Discussion on Deepening Curriculum System Reform of Intelligent Manufacturing Specialty Group in "Internet Plus" Era

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Abstract: "Internet plus" has constantly innovating the core curriculum resources form and teaching and learning mode of the intelligent manufacturing professional group, and develops and develops two resource curriculum resources that are suitable for learners' needs, namely, fragmentation, visualization, interesting and adaptive curriculum resources. Build a micro curriculum system, solidly and effectively carry out "online and offline" mixed classroom teaching, and formulate practical teaching strategies; Build a whole process evaluation system to improve the teaching effect of intelligent manufacturing specialty group courses in vocational education, so as to ensure the effective improvement of talent training quality. In view of the problems existing in the curriculum of Intelligent Manufacturing Specialty under the background of the new era, this paper analyzes in detail the positioning and nature of the applied talent training curriculum system of intelligent manufacturing specialty group, introduces the new concept of specialty group, and reforms the division of intelligent manufacturing specialty and non intelligent manufacturing specialty. By deepening the teaching reform of professional groups, promote enterprises and professional groups to jointly build a professional curriculum system, fully integrate enterprise cutting-edge manufacturing technology into classroom teaching content, and improve students' vocational skills. This paper makes an in-depth study on intelligent manufacturing industry group.

1. Introduction

Under the background of China's rapid economic development, there is a huge demand for comprehensive talents who are proficient in professional skills and have certain expansion skills in various industries or fields of society, and the demand for talents is more diversified and professional [1]. Intelligent manufacturing generally refers to a production mode that uses information technology to participate in data collection, analysis, decision-making and other links of production to improve production efficiency [2]. The goal of intelligent manufacturing proposed by China is to use information technology to realize the digital and intelligent transformation of manufacturing industry [3]. To achieve this goal, we must have a corresponding intelligent

manufacturing technology control curriculum system, and then divide it into different majors to gather various majors into a group, that is, intelligent manufacturing Specialty Group [4]. The course micro resources under the background of the Internet have brought a good situation for the transformation of the teaching mode of the professional core courses of the professional group, which can not only flexibly present boring and rigid knowledge and skills, but also innovate the learning methods of learners, realize mobile and ubiquitous learning anytime and anywhere, and promote learning to be full of fun [5]. Intelligent manufacturing is the product of the deep integration of informatization and industrialization, and has received extensive attention [6]. The emergence of new production technology and mode of production has had a great impact on the adjustment of industrial structure and the demand for talents [7]. The current education of intelligent manufacturing specialty should meet the needs of the development of the times and cultivate comprehensive adaptive talents integrating intelligent manufacturing skills and their expansion skills [8].

Strategic emerging industries such as advanced equipment manufacturing and intelligent terminals are growing and becoming a new driving force to promote high-quality economic development. There is an urgent need for high-quality technical and skilled talents to develop intelligent manufacturing [9]. The original talent training orientation and talent training specifications of vocational education can not meet the requirements of high-end post groups in intelligent manufacturing. Further deepen the integration of industry and education, constantly explore new forms of talent training mode, reconstruct the curriculum system, cultivate compound technical and skilled talents, and improve the ability of vocational education to serve regional economic and social development [10]. Based on this, starting from the current situation of intelligent manufacturing specialty and relying on the social demand for professionals, this paper puts forward the construction strategy of applied talent training curriculum system of intelligent manufacturing specialty group.

