

On the Cultivation of Industrial Robotics Talents in Higher Vocational Colleges

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Abstract With the economic development, most vocational colleges have opened the industrial robot technology just for industrial robot technology professionals for the status and the analysis for existing problems, combined with domestic and foreign experience in robot education, especially in teacher training, curriculum system, teaching equipment and facilities and give the answers, so as to improve the quality of robot technology professionals in vocational colleges.

1. Introduction

Industrial robots are multi-joint robots or multi-degree-of-freedom robots for industrial applications. Industrial robots are automate the operation of a machine that is achieving various functions by using its own power and control. It can accept human command, also can be run in accordance with pre-programmed, modern industrial robots can be based on AI technology to give the principles of action. It has the advantages of high repeatability, high reliability, high flexibility and high degree of automation. It can greatly improve the production efficiency and product quality compared with the artificial one. Compared with the special product, it has the flexibility about production, small size and other characteristics. The use of industrial robots is promote the transformation and upgrading of enterprises, to optimize the quality, improve efficiency, reduce costs, solve the contradiction between human supply and demand, improve the core competitiveness, manufacturing industry has broad prospects. "Robot revolution" is expected to become the "third industrial revolution" a starting point, will affect the global manufacturing, China will become the world's largest robot market. The rapid development of industry robot, the demand for robot talent is also growing. Follow the social needs for enterprises to develop much-needed industrial robots technical personnel, is one of the main tasks of vocational colleges.

2. Domestic and Foreign Robot Education Review

In February 2007, Bill Gates published an article on "Everyone in the Future has a robot" in "Global Science". From 32 years ago, the establishment of Microsoft, making the computer in the world, the robot will be the same as the computer into the thousands of households to completely change people's life.

In some developed countries, robot education has become a hot topic in schools and university education. Countries are actively exploring the path of robot education development. In the United States, robot education is mainly through the theoretical course of practice courses, the theoretical courses are mainly robot technology courses, robot-assisted teaching courses, practical courses. Among them, practical courses include extra-curricular activities and robot-based summer camps and other regular activities.

Japan's robotics and robotics industry is one of the highest in the world. Not only in the primary and secondary schools to set up robotics courses, but also in the university set up a robot research, almost every university has a high level of robot research, and regularly organized robot design, production competition, encourage and promote the robot products, robot technology continues to

develop. On the basis of the robot education, the rapid development of the Japanese automobile industry, the electronics industry, the machinery manufacturing industry, the precision instruments and so on has promoted the upgrading and adjustment of the industrial structure after the war through the social application of the robot. The transformation of the economic structure for the rapid development of Japan's economy provides a guarantee.

In addition, in recent years, the United Kingdom, Singapore and other countries have also introduced a series of measures to promote the development of domestic robot education, hoping to promote the development of robotics through robot education, and then achieve industrial upgrading and promote sustainable economic growth. South Korea has also invested heavily in robot development and education to ensure that robotics research is carried out. At the same time, Taiwan, Hong Kong and other regions, but also in the robot education has made considerable development.

3. Domestic Robot Education Status

In recent years, China's colleges and universities in the robot education research has also made some achievements. From the published works, there are theoretical research on the robot education in China, such as Xiao Nanfeng editor of "humanoid robot"; Peng Shaodong "on the robot education"; Huang Zhijian's "robot education exploration", but also on the Chinese robot Education and practice of the summary and prospects, such as Zhou Haitao editor of "robot and remote robot"; such as Lv Chunpeng "China's teaching robot development issues"; Zhang Jianping, Wang Yi's "robot education: status quo, problems and promotion strategy" and so on.

To sum up, robot education as a new field of education in the future of education has been accepted by countries, robot education, cross-border competition is also intensified. The wide application of robots will greatly promote the development of social productive forces and the adjustment of industrial structure, industrial robot manufacturing and extensive application will become a new economic growth point. With the development of intelligent robot technology and the demand for intelligent technology in the era of science and technology, the feasibility of entering the university classroom into the university's information technology foundation or engineering basic course has gradually become clear and mature.

4. Status of Vocational and Technical Personnel Training in Higher Vocational Colleges and Existing Problems

4.1 Current Situation of Robotics Talents Training in Higher Vocational Colleges

In recent years, the practice of robot education in Chinese universities has paid more and more attention, and in some aspects has made the corresponding results, each has its own characteristics, such research situation is conducive to the promotion of robot education practice teaching reform process, but there are some problems. Most of the colleges and universities in the study of robot education, are from their respective colleges and universities in the practice of reform in the existing problems, suggestions for the problem; or from the teaching materials, curriculum, resource allocation and other single point of view, analysis of practical teaching Or from a specific engineering professional point of view, to study the issue of reform. From the existing research can be found in China at this stage of the emergence of robot education problems are also common.

