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RESEARCH ARTICLE

Research on the classroom teaching design model of enterprise mentors from the perspective of modern apprenticeship

Lifeng Jiang[1*], Meirong Lin[1], Wenjun He[4], Kewei Zhang[2], Yiqun Ma[1], Jiaxing Li[3]

[1] *Hainan Vocational University of Science and Technology, Haikou, Hainan, 570000, China*

[2] *China Electronics(Hainan) Joint Innovation Research Institute, Chengmai, Hainan, 571900, China*

[3] *Cetc Guohai Xintong Technology (Hainan) Co., Ltd., Haikou, Hainan, 570000, China*

[4] *Aviation University Air Force, Changchun, Jilin, 130000, China*

*** Corresponding author:** Lifeng Jiang, jlf@hvust.edu.cn

ABSTRACT

With the advancement of modern apprenticeship, corporate mentors play an increasingly important role in vocational education. However, in the face of new talent training models, corporate mentors face many problems and challenges in classroom teaching design work. This study aims to investigate the problems encountered in the classroom teaching design process for corporate mentors from the perspective of modern apprenticeship. It proposes a classroom teaching design model based on the BOPPPS model that integrates digital technology to solve these problems. This model aims to enhance corporate mentors' teaching design capabilities and classroom instruction quality through digital technology empowerment and optimization of the BOPPPS model. The research results of the paper provide a theoretical, systematic, and scientific classroom teaching design model for enterprise instructors. It provides new perspectives and practical solutions to the classroom instructional design of enterprise instructors under the modern apprenticeship system.

Keywords: Modern apprenticeship; BOPPPS model; digital technology

1. Introduction

Modern apprenticeship refers to a new talent training model integrating production and education, with school-enterprise cooperation as the carrier. Students are trained through dual teaching by school teachers and enterprise mentors [1]. To establish a modern apprenticeship system in China, it is necessary to continue practical exploration and fully draw on the advanced practices of developed countries and relevant international organizations. Among them, the high-quality apprenticeship system advocated by the International Labour Organization (ILO) [2] and its systematic implementation process, organizing and implementing apprentice training is a key stage. Implementing a "double mentor" system in modern apprenticeships has placed higher requirements on both school teachers and business mentors' teaching abilities during this stage. Enterprise mentors' advantages mainly lie in the rich teaching experience and engineering practice ability accumulated based on the traditional apprenticeship system and work

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environment of enterprises. However, it should also be noted that this teaching ability based on mentoring experience faces many problems transitioning from traditional apprenticeship to modern apprenticeship: insufficient ability to apply teaching methods, inadequate assessment capabilities for teaching effectiveness, and insufficient design abilities for instruction. The problem of insufficient classroom teaching design ability has become an urgent issue that directly affects the quality of classroom instruction. To solve this problem, the paper proposes a classroom teaching design model suitable for modern apprenticeship enterprise mentors. This model is based on digital technology and the BOPPPS model, taking into account the impact of the introduction of digital technology in the classroom teaching process on the BOPPPS model.

2. Analysis of classroom teaching design issues for enterprise mentors

In June 2019, the General Office of the Ministry of Education issued a notice on comprehensively promoting modern apprenticeship work. The notice pointed out: "Promote the dual-mentor system, and both schools and enterprises should improve methods for selecting, training, assessing, and motivating dual mentors to create a team of full-time and part-time mentors." In June 2021, the state released the Guiding Opinions on Comprehensively Promoting New Apprenticeship System with Chinese Characteristics in Enterprises to Strengthen Skills Training again, emphasizing that: "Enterprises should select skilled personnel with excellent quality as enterprise mentors for apprentices. This shows that implementing new apprenticeship systems with Chinese characteristics is key to teacher resources, among which the role of corporate mentors is particularly important."

