Development and Exploitation of Middle School Teachers' Learning Ability in Information Era

Lingxuan Wang[*]

Northwest University of Political Science and Law, Xi'an ,710061, China

Email: clairewang0968@163.com

[*]corresponding author

Abstract: In today's highly developed information technology, the combination of information technology and education has achieved unprecedented optimization in breadth and depth. The emergence of new forms of teaching in middle schools has brought new requirements and challenges to the professional qualities of middle school teachers. Middle school teachers hope to keep pace with the times, quickly adapt to the new middle school teaching mode, and improve professional quality. They must choose the appropriate teacher professional development strategy. Among them, the independent professional development of middle school teachers is used as the internal motivation for teachers' professional development and research on their development. However, this also poses severe challenges to the knowledge structure and teaching skills of middle school teachers. The purpose of this article is how to realize the professional development of teachers in the information technology environment, improve the quality of middle school teachers, and promote the improvement of education quality, which has become a top priority. Based on a questionnaire survey of middle school teachers and students, a questionnaire survey and in-depth interviews with some teachers, this article uses SPSS 24.0 software to statistically analyze the survey data. Based on the path coefficients and discussion results, the influential factor model of teachers' information-based learning ability is analyzed and analyzed. The conclusion is that the expansion of middle school teachers 'learning ability needs to improve the material conditions of teachers' information-based learning. Create a good environment for the development of teachers' information-based learning capabilities. Information thinking reshapes the teacher's view of learning and promotes changes in intellectual ability.

1. Introduction

With the wide application of new technologies and methods in the field of education and teaching, while greatly improving the quality of teaching, it has also brought new challenges to our teaching team. Teachers must not only adapt to changes in teaching models brought about by the development of science and technology, but also understand the impact of informatization on students' thinking [1-3]. With the popularity of the Internet, all kinds of information and knowledge can be shared to the greatest extent. Through various information channels, students can grasp and understand information and knowledge in the first place [4, 5]. Changed the form of traditional knowledge acquired by teachers and books. As a knowledge imparter in the information age, teachers have gradually changed the identity of lecturers, more like pioneers and managers of large-scale information foundations.

As the foundation of China's basic education, the ability of middle school teachers to combine information technology with curriculum teaching not only directly affects the development level and quality of future basic education informationization [6]. It is also a key force affecting the success or failure of basic education and teaching reform in the new era. The application of informatization in education has given birth to the informatization of education. This is an important goal under the guidance of modern educational thoughts and theories, mainly using

modern information technology, developing educational resources, optimizing the educational process, and cultivating and improving. Student Information Literacy. A new way of education [7-9]. Pay more attention to educational values that integrate social development and human development. Traditional educational values have overemphasized the value orientation of education to promote social development. In the context of the information age, education pays more attention to the values that promote human development, and attaches importance to the unity of social development and human development [10-13]. In the "Internet +" era with intelligent thinking at the core, teacher education behavior will inevitably form new technological rationality driven by the cultivation of human core literacy, and promote the development of new teacher education courses for education purposes [14, 15].

The era of educational informationization is an era of the deep integration of information technology and teacher wisdom. Teachers use information technology to greatly develop their own potential and creativity. It is also an era that requires learning communities to learn and communicate with each other. Its goal is that teachers can skillfully use information technology, carry out information education, cultivate students and students' self-learning ability, make continuous progress, students get personalized development, and continue to meet the needs of the times and social development. It can be seen that in this context, it is urgent to improve the professional quality and skills of teachers. Teachers need to overcome many challenges and difficulties and constantly explore their own professional development strategies and methods. Through the research of relevant literature, it is found that the integration of teachers 'information technology and curriculum teaching is still stiff at this stage, and the research on the ability structure of teachers' integration of information technology and curriculum has not yet formed a unified framework system. Therefore, this paper starts with the teacher's information technology and curriculum teaching integration ability structure, and studies the middle school teachers' information technology and curriculum teaching integration ability and development strategy.

2.Method

2.1. Teachers' Technical Adaptation Characteristics

The content of traditional education evaluation is too dependent on subject or book knowledge, and ignores practical ability, innovative spirit, psychological quality and emotion. The development of teachers' ability to apply information technology is not only a process of teacher professional growth, but also a process of interaction and adaptation between teachers and their external ecological environment. It emphasizes the dynamic balance between teachers and the external environment. In this sense, the technical adaptability of teachers means that in the process of implementing educational informatization. Teachers respond positively through self-regulation, so that teachers 'own ideas, psychological activities, cognitive characteristics, knowledge structure and abilities can meet the teachers' level and behavioral requirements. The changing requirements of the technology environment enable teachers to achieve a new balance between personal and technical environments. Teachers' technical adaptability characteristics refer to an adaptive tendency formed by teachers in the process of interacting with information-based external teaching environments. It can be seen that the characteristics of teacher's technical adaptation include six key factors: concept change, psychological adaptation, learning integration, knowledge acquisition, ability and behavioral performance. The six interconnected aspects of teachers' technical adaptation characteristics and their interaction with the teaching environment based on external information can constitute an interconnected teacher's technical adaptation characteristics structure model.

