

# Research on the path of improving teachers' digital literacy ability in private colleges and universities under the background of Digital Age

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**Abstract.** Under the background of digital transformation and quality improvement in private colleges and universities, in order to further improve the digital literacy of teachers in private colleges and universities, we should improve their digital technology application ability, digital teaching resources application ability, digital teaching method innovation ability, digital teaching platform application ability and digital education evaluation ability. This paper puts forward a new solution to how to improve the digital literacy ability of teachers in private colleges and universities.

**Keywords:** Private colleges and universities, Digital literacy, New solution.

## 1 Research significance

In October, 2021, the "Action Program for Improving Digital Literacy and Skills of the Whole People" issued by the Central Network Information Committee made a comprehensive and systematic arrangement for improving the digital literacy and skills of the whole people, and emphasized the need to "continuously improve teachers' awareness and ability of using digital technology to improve education and teaching" in the field of education. The 20th National Congress of the Communist Party of China clearly put forward "promoting the digitalization of education". In 2022, the Ministry of Education officially launched the strategic action of digital education, which put forward requirements for improving teachers' digital literacy. On the one hand, the integration of digital technology and education is gradually deepening, and teachers must adapt to the vigorous development of digital technology and its rapid penetration in the education industry; On the other hand, the implementation of major policies such as "double reduction" and educational evaluation reform all put forward higher requirements for teachers' digital literacy.

The vigorous development of digital technology has pushed human society into the digital age, which has had a great influence and change on education. First of all, the digital

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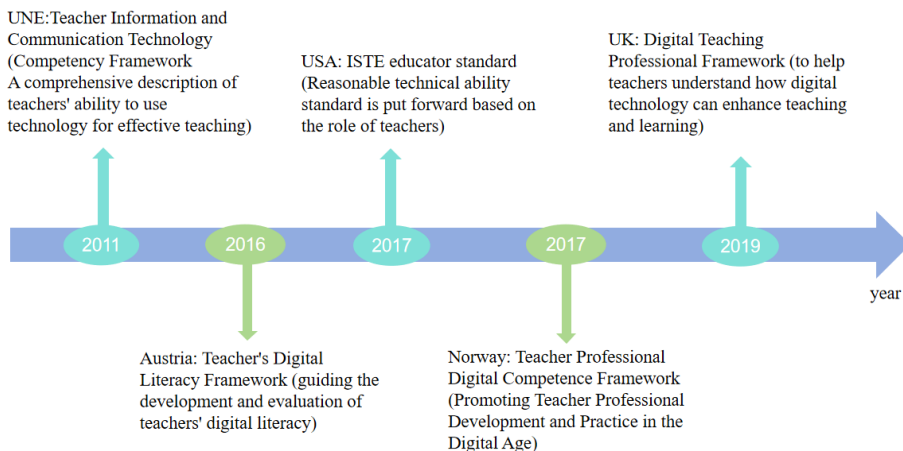
age has made education more popular. With the emergence and rapid development of the Internet, education has transcended geographical and time constraints. Digital technology also provides richer teaching resources and contents for education, making it easier for students to acquire, understand and master knowledge. Secondly, the digital age makes education more convenient and personalized. Digital technology has created more interactive and teaching forms, such as virtual laboratory, online discussion and game-based learning, which can help students better understand and master knowledge. Finally, the digital age has improved the quality and efficiency of education. Digital technology provides more scientific, comprehensive and objective evaluation methods for education, such as online testing, data analysis and intelligent evaluation, which can enable teachers to evaluate students' learning situation and progress more accurately, adjust teaching strategies in time and improve the quality of education and teaching. Digital technology can also improve the efficiency of education, for example, distance education and online courses can make the distribution and utilization of educational resources more reasonable. At the same time, digital teaching can also reduce the waste of educational resources and improve the economic benefits of education.

## **2 Research status at home and abroad**

### **2.1 Domestic research status**

With the keywords of "teachers in the digital age" and "digital literacy of university teachers", the literature resources of "China Knowledge Resource Database" (as of February 28th, 2023) were searched, and 53 related documents were obtained through information screening and screening, including 47 journal papers and 6 master's degree papers. From the research trend, the research enthusiasm and level of teachers' digital literacy have been gradually improved. After 2022, the number of research results has shown an obvious growth trend, accounting for nearly 75% of the total literature. Domestic scholars' research on teachers' digital literacy mainly focuses on four aspects: connotation concept discrimination, evaluation index construction, promotion strategy research and foreign successful experience reference. See Table 1-1 for details. Among them, in the analysis of connotation concept, although different scholars have different emphases on the specific expression of the connotation of teachers' digital literacy, they all focus on the requirements of promoting the integration and development of education, teaching and the use of digital tools. In the construction of evaluation index, it mainly focuses on the dimensions of professional teaching and digital technology application; In the research of promotion strategy, it mainly focuses on promoting awareness of value, strengthening training and creating evaluation and certification. In the aspect of drawing lessons from foreign successful experiences, it mainly analyzes the classic cases of digital literacy training for primary and secondary school teachers abroad and draws lessons from their successful experiences.