4.2 The Main Problems in the Training of Robotics Talents in Higher Vocational Colleges

Higher vocational colleges Industrial robots technology is specialized in the field of industrial training with industrial robot development and application, technical supervision, quality certification and other comprehensive ability of mechanical and electrical combination of advanced high-tech technical personnel, the professional students are mainly for intelligent manufacturing equipment, Mechanical processing, food, new energy and other industries and enterprises, as well

as industrial robot manufacturing enterprises, systems integration business, students after graduation mainly engaged in automation equipment in industrial robots operating unit on-site programming, commissioning maintenance, fault diagnosis, man-machine interface, touch screen Programming and other production technology management, as well as industrial robot sales and after-sales service work, but the current vocational colleges in the industrial robot training process there are still some problems:

(1) Personnel training teachers lack

Industrial robot technology in vocational colleges is a new professional, the current professional teachers are mostly other professional teachers, the lack of professional teachers, resulting in a slightly weak theoretical basis;

(2) Practical teaching links to be strengthened

Because the higher vocational colleges are provided for the enterprise to provide the application of highly skilled personnel, need to carry out a large number of practical training practice links, but the current situation is that the lack of practical experience of teachers in colleges and universities, although teachers can make up for the lack of It is difficult to systematically plan the content of the course of the theory course, which leads to the lack of practice teaching.

(3) The curriculum system is not perfect

At present, most of the teaching systems of industrial robotic technology courses are based on foreign systems or ordinary undergraduate teaching system, which do not fully reflect the characteristics of personnel training in higher vocational colleges. Some colleges and universities will also set up courses because of teacher problems. Not sound, some must master the course failed to open, at the same time, a high level of teaching materials are also a shortage;

(4) Teaching facilities and equipment to be improved

Higher vocational college students require practical ability, in the teaching process requires a large number of practical teaching facilities for students to disassemble, these aspects have yet to be strengthened.

5. The Vocational College Robot Professional Training Countermeasures

Higher vocational college personnel training is mainly for the regional economic construction to provide highly skilled application talents, as the goal, industrial robot technology professionals focus on a few points from the following:

5.1 Team building

Achieving and improving the efficiency and level of higher vocational education depends on the quality, level and responsibility of teachers. In general, the need to build a combination of teaching, dual division, the mechanism of integration of the teaching team. Higher vocational colleges, industrial robot technology teachers on the one hand through the introduction of talent to solve the problem, on the other hand with the creation of industrial robots of the University and training institutions joint teacher training, and schools can also establish school-based employees continue to educate themselves, self-development Mechanism to encourage teachers to conduct in-depth enterprise training, to achieve a real double teacher team.

5.2 To strengthen school-enterprise cooperation

School and enterprise in the system, teachers, training and training system, teaching resources, hardware and software facilities on the depth of integration, to play their own, the students into the enterprise with the post, internship; Advantages, co-train talent, so that students can graduate both employment.

5.3 Improve the teaching system

According to the basic teaching system of higher vocational colleges, which has the requirements of basic, professional and operational, the basic curriculum system is relatively mature and

professional curriculum system. In addition, the professional high school system Vocational characteristics, regional characteristics and school characteristics to set up, operational curriculum system can be based on the school-enterprise cooperation, docking certificate examination department, using teaching, training, examination, evidence of a unified way to solve directly, with a response and practical, In the selection of teaching materials, the use of educational guidance institutions recommended textbooks or combined with their own characteristics of self-teaching materials.

5.4 Personnel training conditions perfect

On the basis of the necessary equipment and facilities, such as the purchase of removable robots, encourage students to participate in various competitions, master the theoretical knowledge in practice, enhance the skills to strengthen the training base construction, training innovative practical skills.

Strengthen the vocational skills contest, build training base. However, due to the influence of traditional subject-basedism, the training base construction target deviation, and not completely according to vocational skills training objectives set skills training, its construction is only to meet the needs of theoretical teaching content, can not play the role of training base, students lack True sense of "practical experience". Training base construction should reflect the advanced teaching philosophy, the establishment of school-enterprise cooperation, the new model of social services, multi-investment new system, the market operation of the new mechanism. The implementation of vocational skills competition is the vocational education and implementation of the party's education policy, the implementation of scientific development concept of major initiatives, is the vocational education teaching reform

Leather quality, quality of education and the level of education, but also to promote vocational education reform, strengthen school-enterprise cooperation, to do an important means of vocational education characteristics. Through the skills competition, not only can promote the school model reform and curriculum reform, but also to promote the "double teacher" team building and training base construction.

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