Guided by the Teacher Teaching Ability Competition, Promoting the Digital Reform of Teaching

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Abstract: In the current context of industrial digital transformation and upgrading, the digital transformation and upgrading of vocational education is imperative. This article analyzes the current situation of digital teaching in vocational colleges, combined with the analysis of the teaching ability competition plan of the National Vocational Skills Competition for Teachers, and explores and analyzes the specific measures for the reform of digital teaching in vocational colleges during the digital transformation process: (1) Improving and optimizing digital infrastructure, creating a new environment for digital teaching, (2) Using teaching ability competitions as a driving force to promote digital classroom reform, (3) Putting effort into the technological application to improve the digital literacy and execution ability of teachers.

Keywords: Teacher's teaching ability; Teaching reform; Digitization

1. Analysis of the current situation of digitalization in teaching

Firstly, analyze the digital teaching infrastructure for teaching. Whether it is the teaching platform software developed by enterprise institutions, or the digital infrastructure construction such as network environment upgrading, smart classroom construction, virtual simulation training base construction, and digital transformation of training venues in vocational colleges, all enterprises, regions, and schools have achieved significant results. However, the situation varies in different regions and schools, and the level and quality of construction vary. As for the construction of smart classrooms, most schools have replaced them with "multimedia classrooms." Only a few schools have achieved good results in the transformation and optimization of "smart classrooms". However, due to information base stations, data storage, and other reasons, there are still problems such as fragmented teaching processes, insufficient teaching interaction, and difficult tracking of learning status. At present, popular online teaching platforms for vocational education include Chaoxing, Cloud Classroom, and Blue Ink Cloud Class. These teaching platforms have two ports, classroom and mobile, which can build personalized and systematic courses. In the teaching process, the interaction between teachers and

students mainly includes check-in, discussion, and selecting people to answer questions. The evaluation system of online teaching platforms is very superior, with multiple subject evaluations, multiple evaluation methods, and the ability to dynamically and comprehensively evaluate the entire process of student learning. Teachers can grasp the teaching situation at any time through student performance statistics and analysis, student learning dynamic data, student self-evaluation, and student course evaluation, and adjust the teaching pace on time. However, each teaching software has its advantages and disadvantages. If various software can communicate with each other, learn from each other's strengths and weaknesses, and develop software that meets both online and offline blended teaching and pure online teaching, it will be better for teaching.

Secondly, from the analysis of digital teaching resources. For the construction of digital teaching resources, various aspects in China have attached great importance. On March 28, 2022, Chen Ziji, Director of the Department of Vocational Education and Adult Education of the Ministry of Education, introduced that the National Vocational Education Smart Education Platform has been connected to 1 014 national and provincial professional teaching resource libraries, with 6628 high-quality online courses and 2 222 video courses. The platform currently has over 5.56 million resources, including over 470 000 videos and over 130 000 images and texts [1]. However, the overall level of digital teaching resource construction is not high. From the current development status, digital teaching resources are mainly aimed at professional groups and courses, consisting of material from libraries (micro courses, videos, animations, audio, multimedia courseware, electronic lesson plans, pictures, etc.), question banks, and discussion and answer banks. Virtual simulation training resources cannot be synchronously applied online and offline, and there are few independent learning platforms for students. The introduction of high-quality foreign teaching resources is also rare. In addition, there are problems with repetitive production and poor quality in the digital teaching resources developed, and the lack of high-quality digital teaching resources in various disciplines and majors is the key restriction to practical teaching applications. At present, in the actual teaching process, most teachers need to fully utilize digital resources in their classrooms. They need to spend a lot of time and resources to collect suitable digital teaching resources on various network platforms to build personalized courses. Although there are many teaching resource libraries in the market, it is very difficult to find resources that can truly meet the actual teaching needs of their school and major. Resources are always lacking or not perfect, which greatly restricts the development of digital teaching in vocational colleges. Although the construction of digital resources is widely used in vocational colleges, the importance of digital teaching has not yet been given due attention, and the relevant working mechanisms are not perfect [2]. The teaching platform is single, and the application level is not high, which leads to vocational colleges not being able to highlight their digital teaching characteristics, and to some extent, it limits the active interest of students in learning, reducing the quality of learning for students in related majors [3].

