



Academic Orientation of Postgraduates of Contemporary Pedagogical principle: Research Vision, Development Stage and Research Orientation

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ABSTRACT

The pedagogical principle is a secondary discipline subordinate to pedagogy, which has a large-scale postgraduate training system in Chinese universities. Taking a comprehensive view of the academic orientation of the graduate theses on the principles of pedagogy in the past 20 years from 2000 to 2019, it is helpful to tap the cultural roots and social context of the research on the principles of pedagogy in China, expand the discipline vision of the pedagogical principle, and build a modern academic position and discipline logic of the discipline system of the pedagogical principle with Chinese characteristics. In this paper, firstly, bibliometrics is used to analyze the academic picture of the graduate dissertation on the pedagogical principle, draw a word cloud map of high-frequency keywords at various stages of the discipline development, extract the keyword association network, perform visual processing of keyword co-occurrence, and use the minimum spanning tree to figure out the internal aggregation relationship, so as to show the discipline development picture at different stages. Then, from the basic construction stage of pedagogical principles, the standardization transformation stage of pedagogical principles, the reflection stage of inheriting discipline development, and the multidisciplinary literacy development stage supported by educational technology, the academic orientation of the research of pedagogical principles at different stages of the discipline is expounded in depth. Finally, through the LDA theme analysis, the mainstream academic orientation of the graduate dissertation on the pedagogical principle is excavated. At the same time, in order to further reveal the vertical research trend in the past two decades, TF-IDF is used for data mining to discover and reflect on its deep-seated development laws.

1. Introduction

The construction of pedagogical principles as an independent discipline in China began with the Catalogue of Disciplines and Specialties for Granting Doctoral and Master's Degrees and Training Postgraduates, which was issued in 1990 and revised in 1997. It explicitly set "pedagogical principles" as a secondary discipline subordinate to the primary discipline of pedagogy in the field of postgraduate education. Education is an activity of inheriting precious knowledge and cultural resources in human society. Pedagogy is to study how human society inherits its own precious knowledge and cultural resources. The pedagogical principal focusses on the pedagogical system itself, study the scientific principles of inheriting precious knowledge and cultural

2. Academic View of Postgraduate Thesis on Pedagogical principles

On August 29, 2020, the discipline name was limited to "Pedagogical principles" in the CNKI doctoral and master's theses database and time span was 2000-2019, 10295 graduate dissertations in the discipline of pedagogical principles were obtained, including 9462 master's theses and 846 doctoral dissertations. The

resources in human society, and regard education as an object that can be explained, predicted, and manipulated, aiming to straighten out some concepts and theoretical relationships in the pedagogical system itself, for example, the object, scope, system and nature of pedagogy research is a basic discipline in the pedagogy system (Qi & Liu, 2006). Looking at the orientation of key academic topics in the graduate theses of Pedagogical principles from 2000 to 2019, it is helpful to deeply study the development process and evolution trend of the discipline in China, tap the cultural roots and social context of the study of pedagogical principles in China, expand the scientific vision of pedagogical principles, and build a modern academic position and discipline logic of the discipline system of pedagogical principles with Chinese characteristics.

earliest graduate thesis of this discipline included by CNKI in 1997 was only one, and in 2002 was more than one hundred (165). Since then, it has increased year by year. In 2006, the growth rate was the largest, with 616 annual graduation papers. In 2007, it continued to climb to 751. In 2008, it reached the peak (770). Since

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then, there has been a slight decline. In 1990, the Academic Degrees Committee of the State Council and the National Education Commission issued the Catalogue of Disciplines and Specialties for Awarding Doctoral and Master Degrees and Training Postgraduates. Pedagogy principles replaced basic theories of education to become a secondary discipline of pedagogy. The first doctoral graduates of this discipline graduated in 1997. Later, with the addition of degree programs, the expansion of postgraduate enrollment, and the addition of the discipline direction of pedagogical principles, they jointly promoted the sharp increase in the number of master's and doctoral theses in 2006, which reached a peak in 2008, decreased significantly in 2010, reached the second peak in 2012 and 2014, and decreased slightly from 2015 to 2018.

