

Research on the Integration of Industry and Education, School-Enterprise Cooperation and Application-Oriented Talent Training System

Jianfeng Wang^{1,*}, Xinli Zhang¹, Junju Jia¹

¹College of Science and Technology, North China Electric Power University, Baoding, 071003, China

*Corresponding author

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Abstract: The integration of industry and education (IIE) can enhance the innovation ability of college students and realize the sustainable development of universities. Based on the current industrial integration and application-oriented talent training mode, this paper conducts in-depth research from multiple perspectives through literature analysis, questionnaire survey and case analysis to improve the application-oriented talent training system and ensure that the IIE can be effectively implemented in application-oriented talent training in the way of school-enterprise cooperation (SEC).

1. Introduction

The IIE is an innovative education model that closely combines teaching and industry explored by the education sector ^[1]. The teaching concept of IIE was emphasized in the School-Enterprise Cooperation Promotion Methods of Vocational Schools issued in 2018. In July 2019, the state reviewed and approved the Implementation Plan of the National Pilot Construction of IIE ^[2]. It also points out that the IIE and the cultivation of applied talents can promote the coordinated development of education, talents, industry and economy. From this point of view, the IIE, the cultivation of high-quality applied talents, better help economic development, service society, is also the general trend of the era, the country is also constantly promoting and promoting the implementation of the IIE, an educational reform ^[3].

In 1906, Herman Schneider of the University of Cincinnati implemented the first industry-education cooperative education program, which was the earliest time when the teaching concept of industry-education integration was implemented ^[4]. Through a period of practice, this cooperative project has been continuously developed and improved, which proves that the cooperation between industry and education has a very important significance for college teaching. The World Association for Cooperative Education was also established in the 1980s. Subsequently, the UK stipulated that college students should have 1-2 years of working experience in relevant enterprises during their university years ^[5]. The University of Waterloo in Canada also integrates SEC into teaching, thus making the IIE gain a certain degree of recognition. The training of applied talents

was first carried out in the form of apprenticeship in foreign countries^[6]. The United States has been advocating Dewey's pragmatic teaching concept, attaching importance to the classification of talent training and the classification of talent training functions in schools, forming an applied talent training system. Community colleges, science and technology colleges, etc. are in line with industry, helping to train many applied talents^[7].

The thought of IIE in China can be traced back to the combination of industrial industry and teaching activities in the late Qing Dynasty, and the semi-public and semi-educational vocational and technical schools after the establishment of New China. These are relatively early IIE. Through the combination of enterprise industry labor and education, cultivate all kinds of talents needed by enterprises^[8]. The Ministry of Education proposed for the first time to promote in-depth cooperation between industry and education in a document released in 2011, and emphasized the deepening of integration between industry and education and cooperation between schools and enterprises in 2013, with increasing attention paid to the IIE^[9]. In recent years, domestic scholars have also carried out some research and discussion on the IIE. Through the analysis of the practice process of the IIE in some schools, some problems have been analyzed and discussed, and a more perfect IIE and school-enterprise cooperative teaching mode have also been discussed and explored to a certain extent^[10]. Through the research of these scholars, it can be found that at present, SEC and the IIE have been gradually implemented. In 2017, some scholars proposed to promote this work in various aspects by establishing a teaching mechanism that is led by the government, guided by the industry, participated by enterprises and implemented by schools, so as to help universities to better cultivate application-oriented talents.

2. The practical significance of the IIE

2.1. The IIE can enhance the innovation ability of college students and realize the sustainable development of universities

The IIE has been put forward in the early stage of our country, but its development process is more tortuous. It took a long time to put forward the theory and then apply it to the teaching system of universities. The IIE points out that industry and education should complement each other, and education can serve industry and provide talents. Industry should also provide resources for education so as to promote the cultivation of applied talents. Early college education lacks the IIE, so there are few talents with innovative thinking. Students learn theoretical knowledge in school, but lack practical skills, which leads to the need to re-learn after entering the society, which greatly reduces the enthusiasm of students to learn theoretical knowledge, and even fails to cultivate students' innovation ability, which greatly reduces the effectiveness of college teaching. Therefore, the emergence of the new teaching model of the IIE has solved these problems. Through a comprehensive understanding of the industry, universities provide industrial practice courses for students, and continuously integrate theoretical courses with industrial practice, set up rich and high-quality courses of the IIE, optimize the teaching content of the course, so as to cultivate students' innovative thinking. Combine theoretical knowledge with practical operation to cultivate high quality applied talents, so as to achieve efficient and sustainable development.

