

# Innovation research of "1+X" certificate system in applied undergraduate education

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**Abstract.** In view of the current situation of 1+X certificate system and the new changes of talent cultivation in the mode of independent colleges, this paper creatively puts forward the innovative design of "1+X+Y+Z" talent cultivation mode, and at the end of the article, puts forward the implementation strategy to ensure the orderly promotion of "1+X" certificate system of independent colleges. Independent college professional talent training propulsion strategy to "1 + X" certification system as a guide, based on course contests, students internalize the practice as the criterion, in the team, led by continuously deepening the reform of personnel training mode, the teaching combination, in order to promote learning, eventually produce different from the characteristic of vocational colleges and normal universities and colleges of undergraduate course, Finally, it embodies the duality of applied undergraduate skill education and research education.

## 1 Introduction

The "1+X" certificate system is a multi-dimensional, diversified and developmental concept, which reflects the evolution of the satisfaction and expansion of social, market, corporate and personal development needs. There is no such thing as "1+X" in foreign countries, and it is more about the integration of production and education and vocational education. Vocational education is employment-oriented and cultivates high-quality technical and skilled talents. In relevant foreign studies, more emphasis is placed on the "dual certificate" system, the dynamic connection of the German "dual certificate" based on lifelong education, the effective connection of the Australian "dual certificate" based on the framework system, and the ability-based connection of the British "dual certificate" system, which have positive enlightenment value for the development goals and methods of the "dual certificate" system of vocational education in my country. However, the traditional "1+X" certificate system, which represents the combination of academic certificates and vocational skills certificates, cannot closely match the actual skills of undergraduate graduates of independent colleges. Therefore, innovation is carried out from the perspective of professional talent training in independent colleges Design is of great significance. It has exported compound talents with innovative ability, learning ability, professional technology, comprehensive adaptability and other qualities to the market, which is more conducive to the exploration of new paths for the cultivation of applied skilled talents, and is conducive to the building of characteristic

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professional brands. It is conducive to the innovation and integration of all resources of "government, school, business and enterprise".

## **2 Research status of "1+X certificate" system**

"To speed up the connection between academic certificates and vocational skill level certificates" is extracted from the 2019 "Government Work Report". Article 1 of Vocational Education clearly points out the four principles of the reform of the "1+X certificate" system: "Manage both ends, regulate the middle, integrate documentary evidence, and run schools in multiple ways", and at the same time, in Article 7 of "Vocational Education", it points out that vocational colleges implement academic qualifications The act of balancing education and training. However, these are slightly lacking in applied undergraduate education, and the performance is unclear. Clarifying the current situation of the pilot work of "1+X" certificate can determine the guidance for the suitability of the pilot work carried out by independent colleges.

As of May 31, 2022, there were 2889 research papers in CNKI under the theme of "1+X certificate", including 213 in Chinese core journals. Most scholars have carried out research on "1+X" from the source and meaning of "1+X certificate" to define the concept, connotation characteristics, emerging problems and fields of further exploration. The so-called "1" refers to an academic certificate; "X" refers to several vocational skill level certificates, that is, "a certificate of vocational skill level, reflecting the comprehensive ability required for professional activities and personal career development" [1]. The "1+X certificate" system is the institutional guarantee for deepening teaching integration and school-enterprise cooperation, and it is also the basic system for guiding vocational education activities in the future (Sun Shanxue, 2019) [2]. Most of the "X" certificates are certificates named after vocational skills, which represent the level of vocational skills and identify students' learning outcomes (Li Qian, Lu Wei, and Yin Xingjing, 2019) [3].

As early as 2011, the "Opinions of the Ministry of Education on Giving Full Play to the Guiding Role of the Industry to Promote the Reform and Development of Vocational Education" clearly deployed "promoting the establishment and improvement of a dual-certificate system, and realizing the connection between academic certificates and vocational qualification certificates". At that time, there were "obvious traces of mechanical copying of foreign experience", even though vocational colleges had generally taken dual-certificate education as their basic orientation (Liu Yusheng,2019) [4]. The effective communication and mutual recognition of academic education and vocational access is the extension of vocational education personnel training. In the process of talent cultivation, vocational education often pays equal attention to academic certificates and vocational certificates. In particular, the teaching process is fully integrated into the industrial training process to realize the integration of production and education, and ultimately promote the optimization of students' human capital ( Liu Yusheng, 2019 ; QIN Jian,2021) [5].

