

Research on Application-oriented Undergraduate Education Based on the Deep Integration of Industry and Education

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Abstract: Through in-depth analysis and empirical analysis of the typical problems existing in the current application-oriented undergraduate talent training process in China, taking Guangdong Province and its surrounding application-oriented undergraduate students as samples for on-the-spot investigation, and taking improving the quality of talent training as the fundamental goal, this paper explores a set of modes and current problems of collaborative talent training between Higher Vocational Colleges and undergraduate students, so as to provide reference for innovative talent training modes in various colleges, It provides theoretical and practical basis for the government departments to issue applied undergraduate talent training policies and the construction of modern vocational education system.

Keywords: Application-oriented, Undergraduate Education, Deep integration of industry and education.

1. Background

The decision of the State Council on accelerating the development of modern vocational education points out that it is necessary to speed up the construction of a modern vocational education system, guide the transformation and development of ordinary undergraduate colleges and universities. By means of pilot promotion, demonstration and guidance, guide a number of ordinary undergraduate colleges and Universities to transform to applied technology colleges and universities, and focus on undergraduate vocational education. Subsequently, hundreds of colleges and universities nationwide transformed to application-oriented undergraduate colleges and universities. Whether from the perspective of social demand for talents or from the perspective of national education development strategy, it has become an inevitable trend for local ordinary colleges and universities, as the backbone of the popularization of higher education, to transform and develop into applied technology colleges and universities.

The transformation from ordinary undergraduate institutions to application-oriented undergraduate institutions is of great significance for adapting to the new normal of economic development, realizing innovation driven development, promoting industrial upgrading, accelerating the establishment of a modern vocational education system and accelerating the adjustment of the structure of higher education.

After years of development, higher vocational colleges have accumulated a lot of experience in school enterprise cooperation and integration of industry and education. Compared with application-oriented undergraduate courses, higher vocational colleges have closer and deeper cooperation with enterprises. The cultivation of applied undergraduate talents lies not only in their solid professional foundation, but also in their ability cultivation, practical operation and social adaptability. The cooperation and organic connection between the Application-oriented Undergraduate Colleges and the higher vocational colleges make the application-oriented undergraduate colleges make full use of the close relationship

between the higher vocational colleges and enterprises, make use of the training and practice resources of the higher vocational colleges, promote the deep integration of production and education, and promote the all-round development of students. The research of this subject is of great significance to the cultivation of applied talents, the optimal allocation of resources, the development of enterprises and the improvement of local economic level.

2. Application Value

The training objective of Application-oriented Undergraduate Talents in China requires paying attention to the cultivation of students' professional quality and ability in the knowledge structure; In terms of ability training, it pays attention to the training of practical operation ability, innovation ability, professional ability, communication and coordination ability, and emphasizes the training of employment and entrepreneurship ability; In terms of quality structure, professional quality is emphasized. With the combination of higher education and collaborative education, undergraduate students can not only master a solid theoretical foundation, but also acquire excellent practical operation ability. The deep integration of production and education can not only broaden students' horizons, obtain the latest knowledge and skills, but also cultivate their noble professional quality, so it has high practical value.

3. Academic Value

1. From the perspective of collaborative education between higher education and undergraduate education, this topic, based on higher vocational colleges, studies the cultivation of Applied Undergraduate Talents under the deep integration of industry and education, so that higher vocational colleges and undergraduate colleges can give full play to their respective advantages, learn from each other, and make effective use of various resources. It not only reduces the waste of resources, but also cultivates high-quality applied talents with excellent knowledge and skills. This research has realized the balance of educational niche and enriched the relevant theories of

educational ecology.

2. Under the guidance of the "synergy theory", the research of this topic can provide reference for the innovative talent training mode of colleges and universities, and provide a theoretical basis for the reform of the education department in the training of applied talents.

3. The purpose of this research is to explore the training mode of high-quality applied talents. The deep integration of industry and education enables students to go deep into enterprises, understand and follow up the most cutting-edge research of the times, and reduce the retraining cost of enterprises for talents after employment. According to the theory of human capital, the role of human capital in economic growth is greater than that of material capital. The main means to improve human capital is education. Therefore, the investment in education is also the investment in human capital. The research of this subject provides a theoretical reference for relevant departments to formulate policies and regulations.