2.2. The IIE helps enterprises and universities realize common interests

At present, it seems that the need for talent in the industry is very urgent. And college education is to constantly train and push all kinds of talents needed for these industries, and finally achieve the goal of training talents and employment. The IIE means that the industry will turn its resources toward higher education. Through cooperation and interaction with higher education, the industry

will put aside the imbalance in value and interests and try its best to cultivate applied talents. Through cooperation with universities, enterprises can provide enterprise resources and practical opportunities to college students, which can not only help college students realize the integration of theory and practice, achieve the goal of talent training, but also provide enterprises with a steady stream of innovative and applied talents. In this way, IIE and cooperation between schools and enterprises are indeed mutually beneficial and can help realize the common interests of enterprises and universities. Although it is impossible for enterprises and universities to fully maximize their own interests due to the different value orientation of the two sides, SEC does bring benefits to both sides, which can only be a limited cooperation in the current era. Universities cannot cover all the industries of enterprises, and enterprises cannot accept all the applied talents provided by universities.

3. Current emphasis and difficulty of the IIE

3.1. Both parties shall actively participate in the SEC

The IIE means that schools and enterprises should reach deep cooperation, and both sides should be in a state of mutual understanding. This is a major problem to be solved at present, and also the focus of the establishment of the integration system of industry and education. The low initiative of enterprises should be avoided, and enterprises should be encouraged to take the initiative to participate in SEC and provide practical resources for universities. On this basis, resources should also be shared, and enterprises should actively communicate with universities on issues related to application-oriented talent training to ensure timely adjustment of application-oriented talent training programs. In the end, it is the enterprises themselves that can get more. Therefore, in the process of SEC, enterprises should actively participate in the practical activities of IIE implemented by universities.

3.2. Problems in the establishment of industry-education integration system in universities

As a "base" for training applied talents, universities still have some areas to improve. First, the composition of teachers. The perfection of the integration system of industry and education is closely related to the courses of teaching in universities, which requires certain requirements for teachers in universities. At present, it is easy to ignore the problem in college teaching that the practical ability of teachers is not up to standard. Most college teachers have a higher degree, but after graduation from school, they have not carried out relevant practical activities, and there is little relevant working background, which leads to the problem that teachers have abundant theoretical knowledge but insufficient practical knowledge. In order to better establish the industry-education integration system, teachers in universities should also have certain practical ability. Teachers on the job should have a certain time of practical training, and new teachers should have a certain working background. Only in this way can we better implement the IIE and cultivate applied talents. Secondly, it is also necessary to pay attention to the problem of the training base of universities. Training facilities and the number of instructors should be guaranteed to ensure the completion of practical training teaching.

3.3. College specialty setting and industry foresight

At present, the traditional college majors such as accounting, numerical control, in the rapid development of the present and the future will certainly appear some changes and reforms, which means that the demand for talents will also have a certain change. On the other hand, the education

department sets a fixed specialty, which is difficult to adapt to the changing market. The curriculum design of universities is not flexible enough, lack of change, the industry guidance of the education department is often only theoretical level, and did not really participate in the whole process of talent training. As a result, the integration system of industry and education is not perfect, and the process is not very smooth. Finally, there is no corresponding update and optimization. At the same time, it also indicates that SEC and the IIE are projects that must be promoted at present. Only when enterprises cooperate with universities openly and transparently, and inform universities of the latest development trends of the industry, can the curriculum of universities appear in a flexible form and cultivate application-oriented talents needed by the market according to the development of the industry.

4. The Exploration on IIE and training of applied talents

4.1. Optimization of industry-education integration management system

In the construction of the industry-education integration system, the position of the government is also very important. It should make overall planning, provide appropriate policy support, and implement the work to be done by all parties and the responsibilities of all parties. The government should make overall planning and play a regulating role. For example, it should guide the implementation of the IIE in universities and provide financial support based on the development of local industries and enterprises' demand for talents. In addition, both universities and enterprises are given independent choices. Universities can independently choose the way and object of industry-education integration, while enterprises can choose to participate in the content and form of industry-education integration, SEC or school-enterprise co-construction. At the same time, the administrative departments of the industry should also participate in the process of the IIE, carry out certain evaluation and certification of schools and enterprises, and put forward certain requirements for teachers and teaching standards. In this way, the management system will be more complete and systematic, all parties can also play their roles, mutual supervision, forming a balanced and unified management system.

4.2. Implementation of industry entry qualifications

Positions in various industries have certain professional requirements for practitioners, such as the requirements for various certificates such as professional qualifications, but not all types of work have such requirements. At present, many vocational countries in the market do not have mandatory requirements for the qualifications of employees, and many of them are trained for job entry. Therefore, only by improving the qualification system for employment and job entry, can the cultivation of applied talents in universities be fully valued, and universities can more wholeheartedly and wholeheartedly cultivate the skilled and applied talents required by various industries.

