

# **Innovation on Personnel and Education Promotes Innovation on Personnel Training and Technogy Service Model**

Zhong-Pei Han

Zhejiang Pharmaceutical College  
No. 888, East Section of Yinxian Avenue, Gaojiao Park (South District)  
Ningbo, Zhejiang, China  
hanzp@mail.zjpc.net.cn

## **Abstract**

In the light of the problems of personnel training and technical services existing in the industrial park, the paper tries to explore the occupation education reform actively. Take the production-teaching-research base as a platform, innovate the mode of personnel training and technological service, promote the sustainable industrial upgrading and the development of higher vocational education.

**Key words:** innovation on personnel and education ; industrial park; personnel training; technical service

**Foundation project:** This paper is the result of the soft science research project of Zhejiang Province in 2013, product of "Talents training and science and technology service model integrated into industrial clusters" (project number: 2013C35078).

## **Introduction**

Historical experience and training objectives and specifications of Higher Vocational and technical education determine that it must be closely integrated with enterprises in order to successfully accomplish its historical mission. Therefore, more and more higher vocational colleges have been or are vigorously exploring the ideas and methods of integration of industry with education in order to meet the industry's demand for technical application-oriented personnel training and providing scientific and technological services. Talents training and the need to provide scientific and technological services.

### **Taking Meeting the Development Needs of Biomedical Industry as the Motive Force of Institution's Innovation and Reformation**

Biomedical industry is a special industry, directly related to safety of lives. Zhejiang Province is a major pharmaceutical province. The pharmaceutical industry is a regional industry with characteristic competitive advantage. It is one of the key points of transformation and upgrading of 11 industries, and also an important part of the development of strategic emerging industries. Pharmaceutical industry has become the pillar industry in Hangzhou, Taizhou, Shaoxing, Jinhua and other cities, and has become an important force to promote local economic development. In the province, a new pattern of industrial parks has been formed, which takes industrial parks

as the carrier, linking up upstream and downstream products, and gathering and developing enterprises, such as Taizhou Pharmaceutical and Chemical Industrial Park, Hangzhou New Pharmaceutical Port National Biomedical Industrial Base, Huzhou South Taihu Biomedical Industrial Park, Zhejiang Zhoushan Marine Biomedical Industrial Park and Shaoxing Bin. Haixin Biomedical Industrial Park, Jinhua Jinxi Modern Biomedical Industrial Park, etc. The provincial government has promulgated the 《Zhejiang Biological Industry Development Plan (2010-2015) 》 and other policies, which has strongly supported the rapid development of the pharmaceutical industry. In order to promote industrial upgrading and improve the quality of personnel training, Zhejiang Pharmaceutical College and many other colleges have actively participated in the construction of public service platform in biomedical parks.

**1. Satisfying the market demand is the motive force for the development of vocational education.** Talents training should be in line with the market and inject continuous power into the development of higher vocational colleges. Firstly, colleges should meet the needs of industries, build service platforms, integrate government, industry, enterprises and college resources to jointly build public training bases, research service platforms and social service platforms [2]. Secondly, major joint with enterprise needs, according to market needs and enterprise requirements to set up major and formulate enrollment plan. Thirdly, students should meet the needs of jobs, adhere to the combination of work and learning, implement task-oriented project courses, achieve joint seamlessly, let students go out of the colleges and enter the enterprise immediately, and save the manpower, material and financial resources needed for enterprise training.

**2. Satisfying industrial transformation and upgrading is the motive force of college-enterprise cooperation and development.** Some labor-intensive and resource-intensive bio-pharmaceutical industries in China must do a good job in industrial transformation and upgrading in the face of severe situation. Enterprises can solve various kinds of technical problems by taking advantage of the college and scientific research institutes, which have dense human resources and strong scientific research ability. Institutions of higher learning must actively integrate into the local economic construction, plan the "demand side" and "supply side" of the industry as a whole, give full play to the advantages of talents, intelligence, technology and culture of the colleges, and lead the transformation and upgrading of the industry. Only in this way, the cooperation between colleges and enterprises could be

motivated; talent training and scientific research services could be supported.

