A Study of College-Enterprise Co-Cultivation of Applied Innovative Talents

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***Abstract*—Applied innovative talents cultivation is the main goal of colleges' and universities' talent cultivation. From the whole developing process of higher education, it is the inexorable trend that teaching and research development is to cultivate students' applied innovative ability, engineering design problem-resolving ability and ability to adapt to social regional economy growth. Talent cultivation requires resource complementation between colleges and enterprises and them to make full use of their advantages. Colleges are mainly responsible for students' specialized theories and fundamental knowledge education; experimentation, practice and practical training are to further the understanding of fundamental theories and knowledge; while the actual ability to resolve problems should be trained in enterprises. Therefore, the key approach of college-enterprises cooperation is to construct a practical teaching system of college-enterprise co-cultivation of applied innovative talents.**

Keywords—applied innovative talents; college-enterprise cooperation; practical teaching system

I. INTRODUCTION

With the rapid development of higher education, talent cultivation has the tendency of diversifying. As for current general regional and social development trend, high education's inexorable trend is to cultivate applied innovative talents. Indeed, colleges have their own special advantages in terms of basic theory and knowledge education; however, it is difficult for them to cultivate students' ability to serve society, resolve engineering problems and of corporate culture, which requires enterprises to participate in related training. Only in this way can applied innovative talents be cultivated. The experimental apparatus in laboratory, training base and engineering training center is to verify the problems appearing in practice; however, the apparatus and equipments used by enterprises is for the company's maximum profit in competition. Engineering graduates to varying degree are divorced from enterprises, so they cannot immediately adapt to companies' jobs. For their survival, development and competitive advantages, enterprises must possess the most advanced production line, technological equipments and manufacturing technologies, which are not possible to come true in colleges. Therefore, by the way of college-enterprise cooperation, students can have access to the most advanced production equipment and manufacturing technologies. After graduation, they will be the well-popular quick mastering workers. How to construct practical teaching cultivation system is the problem that should be discussed by colleges and enterprises.

II. TALENT CULTIVATION PATTERN

It is a generic term of education and teaching process which embodies relatively stable teaching pattern and which consists of education objective, goal, contents, ways, approaches and quality evaluation standards under the instruction of a certain education thoughts and concept. Among all key factors, the education objective of undergraduate talent cultivation pattern is obviously undergraduates; other factors involve four aspects: they are talent cultivation goals, curriculum system and teaching contents, evaluation system, and teaching approach. College-enterprise cooperation talent cultivation pattern is not just introducing enterprises to cultivate students. It is generally acknowledged that it is a co-formulated talent cultivation scheme by colleges and enterprises; they cooperate in faculty, school conditions. By the way of alternating working and studying to teach in colleges and enterprises, teaching process, production process and actual working process can be combined as a talent cultivation pattern. Constructing college-enterprise talent co-cultivation pattern can be conducted for the above-mentioned "four key factors."

III. TALENT CULTIVATION GOALS

Generally speaking, local undergraduate schools aim to cultivate high-level applied talents for technology-intensive enterprises, but specialized talent cultivation goals cannot be equal to enterprises' and industry's talent demand goals. Social Adaption Theory is one-sided. Therefore, when determining applied undergraduate talent cultivation goals, when considering enterprises' and industry's talent demand goals, the basic goal of higher education also should be considered, i.e., to make people improve; namely, students' psychology and intelligence can be developed; their equality are improved;

they can systematically master specialized knowledge and skills and basic science research method. For local undergraduate schools, they have natural advantages in adopting college-enterprise cooperation to determine cultivation goals. On the one hand, when enterprises participate in formulating talent cultivation goals, their demand can be furthest considered by colleges; on the other hand, colleges can adhere to the "self-centered" principle, obeying the principles and requirements of higher education to formulate scientific and reasonable talent cultivation goals.

College-Enterprise Cooperation is the Foundation to Implement Production-Studying Education.

College-enterprise cooperation has become the common approach of world's higher education development. However, China's college-enterprise cooperation is just a wishful thinking. In order to conclude college-enterprise cooperation experience, clear up research fruits of college-enterprise cooperation and analyze deficiency of college-enterprise cooperation research, although there are more than twenty-year span, many problems on college-enterprise cooperation have not been settled down. For example, during college-enterprise cooperation, enterprises do not have strong positivity; inadequate legislation, expenditure shortage.