2.2 Foreign research status  
Internationally, teachers' digital literacy and skills have long been the focus of widespread concern. Some international organizations and countries have put forward relevant frameworks or standards for teachers' digital technology application, as shown in Figure 1.



**Fig. 1.** Relevant frameworks or standards for digital technology application of international teachers.

Through the literature review of foreign teachers' digital literacy, foreign scholars' research on teachers' digital literacy mainly focuses on the evaluation of connotation composition and the practice of training strategies:

Evaluation of connotation composition. The American Institute of Educational Technology (ISTE) put forward the digital literacy standards for educators, including six aspects: digital citizens, digital learners, digital educators, digital evaluators, digital innovators and digital designers. JISC (Joint Information Systems Committee) in Britain defines digital literacy as "knowledge, skills, attitudes and values needed for effective learning, creation and communication by using digital technology". In addition, many researchers have discussed the actual performance and influencing factors of teachers' digital literacy through questionnaires, interviews and case analysis.

Training strategy practice. TPACK model in the United States, which organically combines technology, content and teaching, aims to help teachers make better use of digital technology to promote the improvement of teaching quality. SAMR model in Canada classifies and explains the application of digital technology in teaching in stages, which helps teachers to better grasp the application degree and effect of digital technology. In addition, some digital teaching platforms and resources are widely used, such as Khan Academy and Coursera in the United States. These platforms provide teachers with all-round digital teaching support through online courses and interactive communities.

### **3 Challenges and problems to be solved in improving teachers' digital literacy ability in private colleges and universities**

#### **3.1 The challenge of improving the digital literacy ability of teachers in private colleges and universities**

In the process of improving the digital literacy ability of teachers in private colleges and universities, they are faced with the following challenges:

(1) There are differences in teachers' acceptance and willingness to use digital technology, and some teachers are afraid of difficulties; (2) Digital technology has a rapid development, and teachers need to constantly learn and update it to meet the new educational and teaching needs; (3) There is a gap between the school's investment in improving digital literacy and the actual demand of education and teaching reform.

### **3.2 Problems to be solved in the process of improving teachers' digital literacy ability in private colleges and universities**

In view of the above challenges, this study puts forward the following problems to be solved to improve the digital literacy ability of teachers in private colleges and universities:

(1) Based on the current situation of teachers' digital literacy in private colleges and universities, a hierarchical framework for teachers' digital literacy in private colleges and universities is developed.

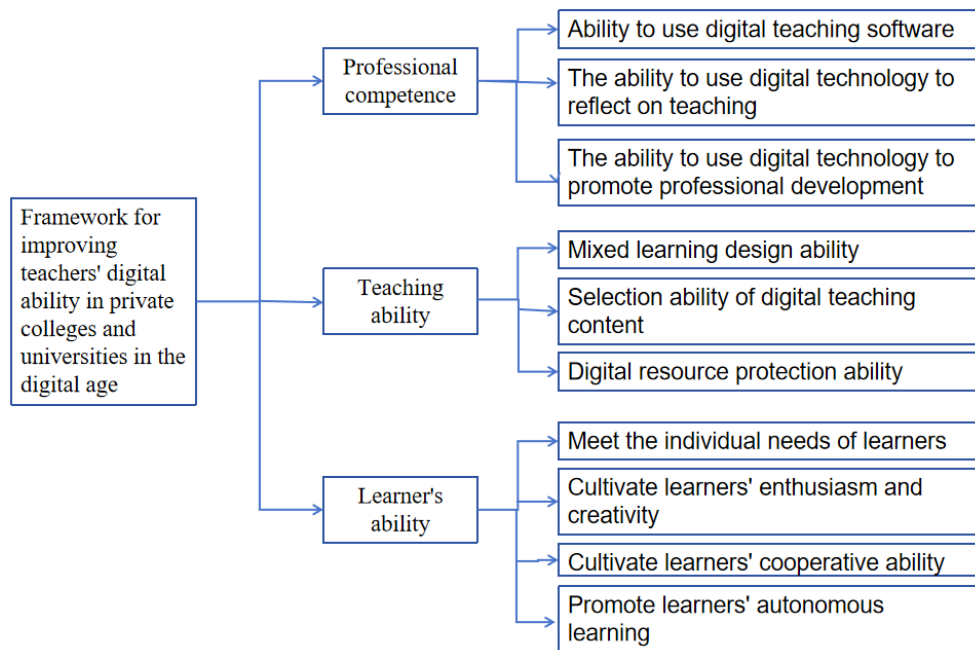
According to the current situation and characteristics of teachers' digital literacy in private colleges and universities, on the basis of reference to mature teachers' digital literacy framework construction concepts and research experience, combined with the current situation and needs of social development in China, the digital literacy level of teachers in private colleges and universities is comprehensively considered, and a hierarchical digital literacy framework for teachers in private colleges and universities is formulated in line with China's national conditions and education goals. It is helpful to clarify the development direction of digital literacy of college teachers.

