Research on the promotion strategy of teachers' digital literacy under the background of education digital transformation

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Abstract: With the continuous advancement of the digital transformation of education, teachers' digital literacy has become an important factor affecting the quality of education and teaching innovation. Teachers' digital literacy not only includes technical operation ability, but also covers multiple dimensions such as information processing, educational innovation and teaching design. This paper conducts an in-depth study on the current situation, challenges and strategies of improving teachers' digital literacy under the background of digital transformation of education, and proposes specific countermeasures to promote the improvement of teachers' digital literacy. The study found that the improvement of teachers' digital literacy requires not only improving their information technology capabilities, but also changing traditional educational concepts and teaching models. By analyzing relevant policies and practical experiences at home and abroad, this paper proposes a phased and hierarchical training program, as well as a combination of practical operations and case teaching, aiming to provide scientific basis and practical guidance for the improvement of teachers' digital literacy. The research results show that systematic training, strong technical support, and policy guarantees are the key to the continuous improvement of teachers' digital literacy.

Keywords: Digital Transformation of Education; Teachers' Digital Literacy; Training Strategy; Educational Technology; Information Technology

1 INTRODUCTION

With the rapid development of information technology, education systems around the world are undergoing digital transformation. The digital transformation of education is not only a major trend in modern education, but also an important way to improve the quality of education, promote educational equity, and optimize the allocation of educational resources. Especially after the outbreak of the epidemic, the widespread application of online education and digital technology has further accelerated the digitalization process in the field of education. In this transformation process, teachers, as the core subject of education, have a direct relationship with the effectiveness of educational transformation in terms of their digital literacy [1]. However, many teachers currently have certain shortcomings in the application of information technology, the use of digital tools, and online teaching design, and are unable to

give full play to the potential of digital technology in teaching. Therefore, it is particularly important to improve teachers' digital literacy.

Teachers' digital literacy not only refers to teachers' proficiency in basic computer operations and software use, but also includes teachers' ability to effectively use information technology for education and teaching, such as information acquisition, teaching design, data analysis and other aspects. Digital literacy has become an important part of teachers' comprehensive quality, which directly affects the quality of teaching and students' learning effects. Therefore, studying how to improve teachers' digital literacy in the context of digital transformation of education has important practical significance for promoting the improvement of education quality and modernization of education [2].

This study aims to explore how to improve teachers' digital literacy through effective strategies in the context of digital transformation of education, so as to provide support for the improvement of teachers' teaching ability and education modernization. The core goal of the study is to find out the key factors affecting teachers' digital literacy and propose practical improvement strategies. By constructing a scientific digital literacy framework, analyzing the current status of teachers' digital literacy, and combining successful experiences at home and abroad, we explore improvement paths and strategies suitable for China's education environment [3]. The tasks of the study include: first, clarifying the connotation and composition of teachers' digital literacy; second, exploring the goals and requirements of improving teachers' digital literacy in the process of digital transformation of education; third, analyzing the factors affecting teachers' digital literacy; fourth, proposing specific improvement strategies and paths.

This study will adopt a variety of research methods to ensure the breadth and depth of the research. First, through the literature review method, the research results on teachers' digital literacy at home and abroad are summarized and analyzed to grasp the current research status and development trends in the field. Secondly, using questionnaires and empirical analysis methods, through surveys of teacher groups, data is collected to evaluate the digital literacy level of teachers in actual teaching, and combined with actual cases for analysis, the key factors affecting the improvement of teachers' digital literacy are extracted. Finally, combined with domestic and foreign cases of education digital transformation, the case study method is used to deeply analyze some successful experiences and practical models that can be used as reference, providing realistic basis and strategies for improving teachers' digital literacy [4].

In summary, this study not only has important theoretical significance, but also has broad practical value. Through systematic research and analysis, it can provide theoretical support and practical guidance for improving teachers' literacy in education digital transformation, and provide important reference for promoting educational equity, improving teaching quality and promoting educational modernization.

2 CONCEPT AND CONNOTATION OF TEACHERS' DIGITAL LITERACY

In the process of digital transformation of education, teachers' digital literacy, as a key component of teachers' professional ability, has received increasing attention. Digital literacy is not only related to teachers' ability to apply information technology in teaching, but also affects how teachers can effectively use digital tools and resources to improve teaching quality in the context of the new era. Therefore, understanding the concept and connotation of digital literacy is crucial to exploring strategies to improve teachers' digital literacy.

