

# Research on Artificial Intelligence Empowering Teaching Reform in Higher Vocational Colleges

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**Abstract:** The development of artificial intelligence has triggered profound changes in social production relations and promoted changes in teaching methods and teaching scenarios in higher vocational colleges. At present, the intelligent teaching ability of teachers in higher vocational colleges needs to be improved, and the intelligent teaching equipment in higher vocational colleges needs to be strengthened. Higher vocational colleges should respond to the changes of the times, improve the level and ability of intelligent education in schools, and use human-machine collaboration to innovate teaching models to promote the realization of the training goals of high-quality and high-skilled students in higher vocational colleges.

**Keywords:** Artificial intelligence; Vocational colleges; Teaching model; Human-machine collaboration.

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## 1. Introduction

Currently, the era of artificial intelligence is approaching us step by step, bringing disruptive changes to all walks of life and people's lives and learning. The rapid development of the Internet of Things, cloud computing, 3D printing technology and virtual reality technology has made many new technologies possible. It can be said that almost no industry will be "absent" in the scope of artificial intelligence's influence. The development of artificial intelligence has also brought about tremendous changes in the field of vocational education, promoting changes in teaching methods and teaching scenarios in higher vocational colleges. So, in the era of artificial intelligence, how to correctly understand the impact of this change, improve teachers' smart teaching level and ability, and promote the education and teaching model of higher vocational colleges to adapt to the changes of the times is a question worth studying.

## 2. Artificial Intelligence Promotes Changes in Teaching Methods in Higher Vocational Colleges

### 2.1. Artificial intelligence provides rich teaching resources

"The in-depth application of artificial intelligence technology in the field of education has created a strong-perception, high-interaction, and ubiquitous learning environment, which provides good conditions for students' knowledge construction activities." [1] In the era of artificial intelligence, intelligent teaching platform, teaching robots, intelligent learning software, etc. provide the teaching resources, teaching equipment, teaching scenarios and other teaching conditions required for discovery teaching for the training of students in higher vocational colleges, which to a great extent stimulates students' motivation and improves students' independent inquiry of positivity. On the one hand, according to the goal of cultivating the craftsmanship of students in higher vocational colleges and combined with the actual professional practice of students, teachers use intelligent tools to study teaching materials, analyze academic situations, plan the teaching process, and use intelligent

teaching platforms to provide students with personalized teaching based on teaching feedback. content, real-time monitoring of the teaching process, tracking students' learning status, providing students with teaching suggestions, receiving questions raised by students, and instantly pushing targeted learning resources based on students' individual behavioral characteristics, learning habits and learning progress. Through intelligent interactive learning, students conduct independent learning, group participatory learning, discover problems, and explore ways to solve problems. Teachers encourage and guide students to innovate and explore learning, transform the teaching process into a meaningful learning process, and then achieve the logical construction of new knowledge and skills. On the other hand, the creation of intelligent teaching scenes and realistic teaching scenes provides necessary fields for students to learn. In a situational environment, teachers master the rhythm of classroom teaching through problem orientation, case analysis, simulation operations, etc., fully mobilize students' enthusiasm, and improve students' ability to analyze and solve problems.

### 2.2. Artificial intelligence promotes the upgrading of teaching methods

In the era of artificial intelligence, it is a development trend to integrate the spirit and elements of artificial intelligence into the education and teaching process of higher vocational colleges. In traditional education, "chalk + blackboard + workshop" has become the image portrayal of its educational means combination; in the era of artificial intelligence, "cloud courses + intelligent technology + virtual reality" has become its new combination of educational means. "With the further implantation of artificial intelligence, "the methods and methods of education tend to be intelligent, process-based and large-scale." [2] This change has prompted vocational education to make changes in the organizational form and way of existence in order to improve teaching effect to meet the individual needs of learners. On the other hand, this change also requires teachers to make changes. Teachers need to maintain continuous learning capabilities that keep pace with the times, constantly change their own educational concepts, optimize teaching models, and use Artificial intelligence technology improves teachers' teaching

effectiveness. The development of artificial intelligence also puts forward new requirements for learners. Learners need to keep up with the development of the times, use artificial intelligence tools to optimize personal learning ability, and continuously enhance personal innovation awareness, development awareness, and humanistic awareness. Comprehensive qualities such as consciousness and global thinking can enhance the collaborative ability of individuals and intelligent machines, forming personal "hard technology" and "soft power".

