

Exploring the Innovation of Talent Training Mode Environmental Art and Design Majors in Higher Vocational Education under the "1+X" Certificate System

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Abstract: The "1+X" certificate system (CS) is a new evaluation system for skilled talents, aimed at promoting effective connection between higher education and vocational education through the training and assessment of vocational skill certificates, and enhancing the actual ability and market competitiveness of skilled talents. This article took the talent cultivation mode (TCM) of environmental art and design (EAD) major in vocational colleges as the research object, and explored how to innovate the TCM, so that graduates have higher vocational skills and practical work experience to adapt to the ever-changing market demand. This study proposed innovative ideas in various aspects such as optimizing curriculum design, sharing educational resources, restructuring the teaching staff, and strengthening practical links. Through extensive research and case analysis, the research results of this article indicated that the respondents have a relatively high understanding of the "1+X" CS, with approximately 88% of respondents expressing knowledge of the "1+X" CS. Innovative TCM help improve students' employment competitiveness and market adaptability, meeting the requirements of the "1+X" CS. Vocational EAD majors can learn from the TCM proposed in this article to continuously meet the needs of industry and society, and cultivate more high-quality EAD talents.

Keywords: "1+X" Certificate System, Vocational Environment, Art Design, Talent Cultivation Mode

1. Introduction

With the development of China's economy and society, as well as the increasing demand for the connection between higher education and vocational education, many problems have emerged in vocational education: the mismatch between subject settings and market demand, the inconsistency between teaching objectives and actual needs, the inconsistency between talent cultivation and enterprise requirements, and so on. These issues directly affect the quality of talent cultivation and market competitiveness, and also limit the development and innovation of vocational education. To address these issues, the country has proposed a "1+X" CS. Its core idea is to carry out vocational skill training and assessment at the intersection of higher education and vocational education, promote the integration of industry and education, and strengthen the quality control of talent cultivation. The cultivation of EAD professionals in vocational colleges also faces the problem of how to adapt to the "1+X" CS and how to innovate training models.

Vocational education is also gradually improving, and TCM and methods have become important standards for measuring whether a modern vocational college has the ability to sustain healthy growth. There are many theories related to the study of the "1+X" CS and TCM. For example, some experts suggest that vocational schools should adjust their goals and strategies for training art and design professionals to cultivate "innovation and entrepreneurship" talents [1-2]. Some experts also point out that there are some problems with talent training in the field of art and environmental design, such as low commercialization of professional environments, unreasonable structure of professional teachers, unique and outdated teaching methods, and weak teaching practice connections [3-4]. In addition, some experts have analyzed the connotation and significance of the 1+X CS [5-6]. The TCM of vocational colleges is compatible with the "1+X" CS, which can better meet the demand of society for higher vocational education talents.

The main research content of this article involves the talent training mode for EAD majors in vocational colleges, aiming to explore how to adapt to the "1+X" CS and innovate the training mode. This study proposes the following innovative points and suggestions. Curriculum optimization: In response to market demand and corporate recruitment standards, it is necessary to streamline and optimize the professional curriculum system, and add practical links and interdisciplinary courses to improve vocational skills and creative abilities. Educational resource sharing: It is necessary to strengthen cooperation with external educational resources such as enterprises, research institutions, and industry associations, in order to enable students to have a deeper understanding of industry and market demands, and to strengthen the cultivation of professional literacy. Restructuring the teaching staff: By adopting various forms of teacher structure such as job suspension, enterprise dispatch, and part-time teaching, a teaching team with industrial and educational backgrounds can be established to improve teachers' practical abilities. Strengthening the practical aspect: By strengthening the cultivation and practical work of the practical aspect, the practical work experience and innovation ability of graduates can be improved, and the training models of imitation, simulation and other practical aspects used internationally can be borrowed.

2. "1+X" Certificate System for the Cultivation of Art and Design Professionals

2.1 "1+X" CS

The "1+X" CS is a new type of education management system in China's vocational education in recent years. Its core design concept is the construction of internal and external certification systems for vocational education [7], as shown in Figure 1.

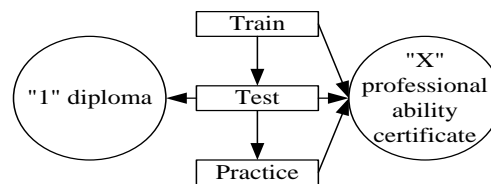


Figure 1: The "1 + X" CS.