The definition of digital literacy has broad and narrow differences. In a broad sense, digital literacy refers to the ability of individuals to effectively acquire, analyze, create, communicate and evaluate digital information in the digital age [5]. This ability not only includes basic technical operation skills, but also covers information critical thinking, the ability to use cross-platform tools, and the ability to self-learn and develop in a digital society. In a narrow sense,

digital literacy is often defined as the ability of teachers to skillfully use information technology, digital tools and online resources to design, organize and implement teaching activities in the field of education. This definition focuses more on the application of digital technology by teachers in classroom teaching and learning management, including the use of digital resources, the mastery of educational software, and the analysis and application of teaching data.

The main dimensions of teachers' digital literacy include multiple aspects. First, the technical operation ability of teachers is the most basic dimension, which means that teachers can skillfully use various information technology equipment and software, including computers, network platforms, teaching tools, etc. Secondly, information analysis and processing ability is also an important part of teachers' digital literacy. Teachers not only need to obtain information, but also have the ability to screen, analyze, integrate and apply information. In addition, teaching design ability is one of the core dimensions of teachers' digital literacy, which requires teachers to be able to use digital tools and platforms to innovate teaching design, optimize teaching methods, and improve students' learning experience and learning effects [6]. Finally, teachers should also have a good sense of digital ethics and network security, and be able to protect students' privacy and data security while using digital tools and platforms, and abide by network ethics.

The characteristics of teachers' digital literacy are mainly reflected in several aspects. First, digital literacy is a dynamic development process, and teachers at different stages have different performances in digital literacy. Young teachers who have just entered the education industry often have strong digital technology operation capabilities, but still need to improve in teaching design, educational data analysis and information critical thinking. As teachers' careers deepen, experienced teachers' abilities in information integration and teaching design continue to improve, but they may face the problem of slow technology updates and adaptation to new educational technologies [7]. Therefore, the development of teachers' digital literacy is a gradual transition from technical operation to in-depth teaching application.

The development stage of teachers' digital literacy is closely related to factors such as teachers' work experience, educational background, and adaptability to technology. At the primary stage, teachers' digital literacy is manifested in basic technology usage capabilities, such as the ability to use common office software and teaching software. At the intermediate stage, teachers begin to be able to use digital tools for classroom interaction, teaching design and evaluation, and can process educational data and adjust teaching content and strategies based on data feedback. At the advanced stage, teachers can not only use digital technology proficiently, but also carry out deeper teaching innovation, master personalized teaching design based on technologies such as big data and artificial intelligence, and promote the transformation of education models [8]. Therefore, the improvement of teachers' digital literacy is a process of continuous development from technical skills to teaching innovation and educational practice integration.

With the deepening of the digital transformation of education, the improvement of teachers' digital literacy is not only the mastery of technology, but also an all-round change in teaching concepts, teaching methods and educational concepts. This process requires teachers to continuously improve their professional capabilities at different stages of development to adapt to the higher requirements of educators in the digital age.

3 CURRENT SITUATION AND CHALLENGES OF DIGITAL TRANSFORMATION IN EDUCATION

With the rapid development of information technology, the digital transformation of education has become an important reform in the global education system. Countries have taken different measures to promote the digitalization of education, using modern scientific

and technological means to improve the quality of education and expand educational equity. However, the digital transformation of education also faces many challenges, especially in the process of improving teachers' digital literacy and applying technology [9]. How to cope with the rapid changes in technology and the transformation of educational concepts has become an urgent problem to be solved.

From international experience, many developed countries have made certain progress in the digital transformation of education. The United States, Canada and some European countries have promoted the development of online education and blended learning by establishing digital education platforms, and improved the accessibility and flexibility of education. The experience of these countries shows that digital education is not limited to the application of technology, but also involves the all-round transformation of educational concepts, curriculum content and educational management methods [10]. However, although these countries have achieved certain results in the process of digital transformation, they are also faced with problems such as too fast technology updates, lagging teachers' digital literacy, and aggravated digital divide. In some low-income countries and regions, the process of digital transformation of education is severely restricted due to lagging infrastructure construction and teachers' lack of digital skills.

