

Promoting Higher Vocational Teaching Reform in the Era of Digital Economy Under 1 Plus X Certificate System Taking Accounting Specialty as an Example

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ABSTRACT

Since the 13th five-year plan, China has paid more and more attention to the development of vocational education. 1 plus X certificate system is a major institutional innovation in the development history of vocational education in China. This institutional innovation also promotes the reform of vocational education to a new direction. Higher vocational colleges should take the 1 plus X certificate system as an opportunity to optimize the talent training scheme, innovate the professional curriculum system, promote the construction of teachers and innovate the development mode of teaching materials, so as to provide reference for the training of accounting professionals in higher vocational colleges in the era of digital economy.

Keywords: Digital economy, 1 plus X certificate system, Reform in education.

1. INTRODUCTION

Against the background of the sustainable development of digital economy, higher vocational colleges shoulder the burden of training accounting talents to adapt to the development trend of the new era for the society. The teaching reform of accounting specialty in higher vocational colleges is also imminent. With the implementation of 1 + X certificate system, the teaching reform of accounting specialty will be effectively promoted and a certain legal guarantee will be provided. Only by clarifying the significance of implementing 1 + X certificate system and closely combining the X certificate with talent training, curriculum construction, teacher team construction and textbook development can we better solve the problem of disconnection between vocational education of accounting major and the development of the times. Meanwhile, more high-quality and high-skilled compound talents who can meet the needs of enterprises would be trained.

2. DEVELOPMENT PROSPECT OF ACCOUNTING INDUSTRY IN THE ERA OF DIGITAL ECONOMY

Digital economy has become an important engine to lead global economic and social changes and promote the high-quality development of China's economy. Since the "national big data strategy" was put forward in the 13th five-year plan, China's policies to promote the development of digital economy and digital transformation have been improved and gradually implemented. The "14th five-year plan for national economic and social development of the People's Republic of China and the outline of long-term objectives for 2035", issued in March 2021, interpreted "accelerating digital development and building a digital China" as an independent chapter, and defined it as one of the objectives and tasks of national economic and social development during the 14th five-year plan period. The 14th five-year plan for digital economy development issued by the State Council in January 2022 put forward specific measures to continuously strengthen, optimize and expand China's digital economy. During the two

sessions of the National People's Congress in the same year, digital economy once again became a hot topic among representatives and members. "Promoting the development of digital economy" was written into the government work report as an important part in 2022.

With the advent of the era of digital economy, modern information technology represented by big data, mobile Internet, cloud computing, Internet of Things, artificial intelligence and other technologies is integrating with all walks of life to varying degrees. For the accounting specialty, the main works done by traditional accounting professional, such as establishing accounts, preparing vouchers, preparing statements and so on, have been gradually replaced by financial robots. The main function of accounting has changed from the original accounting to analysis, prediction and decision-making. In addition to mastering the traditional accounting theory, accounting professionals are required to master the use of information tools, big data analysis and application, financial control, tax planning, statistical audit, teamwork and management skills [1]. In November 2021, the Ministry of Finance issued the "outline of the 14th five-year plan for accounting reform and development", which put forward the overall goal of "taking digital technology as the support, taking the digital transformation of accounting and audit work as the starting point, and promoting the expansion and upgrading of accounting functions" and the main task of "effectively accelerating the transformation of accounting and audit". In December of the same year, the Ministry of Finance issued the "talent development plan for the accounting industry (2021-2025)", which stressed that the ability framework should be constructed for different levels and categories of accounting talents, the requirements for accounting informatization ability should be strengthened, and all kinds of accounting talents at all levels should adapt to the digital transformation of accounting work. In 2021, Shanghai National Accounting Institute, together with a number of companies, selected the "top ten information technologies that would affect accounting professionals in China in 2021 by considering the opinions of 5,772 public votes and 188 expert votes": financial cloud, electronic invoice, accounting big data analysis and processing technology, electronic accounting archives, robot process automation (RPA), new generation ERP, mobile payment, data center manager, data mining, intelligent process automation (IPA). These ten information technologies can be

roughly divided into two categories. One reflects the financial change now and in the past decade, and the other represents the development of financial digitization under the digitization of enterprises in the future [2]. According to the selection, accounting talents in the new era must reshape their knowledge structure, study and explore new technologies, actively participate in the process of financial informatization, automation, digitization and intelligent transformation, think about the essence and future of accounting from a new perspective, and better enable the development of digital economy.