Finally, universities should analyze the digital teaching ability of vocational college teachers. As the main body of teaching reform, teachers are pioneers in the digital construction of teaching. At present, a small number of teachers are still constrained by traditional educational concepts, believing that digital teaching is impractical, which will greatly undermine the enthusiasm and initiative of teachers [4]. The subjective willingness of vocational college teachers to learn information-based teaching knowledge will continue to decline over time. Some teachers, due to various factors such as daily teaching pressure and research tasks, are unable to truly devote their energy and time to improving digital teaching abilities. They often have no enough energy and time to learn new network technologies and apply digital teaching platforms. In the production of digital teaching resources and classroom teaching applications, they have not met the requirements of teaching quality in vocational colleges [5]. Some teachers overly focus on the use of teaching platforms and the display of digital resources, ignoring the true essence of the classroom and putting the cart before the horse.

2. Interpretation of "digitalization" elements in the teacher teaching ability competition plan

In June 2023, the official website of the National Vocational College Skills Competition released the "2023 National Vocational College Skills Competition Teaching Ability Competition Plan." This year's competition has made significant adjustments and changes in important aspects such as competition content, grouping, reward methods, competition materials, classroom-recorded videos, and teaching procedures. Moreover, this year's competition has repeatedly emphasized the improvement of teachers' digital literacy in its guiding ideology, competition content, and final defense. It can be said that the "digitalization" element is a new highlight of this year's competition.

2.1. Guiding ideology first mentions the level of digital literacy

In the guiding ideology of the teaching ability competition plan for the 2023 National Vocational College Skills Competition, it was proposed to promote the growth of "dual teacher" teachers who can speak, express, do, and guide. For the first time, the level of digital literacy of teachers was proposed in the guiding ideology, and the improvement of the digital literacy of teachers became a focus. The achievements of educational digital transformation have become a highlight [6]. The competition plan encourages teachers to make reasonable use of national vocational education smart education and other access platforms, technologies, methods, etc. to carry out practical teaching, organize classroom teaching, support the use of modern information technology to collect real data on the teaching process, and adjust teaching strategies and processes on time according to the reflected problems [7].

2.2. The teaching content requires the integration of digital literacy

In the teaching content, it is encouraged to design modular courses according to actual production and job requirements. Integrating scientific spirit, engineering thinking, innovative consciousness, and digital literacy into teaching practice, emphasizing the cultivation of labor spirit, craftsmanship spirit, and model worker spirit [7].

2.3. Implement deep application of digital technology in teaching

In the process of teaching implementation, it is required to embody student-centered teaching and carry out effective interaction between teachers and students and students by highlighting key points, breaking through difficulties, making reasonable use of teaching resources and methods, improving students' ability to analyze and solve problems, cultivating their comprehensive literacy in self-directed and deep learning, using modern information technology to collect real teaching data in the teaching process, and adjusting teaching strategies according to the reflected problems [8].

2.4. Teaching evaluation encourages the application of information technology

Teaching evaluation encourages the use of modern information technologies such as big data and artificial intelligence for precise analysis of learning behavior, and personalized evaluation of student learning outcomes [9]. This evaluation will also encourage teachers to implement full process information collection during the teaching process, based on teaching and learning behavior data and detection and evaluation data, accurately grasp the learning situation and achievement of goals, and make teaching adjustments.

2.5. Teaching reflection requires the use of information technology

Teaching reflection requires the use of information technology, the cultivation of digital literacy, and other reforms and innovations to achieve an organic unity of design concepts, teaching implementation, and

educational effectiveness [10].

2.6. Set teacher digital literacy defense questions

In the defense section, issues related to teacher digital literacy are set up, highlighting the rapid development of industry digitalization and the phased achievements of education digitalization transformation in the context of digital China construction. The mastery of digital literacy related knowledge by teachers and the practical application of education digitalization transformation are examined to comprehensively enhance teacher digital literacy.

