

Research and Practice on Talent Training in Vocational Colleges Based on 1 Plus X Certificate System

Taking the Specialty of Big Data and Accounting as an Example*

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ABSTRACT

The system of "academic certificate plus several vocational skill certificates" is a major measure to implement the national vocational education reform. By promoting the organic connection of "1" and "X", it is feasible to organically integrate the certificate training contents and requirements into the professional talent training program, optimize the curriculum and teaching contents, strengthen the construction of professional teaching team, and encourage students to actively obtain various vocational skill certificates and academic certificates and expand employment and entrepreneurship skills, so as to realize the goal of vocational colleges to cultivate compound skilled talents.

Keywords: *1 plus X certificate, Talent training, The specialty of big data and accounting.*

1. INTRODUCTION

In the context of China's enrollment expansion of million of students, the Ministry of Education issued the implementation plan of vocational education reform, put forward the pilot construction of "academic certificate + several vocational skill certificate system", encouraged colleges to actively participate in the pilot construction of 1 + X certificate system, such as organically integrating the relevant contents and requirements of vocational skill standards into professional curriculum teaching, optimizing professional talent training programs and improving the talent training system of vocational education, and also established the corresponding reward and compensation mechanism. However, in the actual working process, 1+X certificate system has problems such as contradictions in certificate supply and demand, social recognition, and policy support from institutions. It is necessary to study and explore effective strategies for the

implementation of 1+X certificate system pilot in terms of management mechanisms, development of vocational skill standards and integration of education and teaching with social training.

2. BACKGROUND AND CURRENT SITUATION OF THE PILOT CONSTRUCTION OF 1+X CERTIFICATE SYSTEM

2.1 Implementation of 1+X Certificate System in the Context of Enrollment Expansion of Million of Students

The Department of Vocational Education and Adult Education of the Ministry of Education promulgated the Implementation Plan for National Vocational Education Reform (hereinafter referred to as VET 20), which proposed that "since 2019, the system of academic certificate + several vocational skill certificates (1+X certificate system pilot) would be launched in vocational colleges and applied undergraduate universities". The pilot institutions are mainly higher vocational schools and secondary vocational schools (excluding

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technical schools), with the active participation of applied undergraduate colleges and universities and the Open University. The first batch of vocational colleges are (backbone, high-quality) higher vocational demonstration schools at provincial level or above, national demonstration schools for reform and development of secondary vocational education, and relevant institutions with industrial characteristics.

According to the list of 3,109 pilots of higher vocational education in 2020, the number of pilots of higher vocational education in Shandong Province was 343, ranking first. In Anhui Province, there were 253 pilots of the higher vocational education, ranking second. Jiangsu Province had 229 pilot vocational colleges, ranking third. According to the think tank's statistics of higher vocational development, there were 742 higher vocational colleges on the pilot list in China, and 60 higher vocational colleges had more than 10 pilot projects.

2.2 Research Status and Practical Application Value

According to the statistics of the Ministry of Education in 2021, a total of about 1200 higher vocational colleges and 2300 secondary vocational colleges became pilot colleges of "1 + X" certificate system, the evaluation organizations had expanded to 368, with 471 grading certificates, and the number of assessment sites were increased from 1988 to 5266. The colleges applying for the pilot have been connected with the training and evaluation organization to carry out the development of vocational skill standards, teacher training, teaching arrangement and assessment site construction. The training and evaluation organization goes deep into higher vocational colleges, combines "1 + X" certificate with key projects such as the national "double-high plan" and modern apprenticeship, and cooperates with the "three-education reform" to jointly improve the vocational education system.

In October 2019, the Ministry of Education issued the "guiding opinions on the formulation and implementation of professional talent training programs in vocational colleges", encouraged schools to actively participate in the implementation of the 1 + X certificate system, organically integrated the relevant contents and requirements of vocational skill standards into professional curriculum teaching, and optimized professional talent training programs, so as to

promote the integration of study and certificate. At the same time, the central government established a reward and subsidy mechanism to reward the pilot work of the provincial 1 + X certificate system through relevant transfer payments.

