Innovation and Practice of Teaching Reform in Higher Vocational Colleges under Artificial Intelligence Environment

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Abstract: With the great success of machine learning algorithms represented by deep learning in the fields of machine vision and speech recognition, as well as the abundant and continuous data resources provided by cloud computing and big data, artificial intelligence has entered an unprecedented period of rapid development. Deeply changing all walks of life, the state requires corresponding intelligent education, but the artificial intelligence + education road is how to go, there is still no systematic discussion. In view of this article, artificial intelligence is used to promote the research of teaching reform, in order to enlighten the application of artificial intelligence teaching and promote education. The intelligent development of teaching.

1. Research background
Intelligentization is the new direction of today's social development, and it is also a new feature of information development. With the rapid development of technologies such as artificial intelligence, Internet of Things, big data and cloud computing, smart products and devices such as smart homes, smart robots, smart toys, and intelligent buildings have emerged, bringing people's lives and working methods huge impact. "Use intelligent technology to accelerate the promotion of talent training mode and teaching method reform, and to build a new education system that includes intelligent learning and interactive learning." Under this background, the field of education should follow the development of artificial intelligence, to promote their own teaching reform and innovation, to build the education system to achieve personalized learning and lifelong development, and promote the education of low-level, extensive to high-level, precision type change.

The key to contemporary teaching reform is to meet the new needs of learners for teaching and learning methods, to explore the possible effects of artificial intelligence technology in boosting education and teaching innovation, and to solve problems in current educational development.

2. Research main content
(1) Basic research on artificial intelligence to promote teaching reform
On the basis of discussing relevant theory and technical support, this paper attempts to explore the new influence and new changes brought by artificial intelligence to teaching from the aspects of teaching resources and teaching environment, teaching and learning methods, teaching management and teaching evaluation. The components of artificial intelligence to promote teaching change are shown in Figure 1.
By integrating artificial intelligence to promote the components of teaching reform, it is analyzed that the change of resource environment is the basis of teaching reform. Therefore, from the perspective of resource environment, the analysis of the teaching tools, teaching resources and teaching environment brought about by the development of artificial intelligence To optimize teaching and learning.

(2) **Research on Artificial Intelligence Promoting Innovation and Development of Teaching Resources and Teaching Environment**

**Intelligent learning:** This study attempts to analyze the evolution of learning resources from the perspective of resource independent intelligent evolution. Based on the general processing flow of artificial intelligence, the change of learning style should pay attention to the study of students' "learning" and focus on how to guide students to learn. Create different types of learning tasks, create a supportive learning environment, and help learners adapt to new knowledge, intelligent interactive learning, intelligent companion exercises, and intelligent guided deep learning to enhance learning.

Intelligent learning is a learner-centered learning activity carried out in an intelligent learning environment. Learners can not only get the resources they need, evaluate feedback, but also enjoy personalized learning support services, making learning easier, more efficient and more fun. The general process of intelligent learning is shown in Figure 2:

**Intelligent push teaching resources:** The traditional push method mainly uses email push, user subscription, and send link, and does not realize personalized and intelligent push target. In addition to traditional teaching, students may do 100 questions, and teachers may find out where students' knowledge is lacking. As shown in Figure 3:
Intelligent push can predict and identify the user's individual characteristics and needs, which has targeted initiative to push teaching resources, to provide users with targeted, personalized information and intelligence services in the proliferation of big data era, to meet the user easy access required information needs.

(3) Artificial Intelligence Promotes the Transformation of Teaching and Learning Methods
Focus on the research of artificial intelligence-assisted teachers in preparing lessons, teaching, answering questions, etc., which will help the development of teaching to intelligent, precise and personalized, and analyze the process of artificial intelligence for learners to preview, interact, practice, and deep learning. Provide support to help students continuously recognize, discover and enhance themselves and improve their learning experience.

When artificial intelligence enters the teaching, the machine can assist the teacher to prepare lessons, demonstrate, teach, answer questions, and evaluate the whole teaching process, and accompany the students in all aspects. The core elements of the teaching are thus changed. Teachers, students and machines become the core of teaching, and the machine will be Teaching and learning play an important role in this process. The application of artificial intelligence to teaching can help teachers prepare lessons, implement precise teaching, and carry out personalized Q&A and counseling, which will greatly reduce the burden on teachers and improve teaching efficiency.

(4) Research on Artificial Intelligence Promoting Teaching Evaluation and Teaching Management Innovation Development
The focus is on the transformation of teaching evaluation methods from manual assessment to intelligent assessment, from standardized evaluation to differential evaluation, and specifically analyzes the connotation, characteristics and key technologies of intelligent assessment and differential assessment, analyzes the general process of intelligent assessment, and summarizes intelligence. Implementation recommendations for the evaluation. And the application of artificial intelligence in teaching management from the aspects of scientific decision-making and automation management.

