

Reform of Talent Training Mode of NC Technology Specialty under "1 + X" Certificate System

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Abstract

To establish the talent training mode of NC Specialty in Higher Vocational Colleges under the "1 + X" certificate system, the production tasks, process flow and real products of enterprises must be introduced into practical teaching. Let the academic certificates in the "1 + X" certificate system be organically connected with several vocational skill level certificates required by the enterprise, the professional curriculum development be connected with the industrial enterprise standards, the formulation of talent training scheme be connected with the requirements of professional posts, the talent training quality be connected with the enterprise satisfaction, and the teaching link be connected with the enterprise production process. The prominent educational function and the "X" prominent professional function are perfectly integrated.

Keywords

Numerical technology; Personnel training; Reform and accommodation.

1. The Purpose of the Project Research

In June, 2019, the Ministry of Education issued the Guiding Opinions on the Formulation and Implementation of Professional Talents Training Program in Vocational Colleges, which explicitly proposed to encourage schools to actively participate in the implementation of the "1+X" certificate pilot, organically integrate the relevant contents and requirements of the vocational skill level standard into the teaching of professional courses, and optimize the professional talents training program.

The purpose of this project is to start from the actual teaching situation and personnel training plan of CNC technology major in our college, implement the professional skill level standard of sensor network application development, fully consider the professional development path and growth path of employees in sensor network application development, and take professional quality, professional skills and knowledge level as the main framework. Serve the landing of "X" in our hospital, realize the integration of courses and certificates, organically integrate the vocational skill level standards into the professional personnel training scheme and curriculum system, optimize the curriculum, deepen the innovative and compound skill applied personnel training mode, and improve the quality of personnel training.

2. Main Research Contents

To establish the talent training mode of numerical control major in higher vocational colleges under the "1+X" certificate system, the production tasks, technological processes and real products of enterprises must be introduced into practical teaching. Let the academic certificates in the "1+X" certificate system (i.e. "1") and several vocational skill level certificates required by enterprises (i.e. "X") be connected organically, and the development of professional courses be connected with the standards of industrial enterprises. The formulation of talent training

scheme is connected with the requirements of professional posts, the quality of talent training is connected with the satisfaction of enterprises, and the teaching link is connected with the production process of enterprises. Let the educational function highlighted by "1" and the professional function highlighted by "X" blend perfectly.

Its design ideas include:

- (1) Establish a three-step talent training mode of post integration under the "1+X" certificate system;
- (2) Strengthen the theoretical research and practical exploration of "integration of lessons and certificates", work hard on the word "integration", and constantly enrich the connotation of "integration of lessons and certificates";
- (3) Adapt to the reform and integration of the curriculum system under the 1+X certificate system;
- (4) Integrate academic certificates and post vocational certificates, and integrate the professional quality, professional ability and professional knowledge requirements of professional textual research into various professional courses.

3. Implementation Scheme

To establish the talent training mode of numerical control major in higher vocational colleges under the "1+X" certificate system, the production tasks, technological processes and real products of enterprises must be introduced into practical teaching. Let the academic certificates in the "1+X" certificate system (i.e. "1") and several vocational skill level certificates required by enterprises (i.e. "X") be connected organically, and the development of professional courses be connected with the standards of industrial enterprises. The formulation of talent training scheme is connected with the requirements of professional posts, the quality of talent training is connected with the satisfaction of enterprises, and the teaching link is connected with the production process of enterprises. Let the educational function highlighted by "1" and the professional function highlighted by "X" blend perfectly.

