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Analysis of the Path for Teaching Reform in Higher Vocational Computer Programs Enabled by AI Technology

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Abstract: Against the backdrop of the rapid development of artificial intelligence technology, the digital and intelligent transformation of the education field has become an inevitable trend. As the core position for cultivating applied information technology talents, higher vocational computer programs are in urgent need of technical empowerment for the reform of their teaching models, content, and methods. This paper deeply explores the core values and basic principles of AI technology, empowering the teaching reform of higher vocational computer programs, and then proposes feasible reform paths. It aims to provide ideas for promoting the improvement of teaching quality in higher vocational computer programs, adapting to the industry's demand for talent, and helping higher vocational computer programs achieve comprehensive development.

Keywords: AI technology; Higher vocational computer programs; Teaching reform; Empowerment path

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1. Introduction

With the in-depth advancement of the new round of technological revolution and industrial transformation, artificial intelligence technology has penetrated various fields of social and economic development, presenting higher requirements for cultivating information technology talents. Relying on its core advantages of intelligence, personalization, and high efficiency, AI technology provides new ideas and technical support for the teaching reform of higher vocational computer programs. The in-depth integration of AI technology with the teaching of higher vocational computer programs can not only optimize the teaching process and improve teaching efficiency but also promote the all-round innovation of teaching concepts and models, helping to cultivate computer professionals who meet the requirements of the new era [1]. Based on this, starting from the value of AI technology empowering the teaching reform of higher vocational computer programs, this paper clarifies the basic principles that should be followed in the reform, and then explores specific reform paths, providing a theoretical reference for the orderly advancement of the teaching reform of higher vocational computer programs.

2. Value of AI technology empowering the teaching reform of higher vocational computer programs

2.1. Optimize the teaching process and improve teaching quality

Through the application of intelligent teaching tools and platforms, AI technology realizes the precision and efficiency of the teaching process. In terms of the presentation of teaching content, AI technology can transform abstract computer professional knowledge into visual and concrete teaching resources, reducing the difficulty of students' understanding. At the same time, AI technology can track the dynamic development of industry technologies in real time and update teaching content on time, ensuring that teaching content keeps pace with the cutting-edge of industry development and avoiding the problem of outdated teaching content. In terms of teaching process management and control, AI intelligent teaching platforms can conduct real-time monitoring and data analysis of students' learning behaviors, accurately grasp students' learning progress, knowledge mastery, and problems existing in the learning process, providing teachers with precise teaching feedback.

2.2. Adapt to industry needs and strengthen the targetedness of talent cultivation

The talent cultivation goal of higher vocational computer programs is to produce applied talents with practical operation capabilities for the information technology industry. The core evaluation criterion for talent cultivation quality lies in the adaptability between talents and industry needs. AI technology empowering the teaching reform of higher vocational computer programs can promote the precise connection between the talent cultivation system and industry needs. Through the virtual simulation practical teaching environment built by AI technology, students can carry out practical training in simulated real industry scenarios, become familiar with the work processes and skill requirements of industry positions, and improve their practical operation capabilities. At the same time, AI technology can integrate and analyze industry talent demand data, clarify the core skill requirements of the industry for computer professionals, and provide precise basis for the construction of curriculum systems and the setting of teaching content in higher vocational computer programs, ensuring that the direction of talent cultivation is consistent with industry needs, and strengthening the targetedness and effectiveness of talent cultivation [2].

2.3. Highlight students' subject status and promote personalized learning

The integration of AI technology can break the limitations of traditional teaching models, highlight students' subject status, and promote the realization of personalized learning. The intelligent learning system based on AI technology can tailor personalized learning plans for students according to their learning foundation, learning interests, and learning goals, recommending suitable learning resources and learning paths. Students can independently arrange their learning progress according to their own situation and carry out learning anytime and anywhere, realizing the autonomy and flexibility of learning. At the same time, the AI intelligent Q&A system can provide students with real-time Q&A services, timely solve problems encountered by students in the learning process, reduce learning difficulty, improve learning experience, and then stimulate students' learning enthusiasm and initiative, promoting the cultivation of students' independent learning capabilities [3].

3. Principles of AI technology empowering the teaching reform of higher vocational computer programs

3.1. Student-centered principle

Taking students as the center is the core orientation of education and teaching reform, and also the primary

principle for AI technology to empower the teaching reform of higher vocational computer programs [4]. The ultimate purpose of the application of AI technology is to improve the quality of talent cultivation and promote the all-round development of students. Therefore, in the process of teaching reform, AI technology must be reasonably applied around students' learning needs and growth laws. In the design of AI technology application scenarios, the construction of intelligent teaching platforms, and the formulation of personalized learning plans, full consideration should be given to students' learning foundation, learning ability, and learning interests to ensure that the application of AI technology can truly serve students' learning and growth. At the same time, attention should be paid to giving play to students' subject role, guiding students to actively adapt to the intelligent learning environment, cultivating students' independent learning ability and information literacy, avoiding students' dependence on technology caused by the excessive application of AI technology, and ensuring that teaching reform always takes the all-round development of students as the core goal.

