



Integration Strategy of Intelligent Manufacturing Professional Curriculum Reform and School-Enterprise Co-operation Practice in the Context of AI Era

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Abstract

Artificial Intelligence (AI) is a data-centric intelligence, and the development of AI and the advancement of technology are changing day by day. One day in the future, the application of artificial intelligence will be more extensive and will bring great changes to every industry. In the context of the national strategy of "Internet +", the development of intelligent manufacturing has become an important means of promoting industrial transformation and upgrading. Colleges and universities are important places for talent cultivation, which should combine the characteristics and actual needs of intelligent manufacturing to carry out curriculum reform, and the practice of school-enterprise cooperation should be based on curriculum reform, and in-depth integration, to cultivate high-quality skilled personnel who can meet the needs of enterprises in the AI era. On this basis, this paper discusses the integration strategy of curriculum reform and school-enterprise cooperation practice for intelligent manufacturing majors in the context of the AI era.

Keywords

AI era, intelligent manufacturing professional, curriculum reform, school-enterprise cooperation, integration strategy

Introduction

With the rapid development of artificial intelligence technology, artificial intelligence has penetrated into various fields. At present, China's economy is in a new round of rapid growth, which means the social demand for talent is also increasing, which brings new challenges to university teaching work. In this case, in order to cultivate high-quality and high-level professionals who can meet the needs of society, universities must combine artificial intelligence technology to carry out curriculum reform and integrate with the practice of school-enterprise cooperation in the process of curriculum reform, so that the students cultivated by universities can better meet the needs of society.

1. The significance of the application of school-enterprise co-operation training mode in "Internet +"

1.1 Expanding educational resources through the "Internet Plus" concept

There are available information resources on the Internet platform. Therefore, in education, if we can make effective

use of the vast amount of information resources, we can achieve the expansion of the teaching resources of the curriculum as well as enrich students' thinking and cognition. Enabling students to search, collect and use information online develops their critical thinking skills, so that their classmates' horizons are no longer limited to book knowledge, but make more use of the Internet to keep abreast of social trends (Hu Zhenbiao, 2021). This method allows students to connect with life outside the school to achieve the exchange of ideas. It expands students' learning space and time and improves their thinking quality and personal qualities.

1.2 "Internet plus" concept for innovative interactive learning

Internet+ education can break through the traditional mode of education that requires time and space. The interactive features of the Internet allow students and teachers, students and students, and students and teaching materials to engage in dialogue, thus respecting the learning rules of students more, thus making "Internet +" education more in line with the learning rules of students, and giving more play to the main role of students, which is consistent with the requirements of the new curriculum reform ideas on teaching. Compared with traditional classroom teaching, interactive feedback, evaluation, and communication on the network platform can better meet the needs of students' personalized learning.

1.3 The "Internet Plus" concept to meet personality development

Self-management is essential in developing core qualities. The ability to have a proper understanding and assessment of oneself. In terms of ability performance and learning needs, each student has different degrees of differences, with some students preferring to study in silence in the evening, while others prefer the group discussion approach. The "Internet Plus" approach to teaching and learning can create a real-time platform for students to learn and communicate with each other, thus enabling each student to have his or her own needs, which can also give students the opportunity to create an autonomous time and space for learning. For example, depending on their habits, students can choose the time they feel best to study on the Internet and use it for tests, tasks, or problem-solving. This is a sign of self-management.

2. The status quo of school-enterprise cooperation talent training mode of intelligent manufacturing professionals at the present stage

At present, the training of intelligent manufacturing professionals in China is still relatively backward, unable to adapt to the ever-increasing needs. Whether it is ordinary colleges and universities or a variety of vocational colleges and universities, it is difficult to train a group of high-quality talents with "intelligent manufacturing" expertise. At present, China's universities and colleges of intelligent manufacturing technology personnel training direction is mainly focused on theoretical research, but in the practical application of the lack. Therefore, what is most lacking now is application-oriented talent. Relative to the advanced level of foreign technology, there is a serious shortage of intelligent manufacturing technology talents in China. However, at the present stage, due to the rapid progress of science and technology, the education system that corresponds to it is being gradually improved. In order to cultivate high-quality applied talents, the teaching system of colleges and universities is undergoing a series of reforms and improvements. Among them, the cultivation of talents in the field of intelligent manufacturing has begun to bear fruit. The mode of school-enterprise cooperation provides a good platform for students' professional experience, which can effectively improve their practical operation ability so that they can combine theory and practice, thus improving their professional level. At the same time, there are some problems with the curriculum related to intelligent manufacturing, such as the curriculum system is not sound enough and lacks innovativeness.

