

The “1+X” Certificate in Vocational Education in China

Context

The Evolution of Vocational Certification in China: From “Dual Certificates” to “1+X” Certificate

In recent years, the Chinese government has prioritized the development of vocational education, enacting a series of policies and regulations, including the *National Vocational Education Reform Implementation Plan* and the *Vocational Education Law*. These policies and regulations aim to clarify the status and the role of vocational education within the entire education system in China, as well as guide its future development.

From 2018, the Ministry of Education has begun exploring the establishment of “1+X” certificate system, combining the academic diploma (“1”) with multiple specialized skill certificates (“X”). This system was formally proposed and piloted in 2019 within the *National Vocational Education Reform Implementation Plan* (also known as “*Vocational Education 20 Articles*”). The Ministry of Education, the Ministry of Human Resources and Social Security, the State Administration for Market Regulation, and the All-China Federation of Trade Unions jointly issued the *Opinions on the Implementation of the “1+X” Certificate System in Vocational Education* in April 2019 (Vocational Education Publish (2019) No.11), marking the implementation of this system nationwide.

China has a history of dual certification systems in vocational education. “Dual certificates” traditionally referred to the combination of a graduation diploma (academic qualification) and a skill-level certificate. The 1989 Ministry of Labour’s *Opinions on Deepening the Reform of Technical Schools* mandated that technical school graduates obtain both a graduation diploma and a technical skill qualifications. The 1993 *Decision of the Central Committee of the Communist Party of China on Several Issues Concerning the Establishment of a Socialist Market Economic System* explicitly advocated for Dual certificates (academic diploma and vocational qualifications). The *Vocational Education Law of the People’s Republic of China* (1996) formally stipulated the implementation of academic certificates, training certificates, and vocational qualification certificates within vocational education.

Vocational qualification certificates, a crucial component of the dual certificate system, evolved from internal worker skill assessments within enterprises in the 1950s. By the 1990s, they gradually became institutionalized. Around the turn of the 21st century, various

government departments and industry associations began establishing vocational qualification certificates related to their fields. By 2013, the State Council and local governments had established 618 and 1875 vocational qualification certificates respectively. However, at the same time, the increase of low-value certificates hampered the development of the dual certificate system. This led to a government initiative to regulate vocational qualifications, phasing out vocational qualifications in skill-level evaluation. The *National Vocational Qualification Catalogue (Professional and Technical Personnel Vocational Qualifications)*, issued by the Ministry of Human Resources and the Ministry of Social Security in January 2021, retained only 58 professional and technical personnel vocational qualifications, including 31 entry qualifications and 27 skill-level evaluation qualifications.

As the regulating of vocational qualification certificates neared completion, the State Council issued the *National Vocational Education Reform Implementation Plan* in February 2019, and proposed the “1+X” certificate system in this plan, combining academic certificates with vocational skill certificates, to deepen the reform of composite technical and skilled personnel training models. This resulted in a concurrent existence of the “dual certificate” and “1+X” certificate system within China’s vocational education landscape.

Subsequently, in April 2019, driven by a joint initiative from the Ministry of Education, the National Development and Reform Commission, the Ministry of Finance, and the State Administration for Market Regulation, the “1+X” certificate system pilot program was rapidly launched and gradually expanded. In August of the same year, the Ministry of Human Resources and Social Security issued the *Opinions on Reforming and Improving the Skill Talent Evaluation System*, deciding that “entry qualifications remain in the vocational qualification certificate catalogue, while skill-level evaluation qualifications should be gradually phased out.” From February 2019 to December 2020, the Ministry of Education’s “1+X” certificate pilot program selected 447 vocational skill level certificates for pilot implementation, involving 348 training and assessment organizations. (Gao, 2021)

The key differences between the two systems lie in their implementation scope, overseen authorities and mandatory requirements. First, the “dual certificate” system was initially implemented across both vocational colleges and technical schools, but later primarily focused on technical schools. The “1+X” certificate system primarily operates within vocational colleges and applied undergraduate universities. Second, under the “dual certificate” system, academic certificates were overseen by educational authorities, while vocational qualifications (vocational skill level) were overseen by human resource authorities. Under the “1+X” system, both academic and vocational skill level certificates are primarily overseen by educational authorities (although human resource authorities still

participate in the implementation of vocational skill level certificates in technical schools). Third, the “dual certificate” system mandated skill certificates for students, while the “1+X” system encourages but does not mandate them. In summary, the “1+X” certificate system represents a product of modern reform (Qian, 2021) and also a product of institutional innovation (Du, 2020). Whether it can drive the deep engagement from multiple stakeholders depends on the complex situation during the specific implementation and the response and feedback from all sectors of society, like people’s views on the credibility and effectiveness of government actions (Brezzi et al., 2021).

