

Research on the Integration of “1+X” Certificate System and the Talent Cultivation Program of Computer-related Major

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[**Abstract**] Talent cultivation program is the programmatic document of personnel training in diploma education, and the vocational skill level certificate is the proof of the level of workers' professional ability. This paper analyzes the current situation of computer-related major, puts forward the thought of formulating talent cultivation program of computer-related major based on “1+X” certificate system, in the professional direction, educational objectives, curriculum and other aspects to achieve the integration of the “1+X” certificate system and the talent cultivation program, so as to achieve the goal of training high-quality compound technical talents.

[**Key words**] talent cultivation program; “1+X” certificate system; integration; computer-related major

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In January 2019, the State Council issued “Implementation Plan for National Vocational Education Reform”, which proposes to “launch the reform of ‘Academic Certificate + Certain Vocational Skill Level Certificates’”, also known as “1+X certificate system”. In April, Ministry of Education and other four departments jointly issued “Pilot Program on the Implementation of ‘Academic Certificate + Certain Vocational Skill Level Certificates’ in educational Institutions”, in which it is required to “organically integrate the contents of the certificate training into the professional talent cultivation program, and optimize the curriculum and teaching content”. In June, Ministry of Education issued “Guidance on the Formulation and Implementation of Professional Talent Cultivation Programs in Vocational Institutions”, which clearly notes that the “integration of academic certificate and vocational skill level certificates” is the basic requirement for the formulation of talent cultivation programs, and vocational colleges should “integrate relevant contents and requirements of vocational skills level standards into professional courses organically and optimize the professional talent cultivation program”. It can be seen that the implementation of “1+X certificate” system is inseparable from the formulation of professional talent cultivation program.

1 Definition of relevant concepts

1.1 “1+X certificate” system

“1+X certificate” system is also known as “academic certificate + several vocational skill level certificates” system. “Academic certificate” refers to the diploma issued by school or other educational institution that provide academic qualification education to the learner who has completed the learning tasks of a certain stage within the academic system. It reflects that the educated person has systematically learned certain scientific and cultural knowledge. “Vocational skill level certificate” refers to the certificate issued to the learner who has completed the learning of vocational qualities, knowledge and skills to fulfill the typical tasks of a certain vocational post and pass the assessment. It reflects the level of the learner's vocational ability. Academic education is the foundation of talent cultivation, while vocational skill level training is the combination of vocational skills, vocational literacy and

traditional knowledge system, which is to strengthen, supplement and expand academic education.

1.2 Talent cultivation program

Talent cultivation program is the blueprint for the overall implementation of talent cultivation, and the fundamental guidance for learning activities and teaching tasks, which stipulates the objectives, specifications, quality standards and modes of talent cultivation. There are detailed requirements for curriculum system, practical teaching system, teaching schedule, internship training conditions, and teaching team, which are the basis for the implementation of talent cultivation and quality assessment. At the same time, the talent cultivation program of higher vocational colleges should be dynamically adjusted according to the social development and industrial demand to ensure its quality.

1.3 Integration research

Integration refers to the combination of two or more different things achieving a common goal. In this paper, the integration of “1+X certificate” system and talent cultivation program is studied to integrate the two into a new system, achieving the common goal of cultivating high-quality and compound technical talents.

2 Status of professional talent cultivation for computer-related major

With the restructure of China’s industry, especially the rapid development of new-generation information and technology, such as cloud computing, big data, and artificial intelligence, the demand for computer-related major surges. However, for the current market, China’s professional talent cultivation for computer-related major is still weak, mainly in the following aspects.

2.1 Positioning of talent cultivation goal is unclear

The computer industry is developing rapidly, and the market demand is changing rapidly. However, at present, many computer-related majors in higher vocational colleges cannot be timely docked with enterprises and society, and understand the market demand for talents, so that it is impossible to clearly locate the goals of talent cultivation, resulting in the poor quality of talent cultivation.

2.2 Curriculum system lags behind

Many talent cultivation programs of computer-related majors in higher vocational colleges are born out of the undergraduate computer majors. The curriculum focuses on the completeness of the theoretical knowledge system, while ignoring practical ability, which is the most important. In addition, the development of computer technology is changing every day, and adjustments on computer-related talent cultivation programs, curriculum and teaching content require a certain amount of time. Therefore, the talent cultivation program has a long update cycle, which makes the curriculum system lag behind, compared with the development of computer technology.

2.3 Establishment of double-qualified teaching staff needs to be strengthened

Teachers’ professionalism has a strong relationship with the quality of student cultivation. At present, higher vocational colleges generally recruit those with doctoral or master’s degrees, but have nearly no requirements for vocational qualification certificates, resulting in the lack of teaching and practical experiences in new teachers. And for high-level double-qualified talents, there is a dilemma of “difficult to recruit and retain”. School’s incentive policy is not mature, and teachers’ professional development is insufficient, so that the construction of double-qualified teaching staff needs to be strengthened.