Secondly, "school-enterprise cooperation" remains an important way of training high-quality applied talents. However, some enterprises have shown the phenomenon of "going through the motions" in carrying out school-enterprise cooperation, and the enthusiasm for independent collaboration is not high. In the school-enterprise co-operation relationship, due to the existence of the school-enterprise co-operation relationship the students' professional quality is not high, which has a great impact on the employment of college students.

Finally, in the business management system of enterprises. Under the mode of "school-enterprise combination", students are not adapted to the content of practical activities due to the lack of relevant theoretical knowledge and practical skills training. This is mainly reflected in their lack of familiarity with their chosen specialty, their lack of interest in application development, and their lack of confidence in their working ability. Problems such as these will indirectly cause a brain drain in the field of intelligent manufacturing. Overall, the current situation of talent training for intelligent manufacturing professionals in China is not ideal, and should be improved in a targeted manner according to the needs of social development, professional development of talents, etc. (Li Yanyuan, Zhao Donghui, & Sun Xiaofang, 2021).

3. Integration strategy of intelligent manufacturing professional curriculum reform and school-enterprise co-operation practice in the context of AI era

3.1 Constructing a school-enterprise co-operation talent cultivation model of "combining reality and reality" in the context of the AI era

In the context of the AI era, the intelligent manufacturing profession needs to use virtual reality technology to build a teaching mode that combines reality and reality and promotes the deep integration of vocational colleges and enterprises, so as to let the students more intuitively understand the intelligent manufacturing professional courses and improve the learning efficiency of the students. The application of virtual reality technology in the teaching of vocational colleges and universities can effectively improve the quality of teaching. In practical teaching, teachers can use virtual reality technology to carry out teaching, so that students more intuitively understand the intelligent manufacturing professional courses, stimulate students' interest in learning, and improve students' learning effect (Wu Yanzheng, 2021). For example, in the teaching of the course "Intelligent Manufacturing Technology Fundamentals", teachers can use virtual reality technology to build a "smart manufacturing workshop". Firstly, the simulation system is installed in the training room in the workshop, and then the virtual reality technology is used to simulate the real production workshop environment. In the virtual world, students can communicate with teachers and classmates and collaborate with each other to complete the task. The "intelligent manufacturing workshop" constructed by using virtual reality technology can make students intuitively understand the teaching content of intelligent manufacturing professional courses.

3.2 School-enterprise co-construction of "intelligent manufacturing" specialty and promotion of intelligent manufacturing technology and teaching reforms

School-enterprise cooperation is an inevitable trend in the development of vocational education, but at present, many colleges and universities in China pay insufficient attention to school-enterprise cooperation, resulting in school-enterprise cooperation not being carried out smoothly. At present, with the rapid development of the intelligent manufacturing profession, artificial intelligence technology is also constantly innovating and perfecting, the traditional teaching method has been unable to meet the needs of the development of the times, and the teaching mode of the intelligent manufacturing profession should be reformed and optimized. If colleges and universities want to carry out school-enterprise cooperation, they must change the traditional teaching mode, promote the construction of "dual-teacher" type teachers, and improve the professional level and practical ability of teachers. Therefore, colleges and universities need to build a "dual-teacher" teacher team.

At the same time, if colleges and universities want to promote the practice of school-enterprise cooperation, they also need to establish a long-term mechanism for school-enterprise cooperation. In the context of the AI era, vocational colleges and universities want to achieve the effective docking of talent cultivation goals and enterprise development goals, they need to build a long-term mechanism for school-enterprise cooperation. Intelligent manufacturing professional belongs to the emerging industry, and the requirements for talent are higher, so vocational colleges can introduce intelligent manufacturing industry enterprises to participate in professional construction. For example, the introduction of artificial intelligence, robotics, and other new technologies and new equipment in the intelligent manufacturing profession. After the introduction of new technologies and new equipment needs to be applied to classroom teaching. This can not only improve the efficiency and quality of classroom teaching but also stimulate students' interest in learning.

