Difficulties and Countermeasures of Digital Literacy Improvement of University Teachers in Shaanxi Province under the Background of "Trinity"

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Abstract: Under the background of "trinity," education informatization has continuously boosted the digital transformation of higher education. Digital transformation is an important part of the development of university education in the new era. As the core force for implementing and implementing education digital strategy, the improvement of digital literacy of university teachers has become an inevitable trend in the development of digital education. In improving digital literacy. University teachers in Shaanxi face the following aspects: digital technology knowledge and skills, Digital application, Difficulties, and challenges in professional development and service to the community. Only when teachers face the dilemma and reform the teaching mode and teaching method can they improve their digital literacy and continuously improve their ability to use digital technology to obtain higher returns on education, thus achieving good personal and professional development, better-serving students and society, and providing students with personalized and multi-dimensional digital literacy training mode. To provide digital and diversified educational resources for society.

1. Introduction

The Party's 20th National Congress report pointed out that education, science and technology, and human resources are the basic and strategic support for comprehensively building a modern socialist country. Colleges and universities are the convergence point of education, science, technology, and talents and bear the heavy responsibility of educating people for the Party and the country. Therefore, they should actively explore and promote the "trinity" coordinated and integrated development of education, science, technology, and talents[1]. In the context of the "trinity," education informatization has continuously boosted the digital transformation of higher education. This is also an important part of the development of university education in the new era. As the core force for implementing and landing education digital strategy, university teachers' digital literacy improvement has become a hot topic in digital education at home and abroad. The digital transformation of higher education teaching is a systematic and comprehensive profound

change in the national development of education digitalization, which not only helps to promote the reform of university teachers' teaching mode and teaching method but also promotes the new digital teaching evaluation form of university teachers and the reconstruction of teaching ecosystem. Digital literacy is a comprehensive, dynamic, and open concept formed by the flow of mediators, computers, information, and networks[2]. Therefore, in the trend of information-based education, Shaanxi University teachers are also facing the dilemma of improving digital literacy.

2. Results of the Third to Sixth In-Depth Interviews and Three On-Site Teaching Observations

Combining the results of the third to sixth in-depth interviews and three on-site teaching observations, the research findings reveal the difficulties and feedback teachers face in six universities in Shaanxi province on improving digital literacy. The total conclusion consists of 4 codes and nine subcodes. Therefore, under the theme of difficulties and challenges in promoting digital literacy, the theme's code is summarized into four sub-themes: digital technology knowledge and skills, Digital application, Professional development, and service to the community. All nine subcodes are shown in Table 1; they are 1) Teachers' digital learning willingness; 2) Digital skills; 3) Teaching design; 4) Course management; 5) Student assessment; 6) Digital problem solving; 7) Digital communication and collaboration; 8) Independently use advanced abilities to serve students; And 9) Have the ability to innovate digitally.

Table 1: Difficulties and challenges faced by university teachers in improving their digital literacy

Theme	Code	Sub-Code	Participant
Difficulties and challenges in improving digital literacy	1.Digital technology knowledge and skills	1.1 Teachers' willingness to learn digitally	six
		1.2 Mastery of digital skills	six
	2.Digital application	2.1 Instructional design	six
		2.2 Course management	six
		2.3 Student assessment	six
	3.Professional development	3.1Digital problem solving	six
		3.2 Digital communication and collaboration	six
	4.Service to society	4.1 Self-use of higher-order abilities to serve students	six
		4.2 Digital innovation	six

According to the interview content, combined with the classroom observation and daily interview record analysis of six university teacher participants, there are similarities and differences in the difficulties and challenges participating teachers face in improving digital literacy. At the same time, during the classroom observation and formal interview with the six teachers, we can also feel the common dilemma that other scholars and experts put forward about the process of digital literacy improvement of university teachers. These difficulties and challenges include:

First, how teachers use critical thinking in the classroom to use digital technology responsibly;

Second, how to choose the appropriate digital technology and apply it in the subject teaching;

Third, how to conduct regular training for teachers to promote their personal career development;

Fourth, how teachers apply digital technology to education and teaching innovation.