Although most of the "1+X certificate" system relies on vocational education and some courses with strong practicality, it does not focus on some related studies in undergraduate colleges. According to statistics, according to the independent declaration of colleges and universities and the recommendation of provincial education administrative departments, the Institute of Vocational and Technical Education Center of the Ministry of Education has selected and confirmed pilot projects under 16 "X" certificates, including undergraduate-level vocational education pilot schools, application-oriented schools There are 413 undergraduate college pilots, involving 167 colleges and universities. For applied undergraduate colleges, it is necessary to actively learn from these talent training models, and choose a suitable modern education model based on their own unique circumstances. In order to ultimately improve the quality of personnel training and cultivate high-quality applied talents.

### **3 New changes in talent training in independent colleges under the background of the "1+x " certificate system**

Any talent training model revolves around "how individuals learn, where individuals learn, and what platforms or forms individuals use to achieve learning". With the connotative development of higher education in my country, the steady advancement and in-depth development of the modern vocational education system has just given the talent training model of independent colleges a model for reference, providing an opportunity for its successful transformation. According to the ranking list of the "Chinese Universities and Disciplines Evaluation Report (2020-2021)" released in April 2020, 1,238 undergraduate colleges participated in the evaluation, of which 261 were independent colleges, accounting for 21.1% of the total number of undergraduate colleges. Distributed in 29 regions in China. Independent colleges are the products of the new situation and the continuous expansion of higher education resources. In order to innovate the mode and mechanism of higher education, the way and means of adjusting the educational layout. Independent colleges mainly rely on public universities to run schools in their school-running model, and share resources with public universities in terms of school-running brand, education management, and teacher allocation. The convergence of majors and talent training models with the parent universities is serious.

Taking Zhejiang Province as an example, as of November 2020, there are 21 independent colleges in Zhejiang Province. Except for Zhejiang University City College and Zhejiang University Ningbo Institute of Technology successfully transformed into public schools, other independent colleges are facing the same dilemma. That is to say, it is difficult to let go of the halo and attachment to the parent university, especially in the innovation and development of talent training concepts, which is manifested as insufficient motivation and execution. In the practice of talent training, although there is the name of applied undergraduate concept, there is no reality of applied undergraduate training. For example, most independent colleges still attach great importance to students applying for postgraduate entrance examinations, and give certain rewards to students who have passed the postgraduate entrance examination, and even take the online rate and acceptance rate of postgraduate entrance examinations as the content of enrollment promotion, and some colleges even put too much emphasis on the concept of running a school. The essence of the scientific research level of college students in colleges and universities is a deviation from the concept of training applied talents.

The report of the 19th National Congress of the Communist Party of China comprehensively outlines the top-level design for the overall reform of education, and the State Council also issued the "Several Opinions on Deepening the Integration of Industry and Education", all of which have provided an opportunity for the transformation of the talent training model of independent colleges. As early as 2014, the "Decision of the State Council on Accelerating the Development of Modern Vocational Education" (Guo Fa [2014] No. 19) has clearly stated: "It is necessary to adopt pilot promotion, demonstration and other methods to guide a group of general undergraduate colleges and universities to develop. The transformation of applied technology-type colleges and universities will focus on undergraduate vocational education, and policies and measures such as enrollment and investment will be tilted towards applied-technology colleges and universities." At the beginning, the pilot work of the 'diploma certificate + several vocational skill grade certificates' system was launched in vocational colleges and application-oriented undergraduate colleges and universities."

## **4 Innovative design and goals of the talent training model of the "1+x" certificate system of independent colleges**

The "1+X+Y+Z" talent training model means that under the four-way linkage management system of "academic degree (1) + skill certificate (X) + innovation competition (Y) + language certificate (Z)", through The four-stage education mechanism of "professional courses + enterprise certificate certification + school competitions, provincial competitions, national competitions + self-language training" realizes the training mode of "school-enterprise-teacher-student" four-in-one talent training path, The evolution and development of "1+X+Y+Z" just conforms to the needs of this application-oriented undergraduate education, and builds a new school-running mechanism with school leadership, industry and enterprise assistance, teacher supervision and student self-cultivation as the main body, the new model of starting work after class, charging after graduation, and employment after graduation will eventually promote the innovation of education system and mechanism, the reform of new system, management system, teaching model, talent training model and evaluation system, and cultivate applied technology-oriented undergraduate professionals.

