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Research on Journal Papers supported by National Education Sciences Planning Projects

-Quantitative Analysis on CSSCI Journal Papers in 2001 - 2012

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***Abstract*—By analyzing CSSCI journal papers supported by National Education Sciences Planning (hereinafter referred to as NESP) projects from 2001 to 2012 with CiteSpace software, the paper make conclusions as follows: First of all, institutions that published papers were mainly Beijing Normal University etc. in Basic Education research and Huazhong University of Science and Technology etc. in higher education research. Secondly, disciplines involved in papers mainly included education and psychology, and interdisciplinary research paradigm was based on economics, management and sociology. And then, the research mainly focused on the reform of talents training mode in higher education, training of learning ability in basic education and child/student psychology. Finally, the focus point of cited documents and downloaded documents were found between a few authors such as Chen Yinghe and Chen Huichang.**

Keywords—National Education Sciences Planning (NESP); Hot Spots; Frontier Theme; Knowledge Map

I. INTRODUCTION

"National Education Sciences Planning (hereinafter referred to as NESP) project is the highest level of education research project in China, representing the direction and level of China's educational science research" [1]. In March 1979, Ministry of Education of the People's Republic of China (hereinafter referred to as MOE of China) and the Chinese Academy of Social Sciences jointly held the first National Education Science Planning Conference. Since the establishment of the National Office for Education Science Planning (hereinafter referred to as NOESP) in 1983, NOESP has supported continuously National Key Funds of Education, National Funds for Youths of Education, National General Funds of Education, Key Projects of MOE of China, General Projects of MOE of China, and Projects for Youths of MOE of China for a long time. By the end of 2012, NESP had accumulatively funded more than 5,000 scientific research projects in education, and effectively promoted the prosperity of Chinese educational scientific research. In recent years, with the development of quantitative research in education, Zeng Tianshan [2], Yang Xiaowei [3], Hu Jianhua [4], Liu Lifang [5], Jiang Hualin [6] et al. have analyzed the annual growth, regional distribution, and competitive strength of projects of NESP. However, in general, the existing research lacked attention to projects outcome such as funded papers and their scale, structure, level research theme, hotspots and key areas, and the distribution of authors and institutions, which directly represents projects performance of NESP, and demands qualitative and quantitative research to develop NESP and Chinese educational scientific research. Therefore, based on Chinese Social Science Citation Index (CSSCI), the paper analyzes papers supported by NESP projects with CiteSpace software [7].

II. GENERAL OVERVIEW OF FUNDED PAPERS

"To build a platform for and lead the way in educational scientific research, gather scientific research strength and reflect national and social needs, the state has set up National Education Sciences Planning" [8]. The aim of any project is to fund research and promote achievements. Therefore, the funded papers are undoubtedly an important reflection of NESP projects achievements and performance.

A. Analysis on Total Amount of Funded Papers

From 2001 to 2012, 811 papers supported by NESP projects are included in CSSCI database. The amount of papers per year is shown in Fig.1. Fig.1. exhibits that: From 2001 to 2006, the amount of papers per year was generally kept below 40: 6, 2, 13, 25, 27 and 34; From 2007 to 2012, the amount per year showed a significant growth trend, exceeded 100 in 2010, and reached the historical level of 206 in 2012, nearly 30 times more than in 2001; The year 2006 witnessed a turning point. In essence, there were two fundamental reasons for that growth. On one hand, with the scientization and standardization of further management and final review of NESP Projects, high-level journal papers had increased. On the other hand, the 10th Five-Year Plan period witnessed the deepening of Chinese educational scientific research system reform, the growth of scientific research input, team, quality and power of influence [9]. Due to the accumulation of education and teaching research during the 10th Five-Year Plan period, the results had been highlighted in the 11th Five-Year Plan period. Especially, in 2011, the Central Committee of the Communist Party of China (CCCPC) issued the decision on deepening the reform of the cultural system to promote the great development and prosperity of socialist culture. Since then, the vast number of experts and scholars in education research had fully realized the importance and urgency of promoting cultural reform, and assumed the

mission of "promoting the great development and prosperity of socialist culture" more consciously and actively. The high-quality educational scientific research on a large scale leaded to the rapid growth of the papers supported by NESP projects at the beginning of the 13th Five-Year Plan.