In China, the digital transformation of education is also advancing rapidly. In recent years, the country has vigorously promoted the construction of educational informatization and issued a number of policies to promote the digitization of educational resources and the widespread application of information technology in education. In particular, the proposal of "Internet + Education" has provided new impetus and direction for the digital transformation of education. Whether in cities or remote areas, online education platforms and digital courses have become important tools for improving educational equity. However, although China has made significant progress in the digital transformation of education, it still faces some severe challenges. First, the role and ability of teachers in digital education need to be improved urgently. The digital literacy of many teachers is still at a low level, and they cannot make full use of information technology to improve the quality of teaching. Secondly, the uneven distribution of educational resources, especially in rural and remote areas, and the lagging infrastructure construction have led to difficulties in the implementation of digital transformation of education in these areas. In addition, the innovation of education management and teaching models also faces great resistance. The deep roots of traditional educational concepts and teaching methods make the implementation of educational transformation complicated and difficult.

The role of teachers in the digital transformation of education is crucial. As the implementer of education, the digital literacy of teachers directly affects the effect of educational transformation. However, many teachers still feel powerless when faced with new technologies and new platforms. The main problems encountered by teachers in the process of applying digital technology include: lack of sufficient technical support, insufficient knowledge of new technologies, insufficient training opportunities, and lack of confidence in the actual application of information technology in teaching. Although many teachers have mastered some basic digital technologies, how to effectively integrate these technologies in teaching and use information technology to improve classroom interaction and teaching effectiveness is still

a major challenge they face. Especially in teaching design and curriculum development, teachers lack effective training and practical experience, which makes it difficult for them to fully tap the potential of digital technology.

Therefore, the need to improve teachers' digital literacy is becoming more and more urgent. Teachers not only need to master basic technical operation skills, but also have strong information literacy and be able to critically analyze and apply various digital resources. In addition, teachers should also have innovative educational concepts and teaching design capabilities, and be able to develop personalized teaching plans that meet students' needs in a digital environment. Therefore, the improvement of teachers' digital literacy is not only a technical training issue, but also an overall reform of educational concepts, teaching methods, and educational management methods. For teachers, learning how to use emerging technologies to improve teaching efficiency and quality, how to adapt to new educational models, and how to promote educational innovation are issues that urgently need to be solved.

The digital transformation of education has put forward higher requirements for teachers, especially in terms of technology application ability and innovative education model. In terms of technology application ability, teachers need to master the use of various digital tools, including online teaching platforms, educational software, data analysis tools, etc. In addition, teachers need to be able to flexibly use these tools for teaching design, classroom interaction and personalized learning support [11]. At the same time, the innovation of education model has also become an important challenge for teachers. The traditional teaching model can no longer meet the needs of education in the digital age. Teachers need to be able to flexibly use digital technology to design teaching plans that meet the personalized learning needs of students. This requires not only teachers to have strong technical capabilities, but also to have innovative thinking and to be able to constantly reflect and adjust in educational practice.

Overall, the digital transformation of education has brought teachers the dual challenges of technology application and teaching innovation, and also provided new opportunities for the development of teachers. The improvement of teachers' digital literacy is not only the improvement of personal ability, but also the key to the process of education modernization. Only through effective support and training to help teachers improve their digital literacy can the goal of digital transformation of education be truly achieved.

4 THEORETICAL AND PRACTICAL BASIS FOR IMPROVING TEACHERS' DIGITAL LITERACY

In the context of digital transformation of education, improving teachers' digital literacy has become one of the core contents of education reform. Teachers' professional development is not only about improving skills, but also involves profound changes in educational concepts and teaching models. In order to better guide the improvement of teachers' digital literacy, it is necessary to start from the theoretical framework, analyze the relevant factors affecting teachers' development and digital literacy, and explore how digital education tools and platforms promote the improvement of teachers' literacy.

The theoretical framework of teachers' professional development provides an important theoretical basis for the improvement of teachers' digital literacy. The teacher development

model usually includes three levels: primary stage, intermediate stage and advanced stage. Teachers at each stage are different in knowledge, skills, attitudes and educational concepts, which directly affects teachers' performance in the digital education environment. Teachers' professional growth is a continuous process, covering the accumulation of knowledge, the improvement of skills and the transformation of teaching concepts. With the rapid development of educational technology, the improvement of teachers' digital literacy not only depends on traditional knowledge accumulation, but also requires the ability to flexibly respond to new technological challenges. The theory of professional learning community provides inspiration for the improvement of teachers' digital literacy. This theory emphasizes improving teachers' professional ability through teamwork and joint learning. In the digital age, teachers can collaborate with their peers through online learning platforms, social networks and other channels to share educational resources and teaching experience, which can not only help teachers quickly master new educational technologies, but also enhance their self-confidence and innovation capabilities.

