OPTIMIZING EDUCATIONAL INFORMATIZATION FOR PRIMARY AND SECONDARY SCHOOL TEACHER LEADERSHIP DEVELOPMENT

by

MEIFANG YU

AN INDEPENDENT STUDY SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF EDUCATION IN EDUCATIONAL ADMINISTRATION (INTERNATIONAL PROGRAM)

SOUTHEAST ASIA UNIVERSITY

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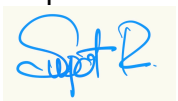

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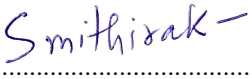

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ABSTRACT

The objective of this study was to conduct a multi-angle and multi-level research on teacher leadership under the background of innovative educational informatization. This research used questionnaire survey, interview, and data statistics. The results found that it is not enough to only study the information leadership of principals. In the process of promoting educational information, teachers' information leadership is an important part of school information leadership. The school is an organization. Under the framework of organizational management, all members have the responsibility to promote the development of the organization. The concept of "school informatization leadership" is the sum of the leadership functions at the school organizational level. School informatization leadership is composed of three important groups: principals, middle-level managers, and teachers.

Keywords: Optimizing educational informatization, teacher leadership

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Meifang Yu

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Chapter 1

Introduction

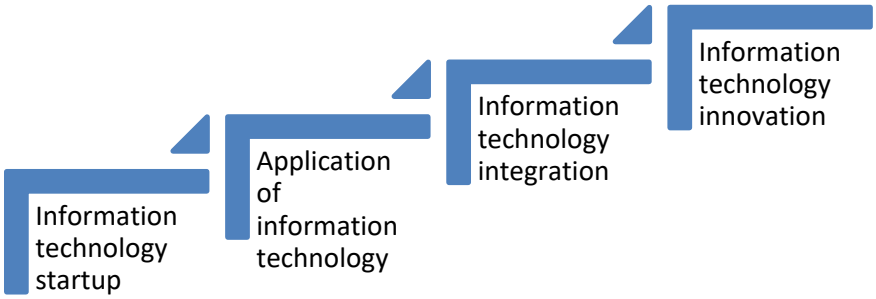
1.1 Statement of the Research Problem

Since 2020, affected by the COVID-19 epidemic, the whole country has taken measures to prevent and control the epidemic in a normal way. Because of the rapid and strict blocking of the risk of epidemic spread, distance education will be adopted in high-risk areas. It is an urgent requirement of China Ministry of Education for all teachers to organize teachers' distance teaching and improve their teaching information technology ability. Colleges and universities across the country and even schools all over the world have organized the call of "stopping classes and learning". In order to ensure students' basic education and teaching, and to carry out online teaching in a timely and efficient manner, primary and secondary schools have intensified the training of teachers' informatization ability. Although online learning has to some extent solved the educational crisis of students returning to school after the epidemic and ensured the effective implementation of teaching progress, there are still some problems in teaching quality, learning methods, application scope, course content, course objectives and later courses.

Question 1: Teachers' information technology is moving forward from "integration of teaching application" to "innovation of teaching technology"

With the connection between modern teaching and Internet age, and the continuous

development of information technology, people gradually apply information technology to education and integrate it into education, so as to promote educational reform and innovation with information technology, and the new skills in Internet age are transformed into new teachers. Educational informatization can be roughly divided into four stages: IT start, IT application, IT integration and IT innovation (Figure 1-1) At present, the development process of educational informatization in China is in the stage of "application of educational information technology to integration", but has not entered the stage of "information technology innovation".



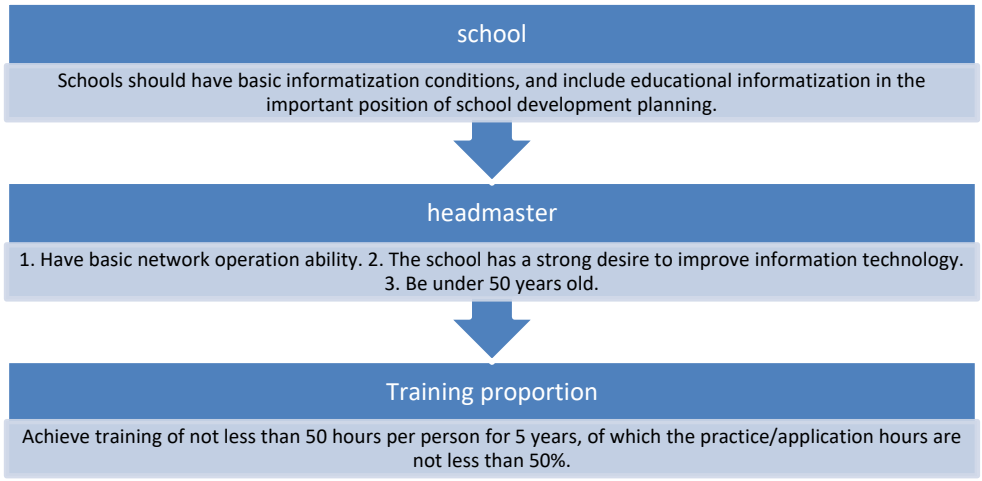
(Figure 1-1)

Question 2: Teacher's information technology is offline, the number of training places is limited, and the scope of teachers information leadership is narrowed.

During the outbreak of the COVID-19 epidemic, the school organized the online course teaching in an orderly manner, and the information leadership of the middle and senior leaders of the school decided the ability of the school to reorganize the information-based teaching of stress events under the normal epidemic prevention and control in the post-epidemic era, which also reflected the school's information-

based leadership of education. The Ministry of Education has also issued the training of educational informatization in every province, city, district, and organization. However, the radiation range of teacher training will also be limited due to the influence of practical problems such as information reception, teaching equipment, hand training venues, training places, trainees' quality, selection criteria of trainers and allocation of educational resources.

Case 1: "The Ministry of Education-China Telecom Primary and Secondary School Principals' IT Application Ability Enhancement Project" selects training objects through selection and leads primary and secondary school principals across the country to complete education and teaching workshop training activities through "Seed". The selection conditions are strict (Figure 1-2), which is to select and train leaders from all over the country to promote the reform and development of school education informatization.



(Figure 1-2)

Although relying on different types and levels of training such as national training,

provincial training, city training, county training and school-based research, the opportunities for principals, middle-level cadres, teachers and training have obviously increased, due to the influence of objective epidemic prevention and control, the training methods are conducted online and offline simultaneously. There is still an average of five years before each principal can participate in the national education informatization leadership training, and middle-level cadres can only carry out the education informatization leadership training at the county level. In 2014, "Primary and Secondary School Principals' Information Leadership Standards (Trial)", the Ministry of Education of China began to gradually attach importance to the promotion and development of educational information, and educational information has become an indispensable part of the educational classroom. Due to the limited training places of educational informatization courses, the leadership of educational informatization has not been paid attention to by the principals and relevant managers of primary and secondary schools in 2019 -2021, and the promotion scope is still limited.

3. The impact of the new educational model and curriculum content leads to the solidification of the educational structure model.

Chinas educational informatization has entered the 2.0 era. Under the influence of the educational informatization wave, it has been impacted by new educational models such as massive open online course, micro-courses and flip-classroom. The changes of various information-based learning contents and resources designed and

developed for individualized curriculum demand have led to the disadvantages of traditional school education such as unbalanced structure and outdated ideas. This causes us to attach great importance to the information leadership in the new wisdom education in three aspects: principals, school management team (middle-level cadres) and teachers at all levels. At present, it is necessary to put forward some strategies, such as establishing public goals and perfecting feedback mechanism, to examine the current situation and shortcomings of informatization leadership of school leaders from the perspective of teachers, and the deviation of evaluation between teachers and school leaders. Therefore, Educational Technology Leadership (ETL) is not only the need for principals and other managers to survive in the information situation, but also the need for the growth and development of school students, teachers, principals, and other stakeholders.

This chapter discusses the strategy research of educational informatization on the optimization scheme of primary and secondary school teachers' leadership training, focusing on the concept of teachers' informatization leadership entering the stage of teaching innovation, the training structure of teachers' informatization leadership special courses, improving teachers' leadership, and understanding the related aspects of educational informatization leadership. After the development context, problem research, data collection, drawing lessons from international experience, investigation and research, reflection and postscript, the overall thinking and main methods of the research are finally summarized.

According to the current survey, the information-based leadership ability of primary and secondary school teachers is relatively weak compared with other vocational teachers and college teachers, and the teachers in this group have insufficient knowledge and awareness of educational information-based leadership. Therefore, the development of educational informatization leadership in primary and secondary school teachers is relatively slow. Improving the awareness and ability of educational informatization leadership plays a vital role in promoting the development of primary and secondary school teachers' informatization major.

1.2 The Research Objectives

Objective 1 To study: The purpose of this study is to conduct a multi-angle and multi-level research on teacher leadership under the background of innovative educational informatization from both theoretical and practical aspects.