### **4.1 Adjust the direction of professional layout according to market demand, add courses related to digital economy**

Compared with traditional industries, the development and iteration of the digital economy industry is faster, new occupations and positions are constantly emerging, and the requirements for employees' cognitive ability and adaptability to changes are also higher. In this regard, schools can keep pace with the times, predict the development trend of the digital industry, adjust training plans in advance according to market talent needs and job skills needs, and add applied professional courses and training bases related to big data, Internet of Things and new media, actively seek enterprise cooperation in the above fields, and realize the cultivation of digital professionals as soon as possible through the combination of industry and academia. On the other hand, give full play to the advantages accumulated in the current professional fields corresponding to traditional industries, especially in terms of faculty, school-enterprise cooperation, student resources, etc., and according to the new needs of the integration of the digital economy and traditional industries, conduct the "digital" transformation of professional knowledge training and skills training provides technical support for the innovation of talent training models.

### **4.2 Clarify employment orientation and cultivate students' practical skills for employment application**

In the new era, the talent cultivation of independent colleges must break the obsolete concept, and have a new understanding of the talent cultivation plan and content construction. The traditional teachers, teaching materials, and practice links cannot keep up. The "1+X certificate" system can cultivate students' innovative awareness, master new employment skills, and gradually form applied talents with strong professional skills, high innovation awareness, and wide knowledge fields. Taking the cross-border e-commerce talents of an independent college as an example, on the one hand, application-oriented undergraduate colleges can consider cooperating with local governments. Associations and other industry associations have closely communicated to realize the quota system for targeted talent delivery, and carry out the optimal allocation of talent delivery to 3 to 5 cross-border e-commerce companies with large sales scale. On the other hand, on the basis of cultivating employment orientation, the school has introduced high-quality enterprises, such as Alibaba lecturers who come to the school to teach classes. The company uses the school's venue and rationally utilizes the human resources of the school's students to help introduce talents and reduce initial investment. Improve economic efficiency, and ultimately enhance students' innovation ability and market competitiveness.

### **4.3 Grasp the cultivation mode of innovation competition and cultivate innovative comprehensive skilled talents**

In order to cultivate students into compound intelligent talents in line with the development of the digital economy era, innovation competition plays an important role in education and teaching reform and innovative talent training. Improving the penetration rate of innovation competition is a breakthrough in the talent training model. On the one hand, all majors in independent colleges and universities can sort out all the competitions they can participate in in advance, including basic and professional competitions, individual competitions and team competitions, and link participation in subject competitions with graduation credit requirements, especially for group-type subject competitions, take the international economics and trade major of a certain school as an example. The competitions that students of this major can participate in include Internet +, e-commerce, economic management case analysis competition, rural revitalization, cross-border e-commerce competition, foreign trade ability competition, and even English-language competitions. Various competitions. Let students combine theory with practice through competition and practice. Application-oriented undergraduate colleges do not respect students' scientific research ability, but advocate practical ability. Everyone's participation in competition is the direction of future professional development. On the other hand, in order to make full use of the theoretical and practical advantages of the independent college's own talent training, it is recommended to establish a "new business workshop" incubation base, encourage teachers and students to participate in research and exploration, use the competition results to incubate projects, and use the entrepreneurial spirit in the student group. Germination promotes employment and truly realizes the integration of production and teaching.

### **4.4 Integrate professional development opportunities and supervise students to improve their language skills after class**

At present, application-oriented undergraduate colleges have successively launched the development strategy of discipline differentiation, but the "language +" strategy has made professional integration a reality, and professional integration development will promote the innovative development of professional talent training models. From a professional point of view, under the new form, students not only have to master basic professional knowledge, but correspondingly, if graduates have language-related professional communication skills, they will have greater market competitiveness. From the perspective of graduate competitiveness, students with excellent computer programming language, Putonghua proficiency, and foreign language ability have higher overall quality. Strong language ability represents students' self-learning ability and imitation ability, and they are more favored by employers; from employment perspectives in terms of direction, graduates with outstanding language are very popular; from the perspective of students' professional characteristics, the advantage of language is not the icing on the cake at the critical moment, but the help. Computer programming language, Mandarin Chinese proficiency and foreign language proficiency (including English and other minor languages) have reached a white-hot stage. If the language threshold is set in the graduation requirements, it is really a stepping stone to employment, and it can stand out among the graduates of similar institutions and improve the quality of graduate students.