2. Overview of Related Concepts and Theories

2.1 Related Notion

On the surface, intelligent manufacturing refers to the organic combination of intelligent system and manufacturing industry. It is another change in the past mechanization, electrification and automation of manufacturing industry. It has deep self perception of information and intelligent manufacturing. It is to speed up the deep integration of the new generation of information technology and manufacturing industry, strengthen the basic industrial capacity and realize the transformation of manufacturing industry from large to strong. The construction of Intelligent Manufacturing Specialty Group mainly cultivates students' patriotism and the all-round development of students' morality, intelligence, physique, art and labor. Curriculum group is a course that scientifically and reasonably integrates the relevant and complementary courses in the specialty according to a certain curriculum framework to form a new curriculum system with professional characteristics according to the cognitive law and ability training law of teaching objects. It is the general name of advanced manufacturing processes, systems and modes that optimize self decision-making, accurate control and self-execution. Intelligent manufacturing, on the one hand, realizes the intellectualization and digitization of the whole production process of the manufacturing industry, cultivates new production modes, and comprehensively improves the intelligent level of production, management and service of the manufacturing industry; On the other hand, it has completed the high integration of informatization and industrialization, realized the information interaction between machines, and the network communication structure between people and machines, greatly improved the efficiency of information interaction and provided the

possibility for personalized production. Intelligent manufacturing is the deep integration and innovation integration of communication technology and manufacturing industry. It applies intelligent technology, network technology and manufacturing technology to the whole process of product management and service, gradually realizes the intellectualization of manufacturing design, manufacturing, management and service, and opens a new round of manufacturing revolution.

2.2 Theoretical Basis

Humanistic curriculum theory holds that the design of curriculum content should take into account the needs of individuals and society, and the curriculum should be flexible and diverse in order to meet the needs of teaching and emphasize creative development, which is an important premise of curriculum design. Humanism advocates that the education implemented should be a kind of education that can cultivate the whole person, live and have humanity. Based on the humanistic curriculum theory, the design of the curriculum content of this study should be based on the development needs of individuals and society, the construction of curriculum group, and try to explore the mismatch between the current talent training process and the needs of enterprises from the perspective of enterprise talent needs, so as to optimize curriculum resources and build a new teaching resource platform, It provides an effective reference for the reform of talent training mode in the new era. Learning is a construction process. Learning activity is no longer a process in which students passively receive new information from the outside, but the result of the interaction between learners and the external environment. The establishment of new knowledge is affected by the external environment and old knowledge. Based on the old knowledge, the old knowledge is optimized and reorganized through the interaction with the outside world, so as to achieve the purpose of establishing new knowledge. Construction process is an inquiry process to realize meaning construction through thinking construction. In the process of constructing their own knowledge and understanding, learners are required to constantly think and explore, process and analyze various information, form assumptions, inferences and tests, and finally achieve the purpose of deepening knowledge structure. Based on the above theoretical basis, combined with the development of enterprises, dynamically adjust the curriculum, and constantly innovate teaching methods and methods to meet the needs of enterprise development.

3. Deepen the Teaching Reform of Specialty Groups

3.1 Integration of Ability Training of Specialized Courses

The allocation of general courses and professional courses should be balanced and in line with the talent training objectives of professional groups. General courses include general basic courses, general application courses and general cross domain courses, which mainly cultivate moral, intellectual, physical and aesthetic qualities and the ability of communication, cooperation and independent thinking; Build professional courses with enterprises to closely combine the needs of enterprises with the talent training needs of professional groups. Professional courses include professional integration courses, professional core courses and professional development courses, which are an important starting point for the implementation of talent training mode; In order to cultivate talents with more characteristics and outstanding quality, and cooperate with the formal courses to achieve the training objectives, various majors have carried out activity courses to improve the students' ability that can not be trained in the classroom. Figure 1 shows the framework for deepening the teaching reform and construction of professional groups:
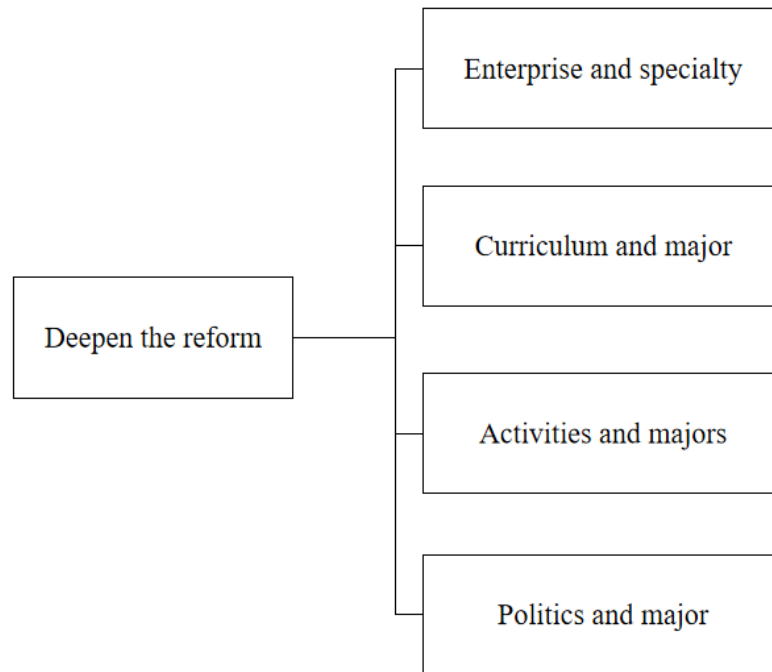
Fig.1 Framework for Deepening Teaching Reform and Construction of Specialty Groups