4. Research Status at Home and Abroad

4.1. Domestic Research Status

Through literature search, there is no research on the application-oriented undergraduate talent training of high-level university based on the deep integration of industry and education. There is less research on the high-level university based collaboration, while there are more research on the integration of industry and education and the application-oriented undergraduate talent training.

The research on the integration of production and education in application-oriented universities mainly focuses on the following aspects:

1) research on the system and mechanism of the integration of production and education in application-oriented universities. Yang X[1] (2020) proposed a multi-level and dynamic system and mechanism, that is, schools should strengthen cooperation with government departments, rely on vocational education groups, create school enterprise cooperation demonstration projects, and strengthen the construction of mutually beneficial mechanisms, so as to promote shallow cooperation to a deeper level. Qu W [2] (2017) put forward the viewpoint of "three points and one line", taking the quality of talent training as the lifeline, taking the school enterprise cooperation system and mechanism as the starting point, and earnestly grasping the key point of teacher team construction and the focus of social service. Lu L[3] (2019) put forward the "integration of two posts and two jobs", and summarized the innovation methods of system and mechanism of Vocational Education in the practice of industry education integration and school enterprise cooperation; Huang Shuai and Shang Qiang W Z[4] (2021) proposed that China's newly-built undergraduate colleges should focus on building a "capability based" talent training mechanism, and carry out systematic planning and construction from the aspects of talent training program reform, curriculum system, teaching methods, practical teaching and educational administration system; Liuxianqing and YIN Wen[5] (2015) proposed the construction of Vocational Education Park, Council system, asset management teaching system and industrial technology scientific research system to improve the quality of talent training and social service ability.

2) Research on the problems existing in the integration of production and education of applied undergraduate. Chan H[6] (2020) believes that the implementation of the industry education integration policy is not in place due to the imperfection of the implementation mechanism, the integration of teachers and the lack of enthusiasm of enterprises to participate in the industry education integration; researchers believe that the current integration of industry and education faces difficulties such as vague positioning, lack of funds, high risk of discipline and specialty adjustment, lack of in-depth cooperation between schools and enterprises, and difficulties in building a "double qualified and dual capable" teacher team; Tao Y[7] (2021) believes that the current application-oriented undergraduate industry education integration faces difficulties such as the lack of close connection between majors and industries, the difficulty of the school management mechanism to further promote the industry education integration, and the low enthusiasm of enterprises to participate. Fengzifang believes that there are some problems in the integration of industry and education, such as unstable cooperation, blocked cooperation channels, single cooperation mode, imperfect cooperation mechanism, deviated talent training, lack of innovation and entrepreneurship practice platform, backward teaching staff, weak teachers, unreasonable teacher structure, etc. Tianying J[8] (2009) pointed out that the application-oriented undergraduate colleges have insufficient depth of school enterprise cooperation in promoting the integration of industry and education, and backward teaching content and teaching mode, The current situation of teachers' non working phenomenon and the tendency of "emphasizing scientific research and neglecting teaching".

3) An analysis of the integration of production and education in applied undergraduate education. Zhang X[9] (2021) started from the dilemma of applied talent training, put forward innovative ideas, optimized the structure of the teaching staff, optimized the curriculum, carried out in-depth diversified cooperation, and opened up new channels for talent training. Zhang X proposed that to promote the integration of industry and education in applied undergraduate universities, it is necessary to improve the fit between the professional structure and the industrial structure, establish an incentive mechanism for the integration of industry and education, and improve the system guarantee for the integration of industry and education; Yaping L I[10] (2019) from the docking service to the top, designed a talent training mode integrating industry and education, docking industry and industry planning, focusing on characteristic majors, established a professional system to serve local development, docking enterprises to innovate enterprises, innovating collaborative education practice teaching platform, deepening cooperation content, docking industry master standards, creating an increasingly reasonable "double qualified" teacher team, docking with the government School and social resources, multi measures, improve the system and mechanism of the integration of industry and education;

The research on the cultivation of applied talents includes:

1) the orientation of the cultivation of applied undergraduate talents. Two requirements should be met in terms of training objectives: first, talent training should reflect the basic requirements of higher education and meet the academic standards of undergraduate higher education. Second, it must meet the special requirements of technical

undergraduate education, and the trained talents must be application-oriented and have strong technical practice ability; Application-oriented universities cultivate application-oriented talents who meet the needs of the society. Their knowledge, ability and quality structure have distinct characteristics, solid theoretical foundation, wide range of professional knowledge, strong practical ability, high comprehensive quality, and strong ability to apply, promote and convert science and technology.