Based on literature research and interview records, the difficulties and challenges faced by university teachers in Shaanxi Province in improving digital literacy will be analyzed and summarized as follows:

3. The First Code: Digital Technology Knowledge and Skills

3.1. Teachers' Willingness to Learn Digitally

University teachers should assume the responsibility and mission to become digital citizens, lead students to carry out digital learning together, cultivate digital citizens, and demonstrate university teachers' "digital" identity value. Young teachers in colleges and universities are no longer the "lay" in the digital world but the "leader" in the cultivation of digital consciousness, and digital consciousness is a necessary product in the minds of young teachers in colleges and universities [3].

The six university teachers who participated in the interview all have a positive willingness and attitude to learn digital technology knowledge and skills. Both from the concept and action, they are very clear about the connotation and value of digital literacy improvement for their own teaching and career development. Although some young teachers do not attach importance to improving digital literacy, under the influence of excellent young teachers around them to improve digital literacy actively, they will take the initiative to learn and discuss other teachers' successful experiences in digital knowledge and skills. With the awareness of actively exploring the digital world, teachers will become more active in their teaching work and scientific research. Actively learn and apply digital literacy.

3.2. Mastery of Digital Skills

Both the ideas emphasized by Gilster and the critical thinking and advanced social emotion proposed by Alcalai emphasize the difference between digital literacy and operational skills. In essence, it is people's rational understanding, value judgment, emotional attitude and control ability of digital tools and information [4]. When university teachers grasp digital knowledge and skills, they will popularize digital literacy knowledge in actual education and teaching. In addition to adding importance to consolidating their concepts of digital knowledge, digital skills, digital resources, digital security, and digital evaluation, teachers will also apply their digital education knowledge and skills to students' information-based teaching practice. Cultivating qualified university students with digital literacy and social responsibility also reflects the mission and responsibility of digital education and the teaching of university teachers. The six university teachers who participated in the interview and observation generally needed help making courseware, collecting materials, using teaching platforms, or conducting student evaluations. The difficulties and challenges Ms. Wang encountered mainly came from two aspects:

I am first collecting the source of teaching materials in making a PPTtakes work. If PPT needs some materials, I will go to the Baidu library to find them, but it is charged; it will find another way to find information, which takes time and effort. Second, in making PPT, there will be challenges in digital technical support. As a non-computer professional teacher, I have yet to receive professional training. I need to explore the design and production of courseware by myself because I need to familiarize myself with the production technology, which also takes time and energy (Fifth interview, May 2023).

The situation of Mr. Liu, Mr. Yao, and Ms. Li is similar to that of Ms. Wang in that they all encountered difficulties in data collection.

Ms. Li: The difficulties and challenges I have encountered in blended teaching are as follows: First, I need to familiarize myself with the new teaching platform and face difficulties in operation

and application. Second, students are in great need of digital literacy education and promotion. It is necessary to educate and train students about digital literacy. Training and improving students' digital literacy is a challenge teachers and students must face together (Fifth interview, May 2023).

From the perspective of digital technology knowledge and skills, the difficulties and challenges teachers encounter in improving their digital literacy are mainly reflected in the use of teaching platforms, the production, of course, PPTs, the collection of materials, and the use of digital skills. According to the interview results, the six teachers had almost no major problems. Is not familiar with the teaching platform; Data collection is difficult to sift; The selected picture or video is inappropriate; Or use the platform out of the situation. For the design and production of teaching PPT, it is generally most convenient to use templates directly. For some designated digital teaching platforms, university teachers have basic skills, but there are no particularly big difficulties and challenges; that is, there will be some unfamiliar problems in the use of processes or technologies, which need to be gradually familiar with and adapted to, and can be solved difficulties and challenges.

