

Exploration and Practice on the Integration of Innovation and Entrepreneurship Education and Forest Engineering Specialty Construction

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Abstract: over the past 30 years, China's reform and opening up has undergone great changes in economic, social, scientific and technological and resources and environmental conditions. How to adapt to this change and get better development in the new situation is worth studying and thinking. Based on the new development situation of the key forestry projects, this paper briefly outlines the key forestry projects in China, and analyzes the problems that the theoretical knowledge structure of the forest engineering specialty and the training mode of talents do not adapt to the requirements of modern forestry development, and the awareness of the construction of ecological civilization can not be combined with the development of forestry. The future direction of talent development and personnel training system for forest engineering specialty are put forward.

1. Introduction

As China's higher education changes from elite education to mass education, it is the current hotspot of teaching reform to actively explore ways and means to cultivate students' innovative thinking and innovative ability. Cultivating students' innovative ability is the focus of professional training programs in colleges and universities. How to cultivate students' independent thinking ability and innovative ability, so that students have strong practical ability and innovative ability after graduation, and quickly adapt to work positions. At present, there is an urgent need for research, discussion and solution in higher education. This paper takes the comprehensive reform of forest engineering as the main research object, and continuously focuses on improving students' innovative practice ability for many years, from updating educational concepts, reforming personnel training mode, reforming curriculum system, strengthening practical teaching links, and reforming teaching methods. The reform, research and practice of forest engineering professional talent training mode, innovation system and innovation platform guided by innovative practice ability are started.

2. The Organic Fit between Innovation and Entrepreneurship Education and Forest Engineering Professionals Training System

The goal of talent training in forest engineering is to give full play to the traditional advantages of the profession, strengthen the cultivation of students' innovative spirit, entrepreneurial awareness and innovative entrepreneurial ability, and integrate quality education, innovation and entrepreneurship education into the whole process of personnel training; cultivate forestry, road engineering and engineering. The basic theories and basic skills in the environment, etc., can be engaged in the planning, design, construction, management, scientific research and other work in the forest engineering, engineering construction, transportation and other departments of the complex advanced engineering and technical personnel. Students have a strong sense of innovation, entrepreneurial awareness and innovative entrepreneurship, capable of multi-faceted work, mastering both engineering and ecological environment, combining sustainable development ideas and scientific development concepts, and dealing with engineering construction and the environment. Relationship.

Undergraduate talent training program for forest engineering, according to the needs of economic and social development, cultivate and enhance students' innovative entrepreneurship and practical ability. In accordance with the four major platforms of "General Education", "Professional Education (Basic + Features)", "Practical Education (Experimental Teaching + Concentrated Practice)" and "Extracurricular Quality Development", the curriculum system will be constructed and four "enhancements" will be implemented. First, to strengthen innovation and entrepreneurship education, extracurricular science and technology activities and other quality development credits must not be less than 6 credits, students complete at least one innovative training program, at least 2 credits of innovative entrepreneurship general elective courses, career planning and innovative education Three basic compulsory courses: employment foundation and employment guidance and entrepreneurship education. At least 2 hours of teaching content related to innovation and entrepreneurship are set in each professional syllabus. The second is to strengthen students' autonomy and differentiated learning needs. The elective credits account for 26.2% of the total credits in the class, and set up four "differentiated courses". The third is to strengthen the interdisciplinary, open the liberal arts and sciences elective courses, and cross the natural sciences and arts, humanities and social sciences courses. The fourth is to strengthen professional cognition, perceptual education, and the cultivation of students' learning ability and comprehensive quality, and to open new seminars. The forest engineering professional personnel training system has formed its own characteristics:(1) According to the broad professional aspect of forest engineering, expand the training direction, pay attention to the intersection and integration of disciplines; (2) Adhere to the coordinated development of knowledge, ability and quality, and pay attention to the cultivation of independent learning ability, practical ability and innovation and entrepreneurship; The training objectives are not only relatively stable, forward-looking, but also flexible to adapt to development changes; focus on the quality development of forest engineering and the construction of innovative teaching system.

