Article

A Practical Study on the Deep Integration of Digital Technology and English Instruction in Higher Vocational Education

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Abstract: The deep integration of digital technology and higher vocational English teaching is not a mere superposition of technical tools and classroom teaching activities, but a systematic transformation process involving the reconstruction of teaching environments, the development of teaching resources and the restructuring of classroom structures. Taking He Kekang's "Three Pathways to Deep Integration" as the theoretical framework, this study has carried out targeted teaching practice on the course *Higher Vocational English I* by virtue of the Youmooc platform. The research finds that there is a prominent disconnection between the current digital teaching resources and actual teaching application, and the application of digital technology in classroom teaching is often limited to the simple interactive form of point-and-click operation. In the process of completing platform tasks, students lack the habit of independent thinking, and the existing evaluation mechanism fails to effectively reflect the whole process of students' learning growth and development trajectory. In view of these problems, the teaching team attempts to construct a dual-track teaching model integrating life scenarios and occupational scenarios, and design a complete learning chain around pre-class reflective questions, in-class situational tasks and post-class reflective assignments. Meanwhile, ideological and political elements are embedded into the digital resources corresponding to each unit, and a diversified evaluation system integrating formative assessment, summative assessment and value-added assessment is constructed. It is expected to provide an operable practical model for the reform and innovation of higher vocational English teaching under the digital background.

Keywords: Digital technology; Higher vocational English teaching; Deep integration; Practical research

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1. Introduction

Vocational English courses shoulder the important responsibility of cultivating students' cross-cultural communication competence and multi-dimensional cultural literacy in professional scenarios, and the rapid development of digital technology has injected new vitality and opened up new possibilities for the implementation of such courses. Advance the digitalization of education and build a learning society for all and a lifelong learning system. The 2023 National Education Conference further emphasizes the need to deepen the strategic initiative of educational digitalization and accelerate the construction of a high-quality educational system. Under this background, educational platforms represented by Youmooc and Xuetong have gradually entered the higher vocational English classroom, and micro-lecture videos, online question banks and interactive exercises have become normalized teaching means in daily teaching. In smart classrooms, teachers use multi-screen interaction and big data analysis technology to collect and sort out students' learning behavior data; students, on the other hand, complete video preview before class, participate in various interactive tasks in class and submit reflective assignments after class, forming a preliminary blended teaching model

[1]. However, from the actual teaching practice, a series of noteworthy problems have emerged in the integration process: the massive learning behavior data recorded by the platform has not been fully transformed into the scientific basis for teachers to adjust and optimize instructional design; when completing open-ended questions with the help of AI tools, students' independent thinking process is replaced by technical means; classroom digital interaction is often limited to routine links such as attendance sign-in, rapid answering and multiple-choice questions. These prominent problems prompt the teaching team to re-examine the intrinsic relationship between digital technology and higher vocational English teaching, and explore the practical path of truly giving play to the supporting role of digital technology in promoting students' deep learning.

2. The Theoretical Foundation for the Deep Integration of Digital Technology and English Instruction in Higher Vocational Education

2.1. The Theoretical Framework for the Deep Integration of Digital Technology and Teaching

The "Three Pathways to Deep Integration" proposed by Professor He Kekang-constructing a digital teaching environment, developing digital teaching resources and transforming classroom teaching structures-constitutes the core theoretical framework for this study to analyze the problems in the integration of digital technology and higher vocational English teaching [2]. Among them, the digital teaching environment in this study is an online learning space supported by the Youmooc platform: students initially contact and master basic knowledge points by watching micro-lecture videos before class, and teachers track and grasp students' learning progress and learning difficulties in real time by analyzing platform data. In terms of digital teaching resource development, the research team breaks away from the simplistic model of only digitizing traditional textbooks; combined with the cognitive characteristics of higher vocational students, the team decomposes professional English knowledge points into modular learning content including unit-guided learning, language workshop and vocational focus section, and configures corresponding video explanations and chapter question banks for each module, so as to ensure that digital teaching resources can effectively serve pre-class self-study and in-class practical training. On this basis, the classroom teaching structure is also undergoing fundamental transformation: teachers have shifted their role from the traditional knowledge transmitter to the designer of students' learning experiences. Before class, students complete video preview, reflective thinking and preliminary assessment through platform tasks; in class, they carry out contextualized practical training and collaborative output activities; after class, they consolidate learning results through reflective exercises. It can be seen that this whole teaching process has completely broken the traditional single teaching model of "teachers lecturing and students listening passively" [3].

