Survey on Information Literacy of Rural Primary and Secondary School Teachers in the Background of Pneumonia Epidemic in COVID-19

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Abstract. Information literacy has become a basic quality that every citizen in the information society must possess. Teacher information literacy is an essential basic literacy in an artificial intelligence society. In the process of education informatization, the information literacy of rural elementary and middle school teachers has received the attention of the education authorities and the majority of teachers. Improving the information literacy of rural elementary and middle school teachers has become an urgent problem to be solved. Under the epidemic of COVID-19 in 2020, the Ministry of Education required "classes suspended but learning continues", which has revealed the current situation of imperfect information literacy in rural primary and secondary schools. This paper analyzes the current situation and existing problems of rural primary and secondary school teachers' information literacy, and puts forward some strategies to improve teachers' information literacy by means of literature research method and interview method. It helps front-line teachers to have a deeper understanding of information literacy, and also provides reference for schools to conduct teacher training, so as to improve teachers' online teaching ability and teaching quality.

1. Introduction

In January 2018, the "Opinions of the Central Committee of the Communist Party of China and the State Council on Comprehensively Deepening the Reform of Teacher Team Building in the New Era" required "Teachers to actively adapt to new technological changes such as informatization and artificial intelligence, and actively and effectively carry out education and teaching." In April 2018, the Ministry of Education launched the Education Informatization 2.0 Action Plan, proposing to vigorously improve teachers' information literacy.

Under the epidemic situation of COVID-19 in 2020, the Ministry of Education requirement to "suspend classes without stopping" is like a sudden test, testing the information literacy of teachers, and it is even more a test for teachers in rural primary and secondary schools. The online course information of each online course platform, various media reports and recommendations, and the various learning platforms provided by the school dazzle parents and students. At this time, teachers must use their information literacy capabilities to identify various Information, select learning methods and methods suitable for your students. In the process of education informatization, the information literacy of rural elementary and middle school teachers has been valued by the education authorities and the majority of teachers. However, compared with cities, there is still much room for improvement in the information literacy of rural elementary and middle school
teachers. At the same time, with the continuous advancement of artificial intelligence, it is urgent to improve teachers' information literacy.

2. The Connotation of Information Literacy

The concept of information literacy was first proposed by Paul Zurkowski in 1974. He believes that information literacy is the technology and skill that people use a large number of information tools and major information resources to solve problems. Information knowledge has become a basic resource in the current society and has penetrated into all aspects of social life and work. Information literacy has also become a basic quality that every citizen in the information society must have, the ability to acquire, analyze, process, and use information as important as the traditional knowledge and ability of "reading, writing, and math", it is the most basic requirement of the information society for the cultivation of new talents. Teachers’ information literacy refers to the fact that teachers can retrieve, acquire, analyze, process and use information to solve the actual conditions of education, teaching, work, and life based on the information-based teaching practice and the development requirements of the social information environment. In the work of modern education informatization, it mainly refers to that subject teachers can skillfully combine modern multimedia information technology with the subject to improve classroom teaching quality and teaching effect. At present, it is generally believed that the information literacy of teachers in the information society is specifically manifested as: information awareness, information ethics, information knowledge, and information ability. These four aspects are interrelated and interdependent, of which information awareness is the forerunner, information knowledge is the foundation, information ability is the core, and information ethics is the direction [1].

2.1. Information Awareness

The level of information awareness and emotion is a quality that modern people must have in the information society. Teachers’ information awareness is to have a basic and correct understanding and knowledge of information, information society, and education informatization; they are concerned about the process of education informatization and actively participate in education informatization work; they have a strong sensitivity to information and recognize information The importance of resources to education and teaching; a sense of lifelong learning.

2.2. Information Ethics

Information ethics is also part of the information literacy that modern people must have. Teachers should have a strong sense of information ethics and information security; in the face of various temptations, they must have firm information ethics self-control ability, respect information ethics, and distinguish the impact of information resources. The pros and cons of subject learning and social development; abide by the ethical, legal and social issues related to information and information technology, as well as relevant network behavior norms.