2) The main problems in the training of applied undergraduate talents. There are some problems in the training of applied undergraduate talents, such as the disconnection between the orientation of talent training and the needs of economic and social development, the insufficient utilization and sharing of social high-quality resources, the outdated talent training mode, and the single path of talent training; Local universities confuse "Applied Undergraduate Talents" with "practical undergraduate talents" in the concept of training applied undergraduate talents, confuse "Applied Undergraduate Talents" with "applied specialized talents" in the orientation of talent training, oppose practical teaching with theoretical teaching in the teaching arrangement, and lack corresponding training and practical training in the construction of teachers, The teaching idea and teaching method cannot be innovated.

The research on high-level collaboration mainly focuses on the exploration of collaborative education mode. Shang L[11] (2019) proposed the school running orientation and development goals of local undergraduate colleges and universities from the needs of the "secondary transformation" of local undergraduate colleges and universities, discussed in detail the collaborative education model, and divided the collaborative education model into school enterprise collaboration, inter school collaboration, school local collaboration, School Institute Collaboration and school bank collaboration. Zhou B[12] (2020) started with the connotation of collaborative education mode and the importance of diversification of collaborative education mode to applied undergraduate education, elaborated the definition and characteristics of talent training modes such as school enterprise collaboration, school school collaboration, political school collaboration and university industry collaboration, and put forward the implementation strategies and approaches of diversification of collaborative education mode.

4.2. Research Status Abroad

As for the practical experience of the integration of industry and education, some European countries with relatively early development of higher education have had hundreds of years of experience and rich experience. There are many overseas studies on the integration of industry and education. On the whole, countries with good integration of industry and education have some common characteristics: first, the relevant policies and systems have been relatively perfect; Secondly, the government gives strong support in fund allocation. Thirdly, enterprises will participate in the whole process in the implementation of the integration of industry and education; Fourth, these countries often implement the employment qualification access system. Foreign research on the integration mode of industry and education can sort out three modes: first, the enterprise led mode. Including the "dual system" in Germany, the "enterprise visit" in Japan, and the "combination of production and learning" in South Korea. The characteristics

of these models are that they adhere to the principle of enterprise training, supplemented by school teaching. Although they meet the needs of social enterprises and institutions for talents, schools are too dependent on enterprises and lack self independence. Second, the school enterprise model. Including the "contract cooperation" in the United States and the "work study alternation" in the United Kingdom, this type of model is characterized by the combination of work and teaching, with equal emphasis on both. While teaching professional theories, the school also actively cultivates students' professional core competence and practical operation ability, and also meets the needs of social enterprises, institutions and production departments for talents, so it is worth learning from. Third, the school led model. Including the "apprentice training center" in France and the "New Apprenticeship" in Australia. This kind of model is school-centered and focuses on the cultivation of students' comprehensive ability.

In terms of the training of applied undergraduate talents, the German University of applied technology has widely used the "dual system" training method. Students have two learning places: universities and enterprises, complete the two learning contents of theoretical knowledge and production practice, and cultivate "bridge talents" who want to combine theory with practice; CBE (competency based education) mode is widely adopted in the training of Applied Talents in the United States, which is translated into "competency based teaching mode". Its core idea is to cultivate students' ability to apply theoretical knowledge to practice according to job requirements, so as to determine the curriculum system, teaching content, and develop a schedule for students' ability development and training.

5. Conclusion

Main problems existed in following aspects.

1) Most of the existing researches on high cost collaboration tend to discuss the mode. The research methods are mainly induction and deduction, and the research method is single; The research field of vision mostly stays in the school enterprise cooperation and school local cooperation in educating people. There are many studies on the "3+2" segmented training of high-level students in the school school cooperation in educating people, and there are few studies on the collaborative training of applied undergraduate level talents, so the research field of vision is narrow.

2) Theoretical research lags behind practical development. For the research on the application-oriented undergraduate talent training and the integration of industry and education, the summary of practical experience is more than the discussion of theory. Many studies are in the pilot and reflection stage, and the level of research still needs to be raised from the practical level to the theoretical level.

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