

Cultivation Paths of Digital Literacy for College Teachers and Students in the Digital Age

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Abstract: With the rapid development of information technology and the widespread application of the Internet, big data, artificial intelligence, etc., the education field is moving towards intelligent and personalized development. Digital literacy has become an essential core competence for college teachers and students. Facing the rapidly changing digital technology environment, exploring effective cultivation paths for digital literacy is necessary and urgent for improving teaching quality, promoting the comprehensive development of students, and enhancing the competitiveness of teachers and students. This article first analyzes the connotation of digital literacy and its importance in education. Subsequently, it expounds on the necessity and implementation strategies of constructing a collaborative development model for teachers' and students' digital literacy. The research shows that through systematic cultivation paths and multi-party collaboration, the digital literacy of teachers and students can be effectively improved, laying a solid foundation for educational innovation and talent cultivation in the digital age.

Keywords: Digital literacy; Collaborative development; Colleges and universities; Teachers and students

Online publication: July 7, 2025

1. Introduction

Higher education in the digital age faces both challenges and opportunities. The challenges mainly lie in the update of teaching content, the integration of teaching methods and technical tools, the development of students' personalized learning paths, and the integration of digital ethics and network security education^[1]. At the same time, the normal trend of online classes, hybrid classes, and remote work also poses new requirements for teaching management. However, the digital age also brings unprecedented opportunities to higher education. For example, the balanced distribution of educational resources becomes possible, there is a broader space for the innovation of teaching methods, and personalized education can be developed^[2]. Improving the digital literacy of college teachers and students is crucial for meeting the challenges and seizing the opportunities of the digital age. Therefore, how to improve the digital literacy of college teachers and students and promote the innovation of the education model has become an urgent problem to be solved in colleges and universities.

In recent years, there have been many studies on the cultivation paths of teachers' and students' digital

literacy. Zhang explored practical paths from three major directions: guarantee mechanism, training mechanism, and evaluation mechanism, aiming to promote the process of educational modernization, improve education quality, and promote the all-round development of students^[3]. Li proposed a “three-main-body, four-step” strategy for improving the digital literacy of college teachers, providing a reference for the professional development of college teachers and the improvement of teaching quality^[4]. Li, in view of the difficulties in improving the digital literacy of teachers in applied-type colleges and universities, proposed that it is necessary to solve the problems through paths such as changing teachers’ digital development concepts, strengthening teachers’ digital training, improving teachers’ digital curriculum design ability, and establishing a guarantee mechanism^[5]. Zhou *et al.* elaborated on the innovative paths for improving college students’ digital literacy from five aspects: improving college students’ digital information literacy, digital thinking literacy, digital skills literacy, digital security literacy, and digital ethics literacy^[6]. Xu explored the paths for improving college students’ digital literacy and skills from four dimensions: ideological and political courses, professional courses, practical courses, and the second classroom^[7]. However, there is a lack of research on the collaborative development and cultivation paths of teachers and students. This article expounds on the necessity of constructing a collaborative development model for teachers’ and students’ digital literacy and proposes implementation strategies for the collaborative development of teachers and students.

2. The connotation and importance of digital literacy

Paul put forward “digital literacy” as a professional term in his book *Digital Literacy*. He believed that digital literacy is the ability of individuals to acquire, understand, criticize, and integrate information, and it is an essential literacy for people in the digital age^[8].

Digital literacy includes multiple dimensions such as technical operation ability, information processing ability, innovative thinking ability, security awareness, and ethical morality. It is not only a basic requirement for individuals to adapt to the digital age but also an important guarantee for their lifelong learning and personal development.

In college teaching, the importance of digital literacy is particularly prominent. For teachers, digital literacy is the foundation for carrying out digital teaching and innovating the teaching model. For students, digital literacy is the key to adapting to a future society and achieving lifelong learning. Improving the digital literacy of teachers and students helps to optimize the teaching process, improve learning effects, and cultivate talents with an innovative spirit and practical ability. At the same time, the improvement of digital literacy is also an important guarantee for educational equity, helping to narrow the digital divide and promote the balanced distribution of educational resources.