3. Insufficient Training Mode of Traditional Talents in Forest Engineering

3.1. Traditional Theoretical Knowledge Structure, Modern Forestry Development

The traditional forest engineering specialty is mainly set up in the specific forestry production links such as harvesting, gathering, transportation and storage. Such production links are borrowed

from the Soviet Union in the early days of the founding of the People's Republic of China, and they are inexhaustible for resources. Inexhaustible situation. At present, China and even the world are vigorously advocating the construction of ecological civilization. At the same time, China has proposed six key forestry projects. The traditional forest industry has very limited professional aspects. The course system of "Timber Production Technology and Management" only specifically addresses early harvesting. Knowledge of production operations procedures such as skidding, transportation and storage, it is difficult for professional knowledge to keep pace with the pace of national key forestry projects, and to a certain extent hinder the progress of national key forestry projects. From the perspective of harvesting and skidding, the country has strengthened the protection of the environment and ecology, and the basic natural forest harvesting basic

If it does not exist, and put forward higher requirements for plantation harvesting technology, then the small collection equipment that can reduce the damage to forest land is often seen, and the theoretical knowledge in this area is very weak. If we do not consider the development of modern forestry and the construction of key forestry projects, and continue to strengthen some unnecessary links, it will certainly hinder the development of forestry.

3.2. Traditional Talent Training Methods are not Suitable for Forestry Development Requirements

First of all, the traditional methods of training talents are limited to the economic and social benefits of forests, while modern forestry focuses on the development of the three, paying more attention to ecological benefits, especially the implementation of key forestry projects in the country, and ecological benefits. The importance has become increasingly prominent. The talents training in forest engineering is relatively simple. Only a single teacher teaches students in the classroom. There are fewer interactions between teachers and students. There are very few foreign students studying abroad. There are few academic exchanges with forestry experts at home and abroad. The general knowledge of basic knowledge cannot cultivate business-oriented talents with a modern concept of environmental protection, can not cultivate talents with strong information processing ability, can not cultivate talents with innovative ability, and cannot cultivate talents with very good integration of humanities law and forestry knowledge.

3.3. The Sense of Ecological Civilization Construction of the Forest Workers Can Not Be Combined With the Awareness of Forestry Development

With the continuous development of socialist modernization, especially the implementation of natural forest protection projects and the 18th National Congress, China has gradually shifted the economic and social benefits of forestry development to economic, social and ecological benefits, with special emphasis on ecological benefits. There are many shortcomings in the ecological civilization consciousness of the traditional Mori workers. First, in terms of ecological values, only the large-scale development and utilization of forest resources are emphasized, while the protection of forest resources is neglected, and the harmonious development between man and nature cannot be achieved. Second, in the world view, we only pay attention to the effective operation of the system of human society, ignoring the integration of human society and natural ecosystems, and taking the old road of destroying governance and destroying borders. Third, in terms of economic concept, the traditional economic concept is a single economic demand, ignoring the multi-functional and diversified development of forests, which seriously restricts the construction of China's 'two-type' society. Therefore, the traditional awareness of ecological civilization cannot be

combined with the consciousness of modern forestry development immediately. The awareness of forestry development needs to be improved from the talents cultivated by forest engineering. Only the consciousness of ecological civilization construction and the awareness of forestry development will be Combine to provide intellectual support for China's ecological construction.

4. Investigation on the Status Quo of Comprehensive Reform Measures for Innovation and Entrepreneurship in Forestry Engineering

4.1. Purpose of the Investigation

Through the questionnaire survey of the comprehensive reform measures for innovation and entrepreneurship of the forestry engineering specialty, it mainly focuses on the satisfaction of the current training model and the suggestions of the current training model. The result analysis provides relevant information for the comprehensive reform measures of the forestry engineering specialty innovation and entrepreneurship. Data basis.

4.2. Questionnaire Survey Development Steps

(1) Establishment of the survey site

This survey is aimed at the comprehensive reform measures for innovation and entrepreneurship in the forestry engineering profession. In order to reduce the difficulty of carrying out survey activities, this survey is mainly carried out in this city, in order to facilitate the development of survey activities and ensure that the survey results are supported by enough data. Therefore, it is determined that the location of the investigation is the forestry engineering major of colleges and universities in this city, and 3 colleges and universities with different reputations are randomly selected for investigation. Since this activity is mainly aimed at colleges and universities in this city, the results are not universal, so this time The results can not explain the comprehensive reform measures of forestry engineering innovation and entrepreneurship in other regions.

