Exploration on the Construction of Industrial Colleges of Local Normal University

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Abstract—Due to the lack of engineering application-oriented research ability in local normal universities, and the lack of service industry enterprises or local economic and social development experience, how to establish industrial colleges has become the current problem that some local normal universities need to solve. Based on the existing practice of colleges and universities, this paper analyzes the operation mode of industrial colleges, and then puts forward a new mode for the establishment and operation of industrial colleges according to the weak characteristics of science and engineering in local normal colleges, to improve the quality of talent cultivation in normal universities.

Keywords—industrial college; normal university; cultivation of talents

I. INTRODUCTION

Industrial college construction has become one of the work contents of normal universities. Industrial colleges need to cooperate with many parties according to the cooperation agreement, complement engineering education advantages, innovate and cooperate, promote the teaching reform and development of colleges and universities, find a new way of talent cultivation and industrial cultivation, and inject new vitality into the regional economic development. However, there are some problems in the development of normal universities, such as vague orientation of running a school, narrow talent service industry and insufficient motivation of teachers for the development of industrial colleges. The idea of running a school, the plan of talent training and the mode of talent training of colleges and universities cannot match the economic development and scale of the region, and it is difficult to meet the needs of various types of talents for regional development. In the upgrading of industrial structure in this region, the institutions of higher learning lag behind the industrial development in this region in system planning, specialty setting, curriculum setting, teaching content, teaching methods and teaching means. Based on the development of industry colleges in local universities, this paper analyzes the difficulties in the development of industry colleges in normal universities and puts forward the key points of building industry colleges in normal universities, to provide some references for building industry colleges in local normal universities.

II. CHALLENGES IN THE DEVELOPMENT OF INDUSTRIAL COLLEGES IN NORMAL UNIVERSITY

A. Non-Normal Majors Lack the Social Influence

Normal colleges and universities are characterized by normal education. Traditional normal majors, especially those of traditional courses such as Chinese, Mathematics, English, Physics, Chemistry and Biology, are given the most attention. Therefore, normal majors will develop faster than non-normal majors, have better historical accumulation, have more abundant teachers and have greater social influence. Especially in the minds of many students, the impact is particularly large, most of them are directed to the teacher's professional to study, teacher's professional to their hearts of the positioning is very high. Even quite several candidates for non-teacher professional existence of natural misunderstanding or even antipathy. In terms of the enrollment rate of each major and the change of majors in our school in the past three years, the overall first-choice admission rate of the normal major is 100%. Without the first-choice registration for the normal major, it is almost impossible for them to be admitted. On the other hand, for some popular majors, such as computer science, electronic information engineering and financial mathematics, the admission rate of the first choice of these non-normal majors is about 30%. Most of these students still have the mentality of changing their majors. Even after a semester or even a school year, most of them try their best to change their majors to normal schools. Industrial college mainly relies on the development of non-normal majors, especially the foundation of engineering majors. Therefore, if we want to set up an industrial college in a normal university, the biggest problem is that students are not interested in non-normal majors. They have little knowledge of the learning content of non-normal majors and do not know the advantages of studying this non-normal major. Therefore, the first step for a normal university to become a good industrial college is to improve the talent cultivation characteristics and employment
advantages of non-normal majors, especially engineering majors, and enhance the sense of pride of non-normal majors.

B. Non-Normal Majors Lack Engineer Resources

First, the investment in engineering lacks resources. Because be not pedagogical major, especially engineering major, its investment is very huge. The key to the construction of industrial college is engineering major, and the development of engineering requires abundant capital to be invested into the construction of engineering. Engineering majors are very costly in both the purchase of experimental instruments and equipment and the investment in scientific research. Second, traditional normal universities do not pay enough attention to the construction of practical infrastructure such as engineering teaching and training. They believe that the teaching and training base is similar to the internship and practice of normal majors, and only needs to use workshops or places of enterprises outside the university. The serious shortage of engineering talent training sites leads to the decrease of students' engineering practice ability. Third, due to the lack of social resources, the early graduates of normal universities go to primary and secondary schools rather than engineering industry, and the contacts they form do not meet the development requirements of engineering industry colleges. Industry colleges need the support of various industries, especially the engineering industry.