IV. The Connotations of "College-Enterprise Cooperation, Working-Studying Combination" Talent Cultivation Pattern Consist of Three Respects

First, high-skilled talents cultivation goals refer to cultivating high-quality and high-skilled talents needed to meet the need of regional and social economy development. Being high-quality requires the talents have staunch political conviction, great ideology and morality (especially professional ethics), strong legal awareness, honesty and trustworthiness, and post-loving characters. Being high-skilled refers to having strong adaption capability in production, construction management and service position; it also means that staff should have horizontal and upward transferring capability among professions (post group).

Second, college-enterprise cooperation means that taking full advantages of enterprise and college's education resource and education environment, utilizing enterprise and college's talent cultivation advantages and acting on students to accomplish the goal of talents cultivation. College-enterprise cooperation mainly embodies the sharing of education resource (including, manpower, faculty, practice conditions, equipment and brand resources). College and enterprise co-stipulate cultivation plan and co-manage teaching process; they also cooperate with each other on cultural atmosphere.

Third, working-studying combination, working means that students practice in the enterprise or as a member of enterprise, they enhance their capability and systematize working process (substituted post exercitation, cultivating professional quality in working) to improve their capability. Leaning refers to that students study in school. Curricula construction and reform are not only basic, specialized knowledge and professional skills learning of improving quality, but also the focus and core of talents cultivation pattern transition.

V. Industry Requirements of Students' Employment

Employment is an important indicator to evaluate the quality of talent cultivation; therefore, cultivating applied undergraduates' demands that industry requirements must be considered in cultivation. Many undergraduate specialties are merged, so specialty caliber becomes wide and one specialized student has a wider employment range. Since there are many same types of enterprises, talent cultivation assimilation should be avoided; the pattern of college-enterprise cultivation should consider industry's capability requirements for students.

VI. Specialty Construction

We should take necessary measures to cultivate different senior specialized talents that meet the needs of society according to social division of labor and principles of talent cultivation. Such a social practical activity involves constructing specialized faculty team, laboratories, training base, also involves specialized teaching method, curriculum development, textbook construction, cultivation goals and cultivation plan. From the connotation of specialty construction, college-enterprise cultivation should not only meet enterprise' requirements, it should also have perspectiveness and expansibility. In the process of national and local economy development, some prospective technologies temporarily are not popularized due to the restriction of objective conditions, but these technologies are necessary from the trend of specialty development. Therefore, the connotation requirements of specialty construction should be considered by college-enterprise talent cultivation pattern.

VII. Requirements To Serving Local Economy

As local colleges, the talents cultivated by them should no doubt serve local economy. Especially, with the rapid development of China's economy, more and more high-level applied talents are required. If local colleges cannot meet the needs of local economic construction, their development will be largely restrained, and it is even a matter of life and death. The college-enterprise pattern can effectively cultivate talents that local economy needs; meanwhile, it can also accelerate the development of local colleges. For example, our school is located at the center of Central Plains Economic Zone of Henan Province, is the industrial base of air harbor construction, whose pillar industry is manufacturing industry.

During the practice of college-enterprise cooperation, some problems may have impact on many teaching links; some even prevent the implementation of such a pattern; therefore, the existing problems and its potential influence should be given full consideration. Apart from the regular problems related to policies and regulations, colleges' management and operating mechanism, the following points should be focused.

- Cooperating with medium-sized and small enterprises: In some regions and industries, medium-sized and small enterprises (MSE) have become the mainstream. How to effectively cooperate with MSE is a real difficulty in college-enterprise cooperation. To solve the problem, government and industry association

should provide preferential policies and assistance to motivate MSE to participate in college-enterprise cooperation; in addition, colleges' main duty is to know the available resources of MSE and select appropriate enterprises.

- Constructing double-qualified faculty: double-qualified faculty is required by college-enterprise pattern. Teacher of applied undergraduate colleges should not only have specialized skills, but also strong academic thoughts, high research and teaching levels. Therefore, colleges and enterprises should focus on cultivating such faculties.

- Cultivating students' academic competence: applied undergraduate talents are supposed to have application and practice ability of theoretical knowledge, and certain academic competence, which is the basic requirement of undergraduate education. Cultivating students' academic competence is very important for their post-development. Students are required to have high academic competence, research ability, and development and application ability of high-tech. Thus, the college-enterprise cultivation pattern should not neglect cultivating students' academic competence. Definitely, strengthening students' vocational ability cultivation is the basic requirement of college-enterprise pattern and the best pattern for applied talents cultivation.

College-enterprise cooperation is both successive and initiate. With the changing of social economy's development form, its method, connotation and approach also correspondingly changed. How to effectively propel this program is an important issue for colleges, enterprises and government. Only when colleges, enterprises and government co-work, practise and innovate this pattern can positive and efficient effects can be generated.

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