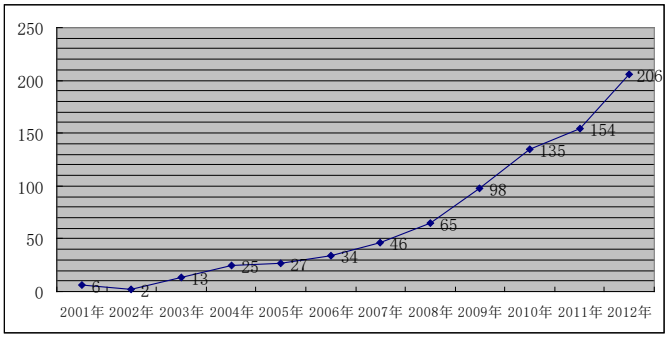

Fig. 1. The amount of funded papers per year in CSSCI database (2001-2012)

B. Journals and Disciplines Distribution

As far as the journals are concerned, 811 journal papers supported by NESP projects from 2001 to 2012 were mostly published in more than 20 high-level journals such as *Psychological Science*, *Psychological Development and Education*, *Education Development Research*, *Foreign Education Research*, *China Educational Technology*, *Comparative Education Research*, *Electrical Education Research*, *China Special Education*, *China Higher Education Research*, *Course Teaching Materials*, *Modern Educational Technology*, *Psychological Journal*, *Psychological and Behavioral Research*, *Higher Education Exploration*, *Degree and Postgraduate Education*, *Higher Engineering Education Research et*., whose impact factors rank the top. The funded papers had been recognized and adopted by high-level academic journals, reflecting high efficiency of NESP projects. However, few papers were published in *Educational Research* (composite impact factor: 2.713) and *Higher Education Research* (composite impact factor: 2.148) with the highest impact factor in education. The amount of papers in both journals was less than 10. Therefore, although the overall quality of NESP projects results was high, it still needed to be improved.

Disciplines distribution is shown in Table I as below. Journal papers focused on 16 disciplines such as Education, Psychology, Physical Education, Management, Ethnology, Linguistics, Economics and so on. Education (504 papers), Psychology (137 papers) and Physical Education (48 papers) ranked top 3. Because both Psychology and Physical Education are the second grade discipline of Education, NESP retained consistent scientific standards with education research characteristics in projects funding, and NOESP stuck to strict and standard project management, at the same time, the trend of deepening education discipline development was presented, and the theoretical research on Psychology and Physical Education was continuously developing. There were still a large number of papers published in economics, management, and sociology, which was highly compatible with new trend of Chinese education research. In recent years, under the guidance of the elder generation of educators and education research experts, numerous new forces were constantly engaging in education scientific research. The narrow vision limitations of education discipline had been broken, and the majority of education researchers were constantly expanding research perspective, innovating research paradigm, and deepening interdisciplinary and multidisciplinary education research.

TABLE I. THE TOP 10 JOURNALS AND DISCIPLINES STATISTICS OF FUNDED PAPERS FROM 2001 TO 2012

Journals	The amount of papers	Disciplines	The amount of papers
Psychological Science	33	Education	504
Psychological development and education	31	Psychology	137
Educational development research	31	Physical education	48
Foreign education research	27	Economics	25
China's electrification education	25	Linguistics	18
Comparative education research	23	Management	17
Audio-visual education research	21	Philosophy	11
Chinese special education	21	Ethnology	9
China Higher Education Research	20	Sociology	8
Curriculum, Teaching Material and Method	19	Law	7

C. Institutions and Researchers Distribution

Institutions and researchers distribution is shown in Table II as below. The institutions (including universities, colleges and their secondary level entities) published papers in the CSSCI database 2001-2012 supported by NESP projects are mainly the Institute of Developmental Psychology of Beijing Normal University, the Institute of Educational Science of Huazhong University of Science and Technology, and Institute of Psychology and Behavior of Tianjin Normal University, School of Psychology of Beijing Normal University, School of Education Science and Technology of Fujian Normal University, School of Education of Central China Normal University, School of Education of Southwest University, etc. Among them, the Institute of Developmental Psychology of Beijing Normal University and the School of Psychology of Beijing Normal University affiliated to Beijing Normal University published as many as 64 papers, which were generally consistent with overall strength and academic status, research ability, and research level of Beijing Normal University in education. In addition, the Education School of Huazhong Normal University and the School of Education of Southwest University ranked second and third, showing the level of scientific research comparable to that of normal universities directly under MOE of China; At the same time, other institutions ranked Top 10 were Institute of Education Science Research of Huazhong University of Science and Technology, Institute of Psychology and Behavior of Tianjin

Normal University, School of Education Science and Technology of Fujian Normal University and so on. Normal universities directly under MOE of China and education schools of comprehensive universities are two main research strengths, demonstrating the dual distribution pattern of Chinese education scientific research. As far as papers contents and projects concerned, normal universities directly under MOE of China and traditional normal universities had occupied the unshakable position of basic education research, while education schools of the comprehensive universities were continuously expanding strength in higher education research, developing basic education research and higher education research simultaneously.