Objective 2 To study: Under the guidance of theory, based on the goal of information-based leadership curriculum, set up an interdisciplinary team of teachers' information-based leadership curriculum design and development; On the basis of exploring the rules of the design and development of teachers' informatization leadership curriculum, this paper puts forward the professional evaluation methods and implementation guidelines of teachers' informatization leadership curriculum theory and practice. Taking the development and reform of the master's degree program of educational informatization leadership in the United States (STEAM education program) as a typical case, the experience and problems in this reform

process are also the focus of our research. According to the investigation and research on the current situation of informatization leadership in China and the analysis and summary of overseas education informatization leadership training methods. This paper gives reflection and enlightenment to the optimization scheme of informatization leadership training for primary and secondary school teachers in China and provides useful reference for future informatization leadership training courses for primary and secondary school teachers.

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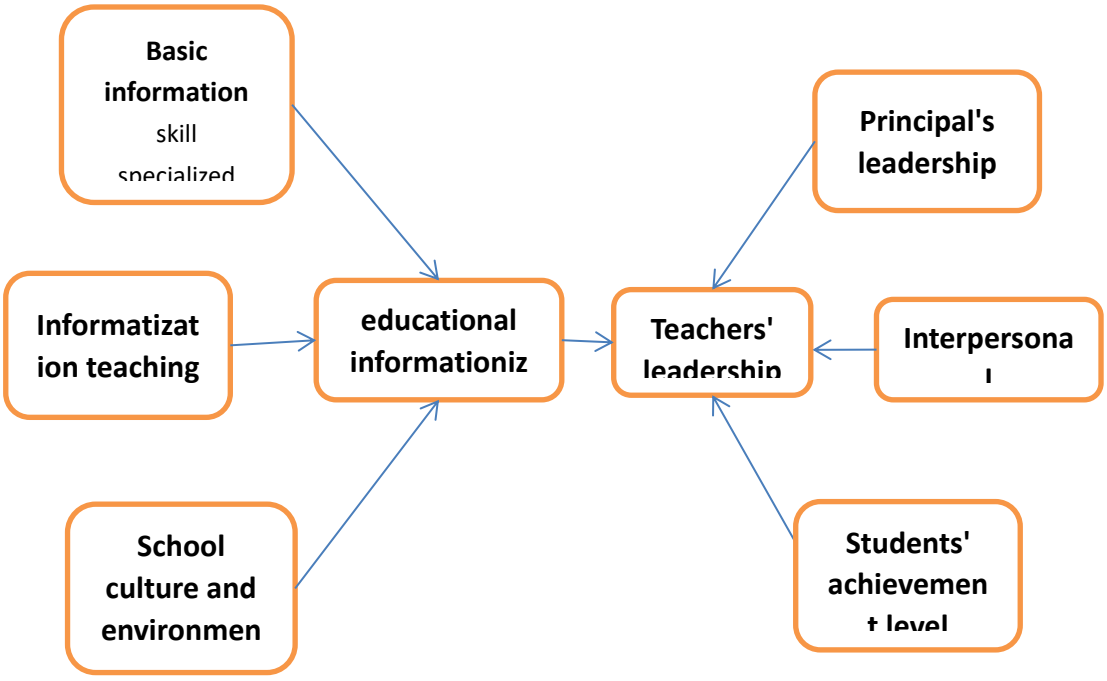
1.3 Conceptual Framework

The research on the training scheme of teachers' leadership in primary and secondary schools is based on the overall level, development degree and existing problems of children's informatization leadership in schools, and the effective information obtained from teachers' interviews is used to supplement the causes, concrete manifestations, and promotion strategies of the current situation of junior middle school teachers' informatization leadership. Through field investigation, the researcher aimed at the present situation of educational informatization in primary and secondary schools from three aspects: basic skills, major, curriculum and teaching, school culture and environment, and put forward the significant influence of promoting junior middle school teachers' informatization leadership from three aspects: principal leadership, interpersonal relationship and students' achievement level.



1.4 The Research Hypotheses

In order to better study the strategies of improving teachers' leadership in the process of educational informatization, this study assumes that the information-based leadership of teachers is influenced by three aspects: students' achievement level, interpersonal relationship and principal's leadership.

Hypothesis 1： Teachers' information leadership level has a significant positive impact on students' achievement.

Hypothesis 2： Good teacher interpersonal relationship has a significant positive impact on teachers' information leadership.

Teachers' leaders in primary and secondary schools do not work independently of the environment, but are influenced by the complicated relationship between

people and their surroundings. The good and unstable interpersonal relationship plays an important role in the leadership of primary and secondary school teachers. The scholar has conducted in-depth qualitative interviews with teachers' leaders in several middle schools. In interviews, teachers' leaders said that interpersonal relationships have a great influence on teachers' leadership, and the attitudes and behaviors of others towards primary and secondary school teachers have an important influence on the work of primary and secondary school education and teaching. When you are in a good environment, you can get the support of others to form a good teacher alliance and teaching and research team, which can achieve the possibility of success in enhancing teachers' leadership.

1.5 The Scope and Limitation of the Research

1.5.1 This study is a survey of primary and secondary school teachers. This group is large and widely dispersed, and it is limited by the single conditions of research area, research time and research place in different regions. As well as researchers' ability, network database access rights and other restrictions, the investigation and research on teaching informatization leadership in primary and secondary schools is insufficient, lacking strong representativeness and practicality.

1.5.2 Due to the influence of transnational regional cultures, different countries have different educational concepts. The literature analysis of this topic is mainly based on English literature and related books. However, due to the differences in

ethnic, social, cultural and educational policies of different countries and the differences in historical and cultural educational backgrounds, there will be different understandings on the concept understanding and ability definition of curriculum practice research of innovative educational informatization leadership.

1.5.3 Case analysis, literature analysis, theoretical analysis and data analysis are used in the research to sort out and summarize the practice of teachers' leadership promotion strategies in the process of educational informatization. Although combined with the methods of meeting interview, community petition investigation and online questionnaire survey, a small number of external factors still have subjective influences on the respondents.

1.6 The Benefits of the Research

Improve teachers' information leadership.

Teachers in primary and secondary schools are selected through interviews, and they have a certain knowledge base related to educational informatization. Moreover, the national education department will hold relevant skills competitions to improve educational and teaching information, and carry out special training related to educational informatization in combination with school development, so as to further integrate the intelligent classroom of informatization with subject education and teaching, and enhance teachers' informatization ability. And with the psychological feelings brought by information-based teaching and communication, teachers can have more "chemical reactions" in teaching after training in information-

based teaching courses and technical courses, compared with their previous teaching abilities. Deming, a famous American management expert, put forward that the requirements of teaching management are composed of four links: planning, implementation, inspection and correction. The English words of these four words are: P(plan)D(do)C(check) and A(action), so the management process is considered as a whole and continuous cycle process with PDCA. Drawing lessons from the "management" process and mastering a good information technology foundation, teachers can improve their information-based teaching ability, teaching and curriculum quality through the "four links" rolling cycle.

Chapter 2

Theory and Literature Reviews

2.1 Definition of Teacher Information Literacy

2.1.1 Education Information Leadership

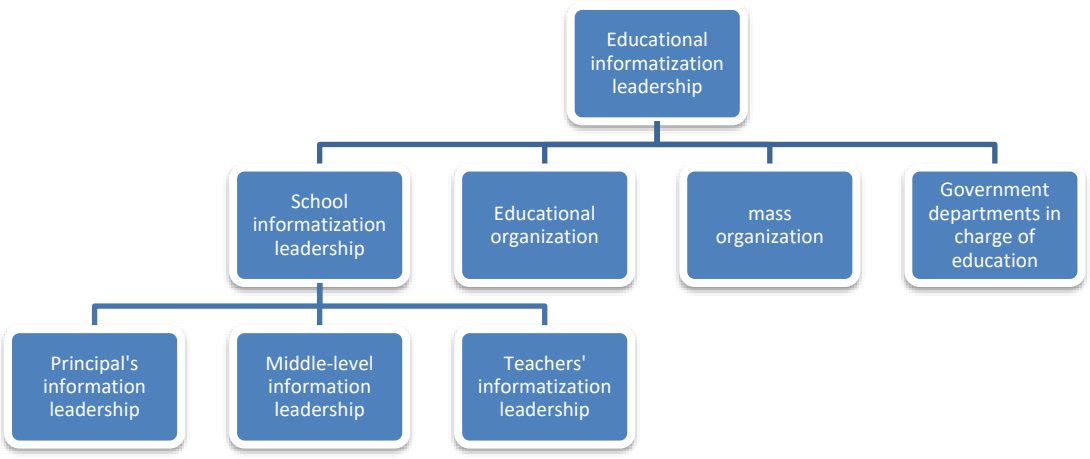
The operational definition of information-based educational leadership is that the subject of behavior has certain ability to achieve certain goals related to this ability. Athens is a professor of education at the University of San Francisco, USA. He defines educational information leadership as: leaders support effective teaching practice, predict future technological development through personal relationships, and effectively integrate and use information technology and other knowledge to achieve educational goals. Aten, a professor of education at the University of San Francisco, USA, defines educational informatization leadership as: leaders predict the future development trend of science and technology through personal relationships and effective integration and application of information technology to support effective teaching practice, so as to achieve educational goals. 1

1. Aten B M. 1996. An Analysis of the Nature of Educational Technology Leadership in California's SB1274Restructuring Schools. San Francisco: University of San Francisco.