3. The necessity of constructing a collaborative development model for teachers’ and students’ digital literacy

3.1. An inevitable choice to cope with the challenges of the digital age

With the rapid development of information technology, digitalization has become the core of modern society, and the education field has been deeply affected. Students face digital challenges, and digital literacy has become the key to their future competitiveness. They need to master skills such as information retrieval, data processing, and network security. As guides, teachers also need to improve their digital literacy to guide students and promote

educational innovation^[9]. Constructing a collaborative development model for teachers' and students' digital literacy can optimize resource allocation, promote educational equity, and improve education quality. This model encourages teachers and students to learn from each other and make progress together, forming a virtuous circle. It can also effectively address the digital divide and narrow the educational gap.

3.2. An effective way to promote teaching and learning

In the digital age, education has transformed into a two-way, interactive and progressive process for teachers and students. Constructing a collaborative development model for teachers' and students' digital literacy enables teachers and students to communicate and cooperate efficiently on digital platforms. Teachers can use digital technology to enrich teaching content, innovate teaching methods, and stimulate students' active learning. Students can display their achievements through the platform, provide instant feedback to teachers, and deepen their understanding of knowledge. This model not only improves students' digital literacy but also contributes to teachers' professional growth. Teachers can accurately grasp students' learning needs, adjust teaching strategies, and improve teaching effects. At the same time, teachers can reflect on their teaching in the interaction with students and achieve the goal of teaching and learning, promoting each other^[10].

3.3. An important measure to promote the educational reform of colleges and universities

In the digital age, college education is changing from the traditional model to a digital and intelligent one, which requires the innovation of teaching content and methods, as well as profound changes in educational concepts and teacher-student relationships. By constructing a collaborative development model for teachers' and students' digital literacy, colleges and universities can guide teachers and students to jointly improve their digital literacy and cultivate new-type talents who can adapt to future society. This can not only enhance students' information-processing and innovation abilities but also improve teachers' educational technology application and curriculum design abilities, injecting new vitality into education. At the same time, this model breaks the traditional one-way teaching, establishes an equal and interactive teacher-student relationship, stimulates students' subjectivity and creativity, and promotes the dual improvement of educational equity and quality.

4. Implementation strategies for the collaborative development model of teachers' and students' digital literacy

4.1. Strengthen top-level design and improve the digital literacy education system

Strengthening top-level design and improving the digital literacy education system are key strategies in constructing the collaborative development model for teachers' and students' digital literacy^[11]. First of all, it is necessary to clarify the importance of digital literacy at the levels of educational policies and strategic plans, and incorporate it into the core of the education system. The senior management of the government, schools, and educational institutions should reach a consensus, formulate long-term goals and blueprints, and ensure the rational allocation of resources and policy consistency. Secondly, to improve the digital literacy education system, it is necessary to integrate curriculum content, teaching methods, and evaluation mechanisms. The curriculum content should cover knowledge in many aspects, such as the use of digital tools, information screening, critical thinking, network security, and ethics. In terms of teaching methods, innovative models such as project-based learning and flipped classrooms are advocated to improve students' autonomous learning and practical abilities. At the same time, a diversified evaluation system should be established, which not only pays attention to

knowledge acquisition but also focuses on practical application and innovation abilities. Through top-level design and system improvement, the digital literacy education for teachers and students can be effectively implemented, promoting educational equity and quality improvement, and laying a solid foundation for cultivating talents who can adapt to the digital age.

4.2. Strengthen the construction of the teaching staff and improve teachers' digital literacy

Strengthening the construction of the teaching staff and improving teachers' digital literacy is a key strategy in promoting the collaborative development model of teachers' and students' digital literacy^[12]. First, organize regular professional training and seminars to help teachers master the latest digital technologies and teaching methods. The training content covers the application of digital tools, online course design, and the management of students' digital behaviors, ensuring that teachers can skillfully use digital technology to optimize teaching. Second, establish an incentive mechanism to encourage teachers to actively explore new fields of digital education, such as virtual reality and artificial intelligence, to broaden their teaching horizons and enhance their innovation abilities. Finally, build a communication platform for teachers' digital literacy to promote the sharing of experiences and cooperation among teachers, creating a good atmosphere of common learning and growth. By strengthening the construction of the teaching staff, not only can teachers' digital literacy be improved, but also a good learning example can be set for students, promoting the collaborative development of teachers' and students' digital literacy and providing a solid guarantee for cultivating talents who meet the needs of the digital age.