3.1. 1+X "Certificate System to Establish A Three-Step Talent Training Mode of Post Integration

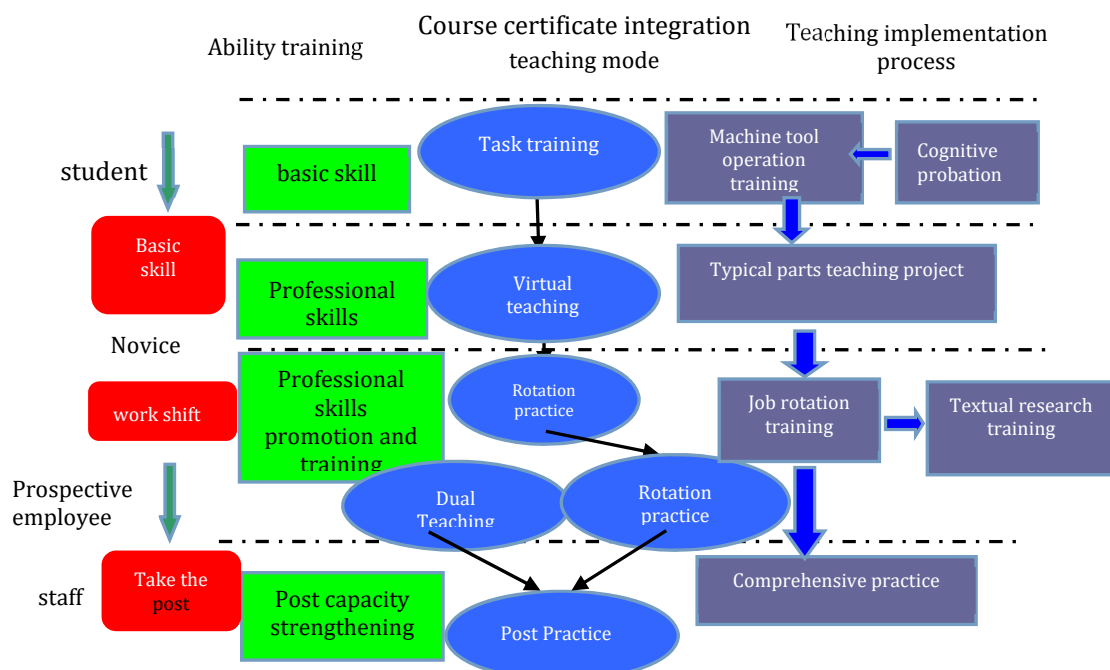


Figure 1. Implementation process of post three-step talent training mode

The three-step post training mode is centered on the teaching mode of "integration of lessons and certificates", and its teaching implementation process is shown in Figure 1.

We divide the growth of students' professional post ability into three stages, that is, to make students become novices who can basically meet the requirements of enterprises' professional posts (groups) through post training; Through rotation, students can realize the transformation from novice to prospective employee; Through the post, students can meet the requirements of employees, thus realizing the gradual integration of students' professional positions. In the concrete implementation process, We have identified four major jobs in the major of numerical control technology-CNC lathe operators, CNC milling machine/machining center operators, CNC process and programmers and CNC maintenance workers. Each job follows the three-step approach of "training", "rotation" and "post-placement", so that students can gradually master the professional ability and ethics they should have. And finally reach that advanced standard of the post.

3.2. Integration of Integrated Teaching under the 1+X System

Organize and implement practical training and practice teaching together with enterprises. Set up a professional practice teaching management Committee composed of enterprise technical experts and professional leaders, and employ enterprise technical backbone to participate in the development of on-campus training and off-campus practice projects, so as to realize the docking of work content and learning content, and make professional quality training and 1+X training run through the whole teaching process at the same time. Work out the management system of practical training and standardize the teaching process of practical training; Employ technical personnel from enterprises to participate in practical teaching and guide students in practical training. Establish and improve the management measures of tripartite participation between school and student enterprise and the dynamic evaluation method of double assessment between school and enterprise. Focus on solving the effective connection between productive rotation training on campus and off-campus rotation practice and on-the-job practice, improving management evaluation methods, and cooperative enterprises participating in the whole process of personnel training mode. See figure 2 for the practical teaching mode of numerical control technology specialty.