2.3. Information Knowledge

It can be further broken down into several aspects: the history of information technology development, the basic principles of information technology work, and the basic composition of information systems. Teachers are required to be able to interpret and analyze and evaluate information accurately and efficiently; to effectively obtain and transmit information; to effectively integrate relevant information with the teaching subjects.
2.4. Information Capabilities

It mainly includes the ability to operate information technology, the ability to search for information, the ability to organize and store information, the ability to edit and express information in combination, as well as the ability to program design, and the ability to teach and apply information technology. Teachers are required to be able to use relevant information to creatively solve practical problems; be able to skilfully use information technology to improve the effect of education and teaching; in the teaching process, pay attention to the cultivation of students' information literacy.

3. The Necessity of Improving Teachers' Information Literacy

The information literacy level of teachers in rural primary and secondary schools determines the process of national education informatization, and is also the key to the deep integration, innovation and integrated application of information technology and curriculum [2]. At present, artificial intelligence is developing rapidly, and the accompanying education informatization is accelerating. Under the influence of the new crown pneumonia epidemic, "Internet + education" has become a reality overnight, and online teaching has become the only method of current teaching. Therefore, under the new situation Higher requirements are put forward for the information literacy of teachers in primary and secondary schools.

3.1. The Need for Educational Reform

The majority of teachers should adopt the Internet, cloud computing, artificial intelligence technology, big data, Internet of Things and other modern information and communication technologies to deeply integrate with subject courses, transform the traditional teaching methods and teaching models, and realize the co-construction and sharing of high-quality educational resources. The life-long education concept of everyone can learn, real-time can learn, and everywhere can be learned has been realized, which promotes the development of education and teaching in a highly automated, intelligent, and personalized direction [3]. The new crown pneumonia epidemic has changed teaching from offline to online, and further promoted the educational reform, allowing teaching to try the informationized teaching of the future society earlier. There is no modernization without informatization. To lead the modernization of education with the support of educational informatization, we must adhere to the core concept of deep integration of information technology and teaching, and the main body to promote integration is teachers.

3.2. Changes in Classroom Structure

The "Internet +" era provides learners with a wealth of cognitive tools and an intelligent supporting environment, and the teaching process will form a new classroom teaching structure. The current online teaching has allowed the emergence of different education and learning forms such as micro-classes, online classes, STRM education, maker education, blended teaching, and inquiry learning, allowing the teaching model to undergo “transformation and upgrading” and “Internet + education” , The way teachers and students acquire knowledge and the way of disseminating information have undergone major changes, bringing about changes in educational resources, changes in teaching patterns, and changes in school patterns.

3.3. The Change of Teacher's Role

Under the new crown pneumonia epidemic, online courses have become the main method of
teaching. The leap-forward development of "Internet + education" has made the role of teachers more diversified. Teachers are not only the transfer of knowledge, but more importantly, they must lead students to complete knowledge. Internalization, from the "indoctrinator" of knowledge to the supporter, collaborator, organizer of information resources, and researcher of education and teaching for students' learning activities. However, the development of educational informatization is still relatively slow. The main reasons are the lack of motivation for the professional development of teachers in rural primary and secondary schools, the lack of informatization teaching resources, the lack of self-learning awareness of teachers, insufficient professional knowledge reserves, and fewer opportunities to go out for training. The structure is aging, the concept is outdated, and its professional development has weak links and shortcomings [4].

3.4. The Needs of Teachers' Professional Growth

Information literacy is not only the basic professional quality of teachers, but also an important factor to promote the development of teachers' professional ability. The modern information technology environment puts forward new requirements for teaching design. For example, teachers should be able to design collaborative learning strategies based on modern information technology environments, design learning tasks based on network resources and tools, and design based on learners' psychological characteristics in the network environment. Learning goals, using the intelligent advantages of information technology to diagnose problems in learning, etc. With the rapid advancement of science and technology and the emergence of the knowledge economy, the competition between science and technology and talents is becoming increasingly fierce. Learning to learn and having the ability to learn for life are the basic qualities indispensable for the survival and development of teachers in modern society. Therefore, we should establish the concept of lifelong learning, take continuing education as our own needs, and keep learning.

3.5. The Needs of the Healthy Growth of Students

Education in the information age not only pays attention to the knowledge teaching and skill training of students, but also emphasizes the cultivation of students' comprehensive quality. Information literacy is an important part of the comprehensive quality of students in the information age, and teacher information literacy is the premise of student information literacy education. In addition, the evaluation criteria for students based on the modern information technology environment should be diversified, with emphasis on the evaluation of students' overall quality and individual differences. Information technology helps teachers to make comprehensive and long-term objective and positive evaluations of students. Therefore, in the era of artificial intelligence, changes in educational concepts, environments, and models require teachers to have high information literacy in order to effectively carry out teaching.

