

# Exploration and Practice of Membership Echelon Construction in Innovation and Entrepreneurship Training Program for College Students

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**Abstract.** The undergraduate innovation and entrepreneurship training program is an important measure to deepen the reform of Undergraduate Teaching Engineering in Colleges and universities. It is proposed to promote the transformation of the concept of talent cultivation by carrying out innovation and entrepreneurship education reform, improve the students' innovative ability and the entrepreneurial ability on the basis of innovation, and cultivate and reserve the innovative country. This paper probes into the necessity of developing the project of College Students' innovation and entrepreneurship training program. Through the in-depth analysis of the main problems and significance of the construction of the echelon of the college students' innovation and entrepreneurship training program, the paper puts forward the best mode of "master teacher brother, teacher and younger brother" mode, that is, "three dimensional" member ladder formation model and "promote the competition by competition." As an example of the exploration of the College of mechanical and electrical engineering of Qiqihar University, it has proved the rationality and effectiveness of the two models and achieved good results.

## 1. Introduction

Under the favorable environment that the state attaches great importance to the cultivation of College Students' innovative and entrepreneurial abilities, the Ministry of Education has put forward the "training plan for college students' innovative and entrepreneurial abilities" in two important aspects of quality engineering and undergraduate teaching engineering (hereinafter referred to as two projects)<sup>[1-2]</sup>. The implementation and implementation of the plan aims to promote the national universities to actively change their educational ideas, reform the traditional talent training mode and education system, strengthen the training and training of College Students' innovative and entrepreneurial ability, and thus achieve the goal of promoting college students' innovative and entrepreneurial ability generally<sup>[3]</sup>. At present, the plan has become one of the key construction projects of "undergraduate teaching quality and teaching reform project in Colleges and universities". At present, the plan is divided into three levels: national-provincial-school level training system, and covers "innovation training project", "entrepreneurship training project" and "entrepreneurship practice project"<sup>[4-5]</sup>. With the implementation of the plan, colleges and universities in Heilongjiang Province have made a lot of remarkable achievements in the innovation and entrepreneurship training plan. At the same time, some problems have arisen in the implementation process: the implementation path is heavy but light; the tutors are multi-tasked and weak; the application system of the project is imperfect; the most important thing is the continuity of project members and the depth of project research<sup>[6]</sup>. The problems mentioned above, such as the difficulty of ensuring sustainability and the serious lack of echelon construction among project members, have greatly hindered the smooth implementation of large-scale venture project plans, and urgently need to reform and study them. Therefore, the exploration and practice of member echelon construction mode has important research value and practical significance in the project of College Students' innovation and entrepreneurship training plan.

## **2. Exploring the Significance of Members' Echelon Formation Model in College Students' Innovation and Entrepreneurship Project**

Membership echelon formation mode of College Students' innovation and entrepreneurship training program is a very important part of College Students' innovation and entrepreneurship project. Rationally optimized member echelon formation model and training system can not only effectively improve students' innovative and practical ability, exercise and improve students' strong will and character, improve students' team cooperation, project leadership and management ability, but also help project research results continue to be applied in scientific research and production practice, research results as far as possible into the market, so as to make college students innovative. The combination effect of human, financial and material is maximized in Entrepreneurship projects. The echelon construction of project team members can provide a strong human resources guarantee for the continuity of project members, the depth and continuity of project research, and also for the smooth application of new projects, forming a virtuous circle for the smooth development and implementation of projects.

## **3. Exploration of three-dimensional member echelon formation model of "Teacher + Brother + Disciple"**

The mode of "teacher + brother + disciple" is the three-dimensional echelon mode of "teacher + postgraduate + undergraduate students of different grades (majors). This echelon model has high adaptability, flexibility and expansibility. It can be flexibly adjusted and matched according to the actual situation of its own colleges and universities, such as "junior students + senior students + graduate students + assistant teachers + associate professors", "junior students + senior students + graduate students + assistant teachers" (lectures). Some colleges and universities are equipped with enterprise tutors as project support, and "junior students + senior students + graduate students + assistant teachers" (lectures). The three-dimensional echelon model of "Young Teachers + Enterprise Teachers + Associate Professors". The three-dimensional member echelon model is highly adaptive and has great application and promotion value.