Sampson and Wasser believe that the head of education information said that principals and school staff can demonstrate and support the use of information technology in teaching, guide primary and secondary school teachers to understand

teaching and culture, and use information technology to improve teaching efficiency. Schmeltzer's educational informatization leadership means that school leaders set up informatization teams to help teachers use information technology in class, improve teaching practice and development strategies, and promote the development of school informatization.

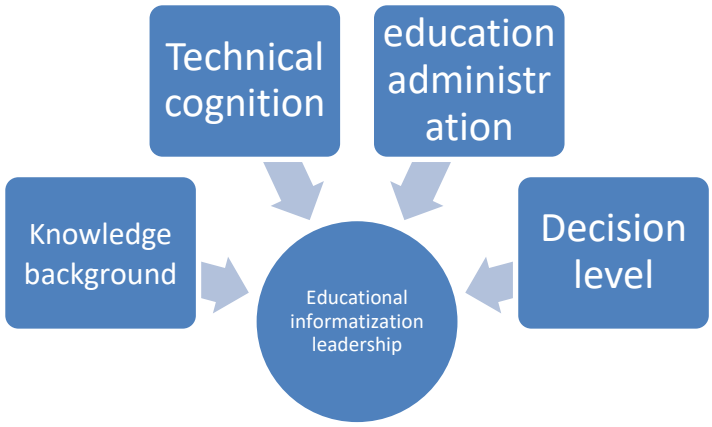
The conceptual relationships related to information-based educational leadership are shown in Figure 1-3-1.



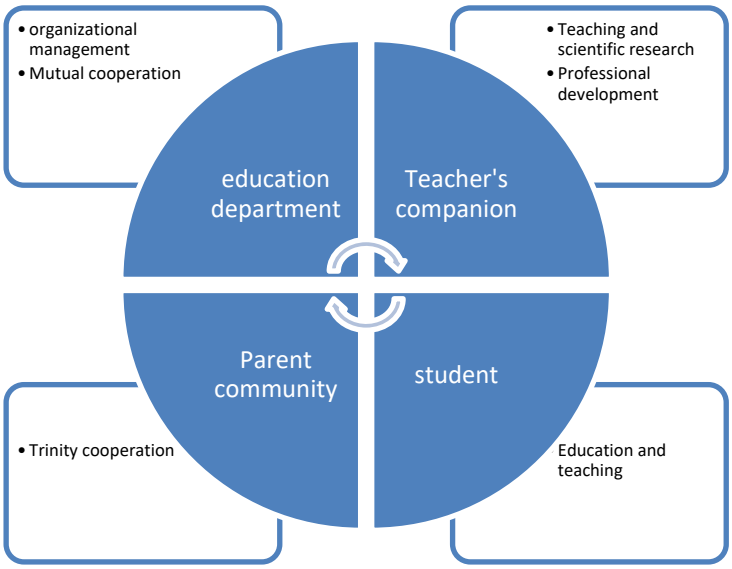
(Figure 1-3-1)

The interpretation of the connotation of educational informatization leadership follows a certain paradigm, that is, an action not only has what kind of ability, but also what kind of educational goal is set in a certain time frame. The factors that influence the leadership of educational informatization are as follows (Figure 1-3-3), and the comprehensive abilities shown in the interaction of different departments are

as follows (Figure1-3-4).



(Figure 1-3-3)



(Figure 1-3-4)

2.1.2 school information leadership

As a general description of the ability of colleges and universities, school information leadership can be divided into two categories: information guidance of principals, information guidance of intermediate command and information guidance of teachers. Domestic principals regard it as the main body of information leadership

ability, and the related research of other ability subjects (educational technology directors, teachers, etc.) is also being gradually carried out. According to the three-tier management system in primary and secondary schools in China, school management is divided into high-level management (principal, vice-principal, school committee members, etc.), middle-level management (department directors, grade directors, subject directors, etc.), and grass-roots management (subject teachers, students, technicians, logistics and service personnel, etc.).

Mr. Yu Tianzhen and Mr. Zhang Xiaofeng used structural equation model to explore the internal structural relationship of informatization leadership of school management team. They believe that the informatization decision-making and planning ability of heads and managers of education administration departments has a direct and positive impact on informatization management evaluation and informatization atmosphere construction. Information-based teaching support ability has a direct positive effect on information-based communication and cooperation ability, information-based communication and cooperation ability has a direct positive effect on information-based management evaluation ability, and information-based management evaluation ability has a direct positive effect on information-based teaching support ability.

2.1.3 Principal's Information Leadership

Liu Meifeng defines the principal's information leadership ability from the perspective of process, and points out that this is the principal's understanding of the

important role of information technology in the use of education. Through a series of abilities, teachers, students and employees of the whole school can work together to promote the development of school informatization.

Principal's information leadership is a dynamic process, which is a process from planning vision to concrete implementation and realization of goals in the information environment defined by time axis. On the other hand, the theory of ability takes the horizontal ability dimension as the starting point to look at the information leadership ability of principals. Although the analysis perspectives and object definitions of the two viewpoints are different, they all agree that the information leadership of principals can promote the informationization of education.

2.1.4 information leadership of middle management team

The middle management team refers to the school management team composed of administrators, which is not the first responsible person of the school, but directly responsible for the daily management of the school. Ren Lingling believes that the informatization guidelines implemented by the middle-level management team led by the principal establish a common vision of informatization development for all members of the school, actively involve them in the informatization planning and decision-making of the school, and assist the principal in promoting the planning process, and finally put it into practice. Sun Zhenxiang and Zhang Yuru believe that primary and secondary school teachers' informatization leadership is an important part of the whole school's informatization leadership, which means that under the

background of educational informatization, teachers consciously use the concepts and skills of informatization to influence students, colleagues and principals through education, teaching management, teachers' professional development, school information and cultural dissemination and other activities. The ability and process to promote the development of information education and teaching in schools and advance the process of information education.

2.1.5 Teachers' Information Leadership

In recent years, there is little research on the content or composition of teacher's information handbook, but the main aspects can be revealed and summarized from the research on the content and composition of teacher's handbook.

According to Zhou Jianping's research, the role of teacher leadership is usually manifested at the level of students, colleagues, schools, parents and communities. On these four levels, teachers play six key roles: they are the promoters of students' learning, teaching and managing effectively, and improving students' learning; Second, it is the promoter of teachers' professional development, carrying out professional exchanges, promoting peer teachers to improve their teaching practice, and jointly improving their professional abilities; Third, it is the promoter of the learning community, participating in building a platform and seeking its common development; Fourth, the participants of team cooperation, actively participate in team work and grow together with team members; 5. Being a participant in school construction,

actively participating in school management and promoting school development and reform; Six is the communication guide for parents, leading parents to actively participate in school management and development. ① Among the six key roles, the first one is to embody teaching leadership; The second point is to reflect teachers' professional development leadership; The third and fourth points, expressed from the perspective of learning community and teamwork, are actually the embodiment of teachers' ability to promote professional development; The fifth point is to show teachers' leadership in school development and management; The sixth point is the leadership of communication and guidance between teachers and parents; Among them, the first, third, fourth and sixth points also reflect the personal accomplishment and ability of teachers.

concept	author	Object subject	Ability composition	Promotion goal
Educational informatization leadership	Aten	leader	Personal relationships and effective integration of information technology and other knowledge, and can predict the future development trend of science and technology.	Support effective teaching practice and achieve educational goals.
School informatization leadership	President Huang Ronghuai and President Hu Yongbin	School leadership group	And attract and influence all teachers, students and faculty to carry out informatization construction.	Realize the development of school informatization.
Principal's information leadership	Principal Liu Meifeng	headmaster	Provide scientific and technological support, assist teachers and students to make	The process of promoting the development of

			good use of science and technology, and develop innovative methods.	school informatization
Informatization leadership of middle management team	Ms. Ren Lingling	Teaching department, moral education department, teacher information development center,	Under the guidance of the principal, all members of the school should establish a common vision of informatization development, participate in the school/improve the quality of running the school.	Formulation of various informatization plans and decisions
Teachers' informatization leadership	Ms Sun Zhenxiang and Ms Zhang Yuru	teacher	Consciously use information technology ideas and skills to influence students, colleagues and principals through activities such as teaching, teaching management, teachers' professional development and promoting school information culture.	Promote the development of information education and teaching in schools and advance the process of information education.

To better understand the connotation, concept, object subject, ability composition and promotion goal of educational informatization leadership, it is analyzed (Figure 1-3-2).

By understanding and comparing the concepts and ways of educational informatization leadership, aiming at the related topics of educational informatization leadership and the comparison of the concepts and connotations, at present, the research on educational informatization leadership mainly focuses on the research of principals, middle management teams and teachers' informatization leadership. This can be defined from the researcher's concept of educational informatization leadership, which generally favors school administrative leadership. However, with the

deepening of research, researchers gradually realize the mixed concept of educational information leadership, and gradually carry out the related research on teachers' information leadership.