4. Second Code: Digital Application

For university teachers, the digital application is mainly in the daily teaching work, the application of digital platforms, including teaching design, curriculum management, student assessment, etc. The key to teachers' digital application is effectively integrating teaching content with their digital literacy so that the curriculum is continuous, logical, scientific, and applied to classroom teaching. Teachers must improve university students' learning, exploration, and digital literacy in digital applications to serve effective digital teaching goals. The "Digital Literacy of Teachers" education industry standard issued by the Ministry of Education in 2022 clearly defines the "digital literacy" of teachers as "the awareness, ability, and responsibility of teachers to acquire, process, use, manage and evaluate digital information and resources, discover, analyze and solve educational and teaching problems, optimize, innovate and transform educational and teaching activities by appropriate use of digital technology [5].In the aspect of digital application, the digital literacy of college teachers is very tested, and the teachers who participated in the interview face great difficulties and challenges. The teachers who participated in the interview faced great difficulties and challenges regarding digital applications.

4.1. Instructional Design

Promoting the digitalization of education is an important requirement for achieving the goal of high-quality education development in the Party's 20th National Congress report, and promoting the development of teachers' digital literacy and skills has important practical significance. University teachers need to use information technology to create a digital teaching environment that supports the creation of students' learning situations and brings them inspiring thinking. Information acquisition and resource sharing between teachers and students can promote teaching interaction and promote students' independent inquiry and group collaborative learning. Teachers are faced with great difficulties and challenges.

Ms. Xia: From a teaching point of view, instructional design is very important, but traditional instructional design is not very practical in online teaching. In the actual network teaching, the teaching design will change at any time, so my present teaching design is to make a table of the teaching content. Excluding time constraints, I need help completing a course's systematic teaching design, which is very difficult for people (Sixth interview, June 2023).

Ms. Li: I need some cognitive clarification in teaching design. I feel that the difficulty coefficient is very high, especially in the teaching design of this online and offline mixed teaching course. In

blended teaching, it is very difficult for teachers to design the teaching content of a course by establishing a rich digital resource library. However, sometimes we have to face three or four courses, and the teaching design of so many courses is even more difficult, and it needs to be clarified to do it (Sixth interview, June 2023).

Among the six university teachers, except for one art teacher who said that their art courses focus on practical practice, the teaching design is relatively low, and there are no great difficulties; the other five teachers all expressed that they will encounter difficulties and challenges of different degrees of Difficulty in teaching design, but they have the confidence to overcome these difficulties and challenges.

4.2. Course Management

Complete digital teaching includes four essential elements: teachers, students, teaching content, and teaching media. The successful completion of a class is inseparable from the teacher's curriculum management. In teaching, teachers will pay great attention to the integration and function of these four elements, so they must integrate the course content. The integration of information technology and curriculum should implement diverse, diversified, and multi-level integration strategies according to different teaching objectives. In teaching, attention should be paid to cultivating students' ability to observe, solve problems, and do experiments [6]. Compared with traditional classroom teaching, the two elements of teacher and student are especially important in the digital classroom. Under the "trinity" background, the relationship and status of teachers and students have changed. Therefore, in curriculum management, teachers must consider: What changes have occurred in the relationship and status of teachers and students? Which of these four elements has changed? What has stayed the same? What should teachers do to be considered good curriculum management?

Mr. Liu: At present, the teaching method advocated in China is that it can not only play the leading role of teachers but also reflect the main position of students. This approach is the teaching method of "autonomy, inquiry, and cooperation." On the surface, it is in line with digital course management. I also do it wholeheartedly, hoping to promote course management with such a teaching method and better stimulate students' initiative, enthusiasm, and creativity. However, there is a disconnect between theoretical knowledge and practical practice, and achieving my ideal course management effect is not easy. However, to do a good job in course management, teachers have their views and practices; I always need help to receive the good effect of course management; it is very difficult (Sixth interview, June 2023).