The application of digital educational tools and platforms has played a vital role in improving teachers' literacy. With the popularization of information technology, the types and functions of educational technology tools are becoming more and more abundant, and these tools provide teachers with more convenient and efficient teaching methods. Common educational technology tools include online classrooms, educational games, virtual laboratories, learning management systems, etc., which can not only improve teachers' teaching efficiency, but also enrich teaching content and stimulate students' interest in learning. However, the application of educational technology tools also faces some challenges, such as teachers' adaptability to new technologies, problems in obtaining educational resources, and maintenance and updating of platforms. Despite this, the introduction of digital educational tools undoubtedly provides teachers with a broader teaching space, enabling teachers to conduct personalized teaching according to students' needs, thereby promoting students' all-round development.

As an important part of digital education, online learning platforms and digital courses have played an indispensable role in the process of improving teachers' digital literacy. Online learning platforms provide teachers with a flexible learning environment. Teachers can learn new technologies, educational theories and teaching methods according to their own schedules. In particular, online platforms provide a good learning channel for teachers who cannot participate in traditional training at work. The advantage of digital courses lies in the efficient integration of resources. Teachers can obtain the latest educational content through the digital course system and learn anytime and anywhere. Digital courses can also combine teaching evaluation to help teachers detect learning outcomes and adjust teaching strategies in a timely manner. However, online learning platforms and digital courses also face some problems in the process of popularization, such as uneven quality of platform content and poor self-discipline of learners. These problems need to be solved in future educational development.

The practical experience of improving teachers' digital literacy at home and abroad also provides us with valuable reference. Internationally, many developed countries have promoted the rapid improvement of teachers' digital literacy by building a complete teacher training system. Countries such as the United States and the United Kingdom have included

information technology capabilities in the compulsory content of teachers' professional development, and have conducted training through a combination of online and offline methods to ensure that teachers can keep up with the pace of technological development. In these countries, the successful experience of improving teachers' digital literacy shows that systematic training, continuous learning and strong technical support are the key. By providing targeted training courses, teachers can master new educational technologies and apply them to actual teaching, thereby improving the quality of teaching.

In China, with the continuous advancement of educational informatization policies, the improvement of teachers' digital literacy has also received widespread attention from the government and society. The national education department has introduced a number of policies to promote the improvement of teachers' digital literacy, carry out training on teachers' information technology application capabilities, and build an informatization teacher development platform. Through these policies, teachers can continuously improve their digital literacy through multi-level and multi-dimensional training. Especially in recent years, with the implementation of the "Internet + Education" strategy, the popularization of online learning platforms and digital courses has provided teachers with more convenient learning resources. However, although China has made certain progress in improving teachers' digital literacy, there are still regional differences and uneven training resources. It is necessary to further strengthen policy guidance and resource allocation to ensure that the improvement of teachers' digital literacy can benefit every educator.

In general, the improvement of teachers' digital literacy is an important part of the digital transformation of education, which requires both the guidance of theoretical frameworks and the support of practical experience. By integrating digital education tools and platforms and combining successful experiences at home and abroad, the improvement of teachers' digital literacy will provide a solid foundation for improving education quality and achieving educational equity. In the future development of education, how to use digital means to promote teachers' continuous professional growth will be an important topic of education reform.

5 RESEARCH ON STRATEGIES TO IMPROVE TEACHERS' DIGITAL LITERACY

In the context of digital transformation of education, the improvement of teachers' digital literacy has become a key link in promoting educational reform and improving the quality of education. With the rapid development of information technology, teachers not only need to have traditional teaching skills, but also must have the ability to flexibly use digital tools and resources. Therefore, formulating a scientific improvement strategy is the basis for ensuring that teachers can adapt to the digital education environment and improve the quality of teaching. This chapter will explore the goals, principles, strategies and implementation plans for improving teachers' digital literacy, and provide a set of systematic improvement paths and specific practical suggestions.

First, the overall goal of improving digital literacy should be to improve teachers' abilities in the digital teaching environment, so that they can make full use of modern information

technology for educational innovation, thereby improving teaching effectiveness and student learning quality. The improvement of digital literacy is not only the enhancement of technical skills, but also the comprehensive transformation of educational concepts, teaching methods and educational resource management methods. By improving digital literacy, teachers can better design personalized teaching plans, optimize teaching interactions, improve students' learning interest and autonomous learning ability, and at the same time, they can more efficiently carry out educational management and data analysis.