Text

The “1+X” Certificate System in Chinese Vocational Education: Content, Design Principles, Value, Stakeholders and Accreditation Mechanism

2.1 Policy Content

The “1+X” certificate system contains two key components: “1” represents the academic diploma earned upon completion of a certain educational phase. “X” signifies multiple vocational skill certificates obtained after training and assessment in specific skill domains. These certificates demonstrate the comprehensive abilities required for professional activities and individual career development. These certificates are classified into vocational skill certificates for broader public social groups outside the college and enrolled college students implemented inside the college. National human resources and social security administrative departments oversee externally administered certificates, while education administrative departments oversee internally administered certificates (vocational skill level certificates within technical schools overseen by human resource departments).

Chinese scholars have been discussing the “1+X” certificate policy, and have agreed on regarding “1” as the foundation and “X” as its complement, strengthening, and expansion. The academic diploma and vocational skill certificates are not two parallel systems; instead, they are interconnected and mutually integrated. This interconnection is the essence of the “1+X” certificate system as follows.

1. Curriculum Integration: The training content of “X” certificates should be integrated with the curriculum of the professional talent cultivation program in colleges. Vocational skill training is not designed as a separate system from academic program, but rather organically incorporated into the academic talent cultivation plan.

2. Standards Alignment: Vocational skill level standards should be aligned with the professional teaching standards across various levels of vocational education. Different levels of vocational skill standards should correspond to the training objectives and core curriculum learning objectives at different educational levels.

3. Synchronized Implementation: The “X” certificate training process and academic instruction process should be jointly organized and implemented concurrently. Due to the organic integration of “X” certificate content with academic courses in colleges, the “X” certificate training and academic instruction can be coordinated regarding teaching content, practice venues, organizational form of teaching, and teaching schedules, along with teacher arrangement.

4. Integrated Assessment: “X” certificate vocational skill assessments should be integrated with academic course assessments in colleges, including concurrent testing and evaluation. The learning outcomes reflected in the academic certificate and vocational skill level certificate can be mutually transferable. Students who have obtained an academic diploma could be granted exemptions on portions of relevant vocational skill level certificate exams; conversely, students holding vocational skill level certificates can receive credit exemptions in their academic studies, bypassing corresponding courses or modules (Tang, 2019).

2.2 Design Principles and Objectives of the Policy

The objective of the Chinese vocational education system development is to establish a new-era, Chinese characteristic vocational education system. This system features a “dual-track” operation of vocational and general high education, centered around vertical and horizontal integration, adapting to economic and social development and to deepening education reform. This system also aims to promote alignment across different levels of vocational education, in setting of academic programs, training objectives, curriculum system, and training processes, creating smooth pathways for the growth and development of technical skilled personnel. The “1+X” system represents a vital component of this Chinese characteristic vocational education framework, and also represents significant institutional support for vocational education framework establishment. Furthermore, it contains certain operating mechanisms such as multi participation in school running, multi pluralistic collaborative governance, diversified funding sources, and multi-stakeholder participation in quality evaluation (Tang, 2021).

2.3 Value of the Policy

The fundamental value of the “1+X” certificate system is its capacity to adapt to and meet the inherent structure, development patterns, and develop needs of vocational education. Its service value could be enhancing vocational education’s ability to serve economic and social development. Its social value could be mobilizing and stimulating the intrinsic motivation of social forces to participate in vocational education. Its constructive value could be helping building and shaping the Learning Society (Edwards, Raggatt, and Small, 2013) and a national qualification framework system (Wei, 2020).

The “1+X” certificate system contributes to improvements within the existing vocational education framework. First, it could highlight the essential distinction between vocational and general education in China, solidifying vocational education’s unique positioning as a type of education. Second, the “1+X” system has a distinct vocational orientation. Through the “X” certificate, it improves alignment between the supply side of talent cultivation and the demand side of industry requirements, forming vocational education into market-oriented employment training and skills-focused practical education. Third, the implementation of the “1+X” system clarifies the responsibilities and authorities of schools and enterprises, improving their collaboration and strategic partnerships, as well as establishing a long-term mechanism for collaborative school running (Zhang, Gao, and Zhou, 2022).

2.4 Stakeholders in the “1+x” Certificate System

The “1+x” certificate system is a complex systematic work. Therefore, a clear understanding of the system’s stakeholders and their core interests is significant (Viennet, and Pont, 2017). The vocational education system has both internal and external elements, including policy-making entities, policy implementation entities, and policy recipients (Ball, 1997).

Key stakeholders include various government departments. Policy-making entities, including education administrative departments, standardization management committees, the Ministry of Finance, and the Ministry of Human Resources and Social Security. They are responsible for policy formulation, guidance, and mechanism development (Greene, and Heflin, 1991). They also monitor and evaluate the quality and effectiveness of implementation. Policy implementation entities, including training and assessment organizations, vocational colleges, and applied undergraduate universities. Policy recipients which are the learners, acquiring vocational skill level certificates and representing the learning subjects for outcome certification and transfer. Educational administrative

departments and vocational education advisory committees provide guidance, evaluation, and supervision. Social groups, including learners and parents, evaluate the work of training and assessment organizations (Huang, 2020).