Although traditional teacher-centered classroom teaching has undergone fundamental changes, there is still a long way to go between digital technology and curriculum management from the perspective of cultivating students' digital literacy awareness and enhancing their innovative spirit. Generally, when teachers need to use relevant digital platforms or skills for course management, they must re-learn, and there needs to be a connection between learning and use. This problem is more prominent, that is, there is a use gap. This is the gap between the ideal and the reality of curriculum management.

4.3. Student Assessment

Student assessment is the necessary test link of a teacher's teaching effectiveness. Including homework scores, questionnaire surveys, group scores, test scores, usual scores, personal self-assessments, final scores, paper scores, etc. It is an important part of evaluating teachers' teaching quality. It can help teachers make better teaching references and provide reference references to education and teaching quality in universities.

Ms. Li: The evaluation of students: The greatest difficulty and challenge is that the online and offline teaching workload is very large and takes up a lot of time. Moreover, according to the requirements of our school, process assessment is to be carried out. Generally speaking, students' usual and online class performance results are to be accumulated and calculated according to the proportion. Daily attendance, class answers, homework completion, learning awards, class discussions, test scores, etc., should be calculated according to the proportion. In addition, the results of online courses include online time, video completion, quick answer, classroom interaction, online examination, paper completion, video clips, etc., which should also be calculated according to the proportion. The two scores are then added to the average and sum to get the student's final grade. The workload is huge, but there is no relevant software to reduce the burden of processing examination score input, which is a headache; I feel that time is spent on these details of the score processing, affecting the improvement of the teaching effect (Fourth interview, March 2023).

According to classroom observation and interviews, the evaluation of university teachers on students can be divided into three stages: pre-evaluation, evaluation, and evaluation. Before the evaluation, teachers will carefully prepare the questionnaire design, content, and course evaluation criteria. In the evaluation, teachers will carry out "teaching achievement + classroom performance + achievement analysis" and other forms of achievement synthesis and carry out more than ten-course performance details assessments of students. After the assessment, teachers will refer to the student's assessment results to improve their next digital course teaching. University teachers generally believe that student assessment is very important, a centralized display of students' accumulated academic achievements. In addition, the results after the assessment can also help teachers reflect on the problems in their daily teaching and form a good use of teachers' digital wisdom in self-reflection, self-solution, and self-improvement. It is convenient for teachers to form a good idea of using digital literacy and promote improving teachers' digital literacy level.

5. The Third Code: Professional Development

Improving the digital literacy of university teachers in Shaanxi is a long process. From the professional development perspective, improving the digital literacy of university teachers involves two stages: pre-service education and post-service training. These two stages are crucial to the professional development of teachers and must run through the whole process of teacher professional development. Pre-service education is an important starting point for improving teachers' digital literacy, and post-service training is a necessary supplement to teachers' professional development. Internal factors are the decisive factors. In the professional development of college teachers, self-learning is the most important, and self-training is an important way to improve digital literacy. The so-called self-training is independent learning, self-improvement, understanding the current situation of the discipline, keeping up with the academic frontier, keeping pace with The Times, and lifelong learning. The key to teachers' knowledge expansion, ability enhancement, and level improvement lies in themselves [7]. Teachers' difficulties and challenges in improving digital literacy mainly come from digital problem-solving, communication, and collaboration.

5.1. Digital Problem Solving

Digital competence is an important survival skill in the digital age, an ability to confidently and critically apply the technologies of the information society [8]. In the Digital Competence Framework for Citizens (DigComp2.1), the European Union emphasizes the importance of teachers' digital competence training. Digital capabilities are information and data literacy, communication and collaboration, digital content creation, security domain, and problem-solving. [9] Cultivating

teachers' digital literacy must be distinct from the attention to teachers' digital ability.