However, it should also be noted that with the deepening of the new apprenticeship system in vocational education with Chinese characteristics, higher requirements have been put forward for the teaching ability of enterprise instructors. Against this backdrop, from the perspective of classroom teaching design ability alone, relevant research has shown that corporate mentors face many problems and challenges, mainly manifested as:

Table 1. Major issues faced by corporate mentors in classroom teaching design.

problem	reason	Specific manifestations
Problems in classroom teaching design	Objective reasons	Insufficient preparation time before class
		Insufficient time for classroom teaching design
	Subjective reasons	Insufficient experience in classroom teaching design
		Insufficient interaction and communication with students
		Insufficient ability to apply teaching methods
		The teaching design needs to include links to understanding the learning situation.
		Insufficient ability to organize classroom teaching activities
		The design of teaching content needs to be revised.
		The teaching process needs to be standardized.

To solve the above problems, this paper proposes to enhance the teaching design ability and classroom teaching quality of enterprise mentors by using digital technology to empower them and optimize the BOPPPS model to construct a classroom instructional design model suitable for enterprise mentors.

3. Digital technology empowers classroom teaching

The report of the 20th National Congress of the Communist Party of China proposed to "promote digitalization in education, build a learning society and a great nation for lifelong learning," which has brought the digital transformation of vocational education in China into a new historical stage. The digital transformation of vocational education is "the all-round penetration of digital technology into the entire system of vocational education under certain order and norms" [11]. With the continuous deepening of digital transformation in vocational education, new-generation digital technologies such as big data, artificial intelligence, cloud computing, and the Internet of Things have been continuously penetrating the field of vocational education, providing solid technical support for continuing to promote classroom teaching design model changes. The main manifestations are:

First, digital technology empowers classroom teaching to integrate ideological and political elements. Colleges and universities are important battlefields for students to receive ideological and political education in the curriculum, while classrooms are important fronts where students can receive such education[12]. Digital technology provides necessary technical support for integrating ideological and political elements into classroom teaching, better serving the curriculum with ideological and political elements, and achieving the goal of ideological and political education. It mainly includes using digital technology to assist teachers in analyzing student learning situations and refining more accurate implementation goals for classroom ideological and political education based on this analysis. Using digital technology can assist teachers in searching, designing, and producing more high-quality materials that match the goals of implementing ideological and political education in the classroom. Using digital technology can assist teachers in designing high-quality ideological and political education cases based on the implementation goals of classroom ideological and political education and integrating them into the classroom teaching process. Digital technology can quickly and accurately evaluate the implementation effect of ideological and political education in classrooms, assisting teachers to continuously improve the quality of ideological and political education in classrooms.

Second, digital technology empowers the design and achievement of classroom teaching goals. Teaching objectives refer to the learning outcomes and standards expected by teachers and students in teaching [13]. The goal of classroom teaching is an important criterion for measuring whether effective teaching has been achieved in classroom teaching. The classroom teaching objectives are at the core of the teaching process. It can be said that "teaching without goals is blind teaching, and teaching objectives without value are even more harmful [14].". However, it should also be noted that designing a correct classroom teaching goal for one class is still challenging for university teachers and even more difficult for corporate mentors. This is because a correct classroom teaching goal needs to meet five measurement indicators simultaneously: "valuable high expectations,"; "Clear, specific and operable,"; "suitable for the needs of students,"; "comprehensive, integrated and profound,"; "Clarify the content and methods of the exam." [15]. The large model established using digital technology can assist enterprise mentors in quickly designing classroom teaching objectives that meet the measurement mentioned above indicators, greatly reducing the difficulty of designing classroom teaching objectives. At the same time, during the entire classroom teaching process, using digital technology, teachers can monitor the progress of achieving teaching goals in real-time and obtain student data in real-time. Based on this, they can adjust the pace, methods, and content of instruction to ensure that classroom teaching objectives are achieved.

Third, digital technology empowers classroom teaching to achieve differentiated education. In July 2021, the Ministry of Education and six other departments issued the Guiding Opinions on Promoting New

Infrastructure Construction in Education to Build a High-quality Education Support System, which proposed " promoting the organic combination of large-scale education with personalized training." From this, we can see the importance and necessity of differentiated education. The deep integration of digital technology and vocational education provides more technical support for teachers to achieve differentiated education in classroom teaching. Specifically, digital technology is regarded as a type of technological tool. In that case, intelligent assessment and diagnosis technologies for student learning conditions, digital portrait technology for students, personalized learning recommendation technology, and other technological tools based on acquiring educational big data can empower teaching models to achieve precise teaching and reach differentiated education goals.