**3. Satisfying resource sharing is the driving force of sustainable development of Industry-College-Research cooperation.** Under the condition of market economy, the essence of cooperation between Park government and colleges, colleges and enterprises, and between government and enterprises is mutual benefit, resource sharing and ecological development. Through college-enterprise cooperation, the college builds multi-functional training bases and other facilities in the pharmaceutical industry park to solve the problem of insufficient resources such as "double-qualified" teachers and training sites, and to improve its own benefits. Enterprises are the participants and beneficiaries of higher vocational education and scientific and technological services in industrial parks. Through cooperation, the level of human resources and the transformation of scientific and technological achievements of enterprises can be improved, and the internal motive force of enterprise participation can be stimulated. The government of the industrial park can enhance the cultural connotation and brand strength of the park through cooperation. Explore the resource sharing and operation cooperation mechanism of "tripartite linkage of government, college and industry".

#### **The Existing Problems of Talents Training and Scientific and Technological Service Model in Pharmaceutical Industrial Park**

**1. Lacking of reciprocity and symbiosis, and the platform for comprehensive cooperation has not been formed yet.** The mutually beneficial symbiotic relationship of enterprises in industrial parks has formed a pluralistic economic organization with complementary advantages and benefit sharing. Innovation is an interactive process. It is impossible for colleges and enterprises to innovate in isolation. Colleges and universities integrated into the park provide enterprises with innovative results, pilot equipment and talent protection; enterprises provide colleges and universities with support of talent market, cooperation platform and practical training posts, so as to form a pattern of complementary advantages and coordinated development. However, there is still a lack of reciprocity and symbiosis in the current cooperation between industry, education and research in pharmaceutical industry parks. There are fewer platforms for comprehensive cooperation. Most of the cooperation is short-term, maintained by feelings and relationships. There is a lack of effective cooperation mode and mechanism between colleges and enterprises.

**2. Lacking of synergistic competitiveness and the formation of innovation ecosystem.** Collaborative competition is for common development. High-tech industrial technology has the characteristics of complexity, clustering and comprehensiveness. No enterprise can have all patents and technologies. Enterprises need to coordinate development. Competition is not usually a life-and-death relationship, but more a collaborative relationship. Through competition and collaboration, the ultimate goal is to achieve common development with the relevant colleges, research institutes and enterprises in the pharmaceutical industry park.

**3. Lacking of complementarity of resources and the formation of interest community.** At present, there are both pharmaceutical enterprises and related enterprises in pharmaceutical industry parks, but most of them are not resources integration required by the professional division of labor, but more enterprises introduced by the government through investment invitation. Resources sharing and complementary advantages are insufficient. Interests are the fundamental source of the driving force for cooperation among all parties. In order to re-educate people, enterprises and the government, it is necessary to build a college-enterprise interest community with "talent co-education, process co-management, achievement sharing and responsibility sharing". At present, the pattern of overall integration of education and industry and benign interaction has not been fundamentally established. The mode of college-enterprise cooperation and practical education of talents has not yet been fundamentally formed, and college-enterprise cooperation is in a shallow and spontaneous state.

**4. Lacking of sustainability of development and the absence of a scientific mechanism.** The effective development of college-enterprise cooperation itself needs a certain system and rules. At present, there are some problems, such as the low enthusiasm of enterprises to participate, the unstable cooperation relationship between colleges and enterprises, the low degree of cooperation, and the low degree of enterprise participation. From the enterprise's point of view, in the cooperative college-running, it will more or less affect the production and safety of enterprises, especially in the event of accidents, it will have a great impact on enterprises. Therefore, more enterprises adopt the attitude that more is better than less, and are unwilling to actively and actively cooperate with college and enterprises. College-enterprise cooperation lacks persistence.

#### **The Existing Problems of Talents Training and Scientific and Technological Service Model in Pharmaceutical Industrial Park**

Promotes the close connection and deep integration of vocational education and industrial development, distributes its locations in the areas where the pharmaceutical industry is concentrated, and explores the multi-functional training base of integrating to service colleges and local teaching and training, public service platform of production, teaching and research of real estate enterprises, continuing education and job training [1]. We should actively innovate the mode of integration of industry and education in order to promote industrial upgrading and sustainable development of higher vocational education.

**1. Emphasising comprehensiveness and combing talent training with service industry.** In order to do a good job in personnel training and social services, we must do a good job in several aspects in line with the requirements of common development. The first is openness. To build a multi-functional training base in industrial parks, we should do a good job of openness, build a vocational education overpass in personnel training, and open up the advanced channels of secondary and higher vocational education, undergraduate and professional master [5]. Secondly, the construction of training bases should be in line with the local economy and serve the pharmaceutical

industry. Thirdly, the construction of training bases in industrial parks should integrate teaching and training, scientific research, technical services and cultural inheritance to ensure the sustainable development of multi-functional training bases.