3. PROBLEMS IN THE PILOT OF 1 + X CERTIFICATE SYSTEM

3.1 Contradiction Between Supply and Demand of 1 + X Certificate

According to 1 + X certificate pilot scheme, the training and evaluation organization is the main construction body of X certificate and standards, responsible for the development of certificate standards and teaching resources, as well as assessment and certification. The training and evaluation organization is the main construction body of 1 + X certificate. Against the background of deepening the "devolution, management and service" and gradually canceling the professional qualification of skilled personnel and promoting the recognition of socialized vocational skill, training and evaluation organizations are limited by industry and their own interests, are unable to establish professional grading certificates matching the professional catalogue in the fields of advanced manufacturing, modern services and strategic emerging industries, and are unable to effectively meet the needs of regional economic and social development for corresponding certificates. Therefore, the knowledge, ability and quality objectives of some X certificate standards deviate from the requirements of post ability development, resulting in oversupply [1].

3.2 Social Recognition of 1 + X Certificate

The development and standard construction of 1 + X certificate are completed by the training and evaluation organization. X certificate is developed on the basis of connecting the needs of social and economic development, students' sustainable development, credit bank and national qualification framework. At the same time, it also acts as a bridge connecting social talent supply and demand and talent iteration. In other words, the training and evaluation organization undertakes far-reaching social responsibility, but the essential attribute of the enterprise (company) is to pursue business profits. In the process of practice, the training and evaluation organization pays attention to the expansion of service objects, focuses on the development of charging items such as training and

teaching materials, values the sales of teaching and training software, lacks strict control over the training quality and teaching materials, and has insufficient depth of teaching materials and training contents, and lacks teacher training and practical ability [2].

At the same time, the authority of the certificate is closely related to the position of the training and evaluation organization in the industry. For example, the certificates of large-scale enterprises and leading enterprises in high-tech fields such as Huawei and ZTE are of high gold content and social recognition. However, vocational skill certificates developed by some training and evaluation organizations that do not have a high position in the industry or education and training enterprises can not represent advanced production technology or connect strategic emerging industries. What students are most concerned about is the linkage between certificates and employment. They can't see the value of X certificate from the perspective of long-term sustainable development. The seal stamped on X certificate is the company seal of training and evaluation organization, and the effectiveness and recognition represented cannot be compared with the academic certificate, which makes the recognition of industry enterprises and the expectation of parents and students to participate in the examination low.

3.3 Policy Support of Pilot Colleges

Vocational colleges are the main implementation body of 1 + X certificate system, undertake the educational responsibility of 1, that is, academic certificate, and are also the fusion of X certificate and 1. The students who have passed the training and assessment of pilot colleges and universities get the X certificate, which means that vocational skill training is incorporated into the vocational education system. In addition, vocational colleges change the running system, which requires the deep participation of industrial organizations and training and evaluation organizations to form a modern vocational education system based on the combination of schools, society and industry.

During the practice of pilot colleges and universities, the supporting strength of pilot colleges and universities is relatively small. There is a lack of specific implementation standards in terms of teacher training, expert recruitment, class hour allocation and performance appraisal. Besides, there is a phenomenon of emphasizing task completion and neglecting policy support. With the

absence of a smooth and effective communication mechanism of "government, enterprise and school", teachers in charge of training and teaching regard the 1 + X certificate system as the learning and examination of a new certificate, fail to understand the origin, reform needs and future vision of the system from the overall situation, and even just regard the learning and examination of X certificate as a new task assigned by the school, resulting in the phenomenon of emphasizing the passing rate of students' assessment and neglecting the quality of teaching and training content.

4. STRATEGIES FOR THE PILOT IMPLEMENTATION OF 1 + X CERTIFICATE SYSTEM

4.1 Improving and Guiding the Development of Vocational Skill Grading Standards

It is suggested to establish national vocational standard system of the new era and multi-party linkage construction mechanism under the guidance of the Ministry of Education and led by provincial education departments, coordinate the department of human resources and social security, the department of education and industry organizations, let more stakeholders participate in the research, formulation and promotion of certificate standards, and speed up the construction process of national qualification framework. In July 2019, the Ministry of Human Resources and Social Security and the Ministry of Education issued a notice on measures for the supervision and administration of vocational skill certificates (Trial) (Ministry of Human Resources and Social Security [2019] No. 34), requiring to mobilize, guide and support social forces to actively participate in vocational education and vocational training, and encouraging the pilot training and evaluation organizations outside and inside the college (including social third-party institutions, the same below) to connect the same vocational standards and teaching standards. In addition, the Ministry of Human Resources and Social Security and the Ministry of Education should respectively rely on relevant parties to organize the recruitment and selection of training and evaluation organizations, and the shortlisted training and evaluation organizations must implement directory management.