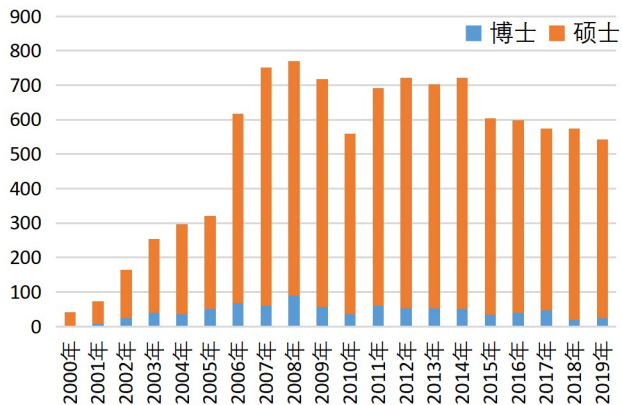


Fig.1: The development trend of the number of postgraduate dissertations on the pedagogical principles

From the perspective of the main themes of the master's and doctoral theses on the pedagogical principles from 2000 to 2019, case studies (190), compulsory education (175), primary and secondary schools (174), primary school teachers (152), countermeasure studies (151), teachers' professional development (124), comparative studies (115), and moral issues (106) have become hot words; From the perspective of secondary themes, teacher professional development (142), value orientation (115), education equity (106), primary and secondary school teachers (78), teacher-student relationship (68), case study (51), etc. are more prominent. From the perspective of discipline distribution, the main disciplines involved include education theory and education management (3537), secondary education (2222), higher education (1501), primary education (1222), adult education and special education (610), preschool education (308), etc.; As shown in Figure 1, the high-frequency keywords and weights of the master's and doctoral theses show that moral education, teachers, compulsory education, college students, teachers' professional development, curriculum reform, higher education, family education, classroom teaching, education equity, questionnaire survey, etc. are more concerned. It can be seen that the master's and doctoral theses in this discipline mainly focus on teachers and students in compulsory education, higher education and other stages, and the research methods are case analysis. Mainly applied research and comparative research, focusing on teachers' teaching practice and professional development research, paying more attention to moral education construction, family education, education fairness, etc. At the same time, teaching research has formed a more systematic research context of the whole chain of teachers' teaching from teachers' beliefs of teaching outlook to classroom teaching practice research, as well as teaching measurement and evaluation, that is, research on teaching effectiveness, but the research method is mainly questionnaire survey, Empirical research on high-level evidence is relatively scarce.



Fig.2: Word cloud map of the top 30 high-frequency keywords at each stage (2000-2004, 2005-2009)



Fig.3: Word cloud map of the top 30 high-frequency keywords at each stage (2010-2014, 2015-2019)

In order to further explore the stage evolution characteristics of the academic orientation of the postgraduate dissertations on the pedagogical principles, the period from 2000 to 2019 is divided into four development stages. The first stage is from 2000 to 2004, which is the construction stage of the basic education curriculum system after the new curriculum reform; 2005-2009 is the second stage; The third stage is from 2010 to 2014. The Outline of the National Medium- and Long-term Education Reform and Development Plan (2010-2020) was publicly consulted in February 2010, and the curriculum reform entered the stage of deepening and comprehensive development; 2015-2019 is the fourth stage. The Core Literacy of Chinese Students was officially released in September 2016, and the study of pedagogy principles entered the literacy era. The research uses keyword co-occurrence to visualize the data, extract the keyword association network, use the minimum spanning tree algorithm to figure out its internal aggregation relationship, and convert it into JSON format as the visual analysis source. Based on the online complex network analysis platform, the knowledge map of keyword co-occurrence is drawn. Each node represents a keyword. The greater the frequency of keywords, the more prominent the node is. If two keywords appear together in an article, a line will appear between them, representing their relevance. The number tags on the line represent their co-occurrence times. The key phrases with strong relevance together form the research topic. The research uses the online complex network analysis platform to visualize keywords and association frequency, and uses the Louvain algorithm built in the online platform to cluster, Get the large-scale network community map of four research stages to show the development prospect of each stage.

3.The Disciplinary Development Stage of Pedagogical Principles

3.1 The Basic Construction Stage of Pedagogical Principles: Exploration of Moral Education Construction and Teaching Practice under the Background of the New Curriculum

From 2000 to 2004, the awarding units of the postgraduate

thesis and degree of the discipline of pedagogical principles were mainly East China Normal University and Southwest Normal University. The research topics focused on the construction of civic morality and moral education, the research of educational practice under the background of new curriculum, the development and practice of curriculum, the exploration of teaching mode improvement, the research of educational theory, the investigation of classroom teaching practice, the analysis of educational policy, the educational dilemma and countermeasures Cultural adaptation of cross-cultural students. The research theme in this field is characterized by the parallel development and distinctive features of higher education and basic education.

