

# Research and Exploration Based on X Certificate in 1+X Certificate System

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**Abstract:** The "National Vocational Education Reform Implementation Plan" puts forward the "degree certificate + vocational skill level certificate" system, which points out the connotation and development trend of vocational education from the logical root. Starting with the trend of quality development and market demand, the specific implementation method of the 1+X certificate system was proposed, and specific issues such as the standard formulation of the X certificate, certificate level development, dynamic assessment and query management were answered, and the "1+X certificate system" was centered on to carry out in-depth exploration and research on the construction of vocational education, and strive to contribute to the enrichment and development of vocational education theory with Chinese characteristics and the construction of a national qualifications framework.

**Keywords:** 1+X certificate system, grade certificate, credit bank, national qualifications framework

## 1. Introduction

Before the country's vocational qualification certificates were decentralized, the human resources and social security departments had been responsible for the standard-setting, verification, and issuance of certificates. On February 13, 2019, the State Council issued a notice on the "National Vocational Education Reform Implementation Plan". In April 2019, the Ministry of Education, Development and Reform Commission, Ministry of Finance, and State Administration for Market Regulation jointly issued the "On the Implementation of Colleges and Universities" academic certificate + a number of vocational skill level certificates "system pilot program", and deployment to start the pilot. According to the requirements of the "Pilot Plan", starting from this year, 20 skilled talents are in short supply in fields such as modern agriculture, advanced manufacturing, modern service industry, and strategic emerging industries. In the near future, the first batch of pilot projects in 5 vocational skills fields will be launched, including construction, Engineering technology, information and communication technology, logistics management, elderly service and management, automobile application and maintenance technology will be the first to enter the grade certificate system [1]. The plan pointed out that deepening the reform of the training model of compound technical skills, drawing on the common practices of international vocational education and training, formulating work plans and specific management methods, and launching the pilot work of the 1+X certificate system [2]. This has pointed out the direction for the new era of the certificate system and the training of technical and technical talents.

This article combines the relevant requirements of the "National Vocational Education Reform Implementation Plan" and the "Implementation of the "Education Certificate + Certain Vocational Skill Level Certificates" System Pilot Program in Colleges and Universities" and proposes specific implementation methods for the 1+X certificate system, which will benefit the X certificate take root and sprout.

## **2. Implementation method of X certificate system**

### ***2.1 "X certificate" standard formulation and qualification recognition***

Prior to the implementation of the national policy of decentralization, management and service, the vocational qualification certificate standards were formulated by the organization standards of the human resources and social departments. After the national vocational education reform implementation plan was proposed, it was clearly pointed out that the training evaluation organization was the main body of the construction of vocational skills grade certificates and standards, responsible for the quality and reputation of the certificate, the main responsibilities include standard development, textbook and learning resource development, assessment site construction, assessment and certification, etc., and assist pilot institutions to implement certificate training [2]. Therefore, the definition of training organization is the key. From the perspective of authority and professionalism, the author believes that training evaluation organization can be undertaken by vocational education associations, technical education associations and social training institutions.

Association organizations are generally composed of vocational and technical education groups, vocational education equipment enterprises, and industry organizations; social training institutions are generally composed of enterprises with good teaching qualifications. They are mainly responsible for corporate research, the latest requirements for job abilities of social occupations, the development of vocational certification standards, the development of related work materials, and the development of learning resources (including micro-classes, MOOCs, and online courses). At the same time, they are responsible for the construction of assessment sites, including equipment construction, and cultural construction, we should also assist the schools applying for the pilot in the training of the examiners. For example, for new professions in artificial intelligence, the knowledge and skills required for the development of certificate standards, textbooks and materials can be undertaken by the Artificial Intelligence Association and supervised by the education and human resources departments.

On the other hand, vocational colleges generally participate in these organizations. They can organize corresponding professional leaders and outstanding teachers, give full play to teachers' expertise in the field of education, participate in the relevant work of training evaluation organizations, and provide relevant professional "X" certificates and standards. Put forward requirements and suggestions for the development work, and do the basic work well.

Association organizations, training institutions, and vocational colleges work together to formulate standards and identify qualifications. As we all know, Galileo's Leaning Tower experiment overturned Aristotle's illogical reasoning, which shows that the lack of practical knowledge is imperfect. The top talents needed by society must not only be proficient in professional knowledge, but also be able to perfectly apply theoretical knowledge in practice. Therefore, the "X Certificate" qualification examination should be divided into two parts: the professional basic knowledge written test and the professional technical application test. In the written examination part, the teachers of the profession in colleges and universities discussed with the staff of the enterprise, and the focus is on the colleges and universities to test the candidates on the theory. Correspondingly, the application test part is negotiated by the enterprise and the university, and the enterprise mainly conducts the practical test for the candidates, and the vocational skill certificate can only be obtained by passing both the written test and the application test.

