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Exploration and Practice of the Training Mode of Innovative Talents in Building Electrical and Intelligent Specialty

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Abstract: The building electrical and intelligent profession is more and more valued by colleges and universities. Colleges and universities have also cultivated a large number of building electrical and intelligent professionals for the society. However, due to the continuous improvement of the demand for professional talents in the society, and the professional electrical and intelligent professional foundations of each university have their own characteristics, the talent training model also needs continuous reform and improvement. The reform and innovation research of the talent training mode has always been valued by educators. Based on the revision of the building electrical and intelligent professional training program, the article discusses the reform ideas of the professional talent training model.

1. Introduction

In today's world, science and technology are changing with each passing day, and international competition is becoming increasingly fierce. Whoever has innovative talents will have greater innovation ability, and whoever has stronger competitiveness will occupy a favorable position in the competition. Our country has set the development goal of building an innovative country, and innovative human resources are the key to achieving this great goal. Colleges and universities are places to cultivate high-level talents. In the era of knowledge economy, the cultivation of innovative talents should be the top priority. From the 1980s to the present, China and the world have set off a boom in building intelligent buildings. The intelligent building industry has become one of the most vital emerging industries in China's economic development. "Intelligent building" not only needs automatic control, communication, office systems, computer networks, but also can not leave the building as a carrier, as well as various construction equipment related to energy and environment for building services. Therefore, intelligent buildings are multidisciplinary intersections and integrations. At present, many colleges and universities have opened the "Building Electrical and

Intelligent" profession. In order to cultivate innovative talents who have the above interdisciplinary knowledge, it is inevitable to build an effective talent training model. To this end, the author has carried out active and beneficial research and exploration in combination with how to cultivate the teaching and practice of independent innovation consciousness of building electrical and intelligent professional college students.

2. The Connotation of the Training Mode of Innovative Talents in Colleges and Universities

The training model of innovative talents is based on acquiring knowledge, taking the development of intelligence as the means, developing innovation ability as the core, and improving the comprehensive quality as the goal of the "model". Colleges and universities are important bases for training high-quality innovative talents. They are also important bases for knowledge innovation and an important part of the national innovation system. China should take a certain position and have a strong competitive strength in the international community in the twenty-first Century. We must cultivate a large number of talents with innovative consciousness and innovative ability 121.For contemporary college students, the connotation of their innovative talents training mode mainly includes the following three meanings.

1. innovative talents should generally have the following basic qualities: (1) broad cultural accumulation and humanistic spirit; (2) healthy psychology, strong physique; (3) rich in the spirit of exploration and inquiry, strong curiosity, strong curiosity; (4) clear thinking, strong judgment and agility; (5) rich and diverse. Practical experience and team cooperation consciousness; (6) solid scientific and technological innovation and ability to solve practical problems.

2. the cultivation of innovative talents in Colleges and universities should include two parts: the training mode of innovative talents and the growth environment of talents. The training mode of innovative talents is the core of the training of innovative talents. It is implemented under the management of certain teaching organization, including training target, professional structure, curriculum system, teaching system, teaching mode and daily teaching management. The environment for the growth of innovative talents is the guarantee for the growth of innovative talents, including teachers, teaching hardware and campus cultural atmosphere. The cultivation of high-quality and innovative talents should be from the teachers to the students, from the concept to the system, from the software environment to the hardware conditions to carry out a comprehensive and multi angle comprehensive construction.

3. The training goal of the innovative talents of colleges and universities is to cultivate the advanced creative talents with a solid foundation, wide knowledge face, strong ability, high quality, strong innovative spirit and strong practical ability. Therefore, the overall design of the training mode of innovative talents in Colleges and universities should follow the principle of "strengthening the foundation, highlighting the consciousness of innovation and innovation, strengthening the practice, widening the profession and improving the quality", focusing on "innovation" and developing the potential creativity of the students in a comprehensive and deep and human way; to foster the creative thinking of the students as the core and to highlight the creation. Sexual thinking; pay attention to the development of personality, let students develop their ability to inspect, advantages and specialties to develop their creative potential, to develop their creative potential, to inspire and induce the students to think and analyze the problems actively, to pay attention to the non intellectual factors and to cultivate the students to create a good psychological quality.

