

Study on the Reform of Personnel Training Mode in Application-oriented Universities under the Perspective of Collaborative Innovation

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Abstract. Collaborative innovation is an important perspective to deepen the comprehensive reform of education and reform the personnel training mode, and is of great significance to the personnel training, technological innovation and social service of application-oriented universities. The paper tentatively discusses several types of personnel training modes based on collaborative innovation of school-school, school-locality, school-enterprise and international cooperation, and puts forward relevant suggestions for application-oriented universities to further develop cooperative education.

1. Introduction

Collaborative innovation is an important strategy and subject for deepening the comprehensive reform in education field and innovative personnel training model. "It is both the internal demand of university education and the new requirement of social development for universities" [1]. In order to achieve sustainable development, applied colleges and universities should learn from the concept of collaborative innovation, improve the cooperative training mechanism through collaborative innovation in government, school, industry and enterprise, further promote the reform of personnel training mode, and explore the path for the growth of applied talents.

2. The connotation and realistic meaning of university collaborative innovation

Collaborative innovation means to fully release the vitality of innovation elements such as "talent, capital, information and technology" and achieve effective convergence and deep cooperation of innovation resources and innovation elements through breaking the barriers among innovation subjects [2]. Specific to applied universities, it mainly refers to the discussion and practice of promoting the reform of personnel training mode in terms of school orientation, specialty construction, industry-academy cooperation, talent training program, course system, assessment method and teacher team, with the guidance of collaborative innovation concept centering on regional economic and social development, making full use of various innovative education resources such as school-enterprise cooperation to cultivate students' practical application ability and innovation and entrepreneurship ability and improving school quality.

It is not difficult to find that the ecology of personnel training in applied universities has changed under the review of the concept of collaborative innovation. This change is mainly reflected in two aspects: one is the collaboration with other universities, scientific research institutions, and industrial enterprises, especially with the industry, so that personnel training extends from the internal expansion of universities to the external. This means that the relationship between universities and external subjects is further deepened, and the knowledge, ability and quality structure contained in the professional and curriculum system is also updated accordingly. Correspondingly, elements such as teaching organization form, teaching training approach, teaching operation mechanism and training program should be adapted to this change, and then bring about the reform of school training goal and even school running idea. Second, multi-subjects and multi-departments work together in the process of personnel training, which makes the training mode fundamentally changed, and the most obvious is that interdisciplinary training, dual-mentorship training, and industry- academy cooperative training become possible [3].

Moreover, collaborative innovation in colleges and universities is of great practical significance and plays an important role in personnel training, scientific and technological innovation and social service. One is to lead the talent training innovation. Collaborative innovation of colleges and universities can integrate education resources of multiple subjects such as local governments, industrial enterprises and scientific research institutions, connect the professional chain with the industrial chain and the innovation chain, innovate the personnel training mode, and train applied senior professionals who meet the needs of regional economic and social development. Second, lead the innovation of applied technology. Collaborative innovation of colleges and universities can integrate the technical resources of local governments, industrial enterprises, scientific research institutions and other subjects, jointly tackle the key and difficult points of industrial key technologies and advanced technologies in the industry, form a number of achievements of great application value, and boost regional economic development and industrial transformation and upgrading. Third, lead the social service innovation. Collaborative innovation of colleges and universities can integrate the talent resources of local governments, industrial enterprises and scientific research institutions, build social service platform, develop social service projects and play a leading role.

3. The pattern of personnel training based on collaborative innovation

Collaborative innovation is an important development concept and strategic choice of applied universities. It is an effective way to improve the quality of applied personnel training by actively exploring and establishing a personnel training model based on school-school collaborative innovation, school-locality collaborative innovation, school-enterprise collaborative innovation and international cooperative collaborative innovation [4].

3.1 Personnel training mode based on school-school collaborative innovation

This model refers to the personnel training model that universities and colleges with different advantageous disciplines and majors develop cooperative innovation and jointly cultivate talents. Collaboration among universities, especially among applied universities in the region, has many similarities in specialty construction, curriculum design and education and teaching reform. It can better integrate relevant educational resources. Not only can it be shared on the platform of experimental training center, practice teaching base, etc., but also can be shared by both sides. Through undertaking scientific and technological research projects, jointly building quality courses and teaching resources, we can cooperate to fully release the vitality of innovative elements such as talents, information and technology. For example, Guangdong Baiyun University and Zhongshan Torch polytechnic have reached the cooperative intention in the aspect of "the applied personnel training of upgrading from junior college student to university student in the third and second grades", carried out exchanges in terms of cooperation programs, cooperation agreements and pilot professional personnel training, and jointly developed high-quality applied talents.

3.2 Personnel training mode based on school-locality and school-enterprise collaborative innovation

This mode is to strengthen cooperation between universities and regions or regions, integrate local, industrial and enterprise resources as a whole according to local development needs and industrial transformation and upgrading, so as to achieve in-depth integration of production and education as well as school-enterprise sharing development. Specifically, applied colleges and universities should actively integrated into the regional economic and social development and the industrial development, cooperate with government agencies within the region and backbone enterprises, scientific research institutes to carry out the cooperative education, and develop professional chain and industrial chain docking, course content and professional standards docking and the production process and the teaching process docking to promote the formation of applied, compound and innovative personnel training mode; at the same time, through school-enterprise collaborative innovation, build a diversified pattern of achievement transformation and technology transfer to

serve the regional industrial structure adjustment and the development of emerging industries. The ministry of education's career education and adult education department require provinces and vocational colleges to highlight "regional" and "dependency" when writing annual education quality report. In fact, this means that whether to achieve symbiosis and win-win cooperation between schools and local areas will become an important indicator to evaluate the quality of running an applied school [5].