In terms of researchers, 19 researchers published more than 5 papers, and Chen Yinghe (34 papers), Shen Hong (14 papers), Bai Xuejun (13 papers), Hong Ming (12 papers), and Kou Yu (9 papers) ranked Top 5. Particularly, Chen Yinghe, Bai Xuejun, Hong Ming, and Kou Yu are all high-level experts in Psychology research in China, which directly reflected the significant position of psychology in the education discipline, and important transformation of the education research from "focusing on basic theory, importing foreign experience" to "focusing on local practice and deepening independent innovation". Shen Hong ranked second is not only a high-level expert in educational economic research in China, but also a leader in interdisciplinary study of educational economic issues. Her papers were not only a reflection of her academic level, but also a testimony to the widespread concern for interdisciplinary research in education.

TABLE II. THE TOP 10 INSTITUTIONS AND RESEARCHERS STATISTICS OF FUNDED PAPERS FROM 2001 TO 2012

Institutions	The amount of papers	Researchers	The amount of papers
Institute of Developmental Psychology, Beijing Normal University	54	Chen Yinghe	34
Institute of Educational Science, Huazhong University of Science and Technology	17	Shen Hong	14
Institute of Psychology and Behavior, Tianjin Normal University	13	Bai Xuejun	13
School of Psychology, Beijing Normal University	10	Hong Ming	12
School of Education Science and Technology, Fujian Normal University	10	Kou Yu	9
School of Education, Central China Normal University	9	Chen Huichang	8
School of Education, Southwest University School of Education, Soochow University School of Information and Communication, Xuzhou Normal University School of Education Science, Northeast Normal University	8	Chen Lin	7
		Shen Deli	6
		Mo Lei, Pang Weiguo, Liu Xiangping, Yan Guoli, Yang Jun, Xu Fei, Wang Jiayi, Shen Renhong, Wang Jing, Yang Li	5

In terms of cooperation, Chen Yinghe of the Institute of Developmental Psychology of Beijing Normal University published most papers was also ranked the top in publishing jointly. He had cooperated with Huang Tianqing, Zhao Xiaomei and Zhong Ningning for many times to form an authors group, highlighting the effectiveness of collaborative research and team work. In addition, the collinear map of authors based on Cite Space software also shows that Li Wenling, Zhang Jie, Li Hong et.al, and Wang Hao, Li Fan, Chen Lin, Jiang Yanhong et.al have also formed an authors group respectively. There were many forms of cooperation: two-person group, three-person group, and one-to-many cooperation; intramural cooperation and extramural

cooperation; cross-disciplinary cooperation and interdisciplinary cooperation. It can be seen that in the current education research, the inter-disciplinary, inter-university and inter-regional exchanges and cooperation between scholars were constantly developing. The integration of educational research resources had been continuously strengthened, and the level of collaboration in educational scientific research teams had been continuously improved.

III. KNOWLEDGE BASE AND RESEARCH FRONTIER

Key words and cited literature are important indicators of knowledge base and research frontier. Based on CiteSpace software, the analysis of Papers supported by NESP projects (2001-2012) is discussed below:

A. Analysis on Keywords

According to research from Dr. Chen Chaomei, research frontiers refer to "a set of emerging dynamic concepts and potential research questions". The key words are the key bibliographic information that directly reflects the research topic and content, and the content unit where the readers quickly understand the topic. The frequency can reflect the overall distribution of academic research orientation and research topics at a certain time. After setting the threshold and cosine similarity coefficient, quantitative statistics analysis of the keywords (as below in Table III) showed that there are 2,317 keywords in the 811 papers included in CSSCI, of which 2007 keywords appeared only one time, accounting for 86.62%; 190 keywords appeared twice, accounting for 8.20%; 120 keywords appeared 3 times or more, accounting for 5.18%. Among all the keywords, only 5 keywords appeared more than 10 times: "higher education" (28 times), "children" (17 times), "undergraduates" (13 times), "teaching mode" (11 times), and "educational research" (10 times). From perspective of centrality, such keywords as "children", "education research", "meta-cognition", "new social behavior", "undergraduates" and "mental health" showed strong centrality, while the rest ones showed no centrality. Therefore, keywords in the papers supported by NESP projects were generally scattered, and the research topics and frontiers had not aggregated together.