(2) Determination of relevant parameters

The establishment of the number of questionnaires is the most basic step of the survey activity, because the number of questionnaires is related to the validity of the survey results. If the number of questionnaires is set too low, the results of this survey will be questioned because the base of the data is not large enough, and the results of the survey are not large enough. It is universal. The number of questionnaires is set too high, and the difficulty of the questionnaire survey activity increases. Therefore, the number of questionnaires this time is set to 200 according to the minimum sample size proposed by the experts and the technical conditions of this survey.

(3) The distribution process of the questionnaire

The issuance of this questionnaire is mainly divided into two stages. The first is the issuance of the questionnaire, and the second is the recovery of the questionnaire. In order to ensure that the results of this survey have greater authenticity, the recovery of the questionnaire will be completed after the questionnaire is issued. Recovered in the next six days, given time to fill out the questionnaire completely. 189 questionnaires were recovered, and the recovery rate this time was 95%.

4.3. Data Processing

(1) When performing correlation analysis on the collected data, the data must be classified and

sorted. This will not only increase the utilization rate of the data, but also promote cross-data analysis. Therefore, the main consideration is the completeness and accuracy of the data. First of all, about data integrity. When the questionnaire is delivered to the sample subject for completion and collection, some sample items are arbitrarily completed, or their selection cannot be completed, which will cause some data sorting problems, but because the retrieved data accounts for the majority, So deleting the lost data means deleting the lost data. Secondly, the precision and accuracy of the data. When conducting an audit, the main consideration is to check whether these data are inconsistent with other choices, or the principle that conflicts with it should be selectively removed but retained as much as possible.

(2) The main meaning of a correlation relationship in the objective correlation analysis method is to generally refer to a certain relationship between various objective phenomena, but they are not strictly corresponding to each other in quantity. There are two main forms of determining the relevant properties of objective phenomena here: qualitative analysis and quantitative analysis. The main purpose of qualitative analysis is to rely on the scientific theoretical knowledge and practical experience of the researcher to accurately determine whether there are correlations between various objective phenomena. Or what kind of factor, the subjectivity of this analysis method is relatively strong. Among them, the commonly used calculation formula is expressed as:

$$r = \frac{S^2_{xy}}{S_x S_y} = \frac{\sum(x - \bar{x})(y - \bar{y})/n}{\sqrt{\sum(x - \bar{x})^2/n} \sqrt{\sum(y - \bar{y})^2/n}} \quad (1)$$

$$r = \frac{n \sum xy - \sum x \sum y}{\sqrt{n \sum x^2 - (\sum x)^2} \sqrt{n \sum y^2 - (\sum y)^2}} \quad (2)$$

5. Analysis of Survey Results

5.1. Satisfaction with the Current Reform Measures

The questionnaire is used to investigate students' satisfaction with the current reform measures. The results of the survey are shown in Table 1:

Table 1. Satisfaction with the current training model

	A college	B college	C college
Dissatisfied	42%	44%	43%
General	33%	32%	34%
Satisfaction	25%	24%	23%