Analyze the factors that restrict the digital literacy ability of teachers in private colleges and universities, and explore new ways to improve the digital literacy ability of teachers in private colleges and universities.

With the continuous development of information technology, digital literacy has become one of the basic abilities of private college educators. By investigating the factors that restrict the digital literacy ability of teachers in private colleges and universities, it helps teachers identify the challenges brought by the development of digital technology to higher education. Cultivate teachers' consciousness of innovation in digital education practice, and explore new ways to improve teachers' digital literacy ability in private colleges and universities from three aspects: professional ability, teaching ability and learner ability. Figure 2 shows the new way to improve the digital literacy ability of teachers in private colleges and universities in the digital era.

School-enterprise cooperation, increase the digital skills training of teachers in private colleges and universities, and improve the digital teaching ability.

Teacher training in private colleges and universities is an important way to promote the professional growth of teachers. It is the direction of professional development of college teachers in the digital age to continuously improve their own digital literacy. The training of digital skills for teachers in private colleges and universities through school-enterprise cooperation includes not only the training of digital teaching ability, but also the training of enhancing the awareness of the importance of data privacy and digital identity for teachers in private colleges and universities. Teachers in private colleges and universities should have the ability to manage their own data, evaluate and judge the source of information, and ensure the reliability of data.



**Fig. 2.** New ways to improve teachers' digital literacy ability in private colleges and universities in the digital era.

#### 4. General methods to improve the digital literacy of teachers in private colleges and universities

(1) Cultivate the data literacy and data ability of teachers in private colleges and universities.

Data ability requires teachers to master three aspects of data teaching: knowledge, thinking and action. Teachers' data literacy is comprehensive. The development of literacy not only requires teachers to master the relevant knowledge of data teaching, but also requires teachers to develop the thinking of paying attention to data, and requires teachers to intervene in teaching activities and solve teaching problems according to relevant data. Teachers actively use relevant knowledge and teaching data to interpret the teaching process and carry out teaching exchanges and discussions.

(2) Combining teaching practice to improve literacy digital literacy, implementing data analysis to promote teaching reform.

Guide teachers to apply data analysis to implement reform. Teachers pay attention to students' behavior data, and integrate analysis to adjust and optimize teaching methods in time, and use data analysis to promote the optimization of teaching activities. On the basis of analyzing students' learning behavior, teachers can gradually strengthen their own data perception ability through practice, and at the same time, they can effectively accumulate experience in data acquisition, data analysis, data judgment and data decision-making. After the completion of practical activities, teachers can summarize and analyze the shortcomings in data application through reflection, and then strengthen their digital literacy through independent adjustment and optimization.

Create a multi-data application promotion platform. Guided by the effective application of data, a data application promotion platform is constructed. With the support of this platform, teachers can be supported to use modern information technology. Teachers can

communicate with students by using software such as Nail, WeChat, etc., collect data of students' behavior and online assessment results, and adjust and optimize the teaching plan by integrating and analyzing these data, and can use the platform to promote successful teaching cases.

(3) Build a professional data literacy education team and strengthen teaching interaction.

The construction of professional data literacy education team is mainly to improve teachers' talent reserve and establish talent management and incentive mechanism. On the one hand, we should vigorously introduce high-level data talents in short supply, and at the same time create a good and relaxed development environment for these high-level university teachers; On the other hand, it is necessary to actively cultivate the existing talents in colleges and universities, optimize the talent training scheme, formulate the data literacy improvement plan in colleges and universities, and plan its teaching activities reasonably according to local conditions. At the same time, it is necessary to set up a high-data literacy team for college teachers to encourage teachers to carry out teaching innovation and teaching competition. In addition, it is necessary to establish a talent encouragement mechanism, establish a special fund as a guarantee for improving the data literacy of college teachers, and encourage high-level talents to participate in exchanges, visits and other activities.

## 5 Summary

Under the background of digitalization, the improvement of teachers' digital literacy ability in private colleges and universities is an important part of teaching reform. By strengthening teachers' digital skills training, encouraging digital teaching innovation and improving the training system and incentive mechanism, teachers' digital literacy ability in private colleges and universities can be effectively improved and the digital transformation of education and teaching can be promoted.

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