### **3. The Dilemma of Teaching Reform in Higher Vocational Colleges in The Era of Artificial Intelligence**

#### **3.1. Teachers' smart teaching level is low**

With the development of artificial intelligence, it has become increasingly necessary for teachers to have skilled intelligent teaching capabilities. However, judging from the current actual situation, teachers' smart teaching capabilities are generally low. In the teaching process, some teachers will use the most normal information-based teaching tools, such as multimedia courseware PPT, teaching videos and other means to assist teaching. There are also teachers who use mobile APPs to assist teaching, or use cloud education methods to mobilize students' enthusiasm for participation. However, a large number of teachers do not know how to use artificial intelligence teaching methods, virtual teaching scenarios, intelligent robots and other teaching methods that require a higher level of intelligence. Will use it. The reason for this situation is that on the one hand, some teachers believe that teaching can be carried out smoothly without using these teaching methods. They believe that teaching content is the most important, and the use of intelligent tools is only a teaching method. As long as the teaching purpose is achieved. There are also some teachers who are unwilling to make new attempts because they are stuck in the original education model, especially older teachers. They are afraid of cumbersome intelligent operations and are unwilling to explore further. In the absence of mandatory requirements from the school, they will generally continue to use conservative teaching methods that they think are suitable for them. There are also some teachers who, because of the needs of the vocational skills competition, will try to explore intelligent teaching methods suitable for teaching, but this is only to serve the vocational skills competition. In actual classroom teaching, intelligent teaching methods have not yet become a reality. It is a common teaching method. At present, some of the teachers who use smart teaching methods are young teachers, and the other part are teachers who are willing to maintain innovative teaching in teaching or are willing to try new things and new methods.

#### **3.2. Intelligent teaching facilities need to be improved**

The development of artificial intelligence has caused traditional teaching auxiliary equipment such as chalk blackboards and projectors to gradually withdraw from the stage of history, and multimedia all-in-one machines have gradually become the mainstream application equipment for smart teaching. However, due to limitations in running conditions, many schools lack relatively advanced intelligent teaching equipment. The equipment used for classroom

teaching in the school is still the projection ceremony teaching equipment, and the smart teaching places are only in part of the teaching area of the school. The school lacks an overall plan for the construction of a smart teaching environment. It lacks an overall construction budget for the construction of a smart teaching environment. There are still big deficiencies in the overall system construction and standardization construction and technical personnel support. The school's smart teaching There is still a lot of room for improvement in equipment construction.

### **4. Human-computer Collaboration Innovates the Teaching Model of Higher Vocational Colleges**

#### **4.1. Improve teachers' intelligent teaching capabilities**

Artificial intelligence technology has led to changes in teachers' roles and functions. Traditional teachers' work content will gradually be replaced by artificial intelligence. Artificial intelligence can provide learning materials according to students' needs, diagnose students' knowledge strengths or deficiencies, provide automatic feedback, and promote learning among learners. Collaborate among students, discover difficulties or errors that students encounter when learning course content or completing exercises, and provide prompts. [3] Teachers make timely adjustments to teaching design and classroom teaching based on the feedback results of artificial intelligence. This prompts teachers to adjust their professional structure. In the past, teachers could complete teaching tasks with good professional knowledge and skills alone. This is no longer enough in the era of artificial intelligence. In addition to good professional knowledge and skills, teachers also need artificial intelligence. Teaching ability, ethical and moral ability and technical critical reflection ability. Among them, artificial intelligence teaching ability emphasizes teachers' mastery of teaching skills such as teaching platform operations, problem-solving strategies, and individual student guidance [4] based on artificial intelligence technology, which is the ability to use artificial intelligence teaching technology; ethical and moral abilities require teachers to be able to master The nurturing nature of education requires always grasping the moral risks that artificial intelligence may bring during the teaching process, grasping the emotional value in the teaching process, and insisting on paving students' future with love. The ability to critically reflect on technology requires teachers not to blindly rely on technology, focus too much on technology, and ignore the true purpose of education, making education formalistic. In short, the development of artificial intelligence has put forward higher requirements for teachers, which requires teachers to maintain sustainable learning capabilities and improve their personal comprehensive ability in intelligent teaching.

