Cultivation Strategy of the Scientific Research Ability of Application-oriented Universities

Yan Bao*

Jilin Engineering Normal University, Changchun 130052 Jilin, China

E-mail: by@jlenu.edu.cn

*corresponding author

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Abstract: At present, governments of all countries attach great importance to cooperation in production, education and research. As an educational institution that trains talents, develops science, and serves the society, the cooperation between industry, university and research institutes is an important way for Chinese universities to fulfill their functions in serving society. This paper analyzes the significance of the research and development ability of the undergraduate students in the application-oriented undergraduate colleges and universities, and analyzes the main problems in the joint cultivation of the production, study and research in domestic universities, and analyzes the reasons for the poor results and stagnant achievements of the joint production and research model. It is proposed to carry out "order-based" joint training; establish a joint training mechanism for industry, academia and research, strengthen unified management, change the loose management of previous industry-university-research cooperation projects; establish a "practice-oriented" curriculum system, clarify training objectives, and cultivate a solid Professional basic theory, and application-oriented professionals with strong practical ability; establish an industry-university-research joint training of undergraduate college students' scientific research ability evaluation model, and the actual contribution that researchers engaged in applied research should make to the economic society The main evaluation criteria and other initiatives will effectively improve the scientific research ability of applied undergraduate universities, and ultimately achieve high-efficiency transformation of scientific research results, truly become a productive force, and realize the function of serving the society in colleges and universities.

1. Introduction

In today's world, science and technology are advancing by leaps and bounds and international competition is increasingly fierce. Scientific and technological competition has become a decisive factor in the world's economic and social development. The key to accelerating the development of science and technology lies in the cultivation and improvement of independent innovation ability [1-2]. At the same time, with the acceleration of economic globalization, industrial development and the rapid development of strategic emerging industries, China's development strategy needs to change from manufacturing type to creative type, and the core of this change lies in innovation [3].

Is the national medium and long-term development of innovation drive the core content of the program for science and technology, has become our country to speed up the transformation of the mode of economic development, promote scientific development, promote social harmony important policy choice, the outline requirements from strengthen national innovation capability, strengthen the original innovation, integrated innovation and the introduction of digestion, absorption and innovation [4]. Current governments are paying more attention to production-teaching-research combination, in order to promote manufacture-learning-research cooperation, the state council issued "about play a supporting role of science and technology to promote steady and rapid economic development of opinions", "on strengthening the opinions of the institutions of higher learning to serve economic and social development", the ministry of

science and technology, ministry of finance, the ministry of education and so on six departments set up promoting university-industry cooperation working group to coordinate and guide, to guide the work of national production, [5-6]. To enter an innovative country in China, to build national innovation system with Chinese characteristics, to develop the higher education, training for college students as the main body of high-level innovative talents, improve the quality of applied undergraduate education in colleges and universities, is the necessary requirement of achieving this goal, education, technology and industry, industry the urgent task facing the common [7].

Industry-university-research cooperation, also known as the combination of industry-university-research, is an important national measure for the mutual integration and cooperation between industrial sectors, institutions of higher learning and scientific research institutions. It is regarded as one of the important contents in the report of the 15th National Congress of the Communist Party of China to rejuvenate the country through science and education [8]. Industry-university-research cooperation mainly adopts an open concept of education, characterized by innovative education, and emphasizes the comprehensive application of disciplines, allowing students to participate in production practice and scientific research projects, so that students can truly experience the combination of theory and practice, and improve students' interest in learning [9]. The outline of the national medium and long-term education reform and development plan (2010-2020) points out that the purpose of running a school is to improve the level of scientific research, improve the quality of talent training in universities, enhance the ability of social services, optimize the structure and run a school with characteristics [10]. It is a new measure for application-oriented universities to cultivate high-level innovative talents in scientific research by using the mode of industry-university-research joint training to meet the needs of economic and social development and provide useful talents for the society. It is helpful to improve the innovation ability and practice ability of undergraduates, and it conforms to the demand of enterprises for the practical application ability of undergraduates.

2. Methods

2.1 Cooperative Education Theory.

Cooperative Education, put forward by professor hermann schneider, believes that the classroom knowledge students learn should not be separated from social practice, and Cooperative Education is an Education model closely combined with social production practice. The essence and ultimate goal of cooperation is education, and cooperation is the way to realize the coordination of relations among the participants in higher education and optimize the allocation of educational resources. Through multi-party relationship coordination and resource integration, the quality of higher education talent training can be improved, and finally, more economic and social values can be created for enterprises through the improvement of talent quality, so as to realize the ultimate goal of education serving social development. Therefore, cooperative education is a kind of university talent cultivation mode that combines deep participation of enterprises and public institutions, internship teaching management organized by schools, students' acceptance of school education and social work practice. In essence, it is a systematic and in-depth paid off-campus practice combining work with study. Cooperation education personnel training mode, to train applied talents with innovation ability as a means of implementation, the students knowledge of classroom learning and paid internship experience, the combination of work by participating in the employer's personnel training goal, make the classroom theoretical study and the actual work experience in time integration, implementation of "learning in doing, learning by doing" highly unified. Deepening the integration of industry and education is an urgent requirement for promoting the organic connection between education chain, talent chain, industrial chain and innovation chain and promoting the supply-side structural reform of human resources.