'1' represents degree certificates in vocational education, while 'X' represents various professional and technical personnel's professional competence certificates. The emergence of this system is of great significance for the growth and development of the art and design profession. Firstly, the "1+X" CS provides a more comprehensive ability development and evaluation mechanism for art and design majors. Vocational education is a vocational oriented education model that emphasizes skills and abilities. The professional competence certificate of technical personnel is the main tool for measuring professional competence, and its certification process must go through multiple steps such as training, examination, and practice. The certificate obtained through participating in the vocational skills certificate exam plays a crucial role in students' future employment, promotion, and even career changes [8]. Secondly, the "1+X" CS has opened up new avenues for the growth and development of art and design majors. Due to the richness and diversity of vocational competence certificates, students can make targeted choices based on their career planning and development needs when choosing a suitable vocational competence certificate. These certificates not only expand the scope of professional skills, but also help enhance personal professional competitiveness. At the same time, the accumulation of various vocational skill certificates can effectively enhance the professional status and influence of the art and design profession. Thirdly, the "1+X" CS helps to achieve the educational goal of "applying what is learned" in the field of art and design [9]. As a vocational education, the teaching of art and design majors should be guided by practice. The content and standards of the vocational ability certificate exam are set based on actual professional abilities. Students who pass the exam can not only master vocational skills but also transform their knowledge into practical abilities, improving their practical work abilities. Finally, in the development environment of higher vocational education, the application of the "1+X" CS in the field of art and design is also an inevitable trend.

China's vocational education has entered a stage of rapid development, and modern vocational education is guided by market needs, with employment skills as its main goal. As an external certification, vocational competence certificates can better reflect students' employment competitiveness. Nowadays, the policies for mutual recognition and conversion of professional

competence certificates are constantly improving, making the application scope and value of certificates more extensive [10]. In short, the "1+X" CS is applicable to all major vocational education, especially for art and design majors, which is an indispensable institutional arrangement. The emergence of this system provides new ideas for the cultivation of talents in the art and design profession, and enables students to receive strong support in practice, thereby improving their professional literacy and abilities, and attracting more outstanding talents to the art and design industry.

2.2 Current Status of Training Modes

The "1+X" CS is an important educational reform policy implemented by the country in recent years. Its core goal is to enable students to obtain industry/vocational skills certificates on top of obtaining higher education degree certificates, improve their abilities and qualities, and increase their competitiveness in employment. As an emerging CS, it would vigorously promote the reform and exploration of vocational ability education in vocational colleges, providing strong talent training guarantees for the "Double First Class" construction strategy [11-12]. In this context, the TCM of EAD majors is constantly being innovated and improved. The traditional teaching model emphasizes the transmission of theoretical knowledge, but in reality, a large number of graduates often cannot match the actual needs of enterprises. This encourages vocational colleges to actively explore innovation, improve students' practical abilities, and be closer to the actual needs of the workplace [13]. The "1+X" CS specifies the time allocation ratio between compulsory courses and additional certificates, allowing students to have a certain amount of time to learn the knowledge and skills required for additional certificates while taking compulsory courses. This setting can better meet the social demand for the ability level of EAD professionals. The knowledge content of the additional certificate is not limited to the field of EAD, but also includes a wide range of other fields. By studying additional certificates, students can broaden their knowledge and comprehensively improve their comprehensive abilities and professional skills [14].

The EAD major creates an atmosphere of innovative teaching models by optimizing teaching courses and emphasizing the design of practical links. The teaching model emphasizes "student-centered" and aims to improve students' skills by guiding them to design and produce practical projects. At the same time, various skill courses in corresponding industries are offered to enable students to acquire more diverse knowledge in practical teaching and improve their competitiveness in employment. Vocational colleges cooperate with enterprises to provide students with opportunities such as internships and graduation training, so that they can better understand the needs and operations in the actual workplace. Such a cooperative relationship would also promote the optimization of curriculum settings in schools, thereby strengthening the promotion of practical teaching and enhancing students' employment competitiveness. The art and design major focuses on innovative practice in design teaching. For example, by conducting various design competitions and innovative practical projects both on and off campus, students can be encouraged to strengthen their practical abilities through practical operations, improve their practical abilities, better adapt to the actual work environment, and enhance their outdoor environmental design innovation ability. Through regular education effectiveness evaluation systems, monitoring of education and teaching can be improved, and problems can be identified and solved in a timely manner, thereby maintaining stability and development of education and teaching. At the same time, increasing student satisfaction and enhancing one's competitiveness in the relevant EAD industry also provide strong support for the emergence of talents in the "1+X" environment.

