ISSN 2663-8169 Vol. 4, Issue 12: 42-45, DOI: 10.25236/IJNDE.2022.041210

Teaching Reform of Course and Certificate Integration under the 1+x Certificate System—Taking Industrial Robots as an Example

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Abstract: *With the development of market economy, the demand for vocational talents is increasing, which promotes the great development of vocational education in China. Both the number of vocational colleges and the number of students are increasing than before, but at this stage, the teaching mode cannot meet the needs of market talents. Many students cannot get the salary they want after graduation, which seriously hits the learning enthusiasm of vocational education students. With the implementation of the 1+X certificate system, vocational education reform has entered a new level, and curriculum integration is also an important part of the reform. By formulating certificate standards for industrial robot majors and combing the curriculum content in combination with the path of curriculum integration, it is conducive to enhancing students' competitive advantage in employment and ensuring the sustainable development of higher vocational colleges.*

Keywords: *1+X Certificate System; Course Accommodation; Reform in Education; Industrial Robot*

1. Introduction

With the proposal of the national vocational education reform plan, it is required to combine certificates such as academic qualifications and vocational skills, clarify the foundation and subjectivity of vocational education, and realize the five in one all-round development, so as to lay a good foundation for students' future development. Among them, X is the vocational skill level certificate, which is jointly participated by the industrial robot industry and higher vocational colleges to formulate the practice certificate standard, which has strong pertinence and guidance to solve the problem of difficult employment of vocational educators. The 1+X certificate system needs to realize the unity of higher vocational education and market human demand, and fully reflect the development law of vocational education. The implementation of this system in higher vocational colleges is conducive to cultivating compound vocational talents, enhancing the proficiency of vocational students' professional ability, and effectively ensuring that they are more adaptable to the social environment and improving the quality of employment.

2. Clarifying the principle of course accommodation to meet the job needs of enterprises

In realizing the 1+X certificate system, higher vocational colleges should clarify the principle of curriculum accommodation, change the educational concept, and take students as the center of teaching, in order to comprehensively promote the growth of students' comprehensive quality; We should reasonably set up the curriculum system, strengthen the guidance of the teaching process, and realize the standardization of the teaching classroom; We should also adhere to the law of teaching reform, reflect the training characteristics of industrial robots, and enhance the influence of the industry, in order to continuously improve the course accommodation mechanism to ensure the realization of teaching objectives [1]. In the teaching of industrial robot specialty, to realize the integration of courses, we should combine the industry standards, clarify the skill certificate standards, and speed up the integration of the concept of course integration, so as to scientifically and reasonably formulate the talent training plan of the specialty, and gradually divide the training tasks into different disciplines. In the major of industrial robot, we should adopt the addition and subtraction method and screening method to delete the redundant part of the classroom content, such as the application status of industrial robot technology; enhance the relevant contents of the certificate, such as offline system programming, application testing, etc., and effectively simulate the enterprise post work in teaching in combination with the configuration of corresponding training equipment . Through the substitution method, the training content of previous

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courses will be gradually replaced by the training content of 1+X certificate, such as the construction of industrial robot painting station. We should combine ideological and political content in the course, combine the dream of the great rejuvenation of the Chinese nation, and stimulate students in this major to be brave in innovation to better realize the improvement of professional skills[2]. Under such curriculum design, the content of industrial robot curriculum has been enriched to meet the needs of social practice.

