

Research on the Cultivation Path of Digital Literacy of PE Teachers under the Background of Education Digital Transformation

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Abstract. With the continuous advancement of digital transformation, digital technology has penetrated into various fields of the education system. Digital literacy, as a key force to adapt to this transformation, is gradually attracting the attention of educators. This article uses literature review and logical analysis methods to study the path of cultivating digital literacy of physical education teachers in the context of educational digital transformation. Based on the theoretical framework of digital literacy for teachers both domestically and internationally, the digital literacy of physical education teachers is summarized into four dimensions: Digital awareness, Digital teaching, Digital communication and collaboration, and Digital evaluation. This paper explores the connotation and value of digital literacy for physical education teachers in the context of educational digital transformation, and proposes to create a digital technology environment for teaching and cultivate digital awareness for physical education teachers; Optimize the digital literacy training mechanism and enhance the digital application ability of physical education teachers; building a digital communication platform for physical education teachers to facilitate digital communication and collaboration; building a digital literacy evaluation system and cultivating a path for precise digital evaluation.

Keywords: Digitization; Physical education teachers; Digital literacy; Cultivation strategy.

1. Introduction

The Work Points of the Ministry of Education in 2022 clearly pointed out that we should actively develop "Internet plus Education", implement the strategic action of digital education, and accelerate the digital transformation and intelligent upgrading of education. The 20th National Congress of the Communist Party of China for the first time included "digitalization of education" in the report, proposing to "promote digitalization of education, build a learning society and a learning country for lifelong learning for all", which pointed out the direction and provided guidance for further developing digitalization of education in the new era and in the new journey.

Digitalization has brought about significant changes in the working environment, tasks, content, and methods of educators. The original quality and ability structure are no longer suitable for the needs of life, learning, and work in the digital age. Improving the digital competence of teachers has become the key to the digital transformation of education. Education administrative departments at all levels must focus on strengthening the high-quality cultivation of digital literacy for physical education teachers, deeply implement the spirit of the 20th National Congress of the Communist Party of China, focus on the new needs for the cultivation of digital literacy for physical education teachers in the new era, strengthen the cultivation concept of prioritizing digital abilities, and promote the comprehensive development of digital literacy for physical education teachers. This study which is based on the theoretical framework of digital literacy for teachers both domestically and internationally, explore the cultivation path of digital literacy for physical education teachers, in order to provide reference and inspiration for the cultivation path of digital literacy for physical education teachers in the context of educational digital transformation.

2. Theoretical Exploration of Digital Literacy for Physical Education Teachers

2.1 The meaning of digital literacy for teachers

With the popularization of digital tools and platforms, the deep integration of digitalization and subject teaching, as well as the research on the transformation of educational digitization, has become hot topics in the field of educational informatization. In the era of informatization, teachers, as practitioners and educators of educational activities, should also possess certain digital literacy. In November 2022, the Ministry of Education released the "Digital Literacy for Teachers", proposing to "improve the standard system of educational informatization, enhance the awareness, ability, and responsibility of teachers to optimize, innovate, and transform educational and teaching activities using digital technology." This includes five dimensions, namely Digital awareness, Digital technology knowledge and skills, Digital application, Digital social responsibility, and Professional development. Internationally, frameworks or standards for teacher digital literacy have also been proposed, such as the Teacher Digital Literacy Standards proposed by the American Educational Technology Association, which include Digital technology applications, Educational and Teaching strategies, Curriculum, and Evaluation. The European Commission's "Digital Competency Framework for European Educators" emphasizes the Digital capabilities of teachers, Digital teaching design, and Digital teaching environment.

In summary, the digital literacy refers to the comprehensive use of digital technology by teachers in the digital age to carry out teaching knowledge, abilities, and attitudes. Firstly, teachers should receive education in information and communication technology and master certain digital knowledge; secondly, teachers should learn to apply digital technology to teaching practice, improve students' learning efficiency and their teaching quality, and promote teaching reform; thirdly, in digital applications, one can abide by moral cultivation and behavioral norms, and improve their professional abilities through continuous learning.

2.2 The connotation of digital literacy of physical education teachers

As an indispensable part of the school education system, physical education teachers, as the guide and the first person responsible for the health of teenagers, should not only establish a strong sense of social responsibility and mission, and gradually improve the physical health level of students in the class they teach, but also expand their horizons, jump out of physical education and see physical education, so that physical education and digital technology resonate at the same frequency, forming a superposition effect. This paper defines PE Teachers' digital literacy as their awareness and ability to optimize, innovate and change PE teaching by using digital technology. Physical education teachers are required to master certain digital technology knowledge and ability, and on this basis, use digital technology to transform the learning environment of physical education classroom, use digital technology to obtain, integrate, manage and evaluate the digital information of physical education teaching, and deeply integrate digital technology and physical education teaching, so as to improve the quality and effect of physical education teaching.