Ms. Xia: Pre-service education and post-service training are indispensable in colleges and universities. Post-service training, ZOOM training, Tencent conference training, and online and offline education and teaching training are many, but they are in many forms and need more pertinency. For example, create a digital teaching training, all the teachers can come. Do not limit the age or professional, and do not screen the teacher's educational background and title; that is, do not distinguish between everyone together for training. The number of trained teachers is very large, but the effect could be better. Some college teachers will feel so simple that training is meaningless; some teachers will find it very difficult; I have never heard of it. The training target is not targeted, and what is said is uniform and general. It is impossible to carry out meaningful and substantive technical training for college teachers, which has little effect on the professional development of teachers. The training that t be divided into audience teachers divided into Canada as to be conducive to the professional development of college teachers (7th interview, August 2023).

5.2. Digital Communication and Collaboration

Ms. Li: As for the professional development of teachers, I mainly study by myself. I will choose teaching cases or lecture competitions that interest me according to my professional development needs. In addition to the necessary teaching time, I will flexibly arrange my learning time and teaching progress, constantly strengthen my awareness of digital learning, and use some digital teaching platforms in China. Learn the latest teaching and research knowledge and subject competition hot information, for the future teaching competition. I have won the second and first prizes twice in the provincial lecture competition for three consecutive years. Therefore, through continuous learning, I plan to participate in the national teaching competition and win the national first prize, my best embodiment of teacher professional development (8th interview, September 2023).

In these two interviews, all six university teachers are willing to have better professional development. Among them, three teachers mentioned that the school's digital resources are conducive to professional development, and they are also actively preparing for higher professional title evaluation. Two teachers felt that professional development depended mainly on themselves, and schools played little role. Another teacher believes that because of his identity as an art teacher, he has also obtained the corresponding professional qualification certificate, but because of his age, his rise is slow, and his professional development has reached a plateau, or the possibility of upward development is unlikely, as long as he can teach students well.

For the professional development of college teachers, there are also some expert suggestions for reference:

First, the universities where teachers work should optimize educational resources, provide targeted and professional course resources for teachers, strengthen the construction of teaching platforms, and provide a basic guarantee for developing teachers' digital literacy.

Second, it is necessary to strengthen the infrastructure construction of teaching digital environment, rely on smart classrooms, help teachers actively adapt to an intelligent teaching environment, and improve teachers' digital literacy.

Third, for teachers with different professional backgrounds and teaching objectives, schools should set up an intelligent education curriculum environment related to them and promote the optimization of teachers' curriculum resources with the help of digital technologies such as artificial intelligence to meet the needs of teachers' professional development. Jeon et al. analyzed teachers' needs for establishing AI-integrated education courses. They proposed that it could comprise three modules: artificial intelligence literacy, basic artificial intelligence creation and deepening, and

artificial intelligence integration course training.

Fourth, actively adopt and introduce a new generation of digital technology, build a more humanized intelligent teaching space, and help teachers use student portraits and educational big data to carry out teaching evaluation so that teachers can constantly innovate teaching models and methods in teaching practice, and promote teachers' professional development. However, in the actual professional development of teachers, teachers all said that these difficulties are complex and difficult to overcome and can only be gradually familiar with and overcome these difficulties and challenges with the help of intelligent teaching means and resources.

6. The Fourth Code: Service to Society

The use of digital literacy by university teachers to serve society is mainly reflected in the independent use of advanced abilities to serve students and the ability of digital innovation. The section on serving students is mainly reflected as follows:

First, teachers can choose tools and software combined with digital resources to complete classroom teaching successfully.

Second, digital teaching management for students.

Third, teachers can combine the tools and software and digital teaching platform needed for teaching, and use these software and platform functions to assist teaching.

Fourth, teachers can timely solve common and sudden digital technology problems, such as software failure and hardware failure, before, during, and after class to improve teaching quality.

The section on having digital innovation ability is mainly reflected as follows:

First, teachers can use commonly used digital teaching platforms to exchange experiences and share.

Second, teachers can effectively use digital teaching technology to create a multi-modal learning environment for students.