C. Teachers in Normal Colleges and Universities Are Short of Teachers

Normal universities are short of qualified faculty for engineering development. Engineering education needs engineering teachers who have accumulated and formed the cultural characteristics of our school in the long-term development process and have specific requirements for the knowledge, ability and quality framework of engineering teachers. Normal university lacks the experience and historical precipitation of engineering development. The lack of teachers not only exists in the traditional teachers' majors, but also in some famous universities with strong power. The professional education or vocational education of industry college belongs to high-tech professional education, and it especially needs some teachers with industrial practice experience. However, teachers in normal colleges and universities are mainly engaged in teaching, teaching research or scientific research, because the professional staff engaged in industrial technology research is very limited, resulting in the lack of teachers in normal colleges and universities and high-tech industries match.

D. Corresponding Incentive System in Normal Universities

Normal colleges, especially local normal colleges, are mainly teaching-oriented, and lack of corresponding incentive mechanism in terms of system for scientific research and industrial cooperation, and do not pay due attention to the research work related to industrial technology. Teachers lack the motivation to connect with the industry and the ability to conduct cooperative research, and their ability is gradually degraded, which makes it difficult to meet the requirements of the current industrial development. In addition, the lack of flexible and free credit certification system is limited to the fact that students must completely follow the credit implementation of talent training programs, and students cannot choose the learning schedule and other learning institutions by themselves, which hinders students' enthusiasm to participate in some enterprise industry courses.

III. EXPLORING THE CONSTRUCTION OF INDUSTRIAL COLLEGE

It is a comprehensive and systematic project to do a good job in the industrial college, which requires the high attention of school leaders and the close cooperation between relevant school departments such as the office of academic affairs and corresponding professional colleges, to form a well-run industrial college. For the industrial college, we hope to build it into an important means that can profoundly influence the professional development setting of the school, profoundly promote the curriculum teaching reform, and cultivate talents to meet the needs of the current society and the needs of the industry. The fundamental goal of industrial college is to cultivate talents suitable for the industry.

A. Industrial College as The Breakthrough Point

Industrial college is to deepen school-enterprise cooperation, industry-learning cooperation, industry-teaching integration, and collaborative education, accelerate industrial development on a higher platform, and take another solid step toward building a high-level application-oriented university with distinctive characteristics. It based on industry, service industry, adhere to the industry development needs "what kind of person", the school will train the ideas of running a school of "what kind of person", based on market demand, industry standards, professional needs as the guidance of the talent cultivation system, deepen the reform of the education teaching, improve the talent training standard and mode, enhancing university-enterprise interaction and communication, promote the implementation of the double main body education and enhance the talent training and the demand of industry enterprises fit, implement training of talents "to use, with good", promote the win-win result, in order to better service industry development and regional economy.

There are many difficulties in the development of science and engineering in normal universities, so the industrial college of normal universities cannot follow the path taken by ordinary universities of science and technology, and it needs to find another way [1-2]. First, the characteristics of normal universities should be highlighted, and the education-related industries should be chosen to cooperate in the industrial colleges. Early education, early childhood education and after-school tutoring are huge industrial chains and the advantageous industries of normal universities. Relying on education-related industries and normal colleges to develop industries, the college will gradually expand to non-normal majors after accumulating certain experience, that is, the model of industrial college construction in which normal majors lead the development of non-normal majors. According to this model, the first choice is a non-teacher professional industry or education leading enterprise development industry college. For example, as an entry level education model to cultivate high-quality and skilled personnel, the concept of STEAM education
has been deeply popular, and the whole STEAM education and training industry has been accelerated. Normal universities can consider STEAM education industry as a breakthrough.