2.2 Development of Teachers' Information Literacy How to improve teachers' informatization leadership has become a hot topic of educational informatization leadership in the new era. With the development of the times, teachers' participation in decision-making is increasing, and teachers' influence is constantly expanding. Based on the proposal of teacher leadership, this paper has an impact with the traditional concept of leadership. This paper combs and summarizes the academic discussion on this topic. In recent years, under the background of understanding leadership from the perspective of bureaucratic model and thinking that only leaders have leadership, in fact, school leadership is a relationship model, that is, leadership exists not only within individuals, but between individuals. This model exists among teachers, principals, middle managers and students. Leadership runs through the daily life of the school. Although other school administrators play a very important leading role in school affairs, they are at the forefront of school reform and development, and teachers play a more important role, which directly affects the development of school teaching. On the basis of the analysis that leadership comes from the participation of all the staff in the school organization, it is analyzed from the aspects of distributed leadership, cooperative leadership, or shared leadership, so that every teacher in the school becomes a leader, and teacher

leadership is an important force for the leadership of school change.

2.2.1 The relationship between educational informatization leadership and teacher leadership

As for the existing factors that affect the development of teachers' leadership, Aten, a professor of education at the University of San Francisco, USA, defines educational informatization leadership as: leaders, in order to support teachers' effective teaching practice, conduct in-depth research through personal relationships and effective integration and application of information technology, etc., and predict the development trend of science and technology in the future, so as to achieve educational goals. ① Schmeltzer, a scholar, believes that educational informatization leadership means that school leaders use information technology to improve teaching practice and development strategies in order to help teachers use information technology in class, and form an informatization team to promote the development of school informatization. ② Aten, a scholar and professor, and Schmeltzer, a scholar, studied from the perspective of interpersonal relationship and information technology in educational informatization leadership, and concluded that the promotion of interpersonal relationship and information technology in educational informatization leadership is one of the strategies to help teachers improve their informatization leadership, and it is also the external driving force for teachers' development, which has a positive effect on teachers' leadership in the process of education and teaching development.

2.2.2 Teachers' information leadership is an important research object of school information leadership.

Researchers have realized that school information leadership is not a simple and isolated existence of a person's ability. The research subject should pay attention to not only principals, middle-level cadres, but also teachers' information technology ability and leadership. In 2005, Anderson and Dexter, scholars in developed countries, emphasized that school informatization leadership is the ability of principals and school technical coordinators to make goals, implement policies and make budget decisions. The relationship between the informatization leadership strategies of principals and management teams and the effectiveness of teachers' leadership makes it easier for schools to use information technology effectively. ③ Scholars Wright and Lesisko proposed in 2007 that the leadership of school education informatization leaders includes providing scientific and technological support, assisting teachers and students to make good use of science and technology, developing innovative methods to keep up with the trend of science and technology, and using software and hardware in the field. ④ Organize and coordinate the combination of various departments' forces with international innovative scientific and technological equipment. However, the advanced scientific and technological equipment only exists in individual schools or school resources are limited, and it is difficult to popularize the learning of individual teachers, which leads to the limitation of teachers' information leadership.

Scholar Davies analyzed the papers published in 1998-2008 on school informatization leadership, and believed that many scholars regarded principals as technical leaders. On the basis of expounding the definitions of principals' informatization leadership by many scholars, he analyzed the differences in definitions, pointed out the shortcomings in the research field of principals' informatization leadership, and thought that attention should be paid to building the structural model of principals' informatization leadership. ⑤

Scholars China Ronghuai Wang and Hu Yongbin believe that school informatization leadership can be defined as the ability of school leaders to attract and influence all teachers, students and faculty to carry out informatization construction and continuously realize the development goal of school informatization. ⑥ Zhang Xian, etc. defined the school leadership oriented to informatization as that the collective leadership, with their unique qualities and powers, leads the school's informatization construction and planning, integration of information technology and curriculum, informatization and students' development, informatization and teachers' professional development, informatization and office automation, and evaluation of educational informatization, etc., so as to improve the quality of running a school. ⑦ It can be seen that researchers have studied the transformation of school informatization leadership, and at the same time, teacher leadership is bound to be developed and promoted.

2.3 Previous Research on Teachers' Information Literacy

Scholars in China have made various researches on the breakthrough point of information-based teaching reform. According to the concept of "teacher's information-based teaching leadership" or "teacher's teaching leadership under the background of educational information", the promotion strategy of teacher's information-based leadership has aroused widespread attention in academic circles. For example, in the article "Development of Teachers' Information Classroom Teaching Leadership" written by Zhong Wang Zheng and Leslie Cheung, a scholar from China, by comparing the role of traditional teachers with that of teachers in the information technology teaching environment, this paper expounds the connotation of teachers' information teaching leadership and gives its own definition. The definition mainly includes teachers' information-based teaching leadership behaviors such as setting information-based teaching objectives, designing information-based teaching processes, carrying out information-based teaching activities, uniting teachers and students, creating a good information-based learning atmosphere, encouraging students to learn actively, promoting students' development, and achieving school goals. Although the definition given by them is limited to information-based classroom teaching activities. ① In the article "Application of Teachers' Teaching Leadership in Informational Teaching" by Niu Fu and Zhang Hui, teachers' teaching leadership is divided into four aspects: the ability of informational teaching design: the ability of informational curriculum design and development, the ability of classroom processing

and evaluation, and the ability of district education. (2) Han Shuijing discussed how to improve teachers' leadership in the network environment in "Research on Teachers' Leadership in the Network Environment", and he proposed; Network technology provides technical support to four aspects of technical leadership: teacher's teaching plan, establishment of learning community, class management, and teaching evaluation, which promotes teacher's leadership. (3) It can be seen that researchers have foreseen the direction of teacher leadership improvement brought by information technology and made new research.

After the concept and research of teachers' informatization leadership are put forward, the ultimate goal of teachers' informatization leadership research is to improve teachers' leadership, and the research on the promotion strategy of teachers' informatization leadership is the primary purpose of the research. In the domestic research field, there are some research articles, such as Li Yunfu's Teacher's Information Leadership: Analysis of Connotation and Value ((4)) and "Teacher preneurs" Analysis and Its Enlightenment to the Research and Practice of Teacher's Information Leadership in China ((5)). Tang Xiaxia and Yan Zhiming's "On Teachers' Information Leadership and Its Development Ways"; Li Yingzhuo and Yang Jingyan, "Deep Analysis and Promotion Strategy of Teachers' Information Leadership"; (6) Yao Mengyan's On Teachers' Classroom Leadership in Information Environment (6). Among them, the research of Dr. Li Yunfu of Northwest Normal University is more prominent. In the article "Teachers' Information Leadership: Connotation and Value

Analysis", he explained the concept of teachers' information leadership in detail and put forward his own views. He believes: "Teachers information leadership is a concept of teacher leadership in the dimension of leadership situation, which can be divided into broad sense and narrow sense. In a broad sense, teachers' information leadership refers to the ability of teachers to influence the work and life of students, colleagues and other related personnel through creative application of information technology in the information society. In the narrow sense, teachers' informatization leadership refers to: in order to cultivate innovative talents in the information age, teachers hold the idea of promoting the deep integration of information technology and teaching in the context of informatization teaching, give full play to their own advantages, and creatively apply information technology in practical activities such as informatization teaching reform, curriculum reform and coordinated development supported by online learning. The ability to have a positive impact on the thoughts and behaviors of students, colleagues, school administrators and other related personnel in the collaborative community, including information-based teaching leadership, curriculum reform leadership and collaborative development leadership supported by online learning space (information-based teaching reform leadership, curriculum reform leadership and collaborative development leadership supported by online learning space). Information-based teaching leadership is the ability of teachers to have a positive impact on students, colleagues and other related personnel by changing teaching process, optimizing course teaching and changing students' learning

style with the help of information technology. Curriculum leadership is the ability of teachers to change subject courses and school-based research courses of subject teachers by grasping the trends of professional frontier and social development, planning, designing, implementing and evaluating, etc. in the information-based teaching situation, so as to keep the course forward-looking and have a positive impact on students, colleagues and other stakeholders. By creating an online collaborative learning environment, online learning enables teachers to have a positive impact on students, colleagues and other stakeholders, thus achieving sustainable development in the online learning environment of teachers, teachers and other collaborative learning communities. " This paper focuses on teaching leadership, curriculum leadership, online learning space learning leadership, and makes research on how to improve teachers' information leadership, and puts forward concrete and feasible methods in the process of how to improve teachers' leadership, especially on teachers' personal education and teaching leadership.

On the promotion strategy of foreign teachers' informatization leadership, we find out the reasons from teachers' subjective factors and microscopic factors, and pay great attention to the analysis of the effect of school training curriculum structure. From a more concrete and microscopic perspective, Geilke summarized the functions of teacher leadership into six aspects: first, continuing teaching activities and improving individual classroom teaching; Second, organize and lead the peer review of school practice; Third, provide knowledge of curriculum development; Fourthly, participate

in decision-making at school level; Fifth, provide on-the-job training for colleagues; Sixth, participate in teacher performance evaluation. ⑧ Among them, the first and third are related to teacher training; The second and fourth items are related to decision-making and evaluation; The fifth and sixth points are about promoting the professional development of colleagues.