3. CONNOTATION OF 1 + X CERTIFICATE SYSTEM

Against the background of economic and social digitization, the demand for high-quality, high-skilled and high-level vocational skilled talents in the accounting industry is increasing, which puts forward higher requirements for the training quality of accounting talents. In January 2019, the State Council promulgated the "implementation plan of national vocational education reform" (hereinafter referred to as "20 articles of vocational education"), which clearly proposed to launch the pilot of "academic certificate + several vocational skill grading certificates" (hereinafter referred to as the pilot of 1 + X certificate system) in vocational colleges and applied undergraduate colleges. Among them, "1" refers to the academic certificate, which comprehensively reflects the talent training quality of school education; "X" refers to vocational skill grading certificate, that is, the certificate of the vocational skill level of graduates and social members, which reflects the comprehensive ability required by professional activities and personal career development. "1 + X certificate system" means that students obtain various vocational skill level certificates while obtaining academic certificates, so as to meet the talent needs of China's current industrial structure transformation and upgrading.

Since the launch of the pilot work of the 1 + X certificate system, the Ministry of Education issued four batches of 447 vocational skill grading certificates in April and September 2019 and January and December 2020. Since the pilot work started in 2019, more than 4500 vocational colleges have participated in the 1 + X certificate pilot, with more than 3.2 million students participating in the pilot, reflecting the characteristics of high application recognition and wide application range.

Among the four batches of vocational skill grading certificates issued, there are more than 20 skill certificates related to the field of accounting industry. The vocational skill grading certificates of smart finance and taxation that first appeared in the second batch, the six certificates in the third batch, such as vocational skill grading certificate of financial sharing service, vocational skill grading certificate of financial digital application, vocational skill grading certificate of big data financial analysis, vocational skill grading certificate of integrated information application of industry and finance, vocational skill grading certificate of digital management accounting and vocational skill grading certificate of golden tax financial application, and more than ten certificates in the fourth batch, such as vocational skill grading certificate of enterprise finance and accounting robot application, vocational skill grading certificate of government finance and accounting robot application, vocational skill grading certificate of intelligent audit, vocational skill grading certificate of audit information application, vocational skill grading certificate of industry finance and tax integration, vocational skill grading certificate of big data investment analysis, vocational skill grading certificate of fine management of enterprise tax, obviously show the characteristics of accounting informatization, automation, intelligence and digitization.

4. SIGNIFICANCE OF IMPLEMENTATING 1 + X CERTIFICATE SYSTEM

4.1 Promoting the Development and Improvement of Higher Vocational Education

In the era of digital economy, the continuous emergence of new technologies, new industries, new formats and new models forces higher vocational colleges to deepen education and teaching reform, and the full implementation of the 1 + X certificate pilot work provides a path for higher vocational colleges to reform teaching. The 1 + X certificate system combines academic education ("1") with non-academic education (vocational certificate, "X") and institutionalizes it, which is a major institutional innovation in the development history of vocational education in China. Driven by this system, the reform of vocational education pays attention to the cultivation of compound technical talents suitable

for social development in terms of talent training. In the construction of curriculum system, the integration of professional skills is emphasized. In addition, it is suggested to put forward new paths and methods in the reform of "teachers, teaching materials and teaching methods". In terms of evaluation mechanism, the needs of industrial development are reflected. The 1 + X certificate system leads the new direction of vocational education reform, helps to promote the modernization of China's vocational education and improve the level of vocational education.

4.2 Improving the Quality of Talent Training

China is moving forward from a major power of manufacturing to a powerful nation of manufacturing. It is the key to have a team of high-end compound technical and skilled talents, and higher vocational colleges are the "cradles" of this kind of talents. By carrying out the 1 + X certificate system, higher vocational colleges integrate the new technologies, new processes and new norms of industrial enterprises into the process of talent training, so that students can not only complete professional courses, but also improve their professional skills according to the needs of social employment, make up for their deficiencies in practical business operation, so as to give full play to the synergy of professional basic education and vocational skill training. Through the implementation of the 1 + X certificate system, the accounting specialty in higher vocational colleges enhances the coincidence between the training of accounting talents and the needs of industries such as finance and taxation, and cultivates excellent talents with "professional knowledge + finance and taxation vocational skills", so as to improve the quality of talent training [3].

4.3 Realizing the Mutual Integration of School Resources and Enterprise Resources

The 1 + X certificate system brings the government, institutions and industrial enterprises into the vocational education and training system. Enterprises, as participants, form a community of destiny with pilot institutions, jointly revise talent training programs, curriculum systems and curriculum standards, jointly develop teaching resources and jointly train teachers, thus breaking the barriers between the "education system" and the "industrial system" and realizing diversified talent

cultivation by industrial enterprises and vocational colleges. On the other hand, in the process of participating in X certificate training, students can obtain real background information of enterprises, get in touch with the latest technologies and norms in the industry, and can quickly be competent for relevant posts after obtaining the certificate. The 1 + X certificate system builds a bridge between schools and enterprises for students and closely connects the school and society.