3. Resetting the course content and realizing the certificate system

According to the principle of course accommodation, the course content of industrial robot specialty is reorganized to effectively meet the implementation of the 1+X certificate system. Through the analysis of the current talent training requirements, we can grasp the functional skill education, add the content needed for skill training, and delete the content that is difficult to learn and less practical application, in order to enhance the offline programming and system maintenance content, let the certificate training content replace the previous practical training content, and gradually integrate the ideological and political content into the teaching, which effectively realize the cultivation of students' professional quality. Through the rearrangement of the course content, the overall content will be single to comprehensive, so as to meet the needs of students' future growth. We should reorganize the teaching content to meet the talent needs of the current market economy and ensure that the knowledge mastered by students majoring in industrial robots is more applicable and meets the needs of practical work. In the course content setting, it is clear in combination with the industry development and skill training objectives, and the course content is arranged from simple to complex. Among them, spraying and writing workstation are the contents to ensure the realization of the 1+X certificate system, which is conducive to improving the quality of professional talents and promoting their better employment advantages. Therefore, teachers in higher vocational colleges should closely understand the development trend of the current industry, and adjust and optimize the curriculum content of the school in combination with the talent needs of enterprises and the development of professional knowledge, so as to effectively meet the realization of the certificate system.

4. Adjusting teaching methods and optimizing teaching organization forms

With the implementation of the 1+X certificate system, the major of industrial robot has been greatly reformed, and the curriculum content is quite different from that in the past, including more practical content, which fully reflects the integrated mode of teaching and doing. This requires teachers not to adopt single teaching methods in classroom teaching, but to comprehensively use teaching methods, such as demonstration, narration, practice and so on. In the major of industrial robot, there are many theoretical knowledge design contents, some of which include spatial knowledge, some are mainly information technology knowledge, and some are simulation knowledge. Basically, oral whole process teaching cannot be adopted. The teaching process needs to be highly integrated with intuitive demonstration. After each knowledge point is learned, demonstration teaching should be carried out to improve the teaching quality. After the demonstration teaching, arrange the corresponding practical training in combination with the course content, and grasp the problems existing in the teaching through the observation of the students' practical process. Therefore, teachers should be prepared before class, not only to master rich theoretical knowledge, but also to skillfully operate all kinds of software and equipment. In order to realize the unity of teaching, we should ensure the integrity of the teaching process, and each teaching hour should be set up for four consecutive hours. Based on the fact that in the process of practice, most of the equipment in this major is expensive and covers a large area, most higher vocational colleges invest too much money to buy many equipment. They often purchase reasonably according to the actual teaching needs, and they will also make reasonable arrangements for practical courses to ensure that the corresponding equipment can be used in the teaching process. Generally, the teaching place is mainly in the computer room. The training base is used as an auxiliary teaching place. Generally, each student has a computer, and the whole class can also be taught. In the teaching of the training base, students in this class need to be grouped to effectively enhance the reasonable ability and problem-solving ability of students, and work study should also be taken as the content of practical training to improve students' innovative spirit.

ISSN 2663-8169 Vol. 4, Issue 12: 42-45, DOI: 10.25236/IJNDE.2022.041210

5. Strengthening teaching assessment and implementing diversified evaluation

No teaching process can be separated from the assessment system. Only through the assessment can we reflect the students' learning situation and teachers' teaching situation, promote the reform of teaching strategies, and effectively ensure the improvement of teaching quality. Industrial robot major is quite different from other disciplines, and its curriculum is highly theoretical and practical, which is basically not suitable for traditional assessment methods. In order to ensure the implementation of the 1+X certificate system, students should be comprehensively evaluated in combination with the results of course assessment and vocational skill level assessment. In course assessment, it is generally necessary to carry out process and phased assessment, and the assessment of both accounts for 50%. Process assessment mainly assesses students' daily learning, such as class performance, homework completion quality, attendance, etc; The skill assessment needs to be implemented in combination with the course content, and generally five to six assessment questions are set; As long as the phased assessment is aimed at the assessment of students' training results, the certificate standard will be used as the assessment basis. Once a student participates in the examination of the vocational certificate above the intermediate level of the major and passes the examination, and obtains the corresponding certificate, they should be given excellent grades, so as to obtain the credits of the corresponding courses.Therefore, in the major of industrial robot, the assessment method should be adjusted, and the traditional assessment method should be transformed into a diversified assessment process, which can effectively reflect the learning results of students and ensure the implementation of the 1+X certificate system.