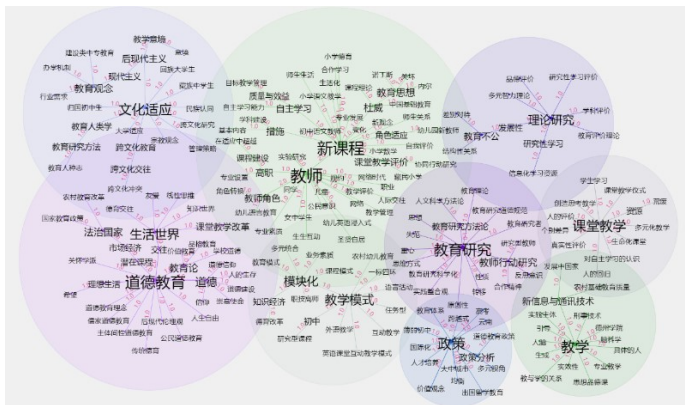
Research focus I: the construction of civic morality and moral education. The goal of moral education is to promote the formation and development of students' ideological and moral character, ultimately improve the ideological and moral quality of the whole society, and build a happy life for everyone to enjoy morality. In essence, it is an activity that purposefully exerts moral influence on the educated. The research explores the shortcomings and deficiencies in school moral education from three aspects: the mandatory development mode of moral education, the rigid requirements of moral education, and the emphasis on memorization while ignoring understanding in moral acquisition, and proposes promotion strategies for school moral education from three perspectives: communication, life and reflection, and introspection (Zhao,2004). In the view of the new biological paradigm, the research explores the problems of life moral education based on the re understanding of people, life, moral education and their relationships, and makes philosophical reflections on the difficulties faced by moral education, responding to the role of social transformation in the transformation of moral education (Liu,2002).

Research focus II: educational practice research under the background of the new curriculum. In 2001, the Central Committee of the Communist Party of China held the National Basic Education Working Conference, and issued the Outline of Basic Education Curriculum Reform (Trial), which opened the curtain on the implementation of the new curriculum reform. The research will further guide the practice of Chinese teaching in primary schools by elaborating four new concepts of Chinese subject integration, cooperative learning, teacher-student interaction, and Chinese curriculum life in Chinese teaching in primary schools under the new curriculum, as well as their implementation suggestions in Chinese teaching activities in primary schools, sorting out the relationship between the new curriculum and the new concept (Wang, 2004). Under the background of the new curriculum reform, the research explored the three elements of school management: education concept, school management system, school management mechanism and their relationships, and conducted a questionnaire survey on the current situation and problems of school management, and proposed some solutions (Gong, 2004).

Research focus III: curriculum development and practice. Curriculum is the core of education, and curriculum research is also the key to the new curriculum reform. From the time sequence, curriculum research can generally be divided into the research on curriculum policy, curriculum design, and curriculum implementation. Among them, the research on curriculum development and practice has far-reaching significance for the construction of the national curriculum system. According to the field survey, the research analyzed the current situation of the development of the moral education activity curriculum in rural junior middle schools, analyzed its crux, and discussed the goal system, content framework and design ideas of the moral education activity curriculum in rural junior middle schools (Zeng, 2004). Based on the three new curriculum concepts of "entering student life", "cultivating innovation awareness" and "learning through experience", the study investigated and analyzed all aspects of the

curriculum practice of "morality and society" in Shanghai primary schools, and put forward several suggestions for improving the curriculum practice (Yue, 2004).

Research focus IV: exploration of improvement of teaching mode. The teaching mode is a relatively stable relationship, teaching activity procedure and its implementation strategy system (Sun, Cheng and Zhu, 2015) formed by various elements (teachers, students, textbooks, media environment) in teaching activities according to specific teaching objectives, teaching content and students' cognitive characteristics under the guidance of certain educational ideas and pedagogical theories and under the support of certain teaching environment and resources The research of management mode is the key topic of the thesis of the graduate students majoring in the principles of education. For example, the research compares the common teaching modes of adult higher education in China: transmission reception, learning guidance,



demonstration imitation, unit, etc., and elaborates the basis for adult colleges to choose teaching mode from four aspects: teaching purpose, discipline nature, college development level, and material conditions (Zhao, 2001).

Fig.4: Co-occurrence of research hotspots in the basic construction stage of pedagogy principles (2000-2004)

3.2 The Standardization Transformation Stage of Pedagogical Principles: Research on Education Equity and Family Education Based on Special Student Groups

From 2005 to 2009, Shandong Normal University and Northeast Normal University were the main awarding units for the postgraduate thesis and degree of the discipline of pedagogical principles, and the research topics focused on the family education research of special student groups, the exploration of educational equity issues, teachers' professional quality and role outlook, college students' sociological practice research, curriculum design research, compulsory education dilemma and countermeasures, curriculum value orientation research, moral education practice research, etc. The research topics in this field are characterized by paying attention to educational equity, special students and the stage of higher education.