5. PROBLEMS IN THE IMPLEMENTATION OF "1 + X" CERTIFICATE SYSTEM IN ACCOUNTING TEACHING IN HIGHER VOCATIONAL COLLEGES

5.1 *The Recognition and Application Scope of the Certificate Need to Be Clarified*

At present, there are more than 20 certificates of 1 + X skill developed in the field of accounting industry. However, due to their own conditions, higher vocational colleges will only select one or two of them to carry out the pilot, and the implementation of each pilot certificate is uneven and asynchronous. Besides, since the development, application and evaluation of the 1 + X certificate examination platform are developed and constructed by relevant industrial enterprises, the assessment difficulty and standards formulated can not fully represent the development and needs of the whole industry. Therefore, it is difficult for employers to make accurate judgments on various certificates, resulting in the low social recognition of X certificate, the low universality of the industry and the limited play of the actual effectiveness of the 1 + X certificate system.

5.2 *Insufficient Integration Between the Existing Professional Curriculum System and "X" Certificate*

1 + X certificate of accounting specialty includes the latest digital technology, accounting robot technology, big data technology, etc., finance, taxation, audit, enterprise management, etc., which provides a rich learning platform and content for higher vocational colleges [4]. Pilot colleges and universities should seize this opportunity, organically integrate the certificate training content into the professional talent training program

according to the requirements of vocational skill grading standards and professional teaching standards, and optimize the curriculum and teaching content. In the process of practice, due to the short implementation of the 1 + X certificate system, all higher vocational colleges are still in the exploratory stage of how to effectively implement the pilot work. Therefore, most pilot colleges simply superimpose the professional courses and X certificate training courses. For example, in addition to the accounting professional course system, it is suggested to build a set of learning and training specially for the examination of vocational skill grading certificates of finance and tax. However, the professional curriculum system and vocational skill certificate standards cannot grow together, and the integration of professional curriculum content and X certificate curriculum content is not high.

5.3 *Teacher Resources Have Not yet Matched the Needs of the 1 + X Certificate System*

The key to the pilot of 1 + X certificate system and the implementation of "three reforms" lies in teachers. 1 + X vocational skill grading certificate shows the professional quality, professional knowledge and vocational skills required by typical posts, strengthens the assessment of the ability to complete typical tasks, and reflects the new technologies, new processes, new specifications and new requirements of industrial enterprises. Therefore, teachers in higher vocational colleges should not only have corresponding professional knowledge, but also have certain practical experience in enterprises. However, from the actual situation, the current accounting teachers in higher vocational colleges mainly come from colleges and universities, most of them have no work experience in enterprises, and the teacher training process is also lack of training of professional skills and professional practice. In this way, it is easy to teach theory rather than practice, and the teaching of practical courses can only be based on their own understanding of theory, resulting in unsatisfactory teaching effect. Although higher vocational colleges are vigorously developing the "double-qualified" teacher team, some of the "double-qualified" teachers do not live up to the name. They mostly stay at the level of having the "double certificates" of teacher qualification certificate and accounting title certificate. Besides, they have less actual professional post experience, low content of vocational skills and lack of real double-qualified

quality. Therefore, it is difficult to cultivate compound skilled accounting talents needed against the background of "Things Amount Area of Next-generation Information Technology".

5.4 Professional Teaching Materials Fail to Keep Pace With the Times

Teaching materials are the carrier of teaching contents and an important part of talent training and professional construction. Teaching materials are the basis for realizing the 1 + X certificate system. With the gradual advancement of China's industrial transformation and upgrading and the continuous adjustment and optimization of relevant national financial and accounting policies and accounting systems, the original accounting professional knowledge and skills should also be updated and improved in time. Due to the long-term revision and publishing cycle of teaching materials and the slow speed of updating, professional teaching materials can not keep up with the pace of industry development, and new processes, new knowledge and new technologies can not be reflected in teaching materials. On the other hand, the accounting textbooks of most vocational colleges still follow the compilation system of general education, only pay attention to the coherence and integrity of theoretical knowledge, do not pay attention to the practicality and application of vocational education, and can not reflect the cultivation of students' professional ability.