3 Ways to integrate “1 + X certificate” system and talent cultivation program for computer-related majors

The integration of talent cultivation program for computer-related majors and “1+X certificate” system should find a point of convergence in their professional directions, talent cultivation goals, curriculum systems, etc. , so as to integrate the requirements of X certificate into the professional talent cultivation.

3.1 Integration of professional direction and vocational skill level certificate

Since July 2019, Institute of Education and Vocational Training has released three batches of enterprises and certificates participating in the 1+X certificate pilot system, including 78 assessment organization of vocational education and training and 92 vocational skill level certificates, among which 31 vocational skill level certificates cover computer-related majors such as computer application technology, computer network technology, software technology, etc. These certificates provide a series of opportunities for related colleges to integrate themselves with suitable “X” certificates according to their own resource advantages, professional characteristics and professional directions. For example, computer application technology majors can be integrated with “web front – end development” certificate towards “front-end development”, and can also be integrated with “big data application development (JAVA)” certificate towards “big data application”, computer network technology majors can be integrated with “network system construction and operation and maintenance” certificate towards “network management”, and can also be integrated with “network security operation and maintenance” certificate towards “network security”.

3.2 Integration of talent cultivation goal and vocational skill level certificate

Each vocational skill level certificate has a corresponding standard. Based on the requirements of occupational positions, vocational skill level standard is to analyze the decomposition of vocational literacy, vocational skills, and knowledge level required by occupational positions, and is a specific embodiment of the needs of enterprises. Talent cultivation goals are precisely based on enterprises’ demand for talents, and are determined by the fusion of vocational standards in relevant industries. Talent cultivation goals should start from the quality structure and standards, ability structure and standards, and knowledge structure and standards. Their integration with vocational skill level standard enables the realization of seamless connection between occupational positions and professional teaching.

3.3 Integration of curriculum system and vocational skill level certificate

The skill standard regulated in the vocational skill level certificate mainly originates from the real work content of enterprises, which should be converted into teaching content and processed by teaching in order to achieve the purpose of talent cultivation. Therefore, after the establishment of professional direction and cultivation goals, the construction of curriculum system must be closely connected to the requirements of vocational skill level standard, and the two should be compatible and symbiotic.

3.3.1 Integration of the development process of curriculum system and vocational skill level certificate

The development of vocational skill level standard starts from the vocational work field. It establishes the vocational units and elements layer by layer, abstracts the work tasks and vocational skills, and then determines the scope, content and extent of the standard according to the knowledge, skills and other related abilities required to complete the work tasks. Based on the vocational skill level standard, the development of curriculum system integrates the knowledge, skills and qualities in the vocational skill level standard, follows the law of education and teaching, designs different course modules for different vocational abilities, and establishes the curriculum system based on work process.

3.3.2 Integration of curriculum system setting and vocational skill level certificate

The curriculum system can be divided into three parts in the forms of “block”, “classification” and “hierarchy”, and integrated with vocational skill level standards. Taking the integration of computer-related curriculum system setting and vocational skill level certificate as an example, the so-called “block” means that the curriculum system is divided into four modules: basic quality module, technical module, skills module and innovation module, corresponding to public basic courses, professional basic courses, professional core courses and

professional elective courses respectively; “classification” means that certification courses in the corresponding vocational skill level certificate are integrated into curriculum system according to different professional directions, for example, set up a “certification course group towards front – end development” for “web front – end development” certificate, and a “certification course group towards cloud computing” for “operation, maintenance and development for cloud computing platform” certificate; “hierarchy” refers to the development of hierarchical progression courses in each direction category in accordance with “primary”, “intermediate” and “advanced” vocational skill level certificates. For higher vocational computer-related majors, most students should be able to obtain the intermediate or primary vocational skill level certificates through professional core courses, while the advanced certificates will be available for those who have the spare capacity for further study of professional elective courses.

4 Conclusion

“1+X certificate” system is based on academic education, supplemented and expanded by vocational skill training. The “+” sign in “1+X” certificate system is a good illustration of the relationship between academic education and vocational skill training. Academic certificates and vocational skill level certificates are not independent of each other, instead, they need to be integrated in order to better cultivate compound technical talents.

For computer-related majors, the integration of “1+X certificate” system and talent cultivation programs is the integration of professional directions and vocational skill level certificates, the integration of talent demand of enterprises and talent cultivation goals, and the integration of vocational skill level standards and curriculum system settings, so as to enhance students’ professional quality and vocational ability simultaneously, and cultivate high-quality compound technical talents.

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