3. Suggestions for the "digitalization" reform strategy of teaching in vocational colleges

3.1. Digital hardware construction keeps pace with the times, creating a new environment for digital teaching

Teachers, students, textbooks, and the environment are the four elements that make up the ecosystem of the curriculum. The teaching environment is the foundation for normal teaching, and a complete digital infrastructure can ensure that digital education resources are extended to every student, making digital education accessible to everyone and achieving inclusive development of digital education. To create a new digital teaching environment, promote the comprehensive mining and integration of educational data, use learning analysis, educational data mining and other means to improve the matching degree between teaching service supply and learning demand, achieve precise push, and optimize the quality and efficiency of teaching services [11].

3.2. Using teaching ability competitions as a driving force to promote digital classroom reform

In the process of implementing and reforming digital teaching in vocational colleges, the teaching ability competition in vocational college skills competitions plays a leading and driving role. Universities will continue to adhere to the principle of "promoting teaching and learning through competitions, improving and building through competitions", and refer to the national vocational college teacher teaching ability competition plan. Based on the actual situation of regions and colleges, universities can construct a digital teaching ability evaluation system for teachers, refine the competition plan links, and construct a micro certification system that is in line with practical teaching [12]. Assessment and certification will be conducted from the dimensions of digital awareness, digital technology knowledge and skills, digital applications, and digital classroom effectiveness. Research has shown that the number of times teachers participate in competitions can not only directly promote the improvement of information technology teaching ability, but also stimulate their attitude towards information technology teaching. Schools in various regions and regions encourage teachers to actively participate in teaching ability competitions. According to the competition plan, in the daily teaching process of teachers, teachers are encouraged to design classroom teaching with information technology, pay attention to the digital reform of teachers in the classroom, and obtain a successful experience of using technology teaching, to improve their attitude towards the application of technology teaching and promote their information technology teaching behavior [13]. Only by enhancing the initiative of self-development, exploring innovative models of information-based teaching, and forming a new norm for conducting information-based teaching, can teachers truly achieve the goal of "promoting construction, learning, and reform through competitions", and serve to promote the digital transformation of vocational education. In addition, colleges and universities

at all levels pay attention to the transformation of competition results, ensure the efficient transformation of competition results, promote the normalization of teachers' information-based teaching behavior and build high-quality resource quality courses [14]. Besides, schools can also develop digital textbooks based on teaching ability competition cases, and encourage teachers to use digital technology to carry out practical teaching, excavate the digital teaching reform and implement similar courses and other courses in schools, while building a new ecology of "Internet +" vocational education.

3.3. Put effort into technological application to improve the digital literacy and execution ability of teachers

Teachers are the guides and organizers of teaching. In the daily teaching process, teachers combine digital infrastructure, professional characteristics, course characteristics, student situations, and personal situations to carry out information-based teaching and promote the normalized implementation of information-based teaching [15]. Using teaching ability as the starting point and adapting to the competition plan, promote the participation of teachers in the competition to daily teaching processes, and strengthen the application of digital platforms, technologies, methods, and resources by teachers.

Suggested measures are as follows:

(1) Reasonably utilize modern technological tools, teaching software, and digital resources, prioritize selecting national regional teaching resource libraries, national online quality courses, and virtual simulation resources. With the support of online course interaction platforms, subject software, professional general tools, and high-quality digital resources, teachers can build personalized courses, actively explore and effectively practice blended online and offline teaching modes, create intelligent classrooms, change the teaching of teachers and students, and promote deep learning.

(2) Fully utilize the achievements of digital transformation of smart classrooms, virtual simulation platforms, and training environments in schools, optimistically and bravely accept new things. Teachers should take the first step of digital teaching, boldly try various digital teaching methods in the classroom, make progress through continuous learning, learn from practice, summarize experience through practice, and improve through practice.

(3) Corresponding to the digital transformation and upgrading of industries, universities should pay attention to the digital development of industries, integrate new digital concepts and methods into the teaching process, and introduce new digital technologies and processes.

(4) Effectively utilizing digital teaching evaluation software and tools, exploring value-added evaluation, strengthening process evaluation, improving result evaluation, and perfecting evaluation systems.

Disclosure statement

The authors declare no conflict of interest.

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