Third, let students have a better digital classroom interaction model and an attractive curriculum experience.

Fourth, teachers should enhance the coverage of professional teaching content and achieve differentiated teaching of students.

6.1. Self-Use of Higher-Order Abilities to Serve Students

University teachers will encounter various problems in using the advanced ability of digital literacy to serve students. In addition to dealing with the digital technology services used in teaching is safe and legal, it also ensures that teaching makes good use of online teaching platforms and network interactive tools and enhances the effective interaction between teachers and students.

Mr. Liu: I am good at using digital knowledge and technology to give online lectures. Some assistance software will dynamically record students' online learning progress, view the real-time status of classes, and carry out differentiated teaching for students. For example, at the end of each day's class, I will summarize the problems when students use the rain classroom responder, Solutions to video and questionnaire problems on the ZOOM conference platform, Superstar platform test issues and preservation experience, etc. To better serve students, I often get familiar with and explore the functions of interactive software commonly used in teaching to facilitate the exchange and effective communication between teachers and students. I will also learn how to download and use different software independently. For example, I will pay attention to Kahoot and Quizlet's interactive software. Learn how to use software BookCreator and ThingLink to create and share teaching video materials; Discuss with students how to use questionnaire Star online classroom, etc (Sixth interview, July 2023).

6.2. Digital Innovation

With the development of China's education informatization cause and education power in recent years, although China's teachers' information technology literacy level has achieved remarkable development results, objectively speaking, teachers' digital teaching innovation ability still needs to be improved. The digital innovation ability of university teachers should not be unilateral, static, and isolated. However, it should pay attention to collaboration and participation and increase the practical opportunities for teachers to participate in improving digital innovation ability.Some scholars believe that competing is the best way to improve teachers' digital innovation ability. Therefore, many colleges and universities often organize teachers to participate in national, provincial, municipal, and other teaching competitions, hoping to achieve the effect of training and promoting teaching through competition. Some colleges and universities set up professional teachers' "digital skills competitions" to encourage teachers to have different teaching experiences, open different ways of thinking, constantly break the thinking pattern, and have better digital innovation ability to help students achieve good digital education.

Ms. Li: On the one hand, there is no clear indicator system to guide and measure the digital innovation ability of teachers, so I can only explore by myself in daily teaching and life. Only when I meet specific course design requirements with clear direction will my best to innovate these designs through my digital literacy and specific online teaching situations. There are many differences between the teaching or competition that needs to be conducted at present and the teaching or competition in the past. However, I am confused about whether the difference between these contrasts is that the innovation of digital capabilities in teaching needs clarification. Because there is no clear standard of digital innovation for college teachers, it is very difficult for teachers to have the ability of digital innovation. I will try my best. After all, teaching is one of the basic professional responsibilities of a teacher (7th interview, August 2023).

The six university teachers who participated in the study all hold a positive will and attitude towards teachers' service to society. We also talked about their views, but everyone agreed that using advanced abilities to serve students and have digital innovation ability is difficult. There are mainly the following reasons:

First, for art and liberal arts teachers, advanced ability is a high-level goal that is difficult to achieve. Different courses and majors require different digital literacy abilities. In the same conditions of professional title evaluation, computer teachers and science teachers will be relatively competitive.

Second, digital innovation challenges teachers to collect and organize curriculum materials in teaching practice. It affects teachers' curriculum design and display form of teaching practice results. It affects whether teachers can stand out in the teaching competition.

Third, with the help of the empowering role of digital intelligence technologies such as the Internet, we can build a suitable digital resource-sharing platform for teachers in education and teaching, share high-quality cases and teaching methods with more teachers, facilitate the online flow of high-quality educational resources in colleges and universities, help teachers optimize the allocation of educational resources, and provide a foundation for ability training to serve the society.