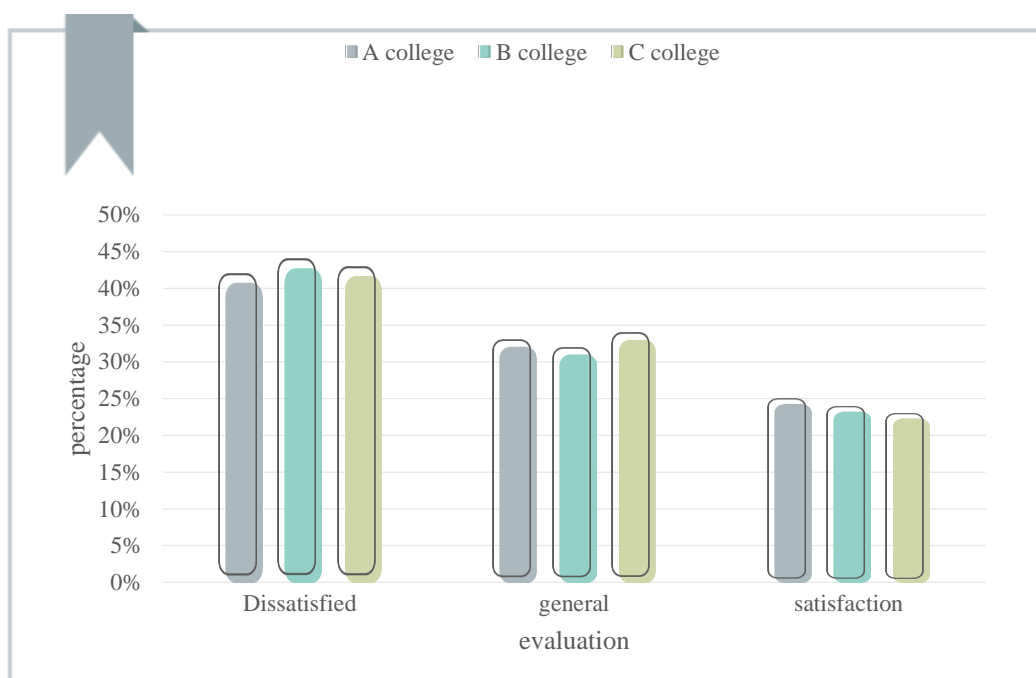


Figure 1. Satisfaction with the current training model

It can be seen from Figure 1 that the students are not satisfied with the innovation and reform of the forestry engineering major at this stage. Those who are dissatisfied with it account for more than 42%, and those who think it is average account for about 32%. From this it appears that the reform of the current training model is necessary.

5.2. Suggestions for the Current Training Model

Through the questionnaire survey of students and teachers' suggestions on the reform of the training model, the results of the survey are shown in Table 2:

Table 2. Suggestions for the current training model

	A college	B college	C college
Teaching is determined by post, academic work alternates	45 %	46%	48%
Cooperation effectiveness needs to be improved	36%	33%	32%
Guidance to students in a timely manner	19%	21%	20%