Fourth, digital technology empowers classroom teaching to achieve high-quality evaluation. Classroom teaching is a teaching activity organized at a specific time and place. Therefore, before digital technology is integrated into classroom teaching, there are great technical difficulties in achieving real-time evaluation and feedback on students' learning situations during classroom teaching. Therefore, to achieve high-quality evaluation in digital technology-enabled classroom teaching, it is necessary to ensure the real-time nature of evaluation. At the same time, it is precisely because digital technology can be used to monitor the learning situation of every student in real-time and store and manage relevant data digitally during classroom teaching that students can use these data to drive specialized digital tools for self-evaluation. This avoids many problems associated with traditional classroom teaching, where teachers evaluate students mainly, and broadens evaluation modes and channels, making the results more objective and accurate, thereby improving the evaluation quality.

The above four aspects discuss how digital technology empowers classroom teaching. Based on this, we will continue to explore the positive impact of introducing digital technology on the transformation of classroom teaching models. Here, we use the BOPPPS model as an example for discussion.

4. Digital technology empowers the classroom teaching model based on the BOPPPS model

The BOPPPS model originated from the Instructional Skill Workshop (ISW) in British Columbia, Canada, during the 1970s. It is one of the most effective design models for teachers when designing instruction and organizing classes [17-18]. Based on the theories of constructivism and the communicative approach, teaching objectives are emphasized as a guide, and students are the center. Therefore, it can effectively improve students' autonomous learning ability and enthusiasm for learning. This model organically divides the classroom teaching process into six links: "starting, connecting, transitioning and combining," namely Bridge in, Objective, Pre-assessment, Participatory Learning, Post-assessment, and Summary.

BOPPPS is a closed-loop feedback teaching model for interactive and reflective learning [20-21] with a low threshold, high standardization, and strong operability characteristics. Therefore, it is particularly suitable for corporate mentors to apply in classroom instruction to impart vocational skills. Using digital technology to empower the BOPPPS model-based classroom teaching mode can effectively compensate for shortcomings such as enterprise mentor's classroom instruction design, organization, method practice, and evaluation. It can improve the comprehensive ability of enterprise mentors to carry out classroom teaching in a relatively short period, thereby effectively improving the quality of classroom teaching. The following will explore in detail how digital technology can empower each link of the BOPPPS model, providing theoretical support for designing a classroom teaching design model suitable for corporate mentors.

4.1. Digital technology empowerment introduction (Bridge-in, B)

A good beginning is half done. Therefore, designing the introduction process well can play a multiplier role in using the BOPPPS model for classroom teaching. A good introduction can achieve multiple goals: integrating ideological and political elements into the introduction to stimulate students' interest and enthusiasm in learning; The questioning teaching method is used to raise questions, allowing students to actively think and generate learning expectations, thereby better introducing the content of classroom instruction; Attract students' attention to classroom teaching through multimedia materials such as pictures, videos, and audios. The use of digital technology can enable the introduction process to achieve these goals better:

First, according to the implementation goal of ideological and political education in classrooms, digital technology can subtly integrate ideological and political elements into questions, learning resources, and materials during pre-class and introduction sessions. This allows for a more natural way to carry out classroom ideological and political education without leaving any traces in the teaching process.

Secondly, before class, we rely on a digital technology-based teaching platform to ask questions and publish relevant learning resources on the platform to inspire students to think about problems actively. In class, we let students express their thoughts on the issues and lead into classroom content. The benefits of this approach are: first, digital technology can be used to extend the introduction process before class, allowing students more time to think about problems. Secondly, using digital technology can provide students with richer learning resources.

Thirdly, digital technology can produce higher-quality multimedia materials such as pictures, audio, and video. These materials are integrated into a high-quality case for playback during the introduction process, attracting students' attention more quickly and effectively in classroom teaching.