Although the papers had not been aggregated into a highly concentrated research theme in general, based on keywords showed strong centrality, there were two research lines (including higher education and basic education) and interaction areas. For example, generally, the papers focused on the talent training mode and internationalization of universities and colleges in higher education; "higher education - undergraduates - universities - higher education - postgraduate education" had formed a main line of higher education research, reflecting interaction points as follows: "higher education - universities - talents cultivating - talent training mode - internationalization". In addition, the papers focused on educational psychology research and learning behavior research in basic education; "children - basic education - middle school students - primary school students" had formed a main line of basic education research, reflecting interaction points as follows: "prosocial tendencies - prosocial behavior - understanding and monitoring - meta-cognition - emotional regulation - learning stress - coping style" and "concomitant learning - extracurricular reading - sharing reading - reading psychology - children psychology".

TABLE III. THE KEYWORDS STATISTICS OF TOP 10 FUNDED PAPERS FROM 2001 TO 2012

Key words	Fren-quncy	Centra-lity	Key words	Fren-quncy	Centra-lity
Higher education	28	0	Training mode	6	0
Children	17	0.05	Working memory	6	0
Undergraduates	13	0.01	Meta-cognition	6	0.04
Teaching mode	11	0	Prosocial behavior	6	0.01
Educational research	10	0.01	Primary school students	5	0
Teachers	9	0	Teacher education	5	0
Basic education	9	0	Universities	5	0
Universities	9	0	The U.S.A.	5	0
Vocational education	8	0	Cooperative learning	5	0
Education informatization	8	0	Human capital	5	0
Eye movement	8	0	Scientific education	5	0
Mental health	8	0.05	Talent training mode	5	0
Professional development of teachers	8	0	Execution function	5	0
Influencing factor	7	0	Postgraduate education	5	0
Middle school students	7	0.02	Physical education curriculum	5	0
Talents cultivating	6	0	Special education	5	0
Instructional design	6	0	Intelligence	5	0

B. Analysis on Cited Literature

The knowledge base is an important concept that expresses the nature of research hotpots. If the research frontier is define as the development direction of research area, literature cited in research frontier constitutes will constitute relevant knowledge base. Co - cited analysis of the literature can comprehensively clarify the knowledge base and sources of papers. Statistics of Cited literature is showed in Table IV as bellow. 811 papers in CSSCI (2001-2012) cited 5,980 papers at home and abroad, citation frequency reached 6,280, and the average citation frequency per paper reached 7.74, reflecting higher level of citation of NESP projects papers. 32 papers had been cited more than three times, 19 of which are foreign documents, accounting for nearly two-thirds of the total. Among the top 20 cited documents, there are also 12 foreign literatures belong to psychology in general. Therefore, on one hand, to a considerable extent, the research of Chinese pedagogy (specifically refers to psychology) absorbing and

referring to foreign psychology research, generally had global academic vision and rigorous and realistic academic attitude, On the other hand, Many theoretical systems and knowledge bases of Chinese education discipline depended on foreign psychology research. The local cited documents ranked first is Chen Yinghe's book “Cognitive Development Psychology”, followed by Li Dan's book “Friendly Behaviors in Children’s Mind and Their Age Development Trends”, which generally illustrate their academic recognition.

As far as the cited authors concerned, 17 authors were cited for more than 6 times, and the cumulative amount was 105 times. Except MOE of China, the top 10 individual cited authors are Ye Lan, Marx, Zhong Qiquan, Kou Yu, Yu Guoliang, Bai Xuejun, He Kekang, Pan Maoyuan, Li Dan. In concrete terms, because Marx is the founder of modern social science, the multiple citations of his achievements indicated to a certain extent that pedagogy research placed emphasis on finding evidence support from the classic theories in humanities and social science. The remaining eight authors were listed below: Ye Hao, Zhong Qiquan in basic education, Bai Xuejun in psychology, Pan Maoyuan et al in higher education. Although they have high academic status and recognition, the citations amount of several authors didn’t have formed an absolute concentration. “A hundred flowers blossom, a hundred schools of thought contend” was leading trend of education research.