In summary, under the "1+X" CS, the EAD major has achieved improvements in industry application needs and students' practical abilities through continuous improvement of innovative TCM, emphasis on the establishment and promotion of practical teaching links, cooperation between industry and education, and emphasis on professional practical innovation. This has achieved certain results in cultivating outstanding talents in the outdoor environmental design industry with certain practical operational abilities for society [15-16].

2.3 Innovation of Training Mode

The "1+X" CS refers to the ability to obtain multiple vocational skill certificates in addition to academic qualifications during the study period in vocational colleges. This system has also been widely applied in the cultivation of art professionals [17].

The training mode for art professionals is shown in Figure 2.

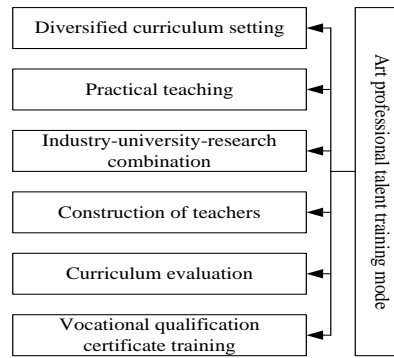


Figure 2: Art professional talent training mode.

Diversified curriculum: Schools should set up diversified curriculum according to market demand, so that students can obtain more skill certificates. Practical teaching: Schools should focus on practical teaching and cultivate students' practical and innovative abilities. Integration of industry, academia, and research: Schools should strengthen cooperation with enterprises, jointly develop practical projects, and improve students' practical abilities and professional literacy. Teacher team construction: Schools should establish a high-level teacher team with rich practical and teaching experience, which can provide professional guidance and support for students. Course evaluation: Schools should regularly evaluate their courses, adjust and improve course content in a timely manner to meet market demand. Vocational qualification certificate training: Schools should provide vocational qualification certificate training for students to help them obtain more vocational skill certificates and employment opportunities. Schools should focus on cultivating students' vocational skills according to market demand. Schools should focus on the diversified development of students and cultivate their innovative and practical abilities.

This article mainly applied principal component analysis to describe the factors of this TCM. The feature vector of the largest eigenvalue is the first principal component quantity μ_1 . The optimization problem is expressed as:

$$\text{maximize}_{\mu_1, \mu_{21}, \dots, \mu_{q1}} \frac{1}{m} \sum_{i=1}^m \left(\sum_{k=1}^q \mu_{k1} a_{ik} \right)^2 \tag{1}$$

The matrix form is:

$$\frac{1}{m} \sum_{i=1}^m \left(\sum_{k=1}^q \mu_{k1} a_{ik} \right)^2 = \frac{1}{m} \|A\mu_1\|^2 \tag{2}$$

A is the matrix of $m \times q$. $\|A\mu_1\|^2 = \mu_1^S A^S A \mu_1$, so the optimization problem is transformed into:

$$\text{maximize}_{\mu_1, \mu_{21}, \dots, \mu_{q1}} \frac{1}{m} \mu_1^S A^S A \mu_1 = \text{maximize}_{\mu_1, \mu_{21}, \dots, \mu_{q1}} \mu_1^S \left(\frac{1}{m} A^S A \right) \mu_1 \tag{3}$$

In summary, the "1+X" CS has played an important role in the cultivation of art professionals, but innovation also needs to be emphasized in practical application. Safeguards need to be strengthened, and the quality of teaching needs to be improved to meet the market demand, so as to cultivate more outstanding talents with practical and innovative abilities [18-19].

3. Investigation on Talent Training of Environmental Art and Design Majors in Higher Vocational Education

3.1 Purpose and Background of the Questionnaire Survey

With the rapid development of the social economy, the demand for EAD industry is also showing an increasing trend year by year. In order to better meet the market demand, cultivating more excellent

EAD professionals has become an inevitable requirement of the times. In this context, the "1+X" CS has emerged, which can help students majoring in EAD broaden their professional fields, improve their job competitiveness, and also provide more practical talents for the industry [20].

The EAD major in vocational colleges is a specialized field aimed at environmental design, mainly cultivating talents with theoretical foundations and practical skills in environmental design. With the development of society and the improvement of people's requirements for environmental quality, the training demand for EAD majors is also constantly increasing. At present, the cultivation of EAD majors in vocational colleges has gradually become a relatively complete system, and the education department has also gradually attached importance to the cultivation of this major. At the same time, with the rapid development of society, the application fields of environmental art design are constantly expanding, and the demand for talent is also increasing.