5. The protection of the interests of all parties in the integration system of industry and education

In order to make the industry-education integration system go further, we must ensure the interests of all parties. Only when all parties gain benefits in the process of industry-education integration, can we promote the continuous development of industry-education integration. From the perspective of enterprises themselves, participating in the IIE will inevitably lead to some losses, such as operating costs, capital and equipment investment, and some enterprises will therefore refuse to participate in the IIE. In the process of SEC, enterprises also need to add additional guidance personnel to participate in practical training. In some countries, corresponding financial

support should be given, such as giving full play to the role of capital market, allowing enterprises to conduct direct financing, and increasing capital investment in industry-education integration projects. At the same time, universities should also be given corresponding policy and financial support, set up feasible special systems for SEC and industry-education integration, ensure the smooth progress of each process of SEC, and optimize the appropriation for the industry-education integration system. In addition, the smooth IIE cannot be achieved without the support of national laws and policies. The responsibilities of colleges and enterprises participating in SEC and industry-education integration should be repositioned, the salary standard of internship students should be clarified, and the interests of students, school authorities and enterprises should be protected, so as to enhance the enthusiasm of all parties involved.

6. The breakthrough point of Industry-education integration in universities

6.1. Improve the understanding of the IIE in universities

If universities want to better carry out the work of industry-education integration, the first thing to do is to raise awareness. We should stick to the road of IIE. Training applied talents is an inevitable requirement of today's economic development. What universities should do is to optimize the training mode and evaluation mode of applied talents. The evaluation of students and teachers should not be based on theory, but should focus on improving their practical ability, training students to have vocational skills that can be directly applied to the job, which is the top priority of application-oriented personnel training, and also the purpose of promoting the IIE. Only when the teaching ideas of universities can have this change, can the IIE be promoted better and the quality of applied talents training be guaranteed.

6.2. Improve the teachers' vocational skills

At present, the classroom teaching in universities is mainly based on theory teaching, and the knowledge background of teachers is also mainly based on theory, and the lack of proper vocational skills training. In order to better promote the IIE, the construction of university faculty teams should also be more diversified. For vocational skills training, universities can employ high-level talents from enterprises as part-time teachers to train students' vocational skills. In addition, vocational skills training for college teachers can also be used to deepen teachers' cognition of the IIE. Through the adjustment of salary system, teachers should actively participate in the project of IIE.

6.3. Improve the training base construction

Through the research of the current industry-education integration projects in universities, it is found that the main problem in many universities is the shortage of training base facilities. In order to improve the quality of application-oriented talent training, universities should improve the industry-education integration system, and pay attention to the investment in the training projects of industry-education integration should be paid to according to the specific situation. Although many universities have completed the construction of training bases and facilities, but not updated in time, so they should continue to invest in the completion of construction. According to the current requirements of the industry for skills, the practical training equipment of the school will be changed, so that the IIE can be carried out better.

7. Conclusions

Based on the current industrial integration and application-oriented talent training mode, the paper conducts in-depth research from multiple perspectives through literature analysis, questionnaire survey and case analysis to improve the application-oriented talent training system

and ensure that the IIE can be effectively implemented in application-oriented talent training in the way of SEC.

Firstly, through in-depth understanding of domestic and foreign scholars on the IIE, SEC, applied talents training system of various studies, relevant materials, relevant papers, as well as some journal articles, government documents, research reports and so on, and comb and analyze their contents, summarize and analyze the previous research on the current IIE in universities, SEC and applied talents training. It provides us with the corresponding theoretical support and analysis basis, and also provides us with writing ideas for our research and exploration.

Secondly, by combining relevant theories, domestic and foreign studies on the IIE, and the situation of the IIE in a university, this paper compiled a questionnaire on the IIE and application-oriented talents training of SEC. It also conducted a questionnaire survey on the leaders, teachers and students of universities engaged in the IIE to collect their understanding and views on the IIE. And understand the current situation of the IIE in universities, the progress of SEC, the resources and system construction of the IIE in universities, including the advantages and disadvantages of the IIE in universities, and collect their suggestions on the integration of school and enterprise cooperation and industry and education. Through the collection of questionnaires and suggestions on advantages and disadvantages, I also promoted the formation of my views on the integration of production and education in universities and the optimization of application-oriented talent training system.

Thirdly, this paper also carries out some case analysis. Through in-depth analysis and summary of the typical situation of the IIE in individual universities, it finds out the problems in the process of the IIE in this case, and summarizes the problems in combination with the current environment to find solutions. Through the analysis of typical cases, this paper not only has theoretical support, but also has practical data support, which provides a lot of ideas and support for the final completion of my paper.

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