2.2. Deep Learning Theory and Its Application in Higher Vocational English Teaching

Deep learning theory advocates that learners should establish organic connections between new and old knowledge on the basis of in-depth understanding, and flexibly transfer and apply the acquired knowledge and skills to new situational contexts to solve practical problems. Combined with this theoretical connotation, the teaching team has carried out targeted adjustment and optimization on the teaching organization form of *Higher Vocational English I*. The team no longer limits the application of platform resources to the single links of pre-class preview and post-class testing, but integrates micro-lecture learning, pre-class thinking tasks, in-class situational training and collaborative output activities into an organic whole, forming a closed loop of learning. Before class, students get in touch with basic language points through micro-lecture videos and complete targeted thinking questions with reflective nature; in class, they need to apply the language knowledge and expressions input before class to the parallel tasks of life scenarios and career scenarios, and realize the flexible application of knowledge through group presentation, simulated workplace dialogue and other forms; after class, they sort out the learning gains and existing confusions in the whole learning process

through reflective exercises. This step-by-step teaching process can drive students to fully mobilize their existing language knowledge reserves to meet the actual communication needs in new situational contexts. In this teaching model, the teacher's role is positioned as a task designer and classroom observer, and students gradually transform fragmented language knowledge into practical application skills in the process of completing specific project tasks under the guidance of the dual contexts of life and occupation [4].

3. Analysis of Issues in the Deep Integration of Digital Technology and English Instruction in Higher Vocational Education

3.1. Systemic Disconnect Between Digital Teaching Resources and Instructional Applications

In the early stage of the research, the teaching team has built six major sections including unit guidance, language workshop and traditional Chinese culture on the YouMOOC platform, and uploaded dozens of micro-lecture videos and corresponding chapter question banks, initially forming a certain scale in terms of the quantity of digital teaching resources. However, in the actual teaching application process, the use effect of students is quite different from the expected goal: most students only hastily watch the pre-class videos just to complete the corresponding testing tasks, and few students take the initiative to log in to the platform for review and consolidation after class. What is more prominent is that the massive learning behavior data accumulated on the platform has not been effectively mined and analyzed, nor has it been converted into the practical basis for teachers to adjust teaching content and optimize teaching methods. At the same time, there is a phenomenon of content repetition or disconnection between micro-lecture videos and classroom teaching content, and the knowledge points that students contact in pre-class video learning lack effective correspondence and connection with the content explained by teachers in class, resulting in the phenomenon of "two parallel lines" between pre-class learning and in-class training [5]. In addition, the chapter question bank designed in the early stage of resource development is mostly limited to the level of testing students' knowledge memory, and lacks open-ended questions that can guide students to think about the practical application of language in professional scenarios. Therefore, although the digital teaching resources are relatively abundant in quantity, they are difficult to provide effective support for the deepening of the dual-context guided teaching model, and the practical value of resource development has not been fully exerted.

3.2. Digital Applications in Classroom Instruction Remain at the Surface-Level Learning Stage

In the current smart classroom teaching, teachers usually use the teaching platform to push attendance sign-in, publish classroom exercises or organize rapid quiz activities, and students complete point selection, answer submission or interactive voting through their mobile phones. From the surface, the frequency of digital technology application in the classroom is relatively high, and the classroom atmosphere seems to be active. But in fact, students tend to focus more on the operational speed of completing tasks and the final scoring results when participating in these digital interactive activities, and lack in-depth thinking and group discussion on the core language knowledge points and practical application rules behind the tasks. Classroom digital interaction is still limited to the shallow level of point-and-answer responses, and it is difficult to realize in-depth academic communication and thinking collision. In the process of group presentation or simulated workplace dialogue, students are accustomed to using translation software to complete language expression; when encountering unfamiliar words or sentence structures, they directly search for answers through network tools without taking the initiative to explore their usage rules and collocation habits. As a result, the language output generated in class lacks the traces of students' independent thinking and personalized expression. The post-class platform data shows that students have completed the required video watching and chapter testing tasks, but teachers find that the answers to open-ended questions submitted by students are highly similar and lack personal opinions and in-depth thinking. It can be seen that the current application of

digital technology in the classroom has not effectively promoted the transformation of students' knowledge mastery into practical language application ability, and has not played its due role in promoting deep learning [6].