3.2. School-enterprise collaboration principle

The core goal of the teaching reform of higher vocational computer programs is to cultivate applied talents who adapt to industry needs. As the direct carrier of industry needs, enterprises play an irreplaceable role in the process of teaching reform [5]. AI technology empowering the teaching reform of higher vocational computer programs must follow the principle of school-enterprise collaboration, fully integrate the resource advantages of both schools and enterprises, and realize the in-depth integration of teaching and industry practice. Enterprises can provide real industry demand information, cutting-edge technical resources, and practical teaching venues for the teaching reform of higher vocational computer programs, helping schools accurately grasp the direction of teaching reform and optimize the curriculum system and teaching content. Schools can rely on their own teaching resources and scientific research strength to provide talent training and technical support for enterprises.

3.3. Moderate and applicable principle

Although AI technology provides strong technical support for the teaching reform of higher vocational computer programs, not all teaching links need to apply AI technology. Excessively pursuing the comprehensive application of technology will instead ignore the essence of teaching [6]. Therefore, in the process of teaching reform, the principle of moderate and applicable must be followed. According to the characteristics of teaching content, the requirements of teaching goals, and students' learning needs, the application scenarios and methods of AI technology should be reasonably selected. For abstract and difficult teaching content that needs visual presentation, the visualization function of AI technology can be used to improve teaching effect; for learning links that need personalized guidance, precise empowerment can be realized through AI intelligent learning systems; for teaching links that require face-to-face communication between teachers and students to cultivate students' teamwork ability and communication ability, attention should be paid to the advantages of traditional teaching models to avoid excessive intervention of AI technology.

3.4. Education-oriented principle

The essence of education is to foster morality and cultivate people. AI technology empowering the teaching reform of higher vocational computer programs must always adhere to the education-oriented principle and integrate value guidance into the whole process of teaching reform [7]. While applying AI technology to optimize the teaching process and improve teaching efficiency, attention should be paid to cultivating students' professional ethics, sense of responsibility, and humanistic literacy. In the construction of the curriculum system

and the setting of teaching content, relevant content such as professional ethics norms of the information technology industry, data security, and privacy protection should be integrated to guide students to establish correct technical ethics and consciously abide by industry norms. At the same time, through the interactive teaching scenarios built by AI technology, the emotional communication and ideological collision between teachers and students, and between students and students should be strengthened to cultivate students' teamwork ability, innovative thinking, and social responsibility.

4. Paths for AI technology empowering the teaching reform of higher vocational computer programs

Combining the application characteristics of AI technology and the core needs of the teaching reform of higher vocational computer programs, a teaching reform path empowered by AI technology is constructed from four dimensions: curriculum system optimization, teaching model innovation, practical teaching upgrading, and teaching staff construction, so as to promote the all-round improvement of the teaching quality of higher vocational computer programs.

4.1. Optimize the curriculum system and integrate AI-related content

The curriculum system is the core carrier of talent cultivation. For AI technology to empower the teaching reform of higher vocational computer programs, it is first necessary to optimize and upgrade the curriculum system, organically integrate AI-related content into the curriculum system, and build a curriculum system that adapts to industry needs and technological development [8]. In terms of curriculum setting, on the basis of retaining the core basic courses of computer programs, additional professional courses related to AI should be set up, covering the basics of intelligent algorithms, artificial intelligence applications, intelligent system operation and maintenance, etc., to help students master the basic principles and application methods of AI technology. At the same time, it is necessary to strengthen the integration of AI technology with traditional professional courses, optimize and upgrade the existing curriculum content, and integrate the application cases and practical methods of AI technology into curriculum teaching to improve the timeliness and practicality of curriculum content. In terms of curriculum content arrangement, the principle of from shallow to deep and step by step should be followed, gradually guiding students to master the integrated application ability of AI technology and computer professional knowledge from basic theoretical knowledge to practical application skills. In addition, a dynamic curriculum update mechanism should be established to timely adjust the curriculum content based on the real-time analysis of industry needs by AI technology, ensuring that the curriculum system keeps pace with industry technological development [9].