### ***2.2 "X certificate" occupation level development***

Vocational skill level certificates before the implementation of the national "decentralization, management and service" policy, the certificates obtained by the learners are clearly issued by the Ministry of Education of the State Council and the human resources and social security departments respectively. The education department is responsible for the issuance of academic certificates and learning ability test certificates, and the human resources and social security departments are responsible for the issuance of various vocational skills certificates. Now, after the national vocational education reform implementation plan is proposed, the certificate can be jointly issued by the education department and the human resources and social department. The vocational skill level certificate shall be based on the needs of social and economic development, the actual needs of the company's position, and the national vocational standards. It shall comprehensively evaluate the vocational skills of high-quality technical and technical personnel, and actually reflect the skill level of the employees. For example, artificial intelligence engineering and technical personnel are those who are engaged in the

analysis, research, development, and design, optimization, operation and maintenance, management and application of artificial intelligence systems related to artificial intelligence algorithms, deep learning and other technologies. In order to distinguish the practitioner's mastery of a certain technical field, the certificate can be divided into five levels or three levels. The five levels can learn from previous practices and are divided into three levels: elementary, intermediate, advanced, technician, and advanced technician. It can only be divided into elementary, intermediate, and advanced. Basic service positions, such as pastry chefs, only need three levels to clearly distinguish the entire skill level of the practitioners, but high-tech positions such as the Internet of Things, artificial intelligence, big data, and industrial robots, including hardware design, processing, installation and commissioning, software design, and system integration of software and hardware at the same time. Due to the wide range of knowledge and skills involved, this new type of position requires multiple levels to accurately describe the difference in skill levels.

In addition, international and domestic advanced standards can be used for reference in level development standards, such as the World Skills Competition. The World Skills Competition is organized by the World Skills Organization and is known as the "Skills Olympics". It is an important platform for members of the World Skills Organization to display and exchange professional skills. The World Skills Competition has set international standards in 52 skill categories, covering artistic creation and fashion, construction and craft technology, information and communication technology, manufacturing and engineering technology, social and private services, transportation and logistics, etc. The international standard it is jointly designed by the world's most famous companies and industry experts. It represents the most advanced technology and skills in this field in the world today. It also contains some industry's new requirements, new technologies, new processes, and new specifications. This combination of domestic and foreign next, the development of relevant vocational skill level standards will be conducive to my country's high-quality development requirements.

### ***2.3 Improve the "Credit Bank" and implement the "X Certificate" dynamic assessment***

In the era of artificial intelligence, the development of science and technology is changing rapidly, and the pace of knowledge update is accelerating, and the demand for technical talents of new types of enterprises will also be different. Some scholars once put forward the term "knowledge half-life" based on the principle of radioactive element decay: if a professional's knowledge is not updated, the basic knowledge is still available after the "half-life", but the other half of the new knowledge is out of date. The "X certificate" represents the degree of mastery of a technical skill. Therefore, a national "credit bank" for vocational education should be established, and the credit bank information system should be designed, open to all prospective practitioners and practitioners, and dynamically manage the "X certificate". Each person applies for an account, registers and stores his or her usual learning input into the system, and is reviewed by the school or the competent department of the enterprise. This is equivalent to depositing your own learning achievements in the enrollment branch and accumulating them slowly, just like a bank storing currency, which can finally be exchanged. According to the degree of difficulty, set the credit exchange coefficient. For example, employees of a company can continuously acquire a certain skill or skills, and at a certain level, they can exchange for academic certificates, or they can obtain higher-level academic qualifications by exempting several academic certificates. In this way, the barriers of academic qualifications and skills certificates have been opened up, and an overpass of 1 and "X certificates", that is, an overpass of academic qualifications and vocational qualification certificates, has been erected.