According to the requirements, the government and education departments should strengthen the organization of leading enterprises and high-quality

enterprises with certain influence in the industry (professional) to join social evaluation organizations in the process of the recruitment and selection of training and evaluation organizations; the organizations participating in training and evaluation organizations need to have the ability to develop vocational skill certificates and standards that relevant industries, many leading enterprises and high-quality colleges and universities have; and the training and evaluation organizations are required to provide the necessity and feasibility demonstration report of vocational skill certificate, demonstration and recommendation opinions of leading enterprises and high-quality enterprises, demonstration and recommendation opinions of industrial experts, etc. Also, it is necessary to establish a merit selection mechanism guided by government organizations and industries, and recruit high-level training and evaluation organizations and vocational skill grading certificates with high "gold content" [3].

Besides, it is feasible to improve the management mechanism of the "X" certificate pilot field of the strategic plan, encourage enterprises in advanced manufacturing, modern services and strategic emerging industries to become relevant training and evaluation organizations, develop vocational skill grading standards and certificates that are more in line with the actual needs of the society, deepen the organic connection between professional talent training programs and training contents of vocational skill grading, and strengthen the site construction conditions of pilot colleges and universities provided by enterprises, including training materials and learning resources, training equipment and site construction, teacher training and other resource construction. In addition, it is required to fully grasp the management requirements of training and assessment, the recognition and accumulation of credits and credit banks and the specific operation requirements, so as to truly realize the exchange of credits between academic education certificates and vocational skill grading certificates [4].

4.2 Deepening the Integration of Curriculum and Certificate and the Integration of Book and Certificate

The connection and integration of curriculum and certificate and the integration of book and certificate mean that the academic certificate and vocational skill grading certificate are placed in the same position. It is required that the vocational skill

grading standard and the professional teaching standard of higher vocational education should be connected with each other, the training content and professional courses should be integrated, and the training process and teaching process should be arranged as a whole. For different majors and different levels of vocational skills, the standards should correspond to the training objectives of academic vocational education in different education stages and the learning objectives of professional core courses, so as to maintain the consistency of teaching training objectives and teaching requirements.

Importantly, it is necessary to promote the integration of training contents of "X" certificate and professional courses. That is, the training content of "X" certificate will be organically integrated into the talent training program of academic education, and the skill standard content of "X" certificate will be integrated in the process of professional courses. For the training contents not covered by some professional courses, the knowledge is supplemented through short vocational skill training modules, including new technologies, new skills, new processes and new norms, so as to strengthen vocational skills, knowledge and literacy, expand professional fields and professional abilities, etc.

What is more, to promote "X" certificate training process and academic education and teaching activities, it is necessary to make overall arrangement, organization and implementation. Besides, it is important to organically integrate the professional course content of academic education with the training content of "X" certificate, so as to achieve the corresponding training and education standards and the integration of course content and certificate content. At the same time, it is required to organically integrate the certificate training activities into the curriculum system of academic education and carry out synchronous assessment and evaluation, so as to realize the integration of "X" certificate training and professional teaching of academic education.

In addition, it is feasible to implement the credit banking system of learning achievements of higher vocational academic education and "X" certificate vocational skill grading training, and the relevant courses or course contents are mutually recognized and exchanged. In the process of obtaining the academic certificate or vocational skill grading certificate, if the learning contents are equivalent or similar, learners can be exempted from partially

overlapping contents, exchange academic education credits according to regulations, or exempt from corresponding courses or modules of vocational grading training. Vocational colleges establish credit banks, establish personal accounts for students, explore the reform of talent training and evaluation mechanism from curriculum reform and teaching reform, and realize the identification, accumulation and transformation of learning results. When exchanging credits, it is convenient to register, identify, accumulate and convert learning achievements.

4.3 Construction of Management Guarantee Mechanism

To implement the 1 + X certificate system, it is necessary to establish a mechanism of school leadership, the main body of colleges and departments, enterprise participation, professional promotion and departmental management guarantee, solve the problems of promoting the organizational process, and implement the main body of responsibility through organizational arrangements.