The basic principles of the improvement strategy should follow the principles of sustainability, pertinence and full participation. First, the improvement strategy should be sustainable to ensure that teachers can continuously update and improve their digital literacy throughout their careers. The rapid development of digital technology means that teachers need to continue to learn and adapt to new technology applications. Secondly, the improvement strategy needs to be targeted, and different training content and methods should be formulated according to the different digital literacy levels, teaching needs and subject characteristics of teachers. Finally, the improvement strategy should focus on full participation to ensure that every teacher can improve their digital literacy through different forms of training and learning, rather than limited to the training of a few elite teachers.

In terms of specific strategies and approaches, school-based training and educational technology support are one of the core ways to improve teachers' digital literacy. Through school-based training, appropriate training plans can be formulated according to the actual situation of the school, the needs of teachers and the characteristics of the subject. School-based training not only allows teachers to practice learning in their own teaching environment, but also encourages cooperation and experience sharing among teachers to form an atmosphere of common progress. At the same time, the construction of an educational technology support system is also crucial. The education department should provide technical support to help teachers solve problems encountered in technology application and ensure the smooth application of technology. By establishing a complete technical support platform and providing instant help to teachers, teachers' ability to apply technology in the classroom can be effectively improved.

The development and use of digital courses and online learning resources is one of the important ways to improve teachers' digital literacy. With the rapid development of online education, digital courses have become an important resource for teachers to learn. Education departments and schools can rely on existing education platforms to develop digital courses that meet the needs of teachers, covering educational technology, teaching design, data analysis and other aspects. These digital courses can be provided to teachers through online platforms, and teachers can flexibly learn according to their own time and needs to improve their professional literacy. In addition, the integration and sharing of online learning resources are also key. Teachers can obtain the latest educational materials and technical information through shared learning resource libraries, thereby broadening their learning horizons and improving their teaching abilities.

In order to ensure the continuous improvement of teachers' digital literacy, regular evaluation and feedback mechanisms for teachers' digital skills are essential. Evaluation can help teachers understand their strengths and weaknesses in digital literacy and develop

personalized improvement paths for them. Regular evaluation not only helps teachers to reflect on themselves and improve, but also provides data support for schools and education departments to adjust training programs and strategies. In addition, the establishment of a feedback mechanism can provide teachers with specific suggestions for improvement and motivate them to make continuous progress. Through feedback, teachers can get correct guidance in a timely manner, avoid misunderstandings in technology applications, and improve learning outcomes.

When implementing specific plans to improve teachers' digital literacy, it is crucial to design training and learning paths in stages and levels. There are differences in teachers' digital literacy levels. Therefore, training should design different learning paths according to teachers' career development stages and technical mastery. For young teachers who have just started working, they can start with basic technical operations and applications, and gradually guide them to higher-level teaching design and technology integration. For teachers with certain experience, they should focus on improving their information processing capabilities, educational innovation capabilities and data analysis capabilities. Through a staged and hierarchical training system, teachers can gradually achieve a leap from technology application to teaching innovation.

Strengthening practical operations and case teaching is an important means to improve teachers' digital literacy. During the training process, attention should be paid to the practical link, so that teachers can personally experience the application of technology through actual operations to solve the disconnection between theoretical learning and practice. At the same time, case teaching can help teachers understand how to combine digital technology with teaching content and improve teaching effectiveness by analyzing successful digital teaching cases. Through case teaching, teachers can more intuitively understand the application of digital technology in the classroom, thereby improving their practical operation capabilities and innovative thinking.

Finally, the construction of the evaluation and incentive mechanism for teachers' digital literacy is an important guarantee to ensure the effective implementation of the improvement strategy. The evaluation system of digital literacy should be comprehensive and multi-dimensional, including the evaluation of technical operation ability, as well as the comprehensive assessment of teaching design ability, educational innovation ability and other aspects. Through the systematic evaluation system, it can objectively reflect the growth and shortcomings of teachers in the process of improving digital literacy, and provide data support for subsequent training. At the same time, the design of incentives is also crucial. By setting up incentive mechanisms, such as training subsidies, professional title promotion, honorary awards, etc., it can stimulate the enthusiasm of teachers to participate in training and improve their literacy. The improvement of the guarantee mechanism provides necessary support and guarantee for teachers in the process of improvement, ensuring that the improvement strategy can be implemented in actual operation.

