

Research on the Practices of the 1+X Certificate System of Technical College

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Abstract: The 1+X certificate system is a kind of monumental systematic innovation of the vocational education in China, and it is also a concentrated reflection of technical college' emphasis on technical skills and professional adaptability. Technical colleges are the main body of practicing the 1+X certificate system. Technical colleges develop and practice the 1+X certificate system to cultivate qualified talents who are innovative, applied and skilled for the country and is a direct reflection of serving the national talent strategy. This article briefly summarizes the research perspectives on the practice of the 1+X certificate system in technical colleges, clarifies the connotation and significance of the 1+X certificate system, reflects the latest progress in the research on the practice of the 1+X certificate system in vocational education, summarizes and reflects on existing research, and provides reference for technical college to practice the 1+X certificate system and further steadily promote experimental work.

Keywords: 1+X Certificate System; Vocational Education; Institutional Connotation; Institutional Significance; Institutional Implementation

1. Introduction

Based on the realistic background of China, Academic certificate & several technical skill certificate systems (This article is referred to as "The 1+X certificate system") is a monumental systematic innovation of the Chinese vocational education. On February 13, 2019, the "National Implementation Program for Reform in Vocational Education" proposed in the specific indicators that technical college and applied undergraduate colleges will try the experimental work of the 1+X certificate system for the first time from 2019. The program requires reforming and deepening the

professional cultivation mode of personnels who are inter-disciplinary and skilled, and drawing on the common practices of overseas vocational education and professional training to formulate work plan and administrative system for the experimental work of this new certificate system. In April 2019, the "Notice on Implementing the Experimental Program of the 'Academic Certificate & Several technical skills Level Certificates' System in organizations" required that the experimental work be launched from 2019, and in the second half of 2020 the experimental work should be summarized. After 2021, the experimental experience is summarized and promoted. many different points of view from different perspectives. On this basis, the 1+x certificate system should be practiced in technical skills fields increasingly, and further promoted nationwide. According to the overall deployment, the 1+X certificate system should first be practiced in technical college, which is the mainstay in the practice of the 1+X certificate system. At present, the experimental work of the 1+X certificate system is being widely promoted nationwide in full swing. Many experts, scholars, and higher vocational education teachers have also actively studied the practice of the 1+X certificate system and proposed different views from different perspectives.

2. The Connotation of the 1+X Certificate System

Technical college, which is the mainstay of the 1+X certificate system, must first sort out and clarify its conceptual connotation and nature. This is a key basic theoretical issue, and experts and scholars have made relevant discussions on it.

2.1 The 1+X Certificate System is a Certificate System that Parallels "Academic Certificates & Technical Skill Level Certificates"

In the "National Implementation Program for Reform in Vocational Education", it is clearly proposed that the "Academic Certificate & several technical skill Level Certificates System" experimental work, namely the 1+x certificate system experimental work. As can be seen from this sentence, 1 is equal to the academic certificate, and X amounts to several types of technical skill level certificates.

Academic certificates are proof of the educational experience of the educated; according to different stages of education, they can be divided into primary, junior high, high school, vocational, higher vocational and technical, undergraduate, master's and doctoral academic certificates.

According to the "National Implementation Program for Reform in Vocational Education", the technical skill level certificate amounts to the certificate developed, trained, assessed, and issued by a third-party vocational education and training assessment organization in order to satisfy the society needs, market demand, and the professional knowledge and competencies required for the operating post (groups) in the industry and enterprises, as well as the requirements of the technical ability level standards for the operating post (groups). The certificate reflects the comprehensive ability required for the career development of the laborer and is a identification of the occupation skill level of the laborer. It can be divided into junior, intermediate, and senior levels.

Wang Yasheng [2] believes that the relationship between 1 and X is that of a subject and a complement. In this new system, 1 is the main body and foundation of vocational education, which is centered on cultivating high-quality personnels with the comprehensive development and providing students with professional technical skills education corresponding to their vocations, laying an unbreakable foundation for their life-long development. X is the complement of 1, which has the characteristics of pertinence, guidance and progressiveness to solve the problems of strengthening, supplementing and expanding expertise, professional demeanor, advanced technologies and new skills. During the current pilot period, technical skills training can be carried out independently without the 1 requirement, and qualified trainees can be issued X certificates. In the