6. TEACHING REFORM OF ACCOUNTING MAJOR IN HIGHER VOCATIONAL COLLEGES AGAINST THE BACKGROUND OF 1 + X CERTIFICATE SYSTEM

6.1 Improving the Social Recognition of X Certificate With Joint Efforts of Various Parties

The implementation of 1+X system requires the joint efforts of multiple parties. Multiple subjects should perform their respective duties, fulfill their respective responsibilities and cooperate with each other within the scope of their respective responsibilities. First of all, as the framer and promoter of the 1 + X certificate system, the government should speed up the construction of the qualification framework at the national level, establish a unified national education standard

system, build a clear vocational skill standard system, and improve the evaluation system of skilled talents. In addition, it is suggested to integrate the academic certificate and vocational skill certificate into the national qualification framework to realize the mutual integration of 1 and X, so as to provide a basis for social evaluation and acceptance of vocational skill certificates. Secondly, as a bridge between vocational colleges and the public, social media should publicize and promote the 1+X certificate system through print media, We-Media platforms and online media platforms, so as to improve the reputation of X certificate and enhance the recognition of X certificate by enterprises, students, parents and other social circles. Thirdly, as the main body of employment, enterprises should strengthen their understanding of X certificate. X certificate can only be widely accepted by the public if it is recognized by the enterprise. At the same time, as an important participant in the implementation of 1 + X certificate system, enterprises should actively participate in the development and assessment of X certificate. On the one hand, by participating in the development of professional standards of 1 + X certificate, new technologies, new processes, new specifications and new requirements of the industry are incorporated in time to ensure the vitality of the certificate. On the other hand, by strictly controlling the assessment standard and quality of X certificate, the gold content of X certificate in the industry can be improved. Fourth, as the pilot unit and main body of the implementation of 1 + X certificate system, higher vocational colleges should closely combine the pilot of 1 + X certificate system with professional construction, curriculum construction and teacher team construction, promote the organic connection between "1" and "X", and improve the quality of vocational education and students' employability. On the other hand, higher vocational colleges should do a good job of publicity and interpretation, and accurately transmit the significance, connotation and requirements of 1 + X certificate system to students, so that students can fully understand relevant policies, and clearly participate in the grading assessment of X certificate, which is conducive to lifelong learning and future career development. Also, more students will be mobilized to participate in the examination team of X certificate.

6.2 Improving the Talent Training Scheme Under the 1 + X Certificate System

In April 2019, the Ministry of Education and other government departments issued the pilot scheme on implementing the system of "academic certificate + several vocational skill grading certificates" in colleges and universities, and proposed to organically integrate the certificate training content into the professional talent training scheme to improve the flexibility, adaptability and pertinence of talent training. At present, the Research Institute of Vocational and Technical Education Center of the Ministry of Education has organized training and evaluation organizations, industry enterprises and vocational education and research institutions to demonstrate and release four batches of 355 vocational skill grading certificate standards to the society, which provides a blueprint for the pilot colleges to incorporate the vocational skill grading certificate standards into the talent training program.

Against the background of the pilot of 1 + X certificate system, higher vocational colleges should take the initiative to strengthen cooperation and exchange with enterprises in combination with the local economic development trend, understand the latest employment requirements of the industry, and cultivate talents according to the post requirements. In addition, higher vocational colleges should deeply study the professional skill grading certificate standard of finance and accounting and the teaching standard of accounting specialty, and formulate a talent training plan reflecting the deep integration of academic certificate and professional skill grading certificate. And then, the newly formulated accounting talent training objectives will be in line with the employment standards of local enterprises, and the effective connection between talent training of higher vocational education and social needs will be realized.

6.3 Building a Professional Curriculum System in Combination with X Certificate

According to the requirements of accounting post and professional ability grading standards in the professional skill grading certificate of finance and accounting, the curriculum system of accounting specialty is reconstructed. Higher vocational colleges should straighten out the connection relationship and content structure

between X certificate and the original professional courses, find out the relevant points, commonalities and gaps among them, subdivide the evaluation standard of X certificate into specific knowledge points and skill requirements, and then decompose it into several courses in the original professional curriculum system. In this way, the new technology, new process and new standard of X certificate can be organically integrated with relevant professional courses, and the professional curriculum system of colleges and universities will be reconstructed based on 1 + X certificate system. Taking accounting as an example, higher vocational colleges can analyze and compare the contents of the existing professional curriculum system with the ability unit content of professional skill grading certificates such as big data financial analysis, financial digitization, financial sharing service, digital management accounting, enterprise finance and accounting robot application. In case of inconsistency in skill requirements and class hour arrangement, the professional curriculum system should be adjusted accordingly. On the other hand, if the existing professional curriculum system does not match the ability unit structure of the above vocational skill grading certificate in terms of curriculum structure and difficulty level, the structural setting and difficulty level of the existing curriculum system should be adjusted to match the certificate. In addition, for the contents that cannot be fully covered by the existing professional curriculum system, elective courses can be added, and the new courses reflecting new technologies, new knowledge and new rules formed in the integration of academic certificate and X certificate can be offered to students, so that students can take elective courses according to their own interests and career planning, and expand their vision of accounting professional knowledge. At the same time, convenient conditions should be provided for students to obtain X certificate.