In order to better understand the demand for talents in the field of EAD, a survey was conducted through the following channels: by contacting local design companies and organizations, the demand for their talents in the field of EAD was understood; the students' interest in EAD and their views on employment prospects were investigated; and the development trend and future direction of the field of EAD were understood.

In order to deeply explore the innovation of TCM for EAD majors in vocational colleges under the "1+X" CS, this article conducted a questionnaire survey. The purpose of this survey is to understand the promotion and application of this model in vocational colleges, as well as the views and understanding of teachers and students on this model, and to provide reference for promoting educational reform and innovation in vocational colleges.

3.2 Questionnaire Design

Survey object: It includes students and professional teachers majoring in EAD in vocational colleges.

Questionnaire composition: This questionnaire mainly includes four parts: basic information, understanding and opinions on the innovation of TCM for EAD majors in vocational colleges under the "1+X" CS, the situation of students obtaining certificates, and the implementation of this mode by teachers. The basic information includes the names, genders, ages, colleges, and other basic information of the survey subjects, in order to better understand the situation of the survey subjects.

The design principle of the questionnaire: This questionnaire should be as concise and clear as possible, and the question design should be as close to the survey topic as possible, avoiding the use of difficult to understand terms and language. At the same time, this questionnaire guarantees anonymity and protects the privacy of respondents.

3.3 Investigation Process

Questionnaire distribution: This survey adopts the form of online questionnaire, and publishes the questionnaire link on the school's official WeChat official account, which is pushed across the school through the school's educational administration system and student management system. At the same time, this article is also being promoted and promoted on campus websites, and forwarded to some student groups and QQ groups, striving to attract more people to participate in the survey.

Survey time: The survey lasted for one week and a total of 130 valid questionnaires were received.

Data organization: After the questionnaire was completed, this article organized and analyzed the collected data, and obtained the survey results.

4. Survey Results of Talent Cultivation

4.1 Basic Information of Survey Subjects

A total of 130 valid questionnaires were collected in this survey, of which 38% were male and 62% were female. The proportion of students is 80%, and the proportion of teachers is 20%. The age of the survey subjects is concentrated between 18 to 25 years old (69%) and 26 to 40 years old (23%). The specific composition is shown in Table 1.

Table 1: Basic information of the survey respondents.

Type	Number	Proportion(%)
Male	49	38
Female	81	62
Students	104	80
Teachers	26	20
18-25 years old	90	69
26-40 years old	30	23
Beyond 40 years old	10	8

4.2 Cognition and Opinions on the Talent Training Model of Environmental Art and Design in Higher Vocational Education under the "1+X" CS

