Research on the Method and Path of Embedding Artificial Intelligence into Higher Vocational Teaching Reform

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Abstract: *To realize the deep integration of artificial intelligence and vocational education and promote the reform of teaching and learning supply mode is the basic path to continuously improve the quality of talent training. This paper starts with the current situation and existing problems of artificial intelligence embedding in higher vocational teaching, and takes the three-core links of teaching, learning and evaluation as the path of embedding artificial intelligence key technology into education. By studying "what to teach", "how to teach", "how to learn" and "how to evaluate", this paper deeply empowers teachers, students and educational management with artificial intelligence to achieve accurate education, personalized learning and dynamic evaluation. The core courses of marketing major are selected to carry out teaching practice. The research finds that the embedding of artificial intelligence in higher vocational teaching can effectively solve the problems of students' diversified learning needs, low lasting enthusiasm for learning, and insufficient systematic assessment and evaluation, which can improve students' academic performance, enhance students' learning initiative, and enhance students' satisfaction with courses.*

Keywords: *Artificial Intelligence, Higher Vocational Education, Teaching Reform, Path Study*

1. Introduction

In the first 60 days of ChatGPT's launch, it immediately gained 100 million monthly active users. Its success is not only a breakthrough for a new generation of chatbots, but also a revolution for artificial intelligence and even the entire information industry.

With the rapid development of artificial intelligence technology, various advanced technologies have been widely used in the field of education. In 2017, "artificial intelligence" has become a national development strategy. Research shows that in the next 20 years, about 77% of jobs in China will be replaced by robots. At present, the research and application of artificial intelligence in the field of basic education is relatively more, and the related research in higher vocational education is relatively less[1].Facing the new challenges brought by artificial intelligence, higher vocational education urgently needs to seize the opportunities brought by artificial intelligence, realize the deep integration of artificial intelligence and vocational education, promote the reform of teaching and learning supply model, and build a personalized training model with "student-centered".

"Artificial intelligence" originated at the Dartmouth College conference in 1956 and has gone through three waves. The integration of artificial intelligence and teaching has become an important goal of global education reform, and some developed countries have carried out relevant research and made certain achievements. After analyzing the application literature of artificial intelligence in the field of education in the past decade, it is concluded that: From the perspective of research subjects, researchers are mostly concentrated in universities, vocational colleges, enterprises and other institutions, while researchers in primary and secondary schools are relatively few. From the perspective of the research object, the research is basically combined with the teaching process, mainly focusing on the introduction of star cases, but not paying enough attention to typical cases in the field of education. From the perspective of research topics, it mainly focuses on educational big data, machine learning, deep learning, personalized learning, learning analysis, etc. From the perspective of research scope, it mainly focuses on three areas that affect the construction and implementation of

artificial intelligence education application - technology, mode and practice. From the perspective of research methods, qualitative research is more than quantitative research, and normative research is more than empirical research[2].

According to statistics, the relevant research on the future higher vocational education driven by artificial intelligence in China has gradually become the focus of the academic circle, and the relevant research and teaching practice include two aspects: one is the macro thinking on artificial intelligence and higher vocational education, and the other is the micro-teaching case study on the integration of artificial intelligence and higher vocational education[3].This paper aims to explore how to apply artificial intelligence technology such as learning analysis technology and virtual reality technology to higher vocational courses from more angles, and study "what to teach", "how to teach", "how to learn" and "how to evaluate", in order to achieve accurate education, personalized learning and dynamic evaluation.

2. The Present Situation and Existing Problems of Artificial Intelligence Embedded in Higher Vocational Teaching

2.1. The Bifurcation of Teachers' Understanding of Artificial Intelligence

Traditional teaching is mainly teacher-centered teaching, students are passive to accept, and students' subjective initiative is difficult to play[4]. However, with the continuous renewal of educational ideas and the promotion and application of Internet technology in education, people's understanding of education is becoming more and more profound. Nowadays, student-centered education and teaching mode is the main theme of the new era, and students should become the main body of classroom teaching.

In the age of digital intelligence, modern information technology such as virtual reality/augmented reality technology, big data analysis system and adaptive learning technology have been used in the classroom of higher vocational colleges, and the relationship between teachers and students has gradually changed into the relationship between teachers, technology and students. Artificial intelligence education puts higher requirements on teachers, teachers should not only adhere to the student-centered teaching concept, but also integrate artificial intelligence science and effectively into the classroom and teaching, and achieve accurate teaching and personalized teaching for different students[5].However, at present, teachers' understanding of the value of artificial intelligence has not been unified, and there is still a phenomenon of polarization. Some teachers can take the initiative to respond to the development of artificial intelligence trends, update teaching concepts in time, actively learn and absorb cutting-edge knowledge and skills of artificial intelligence, constantly improve education and teaching levels, and innovate and reform teaching content. However, there are still some teachers who have not yet recognized or even completely denied the educational value of artificial intelligence, and believe that artificial intelligence into teaching is only a superficial form, which is not conducive to students' attention, but will reduce the efficiency of the classroom[6].