6.4 Strengthening the Construction of 1 + X "Double-qualified" Team

Teachers are the main force in the development of vocational education. The implementation of 1 + X certificate system not only gives teachers new tasks, but also puts forward new and higher requirements for teachers' ability and level. Therefore, higher vocational colleges should focus on building a high-level "double-qualified" team that can adapt to the situation of technological change in the new era, accurately grasp the

advanced concept of 1 + X certificate system and meet the training needs of "four new".

6.4.1 Optimizing the Structure of Teachers

Higher vocational colleges should actively contact the enterprises participating in the pilot work of 1 + X certificate system. On the one hand, higher vocational colleges should introduce the personnel skilled in new technologies, new processes, new norms and new requirements for part-time teaching. On the other hand, higher vocational colleges should encourage teachers to go deep into the enterprise for practice, build a school-enterprise cooperation, full-time and part-time teacher team, and improve the teaching and training ability of professional teachers.

6.4.2 Strengthening the Training of Professional Leaders

Professional leaders should deeply understand the educational concept of the 1 + X certificate system, lead the teacher team to do a good job in the top-level design of pilot work such as the revision of talent training scheme, guide the teacher team to support and cooperate with the 1 + X pilot work, and put forward feasible suggestions.

6.4.3 Strengthening Teacher Training

Teachers should be organized to participate in vocational skill grading certificate training and obtain relevant certificates. By means of participating in training and examination, teachers have deepened their understanding of the 1 + X certificate system, mastered the knowledge, skills and assessment standards of X certificates of relevant majors, and consciously incorporated the examination contents into professional teaching in teaching, paving the way for students to successfully obtain multiple "X" certificates while successfully obtaining "1" certificates.

6.4.4 Improving the Teacher Evaluation System

Higher vocational colleges should take the process and results of teachers' participation in the training of vocational skill grading certificate as one of the standards of their performance assessment, and only the teachers who pass the assessment can be granted the teaching qualification of relevant courses. At the same time, in order to encourage teachers to actively

participate in the industry-university-research cooperation, the enterprise practice projects and performance results participated by teachers can be included in the evaluation criteria.

6.5 Upgrading the Teaching Materials of Integrating Course and Certificate Under the 1 + X System

Under the 1 + X certificate system, the teaching of accounting courses and the training of vocational skill grading certificates are integrated and interconnected. Higher vocational colleges should organize industry experts, enterprise technical backbone and teachers with rich teaching experience to form an expert team to jointly explore the integration of the original curriculum and X certificate, so as to develop a textbook of integrating course and certificate suitable for the accounting specialty of higher vocational colleges. The new teaching materials should closely follow the development trend of the industry, incorporate new knowledge, new skills and new norms in the field of finance and accounting, and reflect the professional ability requirements of typical tasks of finance and accounting. The new textbook not only pays attention to the teaching of theoretical knowledge, but also emphasizes the training of vocational skills and the cultivation of professional quality, with strong professionalism, applicability and practicality.

In the tide of digital economy, the accounting industry is changing rapidly, and professional teaching materials should be updated in time with the development of information technology and industrial upgrading. Therefore, the teaching materials should adopt new loose leaf and manual teaching materials. Users can update the learning content at any time according to the actual situation, and can also make it a "personalized" teaching material. At the same time, higher vocational colleges should provide teaching materials with three-dimensional information-based teaching resources, such as presenting the working process of accounting posts through AR technology and developing exercise bank through network cloud platform, so that the construction of teaching materials can meet the needs of modern online and offline blended teaching, simulated, virtual and real teaching and mobile terminal learning [6].

7. CONCLUSION

1 + X certificate system is the first step of national vocational education reform in the new era. It is imperative for higher vocational colleges to reform the teaching of accounting specialty under 1 + X certificate system. In this study, the discussion on the teaching reform of accounting specialty under the 1 + X certificate system is not comprehensive and in-depth. The effectiveness of talent training program revision, curriculum construction, teacher team construction and textbook development needs to be further improved and tested.

AUTHORS' CONTRIBUTIONS

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