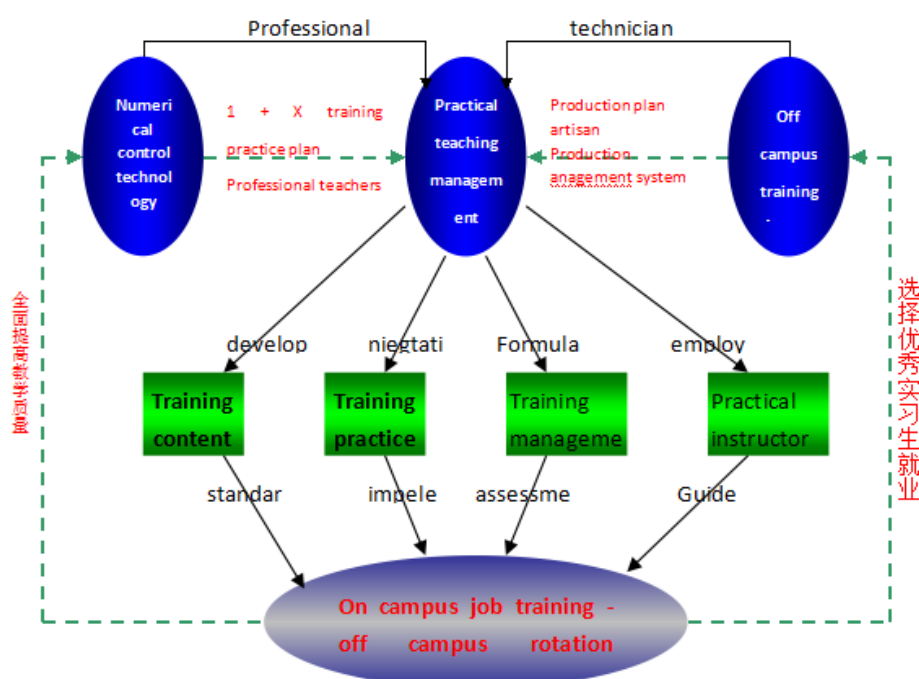


Figure 2. 1 + X NC practice teaching mode

3.3. Curriculum System Reform and Curriculum Construction

(1) Fully summarize the experience of curriculum system reform of professional post ability of NC technology specialty, conduct detailed investigation on the manufacturing posts of cooperative enterprises, analyze the working process and post ability of senior NC operators, NC technicians and NC repairmen, and clarify the job requirements of professional posts (groups) in the technical field.

(2) Under the guidance of the Professional Construction Committee and the help of the technical backbone of the enterprise, according to the working process analysis and job requirements of the above posts, the typical work tasks are determined, and the professional qualification standards are integrated, and the typical work tasks are integrated according to the complexity of abilities to form a comprehensive ability field (i.e., a learning field). Then, according to the teaching law and the growth law of students' professional abilities, Reconstruct the action field and form a task-oriented curriculum system based on working process.

(3) Clear curriculum objectives.

Nature of the course: Based on courses such as mechanical drawing, mechanical foundation, tolerance and coordination, it is a core course for the major of NC technology to cultivate NC machining ability such as programming and operation, process design, fixture selection, tool selection and application.

Course objectives: Be able to engage in the production and processing of complex workpieces, independently design and complete tooling and organize and coordinate production, actively discover the deficiencies in the production process, and communicate with relevant personnel and improve them.