6. Diversified school-enterprise combination, to enhance the depth of industry and education integration

From the current analysis of higher vocational colleges, in the process of the professional teaching, and cooperation between enterprises and industries is not very close, can not effectively obtain the market industry in the professional employment and development trend, difficult to reform the teaching curriculum, system, method, very detrimental to the long-term development of the professional, also can't guarantee the students' employment quality promotion. Therefore, higher vocational colleges should establish diversified school-enterprise cooperation, so that more enterprises, industries and colleges related to the major can cooperate, put forward reasonable suggestions for the construction process of integrating industry and education, and effectively promote the consistency of professional development and market demand. Higher vocational colleges should firmly grasp the "1 + x" certificate system, through building the school training, industry assessment, enterprise receiving education integration center, in the existing teaching foundation and training resources, increase investment in capital, talent, gradually meet the requirements of the certificate system, and promote college talent training and enterprise demand. After discussing with enterprises and industries, we should fully analyze the resource advantages of the three parties in various aspects, and make corresponding adjustments to the talent training plan, gradually build an intelligent training base, and also carry out school-enterprise cooperation with local enterprises to train students. In the teaching reform of this major in higher vocational colleges, some teachers should be selected to conduct in-depth communication in enterprises, such as front-line practice teaching and scientific research cooperation, so as to strengthen teachers' professional teaching ability. In this mode, higher vocational colleges make full use of on-campus training bases, off-campus enterprises, and industry assessment institutions to enhance students' awareness of innovation, and set up professional scientific research teams to provide technical services for teaching and industry development. Higher vocational colleges cooperate with various organizations and academic research teams related to the major, and have set up special scientific research centers to research and analyze the development trend of the industry, and effectively enhance teachers' scientific research awareness and foresight.

7. Combined with the requirements of the certificate system, deepen the reform intensity

With the development of science and technology and the progress of information technology, the industrial industry has accelerated the technological renewal and transformation, expanded the application scope of industrial robots, increased the demand for professionals, prompting more higher vocational colleges to start professional courses, and gradually provide more professional talents for industrial development. However, there are many kinds of industrial industries. There are differences in the use of industrial robots in different industries, and the differences in the requirements for talents. This requires that higher vocational colleges should combine the actual needs of enterprises to meet the talent

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needs of each enterprise, so as to better promote China's economic development. In combination with the different plans of enterprises for the career direction of this major, higher vocational colleges have started an online learning platform, and prepared many optional online course resources for students according to the employment direction of their majors. Students can combine their own career planning direction to make their own choices and learning, which can effectively improve their professional ability. Higher vocational colleges combine the practical training centers in the school region and various practical cases of school-enterprise cooperation in the analysis, gradually cultivate more talents for the society, and adjust the previous course content. In the teaching process, the employment trend of industrial robots is taken as the teaching direction to effectively guarantee the future development of students. According to the different needs of enterprises in the industry, higher vocational colleges should adopt diversified teaching methods, adjust and optimize the course content, and gradually form the industrial robot teaching resource system. In the teaching process, increase the participation and research of the teaching team, and use digital and information technology to write online procedures suitable for teaching in this major. Effectively guarantee the comprehensive teaching resources. Therefore, in line with the "1 + X" certificate system, we should combine with the scientific and reasonable compilation system, to each curriculum content, outline, subject matter and other comprehensive establishment.

8. Conclusion

In the formation of the market economic system, competition among enterprises is becoming more and more intense, talent competition is more common, and there is a greater demand for professional talents, which requires higher vocational colleges to gradually cultivate more professional and technical personnel in line with the development of enterprises. Through the analysis of the talent training mode of higher vocational colleges, the training process implemented at this stage does not meet the needs of enterprises, and the employment quality of a large number of graduates is very poor. This requires that higher vocational colleges should implement the 1+X certificate system, strengthen students' vocational skills, and consolidate professional basic knowledge, in order to enhance students' employment advantages, promote the sustainable development of higher vocational colleges, and better provide high-quality talents for social and economic development.

Acknowledgement

Ningxia polytechnic Project Name: Scientific Research and Development Fund of Ningxia polytechnic, Project No.: XJ202204.

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