#### **4.2. Innovative human-machine collaborative teaching model**

In the context of artificial intelligence, teachers can construct teaching models through human-machine collaboration. Course teaching adopts the collaborative approach of "teachers + artificial intelligence + students", which not only considers the reasonable use of artificial intelligence as a teaching method, but also gives full play to

the teaching leadership of teachers, seizes the essence of education and educating people, and realizes traditional teaching + The organic combination of intelligent teaching + situational teaching is to cultivate high-skilled + high-intelligence + high-quality craftsman talents. Take a complete class as an example: before class, the teacher first publishes preview tasks on the intelligent guidance platform based on the students' academic status, and students use the platform to preview online. During this process, the intelligent system counts student participation in teaching activities and correctness of exercises in real time. rate, etc., and feeds back these academic data to teachers so that teachers can carry out precise teaching design or predict possible abnormal situations. The intelligent system will push learning resources of different difficulty levels uploaded by teachers based on the students' preview results. Complete collaborative preview and lesson preparation. During the class, the intelligent robot teaches knowledge points and gives students a situational teaching experience through explanation videos and virtual scenario teaching. At the same time, intelligent robots synchronously monitor students' learning progress and answer questions and provide real-time feedback to teachers, who can make accurate teaching strategies based on the feedback. In this process, teachers form positive emotional attitude transmission with students through teaching observation and interaction. On the one hand, they transfer knowledge, and on the other hand, they grasp students' emotional attitudes, provide timely educational value and emotional guidance, and complete the collaborative teaching process. In the collaborative assessment process, the intelligent machine immediately assesses and counts students' answers, evaluates whether students have achieved their learning goals, and provides feedback to teachers. Teachers use the feedback provided by the machine to adjust teaching strategies in a timely manner, evaluate students from dimensions such as emotion and innovation, and optimize student learning results. After class, teachers publish learning resources on the intelligent platform in advance, students answer their own questions, and the intelligent system provides feedback and optimized learning paths for learners to complete collaborative tutoring and marking. In the collaborative evaluation process, teachers use artificial intelligence analysis to conduct developmental evaluations of students, and combine teachers' performance on students' learning motivation, learning attitudes, and emotional changes to form a more scientific evaluation. This model can not only give full play to the important role of artificial

intelligence as a teaching method, but also fully consider the humanistic care of teaching and promote the realization of teaching goals.

## 5. Conclusion

In short, the arrival of the artificial intelligence era has brought new changes to the development of higher vocational colleges, triggered changes in the teaching methods and teaching scenes of higher vocational colleges, and brought new opportunities and challenges to teaching in higher vocational colleges. However, when we face opportunities and challenges, we should also clearly realize that artificial intelligence cannot replace everything. The essence of education is to educate people. No matter how artificial intelligence develops, no matter how advanced the development and application technology of artificial intelligence is, it is just a means. In the education process, the teacher's personality charm, the teacher's moral and emotional penetration, and the teacher's role in awakening the soul with the soul cannot be replaced by artificial intelligence. The innovation of education and teaching models in higher vocational colleges under artificial intelligence has not only not weakened the requirements for teachers, but has strengthened the leading role of teachers. Teachers are required to continuously study textbooks, students, society, majors, and new technologies. Be a good leader in students' life journey.

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