Research focus I: research on family education of special student groups. Family education plays a special and important role in the process of people's growth, and is the basis of all education, especially for special student groups such as rural left behind children, migrant children, urban low-income families, students in underdeveloped areas, single parent families, and minority students. For example, the study took the rural left behind children in Jiangxi Province as the object, and explored the guidance and suggestions for the family education of rural left behind children through the investigation of school classrooms and the customs work committee of the Women's Federation (Liu, 2009). Aiming at the problem of poor social development of children from single parent families, the study designed questionnaires to explore

the social differences between single parent families and complete families. It can be seen that children from single parent families are relatively weak in communication with parents, peers, teachers and social groups, and proposed countermeasures to promote the good social development of children from single parent families (Zhu, 2006).

Research focus II: research on educational equity. Education equity is an extension of social equity in the field of education. China's education has made remarkable achievements on the basis of economic development, but education equity issues, including urban-rural gap and regional gap, have become increasingly prominent. For example, under the background of the National Rural Primary and Secondary School Modern Distance Education Project, the research was carried out in the rural primary schools in Panyu District, Guangzhou City, to try to carry out differentiated teaching for poor students in the multimedia teaching environment and summarize teaching experience (Yuan, 2007). The research takes the basic data of education resources in Shanxi Province from 2005 to 2007 as the object, analyzes the current situation, problems and impacts of the distribution of basic education resources in Shanxi Province, and analyzes the impact mechanism of resource distribution differences from economic, social, policies and regulations (Ouyang, 2008).

Research focus III: teachers' professional quality and role view. Teachers are an important force to implement quality education in an all-round way and promote the development of education. The investigation on the status quo of teachers' professional development, professional quality, career planning, role outlook and other aspects at all stages is the research focus of the postgraduate thesis on the pedagogical principles. For example, in view of the problem that the organizational form and evaluation mechanism of teachers' professional development ignore teachers' main needs, teachers' feelings, and teachers' expectations, the research conducted a survey on some primary and secondary school teachers using self-designed questionnaires. The research results show that there is obvious gender, professional title, urban and rural differences in teachers' professional identity, and proposed countermeasures to strengthen teachers' professional identity and promote professional development (Wei, 2005).



Fig.5: Co-occurrence of research hotspots in the standardization transformation stage of pedagogy principles (2005-2009)

Research focus IV: college students' sociological practice research. College students are the frontier group of new social technologies and new ideas, and are specialized talents trained by the state. The research on college students' education, morality, job selection and employment, social interaction, mental health and other social issues in the graduate thesis of Principles of Education is also one of the focuses. For example, research and investigate the basic situation, consumption structure, consumption behavior, consumption values and other contents of college students' consumption, build a relatively systematic analysis framework of college students' consumption culture, and make a clear and

objective understanding of college students' consumption culture (Fan, 2009). The study investigated 800 college students from 8 departments of a university in Chongqing, and investigated gender differences, age differences, professional differences, urban-rural differences, family background differences, work experience differences, etc. in college students' career planning (Zhou, 2007).

3.3 The Reflective Stage of Inheriting Discipline Development: Research on New Curriculum Reform and Teacher Professional Development

In about five years from 2010 to 2014, Southwest University and Northeast Normal University were the main awarding units for the graduation thesis of the discipline of pedagogy principles, and the research topics focused on teachers' professional development and teaching practice, rural teaching status, comparative research on urban and rural teaching, research on the countermeasures for new curriculum reform, research on the value orientation of curriculum and teaching materials, curriculum setting and implementation, and curriculum resource development.

Research focus I: teachers' professional development and teaching practice. This field mainly involves curriculum reform, teaching practice and teacher professional development in the context of individual cases. For example, the research selected mathematics teachers from three junior middle schools in Xi'an, Shaanxi Province as the research object, combed the theory and practice status of education informatization and the development of junior middle school mathematics teachers' professional quality, and proposed reasonable professional quality development strategies (Zhang, 2012)]. The research designed a questionnaire around the three dimensions of the Professional Standards for Kindergarten Teachers (Trial), conducted a survey of 497 kindergarten novice teachers and 166 kindergarten directors nationwide, and proposed strategies to promote the professional development of kindergarten novice teachers from the three levels of the country, educational institutions and teachers (Zhang, 2014).