First is to clarify the dominant position of the school. Schools should deeply know the essence and reform requirements of 1 + X certificate, understand the role of 1 + X certificate on its own development from a strategic perspective, design the implementation of 1 + X certificate to the construction of teaching staff, teaching reform and teaching materials in combination with the professional setting of colleges and universities, analyze the focus and mode of implementation of 1 + X certificate system, improve the top-level design, and provide sufficient capital, human and material resources. The 1 + X certificate system needs the support of various functional departments. Also, schools should clarify the responsibilities of educational administration department, logistics department, infrastructure department, information technology department and other departments and stimulate their participation motivation. From the perspective of schools' promotion, enterprises are the main participants. School-enterprise collaboration and the integration of industry and education are the key to the implementation of the 1 + X certificate system. And school-enterprise cooperation mainly play an entrepreneurial role in talent training program formulation, curriculum setting, practical teaching support, teaching method reform and so on.

Second is to identify that the secondary colleges and teaching departments are the main body to

implement 1+X certificate system. Secondary colleges and departments should implement teaching materials, teachers and other supporting conditions according to the requirements of professional talent training program, and implement them into the process of education and teaching through the 1 + X certificate system. Building a professional team with solid professional knowledge and excellent practical skills is the key to implementing the 1 + X certificate system into majors, courses, classrooms and students, and is also the construction achievement of implementing the "three-education" reform of vocational education.

4.4 Integration of 1 + X Certificate Standard into Talent Training Program

According to the Catalogue of Vocational Education (2021) issued by the Ministry of Education in March 2021, the original accounting major was changed to big data and accounting major, highlighting that the accounting major should adapt to the era of artificial intelligence and big data. Accounting business and accounting information increasingly show the characteristics of new accounting businesses such as massive data processing, real-time cloud computing and accounting intelligent decision-making. The talent training aim of the accounting industry is cultivate compound skilled technical talents who have the theoretical knowledge of accounting and finance, the professional knowledge and technical skills of "arts, science and engineering" of big data analysis and processing technology, computer artificial intelligence and IT information technology.

Most of 1 + X certificate training and evaluation organizations are industrial leading enterprises. They represent more advanced management and technology and are more active and urgent in accounting talent demand and industry transformation. Therefore, these enterprises have participated in training and evaluation organizations and developed dozens of big data accounting skill certificates involving big data analysis and processing technology, computer artificial intelligence and IT information technology, and provide the latest technology and platform for the cultivation of big data and accounting professionals. For example, among the third batch of training and evaluation organization and vocational skill grading certificates issued by the Ministry of Education in 2019, there were a total of 77 certificates, of which

6 certificates were related to finance. The names of these certificates included "digitization, integration of industry and finance, financial sharing, big data, informatization and management accounting",

which were in line with the development and construction of big data technology and represented the career development of financial staff in the future. ("Table 1")

Table 1. 1 + X detailed list of the third batch of vocational skill grading certificates (Accounting Series)

Serial Number	Name of training and evaluation organization	Vocational skill grading certificate
1	China Distance Education Holdings Ltd., CDEL	Vocational skill grading certificate of financial shared service
2	Seentao	Vocational skill grading certificate of financial digitization application
3	Shouguan Education	Vocational skill grading certificate of big data financial analysis
4	Seentao	Vocational skill grading certificate of industry-finance information
5	Guanhui Education	Vocational skill grading certificate of digital management accounting
6	Aisino	Vocational skill grading certificate of golden tax financial application

Social development and iterative updating of industry technology have not only brought about the transformation of the accounting industry, but also driven the continuous innovation of the training mode of accounting professionals. Therefore, it is suggested to build a financial digital talent training system based on the 1 + X certificate system, integrate big data analysis and processing technology and computer artificial intelligence information technology, strengthen the financial digital talent training system with skill cultivation and basic ability cultivation as the core, build teaching methods related to vocational skill grading certificates such as online and offline blended learning, alternating learning of working and learning and project task-driven learning, and introduce a "effectiveness-based" talent evaluation model, pay attention to skill assessment, strengthen the evaluation standard of vocational skill grading certificate, redesign the curriculum teaching content according to the existing accounting courses and 1 + X certificate skill standard, and make the whole curriculum system build around the "1 + X" certificate system standard.