The basic quality education system and professional ability training system permeate each other, and the formal curriculum and activity curriculum integrate each other; The professional group connects with the latest technical skill standards of the industry, cooperates with industry enterprises and training evaluation organizations to jointly develop professional curriculum standards and create a number of high-level, applied and innovative courses; Strengthen the educational function of curriculum ideological and political ideas in the curriculum system of professional groups, strengthen the penetration role of moral education, physical education, labor and other courses, and excavate and highlight the leading function of socialist core values on the basis of realizing the basic functions of curriculum knowledge transfer and ability training.

3.2 Building High-Quality Curriculum Resources

Set up a curriculum development team composed of professional leaders, backbone teachers and enterprise craftsmen to compile teaching materials. The overall planning and organization shall be carried out with the professional group as the unit, focusing on the teaching reform and curriculum system construction, with the focus on revision and serialization construction. Deepen the construction of teaching resources, innovate teaching models, and carry out flipped classroom and mixed teaching reform. Make full use of information-based teaching means, use multimedia and digital teaching equipment to record curriculum resources, and build curriculum resources to meet online and offline hybrid teaching. Figure 2 shows the high-quality curriculum resources:
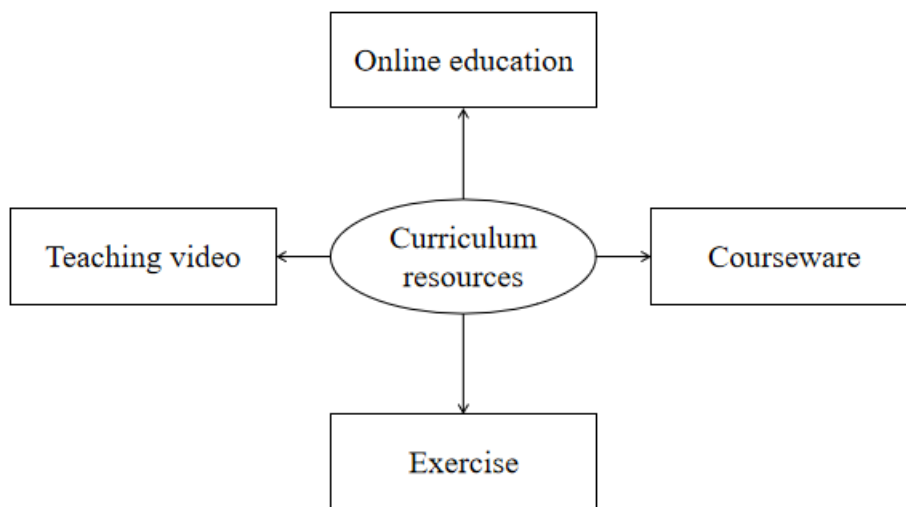
Fig.2 High Quality Curriculum Resources