By referring to the framework research of teachers' digital literacy at home and abroad, this paper summarizes physical education teachers' digital literacy into four aspects: Digital consciousness, Digital teaching, Digital communication and cooperation, and Digital assessment (see Table 1 for details).

Table 1 four dimensions of PE Teachers' digital literacy

Physical education teachers' digital literacy dimension	Dimension description
Digital consciousness	It refers to the physical education teachers' understanding, understanding and application of digital technology, as well as the consciousness and innovation of using digital technology in physical education teaching, Including the importance of digital technology for teaching, the necessity of digital security and privacy protection.
Digital teaching	It refers to the application of digital technology in physical education teaching to improve the teaching effect and students' learning experience, Including digital lesson preparation, digital management, etc.
Digital communication and collaboration	It refers to the use of digital technology for communication and cooperation between teachers or parents to improve the teaching level and effect, Including online teaching seminars, remote guidance, etc.
Digital assessment	It refers to the use of digital technology for assessment and measurement, to help teachers better understand the learning status and progress of students, and to improve more personalized and intelligent services for students, including physical fitness assessment, skill assessment, etc.

2.3 Value of cultivating PE teachers' digital literacy

2.3.1 Integrity and innovation to promote the high quality of Physical Education Teaching

As we all know, the main characteristic of physical education teachers different from other teachers is the skill based teaching method. The traditional teaching mode has long been unable to meet the learning needs of students, and blindly teaching motor skills in the class can not stimulate students' interest in learning. The improvement of PE Teachers' digital literacy can help PE teachers enrich teaching methods and improve teaching effect with the help of digital equipment, platforms and technologies in the classroom. Stimulate students' curiosity, meet diversified learning needs, promote the cultivation of students' innovative ability, and improve the quality of physical education.

2.3.2 Resource sharing to promote the balanced development of Physical Education

Due to the differences in the level of regional economic development and the dual economic structure between urban and rural areas, the level of education informatization in coastal areas is better than that in central and western regions, and urban schools are better than rural schools. The cultivation of digital literacy helps to narrow the education gap between urban and rural areas and regions. The application of modern information technology in physical education can break the restrictions of region and time, so that high-quality educational resources can be shared. Physical education teachers with digital literacy can make better use of network resources, provide students with more diversified learning opportunities, and promote the equalization of education.

2.3.3 Power source to accelerate the digital transformation of Physical Education Teaching

Under the comprehensive effect of the rapidly changing world pattern, the internal needs of education reform and some other factors, global education is facing the challenge of digital transformation. The implementation of digital curriculum system, the promotion of education and teaching, the transformation of teaching mode, and the reform of evaluation system all require teachers with certain digital literacy to undertake important specific implementation work. Only with high digital literacy can we cultivate more students with high digital literacy and promote and form a sustainable ecosystem of digital education development. Physical education teachers, as a

part of them, must shoulder the responsibility and speed up the digital transformation of physical education.

At present, physical education teachers still have weak awareness of using information technology in teaching, lack of information resources, lack of awareness of the importance of information technology, and lack of enthusiasm and initiative in learning information technology. Under the background of digital transformation of education, the cultivation of physical education teachers' digital literacy is the key not only to improve the quality of physical education, but also to promote the innovative development of physical education. Therefore, it is necessary to increase the investment and attention to the cultivation of PE Teachers' digital literacy in order to meet the needs of the development of education in the new era.

3. Cultivation path of PE Teachers' digital literacy

3.1 Create a digital teaching technology environment and cultivate PE Teachers' digital consciousness

To a certain extent, the digitalization of the educational environment will affect the application of teachers' digital technology. Creating an educational digital technology environment, improving the digital infrastructure, providing environmental support for the development of teachers' education and teaching, can better promote the improvement of teachers' digital literacy.