Firstly, it is necessary to carry out teaching according to the logic of "certificate standard — talent training standard — curriculum standard — curriculum content — teaching design — teaching implementation — teaching evaluation" and the logic of compound talent training contained in the certificate. Secondly, it is feasible to make systematic changes in the teaching staff, teaching implementation, teaching resources, teaching methods, teaching evaluation and quality management, and reshape the structure of the

teaching staff according to the requirements of the new curriculum system and the new teaching operation system. Thirdly, according to the student-centered training logic of "learning resources — learning space — learning process — learning support service — learning evaluation", learners can carry out learning according to their own learning styles and learning needs [5].

4.5 Integration of Education and Teaching and Social Training

Education is a public welfare undertaking, and enterprises are the main body of the profit-making market. It is the legal duty of vocational education to develop both academic education and training. Under the circumstances of less training resources, limited internal performance distribution and lack of incentives for teachers to participate in various training in vocational colleges, colleges and universities should deal with the relationship between "1" and "X", and fully integrate 1 + X pilot certificate into the talent training process, and the connection and integration of book and certificate is the best way to give full play to the implementation of 1 + X pilot in vocational colleges. With the demand for multi-type talent training after the enrollment expansion of higher vocational colleges, it is necessary to break the traditional teaching mode, connect the professional teaching standards with the vocational skill grading standards, take the professional talent training scheme as the platform, optimize the curriculum and teaching content, organically integrate the teaching content and certificate training content, and integrate the

professional course assessment and vocational skill assessment, so as to realize the integration of academic certificate and vocational skill grading certificate and the integration of school-enterprise teaching resources and teaching staff.

At the same time, it is suggested to actively give play to the main role of colleges and universities in the social training of skill grading certificates. While carrying out the certificate pilot work for students, colleges and universities should actively undertake various social subsidy training to serve the vocational skills improvement action of regional industrial demand, and form a certificate training system supplement by the nation and local, so as to improve the transformation effect of vocational talent training and talent demand for regional industrial development.

5. CONCLUSION

The 1 + X certificate system is a major measure for the reform and development of vocational education in China. To strengthen the characteristics of vocational education types and innovate the evaluation methods of talent training, it is required to understand the strategic significance of the 1 + X certificate system from the perspective of the transformation of world kinetic energy, national strategy and the turning point of organizational destiny, and participate in the construction of talent training programs and courses based on the 1 + X certificate system, understand the value and operation significance of 1 + X certificate system for improving the quality of vocational education [6]. The purpose of "1 + X certificate system" is to organically connect "1" and "X". Its core is to innovate the talent training mode, drive the in-depth cooperation of colleges, enterprises, training and evaluation organizations and industrial administrative departments, and organically combine the training content of "X" certificate with the growth of higher vocational professionals according to the requirements of vocational skill grading standards and professional teaching standards, cultivate high-quality professionals suitable for posts, so as to adapt to the transformation of national economic and industrial structure and scientific and technological revolution.

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REFERENCES

- [1] Li Shoubing, Gao Yanfang. Current Situation and Countermeasures of Piloting 1+X Certificate System in Vocational Education [J]. Vocational and Technical Education, 2020 (11): 20-24. (in Chinese)
- [2] Song Yingchun, Duan Xiangyun, Lv Qiuhui. Realistic problems in the implementation of 1+X certificate system [J]. Vocational & Technical Education Forum, 2021 (12): 32-39. (in Chinese)
- [3] Chen Lu. Strategies for Vocational Colleges to Promote the 1+X Certificate System [J]. Education and Vocation, 2021 (02): 13-18. (in Chinese)
- [4] Jia Linping, Guo Ju. How to implement "1+X" education in higher vocational colleges [J]. Journal of Beijing Polytechnic College, 2020 (01): 46-49. (in Chinese)
- [5] Wu Nanzhong, Xia Haiying. 1 The reform logic and promotion strategy of vocational colleges under "1+X" certificate system [J]. Education and Vocation, 2020 (08): 5-12. (in Chinese)
- [6] Li Tongyan. To carry out the reform of higher vocational talent training model based on "1+X certificate system" [J]. China Higher Education, 2020 (08): 61-62. (in Chinese)