

Exploration and Practice of Robot + Production Line Intelligent Technology Talent Training Mode based on "Mentor-Team-Project"

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Abstract

Under the background of machine replacement in China and Zhejiang Province, a large number of intelligent technical talents of robot and production line are urgently needed. In order to help the industrial upgrading, this paper explores and practices the talent training mode through the core characteristics of tutors, teams and projects, establishes intelligent talent technology classes, establishes tutor team and student team of school enterprise cooperation, and cultivates students' innovation and entrepreneurship spirit based on the integration of training, R & D and entrepreneurship. At the same time, under the guidance of action oriented, project-based teaching is helpful for students to pay attention to their own development in the work, and do a good job in the cultivation and promotion of professional post ability. Practice has proved that the robot + production line intelligent technical personnel training based on tutor, team and project has good practice effect.

Keywords

Industrial Robot, Mentor-team-project, Training mode.

1. Introduction

The application of industrial robots and automatic production lines is an important means for the transformation and upgrading of enterprises in China and Zhejiang Province, and an important guarantee for the implementation of the "machine replacement" plan. As the main force of training new technical talents of industrial robot and electrical automation, how to cultivate electrical talents with industrial robot + intelligent production line technology, based on Wenzhou manufacturing industry with the focus on electrical industry, it is a very urgent topic to establish and improve the talent training mode of electrical automation technology. At the same time, the industries in Zhejiang Province and Wenzhou are in urgent need of transformation and upgrading, and a large number of intelligent technical talents of robot + production line are urgently needed [1].

Following the trend of Internet plus development and taking the deep integration of informatization and industrialization as the main line, we will focus on developing 10 fields, including intelligent equipment, robots and so on [2,3]. The major of electrical automation technology always adheres to scientific development, adheres to the guidance of science and technology service enterprises in specialty construction. Based on Wenzhou manufacturing industry, which focuses on electrical industry, relying on automation industry, it carries out the teaching of intelligent production line technology and industrial robot technology. According to the standards of "integration of learning and doing, integration of school and enterprise, and integration of teaching and research", the provincial demonstration electrical automation training base has been built, and more than 20 off campus training bases have been built with in-depth cooperation with local leading enterprises, providing strong technical support and talent guarantee for local enterprises to realize "intelligent manufacturing, intelligent product research and development", and boost industrial transformation and upgrading.

In view of the long-term and large number of intelligent technical talents of electrical automation and production line, we should deepen the professional teaching reform, improve the quality of talent training, and implement the "mentor-team-project" industrial robot + intelligent production line talent

training, which is helpful to highlight the practical ability and new technology application ability, give priority to the cultivation of technical personnel, explore and build a "mentor team project" industrial robot + intelligent production line talent training It is suitable for the talent training mode of robot + production line intelligent technology in higher vocational colleges.

2. The construction of the training mode of "tutor-team- project" as the core characteristics

2.1 The concept of "tutor-team-project" as the core characteristic training mode

The training mode of robot + production line intelligent technology specialty students with the characteristics of "tutor -team- project" as the core, in short, is that the students take the team as the unit, and under the professional guidance of the tutor, To carry out the training of intelligent technology elites of industrial robots and production lines with the project as the carrier. The tutor here refers to the teachers, scientific researchers and enterprise tutors who guide the students' technical skills and entrepreneurial team activities; the project refers to the various skills and technologies carried out by the student team, and the technology is used as the technological model for innovation, entrepreneurship, practice and other activities; Team is a project-based team composed of a certain number of students under the guidance of tutors.

2.2 Construction of intelligent technical talents special class guided by double level and multi-direction

Based on the two-level and multi-directional talent training mode, starting from the third semester, combined with the professional characteristics and students' interests, through the test of intelligence and practical ability, the students with special skills are selected, and the specialized students are organized into special classes. Set up production line intelligent technology specialty class. The specialty class adopts small class teaching system, and its major is "specialty" module course extracted from research projects relying on the platform. It takes industrial robot technology and intelligent production line technology as its specialty to carry out personalized development and elite training. Select excellent students with special skills to enter the project R & D team. The tutor will lead the students to carry out applied R & D and implement enterprise R & D projects, so as to continuously improve the ability of solving practical problems, professional application ability and innovation and entrepreneurship ability, and then improve the quality of employment.

2.3 Adopting the "double tutor" system, schools and enterprises jointly cultivate intelligent technical talents of production line

Establish a platform for school enterprise cooperation and integration of industry and education. The R & D personnel of the platform in the school will act as the "first tutor" of students with special skills, actively carry out the transformation and integration of scientific research and comprehensive curriculum content, and select "second tutor" from enterprises to jointly undertake the teaching task. Excellent students are selected to enter the project R & D team. The "double tutors" lead the students to carry out the application research of industrial robots, automatic production lines, Internet of things and other new technologies in their spare time, graduation comprehensive practice and holidays, implement enterprise R & D projects, and implement the local technology innovation talents training oriented by employment, so as to lay a solid foundation for students' post entrepreneurship and independent entrepreneurship.