At present, teachers' informatization leadership is to cultivate innovative talents in the information age, and researchers are not careful enough about the research dimension of teachers' informatization leadership promotion strategy. With the rapid development of informatization and the gradual advancement of educational informatization leadership and school informatization leadership, aiming at the organization of informatization teaching strategies and applied technologies, the design of teaching structure strategies based on network platform is not comprehensive enough, the establishment of teaching resources can't meet the needs of teachers' activities and students' personalized learning, the number of team studies is small, teachers' working hours in school are long, and the workload is heavy, which will definitely hinder the improvement of teachers' informatization leadership. However, the situation of principals, middle-level cadres and teachers' leadership has changed irreversibly. Teachers' leadership will inevitably produce new leadership in the new information situation. Therefore, under the background of informatization, the strategy of improving teachers' leadership development will be paid more and more attention by the theoretical and practical circles.

Chapter 3

Research Methodology

3.1 Population/Sampling Methods/Variables

In order to better understand the current situation investigation of teachers' information-based teaching leadership and further study how to improve their own information-based teaching leadership, according to the main dimensions of the theoretical model of teachers' information-based teaching leadership, and combining the relevant investigation and analysis from 2014 to 2017, this investigation is mainly divided into four parts: the first part is the basic information of individuals; The second part is the "three dimensions" survey; The third part is the investigation of teachers' personal ability evaluation in the process of school informatization; The fourth part is the investigation of the motivation factors of teachers' informatization leadership. The designed questionnaire is divided into questionnaire description, basic information and questionnaire body, including multiple-choice questions and multiple-choice questions. Among them, the second part of the "three dimensions" questionnaire has a total of 38 questions, a survey of teachers' personal ability and a survey of generating motivation factors as multiple-choice questions. The SPSS software is used for data statistics and analysis, and the survey results such as the basic information of the research object, the construction and planning of the development vision of information-based teaching, the development and management of information-based

teaching, the creation of a good school information environment atmosphere, the improvement of personal ability in the process of school information, and the status quo of generating power factors are described statistically.

3.2 Distribution and recovery of questionnaires

Relying on China professional online questionnaire survey platform "QuestionStar", 150 questionnaires were distributed, answered and collected, including 25 for school administrators and 127 for teachers, with a questionnaire recovery rate of 100% and an effective rate of 100%.

3.3 Research Design

Questionnaire on the current situation of teachers' information teaching leadership

Dear teacher:

Hello! In order to fully understand the information teaching leadership of primary and secondary school teachers in China and provide data basis for our national social science fund project, this questionnaire is designed to investigate primary and secondary school teachers in various places. Please take a few minutes to answer according to your current real situation. The questions investigated will not involve personal issues, so I would like to ask for your help and support. I would like to express my sincere thanks!

Your basic information:

- Your school is ()
  A. Urban schools
  B. Rural schools

- Your school is ()
  A. High school
  B. Junior high school
  C primary school

- The subject you are teaching now is:_____

(If you teach multiple subjects at the same time, please write them all down, but please write the main subjects in the front)

Dimension 1: the	be	Majority	General	Minority	Completely

establishment and planning of the development vision of information-based teaching	absolutely in accordance with	coincidence	conformity	coincidence	inconsistent
1. Have a very strong vision of information-based teaching development.					
2. Understand the national curriculum standards and clarify the school development goals.					
3. Be able to establish information-based teaching objectives with their teachers and higher-level teaching leaders (principals, teaching directors, etc.).					
4. Be able to formulate informatization according to the vision of school informatization teaching development. teaching program					
5. Be able to effectively implement the current situation of teachers' informatization teaching leadership in the formulated informatization teaching plan.					
6. Be able to make full use of various					

information tools and methods to provide students and Parents convey and explain the school's development goals and information teaching goals.					
Dimension 2: Developing and managing information-based teaching	be absolutely in accordance with	Majority coincidence	General conformity	Minority coincidence	Completely inconsistent
7. Be able to respond to the requirements of the information society to assess learning needs and determine Teaching objectives					
8. Be able to determine the learning type covered by the teaching purpose, and analyze the techniques and steps needed to complete the learning task.					
9. Be able to determine the skills that learners already have and the learning resources that they need to provide.					
10. Be able to predict the students' performance or what they can do after teaching.					
1. Can develop an					

information-based teaching evaluation tool to test students' learning effectiveness.					
12. Be able to plan the arrangement of activities before and after informatization teaching, the presentation of knowledge content, practice and feedback, testing, etc.					
13. Be able to use personal evaluation, group evaluation and collective evaluation to evaluate students' learning.					
14. Be able to reflect on and improve information-based teaching in view of the actual problems encountered in teaching.					
5. Be able to identify useful information-based teaching resources sensitively.					
16. Be able to skillfully use information technology to develop various teaching resources.					
17. Can provide students with information-based learning resources to support their learning.					

18. When encountering problems such as the lack of teaching-related hardware and software equipment, it can timely report the situation to the school and get solutions.					
9. Be able to actively participate in the construction and management of information-based teaching resource database in schools with colleagues.					
20. Be able to use information technology tools to classify and manage digital teaching resources.					
21. Be good at using information technology teaching methods to stimulate students' interest in learning.					
22. Be able to create real problem situations for students to learn new knowledge with the help of information technology.					
23. Make full use of information technology to design classroom activities that conform to					

modern teaching concepts and students' cognitive level, such as independent inquiry learning and collaborative learning.					
24. Be able to use the school network platform (such as CCtalk, etc.) to carry out information-based teaching.					
25. Be able to use information technology tools to effectively manage the technology-rich teaching process, supervise students' learning activities and give timely guidance.					
26. Be able to use information technology tools to evaluate students' learning process and sum up, and feedback the learning effect to students in time.					
27. Be able to use information technology tools to invite colleagues to listen to their own lectures and encourage students to evaluate their teaching.					
28. Be able to make use of information					

technology and network means to reflect on teaching.					
Dimension 3: Create a good school information environment atmosphere.	be absolutely in accordance with	Majority coincidence	General conformity	Minority coincidence	Completely inconsistent
9. Be able to communicate well with school administrators and leaders to seek their support for the development of information-based teaching.					
30. Be able to collaborate and communicate with other teachers or other brother schools on some network platforms (QQ, WeChat, etc.)					
31. Be able to share information resources and experiences online with teachers and students, and promote collaboration and communication between teachers and students, students and teachers.					
32. Be able to communicate and interact well with parents through the online platform, and understand the					

aspirations of parents of students.					
3. Be able to boldly carry out teaching reform experiments in teaching with the help of modern educational technology.					
34. Be able to master the basic methods of information teaching, and strive to explore solutions to problems.					
35. Be able to improve their own information teaching ability, educational research ability and teaching innovation ability, etc.					
36. It can create its own professional development atmosphere.					
37. Be committed to improving the effectiveness of students' information learning.					
38. Be able to conduct information-based teaching and learning with teachers and colleagues.					
In the process of school informatization, what other capabilities do you think you need to improve? () [Multiple choice questions] A. teachers' self-management and self-discipline ability B. Awareness of sharing resources C supervise the construction of campus environment D. Ability to analyze and reflect					
What factors can promote the motivation of your teachers' informatization leadership? ()					

[Multiple choice questions]
A. the principal of your school especially encourages teachers to exert the influence of information technology.
B. Being recognized by colleagues in the teaching process will make you more confident.
C. The learning of new knowledge by colleagues around me will drive my enthusiasm.
D. Students' enthusiasm for information technology teaching will make me constantly supplement this knowledge.
E. Teachers' information knowledge and skills are valued.
F. Teachers have a consistent consensus on the development of school informatization process.
G. I can clearly feel that the education department attaches great importance to teachers' information technology ability.
H. I have extra time to pay attention to the improvement of information-based teaching ability in the usual teaching process.
F. My school has a space environment suitable for exchanging information technology teaching methods

3.4 Statistics and Data Analysis

reliability analysis

Cronbach'sAlpha value of each variable in this paper is 0.929, 0.977 and 0.959, respectively. Cronbach'sAlpha values of all variables are greater than 0.7. The value range of the reliability coefficient is 0-1, and the closer to 1, the higher the reliability. Finally, the deleted Cronbach'sAlpha values of all variables are tested, and the reliability coefficients of deleted items are all greater than 0.7, and the reliability coefficients of deleted items are all smaller than the overall reliability coefficients of corresponding dimensions. Therefore, it is considered that the data measured by the scale is reliable and reliable.

dimension	T	Scale	Scale	Correlation	Clone Bach	Cl

	opic item	average after deleting items	variance after deleting items	between corrected items and totals	Alpha after deleted item	onbach Alpha
Dimension 1: the establishment and planning of the development vision of information-based teaching	Item 1.1	11.87	24.353	0.978	0.893	0.929
	Item 1.2	11.81	25.378	0.753	0.921	
	Item 1.3	11.84	25.585	0.745	0.922	
	Item 1.4	11.86	25.061	0.78	0.917	
	Item 1.5	11.95	25.065	0.793	0.915	
	Item 1.6	11.7	26.091	0.722	0.924	
Dimension 2: Developing and managing information-based teaching	Item 2.1	49.35	368.66	0.995	0.974	0.977
	Item 2.2	49.23	371.267	0.807	0.976	
	Item 2.3	49.23	373.908	0.792	0.976	
	Item 2.4	49.26	369.831	0.813	0.976	
	Item 2.5	49.27	371.445	0.793	0.976	
	Item 2.6	49.28	375.8	0.756	0.976	
	Item 2.7	49.33	374.103	0.791	0.976	