2.2 Practice Community Theory

The concept of a community of practice was first proposed by Jean Lave and Etienne Wenger in

situational learning: legitimate borderline participation. According to this theory, learning is not confined to the specialized behavior that is divorced from the actual situation in the classroom, but occurs in the practical participation of learners, and such participation is indispensable. "Learners' continuous participation in the corresponding practice is not only the process of their professional or professional maturity, but also the process of their social identity improvement. Learning in the community of practice is called legitimate marginal participation. The so-called "legal" means that the novice enters the industry, is accepted by the insiders, and interacts with the practitioners to promote the legalization of learning. The premise of "legalization" is that the novice has the opportunity to enter the mature practice situation, participate in the practice, and obtain the opportunity and condition of learning. "Marginal participation" means that learners in the "community of practice" participate only partially in practical activities, and such participation is active and closely related to the activities in the "community of practice". College teachers and enterprises and public institutions themselves exist as a kind of practice community respectively. The practice community of college teachers and enterprises and public institutions provides different practice situations for cultivating students in application-oriented universities.

3. Experimental

Applied talents mainly refer to skilled talents who can apply relevant theoretical knowledge to production and life to solve practical problems. It is required to reflect the application of knowledge, skills, production techniques, etc., and it is inseparable from the cultivation and exercise in practice. To this end, it is necessary to provide more opportunities for students to participate in social practice, so that they can find problems, analyze problems, solve problems in practice, and constantly enhance their ability to apply their knowledge and skills. In view of this, in the training experiment of applied talents, special attention should be paid to cultivating the ability to solve practical problems. In this process, it is especially important to focus on the construction of the industry-university-research cooperation platform. The construction of the industry-university-research cooperation platform can provide a suitable place for students' internship practice, so that students can combine their knowledge, skills and production practices to serve local economic and social development. At the same time, in practice, students can also find the gap between their knowledge theory system, technical skill level and actual needs, and find breakthrough points for students' scientific research. Therefore, the feasibility of the training experiment of production, study and research personnel can be effectively determined to meet the needs of the society for talents.

A survey of the more popular talent training models in major universities and colleges reveals that the overall tendency of light practice assessment is presented. The specific data can be seen in Table 1.

Table 1. Questionnaire on the training mode of scientific research talents in applied universities

Category		Number of institution	Proportion
Order-based joint training	No construction	2	0.02%
	Initial construction	23	0.23%
	Good effect	54	0.54%
	Fruitful	21	0.21%
Integrated production and research institute	No construction	2	0.02%
	Initial construction	30	0.3%
	Good effect	59	0.59%
	Fruitful	9	0.09%
Practice-oriented curriculum system	No construction	29	0.29%
	Initial construction	35	0.35%
	Good effect	20	0.20%
	Fruitful	16	0.16%
Quality assessment standard	No construction	48	0.48%
	Initial construction	21	0.21%
	Good effect	12	0.12%
	Fruitful	19	0.19%

4. Discuss

4.1 Problems in the Talent Training Mode Oriented by Industry, University and Research

At present, the status of industry-university-research cooperation talent training mode has been paid more and more attention in the education of colleges and universities in China. The local governments of all universities recognize the status of industry-university-research cooperation, but in the process of implementation, they also face different degrees of common problems. It can also be seen in the table 1.

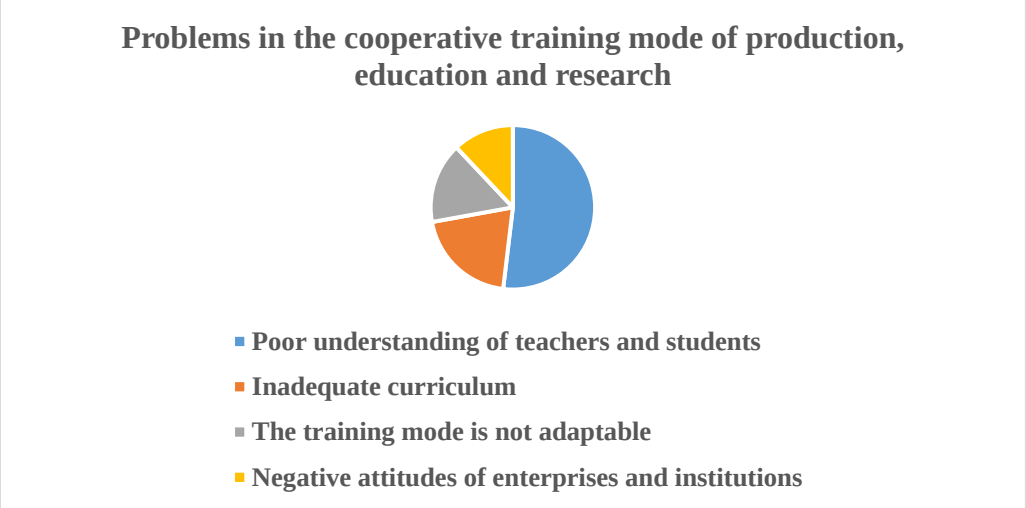

Figure 1. Problems in the cooperative training model of industry, university and research