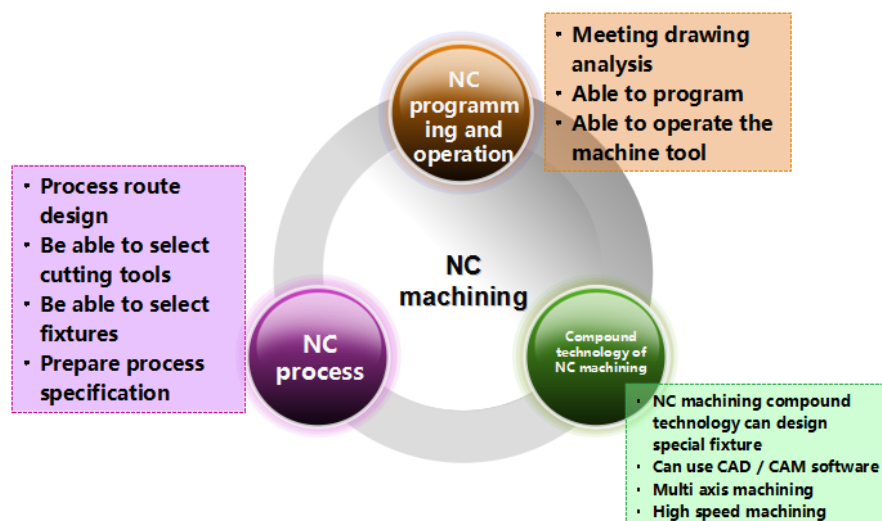


Figure 3. Decomposition of teaching objectives

(3) Reasonable choice of carrier and integration of 1+X certificate standard.

Four steps of vector selection: the source of the vector, the screening of the vector, the sequencing of the vector and the optimization of the vector.

Four principles of carrier selection: docking production site, reflecting advanced technology, reflecting typical process and corresponding refinement target. In terms of carrier selection, we try our best to come from enterprises, but we can adapt to the 1+X standard. If shown in figure 4.

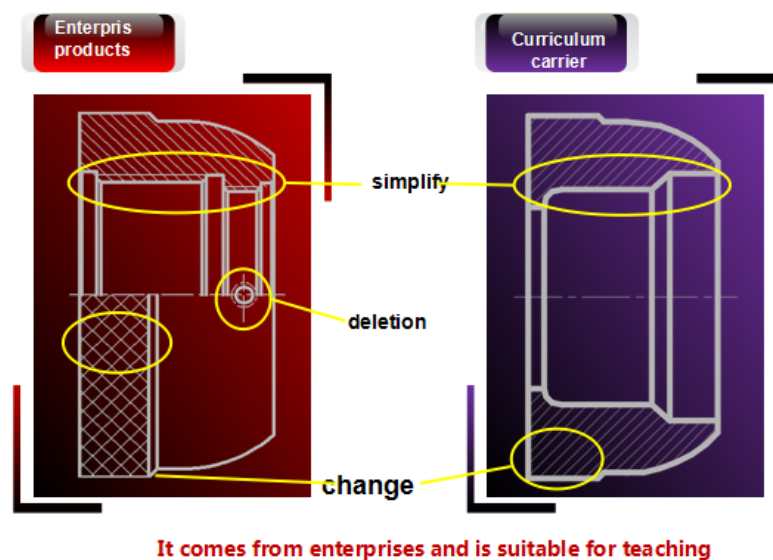


Figure 4. Carrier Improvement Adapts to Certificate Requirements

3.4. Construction and Integration of Teaching Staff

Teachers are the key and difficult point in the implementation of the "1+X" certificate system. Under the background of "1+X" certificate system, higher vocational teachers are not only educators, but also trainers. Higher vocational colleges need to make the original higher vocational teachers change their roles through teacher training. The reform of personnel training mode under the "1+X" certificate system, It can realize the transformation of dual responsibilities of teachers in higher vocational colleges. Teachers have the roles of factory director, workshop director, master and enterprise engineer, and students also have the status of front-line employees in enterprises. Teachers design and teach professional courses of numerical control technology according to the production process of enterprises, so that students can complete the design and processing of typical products of enterprises. According to the actual production of the enterprise, complete the teaching tasks such as curriculum design and graduation design, and make the training mode and system of higher vocational talents under the "1+X" certificate system integrate with the enterprise.

As a higher vocational college, it is imperative to promote the pilot work of "1+X" certificate system. On the road of personnel training mode reform, we should correctly handle the relationship between "1" and "X" certificates, actively innovate the school-enterprise cooperation mode, reflect on the reform, make textual research and teaching better integrate, and comprehensively improve the level of higher vocational education. To provide the society with high-skilled talents meeting market requirements.

Acknowledgments

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