## **5 Implementation strategies to ensure the orderly advancement of the "1+x" certificate system for independent colleges**

### **5.1 Top-level design of the "1+x+y+z" professional talent training model**

The specific implementation of the "1+X+Y+Z" talent training model needs to meet the following conditions. First of all, the training mode of innovative talents should be clear and

open. The specific concept of the talent training model is fully known to students when they enter the school, and the four-year university is set into four time periods: freshman, sophomore, junior and senior. The hours of study, skill certificate hours, competition hours, and spare-time self-study hours are set and arranged, and a floating class hour arrangement system and a floating course adjustment system are set. Secondly, by signing the school-enterprise cooperation agreement, the school and the enterprise jointly formulate a talent training plan. Jointly develop courses, select materials, jointly design and implement teaching in stages, jointly formulate and implement assessment and evaluation standards, and jointly formulate teaching research, etc., to implement specific models of vocational qualification management. Third, the three-mentor system guarantee system of professional tutors, industry tutors and competition tutors strengthen students' learning. During the school teaching period, school teachers are the main body, and off-campus tutors are supplemented. During corporate teaching, off-campus tutors are the main course instructors, and school teachers are assistants. Ensure the operability of professional courses, skill certificates and theme competitions, so that theoretical knowledge is internalized in competitions and externalized in enterprises. Finally, the sustainability of students' motivation for independent learning must be ensured. Integrating subject competitions and professional skills certificates into the overall curriculum design of the major typically increases student workloads, resulting in the addition of extracurricular self-study tasks in addition to the content of the original teaching plan.

## **5.2 Decomposition of professional ability and competition quality ability**

One of the problems that need to be solved to build the "1+X+Y+Z" professional talent training model is the decomposition of professional ability and competition quality ability. Therefore, it is recommended to build a "parallel and progressive" innovative competition system to solve this problem, so that students can fully understand their professional positioning, identify the positioning, and match the teaching content and competition content. During the competition, students can discover problems, analyse problems, solve problems, compare and discover their own deficiencies in knowledge and ability, and complement each other's advantages in the process of teamwork, which is conducive to cultivating students' interest in independent learning and innovative awareness and innovation. Thinking, test students' professional and technical ability. The basis of the subject competition is the professional foundation, and its purpose is to test the students' mastery and application of the knowledge and skills learned in the classroom by means of competition, and to cultivate the students' ability to integrate theory with practice. The introduction of subject competitions in the teaching of professional courses can improve the teaching effect of the courses on the one hand, and stimulate students' interest in competitions on the other hand, so as to realize the close connection between theory and practice, courses and classrooms. It is an effective way to cultivate the innovative ability of college students by combining the learning and research of discovering and solving problems, forming an innovative teaching mode that interacts with subject competitions and promotes the independent development of college students.

## **5.3 Establishment of school-enterprise cooperation mechanism and credit replacement mechanism**

Taking the talent training program to meet the employment needs, the professional connection to the industry, the curriculum connection to the post, and the teaching material connection skills as the starting point, the "1+X+Y+Z" talent training model cannot be separated from the industry, academia and research as the support. The company assists the institutions responsible for the development of "learning skills module package" and the construction of teaching resources, assists in establishing evaluation research and other related content, improves the evaluation mechanism, provides an online learning platform for students, and finally realizes independent learning-enterprise training-online consultation and

guidance-graduation as for the integrated service of induction, it provides strong support for improving the quality of teaching, and plays a role in the sharing, radiation and demonstration of construction achievements. The graduation rate and employment rate of students are the concerns of every school. If the school-enterprise cooperation mechanism and credit substitution are integrated, it is possible to participate in corporate internships without leaving school supervision, and companies do not have to bear the accommodation and safety of students. Management, students can obtain the corresponding credit authorization, the graduation season is the employment season, and there is no window period to connect, and finally achieve a win-win situation for schools, enterprises and students.

## 6 Conclusions

This paper proposes an innovative approach to the talent training model of the "1+X certificate" system of independent colleges, taking the internal driving force of students as the core concept, and combining with the actual situation of applied undergraduate majors and the characteristics of students, the existing talents Reform the training system. The undergraduate education of independent colleges is employment-oriented and cultivates high-quality technical and technical talents. However, the talent training model of the combination of academic certificates and vocational skills certificates represented by the "1+X certificate" system implemented by higher vocational colleges can no longer fully reflect The actual level of technical skills of undergraduate graduates is different from ordinary undergraduate colleges and vocational colleges after graduation, and it also reflects the learning ability and comprehensive quality of students in application-oriented undergraduate colleges. Therefore, the "1+X+Y+Z" proposed in this paper just conforms to the needs of this applied undergraduate vocational education, and integrates applied education and undergraduate research education.

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