Research focus II: Comparative study on the current situation of rural teaching and urban and rural teaching. Since the new century, the rural economic and social development has presented a series of new stage characteristics, and the research on school teaching, school construction, family education, teachers and teachers in the rural basic education stage has also emerged in an endless stream. For example, the study analyzed the impact of the current rural primary and secondary schools' withdrawal and proofreading on rural society, rural education, urbanization and modernization from macro and micro descriptions, rationally reflected on the four aspects of theoretical guidance, policy logic, dynamic mechanism, and ethical problems, and put forward suggestions on the transformation of rural education ideas, layout policy adjustment, and specific strategic operations (Zhou, 2013).

Research focus III: Research on the countermeasures of the new curriculum reform. With the deepening of the new round of basic education curriculum reform in China, research on teacher development and educational practice under the background of the new curriculum has become a hot spot. For example, the study investigated the implementation of the new rural English curriculum in six rural junior middle schools in Handan City, Hebei Province, based on the current situation that there are many problems in the implementation of the new curriculum in China's rural junior middle schools due to the impact of traditional education concepts, outdated curriculum concepts, economic conditions and other factors (Li, 2012). The research conducted an investigation in selected senior high schools in Chongqing to understand the current teaching situation of senior high school geography teachers in Chongqing, find the distance between the current senior high school geography teaching and the new geography curriculum standard, analyze and find out the reasons

for these gaps, and put forward suggestions for improvement according to the actual conditions (Zhang, 2013).

Research focus IV: research on the value orientation of curriculum and teaching materials. For example, the research takes the high school textbooks under the new curriculum standard as the blueprint, and uses the text analysis, comparison and statistics methods to focus on the differences between PEP and foreign research textbooks in guiding ideology, writing system, text content and keywords, with a view to mining the value orientation embedded in high school English textbooks (Jia, 2014). The research aims to interpret the curriculum value orientation from the perspective of normal school students, explore the true interpretation of the curriculum value orientation by normal school students, discuss "what kind of curriculum is most valuable" from the perspective of normal school students, how normal school students view the knowledge field as the object of curriculum selection, and how to compare the curriculum value through what value judgments (Xin, 2014).

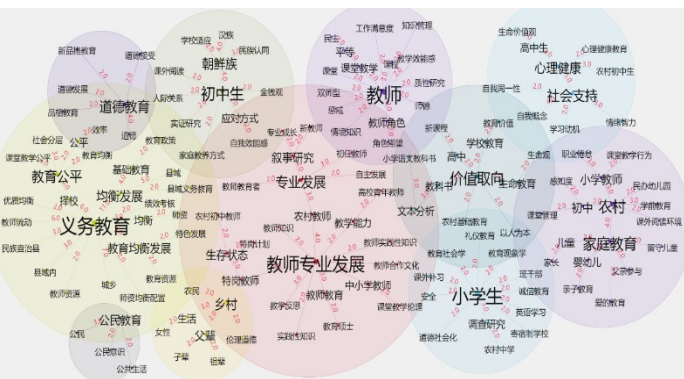


Fig.6: Co-occurrence of research hotspots in the reflective stage of inheriting discipline development (2010-2014)

3.4 The stage of multidisciplinary literacy development supported by educational technology: exploration, curriculum practice and development based on the "Internet plus" model

From 2016 to 2018, the degree awarding units of the graduate thesis of the discipline of pedagogy principles are mainly East China Normal University, Northeast Normal University, etc. The topics of the thesis focus on the practical research of core literacy, the application of new teaching models such as flipped classroom and micro class, the comparative study of curriculum standards or textbooks, reading teaching, school-based curriculum development and practice, the cultivation of critical thinking, classroom teaching practice research. Research on the consistency of curriculum standards and the causes and countermeasures of education problems at various stages.

Research focus I: practical research on core literacy. In 2016, the Core Literacy of Chinese Students was officially released. In 2017, the curriculum standards of various subjects in senior high schools were published one after another, calling for the implementation of the cultivation of students' core literacy. The research on core literacy has also become the mainstream topic of the dissertation on the principles of education in this period. For example, the research takes a school in Shanghai as the research object, adopts qualitative research methods, and obtains the main research materials through observation, interview and material collection through participation, aiming to analyze the experience and problems of school-based curriculum construction based on students' core literacy (Lv, 2016). Based on the English Curriculum Standards for Ordinary Senior Middle Schools (2017 Edition), the research takes the senior high school English textbooks approved by Beijing Normal University in 2004 as the research object, combines the characteristics of textbooks and English disciplines,

and uses the literature research method and content analysis method to analyze which content in textbooks is helpful to cultivate students' language ability, cultural awareness, thinking quality and learning ability (Wang, 2019).