4.2. Digital technology empowers the objective (O) link of teaching objectives.

The teaching objectives are at the core of the BOPPPS model, and all other aspects revolve around them. Therefore, to do a good job in classroom teaching design, it is necessary first to design the teaching objectives. The establishment of teaching objectives needs to comply with the laws of teaching: students' ability to learn should be taken as the starting point for classroom instruction goal design; The number of classroom teaching objectives should not be too many, generally 2-4; Describe the expected effect of classroom teaching in simple language. Therefore, the design of teaching objectives is generally based on theories such as Bloom's Taxonomy of Learning, Solo Learning Classification, and Meaningful Learning Classification. It is determined from three aspects: cognition, emotion, and skills. The above requirements pose a significant design difficulty for enterprise mentors, and it takes work to quickly improve their ability to design teaching objectives in the short term. Digital technology, especially AI-related big data, large models, deep learning, and natural language processing technologies, can assist corporate mentors in quickly designing teaching objectives that meet classroom instruction requirements. This is mainly manifested in:

First, conduct an in-depth analysis of classroom teaching content to identify key concepts, knowledge points, and logical relationships. Then, according to the hierarchy of Bloom's Taxonomy (knowledge, comprehension, application, analysis, synthesis, evaluation), summarize content into corresponding levels. This will help teachers better understand each knowledge point's teaching objectives and requirements.

Secondly, based on the deep content analysis and hierarchical identification of classroom teaching contents, considering individual learning needs differences among students, it automatically identifies each

student's ability level at various cognitive levels to ensure that every student can learn at an appropriate difficulty level. It also assists enterprise instructors in designing personalized teaching objectives.

Thirdly, students' learning progress is monitored in real time during the teaching process. Based on their responses to the teaching content, the teaching objectives' difficulty, breadth, depth, and emphasis are dynamically adjusted to ensure they always align with the student's needs.

4.3. Digital technology empowers the pre-assessment (P) phase

After determining the teaching objectives, through implementing pretest procedures, teachers can help students review and consolidate their learned knowledge and better understand how well they have grasped the foundational concepts needed for this lesson. This helps enterprise mentors adjust the depth and pace of classroom instruction based on students' knowledge base in real time. Empowering the pretest process through digital technology not only enriches the means of pretesting and increases students' enthusiasm for participating in testing but also effectively improves testing efficiency, effectiveness, and impact. This is mainly manifested in:

First, various semi-automatic and automated testing tools based on digital technology, such as scanning code questionnaire surveys, online voting, and online objective question tests, will be used to understand students' previewing before class, their mastery of prior knowledge, and the consolidation of important learned knowledge.

Second, digital technology can be leveraged to design more personalized testing schemes based on students' learning conditions, accurately grasping their individualized learning needs and laying the foundation for the next step of engaging in participatory learning.

Thirdly, digital technology can monitor students' status in real time during testing and quickly generate test results. Teachers can adjust their teaching plans accordingly to ensure that the instruction content matches students' knowledge base, learning needs, and other factors.

4.4. Digital technology empowers participation (P)

Participatory learning refers to teachers' flexible use of multiple teaching methods in classroom learning, mobilizing various teaching resources, guiding students to participate actively, achieving communication between teachers and students, and inspiring wisdom. Through digital technology, it is possible to build the participatory learning environment required for teaching quickly, rapidly achieve the transfer of classroom teaching dominance from teachers to students, enrich strategies and methods for participatory learning, and create a relaxed and lively teaching atmosphere.

The empowerment of participatory learning through digital technology is mainly manifested in:

First, virtual reality, mixed reality, digital twinning, and other technologies can empower participatory teaching sessions to create a highly realistic and immersive learning environment in classrooms, training rooms, internship bases, and other teaching venues. This is more conducive to developing task-based and project-based teaching based on real problems, making both students' learning and teachers' teaching more effective, efficient, and productive in process and outcome.

Secondly, although teachers' dominant role in classroom teaching gradually weakened during participatory learning sessions, they can use digital technology to obtain real-time information about student performance and become organizers and guides who control the overall situation in classroom teaching. With the help of digital technology, students' participation in learning has greatly increased, thus taking the lead in the classroom teaching process.