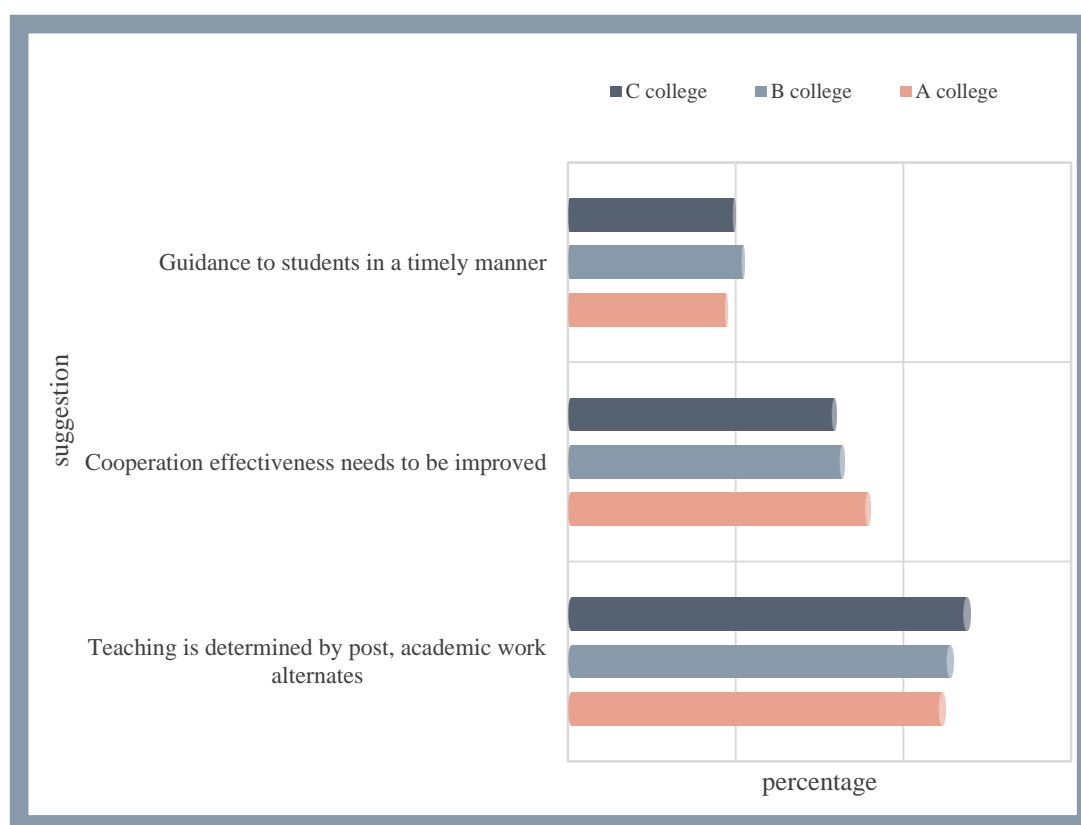


Figure 2. Suggestions for the current training model

It can be seen from Figure 2 that more than 45% of students and teachers in the suggestions given believe that schools should train talents based on the needs of the enterprise, rather than divorce the actual talent needs and emphasize theory rather than practice.

6. Comprehensive Reform Measures and Practice of Innovation and Entrepreneurship in Forest Engineering Specialty

6.1. Build an Application Talent Training Model

Forest Engineering (Road and Bridge Direction) The professional training program combines the strengthening of the foundation with the enhancement of adaptability based on the knowledge, ability and quality structure of the professional talents. The supporting disciplines (forestry, civil engineering and mechanical engineering) have a focus on forest engineering, so that students truly have "one speciality and many abilities". Closely linked to the reality, relying on the practice base inside and outside the school, highlighting the talent cultivation characteristics of "thick foundation, strong practice, innovation and high quality", and accurately positioning the innovative and applied advanced engineering and technical personnel training goals. The curriculum system adheres to the principle of cultivating people-oriented and abilities, paying attention to the overall optimization of students' knowledge structure, scientific and reasonable, fully embodying the characteristics of the profession, taking into account the development of students' personality, and the scientific and reasonable distribution of time and credits.

The use of modern teaching mode, especially the integration of theory and practice, has

distinctive features and operability, which can ensure the smooth development of training objectives. On this basis, according to the opinions of the school to optimize the professional structure, combined with the needs of talents in the South China's economy, society and science and technology, the professional structure and personnel training program were revised, and the application-oriented advanced engineering of "professional foundation + direction module" was created. Technical talent training mode.

6.2. Construct Teaching System of Education

The first is to carefully design experimental courses and content that combine regional characteristics with the development of the frontiers of the discipline. According to the needs of discipline development and application-oriented talent training, a step-by-step multi-level experimental teaching content system from simple to complex, from basic to comprehensive is established. Closely connect with the development of theoretical teaching and related discipline technology, combine classical knowledge with new technology, comprehensively integrate and update the original experimental content, increase the proportion of comprehensive, design and research innovative experiments, and solidify it at the right time. For the experimental textbooks, build a practical teaching course with its own characteristics.

The second is to pay attention to the integration and optimization of the internship course, integrating curriculum experiment, curriculum design and innovation experiment. This reform is conducive to improving students' analytical and problem-solving abilities, cultivating students' innovative consciousness and innovative spirit, and is a good way to achieve innovative education. Practical teaching links are accompanied by instructions, syllabus and assessment methods to provide a solid basis for the implementation and assessment of practical teaching plans. It can get twice the result with half the effort for cultivating students' ability to master knowledge more solidly, and to use knowledge, hands-on ability and innovative ability to improve students' comprehensive quality.

6.3. Build a Platform for Innovation Education and Teaching Practice

In combination with the national undergraduate "engineering ropeway" quality course and the provincial and municipal joint construction project "construction of undergraduate talents professional ability base for transportation and civil engineering", the project has promoted professional construction and laid the foundation for the reform of the talent training model, further supplementing and perfecting the experiment. Room equipment and environmental conditions; build a diverse and diverse undergraduate internship model to create an important practical teaching platform. Actively absorb students' joint research projects in school-enterprise cooperation, and guide teachers to lead students to conduct scientific experiments, research and solve problems, cultivate students' practical ability and solve practical engineering problems according to the actual engineering problems or scientific problems of enterprises. ability.