3.3. Lack of Autonomy and Deep Thinking in Students' Digital Learning Processes

In the digital learning process based on the platform, students generally have the problem of utilitarian learning motivation, who tend to quickly complete the mechanical tasks of pre-class video watching and post-class chapter testing, but rarely take the initiative to ponder the internal logical connections between different knowledge points. Many students even play micro-lecture videos as background music in the learning process, without taking notes or sorting out the key points and difficulties of knowledge in a timely manner. When facing open-ended thinking questions or tasks that need to collect and sort out information independently, students are accustomed to quickly scanning and obtaining ready-made answers through mobile phone search tools; after simple copy-paste and submission, they no longer review and digest the language points and application rules contained in the questions themselves. In the classroom group discussion session, there is also a phenomenon of uneven participation: some group members simply rely on the ideas and expressions of other classmates, and only need to read out the pre-prepared content during the formal presentation to obtain the corresponding scores, resulting in the task division within the group often evolving into a few people undertaking the majority of the thinking and research work [7]. In the fixed content section of post-class learning summary, most students' submissions are only simple retellings of textbook content or platform resource information, and it is rare to see students reflect on the practical problems encountered in their own language use and put forward targeted solutions. When teachers check students' learning records on the platform, they find that the frequency of students' platform access is not low, but when they delve into the detailed content of the micro-lecture videos or ask random questions about the post-class thinking questions, students often cannot answer them accurately. This fully reflects that students' digital learning process is more focused on task check-in and form completion, and the internalization and absorption of knowledge have not been effectively realized. Long-term reliance on digital tools has made students accustomed to obtaining convenient and ready-made answers; when encountering difficulties in language use, their first reaction is to search for external tools, rather than mobilizing their existing knowledge reserves to try to solve problems independently. Over time, students form a bad habit of relying on external tools to complete learning tasks, and their language application ability and independent thinking habit fail to develop synchronously with the use of digital technology [8].

3.4. Instructional Assessment Mechanisms Fail to Effectively Fulfill Formative and Summative Functions

The existing teaching evaluation mechanism has a prominent gap between platform data collection and effective teaching feedback. Although the YouMOOC platform can record students' video viewing progress, chapter test scores, classroom interaction participation frequency and other learning behavior data in detail, most of these data are only used as the original basis for calculating the final academic scores, and have not been further in-depth mined, analyzed and applied. When facing the massive learning traces accumulated on the platform, teachers pay more attention to the completion of students' learning tasks in form, but ignore the thinking trajectory and cognitive process of students in the process of completing tasks [9]. In the actual evaluation process, the number of sign-ins and the rate of homework submission have become the main evaluation indicators, while the quality of students' answers to pre-class thinking questions and the depth of post-class reflective thinking have been marginalized. Summative evaluation still occupies a dominant position in the whole evaluation system, and the final exam scores account for an excessively high proportion in the overall evaluation results. Students who spend a lot of time and energy on the platform to carry out in-depth learning can only obtain conventional scores in the indicators of attendance and homework completion

frequency, and the value-added evaluation that can reflect students' learning progress and growth has almost no operational space in the current evaluation system. After a semester of teaching practice, the platform has recorded a large amount of students' learning behavior data, but the growth rate of students' comprehensive ability from the beginning to the end of the semester and the individual progress trajectory in different learning tasks have not been effectively extracted, analyzed and fed back to the students themselves in a timely manner [10]. This makes it difficult for students to clearly recognize their own learning shortcomings and development progress, and also makes it impossible for teachers to carry out targeted teaching intervention and guidance according to students' individual differences.

4. Practical Pathways for the Deep Integration of Digital Technology and English Instruction in Higher Vocational Education