B. Establish Relevant Supporting Systems for Industrial Colleges

During the construction of industrial college, both the university and the enterprise should make clear the cooperation objectives, implementation subjects, forms of cooperation, promotion measures, supervision and inspection, and establish the basic institutional framework of school-enterprise cooperation. In the process of deep integration of production and education, existing teaching resources should be fully tapped to improve the pattern of school running and broaden the new ideas of school-enterprise cooperation in training talents.

The establishment of industrial college is not an isolated operation but requires the guidance of a series of supporting policies of land, finance, personnel and teaching management, as well as the coordination and guarantee of a series of supporting systems and mechanisms such as enrollment, teaching and employment [3]. At present, most of the above policies and norms have not been established, and many institutional barriers restrict enterprises from participating in the construction of industrial colleges, resulting in the difficulty of real cooperation between enterprises and universities. Once break through system difficult problem, industrial institute can have very big development. For example, ZTE college of Xinyu University is quite distinctive in the national industry colleges. ZTE college of Xinyu University is a secondary college jointly established by Xinyu University and ZTE Corporation.

C. The Cooperation Between Universities and Enterprises

The construction of industrial college is not only a reflection of the school's orientation, but also a way to improve the school's ability to serve local economy and society and improve teachers' ability of scientific research. To be on the basis of the existing service place industry-university-institute cooperation platform, the group applied talents training as the main body, pillar industries of tight butt area, increase the intensity of fusion, university-enterprise cooperation education, actively explore a variety of industrial school running mode, make a key step in the development of local transformation, grounding for regional industry development needs to create more and better high quality applied talents.

The key for an industrial college is to partner with leading enterprises in a specific industry. This enterprise sends senior engineers to participate in the whole process of formulating talent training program, curriculum outline, teaching teachers, providing practical teaching base and graduation thesis topic in the industrial college. In particular, internship and graduation thesis, to solve the practical problems of the enterprise. Taking enterprises as the center, it has effectively solved the serious shortage of practice bases for non-normal majors in normal colleges and universities, as well as the teaching problem of how to cultivate application-oriented talents for non-normal majors.

The path of reform is the route of industrial college reform pilot; The reform of path is the adjustment of industrial college reform pilot process. Pilot reforms on the one hand, industrial institutions should have clear industrial service oriented, in accordance with the chain building courtyard, with chain into a courtyard, docking and specific industry leading enterprises such as depth of partner cooperation, exert the principal role of partner collaborative education, and the corresponding construction, management and operation of the responsibility of the function, the partner to the advantage of resources industry college, precise joined in the whole process of talent training. On the other hand, industrial college reform pilot has relative stability and dynamic adjustment. With the shortening of industrial transformation and upgrading cycle and the acceleration of the integrated development frequency of new industries and new formats, the local specific path of industrial college reform pilot will be appropriately adjusted with the change of industrial development demand, which will become the necessary means to strengthen irreplaceability and sustainability.

In the construction process of industrial college, it is necessary for all parties to reach a voluntary agreement. In the future development process, mutual benefit and mutual benefit shall be achieved through sincere cooperation to achieve common development of both parties and realize the fair and equitable distribution of interests among all members as far as possible [4-5]. In the process of cooperation, the clear distribution of rights and responsibilities among members should be ensured and mutual supervision should be achieved. In the process of cooperation, the resource information should be open and transparent, fully cooperate, and coordinate, guide and implement the cooperation between the two sides [6].

IV. SUMMARY

Normal colleges and universities in the current rapid high-tech development in the construction industry institute, and the national development planning, regional economic development present situation, the universities own factors, based on the current popular industry, especially in the forefront of high-tech industry development and trend of clear cooperation agreement and related enterprises, formulating and industry, supporting system. In terms of teaching, the curriculum system of talent training should be updated in a timely manner. Colleges and universities should keep close contact with the industry in terms of teaching and curriculum, track the development of the market, and employ scientific and technological personnel from relevant leading enterprises in the industry as the faculty of the industry college, so that students can master the latest industry and new technology in a timely manner.

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