Overall, the improvement of teachers' digital literacy is a long-term and systematic task that requires support and cooperation from all aspects. Through scientific improvement strategies, systematic implementation plans, and effective evaluation and incentive mechanisms, it can ensure that teachers continue to grow in the wave of digital transformation

and improve their teaching and innovation capabilities in the modern education environment.

6 CONCLUSION AND OUTLOOK

In the context of digital transformation of education, the improvement of teachers' digital literacy has become a key link in education reform. This study systematically discusses the current situation, influencing factors and improvement strategies of teachers' digital literacy, and puts forward corresponding countermeasures and suggestions. Through literature analysis, empirical research and case analysis, this study comprehensively understands the role and needs of teachers in the digital education environment, analyzes the successful experience of improving teachers' digital literacy at home and abroad, and aims to provide theoretical guidance and practical reference for the future digital transformation of education.

First, the main results of the study show that the improvement of teachers' digital literacy is not only the improvement of technical ability, but also the transformation of teachers' teaching concepts, teaching methods and education management models. Teachers should have high information literacy, not only can they flexibly use digital tools for teaching design, but also can critically analyze and apply various digital resources to promote educational innovation. The improvement of digital literacy plays an important role in improving teaching quality, promoting personalized learning and improving educational equity. The study also found that the improvement of teachers' digital literacy is affected by many factors, including teachers' personal technical background, school technical support, the promotion of education policies and the influence of social and cultural environment. Therefore, improving teachers' digital literacy requires multi-party collaboration and systematic training and support.

There are still some limitations in the research process. First, since this study mainly relies on existing literature and some empirical data, it fails to go deep into the specific situation of each school and region. The challenges and needs faced by teachers in different regions and disciplines in the process of improving digital literacy may be different, so in the future, more specific case studies can be used to supplement the depth of the research. Secondly, this study is relatively simple in terms of the evaluation of the effectiveness of strategy implementation. Future research can further verify the effectiveness of the proposed improvement strategy through long-term tracking and evaluation, and adjust and optimize it according to actual conditions.

Future research directions will pay more attention to the personalized path and diversified model of improving teachers' digital literacy. With the continuous advancement of educational informatization, new technologies and platforms continue to emerge, and teachers' digital literacy improvement will face more complex needs. Therefore, subsequent research can further explore how to combine cutting-edge technologies such as big data and artificial intelligence to design personalized teacher training programs to achieve precision and differentiation of teacher learning. In addition, the improvement of teachers' digital literacy also needs to take into account the overall ecosystem of education, including the support of education administrators, policymakers and all sectors of society. Future research can explore how to establish a comprehensive educational technology support system from a macro level.

In the future digital transformation of education, the improvement of teachers' digital

literacy will face new opportunities and challenges. First, with the continuous development of information technology and educational concepts, teachers will be able to access new technologies and educational resources more conveniently, thereby improving the quality of education. Educational tools such as online learning platforms and digital courses will provide teachers with more learning opportunities and practice platforms. In addition, the improvement of teachers' digital literacy is not only the construction of personal capacity, but also the driving force for the reform of the entire education system. In this process, teachers are not only users of technology, but also the main force of educational innovation. With the introduction of technologies such as artificial intelligence and big data, teachers' work in teaching design, student assessment, and education management will become more intelligent and precise in the future, and the role and ability requirements of teachers will also increase accordingly.

However, the challenges of improving teachers' digital literacy still exist. Especially for some remote areas or places where educational resources are relatively scarce, the technical difficulties and lack of training resources faced by teachers are still urgent problems to be solved. How to ensure that teachers can obtain effective training and technical support at different stages of development is a direction that needs to be focused on in future research and practice. In addition, the rapid development of educational technology has also brought about some ethical and security issues, such as data privacy and information security. These issues need to be given full attention and resolved while improving teachers' digital literacy.

In short, the improvement of teachers' digital literacy is a key link in the digital transformation of education. Only by continuously improving the training system and providing diversified support can we effectively improve teachers' digital literacy and promote the innovation of educational models and the improvement of educational quality. Future research should focus on how to overcome the current challenges, seize new opportunities, and promote the overall improvement of educational equity and quality through collaborative innovation in the context of global digital education transformation.

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