Research on the Cultivation Path of Digital Literacy of College Teachers in the Context of Digital Transformation of Education

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Abstract: The deep integration of digital technology and education has accelerated the digital transformation of higher education, promoted the transformation of teaching concepts, teaching environment and teaching mode in colleges and universities, and put forward new requirements for the digital literacy of college and university teachers. As the main actors of education and teaching and the transmitters of cultural knowledge, the enhancement of digital literacy of college teachers is not only a necessary requirement to adapt to the digitalization of education, but also an effective way to promote the modernization of higher education. The embedding of digital technology is shaping the new ecosystem of higher education, and in the digital transformation of education, university teachers are facing the problems of weak sense of subjectivity, lack of digital knowledge, lack of digital skills, weak security protection, and insufficient digital resources, etc. In this regard, the article focuses on stimulating the endogenous development of digital literacy. Based on this, the article proposes the cultivation path of digital literacy for college teachers from the aspects of stimulating endogenous motivation, constructing learning community, implementing diversified evaluation, carrying out systematic training, and strengthening safety protection ability in order to promote the realization of the modernization of China's higher education.

1. Introduction

Under the wave of digitization, the improvement of digital literacy of college teachers has become the key to the modernization of education. With the wide application of cloud computing, blockchain and other new-generation information technologies, college teachers urgently need to adapt to digital transformation[1]. However, the reality is that there is a shortage of digital teachers and a weak teaching force, which hinders the process of education modernization. The connotation of teachers' digital literacy is constantly enriched, from media literacy to digital literacy, reflecting the development of economic and social technology. Currently, enhancing teachers' digital literacy faces many challenges, such as the tendency of technology supremacy, data omnipotence, and other realistic dilemmas. Therefore, it has become necessary to strengthen the ethical and legal regulation of digital technology, develop assessment standards, and establish a lifelong learning community. In

the face of these challenges, universities and teachers need to make concerted efforts to reduce and defend against risks. Teachers' digital literacy should be enhanced through multiple ways, such as training, practice and research, to promote the deep integration of information technology and education and teaching[2]. At the same time, the digital literacy assessment and feedback mechanism should be strengthened to motivate teachers to continuously improve their abilities and contribute to the cultivation of outstanding talents in the digital era.

1.1 Digital Literacy for College Teachers: Conceptual Interpretation and Value Implications

1.1.1 Digital Literacy for Teachers: A Conceptual Framework and Interpretation

The deep integration of the new information technology revolution with the world's economic and social sectors has given rise to the concept of "teachers' digital literacy", i.e., a set of relevant skills and competencies that teachers need to be successful in the digital environment . In this study, teachers' digital literacy refers to the ability of teachers to consciously use modern information technology to acquire, analyze, use, organize, evaluate, innovate, secure and so on in their teaching and learning activities in a dynamic and sustainable way, and to define the boundaries of the use of digital technology and give full play to the advantages of the intelligence and efficiency of information technology in teaching and learning, and to use digital technology in a self-confident, responsible, ethical and temperate way[3]. At the same time, they should use digital technology and disseminate digital knowledge with self-confidence, responsibility, ethics and temperature. Specifically, first, in the digital education arena, teachers can face the digital transformation of education in a positive manner, make full use of new-generation information technologies such as big data, artificial intelligence, cloud computing, and the Internet, and give full play to the advantages of information technology in teaching and learning activities, so as to continuously improve the level of intelligence in digital teaching and learning. Second, teachers' digital literacy does not mean a simple combination of "digital tools + teaching", but rather the ability and awareness to use digital technology in the teaching process for a series of practical operations, such as acquisition, analysis, use, management and evaluation, and the ability to use digital technology confidently, thoughtfully and with warmth. Thirdly, in the face of the rational logic of operation of the tool, teachers not only know its knowledge, rules and operation, but also pay attention to giving it a human logic and observing ethics in the use of digital technology.

1.1.2 The Value Implications of Cultivating Digital Literacy for Higher Education Teachers

In the context of education digitization, the cultivation of digital literacy among college teachers has far-reaching value. First, it helps to bridge the digital divide between teachers and students, improve the quality of teaching, and enable students to enjoy an intelligent learning experience. Secondly, teachers with high digital literacy can promote the high-quality development of higher education and cultivate modernized talents with competitiveness. In addition, the improvement of teachers' digital literacy is also the key to the modernization and transformation of higher education, which helps to adapt to the new field of digital education[4]. Finally, cultivating teachers' digital literacy is crucial to building an active learning society, which can stimulate students' interest in learning, meet diversified learning needs, break down learning barriers, and realize the vision of all-time and all-geographical learning. Therefore, enhancing the digital literacy of college teachers is of great contemporary significance and practical value.