3.3 Integration of AI into talent development programs through industry-education integration

In the context of the AI era, in order to cultivate more high-quality technical and skilled personnel, universities need to reform the talent training program according to the development trend of the industry, combined with AI technology, and promote the smooth implementation of school-enterprise cooperation practice projects. Specifically, firstly, colleges and universities need to fully understand the employment needs of enterprises, and formulate a more reasonable talent training program by combining the development trend of the AI era and the requirements for talent. Secondly, colleges and universities need to pay attention to the implementation of school-enterprise cooperation practice projects, organically combine enterprise projects with teaching projects, and use AI technology to achieve students' skills training and comprehensive quality training (Zheng Min, 2021). Finally, colleges and universities need to actively participate in the research and practice of the integration and development of AI technology and intelligent manufacturing, and promote the technological innovation of enterprises in the field of artificial intelligence. In the context of the AI era, colleges, and universities need to actively promote the development of the practical work of the integration of industry and education, improve

students' cognitive ability and application ability of new technologies and new processes, and closely integrate the actual production process of enterprises with the teaching project to promote the application of new technologies and new processes in teaching.

3.4 Construction of "intelligent manufacturing" curriculum system, development of a series of high-quality teaching materials

Colleges and universities should build the "intelligent manufacturing" curriculum system based on the theory of artificial intelligence, the development of the intelligent manufacturing industry, and the requirements for talent training, with students as the center, vocational ability training as the main line, vocational literacy training as the goal, and combining work and study as the way. Through the analysis of artificial intelligence-related technology, intelligent manufacturing industry development, and talent training requirements, we find out the key points of the "intelligent manufacturing" curriculum system construction and the docking of enterprise positions, analyze the basic requirements of the core competencies of each position, and carry out the construction of professional curriculum system. Develop high-quality teaching materials with strong relevance and practicality. Increase the learning content of AI-related knowledge in the teaching materials, including the basic knowledge of AI, automation control systems, PLC technology, etc. Organic integration of course teaching content and enterprise job content, so that students learn professional knowledge while understanding the actual workflow and work methods of enterprises. Through the development of intelligent manufacturing series teaching materials, promote the formation of the integrated teaching mode of theory and practice, and provide students with real work task situations. Through school-enterprise cooperation in the development of an intelligent manufacturing series of high-quality teaching materials, students' innovative spirit and practical ability can be effectively cultivated.

3.5 School-enterprise cooperation in the construction of "intelligent manufacturing" training bases to enhance students' practical ability

School-enterprise cooperation is an important means of curriculum reform in colleges and universities, and schools can jointly build "intelligent manufacturing" training bases with enterprises to improve students' practical ability (Qian Sheng & Guo Dongxu, 2023). The construction of training bases requires the cooperation of schools, enterprises, and students, and the construction of training bases is constantly improved in the process of practice. In the construction process, the school can divide students into different groups according to the requirements of the intelligent manufacturing professional courses, and each group has different training plans. In addition, the school can also hire enterprise experts and enterprise engineers to participate in the design of the curriculum and work together to develop practical teaching programs. School-enterprise cooperation can achieve complementary advantages and promote the optimization of the talent training mode in colleges and universities. For example, in the construction of "intelligent manufacturing" training bases, schools can work with enterprises to build multi-functional practical teaching places such as artificial intelligence laboratories and artificial intelligence exhibition halls, so as to improve the practical ability of students.

4. Conclusion

In short, the overall quality of students can be effectively improved through "school-enterprise cooperation", and the implementation of the school-enterprise cooperation mode in the context of the AI era has greatly expanded the curriculum resources of the intelligent manufacturing profession, and also provided new ideas and methods for the cultivation of talents in schools and enterprises. Therefore, in the environment of AI, it is necessary to establish a "school-enterprise cooperation" mode that can improve the competitiveness of enterprises, promote scientific and technological progress, and improve professional application ability. In order to meet the needs of social development for intelligent manufacturing professionals, schools should establish a sound training program and strengthen school-enterprise cooperation.

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