Innovative use of "graduate students + undergraduates of different grades" member echelon model construction, instructors can check the overall progress of the project, general direction and research difficulties, through the main guidance of graduate students to carry out project research, graduate students can help instructors to coordinate the division of tasks, implement and promote research work, meet difficulties or difficulties timely feedback, dress up. Perform the key role of upload and delivery, and ensure the project to achieve unity, efficiency, science, orderly and rational operation. Postgraduates and senior students have a certain amount of professional knowledge reserve, can quickly understand the intentions of the instructor, can make up for the low-grade students have not yet learned professional knowledge is still in the gap stage (while teaching, while learning). Students in lower grades should also give full play to the advantages of divergent thinking, which is not stereotyped by professional knowledge and is precious, so as to provide more innovative thinking, novel ideas and better solutions for the project. Based on the above discussion, the "three-dimensional" member echelon formation model has realized the function of "transmission, assistance, banding and research". Such a echelon model can also effectively avoid the occurrence of fault among project members, guide the research echelon to inject fresh blood continuously, and ensure the benign cycle and replacement of project members. If the team spirit, professional and technical knowledge and research methods are well inherited, the new members can quickly enter and adapt to the role of "senior" members in the new round of innovation research after the departure of "senior" members, and there will not be too long gap in the project research process. Team members coordinate with each other, give full play to their strengths, characteristics and capabilities, and make the work easier. In an efficient and scientific development track, it ensures the continuity and continuity of project research. By forming an organic whole with high efficiency and team harmony, the effect of  $1 + 1 > 2$  can be achieved.

#### **4. Initial Exploration and Successful Practice of "Three-dimensional" Membership Echelon Formation Model**

At present, the research team of platform teachers and students is composed of 10 teachers, including one professor, two associate professors, four lecturers, one assistant and two enterprise tutors. Team guidance teachers have a reasonable age structure. There are three teachers over 40, two teachers aged 36-40, four teachers aged 31-35, one teacher aged 26-30, three teachers with doctoral degree, four teachers with master's degree, and the rest teachers with bachelor's degree. Over the past five years, Team Teachers have undertaken more than 10 projects of national and provincial funds, published more than 20 scientific research papers and more than 10 teaching and research papers. Team Teachers have strong scientific research ability, which lays a solid foundation for the smooth development of innovation and entrepreneurship training programs.

Considering the inheritance and accumulation of knowledge, according to the needs of member echelon construction model, members cover students of different majors and grades. Among them, there are 4 graduate students, 5 senior students, 16 junior students, 23 sophomores and 37 freshmen. A graduate student is assigned to be responsible for one or two teams. Each senior student brings two or three junior students. Each team basically conforms to the "three-dimensional" member echelon formation model.

Postgraduate students can introduce some professional knowledge to undergraduates in advance from time to time, or follow-up research may need to learn theory or software knowledge. Undergraduates can also collect information and learn in advance with a goal. If they encounter difficulties and difficulties in learning, the first time help and solutions of the Graduate Union fully reflect the virtuous circle of "help" and "band" team. Potential. For example, the 2016 National College Students Innovation and Entrepreneurship Training Program project "A Reward-Penalty Intelligent Deceleration Belt", which consists of two instructors, one graduate student and three undergraduates, basically forms a project research team structure at three levels: different knowledge levels and different educational levels. The aim of the project is to develop a new kind of deceleration belt with incentive and punitive coexistence, which can realize intelligent control of online speed measurement. Humanized design will invisibly enhance people's awareness of compliance with traffic regulations and safe driving, and let people experience the changes brought about by intellectualization to people's lives. Graduate students have many difficulties and difficulties in the process of designing lifting device and learning finite element analysis software. Graduate students first carry out appropriate analysis and guidance, and will not solve the problems. Through the feedback of graduate students to the instructor, the instructor summoned members through group meetings, group discussions and so on. The research team finally over fulfilled the expected results of the project commitment, published two high-level academic papers and filed two patents.

#### **5. Conclusion**

"Innovation and entrepreneurship training program for college students" is an important measure to deepen the reform of "undergraduate teaching project" in Colleges and universities. It is proposed to carry out innovation and entrepreneurship education reform, promote the transformation of the concept of talent cultivation in Colleges and universities, enhance students'innovation ability and entrepreneurship ability on the basis of innovation<sup>[7-8]</sup>, and train and reserve talents for the creation of an innovative country. In the process of echelon construction and team innovation, the overall function of an excellent innovation team will be greater than the sum of individual functions, and the overall function will have team strength besides the sum of individual functions, forming an advantage of more than two members echelon.

The echelon construction of College Students' innovation and entrepreneurship training program project members is a ladder talent team that takes both learning and research into account. Rational optimization of combination mode can significantly improve the overall ability and effectiveness of the team, and can make more and greater contributions to the innovation and research of the project.

Taking the project practice of innovation and entrepreneurship training program of Qiqihar University College of Mechanical and Electrical Engineering as an example, this paper puts forward and practices the "three-dimensional" member gradient formation model, which embodies the rationality and superiority of the model. At present, the establishment of "three-dimensional" member echelon model is gradual, and there are many problems that need to be further studied, such as the optimal proportion of members, which provides a new research direction for the follow-up in-depth exploration of the topic.

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