7. Conclusion

The forest engineering specialty, whether it is the target target, or the knowledge system it covers, has the broad characteristics. It is in line with the requirements of the modern "wide professional and thick foundation". The vitality of forest engineering is that it can constantly adjust its development direction according to the requirements of national development. "The important

adjustment of national forestry policy" provides good development conditions for the development of forest engineering specialty. "The importance of forestry development has been common understanding for people". It provides a good social foundation for the development of forest engineering specialty. The rapid development of science and technology and information technology provides a solid technology for the development of forest engineering specialty. Support. Once again, history provides an opportunity for the development of forest engineering. As long as the forest engineering major adapts to the development situation, the direction of development is clear, and the advantages of the forest engineering are made full play, the professional development goal will be realized and the high-level specialty with distinctive features, good quality, domestic lead and international competitiveness is a major task.

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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.

References

- [1]Hong-Tao L I, Ying H, Lai P F. *Exploration and Construction of Innovation and Entrepreneurship Training System for Local College Students. Northwest Medical Education, 2013.*
- [2]Zhang C, Zhou H B, Luo Y F, et al. *Constructing Integration Practice Platform of Undergraduates' Innovation and Entrepreneurship Education. Research & Exploration in Laboratory, 2013.*
- [3]Zhang X, Guo J R, Ying L I, et al. *Exploration and Practice on Making the Education of Innovation and Entrepreneurship in Veterinary Medicine Specialty. Animal Husbandry & Feed Science, 2013.*
- [4]Shi X J, Huang J Y, Wang X M, et al. *Practice and exploring for innovation and entrepreneurial education of applied specialty. Laboratory Science, 2015.*
- [5]Yang C P, University N F. *Research and Practice on the Construction of Innovation and Entrepreneurship Education System for Agriculture and Forestry University Students. China Agricultural Education, 2016.*
- [6]Pang L. *Cultivation and Construction of Innovation and Entrepreneurship for Engineering Students in Agriculture and Forestry University. Anhui Agricultural Science Bulletin, 2015.*
- [7]Zhou J X, Polytechnic S. *Exploration and practice of training path of higher vocational students' innovation and entrepreneurship under the integration of culture and enterprise culture. Journal of Jiamusi Vocational Institute, 2016.*
- [8]Hu H, Du W, Chen P, et al. *Exploration on path for innovative and entrepreneurial education integrated into whole process of talent cultivation in colleges and universities. Experimental*

Technology & Management, 2017.

- [9]Feng-Qin B I, Sun L L, Wang Y, et al. *Innovation and Entrepreneurship Education Training Platform Construction of Material Specialty Based on "Internet+"*. *Value Engineering*, 2017.
- [10]Gong J. *The Current Situation and Construction Ways of Innovation and Entrepreneurship Education System of Engineering Specialties in Colleges and Universities*. *Science Education Article Collects*, 2017.
- [11]Zhang L, Yin L, Zhang L, et al. *Exploration and Practice of Deep Integration of Virtual Simulation Technology and Innovative Entrepreneurship Education*. *International Conference on Economics, Social Science, Arts, Education and Management Engineering*. 2017. <https://doi.org/10.2991/essaeme-17.2017.451>
- [12]Chen Y Y. *Deep Integration of the Modern Apprenticeship System and the Innovation and Entrepreneurship Education in Construction Engineering Technology Specialty*. *Journal of Changsha Aeronautical Vocational & Technical College*, 2017.
- [13]Liu F C, Huang T Z, Xu X T. *Exploration and Practice on the Construction of Innovation and Entrepreneurship Education System in Higher Vocational Colleges*. *Journal of Jiamusi Vocational Institute*, 2018.
- [14]Li W, Bi Y, Yu S, et al. *Practice and Exploration of Innovation and Entrepreneurship Education under the Background of Emerging Engineering Education*. *Higher Education in Chemical Engineering*, 2018.