Item 2.8	49.27	373.391	0.79	0.976
Item 2.9	49.23	373.049	0.79	0.976
Item 2.10	49.34	375.528	0.776	0.976
Item 2.11	49.28	373.317	0.794	0.976
Item 2.12	49.25	372.898	0.844	0.975
Item 2.13	49.33	372.409	0.804	0.976
Item 2.14	49.24	372.076	0.801	0.976
Item 2.15	49.23	374.811	0.799	0.976
Item 2.16	49.17	372.65	0.767	0.976
Item 2.17	49.16	373.491	0.76	0.976
Item 2.18	49.29	371.725	0.802	0.976
Item 2.19	49.21	377.521	0.753	0.976
Item 2.20	49.31	372.939	0.82	0.975
Item	49.2	374.993	0.812	0.976

	2.21 Item 2.22	49.29	374.41	0.769	0.976	
	3.1 Item 3.2	22.35	86.671	0.994	0.948	
	Item 3.3	22.43	88.756	0.812	0.955	
	Item 3.4	22.33	90.559	0.754	0.957	
	Item 3.5	22.22	88.065	0.815	0.955	
Dimension 3: Create a good school information environment atmosphere.	Item 3.6	22.23	87.237	0.819	0.955	0.959
	Item 3.7	22.37	89.86	0.777	0.956	
	Item 3.8	22.25	88.177	0.833	0.954	
	Item 3.9	22.32	89.561	0.801	0.955	
	Item 3.10	22.25	89.721	0.789	0.956	
		22.27	89.445	0.802	0.955	

Validity analysis

The validity depends on the significance of KMO coefficient and Bartlett spherical test. The KMO values of each measurement are 0.749, 0.945 and 0.797, all of which are greater than 0.7. The value range of KMO coefficient is 0-1, and the closer it is to 1, the better the structural validity of the questionnaire is, indicating that the overall validity of the questionnaire is higher. And if the significance of Bartlett spherical test is less than 0.05, we can also think that the questionnaire has good structural validity.

Scale name	KMO value	Bartlett spherical test approximate chi-square value	dif	sig
Dimension one	0.749	865.177	15	0.00
Dimension two	0.945	3493.195	231	0.00
Three dimensions	0.797	1686.751	45	0.00

Chapter 4

Data Analysis Result

4.1 The symbols used present the results of data analysis.

Dimension 1: the establishment and planning of the development vision of information-based teaching

Analysis of the status quo of the establishment and plan of teachers' information-based teaching development vision: the survey angle is "information-based teaching development vision consciousness, national curriculum standards, Clear school development goals, teachers can establish information-based teaching goals together with higher-level teaching leaders (principals, teaching directors, etc.), develop information-based teaching plans, effectively implement the established information-based teaching plans, and use various information tools and methods to convey and explain the school development goals and information-based teaching goals to students and parents. "Through the questionnaire survey and statistical data analysis of 150 teachers, teachers performed well in establishing information-based teaching goals; There are still more than 5% of teachers who fail to meet the standards in the establishment and planning of informatization teaching development vision. Among them, rural schools are weaker than urban school teachers who can jointly establish informatization teaching goals with higher-level teaching leaders (principals, teaching

directors, etc.). Therefore, the popularization rate of all kinds of teacher training and education informatization teaching development courses for primary and secondary school teachers across the country fails to meet the standards.

Topic/option	be absolutely in accordance with	Majority coincidence	General conformity	Minority coincidence	Completely inconsistent
1. Have a very strong vision of information-based teaching development.	34(22.67%)	59(39.33%)	38(25.33%)	11(7.33%)	8(5.33%)
2. Understand the national curriculum standards and clarify the school development goals.	39(26%)	53(35.33%)	25(16.67%)	25(16.67%)	8(5.33%)
3. Be able to establish information-based teaching objectives with their teachers and related teaching leaders (principals, teaching directors, etc.).	38(25.33%)	56(37.33%)	30(20%)	15(10%)	11(7.33%)
4. Be able to formulate	41(27.33%)	56(37.33%)	22(14.67%)	22(14.67%)	9(6%)

information-based teaching plan according to the vision of information-based teaching development in schools.					
5. Be able to effectively implement the established information-based teaching plan.	49(32.67%)	47(31.33%)	29(19.33%)	17(11.33%)	8(5.33%)
6. Be able to make full use of various information tools and ways to convey and explain the school development goals and information teaching goals to students and parents.	32(21.33%)	49(32.67%)	38(25.33%)	23(15.33%)	8(5.33%)

Dimension 2: Developing and managing information-based teaching

Teachers' information leadership level has a significant positive impact on students' achievement.

The questionnaire on developing and managing information-based teaching is designed by Dick-Kerry teaching mode, and three questions are analyzed and summarized:

(A) 7-14 questions can be summarized as the analysis of the current situation of the design and development of information-based teaching:

90% of teachers are in line with information-based instructional design and development. In this survey, junior middle school teachers, elementary school teachers and senior high school teachers performed better in information-based instructional design and development. Compared with rural teachers and urban teachers, urban teachers performed better. Among them, 8% of the students who "can predict the students' performance or what they can do after the end of teaching" don't meet the teachers' presupposition in the information-based teaching design at all. At this time, teachers should understand the differences among students and consider whether the hierarchical teaching method can be adopted.

Topic/option	be absolutely in accordance with	Majority coincidence	General conformity	Minority coincidence	Completely inconsistent
7. Be able to respond to the requirements of the information society to assess learning needs and determine teaching objectives.	38(25.33%)	58(38.67%)	37(24.67%)	12(8%)	5(3.33%)
8. Be able to determine the learning type covered by the teaching	38(25.33%)	56(37.33%)	27(18%)	20(13.33%)	9(6%)

purpose, and analyze the techniques and steps needed to complete the learning task.					
9. Be able to determine the skills that learners already have and the learning resources that they need to provide.	37(24.67%)	50(33.33%)	38(25.33%)	19(12.67%)	6(4%)
10. Be able to predict the students' performance or what they can do after teaching.	42(28%)	52(34.67%)	30(20%)	14(9.33%)	12(8%)
11. Can develop an information-based teaching evaluation tool to test students' learning effectiveness.	47(31.33%)	42(28%)	28(18.67%)	29(19.33%)	4(2.67%)
12. Be able to plan the arrangement of activities before and after informatization teaching, the presentation of knowledge	37(24.67%)	56(37.33%)	35(23.33%)	15(10%)	7(4.67%)

content, practice and feedback, testing, etc.					
13. Be able to use personal evaluation, group evaluation and collective evaluation to evaluate students' learning.	41(27.33%)	55(36.67%)	33(22%)	14(9.33%)	7(4.67%)
14. Be able to reflect on and improve information-based teaching in view of the actual problems encountered in teaching.	39(26%)	54(36%)	30(20%)	21(14%)	6(4%)

(2) Question 15-20 can be summarized as an analysis of the current situation of the construction and management of information-based teaching resources;

According to the data analysis, most teachers have been optimized in the construction and management of information-based teaching resources, especially in "developing all kinds of teaching resources by using information technology" and "upgrading the software and hardware related to teaching", which shows that the establishment and management of information-based teaching resources inventory by the Ministry of Education has been recognized by teachers, and at the same time, the teaching resources are shared. By comparing primary school teachers, junior high

school teachers, senior high school teachers and teachers of various disciplines, we find that the construction and management of teaching resources in Chinese, mathematics, English, physics, chemistry, politics and other disciplines are relatively better, which is found by the comparison among teachers of various disciplines in this questionnaire. In the process of actively establishing and collecting information-based teaching or learning resources, teachers realize the importance of teaching leadership and enjoy full teaching decision-making power.

Topic/option	be absolutely in accordance with	Majority coincidence	General conformity	Minority coincidence	Completely inconsistent
5. Be able to identify useful information-based teaching resources sensitively.	38(25.33%)	51(34%)	34(22.67%)	20(13.33%)	7(4.67%)
16. Be able to skillfully use information technology to develop various teaching resources.	42(28%)	50(33.33%)	40(26.67%)	12(8%)	6(4%)
17. Can	42(28%)	47(31.33%)	37(24.67%	18(12%)	6(4%)

provide students with information-based learning resources to support their learning.			)		
18. When encountering problems such as the lack of teaching-related hardware and software equipment, it can timely report the situation to the school and be solved.	34(22.67%)	56(37.33%)	39(26%)	14(9.33%)	7(4.67%)
9. Be able to actively participate in the construction and management of the information teaching resource	46(30.67%)	47(31.33%)	31(20.67%)	21(14%)	5(3.33%)

bank of the school together with colleagues.					
20. Be able to use information technology tools to classify and manage digital teaching resources.	43(28.67%)	42(28%)	38(25.33%)	21(14%)	6(4%)

(3) Question 21-28 can be summarized as an analysis of the current situation of the implementation and management of information-based classroom teaching;

From the data analysis, it is found that the new generation of information technology of intelligent teaching is deeply integrated with education and teaching, and it is widely used. Among them, the classroom environment, technology application, teaching methods and learning methods of intelligent teaching are actively integrated and innovative application of high-quality online courses, teaching resources, intelligent auxiliary teaching system and learning process big data is a process of empowering independent and efficient learning and personalized teaching. It shows that the application scheme of technology landing has been put in place in cities and towns, while the construction of rural schools is stepping up. Compared with the traditional teaching, the scene creation of this investigation wisdom

classroom has undergone essential changes in the technology application scene of wisdom teaching.