At present, several online shared open Courses under construction in the professional group have many kinds and rich contents. Take the NC machining course as an example. The implementation of NC machining course widely uses modern information technology, and some contents have realized network teaching. Teaching resources such as teaching videos, exercises and courseware have realized network resource sharing. Online and offline hybrid teaching can promote the organic combination of new ideas, new learning methods and new technologies. Students can use information technology to study flexibly and independently, so as to improve their learning ability, innovation ability and practical ability. Determine the training objectives of intelligent manufacturing professionals. Firstly, the school should be based on the professional group, conduct a comprehensive investigation on the work tasks of various posts in the society, and accurately locate their professional needs. In addition, it needs to carry out homogeneous training on the basic ability requirements of intelligent manufacturing and general ability, so as to make the teaching content based on the post requirements. Carry out more mutually selected expanded professional courses, make flexible choices according to students' individual needs, and enhance students' sustainable development ability and practical application ability.

4. Conclusions

Since the construction of the professional group, the professional courses in the group have been continuously improved and achieved good results. The major of mechanical manufacturing and automation and the major of electrical automation technology are the key construction majors of national backbone higher vocational colleges. With the rapid development of the Internet industry, it has not only brought great changes to people's production and lifestyle, but also brought unprecedented changes to the teaching mode, teaching methods, teaching means and teaching organization of higher vocational education. In view of the actual demand for talents in the society under the new situation, it is necessary for the Intelligent Manufacturing Specialty in vocational colleges to build the application-oriented talent training system of the intelligent manufacturing specialty group from the aspects of changing the professional teaching structure system and paying attention to curriculum integration, so as to cultivate high-level professionals who meet the needs of the times. Starting from the current situation of intelligent manufacturing specialty, this paper puts forward some targeted rectification strategies, and comprehensively realizes the construction of

application-oriented talent training system of intelligent manufacturing specialty group from the aspects of constructing intelligent manufacturing specialty group, innovating specialty teaching methods, strengthening the reform of specialty curriculum system and paying attention to specialty application. Through the big data analysis function, accurately grasp students' learning dynamics, adjust teaching strategies in real time, meet students' learning needs, effectively improve classroom teaching effect, and lay the most solid foundation for cultivating highly skilled compound talents

Acknowledgement

References

[1] Chen Guangzhong. Construction and research of "progressive" curriculum system in Higher Vocational Colleges - - taking intelligent manufacturing specialty group as an example [J]. Education of the times: late 2020 (5): 1

[2] Cai Hongxia, Liu Lilan, Wang Xiaojing. Exploration on the construction of new engineering specialty of intelligent manufacturing [J]. Education and teaching forum, 2019 (20): 4

[3] Chen Kailang. Analysis on the construction of intelligent manufacturing technology specialty system in Higher Vocational Colleges under the background of "Internet +" [J]. Information recording materials, 2020, 21 (6): 2

[4] Liu Lihong. Exploration and construction of curriculum system of mechanical manufacturing and automation (intelligent manufacturing direction) in Higher Vocational Colleges Based on "made in China 2025" [J]. Electromechanical information, 2019 (26): 2

[5] Jiang Linmin. Discussion on deepening curriculum system reform of Intelligent Manufacturing Specialty Group [J]. Heilongjiang science, 2021, 12 (15): 2

[6] Yao Gang. Curriculum system construction of industrial robot specialty in Higher Vocational Education from the perspective of intelligent manufacturing [J]. Career space and time, 2016, 12 (6): 3

[7] Li Peng, Chen Yong, Ren Wenping, et al. Improvement of experimental platform and content system of automation courses [J]. Laboratory research and exploration, 2019, 38 (12): 4

[8] Yang Tianling. Exploration and practice of industry education integration education mechanism for Intelligent Manufacturing Specialty in Higher Vocational Colleges [J]. Modern education forum, 2021, 4 (8): 46-47

[9] Xiao Haihui, Yan Meixian. Construction of curriculum system of Mechatronics specialty in Higher Vocational Education Based on "Internet +" [J]. Career time and space, 2016, 12 (3): 4

[10] Yan Feng. Micro course construction and practice of Intelligent Manufacturing Specialty Group under the background of "Internet +" - Taking NC lathe programming and machining as an example [J]. Educational Science Forum, 2020 (3): 3