Research focus II: teaching research in the Internet environment. The continuous development of Internet technology has brought new opportunities and challenges to people's study, work and life. The research on this topic is mainly divided into the combination of Internet and subject teaching, and the exploration of teaching mode under the Internet environment. For example, the research proposes that the new English teaching model in the "Internet plus" era can expand the sharing of English teaching resources and also accelerate the self-transformation ability of education. The article discusses the opportunities and challenges of English teaching in the "Internet plus" era, and proposes countermeasures to deepen the innovation of English teaching (Zhang, 2019). The research analyzed the guiding concept and development reconstruction of the reform of the teaching model in the "Internet plus" era, and took Zhangqiu kindergarten as the research object, using the questionnaire survey method and interview survey method to explore the problems of the "Internet plus+ Education" model in teaching objectives, form and content, role identification, supervision and management (Kong, 2018).

Research focus III: classroom teaching practice research. Relevant research on this topic includes research on classroom teacher-student interaction, classroom evaluation and effective teaching. For example, the study investigated the basic situation of teacher-student interaction in the classroom of a junior high school in Yanji City, as well as the group differences, and concluded the tendency characteristics of teacher-student interaction (Zhao, 2019). The study conducted a case study on the classroom evaluation language of primary school teachers, and analyzed the current problems of primary school teachers' classroom evaluation language, such as emphasizing single over multiple, emphasizing judgment over description (Li, 2018). The research analyzes the effectiveness of classroom teaching in four primary schools in Qingdao from three dimensions: teacher factors, student factors, teaching organization forms and teaching conditions, and puts forward countermeasures (Fang, 2015).

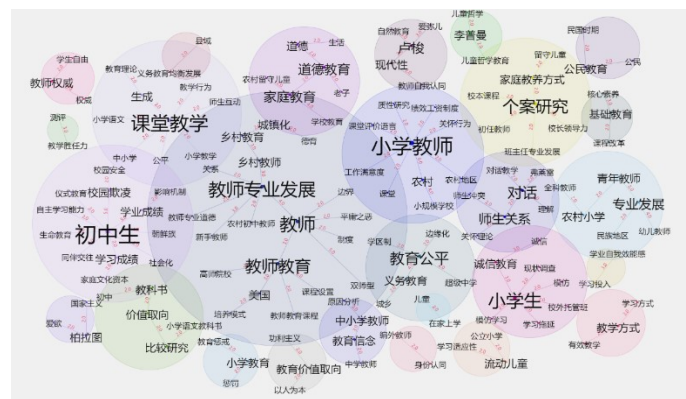


Fig.7: Co-occurrence of research hotspots in the multidisciplinary literacy development stage (2015-2019) supported by educational technology

Research focus IV: school-based curriculum development and practice. The 2017 version of the curriculum standards of all disciplines proposed that in order to meet the needs of students for multiple courses, compulsory courses, selective compulsory courses, elective courses and other forms of courses should be set up. Among them, elective courses include school-based courses based on the characteristics of our students and local resources. The research on school-based courses has gradually become a hot topic in the field of education research. For example, through the

observation of school-based curriculum activities during the internship in Y Primary School and the collation and analysis of a large number of text materials, the study systematically discussed the design concept, curriculum scheme, implementation and evaluation of three school-based courses, namely, "Small Citizen Five Fingers Course", "Small Citizen Literacy Experience Activity", and "Small Citizen All Discipline Activity" (Wang, 2017).

4. The Orientation and Reflection of the Academic Orientation of the Postgraduates of Pedagogy Principles

This part excavates the mainstream academic orientation of postgraduate dissertations on the principles of education through LDA topic analysis. LDA (Latent Dirichlet Allocation) is a document topic generation model, also known as the three-layer Bayesian probability model, which contains a three-layer structure of words, topics, and documents, and is generally used to identify the topic information hidden in large-scale document collections or corpora. At the same time, in order to further reveal the vertical research trend in the past two decades, TF-IDF is used for data mining to discover and reflect on its deep development laws. TF-IDF is a common technical model for information retrieval and data mining, which is widely used in search engines, document classification and other fields to evaluate the importance of a word in a file set or corpus. This part combines two key technologies of data mining to conduct in-depth analysis and reflection on the academic direction of the graduate thesis on the pedagogical principles.