4.2. Innovate teaching models and construct intelligent teaching scenarios

The limitations of traditional teaching models are important factors restricting the improvement of the teaching quality of higher vocational computer programs. AI technology empowering teaching reform requires innovating teaching models, constructing intelligent teaching scenarios, and realizing the precision and personalization of the teaching process [10]. On the one hand, build an AI intelligent teaching platform, integrate high-quality teaching resources, and realize the intelligent push and sharing of teaching resources. Teachers can release teaching tasks and upload teaching resources through the platform, and students can carry out independent learning, complete homework, and participate in interactive discussions through the platform. The platform can conduct real-time

monitoring and data analysis of students' learning behaviors, provide teachers with precise teaching feedback, and help teachers adjust teaching strategies. On the other hand, promote personalized teaching models. Based on the intelligent learning system of AI technology, tailor personalized learning plans for students according to their learning foundation and learning needs, recommending suitable learning resources and learning paths. At the same time, use AI technology to construct virtual simulation teaching scenarios, visualize and materialize abstract computer professional knowledge and complex practical operation processes, allowing students to carry out learning and practice in a simulated real environment to improve learning effects. In addition, implement a blended teaching model, integrating the advantages of online intelligent learning and offline face-to-face teaching. Online, independent learning and precise Q&A are realized through the AI platform; offline, targeted guidance by teachers and group collaborative learning are used to cultivate students' practical ability and teamwork ability [11].

4.3. Upgrade practical teaching and build an AI-empowered practical platform

Practical teaching is the core link for higher vocational computer programs to cultivate students' application ability. AI technology empowering teaching reform requires upgrading practical teaching, building an AI-empowered practical teaching platform, and improving the targetedness and effectiveness of practical teaching [12]. First, construct an AI virtual simulation practice base, using AI technology to simulate real work scenarios in the information technology industry, such as intelligent system operation and maintenance, data processing and analysis, allowing students to carry out practical training in a virtual environment. The virtual simulation practice base can break the limitations of time and space, provide students with more practical opportunities, and reduce the cost and risk of practical teaching. Second, build a school-enterprise cooperation practice platform, jointly develop AI-related practical teaching projects with enterprises, introduce real projects and technical resources of enterprises, and allow students to participate in the actual project operation of enterprises to improve their practical operation ability and post adaptability. In addition, use AI technology to construct a practical teaching evaluation system to comprehensively and objectively evaluate students' practical processes and results. The evaluation system can real-time monitor students' practical operation behaviors, analyze students' practical ability shortcomings, provide teachers with precise evaluation feedback, and help students improve their practical ability in a targeted manner [13].

4.4. Strengthen teacher training and improve teachers' AI application ability

Teachers are the main implementers of teaching reform. AI technology empowering the teaching reform of higher vocational computer programs requires strengthening the construction of the teaching staff, improving teachers' AI technology application ability, and ensuring the smooth progress of teaching reform [14]. On the one hand, carry out targeted teacher training, inviting experts in the AI field and industry technical talents to provide teachers with training on AI technology basics and the application of intelligent teaching tools, helping teachers master the basic principles and application methods of AI technology. At the same time, encourage teachers to participate in AI-related teaching and scientific research projects and industry practice activities to accumulate teaching experience and industry experience in AI technology application. On the other hand, establish a teacher exchange and cooperation mechanism, strengthen exchanges and cooperation with other institutions, share the experience and achievements of AI technology empowering teaching reform, and promote the improvement of teachers' teaching ability [15]. In addition, introduce professional talents in the AI field to enrich the teaching staff, optimize the teacher structure, and provide strong talent support for teaching reform. Through multi-dimensional

teacher training, build a teaching team with solid professional knowledge and strong AI technology application ability, promoting the in-depth integration of AI technology and the teaching of higher vocational computer programs.

5. Conclusion

The rapid development of AI technology provides new opportunities for the teaching reform of higher vocational computer programs. Empowering the teaching reform of higher vocational computer programs with AI technology is an inevitable choice to comply with the trend of the times and improve the quality of talent cultivation. AI technology can optimize the teaching process, adapt to industry needs, and highlight students' subject status, which has important reform value. In the process of reform, the principles of student-centered, school-enterprise collaboration, moderate and applicable, and education-oriented must be followed to ensure the correctness and orderliness of the reform direction. Through four core paths of optimizing the curriculum system, innovating teaching models, upgrading practical teaching, and strengthening teacher training, the in-depth integration of AI technology and the teaching of higher vocational computer programs can be promoted, the all-round improvement of teaching quality can be realized, and more high-quality applied computer professionals who adapt to industry development needs can be cultivated, providing strong talent support for the development of the information technology industry and the progress of social economy.

Disclosure statement

The authors declare no conflict of interest.

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