Teaching reform includes teaching evaluation and teaching management reform. Teaching evaluation methods and teaching management methods that match the new teaching methods should be adopted to monitor the teaching process and quality. The development of technology and the optimization and innovation of the teaching environment make the process data of teaching and learning more and more abundant. Educators should use the techniques of big data, learning analysis
and other techniques to fully explore and analyze the teaching data to realize teaching evaluation and teaching management. Automated, intelligent and scientific.

3. Key issues to be addressed

(1) Technical support for intelligent teaching environment

First, the development of the teaching environment is the basis for promoting teaching change. A new generation of learners put forward higher requirements for the construction of the teaching environment, such as the needs of intelligent perception learners and personalized learning services.

Secondly, IntelliSense is the basis for realizing personalized learning resource push. A new generation of artificial intelligence development planning points out that high-dynamic, high-dimensional, multi-mode distributed large-scale scene perception is required.

(2) Intelligent teaching mode design

The change of teaching subject with teachers, students and machines as the core will realize the interaction between teachers and machines, students and machines, teachers and students more efficient, open and diverse, the development of technology, the improvement of environment, and the adaptive learning resources make the teaching process more fluent, the teaching interaction more in-depth and timely, and the teaching effect is more obvious. From pre-course, after-class to after-class, intelligent teaching is more efficient than traditional teaching in all aspects. The intelligent teaching mode is built around the changes brought about by the development of artificial intelligence, as shown in Figure 4 below:

![Figure 4 Intelligent teaching mode scene](image)

4. Research ideas and technical routes

The research follows the whole research and development trend of research and application of artificial intelligence teaching → analysis of practical cases of artificial intelligence teaching application → conducting expert interviews on artificial intelligence to promote teaching change → extracting artificial intelligence will affect the teaching links → exploring labor Intelligent promotion of teaching resources and optimization of teaching environment → Exploring the artificial intelligence to promote the transformation of teaching and learning methods → Exploring the artificial intelligence
to promote innovation in teaching evaluation and teaching management. The research technical route is shown in Figure 5 below:

![Figure 5 research technology route](image)

5. Project features innovation

(1) **Provide personalized intelligent teaching platform**

   The intelligent teaching platform is based on computing intelligence technology, learning analysis technology, data mining technology and machine learning technology to provide teachers and students with a personalized teaching and learning system. It mainly uses artificial intelligence technology to intelligently analyze the content learned by learners, construct learners' knowledge maps, provide learners with personalized learning content and learning plans, support adaptive learning, and realize intelligent recommendation of learning content. The intelligent teaching platform realizes the full connection of teachers, students and parents with the help of adaptive, big data, cloud computing and other technologies. In the teaching service, through the analysis of the teacher's teaching process data, help teachers to summarize the gains and losses, monitor the quality of teaching, and adjust the teaching design to achieve the precision of the teaching process.

   It can be seen that artificial intelligence integrates adaptive intelligence, push technology, semantic analysis and other artificial intelligence analysis and big data mining technology to support learning calculation.

(2) **Constructing an intelligent teaching model**

   The integration of artificial intelligence into teaching has transformed the traditional teaching and student-oriented dual teaching subject to the ternary teaching subject dominated by machines, teachers and students, which helps to enhance the teaching wisdom of teachers and promote the cultivation of innovative creative talents. When artificial intelligence enters the teaching, the machine can assist the teachers to prepare lessons, demonstrate, teach, answer questions, and evaluate the whole teaching process, and accompany the students in all aspects. The core elements of teaching change accordingly, and teachers, students, and machines become the core of teaching.

(3) **Teaching Evaluation and Teaching Management Innovation Development**
Artificial intelligence promotes the innovation of teaching evaluation and teaching management. With the development of information technology, teaching evaluation methods and teaching management methods that match the new teaching methods should be adopted to monitor the teaching process and quality. The development of technology and the optimization and innovation of the teaching environment make the process data of teaching and learning more and more abundant. Educators should use the techniques of big data, learning analysis and other techniques to fully explore and analyze the teaching data to realize teaching evaluation and teaching management. Automated, intelligent and scientific.

6. Conclusion
Technology to promote teaching reform has always been the focus of scholars. Artificial intelligence has gradually integrated into the field of education, providing new possibilities for teachers and students to meet the needs of quality learning resources, smart learning environment, and personalized teaching. The artificial intelligence teaching application provides the conditions for the smooth implementation of intelligent teaching. It studies the artificial intelligence-assisted teachers to carry out the preparation, teaching, and answering questions, and analyzes the artificial intelligence to support the learners' preparation, interaction, practice, and deep learning. It can help solve the problems of mechanical, inefficiency and insufficient participation in traditional classroom teaching, and promote the development of teaching in the direction of intelligence, precision and individuality.

In short, in the artificial intelligence environment, the research on the reform and practice of teaching reform in higher vocational colleges is carried out on the whole level. At the same time, this research can better support the teaching for artificial intelligence technology.

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