2.2. Necessity of Improving Middle School Teachers' Teaching Ability in the Information Age

In the information age, middle schools improve teachers' teaching ability and promote teacher development, mainly referring to promoting teacher professional development. Teacher professional development means that teachers can gradually develop into professional teaching members in the teaching process and effectively increase their educational influence in education. Teachers'

professional development is an effective symbol of teachers' careers. At the same time, teachers' professional quality and education level have been improved. In the context of informationization, middle schools can establish and implement an intelligent learning ecosystem to enable teachers to continuously self-enrich, and achieve self-adjustment in the process of interacting with the educational environment, changing their educational role, and reforming educational concepts to satisfy These conditions. Under this premise, carry out teaching work, improve teachers 'teaching ability in a subtle way, and meet the needs of teachers' professional development. From the use of multimedia in classroom teaching to the booming of online information resources such as MOOCs, quality courses and micro-lectures, information technology has had a huge impact on social life and education, and has quickly triggered people's social lifestyle. In this case, the traditional teaching mode can no longer meet the requirements of information-based teaching, and the role of teachers in educational teaching will inevitably change. It will transform from past TK educators, textbook implementers, and moral trainers. It is a developer of diversified digital learning resources, designers, assessors and researchers of information-based teaching, network learning modelers and personal knowledge managers.

3. Experiment

Teachers' digital abilities have strong contextual and technical attributes, which can vary greatly in different regions or at different times. This also determines the research and construction of models of the teachers' digital abilities. The traditional single research method cannot be adopted. To this end, according to the characteristics of teachers' digital abilities, according to the current situation of China's education development, drawing on existing successful experiences abroad, and the need for digital abilities in education and teaching activities of elementary and middle school teachers, a questionnaire survey method was crafted, creative Combining with Delphi method, the constituent elements of digital competence of Chinese middle school teachers were finally determined, and a corresponding model of teacher digital competence was established.

In order to improve the reliability of the questionnaire, this article consulted relevant experts many times, discussed with many graduate students, and listened to the suggestions of many middle school teachers, and amended or canceled ambiguous, repeated and irrelevant items to improve the quality of the questionnaire. This article compiles a questionnaire for middle school teachers' ability to combine information technology with curriculum teaching. The questionnaire divides the skills of middle school teachers in information technology and curriculum into two levels and five dimensions. Prior to the formal use of the questionnaire, predictions have been made for some secondary school teachers. After using SPSS24.0 software to analyze the data, it has good reliability and validity. Some questions have been modified and can be used for formal evaluation. In order to ensure the quality and accuracy of the questionnaire, the reliability of the questionnaire was tested. Reliability indicates the consistency or stability of the measurement results. The questionnaire uses the internal consistency coefficient Cologne alpha coefficient to test the reliability of the questionnaire. The α coefficient is greater than 0.7, indicating that it has good internal consistency. The results are shown in Table 1.

Table 1. Reliability analysis of each dimension of the questionnaire

Dimension	Cologne α coefficient	Number of items
Information Technology Literacy	0.951	10
Plan and prepare	0.943	12
Organization and management	0.961	10
Assessment and diagnosis	0.953	8
Learning and development	0.943	5
Overall questionnaire	0.972	45

Delphi method is one of the methods commonly used in the field of competence research. The method adopts the method of anonymously expressing opinions, selecting representative experts

and authoritative experts in the corresponding field, and conducting multiple rounds of expert opinions on prediction questions or questionnaires. Through repeated consultations, induction and modification, the experts finally reached an agreement. In this article, we will use the two methods described above to use this method to solicit expert opinions on the constituents of teachers' digital abilities to further form a more reliable constituent system and model.

4. Discuss

4.1. Evaluation of Teachers' Information-based Learning Ability

Teachers' information-based learning ability is a dynamic energy system composed of multiple abilities. Through qualitative and quantitative analysis, this paper considers that teachers' information learning ability includes four kinds of abilities: information learning motivation, technology, control and reflection ability. Among them, the internal driving force is the source of motivation for teachers' information-based learning behavior. Technical ability is the basic ability for teachers to perform information-based learning smoothly. Supervision power is the supervisor in the process of teachers' information learning. Reflection ability is a necessary guarantee for teachers' information-based learning effect. Table 2 shows the overall level of teachers' information-based learning abilities.

Table 2. Overall level of teachers' information-based learning ability

	Total	Average Score	Standard
Internal drive	1321	3.946	0.694
Technical force	1321	4.446	0.796
Regulatory power	1321	4.271	0.738
Reflective power	1321	3.951	0.718
Total score	1321	4.091	0.722

It can be seen from Table 2 that the overall level of teachers 'information-based learning abilities is considerable. The overall score of teachers' information-based learning abilities is 4.091 points, which exceeds 4.00 (good) observation points, and the standard deviation 0.722 indicates that the information. The discrete score of the learning ability score is not large. Specifically, the information-based learning ability scores from high to low are the average internal driving force score of 3.946 and the standard deviation of 0.694, respectively. The average technical skill score was 4.446 and the standard deviation was 0.796. The average control ability score was 4.271 and the standard deviation was 0.738. The average reflected power is 3.951 and the standard deviation is 0.718.