4.1 The Main Academic Theme of the Postgraduates of Pedagogy Principles

In view of the sample characteristics of the graduate thesis on the principles of education, the classical LDA text analysis method was adjusted to overcome the problems such as insufficient sample

size and the difficulty of subdividing topics for documents in the same field. This study used the processing method of topic analysis and different parameter combinations to conduct multiple experiments. Finally, the result with the smallest difference in the number of subject words is selected as the final theme analysis result (Table 1). The five themes focus on education practice research, teacher professional development, moral education in primary and secondary schools, civic education and family education for special student groups, teacher development and classroom teaching.

In order to explore the changing trend of the text theme with the years, the documents were merged to form an annual document set, and the theme analysis was carried out. From 2000 to 2019, the theme evolution of the graduate theses on the principles of education was obtained. The five key years with relative average distribution are selected for in-depth analysis to explore the theme evolution trend. It can be seen from Table 3 that at the beginning of 2000, the research on the pedagogical principles in the compulsory education stage has attracted much attention, and the research on teachers, beginning teachers and normal students has become the main direction; In 2005, it focused on teachers' professional development, moral education, mental health education and other hot words in the basic education stage; In 2010, it turned to case studies on teachers and students in primary and secondary schools, master's degree students and classroom teaching practice research; In 2015, more attention was paid to the civic education and family education of special groups such as left behind children and rural children, as well as the education equity of students. In addition, research on curriculum reform and learning strategies has also become a hot spot; The theme analysis in 2019 shows the orientation of paying equal attention to teacher development and classroom teaching, taking narrative research as the hot method and value orientation as the hot theme.

Table 1 LDA Theme Analysis of Graduate Thesis on Principles of Education

Term1	Term2	Term3	Term4	Term5
Compulsory education 37.89	Teachers 25.17	Pupils 21.49	Civic education 19.76	Teacher professional development 21.16
Teachers 28.03	Teachers' professional development 22.90	Teachers 13.31	Education equity 19.41	Narrative research 20.76
Case study 20.53	Professional development 19.78	Primary and secondary school teachers 12.27	Primary school students 18.90	Classroom teaching 18.17
First time teacher 18.21	American 19.47	First time teacher Moral education 11.35	Left behind children 17.94	Primary school 17.41
Junior high school students 17.85	Primary school students 19.06	Primary school 10.31	Rural 13.95	Teachers 16.65
Life education 16.57	Moral education 17.59	Rural primary school teachers 9.70	Rural education 13.45	Value orientation 16.51
Normal students 16.29	Teaching 16.21	Junior high school students 9.64	Family education 13.42	Teacher specialization 14.88
Primary and secondary school 16.02	Basic education 15.35	Classroom teaching 9.52	Junior high school students 13.15	Teacher student relationship 14.57
Primary school teachers 15.36	Mental health 14.75	Master's Degree 9.13	Curriculum reform 11.46	Rural 14.36
Investigation 14.34	Primary school teachers 14.13	Primary and secondary schools 9.01	Learning strategies 11.32	Life world 12.65

4.2 Reflection on the development of the research orientation of pedagogical principles

TF-IDF is a common technical model for information retrieval and data mining, which is widely used in search engines, document classification and other fields to evaluate the importance of a word in a file set or corpus. Its main idea is that if a word appears frequently in a specified text set and rarely appears in other texts, it can be considered as a keyword of the specified text, Used for classification or labeling. The term frequency (TF) in the model refers to the frequency of a given word in the text. This

number is the normalization of the word count; Inverse Document Frequency (IDF) measures the general importance of a word and calculates the number of documents containing a specified word in the document set. The calculation formula is as follows:

$$TF_{ij} = \frac{m_{ij}}{\sum_k m_{kj}}$$

Where, m_{ij} represents the number of occurrences of word t_i in text d_j , and $\sum_k m_{kj}$ represents the total number of occurrences of all words in text d_j .

$$IDF_i = \log \frac{|M|}{\{|j: t_i \in d_j\}|}$$

Where, $|M|$ represents the total number of documents in the corpus, and $|\{j: t_i \in d_j\}|$ represents the number of documents containing the word t_i .