TABLE IV. THE TOP 20 CITED LITERATURES STATISTICS OF FUNDED PAPERS FROM 2001 TO 2012

Papers	Frenquncy	Papers	Frenquncy
Cognitive developmental psychology	5	Perfectionism: Its measurement and career relevance	3
A review of children's prosocial behavior and intervention studies	5	Effects of pinyin learning on development of phonological awareness in kindergarten	3
Eye movements in reading and information processing: 20 years of research	5	The Chinese version of almost perfect scale-revised	3
A comparison of two measures of perfectionism	4	Dimensions of perfectionism	3
Friendly behavior in children's memory and its developmental trend	4	Retrospect and prospects of graduate education of physical education science in new China	3
Unspaced text interferes with both word identification and eye movement control	4	Perfectionism in the self and social contexts: Conception; assessment; and association with psychopathology	3
Relation between intellectual and metacognitive skills from a developmental perspective	4	Prosocial behaviors of young adolescents:a focus group study	3
Revised almost perfect scale	3	English phonological awareness of Chinese children and spelling	3
A componential view of theory of mind: evidence from Williams syndrome	3	Inference making ability and its relation to comprehension failure	3
Can offline metacognition enhance mathematical problem solving?	3	The social information processing model of children’s social adjustment and its special application	3

C. Analysis on downloaded and cited frequency

In order to prove the analysis results with CiteSpace software, the research also selected relevant statistics based on CNKI database. The statistics show that among more than 800 papers funded by NESP projects in 2001-2012, there are 45

papers that had been downloaded more than 1000 times. The papers ranked top 3 were Hao Zhen and Cui Lijuan's paper "A Study on the Influence of Self-esteem and Locus of Control on Left-at-home Children's Social Adaptation" (downloaded 2,917 times), Pei Dina's paper "On the Important Transitions of Chinese Classroom Teaching Quality Evaluation Outlook" (downloaded 2,598 times), Zhou Zongkui, Sun Xiaojun et al.'s paper, "Psychological development problems of children left in rural areas and their solutions" (downloaded 2520 times). According to the content, Hao Zhen et al.'s paper and Zhou Zongkui et al.'s paper focused on related issues of left-behind children, and responded to the real social problem of "left-behind children" on the theoretical research level. Thus, the applied research orientation of NESP projects was "Scientific research service society", and played a positive leading role in responding to and solving social hotspots.

In the case of the cited results of papers, there were 13 papers that were cited more than 50 times. In the top 10 literatures, Chen Huichang's paper appeared twice, reflecting his high academic recognition and the leading position of psychology research of Beijing Normal University in China. In addition, four papers of Hao Zhen et al., Chen Huichang et al., Pei Dina and Zheng Yanlin et al. are both highly download papers and highly cited papers. Furthermore, 8 papers belonged to the cooperative document, providing proof for the argument based on analysis of the collinear map of authors with Cite Space: "The integration of educational research resources had been continuously strengthened, and the level of collaboration in educational scientific research teams had been continuously improved".

IV. CONCLUSION

Research analyzed CSSCI journal papers supported by NESP projects from 2001 to 2012 with CiteSpace software, and made conclusions as follows:

- Based on analysis on total amount of funded papers, funded papers showed a significant growth trend. Thus, NESP projects had an important role in developing the high-quality educational scientific research.
- In terms of the analysis on Journals and disciplines distribution, disciplines mainly included education and psychology, at the same time, interdisciplinary and multidisciplinary education research was continuously developing. But the overall quality of NESP projects results still needed to be improved.
- As far as institutions and researchers distribution concerned, normal universities directly under MOE of China and education schools of comprehensive universities are two main research strengths, demonstrating the dual distribution pattern of Chinese education scientific research.
- Keywords statistics showed that there were two research lines, including higher education and basic education. Higher education research focused on the talent training mode and internationalization of universities and colleges. Basic education research focused on educational psychology research and learning behavior research.
- Based on analysis on cited literature, "A hundred flowers blossom, a hundred schools of thought contend" was leading trend of education research.

Due to the implement of National Education Sciences Planning projects, the integration of educational research resources had been continuously strengthened, and the level of collaboration in educational scientific research teams had been continuously improved, educational scientific research had been constantly developing.

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