Third, digital technology can assist teachers and students in adopting various teaching strategies, such as flipped classroom, systematic instruction, project-based learning, problem-driven approach, group discussion, student presentation, situational method, role reversal between teachers and students, inquiry-based, collaborative, asymptotic, and progressive approaches during participatory learning processes. This fosters a more active and relaxed atmosphere for both teaching and learning, effectively enhancing participation and efficiency in teaching and learning.

4.5. Digital technology-enabled post-assessment (P)

The post-test link is to understand and evaluate students' learning effects and whether they have achieved the learning objectives of this lesson [23]. Using digital technology to empower the post-test process can enrich testing methods and approaches, provide personalized testing for students, quickly obtain test results, and achieve automated analysis and evaluation of test results. The empowerment of participatory learning through digital technology is mainly manifested in:

First, digital technology can enrich testing methods and approaches. It also assists teachers in selecting the most suitable testing methods based on classroom teaching content to improve test efficiency. Especially for practical training courses, comprehensive practice courses, and internship courses with strong engineering applicability, using digital technology to construct a mixed-reality testing environment that integrates multiple testing methods can achieve better results.

Secondly, digital technology can quickly generate personalized testing plans based on classroom teaching content and continuous monitoring data of students' learning status in the past. This saves time for testing and allows for more accurate assessment of learning outcomes and rapid identification of student learning problems.

Thirdly, digital technology can quickly obtain post-test results and generate test analysis evaluation reports for each student in a limited amount of classroom time. This lays a solid foundation for teachers to carry out their work during subsequent summary sessions.

4.6. Summary of digital technology empowerment

The summary session is mainly used to review the main content of this classroom teaching and achieve understanding and consolidation of knowledge points against the teaching objectives. Summary plays a role in connecting the past and the future, which is both a summary of the lecture's content, providing opportunities for reflection to teachers and students, and an introduction to the next lecture's content. The summary can be completed by the teacher, who generally summarizes the content of this classroom teaching and identifies the key points and difficulties. At the same time, they assign homework for this lesson and preview material for the next class. However, a better way is for teachers to guide students in summarizing independently. Students can reflect on their learning situation and face up to the achievements they have made and their shortcomings through reflection. With the help of teachers, they can further consolidate and improve their learning effectiveness through after-class review, homework, and other methods. This form of student-led self-summarization under the guidance of teachers can also allow students to explicitly express their learning gains and insights, thereby effectively improving teaching effectiveness. Here, we mainly discuss how digital technology can empower the summary link in the second case, which is mainly manifested as:

First, digital technology empowers students to reflect on their classroom learning. Digital technology can monitor, record, analyze, and evaluate students' learning behavior in real time during classroom teaching.

It can also save the results as video, audio, or document to form procedural materials. These preserved materials are important references for students to reflect on.

Second, digital technology empowers teachers to conduct personalized reviews and evaluations for different students. After students have completed their reflections and summaries, the teacher will act as a guide to comment on them. Teachers can use classroom teaching process materials recorded based on digital technology to comprehensively review students' learning behaviors in the classroom and comment on their reflections and summaries. Teachers can use procedural materials to explain students' shortcomings during the evaluation process. This allows students to gain a more intuitive and profound understanding of their deficiencies. This lays a solid foundation for students to continue reviewing and improving after class.

5. A classroom teaching design model for enterprise mentors based on the BOPPPS model

Through the above research on digital technology-enabled classroom teaching models based on the BOPPPS model, this paper proposes a business mentor classroom teaching design model based on the BOPPPS model to solve problems and pain points in the process of classroom instruction by business mentors under the background of modern apprenticeship. Considering that solidifying classroom teaching design could be more conducive to teaching innovation, achieving teaching goals and improving teaching effectiveness are the purposes of the BOPPPS model [24], which should be flexibly applied in practical teaching. The elements in the model can be adjusted according to the course's teaching objectives and content needs to avoid falling into a formalized approach to classroom instruction design [25-26]. This paper optimizes and adjusts the application of each link within the BOPPPS model. The basis for optimization and adjustment mainly includes: first, the positive impact of digital technology empowering the BOPPPS model and implementing it in various links; Second, the implementation of a modern apprenticeship system has put forward new requirements for classroom teaching venues, instructors, students, teaching content, and teaching methods. The composition and architecture of this design pattern are shown in **Figure 1**. From the figure, it can be seen that the enterprise mentor classroom teaching design pattern proposed by the paper has optimized and adjusted the BOPPPS model as follows:

First, digital technology should be introduced to empower all aspects of classroom teaching design.

Secondly, due to their close connection, the post-test and summary stages are combined into one stage.

Thirdly, optimize the proportion of each part: Better integrate ideological and political elements into the introduction process, increase the proportion of the introduction section, and consider the digital technology-enabled teaching objectives, pretests, and participatory learning cycles.

The section can improve the efficiency of implementing these links, so the proportion of these links has been appropriately compressed. The proportion of this part has been appropriately increased to enable students to better reflect on themselves through the summary process and discover their problems in real-time under the guidance of mentors.

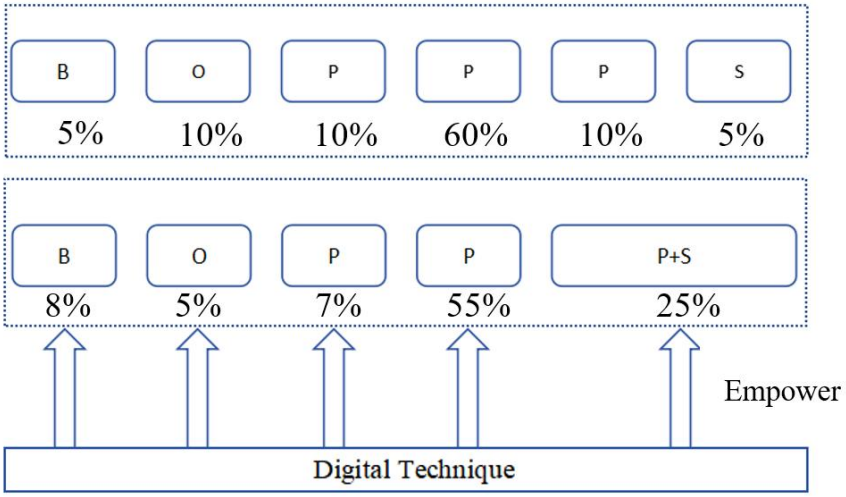

Figure 1. The architecture diagram of the enterprise mentor classroom teaching design model based on the BOPPPS model.

As shown in **Figure 1**, the BOPPPS-based classroom teaching design model proposed by this paper can be divided into five parts: introduction (B), objectives of instruction (O), pretest (P), participatory learning (L), posttest (P) and summary. The enterprise mentor needs to complete the design work according to the requirements of each link based on the classroom teaching content to be taught and then combine all links to complete the teaching design for a class. The specific tasks that the enterprise mentor needs to complete in each step are as follows:

In the introduction (B) stage, enterprise mentors must use digital technology to create exciting cases based on the implementation goals and teaching content of ideological and political education in the classroom. They should then play these cases and explain them during this stage to attract students' attention more quickly and effectively to the classroom instruction.

In the teaching objectives (O) phase, enterprise mentors must quickly design teaching objectives that meet classroom requirements based on the course content using digital technology, especially AI-related big data, large models, deep learning, and natural language processing technologies.

In the Pre-assessment (P) phase, enterprise mentors must design pre-assessment questions based on teaching needs and test students' knowledge foundation through semi-automatic and automated testing tools based on digital technology such as scanning code questionnaire surveys, online voting, and online objective question tests.

In the Participation (P) phase of participatory learning, enterprise mentors must use digital technology to construct a highly immersive and realistic teaching environment based on the course content. They then arrange the content using task-based or project-based teaching methods.

In the post-test and summary session (P+S), the enterprise mentor first requires students to conduct a self-assessment and then comments on their reflection and summary based on the self-assessment results combined with procedural materials obtained from digital technology.