First of all, local education administrative departments should increase funding and strengthen the construction of digital infrastructure in schools; secondly, the introduction of artificial intelligence, big data, cloud computing, etc, is applied to all aspects of physical education teaching, management and scientific research to improve the quality and efficiency of physical education teaching; finally, integrate educational resources and establish a resource sharing platform to provide teachers and students with rich online courses, learning materials, teaching videos, etc. At the same time, we should also strengthen the construction of digital ethics and legal system, encourage physical education teachers to abide by moral norms, not to violate the law, and create a green and sustainable teaching environment. Give full play to individual initiative, fully recognize the importance of digital technology, and actively embrace change

3.2 Optimize the digital literacy training mechanism and improve the digital teaching ability of Physical Education Teachers

The number of the teachers in China is huge. Their demand for training resources is constantly updated, with high standards and great differences. The improvement of PE Teachers' digital literacy needs the joint efforts of many parties.

First, the education department will take the lead to set up special training courses according to the characteristics of the school and the needs of physical education teachers for digital literacy. On this basis, through the construction of physical education teachers' digital literacy training bases, physical education teachers can be provided with opportunities for hands-on practice and simulation practice, so that physical education teachers can skillfully use digital technology and improve teaching quality. And regularly hold lectures and seminars on PE Teachers' digital literacy to share the latest developments in educational information and technology development, and enhance communication and cooperation between teachers and students. According to the analysis of students, design and develop teaching resources as well as online resources so that students can master and improve their sports ability in practice. Relevant technology enterprises can also be invited to establish cooperation with the school, so that professionals can enter the campus to provide technical support and training for teachers. Finally, according to the digital literacy development needs of teachers of different ages, teaching ages, disciplines and academic qualifications, we should reasonably plan and design training content with difficulty gradient,

strong systematicness and strong practicality, so as to meet the development requirements of teachers with different levels of digital literacy development.

3.3 Build a digital communication platform for physical education teachers to facilitate digital communication and cooperation

Building a digital communication platform for physical education teachers can improve communication efficiency, expand the scope of communication, promote knowledge sharing, promote cooperation and innovation, and facilitate personal life. These platforms can bring many conveniences and opportunities to physical education teachers, and are of great significance for personal, social and economic development.

Schools or education departments can establish a digital communication platform to provide physical education teachers with occasions for information exchange, resource sharing and cooperation, including online forums, social media groups, etc, so that teachers can communicate anytime and anywhere. Introduce and promote some commonly used collaboration tools to help physical education teachers realize real-time collaboration, jointly edit documents, assign tasks, improve work efficiency and team collaboration ability. Organize special training courses to help physical education teachers master the basic operation and application skills of digital communication and collaboration tools.

3.4 Build a digital literacy evaluation system to accurately assess the digital quality of Physical Education Teachers

Combined with the actual situation, develop PE Teachers' digital literacy evaluation tool, carry out the normal tracking of PE Teachers' digital literacy, and establish PE Teachers' digital literacy portfolio. Aiming at the connotation and extension of PE Teachers' digital literacy, a comprehensive and scientific evaluation index system should be constructed.

On the one hand, improve the evaluation mechanism. Teachers' digital literacy will be included in the scope of teachers' evaluation, and digital literacy will be taken as an important indicator of teachers' professional development. A multi-dimensional digital literacy evaluation system for different indicators will be established. Constantly monitor students, teachers and schools through big data to achieve evaluation-oriented results and assessment. On the other hand, according to the development needs of physical education teachers, effective incentive measures should be formulated to enhance the endogenous power of physical education teachers to improve their digital literacy. For PE teachers with insufficient digital literacy, special training and guidance should be provided to help them improve their digital literacy, so as to improve the quality of education and teaching. The evaluation results should be fed back to teachers in time, so that they can understand their advantages and disadvantages.

4. Conclusion

Digital transformation has become a new trend in the development of global education and teaching. China needs to speed up the pace of digital transformation of physical education, and create an innovative team of physical education teachers with high digital literacy and digital teaching ability. This paper makes a preliminary exploration on the cultivation of PE Teachers' digital literacy from creating a digital technology environment, cultivating digital awareness, optimizing the training mechanism, improving digital teaching, establishing a communication platform, innovating digital communication and cooperation, constructing a precise evaluation system. However, the growth of PE Teachers' digital literacy is a process of gradual deepening and expansion. It has changed from mastering basic skills to performing in-depth integration and creative practice. In order to meet the needs of the information age for PE teaching, PE Teachers' digital literacy should also be continuously improved. It is hoped that the strategies and suggestions put forward in this study can provide a certain reference for the cultivation of PE Teachers' digital

literacy, and contribute to the promotion of digital transformation of education. At the same time, it is expected that more scholars and educators will join the research and practice in this field in the future to jointly promote the digital transformation of physical education to a new height and help the construction of a sports power.

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