absence of X, technical college can independently complete talent cultivation work in accordance with the professional talent cultivation plan, allowing graduates to obtain professional academic certificates normally. At the same time, 1 and X are an organic whole, jointly building a complete vocational education professional system and professional talent training objectives. The roles of 1 and X are complementary and inseparable. X" has the functions of strengthening, supplementing and expanding 1, while 1 plays a supporting role in X. The two promote and enhance each other. Liu Chuanli believes that in the course of practice the 1+X certificate system, the 1 and X are not independent entities, but form a complete standard system through mutual integration. Once the relationship between 1 and X reaches a high-quality integration, it will be able to comprehensively improve the educational level of technical college, thereby achieving the fundamental goal of integrating production and education. Most scholars believe that promoting the "integration of book and certificate" is the key point for technical college to implement the 1+X certificate system. The symbiotic development of regular education in schools and training and learning for obtaining professional certificate requires firstly aligning the technical skill level standards with the major teaching standards of vocational education at all levels, secondly further integrating the training and learning content of technical skill level certificates with the curriculum content specified in the school's professional personnel training program, and thirdly, promoting the synchronous implementation and overall organization of technical skill level certificate training process and academic education professional teaching process.

2.2 The 1+X Certificate System is a Reform and Innovation of the Double Certificate System

"Double certificates" refer to academic certificates and professional qualification certificates. A professional qualification certificate is a certificate that a laborer (student) obtains through examination and evaluation by a nationally recognized technical skill evaluation institution to enter employment. It reflects the professional theoretical knowledge and practical operational skill level of the

laborer (student). Vocational qualification is the most basic requirement for laborer (students) to possess professional theoretical knowledge and practical operating skills necessary for engaging in a specific occupation. It is the minimum level of professional knowledge and operating skills that laborer (students) possesses in order to satisfy the requirement of the industry and enterprise operating post (groups). In 1998, China officially established a five-level national vocational qualification certificate system, including junior (five levels), intermediate (four levels), senior (three levels), technician (two levels), and senior technician (one level). According to Chinese relative laws, the classification of occupations and the stipulation of technical skill standards for occupations are determined and formulated by the state. The practice of the professional qualification certificate system is the responsibility of the government-approved assessment and identification organizations to carry out technical skill assessment and identification for laborer. The vocational qualification certificate system is a specific form of national testing system. It is based on the occupational (type) skill standards or job qualifications stipulated in the National Occupational Classification Code, and through the national approval and recognition of the assessment and identification organizations, namely the technical skill assessment guidance centers established by the human resources and social security departments at all levels or industry departments (group companies), as well as the technical skill assessment (station) managed by them, the professional theoretical knowledge and skill operation level of the laborer (student) are scientifically, standardized, objective, and fair evaluated and identified. Those who pass the examination are considered to have achieved a national-recognized occupational (type) ability and are issued a national vocational qualification certificate.

It can be seen that the 1+X certificate system and the double certificate system have both similarities and differences. The similarities are that both include academic certificate education. The difference is that X refers to certain technical skill level certificates, while in the double certificate system, the other certificate refers to the national vocational

qualification certificate. These two certificates come from different education and training systems. Therefore, the connotations of these two certificate systems are different.

Wu Haiyong [3] concluded that for a long time in the past, the double certificate system had a profound impact on the vocational education in China. It has provided a solid institutional guarantee and practical foundation of innovation to enhancing the level of vocational education in China. However, the double certificate system also has many drawbacks, such as not being able to reflect the future tendency of the latest level of science and technology and the changes in human resource demand in a timely manner, not having a wide coverage, not being standardized, not having smooth training mode management system and mechanism, and not fully considering the characteristics and needs of vocational education in organizations. A new system that more satisfies the new era's demand of personnel cultivation in vocational education is urgently needed. Therefore, the 1+X certificate system emerge in response to the proper time and conditions. This system is a kind of significant system innovation of the China vocational education and is a further reform and deepening of the double certificate system that has been practiced in technical college for many years.

2.3 The "1+X" Certificate System is a Fresh Educational Form Based on the Credit Bank and National Qualification Framework System

The objectives and tasks in the "Experimental Work program for practicing the 'Academic Certificate & Several technical skills level Certificate' System in organizations" call for actively exploring in the field of national vocational education, focusing on building the "credit bank" system, and constructing the qualification framework. It is obvious that the practice of the 1+X certificate system is closely related to the establishment of the qualifications framework in China and professional fields.

The National Qualifications Framework provides a reference standard that enables the certification and conversion between different types and levels of educational outcomes and vocational training system outcomes. It is a bridge connecting higher education, vocational

education, and general vocational training, and is a tool for exchanging various learning outcomes. Establishing a qualifications framework is essentially an institutional innovation and practical exploration of lifelong education. The qualifications framework connects formal and non-formal education at all levels, provides diverse educational opportunities and pathways, supports cross-regional and even transnational mobility of people and learning, and is a basic system for achieving lifelong learning.