2.2. Students' Over-Reliance on Artificial Intelligence Devices

In the age of digital intelligence, mobile phones, pads and computers have become tools to assist students in learning. On the one hand, they bring convenience to students' learning, and on the other hand, they also cause negative effects such as abuse of electronic equipment and addiction of students. At present, many vocational students mainly rely on electronic devices when completing homework and inquiring information, and even some students with weak self-control are addicted to the phenomenon of network entertainment function. In addition, with the popularity of ChatGPT and homework analysis intelligent APP, individual students are even tired of thinking and directly use artificial intelligence devices to complete tasks.

The study found that nearly 90% of American college students complete their homework with ChatGPT[7]. In the long run, students are prone to lose their independent thinking ability, and teachers are also difficult to test students' mastery of knowledge and skills through assignments and tasks, and they cannot accurately carry out teaching reflection. It can be seen that artificial intelligence education not only provides students with learning convenience, but also brings greater challenges to students' self-management ability and independent thinking ability.

2.3. The Evaluation Lacks Systematic Analysis

Under the background of digitalization, teachers should realize the integration of technology and teaching in the aspects of teaching content, teaching means and learning methods, and educational evaluation also needs further reform. At present, some teachers have begun to use intelligent platforms and technologies to assist teaching, but there are still problems such as systematic deficiencies, single evaluation dimension and imperfect evaluation indicators in classroom teaching evaluation.

It is found that the problems are mainly reflected as follows: first, the main body of evaluation is still teacher evaluation, teaching management department evaluation and school evaluation, and there is a lack of parents and other stakeholders evaluation; Second, the evaluation scope is often selected within a given number range or individual samples to carry out individual evaluation, which is difficult to achieve intra-group difference evaluation; Third, the evaluation indicators are often set as the purpose, subject, object, content, result and other dimensions, and less consider of students' basic and cognitive evaluation, students' academic value-added evaluation and so on[8].How teachers should use intelligent technologies such as big data, cloud computing and virtual simulation to provide more scientific, fair and reasonable technical support for classroom teaching evaluation in higher vocational colleges, and carry out continuous and dynamic tracking is worthy of our in-depth research and exploration.

3. The Reform Path and Practice of Artificial Intelligence Embedded in Higher Vocational Teaching

During the "14th Five-Year Plan" period, China's education entered a stage of high-quality development. Facing the new stage and new situation, this paper takes the key technologies of artificial intelligence such as intelligent identification technology, learning analysis technology and virtual reality technology as the path to embed the three-core links of education: teaching, learning and evaluation. Research on "what to teach", "how to teach", "how to learn" and "how to evaluate", deeply empower teachers, students and education management with artificial intelligence, promote the deep sharing of high-quality education resources, help improve the quality of the whole process of education and teaching, and build a personalized training method with "student-centered" in order to achieve accurate education, personalized learning and dynamic evaluation. By selecting the core course of marketing major "Customer Relationship Management" to carry out teaching practice research, this paper will explore the reform and innovation of higher vocational education teaching and learning in the era of artificial intelligence.

Customer Relationship Management is the core course of the Marketing Professional Group (Guangdong high-level Professional Group), which has been awarded the 2021 Guangdong Provincial Fine Open Online courses. The course has a good foundation and adopt blended teaching for a long time. This paper will deeply explore the path of embedding artificial intelligence into the three-core links of teaching, learning and evaluation of this course.

3.1. Artificial Intelligence Embedded in the "Teaching" Section

With the development of New Media Marketing, the marketing model and customer service of various industries will have significant changes, such as the widespread use of AI customer service and virtual anchors, and the teaching content of courses needs to be updated simultaneously. Through the creation of a "diversified" teaching team, teachers cooperate deeply with Huawei, Telecom, China Unicom and other enterprises with industry characteristics, build an industrial college, double teacher studios, and training bases, adopt real project-driven, and jointly revise the integrated teaching content of the school and enterprise, while introducing artificial intelligence-related knowledge and cases, and incorporate new technologies, new means, and new norms into the teaching materials. Teachers expand traditional paper textbooks into "Internet +" textbooks, and organically embed ideological and political elements. Based on the network learning platform of artificial intelligence, teachers develop a diverse teaching resource library based on online and offline linkage to ensure that course resources can be heard, seen, practiced and interactive, and continue to iterate update.

In traditional classroom, a teacher gives lectures to dozens of students at the same time, emphasizing the indoctrination of knowledge and attaching importance to unity and planning, which is difficult to stimulate students' internal learning motivation and fails to meet students' personalized learning needs. In the era of artificial intelligence, through learning analysis technology, teachers can

combine the learning rules and characteristics in students' portraits to select knowledge content with high matching degree and accurately push it to students before and after class. At the same time, teachers can adjust teaching strategies timely and pertinence by receiving feedback information, and implement personalized teaching.

3.2. Artificial Intelligence Embedded in the "Learning" Section

The customer relationship management course is faced with the problems of "many students in higher vocational colleges, difficult to teach students according to their aptitude, and lack of individualized teaching".

In the era of artificial intelligence, students only need to use relevant electronic devices to obtain broad and diverse data resources, master the learning time and progress independently, and carry out human-computer interactive learning, personalized learning and deep learning. Through the interaction with artificial intelligence teaching assistants and the assistance of virtual resources, students can independently explore the realization of tasks without teacher guidance, enhance class participation and improve learning interest.