Relying on the skill master's studio and tutor's studio, the competition promotes teaching, learning and creation, and effectively cultivates and improves students' technical level. Actively organize teams to participate in the national skills competition of Higher Vocational Colleges organized by the Ministry of education, actively participate in the automation skills competition organized by the machinery industry committee, the electric power industry committee and the world's top 500 enterprises, and participate in the international BRICS and world skills competition.

We should make full use of the existing practice teaching conditions of research and development teams, master studios and production and education integration bases inside and outside the school,

further expand the practice conditions outside the school, and integrate the education of specialty students into the practice inside and outside the school, and establish a new mode of "double tutors" of school enterprise cooperation.

2.4 Based on the integration of training, R & D and entrepreneurship, cultivate the innovative spirit of students with special skills

Based on the integration of training, R & D and entrepreneurship, the training mode of tutor team project can be divided into two stages. The first stage: after entering the school, the students will join the special class and select the excellent ones to enter the innovative society. The innovation ability training courses and entrepreneurship general courses are offered to cultivate students' innovation and entrepreneurship awareness. Senior students in the community teach and help freshmen, one-to-one counseling; The second stage: set up special courses of innovation and entrepreneurship. On the basis of professional special ability learning, we investigate the technical problems existing in enterprises, apply for the training project of College Students' innovation plan, carry out innovation ability training, and solve practical problems for enterprises. At the same time, we should set up an entrepreneurial team, and the professional entrepreneurship guidance teachers will provide systematic guidance on entrepreneurial knowledge and entrepreneurial methods.

3. The Project teaching practice based on action oriented

The action oriented teaching method is based on the real project or practical working process of the enterprise. It is an innovative teaching mode for teaching design, planning, project implementation and evaluation. In the teaching process of industrial robot talent training course, action oriented follows the complete "action" process of "(1) information, (2) plan, (3) decision, (4) implementation, (5) inspection and (6) evaluation". Starting from the specialty and practice of industrial robot + intelligent production line, the project method and action oriented teaching method can be introduced into the classroom teaching to carry out teaching activities [4,5].

The project teaching method is designed according to the teaching objectives, teaching contents and ability objectives of industrial robot + intelligent production line technology course. Project teaching method is a kind of teaching method which takes students as the main body, teachers lead and emphasizes both theory and practice. Project law transforms practice into professional skills, which is a practical process of full participation. The project teaching method can be carried out according to the following steps:

3.1 Teachers assign project tasks

According to the practical project, the project task of industrial robot + intelligent production line technology course is assigned. The determination of the project should not only consider industrial robot and its theoretical basis, but also consider the application ability of students. When making the project task, we should pay attention to the characteristics of each project, such as the connection between the past and the future, and the teaching law of students' mastering knowledge.

3.2 Develop project task plan

In the teaching process, the industrial robot + intelligent production line technology project is taken as the carrier, and the project team is taken as the unit. Around the project task, the team members first discuss with each other, and record and formulate multiple feasible plans.

3.3 Optimal decision making

After the formulation of the plan, each team selects the best effective solution from multiple plans according to the project knowledge points and training environment, and determines the detailed implementation steps and plans.

3.4 Project plan implementation

According to the optimal solution and detailed planning steps, the work plan of industrial robot + intelligent production line project is implemented. All members work together, and the task objectives

must be clear in the task allocation link to ensure that the plan is completed on time, and teachers are on the side to guide and help.

3.5 Supervision and inspection in implementation

In the process of project implementation of industrial robot + intelligent production line, members of each group should carry out corresponding inspection, including work progress and work quality, and require to confirm the consistency of the project during online operation, and timely adjust the progress.

3.6 Group review and presentation

As the course has the corresponding teaching equipment, the group recruitment and exhibition will be carried out after the project. The working group should report the achievements of industrial robot + intelligent production line project, display and how to solve the problems encountered in the working process. At the same time, the team members should carry out mutual evaluation and scoring, so as to master the knowledge and skills, and improve the ability to solve problems.

Under the guidance of action oriented, the talent training of industrial robot + intelligent production line adopts project-based teaching, starting from the actual work position and working process of the enterprise, which is conducive to the students' attention to their own development in work and do a solid job in the cultivation and improvement of professional post ability. At the same time, the new technology, new process and new specification are applied to update the curriculum standard and content of industrial robot + intelligent production line, and the new technology, new process and new specification in the field of industrial robot are integrated into the teaching content, and the teaching resource library is constructed. On the one hand, students' ability to solve industrial robot project practice is improved, and on the other hand, students' creativity is stimulated.

4. Conclusion

With the development of intelligent manufacturing technology, the industry and enterprises are in urgent need of industrial robots and intelligent production line talents. Through school enterprise cooperation, tutors and student teams are set up, and action oriented project-based teaching is introduced to introduce new technologies, new processes and new norms, so as to cultivate students' professional and technical skills. Practice has proved that the robot + production line intelligent technical personnel training based on tutor, team and project has good practice effect.

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