Liu Yiyun [4] concluded that the national qualifications framework focuses on the integration of various forms of education (including vocational education) based on qualification levels, while the 1+X certificate system currently weighted heavily in professional education. Both emphasize the role of nurturing and training, and the social strength is encouraged to participate in education and teaching processes. In the 1+X certificate system, the 1 and the X are two different perspectives to measure learning outcomes, one is the perspective of academic qualifications, and the other is the perspective of technical skills. The qualifications framework is the best tool for realizing the partial mutual recognition and exchange of the 1 and X certificates. In turn, in the national qualification framework, the training certificate recognition system and the development of scoring standards can draw on the new certificate system. During the experimental work process of this new system, the experience accumulated in the development, evaluation, and issuance of certificate standards is of great reference value. The national qualification framework and the 1+X certificate system is mutually integrated and reinforcing.

3. The Significance of Studying and Implementing the 1+X Certificate System

The 1+X certificate system is an important governance action for building national standards for vocational education, and through this system, the interests of all stakeholders are integrated, thereby enhancing the value and influence of professional qualification certificates. Therefore, the significance of studying and practicing this new certificate system covers multiple levels. At the level of vocational education, it

promotes the opening of the internal talent cultivation and evaluation system of technical college to the industry and enterprises, realizing the full coverage of school autonomy and external evaluation, which is helpful to satisfy the demands of reforms in the national vocational education. At the school level, this system clarifies the specific requirements for personnel cultivation in ordinary undergraduate schools when transforming into applied undergraduate schools, unifies the internal and external vocational qualification level standards, evaluation and awarding systems of schools, and forms a new design of vocational qualification system, which is also the development foundation for further deepening the mode reform of personnel cultivation in higher technical school. At the enterprise level, this system can help enterprises better express their needs to universities, so that the personnel training objectives of technical college are aligned with the demands of enterprises. At the student level, through the learning and training of X certificates, students gain abilities that are more suitable for the needs of their jobs, thus enabling them to better obtain employment and acquire sustainable learning and development abilities.

Feng Songsong [5] emphasized that technical college are the foundation for cultivating social technical talents and should actively respond to the national call and take the initiative to participate in the practice of this system. In microscopical sight, this will help alleviate structural employment contradictions and ensure technological and talents support for achieving the country's strategic goals. At the same time, it also conforms to the social development of the times and could be favorable to the reform and development of national vocational education. Many existing literature has emphasized the value of practicing the 1+X certificate system in higher technical college, which can be summarized as follows: promoting the reform of school running mode and improving the overall level of technical college; It is conducive to the innovation of mode for personnel cultivation, improving the training quality of technical and skilled personnels and the stable and sustainable supply quantity; Enhance exchanges and cooperation between technical college and industries and enterprises, and fuse

the production with the education for mutually beneficial cooperation.

4. Research on the Practice of the 1+X Certificate System by Technical College

Through reading, combing and summarizing the relevant literature, it is found that most scholars focus on the implementation of 1+X certificate system in technical college from the professional perspective, implementation path research, problems and countermeasures research.

4.1 Research on the Professional Perspective of Implementing the 1+X Certificate System in Technical College

The research on the practice of the 1+X certificate system from a professional perspective is summarized as follows: Most scholars take a specific major as the starting point, combining this system with professional construction to explore the major reform of personnel cultivation in the 1+X certificate system, thereby improving the quality of personnel cultivation [6]. There are also many scholars who focus on the correlation between the technical skill level certificate system and personnel cultivation programs, the necessity of fusing the personnel cultivation programs with the 1+X certificate system, the mutual integration of talent training programs and curriculum standards with the 1+X certificate system, and ultimately form a personnel cultivation model for school-enterprise cooperation, strengthen the construction of connotation in vocational education, and improve the quality of personnel cultivation. Such research usually analyzes and summarizes based on a specific major. Others analyze the curriculum construction, the development of teaching materials, the building of teacher organization, and other aspects in the 1+X certificate system from a specific course of the major, and study key issues such as improving the quality of personnel cultivation and the employability of the graduate in technical colleges. At the same time, they conduct in-depth analysis on the integration of theoretical courses and professional certificate training. Due to the narrow research perspective and the great similarity of the overall environment in which technical college are located, the suggestions they put forward are similar. Studying the

practice of this system from a specific major view is highly targeted, and it has a penetrating cognition of the existing problems in the pilot process of the major. The suggestions put forward are also feasible. However, overall, the understanding of the problems is not comprehensive enough, focusing on intuitive issues and lacking a holistic perspective. The majors studied are mostly popular pilot majors, and there are few studies on promoting the practice of this system for some new majors or those that have not been piloted, which can be said to be almost nonexistent.