1. Ministry of Education

The Ministry of Education is the leading authority in vocational education, responsible for policy formulation and the promotion of vocational education development. It plays a vital role in the implementation of “1+X” certificate system, acting as both a proponent and a supervisor. The Ministry formulates and releases policies, determine the system’s direction, objectives, requirements, and implementation pathways. It is also responsible for promoting pilots nationwide, ensuring effective execution throughout the country.

2. Training and Assessment Organizations

These training and assessment organizations are responsible for the development of vocational skill level certificates and assessment standards, associated educational resources, examination site setup, and certificate issuance.

3. Institutions (Colleges and Universities)

Various educational institutions are the primary implementers of the “1+X” certificate system, as a crucial part of implementation. Institutions should develop specific plans based on Ministry of Education policies, coordinating resources across majors and faculties, integrating vocational skill level certificates with major updating and course development, and offering vocational skill training and assessments to both enrolled students and the broader public. During the implementation, schools should maintain close cooperation with industry partners in developing teaching plans, curricula, and assessment criteria to ensure labour market relevance (Olazaran et al., 2019). Institutions also need to invest in faculty training and the development of educational resources to enhance teaching quality and provide high-quality vocational education.

4. Enterprises

Partnering enterprises provide practical experience, technical support, and market demand information through collaborative agreements, the joint establishment of training bases, and collaborative curriculum development. Enterprises can offer internships and technical support, help bridging theoretical knowledge with practical application (Somantri, and Pramudita, 2024). This cooperation benefits enterprises by providing a continuous supply of talent and stimulating technical innovation, thereby enhancing competitiveness of the enterprises.

2.5 Vocational Colleges Certification and Accreditation Mechanism

The vocational school certification and accreditation mechanism is a critical step for the smooth implementation of the “1+X” certificate system. It ensures that participating institutions have the ability for certificate training and education through rigorous procedures, thereby guarantee the quality of skill training.

Certification and Accreditation Process: Institutions seeking accreditation must experience a process of application, review, and evaluation. They submit applications and supporting documents (including details on faculty, facilities, and teaching plan) to relevant municipal or provincial certification bodies. After review by experts to determine if the institution meets the requirements, a comprehensive evaluation assesses teaching quality, resources, and management. Only those institutions passing the evaluation receive accreditation to conduct teaching and training.

Certification and Accreditation Standards: Rigorous standards are implemented to ensure the high-quality implementation of the “1+X” system. Faculty requirements include a sufficient number of qualified instructors with extensive teaching and practical experience (called “dual-teacher” in some regions in China). Facilities must include advanced equipment and experimental environments to support teaching, training, and testing (e.g., Revit software-equipped computers for “1+X” Building Information Modeling entry-level certificate testing) (Olanrewaju, 2022). Curriculum must include all skill points within the certificate framework and emphasize practical skill development.

Certification and Accreditation Management: A management mechanism is established to monitor and evaluate authorized institutions regularly, reviewing teaching practices, student performance, and faculty staffing to maintain high teaching standards. The mechanism dynamically adjusts accreditation, revoking accreditation from institutions failing to meet requirements or exhibiting serious issues to ensure the system’s rigor and authority. This management approach ensures that authorized institutions maintain high quality and efficiency.

Consequences

Challenges and Solutions for the “1+X” Certificate System in Vocational Education in China

3.1 Implementation

The “1+X” certificate system, piloted in November 2019 and fully implemented across 31 provinces (autonomous regions, municipalities directly under the central government)

across the country by May 2024. Over 400 vocational skill level certificates included in the scope of the 1+X certificate system, over 10 million students and individuals obtaining vocational skills certificates. Since the implementation of the 1+X certificate system in 2019, the number of certificates issued has continued to increase (Wang et al., 2022). As of the end of 2022, more than 2.5 million vocational skill level certificates have been issued, involving over 200 professions (majors). Starting from the pilot program of six vocational skill level certificates in talent scarce fields such as elderly service and management, logistics management, and information and communication technology, and continuing to expand in subsequent batches, it has attracted active participation from numerous training and evaluation organizations as well as vocational schools, higher vocational colleges, and applied undergraduate universities. However, several challenges affect its effectiveness as follows.

1. Low Social Recognition of X Certificates

A key challenge is the disconnect between the assessment criteria and labor market demands. Many certificates lack credibility, leading to low recognition among employers. Contributing factors include the following elements.