Topic/option	be absolutely in accordance with	Majority coincidence	General conformity	Minority coincidence	Completely inconsistent
21. Be good at using information technology teaching methods to stimulate students' interest in learning.	34(22.67%)	55(36.67%)	37(24.67%)	19(12.67%)	5(3.33%)
2. Be able to use information technology to create real problem situations for students to learn new knowledge.	40(26.67%)	42(28%)	38(25.33%)	22(14.67%)	8(5.33%)
3. Be able to make full use of information technology to design classroom activities that conform to modern teaching concepts and	35(23.33%)	51(34%)	36(24%)	18(12%)	10(6.67%)

students' cognitive level, such as independent inquiry learning and collaborative learning.					
24. Be able to use the school network platform (such as moodle, Tencent Conference, teams, Nail, etc.) to carry out information-based teaching.	46(30.67%)	43(28.67%)	36(24%)	18(12%)	7(4.67%)
5. Be able to use information technology tools to effectively manage the technology-rich teaching process, supervise students' learning activities and give timely guidance.	33(22%)	51(34%)	42(28%)	21(14%)	3(2%)

6. Be able to use information technology tools to make process evaluation and summative evaluation of students' learning situation, and feed back the learning effect to students in time.	39(26%)	57(38%)	30(20%)	18(12%)	6(4%)
27. Be able to use information technology tools to invite colleagues to listen to their own lectures and encourage students to evaluate their teaching.	33(22%)	48(32%)	50(33.33%)	13(8.67%)	6(4%)
28. Be able to make use of information technology and network means to reflect on	41(27.33%)	53(35.33%)	29(19.33%)	22(14.67%)	5(3.33%)

teaching.					

Dimension 3: Create a good school information environment atmosphere.

Good teacher interpersonal relationship has a significant positive impact on teachers' information leadership.

(A) Question 29-32 can be summarized as an analysis of the current situation of teachers' communication and coordination ability in information-based teaching:

In this questionnaire, four questions about communication and coordination of information-based teaching between teachers and principals, middle-level leaders, parents and students were set up. The research found that "good communication with school administrators and leaders" and "good communication and interaction with parents through network platform", Understand the aspirations of students' parents ""Be able to collaborate and communicate with other teachers (teachers of other brother schools) on some network platforms (QQ, CCTALK, WeChat, etc.) ""Be able to share information resources and experiences with teachers and students online, and promote collaboration and communication between teachers and students, students and teachers ".Compared with teachers and colleagues, students and parents, the frequency of information communication is more frequent, but it is less frequent with principals and middle-level leaders. It also reflects from the side that teachers are not fully involved in school management, and their enthusiasm for participation is relatively low, which leads to obstacles in information communication and coordination between teachers and schools.

Topic/option	be absolutely in accordance with	Majority coincidence	General conformity	Minority coincidence	Completely inconsistent
9. Be able to communicate well with school administrators and leaders to seek their support for the development of information-based teaching.	31(20.67%)	60(40%)	33(22%)	15(10%)	11(7.33%)
30. Be able to collaborate and communicate with other teachers (teachers from other brother schools) on some network platforms (QQ, CCTALK, WeChat, etc.)	44(29.33%)	51(34%)	23(15.33%)	22(14.67%)	10(6.67%)
31. Be able to share information resources and experiences online with teachers and students, and promote collaboration	36(24%)	53(35.33%)	29(19.33%)	22(14.67%)	10(6.67%)

and communication between teachers and students, students and teachers.					
32. Be able to communicate and interact well with parents through the online platform, and understand the aspirations of parents of students.	37(24.67%)	45(30%)	27(18%)	29(19.33%)	12(8%)

(B) Questions 33-38 can be summarized as the analysis of the current situation of teachers' information teaching technology ability:

According to the 150 valid questionnaires collected in this sampling survey, 85% of the teachers meet the basic information technology ability, and more than 30% of the teachers can fully meet the information technology teaching ability, educational research ability, teaching innovation ability, and their own professional development. No matter in rural schools or urban schools, especially in the 45-58 age group, when teachers encounter information technology problems, they are more likely to seek help from others, which shows that both young teachers and senior teachers are conscious.

Topic/option	be absolutely	Majority coincidence	General conformity	Minority coincidence	Completely inconsistent

	in accordance with				
3. Be able to boldly carry out teaching reform experiments in teaching with the help of modern educational technology.	37(24.67%)	49(32.67%)	26(17.33%)	20(13.33%)	18(12%)
34. Be able to master the basic methods of information teaching, and strive to explore solutions to problems.	39(26%)	53(35.33%)	26(17.33%)	22(14.67%)	10(6.67%)
35. Be able to improve their own information teaching ability, educational research ability and teaching innovation ability, etc.	36(24%)	47(31.33%)	31(20.67%)	24(16%)	12(8%)
36. It can create its own professional development atmosphere.	35(23.33%)	55(36.67%)	25(16.67%)	26(17.33%)	9(6%)
37. Be committed to improving the	32(21.33%)	52(34.67%)	33(22%)	21(14%)	12(8%)

effectiveness of students' information learning.					
38. Be able to conduct information-based teaching and academic mutual assistance with teachers and colleagues.	31(20.67%)	58(38.67%)	25(16.67%)	25(16.67%)	11(7.33%)

In the process of school informatization, what other capabilities do you think you need to improve?

Democratic and enlightened school culture has a significant positive impact on teachers' information leadership.

In the analysis of teachers' ability to improve in the process of school informatization, the analysis results show that "supervising the construction of campus environment" means that schools and teachers create a good information environment for students' learning, including the construction of educational resources and learning platforms, etc. For the construction of information-based learning environment, teachers also bear the main responsibility. The survey results show that this option only accounts for 24.67% of teachers' choice. This data shows that teachers' awareness of the construction ability of information-based learning environment is relatively low, and schools need to guide teachers to actively participate in school information-based supervision of campus environment. The

analysis also shows that the proportion of teachers in choosing "teachers' self-management and self-discipline ability" and "awareness of sharing resources" is over 50%, which shows that teachers attach great importance to the awareness of building online learning community.

option	subtotal	proportion
A. teachers' self-management and self-discipline ability	82	54.67%
B. Awareness of sharing resources	102	68%
C. supervise the construction of campus environment	37	24.67%
D. Ability to analyze and reflect	67	44.67%
This question is filled in effectively.	150	

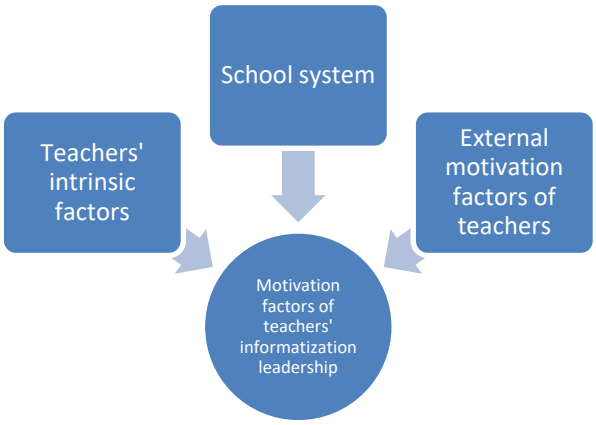
What factors can promote the motivation of your teachers' informatization leadership? [Multiple choice questions]

Analysis of multiple choices of driving factors influencing the generation of teachers' personal information leadership: From the external driving factors of teachers' own information leadership, firstly, teachers generally feel that the education department attaches great importance to teachers' information technology ability, and teachers who have the principal's special encouragement to teachers to exert their information technology influence are more able to recognize teachers' information leadership. It can be seen that the principal's attitude is the first factor of the external motivation of teachers' informatization; Secondly, being recognized by principals, colleagues and students through team learning and organizational learning

atmosphere will enhance teachers' leadership confidence, help to transform it into practical experience in information-based classroom, and enhance teachers' self-identity; Thirdly, the school has very little space environment suitable for exchanging information technology teaching methods, and there is no characteristic team to guarantee the realization of the vision; Fourthly, because of the relationship between working hours and personal time, teachers don't have much time and space to pay attention to the improvement of information-based teaching ability.