4.2 Research on the Realization Route of the 1+X Certificate System by Technical College

Zhang Pei [7] believes that as a kind of significant system innovation in the field of high-level professional education with Chinese characteristics for reform and development, the 1+X certificate system is a system which involving many participating parties in the construction and implementation, and has great social influence, long experimental work fronts, many interest gaming links, and great difficulty in overall coordination. It requires scientific and rational system design and careful and meticulous promotion and deployment. He proposed to practice the 1+X certificate system from six aspects: building a lifelong education qualification framework and designing the top level ; improving the collaboration and cooperation of multiple subjects and reconstructing the teaching content; optimizing the production and education integration mode and innovating the organizational form; strengthening the construction of training quality standards and improving the certificate system; Highlighting the integration of data, informatization, and intelligence, and strengthen the application of the latest scientific technologies; reforming the education management system and optimizing the implementation mechanism.

Guangfu Gu also summarized the implementation path from multiple subjects. He believed that government departments should introduce corresponding supporting policies and strictly select and evaluate training organizations and certificate issuance and management. He emphasized the implementation points of technical college: actively explore new training programs; build

a professional personnel training program that inosculate 1 and X intimately; create a professional teaching team that combines full-time and part-time; improve social and economic development service capabilities; innovate the path of school-enterprise cooperation.

Wang Xueqin [8] proposed that technical college, as the first pilot of the 1+X certificate system, are both the practice subject and the benefit subject, so it is more important to focus on studying how to implement and practice the 1+X certificate system from the standing of technical college. He Jianqi believes that the realization route of the 1+X certificate system in technical college should include correctly selecting the X certificate; integrating the X into the professional personnel cultivation program; reconstructing the professional curriculum system; strengthening the development of teacher teams in this new system; speeding up the building of supporting institution and safeguard mechanisms.

4.3 Problems and Countermeasures of Practicing the 1+X Certificate System in Technical College

The practice of the 1+X certificate system involves the integration of two types of certificates and the cooperation of multiple subjects. Many scholars have studied the problems that arise during the implementation process and proposed corresponding solutions. Li Qian [9] summarized the problems into three major areas: certificate construction; implementation at organizations; and supporting system. Certificate construction and supporting systems mainly involve training evaluation organizations and government departments. Vocational schools have encountered many pain points in practicing the 1+X certificate system, these points can be summarized as follows: poor alignment of talent training programs; low enthusiasm of teachers and weak quality of dual-certification; insufficient integration of book and certificate; lack of platform for the integration of course and certificate; maladaptation of current teaching materials and teaching means; and the urgent need to further deepen the cooperation model between colleges, enterprises, and training organizations. Mao Shaohua [10] believes that the reasons for these problems are: the single

subject of developing talent training programs, which is slight deviated from the current condition of local economic trend; the lack of implementation of policies that clarify the responsibilities, rights, and benefits of the main body implementing the 1+X certificate system; the lack of collaboration between schools, enterprises, industries and social training organizations; the low technical skills content in the "dual-certification" quality of vocational teachers; the lack of platforms for the integration of course setting and professional capability, and the difficulty in unifying the curriculum standards of the "credit bank". He proposed that in order to cultivate compound high-tech skilled talents, technical college practicing the 1+X certificate system should focus on the following aspects: multi-subject participation and collaborative education; ensuring the credibility and validity of certificates based on market standards; promoting the integration of colleges and industries to facilitate the integration of two types of certificates; optimizing curriculum construction with demand-oriented; using the "dual-certification" standard to innovate teacher training models; reforming teaching materials and methods with service-oriented; and realizing the integration of certificates and courses through the "credit bank".

5. Summary and Reflection on Existing Research

By reviewing the literature on the practice of the 1+X certificate system in technical college, we can find that scholars have obtained specified results in the research on the conceptual definition, value significance, main dilemmas, influencing factors, and promotion paths of the 1+X certificate system. From the point of research methods, there are three main methods: general literature research, survey research, and general research, with problem-oriented research as the main focus. From the point of research content, the research focuses on the analyzing of the current situation, problems, with more theoretical research and less practical study. From the point of research objects, the study focuses on the interpretation of policies and secondary vocational education, with less study on higher vocational education and above. In general, the study has achieved certain results, but there are still many

follow-up studies and repetitive studies in the current research, which neglects the in-depth expansion of research issues. The study on the 1+X certificate system also needs to strengthen practical research, and only the system that has been tested in practice is scientific and universal.

With the gradual practice of the 1+X certificate system pilot project, the 1+X certificate system is facing new problems and challenges, and its study should also keep pace with the times, exploring the realization route of the 1+X certificate system suitable for Chinese professional colleges.

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