First, the ideological understanding of college students and students on the cooperation between industry, university and research to cultivate college students' scientific research ability is not uniform and not in place. Under the premise of not breaking through the traditional talent training mode, the goal and orientation of innovative talent training is unclear; it is subject to traditional teaching management and evaluation. Institutional constraints, teachers and students mostly lack incentive mechanism; second, the curriculum is not perfect, the scientific innovation education curriculum, the logic within the practical training curriculum, the integrity of the innovative education curriculum and the different professional courses need to be further improved; these

limitations Sexuality usually manifests itself as: relying on a small number of innovative lectures, or opening a small number of innovative public elective courses, mainly for the business plan competition, teaching methods, teaching methods are relatively simple, there is no systematic innovative education curriculum system; a single form of cooperation, colleges and universities Although the cooperation of industry, academia and research has been carried out, traditional education still occupies a dominant position; universities have not actively participated in the training. Under the form of “commissioned development” as the main form of cooperation, students become bystanders, and the level of cooperation is shallow, making it difficult to form interactions; cooperation with a small number of fixed enterprises and enterprises, providing limited and small growth space for students to practice, can not really implement production and research The purpose of cooperative talent training; Thirdly, although many colleges and universities have used the platform of student scientific research practice and challenge cup competition to implement the reform of innovative talent training mode, they have achieved certain experience and results, but they are truly suitable for their respective schools. There are still few models and methods for innovative education. Fourth, the attitude of enterprises and institutions is relatively negative. Many enterprises have old-fashioned concepts and believe that schools are the base for cultivating talents. They only reach out to people, but they do not realize that they are directly beneficiaries in the mode of training talents in production, education and research. The cultivation of industry, university and research cooperation talents is a game of interests for all subjects. Faced with this situation, the government should do a good job in safeguarding work, give preferential support to enterprises in material and policy, and let enterprises participate in the cooperation of industry, university and research with peace of mind and heart, and provide a broad space for practice in the training of talents in colleges and universities.

4.2 The Way Out for the Cultivation of Talents in Production, Learning and Research

The company proposes personnel training requirements, and the college implements teaching according to the situation. The instructors organize students to participate in the social practice of the company in their spare time, winter vacations, and holidays, starting from the most basic operations of the enterprise and slowly transitioning to complex scientific research activities. The “order-based” college student training program is jointly formulated by the school and the employer. Some courses are set up according to the needs of the students. The topic of the thesis is directly derived from the technical problems that the employer urgently needs to solve in the engineering practice. After graduation, the program is directly served by the employer. . Taking the needs of enterprises as the starting point and cultivating students' own requirements is an effective way to solve the employment of students. The key to achieving this kind of educational achievement is to rely on the open cooperation between universities and enterprises.

Establish a "practice-oriented" curriculum system. The college integrates the content of commonality, key technologies and research frontier development into the curriculum system, ensuring that all majors practice the necessary credits for teaching and establish a variety of practical courses to choose from. These practical courses are mainly different types of cutting-edge lectures and joint courses with major subjects and production practices, which are jointly conducted by joint instructors or industry experts. They highlight the combination of basic theory and practical theory, and openly explore and actively Improve students' ability of scientific research and innovation in the process of sexual learning.

5. Conclusion

The essence of the combination of industry, university and research to train college students is that universities, enterprises and scientific research institutions use their superior resources to build innovative and cooperative platforms for mutual participation, mutual promotion and mutual benefit, and work together to cultivate applied technical talents. The combination of production, study and research has changed the traditional mode of training alone in colleges and universities, strengthening the close integration of talent cultivation and scientific research production, and

forming a new pattern of joint training of college students in a multi-faceted manner, with extensive social resources. Participate in it and adapt to the needs of the country's new situation. The industry-university-research cooperation provides students with an opportunity to directly face practical scientific problems, which is conducive to students' understanding of problems, analysis of problems and problem-solving, and is conducive to the cultivation of students' professional quality, scientific quality and innovative ability. The cooperation of industry, university and research institute has cultivated high-level scientific and technological talents for the development of enterprises, and provided products with market competitiveness, which is an important guarantee for enterprises to improve their competitiveness. Therefore, the parties of industry, academia and research are based on their own internal needs, can form an organic whole that promotes each other, interdependence and complement each other, and promotes the common development of universities, enterprises and scientific research institutions. It is a mutually beneficial and win-win development. mode.

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