**2. Emphasising the participation of all parties to jointly build a multi-functional training base.** Cooperates with the Management Committee of Biomedical Industrial Park and relevant enterprises to give a full play to the advantages of all parties and actively explore the construction of multi-functional training bases serving colleges and local teaching and training, public service platform of production, learning and research of colleges and enterprises, continuing education and on-the-job training.

**3. Emphasising the expansion of functions and building three overpasses of medical vocational education and scientific and technological services.** One is to build an overpass for talent cultivation. Combined with local secondary vocational schools, combined with the teaching resources of higher vocational colleges and undergraduate resources of adult education, a bridge linking secondary vocational schools to enterprises, secondary vocational schools to higher vocational colleges, and enterprise employees' academic qualifications to higher vocational colleges and master's degree is formed [5]. The second is to build an overpass for skill training. Preparing for the establishment of regional medical vocational education group, strengthening the training system of integration of vocational skills training, vocational qualification appraisal and academic education, establishing a vocational, vocational and applied undergraduate education corresponding to the acquisition and cohesion of vocational qualifications of intermediate, senior and technical workers, and forming a complete academic qualifications education model. "Through Train" for Education and Vocational Qualification Appraisal [6]. The third is to build an overpass of medical science and technology services and industrial services. With the support of relevant government departments, industrial policy service centers, regional public training centers, joint training centers for enterprises and public service platforms for inspection and testing should be established in the pharmaceutical industry park. According to the needs of enterprises, the government (park management committee), enterprises and secondary and higher vocational institutions should be established. Industry services overpass, the implementation of government, colleges and universities and enterprises to share resources, and have a win-win situation [1].

### **Innovate the "demand-oriented, two-way cooperation" talent training mode to improve the quality of talent training**

**1. Highlighting demand orientation, so that professions and industries, courses and posts docking.** It is an important function of higher vocational education to cultivate applied talents required by the industry. The Circular of the Ministry of Education and the Ministry of Finance on Supporting Higher Vocational Institutions to Promote the Development Ability of Professional Service Industry (No. 11 of Teachers' Achievement [2011]) points out that we should adhere to specialty construction, personnel training and

industrial development, and take the initiative to train excellent and high-end skilled professionals to regional pillar industries, key industries and characteristic industries. [7]. Therefore, it is necessary to conduct adequate market research, do a good job of professional and market docking, clear training objectives, highlight students' professional quality and vocational skills training in curriculum settings, so that curriculum and post requirements docking.

**2. Highlighting practical teaching, so that students' professional education and qualification certificates can be docked.** College develops curriculum system based on working process, pays attention to the curriculum reform of integrating theory and practice in normal professional education, makes full use of local training bases, emphasizes the clear professional orientation based on Vocational post requirements, and provides students with learning opportunities to experience the complete working process. Secondly, "double certificate education" is also implemented, requiring that in the process of learning, not only to obtain a diploma for the purpose, but also to obtain a vocational post certificate. The school offers relevant courses, reforms assessment, examination methods and evaluation system in accordance with industry standards and vocational qualification assessment requirements, and provides convenience for students' training and examination of vocational qualification certificates.

**3. Highlighting the restructuring of teachers, so that full-time and part-time teachers can be trained and trained in enterprises.** In order to serve enterprises and improve teachers' practical ability, the school encourages teachers to go to enterprises for on-the-job training to train "double-qualified" teachers. At the same time, based on the principle of "not seeking all, but seeking to use", the school introduces experienced professionals and technical abilities into the school's part-time teacher resource bank and implements dynamic management. At the same time, give full play to the advantages of the training base, and increase the intensity of teachers' in-school training. Formulate teacher practice plan, regularly go to the industrial enterprises to take up post training, improve teachers' practical work ability, accumulate work experience of industrial enterprises, realize the connection between teachers' teaching and industry, and promote the formation of teachers' social service ability.

### **Innovating the "Problem-oriented, Collaborative Innovation" Science and Technology Servicing Model to Improve the Ability of Servicing Industry.**

**1. Highlighting the guidance of demand, coordinating production and education, and constructing the information platform of scientific and technological innovation in industrial parks.** Together with pharmaceutical industry associations and local enterprises, we will build an information platform for scientific and technological innovation in industrial parks, grasp the needs of enterprises and help solve the development problems. One is to innovate the information management platform of biomedical industry, make full use of relevant tangible and intangible resources to build a permissive environment for the development of the industry. The second is to help the pharmaceutical industry and



enterprises strengthen exchanges and cooperation with innovation carriers such as colleges and scientific research institutes at home and abroad, and promote the gathering of innovative talents. Thirdly, we should establish the core technology projects, subject databases, cluster service organization databases and expert databases needed by the province's biomedical industry to support the technological innovation of enterprises.