3. The History and Current Status of Undergraduate Majors in Electrical and Intelligent Building

The current situation of building electrical and intelligent professional personnel training in order to adapt to the needs of socialist market economy and scientific and technological development, Since 1993, many colleges and universities under the guidance departments at all levels of education, have been involved in the reform and practice of intelligent building collar teaching content and course system of domains, from the conduct of intelligent building professional direction, until the establishment of the new professional and intelligent building electrical, A lot of good experiences and achievements have been achieved. At present, the cultivation of building electrical engineering technicians in China can be classified into two categories: one is the direction of intelligent architecture derived from electrical engineering and its automation, electronic information engineering, computer science and technology, building environment and equipment.

From the current development of China's higher education and the operation of the construction industry, intelligent buildings have not yet developed into independent disciplines, and their training models and disciplinary systems have not yet been fully established, and the cultivation of the second category of talents is still in the exploration stage. Because intelligent buildings are interdisciplinary and integrated, the cultivation of talents benefits from the similar academic background and solid professional knowledge. It accounts for the vast majority of intelligent construction engineers and technicians, but practitioners generally have a single professional knowledge. The problem that the knowledge structure is more than sufficient and the breadth is not enough does not have the ability to master interdisciplinary knowledge. Therefore, although the overall level of China's intelligent building technology is close to the world level, the actual situation of the fault-free operation rate and energy-saving efficiency of its intelligent system is far from the expected requirements. At present, one of the important reasons hindering the development of China's intelligent building technology is the lack of specialized talents at all levels of intelligent building design, construction and operation management.

As a new major in the civil engineering category, the building electrical and intelligent specialty has filled the gap of the “electricity” profession in the civil engineering profession and has a strong interdisciplinary relationship. The professional training target should not only master the basic knowledge of building electrical technology that focuses on strong electricity, but also have weak electricity technology adapted to the information age; professional positioning is not only "intelligent" + Architect, pay more attention to "building energy efficiency + Environmental protection; that is, positioned in "Building + Electrical + information + Energy saving. The professional is responsible for the training of senior professional technicians in the design, construction, operation and maintenance of building electrical and intelligent fields. The quantity and quality of talents are directly related to the development of national building energy conservation.

4. Building Electrical and Intelligent Professional Talents Training Ideas

The orientation of building electrical and intelligent professional training is applied-oriented innovative talents. The students are mainly engaged in planning, design, construction and maintenance after graduation. This requires that students' theoretical level and practical ability should be fully considered when determining the talent training mode. In this way, we can stand in the increasingly competitive market. Therefore, the student-centered, theoretical study is mainly

based on schools, and the actual skills are improved mainly in the enterprise. Combined with the cultivation of professional quality, they form the framework of the professional training model of students.

In the talent cultivation ideas, the school provides the various professional knowledge and skills required by the students as the main body, so that the students' comprehensive quality and professional level can meet the requirements of the undergraduate. The school offers a range of design, training and innovative practice opportunities. At the same time, the improvement of students' professional skills depends on the actual exercise of society and business. Therefore, on the one hand, the school is connected with social enterprises in various internships, let students know what kind of professional knowledge and skills the society needs, and what kind of talents are needed, so that students can enhance the sense of urgency of theoretical study and stimulate students' curiosity. On the other hand, the school itself must cooperate with the enterprise and constantly adjust the training plan and plan according to the needs of the society; the school teachers can realize the transformation of scientific and technological achievements through cooperation with the enterprise, timely understand the latest technology and concepts of the professional, and continuously improve the level of the teachers themselves. Do a good job in teaching. Students continue to improve their overall quality and professional skills according to their own strengths and hobbies, and improve their competitiveness in the society after graduation.

At the same time, we need to evaluate the work efficiency of talents in order to make sure whether the talent training is implemented. According to the benefit measurement theory, if the output of the system is y, the efficiency corresponding to the output is p, the human resource required to realize this output is x, and the cost corresponding to the human resource is c, then the talent work efficiency is:

$$e = \frac{py}{cx} \tag{1}$$

Under the whole training mode of cultivating innovative talents, the total efficiency of the whole training mode is as follows:

$$e = \frac{\sum_{i=1}^{N_0} k_{OE_i} W_{O_i} + \sum_{i=1}^{N_C} k_{CE_i} W_{C_i} + \sum_{i=1}^{N_D} k_{DE_i} W_{D_i} + \sum_{i=1}^{N_P} k_{PE_i} W_{P_i}}{(C - \Delta C)(F - \Delta F)} \tag{2}$$

Among them, O, C, D and P are the demand of innovative talents training business under the training mode of operation, monitoring, scheduling and maintenance. Only by evaluating the effectiveness of innovative talents training, mobilizing the enthusiasm of all aspects and creating a good atmosphere for the growth of innovative talents, can we cultivate talents with innovative spirit and ability more effectively.