4. Teacher Information Literacy Problems

Under the new crown pneumonia epidemic, the requirements of various schools to carry out online teaching have revealed many problems of teachers' information literacy. If you don’t know how to take online classes, various platform software doesn’t know how to filter information suitable for your own students, the data is misused, it is impossible to arrange and check online homework, and it lacks the ability to communicate with home and school through the Internet, manage students and handle various class affairs. These problems are more prominent in rural primary and secondary schools. Generally speaking, the current information literacy of teachers in rural primary and secondary schools in my country is relatively low. The main manifestations are:
4.1. Weak Information Awareness and Concept
The motivation of teachers' professional development is insufficient, the information teaching resources are lacking, and teachers' awareness of autonomous learning is not strong. Many teachers in rural primary and secondary schools follow the old ways, living in a rural environment with relatively low competitive pressure, they are unwilling to try new technologies, are not active in participating in educational information technology training, have limited information, lack information sensitivity and processing capabilities. Some teachers even show that they are not suitable for modern teaching.

4.2. Information Sensitivity Is Low
Many teachers cannot keep up with the development of modern information technology in time, cannot capture effective information, or the information is lagging behind and cannot keep up with the progress of the times.

4.3. Insufficient Mastery of Modern Education Technology
Many teachers are not able to use information technology proficiently in teaching. They are only at the initial stage of using multimedia to display courseware, and cannot integrate information technology with courses. Some teachers even avoid using modern teaching methods.

5. Strategies to Improve the Information Literacy of Teachers in Rural Primary and Secondary Schools

5.1. The State Increases Financial Support and Policy Guidance
The state should increase funding for the construction of school networks and help schools equip them with necessary teaching tools, software and equipment. Provide necessary technical support to improve teachers' information skills. Allow teachers to practice and operate exercises in daily teaching, improve teachers' information skills. In terms of policies, the assessment of teachers’ information literacy has also been increased to implement standardized school-running behaviors.

5.2. The School Establishes an Information Resource Database
Under the new crown pneumonia epidemic, online teaching has highlighted the importance of the information resource library. With the development of computer technology and network technology, in addition to having a large number of paper documents, the school library (room) is actively carrying out the automation and network construction of the library management system. The teachers and students of this school can be in a very short time through the campus network. Retrieve a large number of documents and information that you need within time, and provide quick help for work and study. Schools need to increase their efforts in the construction of campus networks and modern libraries (rooms), especially for schools to continuously expand and update their information resource base, from single media to multimedia, to provide more solid material for the improvement of the information literacy ability of teachers and students of the school guaranteed.

5.3. Build an Online Course Platform
Online courses provide a large number of resources for online teaching, which greatly reduces the work pressure of teachers. It is composed of corresponding teaching goals, teaching strategies, teaching content and corresponding network teaching support environments. Online courses have basic characteristics such as interactivity, sharing, openness, collaboration and autonomy. Through
the construction of the online course platform, the traditional classroom teaching phenomenon is changed, and students are encouraged to participate more in research learning and autonomous learning activities. In the teaching of online courses, teachers design certain teaching goals and set up related topics. Students or research study groups take the initiative to complete the topic goals and submit the course platform to the teacher to guide and comment. The online course platform provides students with space for cooperative learning, research-based learning and autonomous learning, which can not only improve students' enthusiasm for autonomous learning, but also improve students' information literacy ability.

5.4. Conduct Targeted Information Literacy Training

In modern education information technology teacher training, combining the characteristics of modern education and the needs of various disciplines, the training is carried out by levels, disciplines, and stages. In the initial stage, the training is divided into different levels according to age, and initial training is carried out for old teachers and new teachers with zero foundation. The main learning content is the basic application of information technology. Provide experienced backbone teachers with staged training for efficient integration of information technology and disciplines. In the later period, the backbone teachers will guide the teachers in the primary application stage in the teaching practice to achieve common improvement. Schools should also be equipped with necessary teaching tools, software, equipment, and instructors, so that teachers have a certain practice place and operating platform, improve teachers' practical operation ability, and solve various practical problems encountered in teacher training through training and practical exercises. To help teachers improve their ability to analyze and process information, select appropriate network information according to the actual situation of their own class, better integrate the actual situation of students with network education, and improve the effectiveness of teachers' information literacy ability.

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