2. The Actual Difficulties Facing the Enhancement of Digital Literacy of College Teachers

2.1 Weak subjective awareness and insufficient stimulation of endogenous motivation

Teachers in colleges and universities face multiple realistic dilemmas in improving digital literacy. First, some teachers have a weak sense of subjectivity and lack the endogenous motivation to improve digital literacy. Their understanding of the digitalization of education is biased, and they fail to correctly grasp the opportunities that digital technology brings to education and teaching, leading to a negative attitude towards the changes in digital education. Secondly, teachers have little willingness to digitize, stick to traditional teaching methods, and lack the initiative to learn and master digital technologies. In addition, in the face of the challenges of the new generation of digital technology, some teachers' digital will is weak, and it is difficult for them to effectively respond to the test of their ability to operate digital technology[5]. Together, these dilemmas have hindered the improvement of college teachers' digital literacy and affected the process of educational digitization. Therefore, stimulating teachers' subjective consciousness and enhancing their digital willingness and will have become an urgent task to improve the digital literacy of college teachers.

2.2 Lack of numerical knowledge and weak mastery of basic knowledge

The lack of digital knowledge is a major obstacle in the process of improving the digital literacy of college teachers. Due to factors such as insufficient subjective initiative, the specificity of teaching tasks and the undifferentiated nature of training, teachers have obvious deficiencies in digital theoretical knowledge, digital tool knowledge and digital ethical knowledge. Lacking the basic concepts and values of digital teaching, it is difficult to master effective digital teaching methods and problem-solving skills. At the same time, in the use of digital tools, teachers often remain in a simple and shallow understanding, making it difficult to maximize the role of digital technology in teaching. In addition, with the advancement of digitalization in education, the boundaries of network use have become blurred, and the issue of digital ethics has gradually come to the fore[6]. The lack of digital moral consciousness of some teachers may misbehave or even commit crimes in cyberspace, destroying the teaching ecology. Therefore, to enhance the digital literacy of college teachers, it is not only necessary to strengthen the learning of digital theoretical knowledge and improve the ability to use digital tools, but also to strengthen the awareness of digital morality to ensure the healthy development of the process of education digitization.

2.3 Shortage of digital skills and weak practical applications

Many teachers lack digital equipment and software operation skills and are difficult to use teaching software and multimedia equipment skillfully. At the same time, they are also deficient in digital professional operation skills, making it difficult to make full use of teaching data and information. What's more, some teachers are deficient in digital application skills, making it difficult for them to carry out personalized instructional design and innovation. These problems hinder the advancement of education digitization and affect the quality and effectiveness of teaching[7]. Therefore, it has become imperative to improve the digital skill level of college teachers.

2.4 Inadequate security protection and lack of ability to recognize multiple risks

With the advancement of education digitization, college teachers face multiple security risks. Inadequate protection of personal information security leads to easy invasion of privacy; lack of

security prevention of work data, frequent occurrence of data leakage, loss and other problems threaten the safety of academic achievements; weak prevention of digital security awareness makes it difficult to identify and respond to digital risks. These risks not only affect the work and life of teachers, but also hinder the healthy development of educational digitization. Therefore, enhancing the awareness and ability of university teachers in digital security protection and strengthening digital security education and training are important tasks in the process of promoting education digitization[8].

2.5 Lack of digital resources and lack of systematic learning support

Teachers in higher education face the dilemma of a lack of digital resources, which stems from multiple factors such as economic costs, limited access to resources and restricted communication methods. Digital training resources lack personalization and are difficult to meet the actual needs of teachers. At the same time, the sharing of digital resources among institutions is poor, leading to the problem of "resource islands". In addition, the scarcity of high-quality digital resources and limited hardware resources affect the efficiency of teachers' access to and use of digital resources. These problems limit teachers' dynamic, systematic and sustainable learning and need to be addressed urgently[9].

3. Paths for Cultivating the Digital Literacy of College Teachers in the Context of Digitalization of Education

The Ministry of Education attaches great importance to the digitalization of education and encourages teachers to take the initiative to adapt to the development of education informatization. The cultivation of digital literacy among college teachers is a result of mutual support between self-development and external promotion[10]. In order to improve the quality of teaching and promote the digitization of education and its regular development, we can start from the following aspects.

3.1 Enhancing the digital awareness of subjects and stimulating endogenous motivation

In order to promote digital teaching, teachers in colleges and universities should enhance the subject's digital awareness and stimulate endogenous motivation. Specifically, teachers should establish a digital teaching mindset, recognize the importance and value of educational digitization, and break the traditional limitations. At the same time, teachers should enhance their identity as digital educators and transform digital teaching from an externally driven activity to a conscious behavior[11]. In addition, they should strengthen their digital will, actively respond to the challenges of digital skills, and continuously improve their own capabilities. Through these measures, college teachers can better adapt to the digital requirements, promote the deep integration of teaching and digitalization, and achieve the goal of education modernization.