**2. Highlighting the problem-oriented, cooperating with colleges and enterprises, and building a scientific and technological innovation service platform for industrial parks.** We will further promote collaboration between colleges and small and medium-sized enterprises, adhere to problem orientation and provide science and technology innovation services according to the requirements of effective services and scientific services, and categorize the needs of enterprises. Firstly, we should establish an innovation system for the biomedical industry, integrate scientific and technological resources, and work with relevant units to jointly develop it. The second is to build a public technology platform for biomedicine, providing scientific research facilities, pilot bases and testing platforms for biomedicine enterprises, so as to improve the level of research and development and reduce the cost of research and development.

**3. Highlighting market participation and college-site collaboration to build an incubator platform for scientific and technological innovation in industrial parks.** The development of industrial agglomeration needs the joint efforts of the government, scientific research institutions, colleges and universities, financial institutions, customers and industry associations. Establishing incubators and University Science and Technology Parks in biomedical industry parks to jointly introduce and cultivate technology-based small and medium sized-enterprises (SMEs). The emphasis is laid on improving the investment profitability of incubators and University Science and Technology Parks by building project resource platform of biomedical industry, providing management consulting, market expansion, entrepreneurship training and intellectual property protection services for enterprises.

#### **Innovating the safeguard measures of personnel training and scientific and technological service mode oriented to industrial parks**

**1. Establishing a policy-oriented mechanism to enhance the level of macro-control.** We should strengthen the top-level design of service industry parks in colleges and universities, formulate relevant policies and regulations from the strategic height of promoting industrial transformation and upgrading, establish policy guidance mechanism conducive to college-site, college-enterprise cooperation and resource sharing, and improve the quality of personnel training and the level of scientific and technological services.

**2. Establishing the mechanism of resource integration to improve the level of collaborative innovation.** The purpose of innovating the mode of talent cultivation and science and technology service oriented to industrial parks is to optimize the resource allocation of college and industrial parks. Actively promote collaborative innovation among colleges, Park governments and enterprises, so that different innovation

subjects can play their due roles in the chain of collaborative innovation and achieve high-efficiency input and output.

**3. Establishing benefit-sharing mechanism to improve the level of cooperation between industry and college.** Vocational colleges and industrial parks should work together to form various forms of college-enterprise cooperation modes through various forms, means, channels, training and investment bodies at different levels. We should deal with the existing problems in the distribution of interests among the parties involved in the cooperation of industry, college and research institutes, and find the best fitting point for the interests of the governments, enterprises, colleges and scientific research institutes, so as to jointly develop and share the interests. Promoting the orderly flow of innovative elements and improve the level of Industry-College-Research cooperation.

**4. Establishing market operation mechanism to enhance the level of sustainable development.** Following the rules of market operation and operate according to the characteristics and rules of market operation. Actively facing the market, promoting the connection of academic education, vocational qualification education and social training, integrating teaching, practical training, scientific research and social services, and improving the level of sustainable development.

#### **References**

- [1] Han Zhongpei. Serving the Pharmaceutical Industry Park to Build a Practical Training Base for Higher Vocational Education [J]. *China Higher Education*, 2014 (12): 35-37
- [2] Wu Jiansheng et al. [J]. Exploration of the "three-tier docking" mode of Running Local Higher Vocational Colleges [J]. *Higher Education Research*, 2010 (11): 90-92
- [3] Wang Zhenhong. Constructing Interest Community and Promoting Deep Cooperation between Institutions and Enterprises [J]. *China Higher Education*, 2011 (3): 61-63
- [4] Han Zhongpei. Building Vocational Education Overpass for Industrial Park [J]. *Vocational Education Forum*, 2014 (36): 67-69
- [5] Xie Hong, Lu Hong. Construction of a "flyover" between the modern vocational education system and the training of skilled personnel [J]. *China Vocational and Technical Education*, 2013 (3): 25-29
- [6] Ludong; Wang Xiaodong. Relying on Vocational Education Group, Constructing Vocational Education Talents Training Overpass [J]. *Jiangsu Higher Education*, 2011.11.5
- [7] China News Network. WWW. JYB. CON [EB/OL]. 2010.10.19