4.1. Construction and Implementation of a Teaching Model Based on "Dual-Environment Guided Learning"

Combined with the teaching content and curriculum characteristics of *Higher Vocational English I*, the teaching team designs six teaching units, which correspond to two core themes of life scenarios and career scenarios as a whole, and each unit is designed to gradually transition from daily communication scenarios to professional industry and workplace tasks in terms of content arrangement. In the unit guidance section, students first contact video materials related to life topics to complete the basic language input; then enter the language workshop module to complete dialogue exercises and document writing tasks in simulated workplace scenarios. The design of the occupational context section closely combines the professional background of different majors of students: for the chemical engineering major, the teaching focus is on guiding students to describe the equipment operation process in English; for the oil and chemical major, the practical training is carried out around the English expression of safety production instructions; for the photovoltaic major, the key point is to train students' ability to read and understand English materials in the new energy field [11]. In the specific teaching implementation, the platform pushes life-oriented micro-lectures related to the unit theme to students before class to arouse their learning interest and lay a foundation for in-class learning; in class, teachers guide students to realize the transfer and application of language, and flexibly use the expressions learned in life scenarios to complete professional situational tasks; after class, students are required to record workplace dialogue videos combined with their own major and upload them to the platform for teacher evaluation and peer communication. In this dual-environment guided teaching model, teachers assume the roles of scenario designer and task cohesion person, and students can repeatedly practice and consolidate key language points in the dual-line switch between life and career scenarios. In the continuous conversion and application of multiple scenarios, knowledge is gradually internalized into students' practical language application ability [12].

4.2. Design of Blended Teaching Activities Aimed at Deep Learning

To promote students' deep learning, the teaching team links pre-class video preview with in-class situational tasks organically, and designs a complete and closed learning chain with strong logical connection. After watching the pre-class micro-lectures, students need to complete reflective thinking questions closely related to the video content and upload their answers to the platform. These thinking questions are not simple retellings of the knowledge points in the video, but guide students to make specific language judgments and expression attempts based on their own life experience. For example, after watching the micro-lecture video of the restaurant ordering scenario, students are required to describe their own language response strategies in similar real-life scenarios [13]. All in-class teaching activities are carried out around these pre-class prerequisite thinking tasks: teachers first select typical answers uploaded by students as classroom discussion materials, then organize students to carry out group analysis and optimize the inappropriate language expressions in the answers. In the process of comparing and

analyzing different answers, students can naturally discover the differences in language use and the skills of appropriate expression in different scenarios. After the group discussion, each team needs to redesign the situational dialogue based on the optimized expressions and carry out on-site presentation; during the presentation, other groups record the referenceable expressions and the areas that need further improvement in the works of the presenting group. The post-class learning activities require students to review the whole learning process comprehensively, and sort out the language confusion encountered in pre-class thinking, in-class discussion and feedback presentation and the corresponding solutions formed in the communication. It is clearly stipulated that students cannot rely on AI tools to directly obtain ready-made answers when completing these learning tasks. Pre-class thinking questions focus on personal experience expression, without fixed standard answers; in-class tasks require group collaboration to create language works and accept peer evaluation and teacher guidance; post-class reflection needs to combine personal learning experience to sort out real learning difficulties and cognitive gains. In this way, the students' learning behavior data recorded by the platform is no longer limited to the simple indicators of video completion rate and test scores. Teachers can view the quality of students' answers to thinking questions, the frequency and depth of their participation in in-class tasks, and the thinking traces presented in post-class reflective assignments in the platform background. These multi-dimensional and in-depth learning data have become the important basis for teachers to judge students' real learning status and adjust the subsequent instructional design in a targeted manner [14].

4.3. Systematic Development of Digital Teaching Resources and Integration of Ideological and Political Education into the Curriculum

In the process of optimizing the development of digital teaching resources, the teaching team adheres to the integration of ideological and political education into the curriculum, and embeds the ideological and political elements of the course into the digital resources corresponding to the unit theme in an implicit way, instead of setting up separate and rigid preaching modules. For each teaching unit, on the basis of the original language workshop and career focus section, the team develops micro-lecture videos with the theme of traditional Chinese culture and professional literacy. For example, the daily greeting section of Unit 1 is matched with the micro-lecture introducing traditional Chinese etiquette; after watching the video, students are required to complete a reflective thinking question of comparing Chinese and Western greeting methods and upload the answer to the platform. The dietary topic of Unit 3 is supplemented with materials on Chinese seasonal dietary culture, so that students can learn food-related English vocabulary while understanding the inherent relationship between Chinese 24 solar terms and dietary culture. The professional scenario section of Unit 5 is designed with the case study of the craftsman spirit, and the micro-lecture video presents the industry models telling their own growth experience in English [15]. In the teaching implementation, the platform pushes these ideological and political micro-lectures to students before class without marking obvious ideological and political labels, but presents them as ordinary language learning materials. In this way, students can naturally come into contact with excellent traditional Chinese culture and professional spirit culture in the process of completing language learning tasks, realizing the organic integration of language learning and value shaping. After class, students are required to record English videos introducing their hometown's traditional crafts or festival customs, and these student works are uploaded to the platform as supplementary teaching resources for subsequent classes, forming a positive interaction of resource co-construction [16]. The platform data statistics show that the frequency of students accessing cultural-themed micro-lecture videos is comparable to that of language knowledge videos, which indicates that embedding ideological and political content in the form of digital resources does not increase students' cognitive learning burden, and has achieved good educational effect. In the design of these ideological and political digital resources, the teaching team pays special attention to combining with students' professional background: the chemical engineering major is

supplemented with the local development stories of the petroleum industry, and the photovoltaic major focuses on introducing China's important contributions in the new energy field, so as to realize the organic combination of professional education, cultural education and ideological and political education.