5. Building Electrical and Intelligent Professional College Students are the Way to Cultivate Innovative Ability

1. Change the concept of education and set up a new concept of cultivating innovative talents.

In the process of new specialty construction in our university, the transformation of educational ideas and educational concepts is particularly important. Innovative education aims at improving innovative quality, shaping innovative character and cultivating innovative talents. It calls for innovative educational ideas. It is directly related to whether education and teaching reform can really be carried out deeply if we can do well in the transformation of educational ideas and

concepts and establish the educational concept of cultivating innovative talents. The aim of the training of building electrical and intelligent professionals is to cultivate innovative talents with a strong basic knowledge, strong professional ability, high comprehensive quality, international vision and sustainable development to meet the needs of economic and social development.

2. strengthen the practice link, at the same time, pay attention to the organic links of all links.

We should strengthen practice training, cultivate students' practical ability and innovative spirit, and build practical teaching system. Strive to achieve "four combination". The professional compulsory experiment is combined with the cross professional elective experiment, the experiment in the class and the extracurricular practice, the combination of the school experiment and the practice of the enterprise, and the combination of practical teaching and scientific research. In addition, various teaching modes can be adopted and the organic links of all links should be noted. Such as field tour, architectural intelligent environmental science curriculum design, electronic course design, building power supply and distribution course design, intelligent building technology practice, building supply and distribution practice, cognition practice, graduation practice, graduation design and so on.

3. strengthen the construction of laboratory and innovation base

Laboratory construction can provide good practical teaching conditions for student development. In order to enable students to fully understand and master the application of intelligent building technology in the construction industry, to consolidate and highlight the characteristics of our school's electrical and intelligent professional, to meet the requirements of the construction industry, we set up according to the professional training plan. The following professional experimental contents: building power supply and distribution and lighting control experiments, elevator principle and control experiments, security monitoring system experiments, access control system experiments, integrated wiring system experiments, fire alarm and fire linkage control system experiments, fieldbus control experiments, etc.

4. cultivate a contingent of teachers with innovative ability

We should build a highly educated and multi-level teacher team. In this team, middle-aged teachers are the backbone, they have considerable teaching, scientific research and management experience, and energetic, are the backbone of course. Old teachers are the precious wealth of the profession. Young teachers are the successors of middle-aged teachers and the hope of academic echelons. In the specific implementation of daily teaching, schools require teachers to achieve "Three Combinations". (1) the combination of teaching and scientific research. Students are required to master scientific methods and ways of thinking while cultivating scientific literacy while learning scientific knowledge. (2) teachers and students are combined. Embody the power of students to grasp the independent development, always maintain the dominant position of students, and form a community of teachers and students in common research. (3) the combination of theory and practice. We should cultivate students' ability to ask questions, analyze problems and solve problems through practical teaching. We should give full play to students' creativity as subjects in experiments, exercise classes, curriculum design and examinations.

6. Research and Analysis on the Training Mode of Innovative Talents

1. Analysis on skill demand of innovative talents in building electrical and intelligent specialty

Students majoring in building electricity and intelligence are mainly engaged in planning, design, construction, maintenance and other work after graduation. This requires that the theoretical level and practical ability of students should be fully considered when determining the talent

training mode. Therefore, it is necessary to cultivate students' corresponding practical ability, Innovative talents of building electrical and intelligent specialty need to have the ability to return to building electrical and intelligent related jobs. In this paper, under the background of big data, we use data mining technology to understand the proportion of professional skills required by building electrical and intelligent related enterprises. The data results are shown in Figure 1.

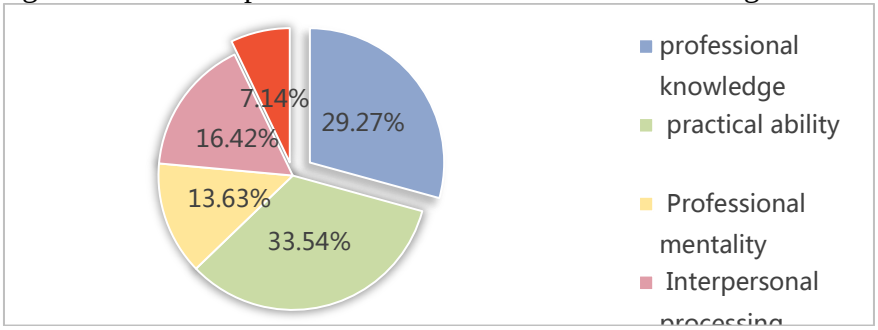

Figure 1. Analysis on skill demand of innovative talents in building electrical and intelligent specialty

As can be seen from Figure 1, among the professional skills required by building electrical and intelligent related enterprises, practical ability accounts for 33.54%, professional knowledge 29.27%, interpersonal processing 16.42%, professional mentality 13.63% and team awareness 7.14%.