3.3 Personnel training mode based on international collaborative innovation

This mode mainly refers to the cooperation between universities and foreign or overseas universities, research institutes, enterprise associations and other resource subjects in education teaching, scientific research, technology development, public service innovation and other aspects to jointly cultivate applied talents with international vision. There is no denying that foreign applied universities have a lot for domestic universities to learn from in terms of talent collaborative training, such as collaborative innovation and entrepreneurship education, practice and security system. Local governments and applied universities are also paying more and more attention to cooperate and exchange with applied universities in developed countries. By building an international cooperation platform, they are introducing high-quality resources in terms of discipline construction, advantageous professional group construction, exchange and study of teachers, and cooperation in training engineers, so as to enhance their core competitiveness through internationalization. Dongguan University of Technology, for example, actively carries out multi-channel, multi-level and comprehensive international cooperation and exchanges, especially sets up first Guangdong-Taiwan joint training project of Guangdong province - Guangdong Institute of Industry Technology, with the introduction of Taiwan's teaching management pattern and the full-time introduction of Taiwan's teacher team to carry out teaching and administration, focusing on cultivating high-quality applied creative talents.

4. Further thinking on the education of collaborative innovation

In order to truly implement the collaborative innovation education, local applied colleges and universities, as important innovation subjects, should pay attention to the renewal of educational philosophy, organizational guarantee, construction of applied majors and improvement of long-term mechanism.

4.1 Update the concept of schooling

Education concept has important guiding function for education practice. The education development concept of collaborative innovation is a rethinking of the school running concept and school running orientation, which can not only make the university clear its own development orientation, but also create the differentiation of advantages and features. Therefore, applied universities should carry out collaborative innovation concept in the school personnel training, scientific research and management system construction of each link, change the original talent training pattern which is relatively closed, and actively integrate into the regional social development, carrying out deep cooperation with governments, enterprises, research institutes and other bodies, with various forms of collaborative innovation, to effectively enhance the quality of personnel training.

4.2 Strengthen organizational leadership

Collaborative innovation involves multiple subjects and multiple departments. It needs to coordinate multiple relations, mobilize and integrate multiple resources, balance the demands of different interest subjects and break the barriers of various systems and mechanisms. To some extent, with such complexity and difficulty, without a unified and strong core of organizational leadership, it is difficult to achieve the aggregation, integration and coordination of human, financial, material and institutional systems. Therefore, it is necessary for colleges and universities to set up leading groups and related organizations to coordinate all kinds of collaborative innovation

resources on and off campus, solve various problems in collaborative innovation, and provide solid organizational guarantee for further promoting collaborative innovation.

4.3 Strengthen the construction of advantageous majors and applied majors

For applied colleges and universities, the construction of advantageous majors and applied majors is the key to form school-running characteristics, is the focus of professional construction planning, and is also an effective way to improve school-running efficiency and serve local society. The practice shows that the strong professional advantage is the backing which provides the talented and the intelligence support, and is the important support which develops the coordinated innovation. Colleges and universities should plan major construction scientifically based on the local economic and social development and industrial development. With the construction of advantageous majors and applied majors as the core, drive the construction and development of relevant professional groups, make continuous efforts in professional evaluation, construction of diversified cultivation model, optimization of curriculum structure and strengthening of practical teaching, and build a batch of specialties that meet the needs of local industry development.

4.4 Speed up the building of a dual-qualification teachers' team

Professional construction is inseparable from the high-quality and professional dual-qualification teachers' team. Applied colleges and universities should adhere to the principle of "internal training and external introduction", and build a team of teachers who are compatible with professional settings, familiar with the needs of industrial enterprises and have strong practical teaching ability. In terms of internal training, colleges and universities can guide and drive a group of teachers to the industry or key departments of enterprises to take part in enterprise engineering practice, technical service and product research and development through co-construction of cooperation platforms with enterprises in key industries in the region, and strive to promote the transformation of teachers into the dual-qualification. In terms of external introduction, the construction of applied majors should introduce a group of skilled talents with many years of working experience in the industry and enterprises, especially the outstanding talents who have won awards in the skill competitions at or above the provincial level. At the same time, colleges and universities should establish good cooperative relations with industries and enterprises, and employ industry experts or technical backbones with rich work experience and competent for teaching tasks as part-time teachers, which plays an important role in guiding the experimental training of teachers and students. In this way, the collaboration and complementarity between professional and part-time teaching teams can not only better serve professional teaching, but also bring vivid and flexible teaching methods, such as cooperative teaching, experiential teaching and interactive teaching [6].

4.5 Improve the long-term mechanism for collaborative innovation education

Collaborative innovation is the breakthrough and key point to solve a series of problems in education, industry and enterprise development. At present, the existing school-enterprise cooperation is mostly the initiative of the school to seek enterprise cooperation, but the enterprise integration into school-enterprise cooperation is insufficient motivation. The cooperation content also stays only in relatively superficial aspect such as the project support, providing the student practice and the enterprise staff training. Such cooperation does not achieve the real sense of school-enterprise collaboration, production and education integration, and it is difficult to form a virtuous and sustainable development cycle mechanism. Therefore, in order to improve the enthusiasm of industrial enterprises to participate in deep cooperation, colleges and universities should actively improve the long-term mechanism of collaborative innovation education. First, organize a leading group to focus on top-level design and macro-control. Second, in terms of specialty setting, talent training quality, enterprise practice, joint tackling, staff quality and other aspects, explore the profit driving points of enterprises' participation in collaborative innovation and establish long-term and stable cooperative relations. Third, we should formulate systematic rules and regulations, improve incentive policies for enterprises to participate in school-enterprise collaboration, and ensure the normalization and standardization of school-enterprise collaboration

innovation.

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