Through the reform of teaching mode, with the help of online teaching tools such as Superstar Learning Pass and Rain class, blended teaching is carried out. Teachers introduce AR/VR, virtual simulation system, AI robot, etc., to create an immersive learning experience and form a new classroom teaching form. Teachers use AR (augmented reality) technology to make relevant knowledge and technical difficulties into easily understood and effective multimedia teaching means (such as video, animation, three-dimensional solid graphics and other dynamic resources). AR software is used to scan and recognize two-dimensional code images to realize multimedia interactive functions such as three-dimensional presentation of resources.

In the practical training teaching, with the interaction, immersion of VR (virtual reality) technology, we provide students with a variety of efficient learning scenes such as "demonstration exercise" and "group discussion", so that students can get a variety of senses such as vision, hearing, touch and smell in the virtual environment through VR technology equipment, so as to fully mobilize human perception, find problems, solve the problem, profoundly improve the learning efficiency, ensure the learning effect[9].Teachers use the "five combination" teaching methods, that is, students' independent and concentrated learning, individual learning and group cooperative learning, network learning and classroom teaching, theoretical knowledge learning and practical ability training, students' self-study and teacher guidance, to form a teaching landscape of "reality in theory and rationality in reality".

3.3. Artificial Intelligence is Embedded in the "Evaluating" Section

The traditional evaluation method is generally conducted by examination after class, which can focus on reflecting the problems in teaching[10]. However, due to a long time gap, it is difficult to obtain real-time teaching feedback and realize the automation of teaching evaluation by relying on experience and observation. Teachers can solve the shortcomings of traditional evaluation system through artificial intelligence technology, such as intelligent monitoring and evaluation system. On the one hand, teachers can dynamically monitor students' grasp of knowledge points in real time and record students' learning of knowledge points. On the other hand, the intelligent evaluation function of the system can be used to intelligently analyze the knowledge mastery of each student, and make personalized assessment and assessment for each student according to the analysis results, so as to achieve normalized and automated teaching evaluation and help teachers and students to carry out teaching diagnosis.

This course adheres to the combination of process and finality, explores value-added evaluation, and adopts multiple evaluation methods including self-evaluation, mutual evaluation, systematic evaluation, teacher evaluation and enterprise tutor evaluation. Teachers innovatively use intelligent voice robots, business process robots and intelligent video analysis robots to collect data, deeply integrate intelligent teaching system and smart classroom learning behavior data, use intelligent diagnosis software and skill evaluation system for big data analysis, and use digital twin platform to realize visualization. Through the data of the online platform, teachers can effectively establish the curriculum learning files of students and promote the development of students. Finally, the teaching effect and education effect are tested by observation, questionnaire survey and in-depth interview.

3.4. Experimental Results

Two classes of Grade 2021 of marketing major in our school were taken as experimental subjects, one class was the experimental group, and the teaching reform was carried out by using artificial intelligence embedded curriculum, while the other class was the control group, and the teaching was carried out by traditional means. By issuing questionnaires, teachers take students' learning achievement, learning interest and satisfaction with the course as indicators of teaching effect to carry out teaching experiment research. The results show that 93.32% of students like to use AI-embedded teaching, and 82.3% of students believe that AI-embedded teaching can make them better master knowledge and skills; 89.6% of the students believed that AI-embedded teaching was more interesting and interactive than traditional teaching; 96.7% of students are willing to continue to use artificial intelligence to participate in learning. In short, students generally believe that using artificial intelligence to carry out teaching can make them better grasp difficult knowledge points, improve their learning interest and initiative, promote them to actively participate in active learning, better carry out personalized learning, and achieve good results in actual teaching.

4. Conclusions

Under the background of digital economy, taking Guangdong Province high-quality online open course "Customer Relationship Management" as the entry point, this paper carried out research on the theory and path of embedding artificial intelligence into higher vocational education. As the practitioners of vocational education, higher vocational teachers must re-understand the orientation of education and their own roles in the era of artificial intelligence, and break away from the inherent teaching thinking mode. In addition to improving their own digital competence and intelligent literacy, teachers should also improve the practical innovation ability of applying artificial intelligence technology to implement intelligent teaching, constantly seek innovation and breakthrough from the aspects of teaching concept, digital literacy, teaching resources, teaching strategies, teaching evaluation, etc., and promote the reform of teaching and learning supply mode. Only in this way can we ensure that the talent training model of vocational education is more accurate, intelligent and diversified, and can we better cope with the challenges of the intelligent age and the impact of technological change on teaching.

Finally, through the method of experimental research, the paper discusses the teaching effect of artificial intelligence embedding teaching method applied to higher vocational courses. The research finds that the embedding of artificial intelligence in higher vocational teaching can solve the problems of diversified learning needs, low lasting enthusiasm for learning, and insufficient systematic assessment of vocational students to a certain extent, and can effectively improve students' academic performance, enhance students' learning initiative and enthusiasm, and enhance students' satisfaction with courses.

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