In summary, the enterprise mentor classroom teaching design model based on BOPPPS proposed in this paper can effectively solve problems encountered by enterprise mentors when designing their classroom instruction. Its specific functions are shown in **Table 2**:

Table 2. The ways to solve the problem of classroom teaching design of enterprise tutors.

problem	reason	Specific manifestations	The role of the instructional design model
Classroom teaching design issues	objective reason	Insufficient preparation time before class	Standardization of classroom teaching design can save time and improve efficiency.
		Insufficient time for classroom teaching design	Standardization of classroom teaching design can save time and improve efficiency.
	subjective reason	Insufficient experience in classroom teaching design	Designing teaching content according to the optimized BOPPPS model can effectively compensate for a lack of experience
		Insufficient interaction and communication with students	The optimized BOPPPS model, enabled by digital technology, can enrich the interactive methods.
		Insufficient ability to apply teaching methods	The optimized BOPPPS model, enabled by digital technology, can better utilize digital technology practices in the participatory learning process of the BOPPPS model to implement student-centered teaching methods.
		The teaching design needs an understanding of the student learning situation.	The optimized BOPPPS model, enabled by digital technology, can grasp the learning situation in real-time.
		Insufficient ability to organize classroom teaching activities	The optimized BOPPPS model, enabled by digital technology, can effectively compensate for the lack of organizational ability in classroom teaching activities through standardized and digitized design ideas
		The design of teaching content needs to be revised.	The optimized BOPPPS model, enabled by digital technology, has specific quantifiable and executable requirements for classroom teaching time and content allocation. It can effectively solve the problem of unreasonable distribution of teaching content and time in instructional design.
		The teaching process needs to be standardized.	Completing the teaching process, based on the optimized BOPPPS model in instructional design, can solve the problem of non-standardized teaching procedures.

6. Conclusion

To address the challenges faced by enterprise mentors in conducting classroom teaching design activities within the context of modern apprenticeship, this paper conducts an analysis and study on how digital technology can empower each aspect of the BOPPPS model, building upon the rich achievements made through the integration of digital technology into vocational education in recent years. The paper applies the analysis and research results to the design process of teaching models and proposes a classroom instructional design model based on the BOPPPS model.

The classroom teaching design mode can play the following roles for the enterprise tutors to solve the main problems encountered in the classroom teaching design work.Firstly, to realize the standardization of the classroom teaching design process to improve work efficiency and achieve the goal of effective time-saving; Secondly, to solve the problems of enterprise mentors' insufficient experience in classroom teaching design and nonstandard teaching processes and put forward the optimized BOPPPS model. To avoid such problems, enterprise mentors only need to design the teaching content and organize the teaching process according to the various links of the model; Thirdly, aims to solve the problems of insufficient interaction

between enterprise tutors and students and the lack of understanding of learning situations in teaching design. It puts forward practical ideas and methods of enriching interaction ways and real-time learning situations through the optimized BOPPPS model enabled by digital technology. Finally, It is important to solve problems such as the need for more ability to use the teaching methods of enterprise mentors, the lack of the ability to organize classroom teaching activities, and the unreasonable design of teaching content. It puts forward the practical ideas and methods of using digital technology to enable the optimized BOPPPS model to realize the standardization of the classroom teaching process, the modularization of teaching content, and the digitalization of teaching methods.

The research results of this paper have certain guiding significance for studying how to improve the classroom teaching design ability of enterprise mentors and also provide a new perspective and practical solution for enterprise mentors to use digital technology in classroom teaching design from the perspective of modern apprenticeship.

Author Contributions

JiangLifeng: Conceived and designed the study; drafted the initial manuscript; revised and finalized the manuscript.

LinMeirong: Revised and finalized the manuscript.

HeWenjun: Provided valuable input on the research approach.

ZhangKewei: Provided guidance on the structure of the paper.

MaYiqun:Contributed to the theoretical framework and provided critical feedback on the manuscript.

LiJiaxing:Reviewed the content of the manuscript.

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