In addition, in order to ensure the gold content of the "X Certificate", it must implement a dynamic assessment system. The so-called dynamic assessment is to carry out the assessment of the "X certificate" on a regular basis. Due to the different deadlines of each industry, the content of the assessment also needs to be changed according to the actual situation. Take mechanical processing as an example. In the past, there were only lathe hours and only ordinary lathe certificates. With the development of science and technology, CNC machine tools appeared, you must test the knowledge of CNC lathes. If you have robots to make machine tools in the future, you must supplement the part of robots. In this way, the "X certificate" is not just a static certificate, it can not only prove the level of the past, but also the level of future practitioners. The credit bank record system will record the practitioner's lifelong learning situation, and also realize the concept of lifelong learning. For those who have not passed the dynamic assessment at a certain stage, there is an opportunity to make up the assessment. If the assessment is completed within one year or half a year, the assessment is still valid. If the make-up assessment is not successful, the personnel certificate will be temporarily withdrawn, that is, the system will show that the assessment has not pass until the training is completed again and

the exam is passed, and then the certificate will be issued. In this way, we encourage and urge people from all walks of life to learn and make progress. The formation of a learning atmosphere for the whole nation is also in line with the establishment of a national learning society. The implementation of dynamic assessment will significantly increase the gold content of the certificate, and it will also be favored by employers. The dynamic assessment system of "Credit Bank" and "X certificate" not only guarantees the gold content of "X Certificate", but also lays the foundation for the establishment of a national qualifications framework.

#### **2.4 "X certificate" query and management**

Before the policy changes of the national vocational education reform implementation plan, the certificates issued by the Ministry of Education and the Ministry of Human Resources and Social Security could not be checked in their respective systems. However, with the introduction of the State Council's new policy in 2019, this situation is bound to change. The author believes that it is possible to launch web query and WeChat official account, WeChat applet, APP development and other methods to establish a public information management service query platform for X qualification certificates. The X qualification certificate uses an electronic certificate, even if the certificate is lost, the electronic certificate can be inquired set the ID card as a special account. After logging in, for the students of vocational colleges and applied undergraduate colleges and social personnel participating in the pilot of the 1+X certificate system, the vocational skill level certificates obtained will be entered into the platform, and at the same time as the previous. The mentioned credit bank personal account system is docked to record the students' learning situation and credits during the school. At the same time, it also records the vocational qualification certificates obtained by social personnel, and provides social services such as online public inquiries in a unified manner. All academic certificates and vocational skills certificates can be inquired at any time. The system can also publish the latest occupational policies, exam time, exam standards, rules, and precautions for certain certificates, and can also use blockchain technology to supervise the process of certificate assessment. This is conducive for employers to fully grasp the learning situation of students, use big data, cloud computing, mobile Internet, artificial intelligence and other information technology to realize the function of supervision and evaluation, and also can intelligently understand whether the needs of a certain profession are the same as the current ones. The qualified personnel of this position are proportional, which provides a useful reference for the government's human resources management department. The system can also develop services such as online learning, which not only enables learners to learn everywhere, but also promotes the development of "1+X" certificates.

### **3. Conclusion**

The implementation method of the X certificate system proposed in this article answers questions such as who determines the standard of the X certificate, how to set the certificate level, how to ensure the gold content of the certificate, and how to query management. It is conducive to the reform of the training model and evaluation model of technical and skilled personnel, and is also an important measure to improve the quality of personnel training. At the same time, it also points out the direction for practitioners to improve their employment and entrepreneurial skills and ease structural employment contradictions, and lays a good foundation for building a national qualifications framework, which is of great significance for advancing education modernization and building a country with strong human resources.

### **References**

- [1] *The "Education Certificate + Several Vocational Skill Level Certificates" pilot program is launched to accelerate the cultivation of compound technical skills [EB/OL]. [20190412]news.cctv.com/2019/04/17/ARTISKJxzvL4vXY8PvCTAbSm190417.shtml*
- [2] *Notice of the State Council on Issuing the National Vocational Education Reform Implementation Plan [EB/OL]. [2019-01-24].www.moe.gov.cn/jyb\_xxgk/moe\_1777/moe\_1778/201902/t20190213\_369222.html*
- [3] *Sun Shanxue. Some understandings of the 1+X certificate system [J]. China Vocational and Technical Education 2019. (7)*
- [4] *Du Yiping, Li Haidong, Zhan Bin Talking about the design of the 1+X certificate system from the "course certificate symbiosis" [J]. China Vocational and Technical Education 2019. (4)*

[5] Zhang Zonghui. *1+X to enhance the gold content of professional qualification certificates-Interview with the chief editor of the Human Resources Security Publishing House and Zhang Mengxin [J]. China Training 2004. (02)*

[6] Li Haidong. Du Yiping. *Thoughts on Establishing my country's National Qualifications Framework[J]. China Vocational and Technical Education 2019.(7)*