Intrinsic driving force is the intrinsic inducement of all behaviors. As one of the constituent elements of the teacher's learning-based learning ability, it is not only the incentive to promote the teacher's information-based learning, but also the internal motivation to promote the continuous development of the teacher's information-based learning ability. Based on the needs of teachers' professional development, this article has set up a total of four projects in the driving force dimension of teacher learning learning. They hope that teachers will use information-based learning behaviors to enhance professional knowledge, improve teaching skills, improve learning efficiency and enrich teaching content. Specifically, as shown in Figure 1.
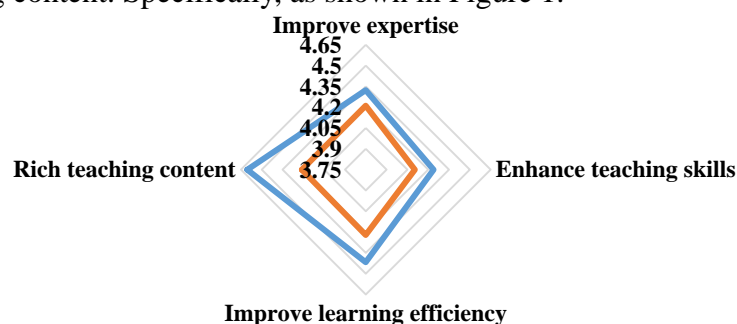

Figure 1. Basic information on the driving force of teachers' information-based learning

In the intrinsic motivation of teachers' information learning, the score of each item is higher than 4.021, which indicates that teachers have a strong willingness to learn information. Among them, the professional knowledge score increased by 4.323. The improved teaching skill score was 4.238. The learning efficiency score improved by 4.417. The rich teaching content score is 4.604.

4.2. Training Methods for Teachers' Quality in the Information Age

To define teachers' information-based learning capabilities, we must first understand what information-based learning capabilities are. At present, the concept of information-based learning capabilities has not been finalized. Therefore, this article attempts to define information-based learning capabilities. First, information-based learning behavior refers to the behavior of learners based on the information-based learning environment (the existence of a carrier), whose goals are knowledge acquisition, skill development, and wisdom generation. Information learning ability is a dynamic energy system that can drive the occurrence of learning behavior, regulate the process of learning behavior, and ensure the role of learning behavior in the information learning environment. To improve teachers 'information literacy, we must first create a good environment, including the school environment and the social environment, both of which should pay attention to improving teachers' information literacy. For example, education administrations have policies and plans to create an information-based learning environment across society. Secondly, to carry out related training, schools and governments should regularly organize training of various information-based teaching abilities, and teachers should actively participate in improving their information-based teaching level.

In addition, teachers should actively learn relevant information literacy knowledge, consciously apply it to teaching practice, and continuously enrich and update their information literacy. As life leaders of middle school students, middle school teachers need to explain and introduce the ideas and spirit of the information age to middle school students while imparting traditional knowledge and basic skills, so that students can develop their own ideological knowledge through continuous learning and application. These products. Increase awareness of innovation. In order to prevent middle school students from being abandoned by the times in the more independent study and life in the future, they should become professional and innovative talents who lead the trend of the times. As a leader of middle school education activities, middle school teachers need to recognize that information education is a deepening of education reform and an inevitable choice for achieving leapfrog development of education. The teaching design of information technology is essentially the design of the entire teaching process, including not only the design of classroom teaching, but also the design of the management part of middle school students. In classroom teaching design, teachers are required to be proficient in using information technology to integrate curriculum knowledge, making the expression of knowledge more flexible and vivid. In addition, teachers are required to use online education and teaching platforms to announce teaching goals, teaching content and teaching schedules in advance, and provide students with learning materials or access to information on the platform so that students can predict autonomous learning. Courses and improve their learning efficiency. After completing the course, teachers should arrange homework or check problems regularly on the platform. The students submitted on time. The teacher double-checks and gives feedback based on the student's work or answers.

5.Conclusion

With the development of education informatization in our country, the digital ability of middle school teachers will become the core ability of teacher education. Therefore, the information age gives teachers new professional connotations. On the basis of deep understanding of teachers' professional ability, middle school teachers should also master the path of their professional ability development. The information age has brought new challenges to teachers 'professional competence, and information technology has also provided good services and support for the development of teachers' professional competence. To this end, middle school teachers must master the rapidly developing information technology, and at the same time continue to hone their information-based

teaching skills in teaching practice, seeking a more scientific teaching model. In addition, through the in-depth combination of information-based teaching and academic research, we should explore middle school teaching methods that are more in line with actual requirements, so that the growth and progress of middle school teachers contribute to the harmony of the education ecosystem. The ultimate purpose of this article is to meet the needs of students, adapt to the development of society, promote the realization of teachers' self-worth, and reflect the trend of the integration of information technology and education.

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