4.3. Strengthen the construction of digital resources and build a digital learning environment

Strengthening the construction of digital resources and building a digital learning environment are core links in the implementation strategies of the collaborative development model of teachers' and students' digital literacy^[13]. First, it is necessary to increase investment in and development of digital resources, provide high-quality online courses, virtual laboratories, digital books and materials, etc., to meet diverse learning needs. Attention should be paid to the scientificity, interestingness, and practicality of the resources to stimulate students' interest. Second, optimize the functions and user experience of the digital learning platform, ensure that the interface is user-friendly and easy to operate, support multiple learning modes such as autonomous learning and collaborative learning, and strengthen data security and privacy protection to ensure the information security of teachers and students. Finally, promote the in-depth integration of digital resources and physical teaching, achieve seamless connection between online and offline teaching, and improve teaching effects and learning experiences. By building a rich, convenient, and interactive digital learning environment, not only can teaching methods be enriched and teaching efficiency be improved, but also strong support can be provided for the collaborative development of teachers' and students' digital literacy, helping to cultivate high-quality talents who meet the needs of the digital age.

4.4. Strengthen teacher-student interaction and build a digital learning community

Strengthening teacher-student interaction and building a digital learning community are key links in the implementation strategies of the collaborative development model of teachers' and students' digital literacy. First, use digital platforms such as online forums and instant messaging tools to build a bridge for teacher-student interaction. Encourage students to ask questions and share, and teachers should respond and guide on time to

create a positive learning atmosphere. Second, organize online seminars, digital project cooperation, and other activities, so that students can master digital skills in practice, enhance the understanding and trust between teachers and students, and cultivate teamwork, innovation, and problem-solving abilities. Finally, build a digital learning community, encourage teachers and students to jointly participate in the development and maintenance of digital resources, share learning experiences, and form a virtuous ecosystem of mutual help and common growth.

4.5. Strengthen school-enterprise cooperation and expand the channels of digital literacy education

Strengthening school-enterprise cooperation and expanding the channels of digital literacy education are key measures in the implementation strategies of the collaborative development model of teachers' and students' digital literacy^[14]. By cooperating with technology companies, introducing the latest digital technologies and application cases, updating teaching content, and ensuring that teachers and students have access to cutting-edge knowledge. At the same time, invite enterprise experts to give lectures, conduct workshops, and other activities to share practical experience, enhancing the practicality and pertinence of teaching. Second, jointly build internship and training bases to provide a platform for students to transform digital literacy into practical abilities. By participating in real-world enterprise projects, students can deepen their understanding and application of digital technologies and enhance their career competitiveness. In addition, carry out joint scientific research projects, encourage teachers and students to jointly explore new methods and technologies of digital literacy education with enterprises, promote educational innovation, improve scientific research capabilities, and bring innovative inspiration to enterprises, achieving a win-win situation.

4.6. Strengthen practical application and improve teachers' and students' digital skills

Colleges and universities should pay attention to combining digital literacy education with practical applications and improve the digital skills of teachers and students through diverse practical activities^[15]. First, regularly hold digital literacy competition activities, such as digital works creation competitions and digital skills application competitions, to stimulate the interest of teachers and students in learning and applying digital technologies and improve their abilities in using digital tools, creating digital content, and solving digital problems. Second, encourage teachers and students to actively participate in digital project practices, such as participating in the development of digital resources, the construction of digital platforms, and the design of digital products, applying theoretical knowledge to actual projects, and enhancing the application ability of digital skills and innovation awareness. In addition, strengthen school-enterprise cooperation, establish cooperative relationships with technology companies, Internet companies, etc., jointly develop digital literacy education courses and resources, provide internship opportunities for students, enable them to exercise their digital skills in a real-world working environment, and understand the latest industry trends. At the same time, invite enterprise experts to campus to give special lectures and conduct workshops on digital literacy, share practical experience, and broaden the horizons of teachers and students.

5. Conclusion

In the digital age, the cultivation of the digital literacy of college teachers and students is an important link related to the success or failure of China's educational digital transformation.

This research explores the necessity of the collaborative development of teachers' and students' digital literacy and its implementation strategies, providing a reference for improving the digital literacy of college teachers and students. The improvement of digital literacy is a long-term process that requires the collaborative development and joint efforts of teachers and students. They should actively face the challenges in the digital transformation, jointly promote the improvement of teachers' and students' digital literacy, and contribute to cultivating high-quality talents who meet the needs of the digital age.

Funding

China Tao Xingzhi Research Society Intelligent Education Research Branch "Education Digital Research" special project of the "14th Five-year Plan" in 2024 (Project No.: China Tao Association Intelligent Education 202411576SD)

Disclosure statement

The author declares no conflict of interest.

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