Missing feedback data of the selection of certification and market tracking: Until now, there has been no official data showing the demand and supply quantity of the labor market targeted by the pilot certificate, as well as the evaluation data of the advantages demonstrated by certificate holders in the job market. Meanwhile, due to the increasing number of certificates and their tendency towards homogenization, it becomes more difficult for universities to choose certificates in the absence of relevant comparative data.

Weak industry credibility of training and assessment organizations: Many stakeholders have considerable doubts about whether the standards for vocational skill level certificates fully comply with the latest industry standards or only match the skill operation standards of specific products of a certain company. From the current participation enthusiasm of training evaluation organizations, educational institutions are much higher than production-oriented enterprises. The industry credibility of training evaluation organizations is not strong, which also leads to low social recognition of X certificates.

Limited involvement of leading enterprises: The design intention of the X certificate is to integrate new technologies, processes, and standards to compensate for the disconnect between school education and business needs. The leading or benchmark enterprises in the industry have relatively advanced technology and should become the main group for X certificate development. However, among the training evaluation organizations participating

in the pilot projects, the ratio of certificate development for private enterprises, state-owned enterprises, industry associations, and public institutions is 73:22:3:2 (Zhang, 2022). The proportion of small and medium-sized enterprises in private enterprises is relatively large, with only 38% of certificates developed by industry leaders and well-known enterprises (Zhang, 2022). Due to their scale and strength, whether the X certificate co-developed by small and medium-sized enterprises can be widely recognized by the industry has also raised questions from various stakeholders.

2. Insufficient Teaching Resources

One of the primary goal of the Pilot Program is to deepen the reform of the 'three teachings' (Qi, Sun, and Zhang, 2024) in colleges and universities through pilot programs. As an effective carrier for implementing the above reform goals, how to promote the implementation of X certificate in curriculum teaching and training is the primary issue that must be addressed in the practice of vocational education teaching reform. Research has found that teachers, teaching content, and teaching methods are still the core elements that urgently need to be constructed in the current promotion of the 1+X certificate system in colleges and universities. From the current pilot programs, insufficient construction of core elements are as follows.

Inadequate Teacher Training: Many instructors lack sufficient understanding of the system and the requisite industry expertise for effective implementation.

Insufficient Teaching Materials: A shortage of suitable teaching materials related to certificate standards restricts effective curriculum integration.

Inflexible Teaching Methodologies: Traditional teaching methods often fail to support the system's emphasis on practical work tasks and contextual learning. A disconnect exists between daily instruction and certificate exam preparation.

3. Lack of Integration with the “Credit Bank System”

There is an intention for the certificate system integrating with the national credit bank (Xing and Li, 2024), but qualifications framework remains incomplete due to the following reasons.

Absence of Standardized Credit Conversion: An absence of established standards for converting certificate credits to academic credits impedes seamless transfer of learning outcomes.

Less interconnection with other Certificates: Certificates from different government departments, like the Ministry of Education and the Ministry of Human Resources and Social Security, have different standards and ways of giving credit. This makes it hard for them to work together.

3.2 Recommendations and Strategies

1. Enhancing coordination

The education regulatory authorities should strengthen the overall coordination between pilot colleges and training evaluation organizations, establish effective communication mechanisms, and ensure that all parties are synchronous. At the same time, supervision and management of training evaluation organizations should be strengthened to ensure their service quality and certificate quality. Efficiency of information management should be improved, and the certificate management platform need to reduce administrative burdens. A platform for improving information exchange among stakeholders could be establishing.

2. Refining quality assurance mechanisms

Transparency of oversight results: Publicly releasing the results of inspections and audits.

Independent Evaluation: Integrating independent third-party evaluations.

Monitoring market demand: Conducting regular labour market surveys to track certificate demand and utilization.

Strengthening selection of assessment organizations: Shifting focus from planning to selection and cultivation of assessment organizations with good reputation.

Enhancing the social recognition of X certificates: An approach involving governmental guidance, public awareness activities, and collaborations with industry is required to increase certificate credibility.

3. Accelerating development of related teaching resources

Teacher development: Investing in teacher training related to the "1+X" system. Targeted training programs for instructors are vital, focusing on the "1+X" system, curriculum integration, and improved pedagogical techniques.

Curriculum development: Collaborating with industry to create course modules and practical teaching materials, utilizing innovative digital technologies.

Pedagogical reform: Adopting modular and hands-on teaching methods and using virtual simulation platforms.

4. Strengthening the credit bank integration framework

Standardized learning outcome evaluation: Defining learning outcomes within skill standards using a standardized framework.

Standardized credit assignment: Assigning credit units to specific learning modules in the skill standards.

Credit recognition mechanisms: Establishing mechanisms for monitoring and recognizing certificate credits within the credit bank system.

The successful implementation of the "1+X" certificate system requires collaborative efforts, continuous improvement, and a commitment to ensuring its relevance and value within the broader context of China's vocational education landscape.

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