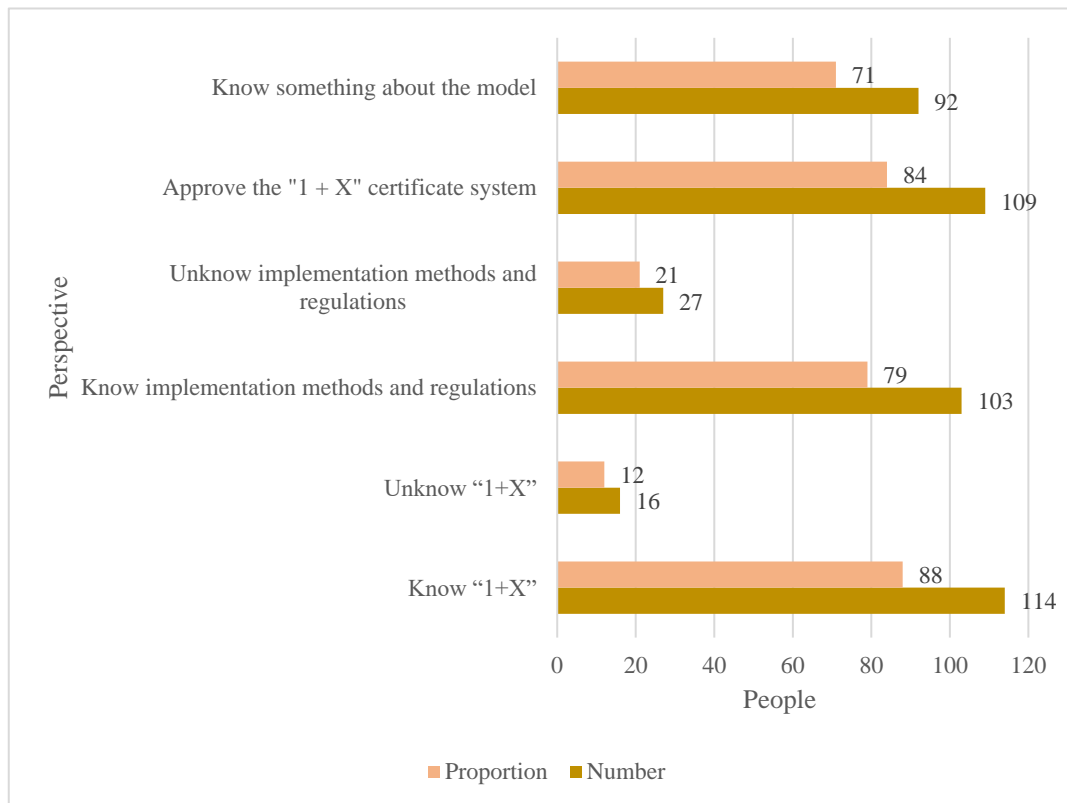


Figure 3: Cognition and view of the talent training mode of higher vocational environmental art and design majors under the "1 + X" CS.

As shown in Figure 3, 21% of survey respondents did not know the specific implementation methods and regulations of the "1+X" CS. The survey respondents generally had a high recognition of the TCM for EAD majors in vocational colleges under the "1+X" CS, with a recognition rate of 84%. 71% of respondents expressed understanding of the relevant content of the model, but only a small number of respondents expressed a clear understanding of the detailed regulations and implementation of the model, indicating that there are still some shortcomings and areas for improvement in the promotion and implementation of the model.

4.3 Status of Students Obtaining Certificates

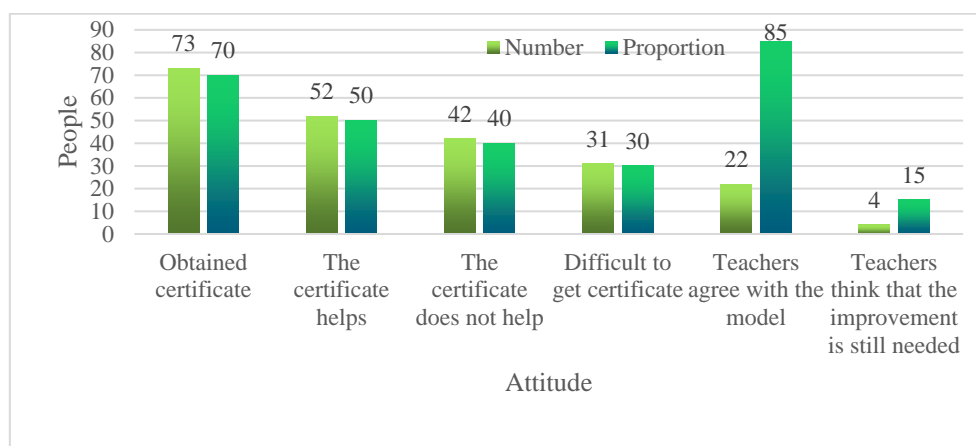


Figure 4: The situation of students obtaining certificates and the implementation of this model by teachers.

As shown in Figure 4, 70% of students obtain certificates, and some of them express that obtaining a certificate is very helpful for their career development. 40% of students stated that obtaining a certificate is not very helpful for their career development, while some students stated that the difficulty of obtaining a certificate is high and they need to study harder. 85% of teachers agree with the model and state that they would actively promote its implementation. At the same time, some teachers say that the model still needs more improvement and improvement to promote education and teaching reform.

Through this questionnaire survey, this article has drawn some valuable conclusions. The survey results indicate that in the process of innovating the TCM for EAD majors in vocational colleges under the "1+X" CS, this mode has been recognized and supported to a certain extent by the survey subjects. In addition, there are still some shortcomings that need to be improved and improved. Based on this, this article suggests further research on the education and teaching reform of higher vocational colleges and sorting out more effective training models, in order to promote high-quality talent cultivation and contribute to social and economic development and progress.

5. Conclusions

Taking the TCM of EAD major in vocational colleges as the research object, this article explored how to innovate the TCM, so that graduates have higher vocational skills and practical work experience to adapt to the ever-changing market demand. The innovative suggestions proposed in this article include optimization of curriculum design, sharing of educational resources, restructuring of teaching staff, and strengthening of practical links, all of which can be borrowed from other vocational education fields. The research conclusion of this article indicates that innovative TCM can help improve students' employment competitiveness and market adaptability, and meet the requirements of the "1+X" CS. Vocational EAD majors can learn from the TCM proposed in this article, continuously meet the needs of industry and society, and cultivate more high-quality EAD talents.

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