The TF-IDF value of the word is obtained by multiplying the TF value and the IDF. The higher the TF-IDF value of the word, the higher the importance of the word in the text, and the more likely it is the keyword of the text. Calculate the TF-IDF value of the key words in the text of the academic paper by taking each year as a unit. Based on the three indicators of co-occurrence frequency, TF-IDF value and relevance to the theme, select the ten key words that can best represent the curriculum and teaching theory research. Draw a line chart according to the changes of the TF-IDF value of

the year. The horizontal axis represents the year, and the vertical axis represents the size of the TF-IDF value. As shown in Figure 8, teachers have always been in the mainstream research orientation since 2003, and were in the hot discussion stage in 2004-2009; The professional development of teachers has also attracted much attention since 2007; Apart from the rupture in 2004 and 2010-2011, moral education is also a hot research field in recent years; From 2005 to 2019, the theme of family education shows a trend of one after another, which can also be one of the key research themes; From the perspective of research objects, research on primary school students has been prosperous since 2008, and research on junior high school students has shown a high weight of research orientation since 2007, with a break point in 2014.

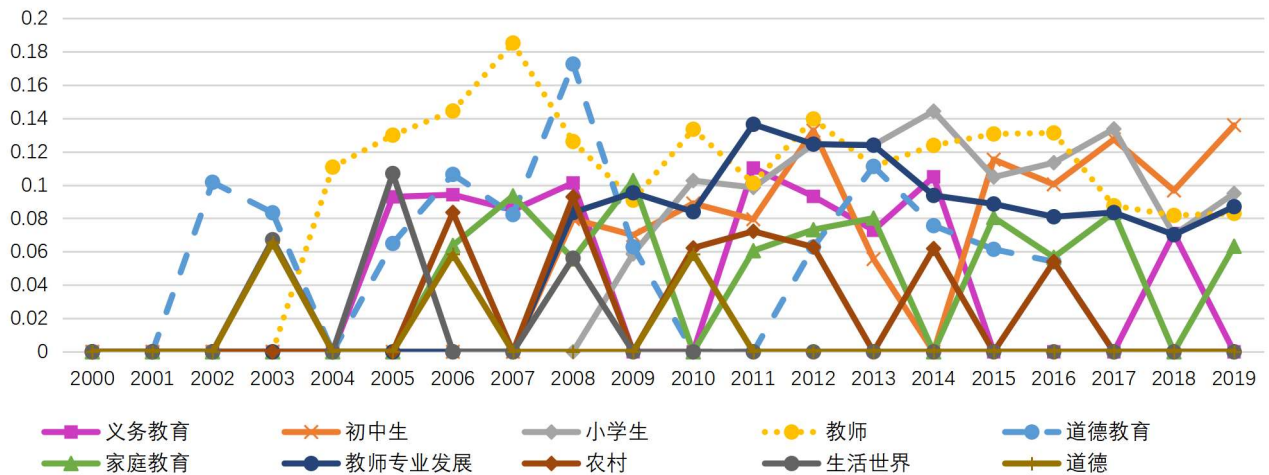


Fig.8: Trend Chart of Research Orientation of Pedagogical Principles Based on TF-IDF Method Mining in Recent 20 Years

5. Conclusion

To sum up, in the development scene of the research on the pedagogical principles, the graduate thesis focuses on the teaching practice and professional development of teachers. Rural areas and the compulsory education stage have attracted much attention. At the same time, moral education and family education are also the focus of research. With the development of the eighth curriculum reform, the quality-oriented curriculum teaching practice has become the theme of the new era, Teacher research has emerged and become one of the mainstream research fields. Looking at the academic orientation of the graduate theses on the pedagogical principles in China in the past two decades, the academic research on the pedagogical principles has entered a new historical development stage, forming some educational theories with Chinese characteristics, and the discipline development has become increasingly mature. In recent years, the research on the pedagogical principles has gradually turned its research perspective to the frontline of educational practice, taking more

micro, specific and practical issues as the topic, The "problem turn" and "practice turn" of research focus have become new growth points of academic research (Liu, 2016). The research level of master's and doctoral theses represents the research status and talent cultivation level of the discipline to a large extent. Looking back on the research orientation of the graduate theses on the pedagogical principles in the past 20 years, we should always face the educational practice in the future, put forward proposals to solve the problems in educational practice, and devote ourselves to expanding the discipline vision of the pedagogical principles, and strengthening the exchange and reference between disciplines, Pay attention to the disciplinary position of guarding pedagogical principles in the discourse context of multidisciplinary research, and highlight the professional perspective of pedagogical principles. We should not only pay attention to the problem of knowledge inheritance of pedagogy principles, but also think about how to better apply educational technology to curriculum and teaching in the era of artificial intelligence, so as to build the research paradigm and research methods of pedagogy principles with Chinese characteristics.

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