4.4. Establishment of a Multi-dimensional Evaluation System Combining Formative, Summative, and Value-Added Assessment

Based on the big data collection function of the YouMOOC platform, the teaching team constructs a multi-dimensional and comprehensive evaluation system integrating formative assessment, summative assessment and value-added assessment, so as to realize the whole-process and all-round evaluation of students' learning. In this system, formative assessment takes the platform-collected data as the main basis, including the quality of students' answers to pre-class thinking questions, the frequency and depth of in-class interactive participation, and the completion quality of post-class reflective homework. These multi-dimensional data can truly reflect students' real engagement in the learning process and the whole thinking trajectory of knowledge construction [17]. Summative assessment is composed of two parts: the presentation report of unit occupational situational tasks and the final platform comprehensive test. Among them, the presentation report requires students to complete workplace situational dialogue design and display in groups, and record and upload the video to the platform for comprehensive evaluation by teachers and peers; the final platform test abandons the single form of examining knowledge memory, and focuses on testing students' comprehensive language application ability in professional scenarios. Value-added assessment is the key innovation of this evaluation system, which focuses on tracking and analyzing the individual growth rate of students' comprehensive ability from the beginning to the end of the semester. Teachers compare the oral task videos completed by the same student at the beginning and end of the semester, and conduct in-depth analysis of the changes in students' language expression ability, content organization ability and situational coping ability. The platform is used to automatically generate a personalized learning growth chart for each student, and feedback the growth data and evaluation suggestions to the students themselves at the end of the semester. The evaluation data of the three dimensions of formative, summative and value-added assessment are comprehensively presented on the platform data dashboard: students can check their own performance in various evaluation dimensions at any time, and carry out horizontal comparison with the class average level, so as to clearly recognize their own learning advantages and shortcomings; teachers can grasp the overall learning status of the whole class and the individual differences of students in a timely manner, and adjust the teaching design focus of subsequent units according to these objective evaluation data, so as to realize targeted teaching and personalized guidance.

5. Conclusion

From the perspective of teaching practice, the deep integration of digital technology and higher vocational English teaching is gradually shifting from the simple application of technical tools to the systematic reform and transformation of the whole teaching structure, and this process is accompanied by continuous exploration and optimization.

In this research practice, the YouMOOC platform has built a complete learning chain connecting pre-class preview, in-class interaction and post-class reflection, providing technical support for the implementation of blended teaching. The dual-line design of life and career scenarios makes students have the opportunity to repeatedly practice and apply key language points in the continuous conversion of scenarios, effectively promoting the internalization of knowledge into ability. The embedding of curriculum ideological and political elements into unit themes in the form of micro-lectures avoids the rigid preaching of ideological and political education, making students naturally contact and accept excellent cultural edification and value shaping while completing language tasks. The construction of a diversified evaluation system has changed the

previous single evaluation model dominated by summative evaluation, making teachers pay more attention to the quality of students' answers to pre-class thinking questions, the depth of in-class task participation and the reflective thinking traces of post-class homework. The personalized growth chart generated by the platform helps students clearly see their own learning progress and development trajectory, effectively stimulating their internal learning motivation. The teaching practice shows that when digital teaching resources are truly oriented to the design of deep learning tasks rather than simple knowledge transmission, and when classroom teaching activities are guided to students' independent thinking and collaborative exploration rather than shallow point-and-answer interaction, digital technology can really play its supporting role and drive students' learning to move towards the deep level. Of course, the rapid development of artificial intelligence technology has also brought new challenges and problems to the deep integration of digital technology and higher vocational English teaching: how to guide students to maintain the habit of independent thinking when using AI tools to complete learning assignments, and how to help teachers effectively extract valuable information from massive learning behavior data and feed it back to teaching practice in a timely manner. These problems need to be further in-depth research and exploration in the subsequent teaching practice and research work.

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