3.2 Promoting mutual learning exchanges and building a learning community

Building a digital learning community is crucial for college teachers to improve their digital teaching ability. Through learning exchanges between "school domain-teachers", we can break the "information silo" and realize the integration and sharing of digital resources. At the same time, relying on the digital interactive platform, we should promote the construction and sharing of high-quality resources in order to improve the digital application skills of college teachers. In addition, building a digital learning community with mutual support between teachers and students

not only meets the diversified learning needs of students, but also promotes the innovation of teachers' teaching methods and contents, and improves teaching quality and digital literacy[12]. Therefore, mutual learning and exchange should be actively promoted, and a digital learning community should be constructed to promote the overall enhancement of college teachers' digital teaching ability.

3.3 Enhancing the awareness of numerical values and practicing diversified evaluation

Enhancing the digital value cognition of college teachers is the key to promoting digital teaching. To this end, sustainable evaluation standards for digital literacy should be formulated, combining institutional practice and drawing on foreign experience to develop evaluation standards that meet their own needs. At the same time, teachers are encouraged to conduct self-evaluation of digital teaching training to enhance the sense of learning acquisition and achievement. In addition, a comprehensive digital literacy assessment is conducted to provide teachers with dynamic and developmental evaluations from various aspects to stimulate digital teaching motivation[13]. Through the implementation of diversified evaluation, it promotes the improvement of teachers' digital literacy and the in-depth development of digital teaching.

3.4 Stimulate digital learning and develop systematic training

Systematic training is needed to energize digital learning among university teachers. Classified training should be implemented for teachers at different career stages and professional needs to ensure that the training content is targeted and effective. At the same time, cross-campus joint training should be strengthened, and the advantages of group intelligence should be brought into play to provide high-quality, multi-dimensional digital teaching training. Through these measures, teachers' individualized and flexible learning needs can be met, digital literacy can be promoted, and the in-depth development of digital teaching for college teachers can be promoted[14].

3.5 Defining the boundaries of digitization and strengthening security protection capabilities

Digital teaching has brought unprecedented convenience to education, but its accompanying security problems should not be ignored. While enjoying the dividends brought by digital technology, college teachers must enhance their awareness of digital security, guard against risks such as data leakage and cyberattacks, and improve their ability to screen for false information. At the same time, teachers should also have an in-depth understanding of and comply with relevant policies and regulations to ensure the legal and standardized use of technology and resources in the digital teaching environment[15]. In addition, strengthening digital moral and ethical education and fostering teachers' sense of cyber responsibility are crucial to maintaining the harmony of the cyber ecology. Colleges and universities should establish a sound security prevention system for digital education, upgrade infrastructure and strengthen network security protection to provide a safe and robust environment for digital teaching. These initiatives will help guarantee the smooth progress of digital teaching and promote the development of education to a higher quality.

4. Conclusion

The digital transformation of education is not only an intrinsic requirement for building a strong education nation, but also an important measure for realizing a digital China and a strong digital nation. The enhancement of teachers' digital literacy is a positive response to the digital transformation of education and a concrete manifestation of the advancement of education with the

times. In the face of the widespread popularization of digital technology in the teaching field, college teachers have the ability to make sustainable use of digital technology to meet the diversified learning needs of students, and to give full play to the advantages of digital technology in terms of intelligence and efficiency. However, research has found that in specific teaching situations, university teachers have negative psychological feelings of avoidance and neglect of the digital transformation of education, as well as behavioral dilemmas such as the lack of digital knowledge, skills and safety precautions, which affect the dynamic and sustainable digital teaching of university teachers, and thus impede the process of the development of the digitalization of education. To deal with the multiple dilemmas of college teachers in terms of "psychology + behavior", we should enhance the subjective awareness and value cognition of college teachers on digital teaching, and change the deficiencies of college teachers' digital teaching behaviors by building a digital learning community, diversified evaluation and training mechanisms, so as to push forward the realization of the development of education digitization. Digital literacy of college teachers is an innovative academic proposition, which is bound to attract more attention from the academic community under the support of the national strategy of promoting a strong education and a strong digital country. The research on this topic can be deepened from three aspects: first, the research on digital ethics in teachers' digital teaching. First, the study of digital ethics in teachers' digital teaching and learning. Technology is not only a matter of "art", but also a matter of "morality", which involves the ethics of science and technology as well as the ethics of society in the process of digital teaching and learning. Secondly, it is a study on the enhancement of students' digital literacy. In the field of digital teaching and learning, students are also participants in the process of digital teaching and learning, which requires them to have a certain degree of digital literacy to adapt to the digital transformation of education. Third, research on the construction of digital learning communities for teachers. Digital technology can break the limitations of time and space, making digital resources reproducible, shareable and transmittable. With the advantages of information technology's spillover, diffusion and reciprocity effects, how to explore the construction of a digital learning community for teachers under the digital transformation of education is also an issue that needs attention.

Acknowledgement

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