2. Analysis on the results of innovative talents training model of building electrical and intelligent specialty

It is a long-term task for colleges and universities to cultivate the innovative ability of Architectural Electrical and intelligent majors. By strengthening practical training, cultivating students' practical ability and innovative spirit, constructing practical teaching system and innovative talent training mode, students' professional skills can be increased and their social competitiveness can be improved. In this paper, five classes of building electrical and intelligent specialty are selected to explore the innovative talent training model by comparing the situation before and after the use of the innovative talent training model. The data results are shown in Table 1.

Table 1. Analysis on the results of innovative talents training model of building electrical and intelligent specialty

		Basic operation	System maintenance	Mechanical operation
class 1	before	9.9	5.4	12.7
	after	15.8	16.7	29.2
class 2	before	7.7	6.8	18.2
	after	14.2	18.5	31.6
class 3	before	8.3	8.6	15.7
	after	12.1	16.7	28.4
class 4	before	6.4	9.4	12.3
	after	11.8	17.5	29.3
class 5	before	7.5	8.2	17.1
	after	17.3	17.2	36.3

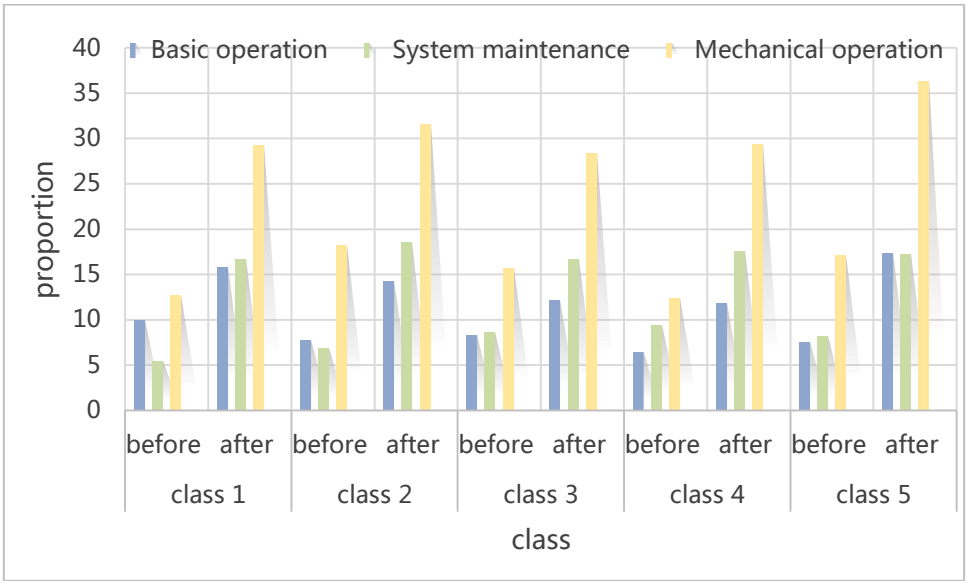

Figure 2. Analysis on the results of innovative talents training model of building electrical and intelligent specialty

From Figure 2, it can be seen that the innovative ability training mode of college students in Architectural Electrical and intelligent majors has certain effect. After using the new talent training mode, the proportion of students who learn to participate in basic operation, system maintenance and mechanical operation is increased.

7. Conclusion

Building electrical and intelligent chemistry is a comprehensive interdisciplinary subject with broad market and great prospects for development. The cultivation of innovative ability of college students is an important task and long-term task faced by colleges and universities. As a university and the Secondary college, it is necessary to fully understand the importance of the cultivation of innovative ability of college students to the construction of innovative countries and cities, and to establish a mechanism to cultivate the creative ability of college students. As a university student, we must lay a solid theoretical foundation and take an active part in innovative practice. Only by fully mobilizing the enthusiasm of all aspects and creating a good atmosphere for the growth of innovative talents, can the talents with innovative spirit and innovation ability be more effectively cultivated.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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