option	subtotal	proportion
A. the principal of your school especially encourages teachers to exert the influence of information technology.	58	38.67%
B. Being recognized by colleagues in the teaching process will make you more confident.	51	34%
C. The learning of new knowledge by colleagues around me will drive my enthusiasm.	36	24%
D. Students' enthusiasm for information technology teaching will make me constantly supplement this knowledge.	59	39.33%
E. Teachers' information knowledge and skills are valued.	61	40.67%
F. Teachers have a consistent consensus on the development of school informatization process.	74	49.33%
G. I can clearly feel that the education department attaches great importance to teachers' information technology ability.	81	54%
H. I have extra time to pay attention to the improvement of information-based teaching ability in the usual	28	18.67%

teaching process.		
I. My school has a space environment suitable for exchanging information technology teaching methods.	20	13.33%
This question is filled in effectively.	150	



4.2 Basic information of interviewees

This questionnaire on the current situation of teachers' information-based teaching leadership comes from high school, junior high school and primary school teachers in towns and villages in Tianjin, Guangdong, Jiangsu, Shanghai, Beijing and other provinces in China. The survey subjects are divided into school-level administrators and teachers, covering teachers in 13 disciplines including Chinese, mathematics and English.

option	subtotal	proportion
A. Urban schools	82	54.67%
B. Rural schools	68	45.33%
This question is filled in effectively.	150	
option	subtotal	proportion
A. High school	49	32.67%

B. Junior high school	69	46%
C. Primary schools	32	21.33%
This question is filled in effectively.	150	

Chapter 5

Conclusions and Discussion

5.1 Conclusions

In the past three years' questionnaire survey, interview and data statistics, it has been found through research that it is not enough to only study the information leadership of principals. In the process of promoting educational information, teachers' information leadership is an important part of school information leadership. The school is an organization. Under the framework of organizational management, all members have the responsibility to promote the development of the organization. The concept of "school informatization leadership" is the sum of the leadership functions at the school organizational level. School informatization leadership is composed of three important groups: principals, middle-level managers and teachers. Through the previous investigation and analysis, we know that at present, teachers' knowledge of their own information leadership is not deep enough, and they lack more optimized training and learning. Therefore, according to the practice of teachers' informatization leadership, we summed up three strategies to help teachers improve their informatization leadership.

5.2 Suggestions

Research and practice of teachers' leadership strategy in the process of innovative education informatization suggest that principals give teachers more

information leadership.

In the 2019-2022 questionnaire survey on the influencing factors of teachers' informatization leadership, 65% of subject teachers in the data survey think that the principal's attitude is the key factor in the generation of teachers' information leadership, and the style of a school principal greatly influences the direction of this school's development. The support of principal's leadership plan is the best way to promote teachers' informatization leadership.

Principals delegate power to teachers, emphasize the participation of all teachers, share the information vision of the school with teachers, strongly support teachers to give full play to information leadership, and learn from the ways and methods of global teachers to give full play to information leadership. These are all solid supporting forces on the road of teachers' information growth.

Suggestion 1: In the process of cultivating middle-level leadership by principals, teachers' information leadership should be included in the optional items. The training targets should be mainly young and middle-aged teachers, and young and middle-aged teachers with solid information leadership skills, excellent moral cultivation and excellent honors should be selected as the talent team. Set up a teacher development information leadership center to screen out school leaders more suitable for the "smart campus" era.

Suggestion 2: According to the investigation in the preceding paragraph, as there is obvious deviation between principals and teachers on the information leadership

of principals, it is suggested that principals should actively publicize and guide teachers in schools through systematic and diverse ways and means in view of their ideas and actions of information leadership. For school teachers, school management departments at all levels should. The principal can also invite teachers to discuss and participate in the school information policy planning, formulate and promote the education information policy, and adopt information-based teaching equipment and mode to reach the consensus of all teachers.

Principals should also make use of the information platform of the education system to communicate with teachers more, for example, to establish the idea of sharing resources with other colleges and universities, and to provide teachers with information-based leadership resources, free development suggestions, academic level quality analysis reports and evaluations on the premise of respecting intellectual property rights. Principals should take the initiative to listen to and understand teachers' professional development needs, so that teachers can gain more leadership under the background of educational information and play a role in their educational career.

Smart classroom is a means to improve teachers' teaching leadership.

In the information 2.0 era dominated by society and artificial intelligence in the future, optimizing the implementation and management of information-based classroom teaching will help cultivate students with innovative thinking and ability, and also promote the development of school education objectives and classroom

teaching objectives. The improvement of teachers' information leadership is helpful to improve learners' innovative thinking and key abilities. It is a new concept of intelligent classroom in the age of ability informatization 2.0. It is also the basic principle of intelligent teaching aimed at cultivating innovative talents, and provides conditions and support for the transformation of knowledge into ability. Knowledge learning is not an end but a means. Knowledge serves the development of ability.

Wisdom classroom is mainly based on the concept of ability, adapting to the knowledge explosion in the era of mobile internet plus. Compared with traditional teaching and intelligent teaching in the technical scene, intelligent teaching has appeared in the classroom environment: intelligent classroom, interactive electronic whiteboard, online course resource platform, intelligent teaching assistant system and other intelligent electronic devices, and technical application has appeared in the deep integration of information technology and teaching. Teachers' teaching methods: integrating the whole teaching process with technology, and solving students' differences to a great extent by personalized teaching, blended teaching and situational teaching. Students' intelligent learning style; With the integration of information technology with environment, curriculum, organization and learning, blended learning, personalized learning, experiential learning and adaptive learning have emerged to continuously improve students' autonomous learning ability.

Build a smart classroom and autonomous learning space, initiate learning based on problems, projects and the guidance of STEAM courses, and train STEAM education

teachers accurately through multi-party linkage. Colleges and universities should innovate the talent training mode, train professional teachers with STEAM literacy through cross-disciplinary combination, and provide accurate technical support and guidance for the technical content of teaching ability and learning guidance, and for blended, experiential and personalized learning.

Teacher training: Establish a training mechanism for teachers' information leadership teachers' studio.

Peter, a master of management and a senior professor at MIT. In his book "The Fifth Discipline: The Art and Practice of Learning Organization" (The pinh Discipline: After the concept of learning organization was put forward in the ar and practice of the learning organization, terms such as learning community, professional community and development community appeared in the field of educational theory. In the leading city of educational practice, there are a large number of centers such as famous teacher studios and subject bases. The famous teacher's studio is not only an informal organization, but also a new research team that promotes the development of teachers' information leadership. The form of attracting a group of teachers to set up a famous teacher's studio by relying on their personal charm and influence emerged in the process of exploring a new learning community. However, there are a series of practical problems such as the definition of the connotation of a famous teacher, the orientation of its work objectives, its value orientation and functions, etc.

The Teacher Law promulgated and implemented in China in 1993 clearly defined

"taking part in further education and other forms of training" and "constantly improving ideological and political awareness and education, teaching professional level" as a basic right and obligation of teachers. At the same time, the law assigned the responsibility of organizing and implementing teacher training to people's governments at all levels, education administrative departments, school authorities and schools. In training teachers' informatization leadership, the purpose of the school is to strive to improve their own teaching leadership level, earnestly perform the duties of famous teachers, at the same time, make full use of the existing information technology platform, and give full play to the role of famous teachers in teaching and educating people. Education, scientific research, guidance and training of teachers also play an exemplary, leading and radiating role while improving informatization leadership. Efforts are made to train a group of teachers with excellent moral quality, advanced teaching philosophy, solid professional literacy and solid teaching and research ability, so as to promote the balanced development of regional basic education and make them the birthplace of excellent teachers' informatization leadership training.

The construction of information-based leadership studio not only needs the participation of a team of famous teachers, but also needs certain material security, institutional security and financial security, including suitable office space and equipment and systems for information-based office. Moreover, the school should implement the policy inclination for the famous teachers and their assistants with

information leadership to better carry out their work, including reducing the workload of teaching and administration, and taking the studio work into account the workload of the school, so as to ensure that the famous teachers and their assistants have enough time to carry out their work. Local education administrative departments can formulate more detailed implementation rules to facilitate the teaching and scientific research of famous teachers and their studio members. The competent department of education should provide subsidies for famous teachers' studios. These funds are mainly used for the expenses of work subsidies, books and materials purchase, office equipment purchase, website construction, business training, visiting and studying, etc. of famous teachers and their studio members.

Finally, in order to ensure the effect of information-based leadership teacher studio, regular assessment is also an important means to strengthen quality management. The main contents of the evaluation can be started from three aspects: first, the construction and development level of the studio itself; second, the contribution made by the studio in training and guiding students; third, the demonstration and leading role played by the studio in local education and teaching reform. The main body of evaluation can be composed of leaders in charge of education departments, training experts, teaching and research staff, leaders and teachers of affiliated schools, and teachers' representatives from other fraternal schools. The assessment team should conduct comprehensive assessment in the studio and teaching site, and give qualitative evaluation and grade evaluation. A

famous teacher's studio can also establish an exit mechanism. Members who fail to meet the requirements of the studio within a period of time can be disqualified, and members can be changed regularly to ensure the quality and effect of the famous teacher's studio.

As the carrier of teacher training, the famous teacher studio is still a new thing in China, and there are many theoretical and practical problems to be explored. In order to further explore the operation mechanism and target positioning of the famous teacher studio for information leadership, more attempts and summaries should be made in practice, so as to enrich the methods and approaches of information leadership training for teachers in the new era.

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