7. Conclusions

The above four codes reflect the difficulties, challenges, and characteristics of the digital literacy improvement of the digital generation teachers from nine aspects, which requires that the teaching of university teachers should also adopt corresponding digital teaching models and teaching strategies, especially teachers with relatively weak digital literacy should fully grasp the learning

characteristics of digital natives. So that their teaching design, teaching content, teaching mode, and teaching strategy can better match with learners and help students grow and become talents. University teachers need to process cloud-based teaching data, make use of digital platform learning materials, analyze the actual situation of students' digital literacy training, present the process of teachers' digital literacy cultivation and improvement from a multi-dimensional perspective, and actively promote teachers to overcome the difficulties and challenges faced by digital literacy improvement. Faced with many difficulties in improving digital literacy, university teachers in Shaanxi can adopt the following strategies:

First, have the initial ability to process, screen, and apply digital resources and use the concept of information security to guide students to screen useful and credible network information resources, filter out junk information, and improve students' ability to use learning information;

Second, teachers and students explore the use of digital teaching platform, so that digital teaching platform can better serve teaching;

Third, teachers should design the teaching process and learning content according to the teaching objectives of students' digital learning, make reasonable use of the digital teaching resources on the public teaching media of colleges and universities, and transform them into high-quality teaching resources through innovation.

Fourth, teachers should dare to try a new digital teaching model, guide students to form a learning group, use network teaching resources and digital teaching software as a team, and cooperate to complete learning tasks.

Fifth, for students with different levels of digital literacy, teachers should choose reading texts and digital teaching platforms suitable for the depth of students' learning, match students' learning needs, and encourage students to use paper learning resources and electronic documents.

Sixth, teachers can innovate more forms of assessment of students, allowing students to use electronic recording equipment or video editing tools to complete or submit homework tasks; teachers should give timely teaching feedback on students' homework recordings or video tasks.

Seventh, teachers must have the digital ability and information skills to connect offline and online teaching freely. When serving students, they will use digital teaching technology and network data resources to provide students with immersive learning experiences, enhance the actual effect of the two forms of teaching, and effectively transform virtual teaching and learning resources.

Eighth, teachers need to cope with the difficulties and challenges in digital teaching flexibly, timely adjust teaching strategies, enhance the effectiveness and interest of teaching, encourage students to use digital innovation ability to innovate, transform and apply what they have learned, form learning resources conducive to the common progress of teachers and students, and share them with everyone to help teachers and students jointly improve digital literacy.

While adopting the above strategies to improve digital literacy, university teachers in Shaanxi Province also need to continuously improve their ability to use digital technology to obtain higher educational returns, which not only refers to good personal and professional development for teachers but also to provide personalized and multi-dimensional digital literacy training for students. In such a digital teaching process, attention must be paid to enabling teachers, as users of new technologies, to take the lead in classroom and teaching. Especially in the context of artificial intelligence technology, such as ChatGPT entering a new stage, balancing humanism and instrumental rationality is more necessary.

On the one hand, through the guidance of universities, expand the service supply scale of teachers' digital literacy improvement. Relying on the construction of smart classrooms will drive the digital literacy training of college teachers, give full play to the exemplary guiding role of famous teachers and first-class courses, and constantly help teachers improve the utilization ability

of high-quality teaching resources.

On the other hand, give full play to the enabling role of digital intelligence technologies such as big data and the Internet, build a high-quality and shared digital teaching resource platform for teachers, fully demonstrate the high-quality teaching cases of other teachers' digital innovation ability, share these selected teaching designs, teaching resources and teaching methods with more teachers, and break the barriers of inter-university digital resources. The formed high-quality digital education resources will flow online across time and space, and the allocation of digital education resources for teachers will be continuously optimized. China has long participated in UNESCO's digital literacy training for teachers, contributing its strength to the development of education informatization and higher education and also helping teachers in other countries who need to improve digital literacy. It can promote the development of the digital innovation ability of university teachers in different professional backgrounds, accumulate practical experience in improving teachers' digital literacy, and enhance international influence by "telling China stories well."

Acknowledgements

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