ISSN 2616-5783 Vol.6, Issue 7: 63-67, DOI: 10.25236/AJHSS.2023.060711

# The Thought of University-Enterprise Integration Mode in Training Undergraduate College Graduates

**Shoukai Chen**[1,*]

[1]*School of Water Conservancy, North China University of Water Resources and Electric Power, Zhengzhou, 450045, China*
[*]*Corresponding author*

***Abstract:*** *To promote science and engineering, colleges and universities carry out joint efforts to cultivate undergraduate course graduation thesis (design) schemes based on the reference of a variety of foreign integrated models of education as the background. Using water conservancy engineering as an example in this paper, the model of specific methods, results, and experiences provides new ideas for Chinese undergraduates' integration between colleges.*

***Keywords:*** *University-enterprise integration mode, Graduation thesis (Design), Joint culture, Mutual benefit and win-win results*

## 1. Introduction

Often, a college talent training method determines the trend of college development, and today's common training method only considers the quality of the faculty and experimental environment, not the actual production needs and social practice combined. Although the employment rate in the current water conservancy and hydropower engineering market is high, the general fresh graduates have practice and theory decoupling phenomena, which causes many problems, according to the previous guidance thesis (design) link.

University-enterprise integration first originated in Western countries and began to be introduced to China at the end of the 1960s. Its methods vary in the process of application, but the core idea of university-enterprise integration remains the same. At the beginning of the 20th century, the founder of the American university-enterprise integration theory, Bear Pitt, proposed in The Theory of Economic Development that economic development is the result of innovation and gave five innovative ideas based on this, which immediately became a world-wide sensation, and after the 1980s, Rothberg supplemented his ideas, making the university-enterprise integration innovation idea more influential; after the war, Germany proposed the "dual system". Germany put forward the "dual system university-enterprise model, in which enterprises and schools participate together as dual subjects. His model is mainly aimed at secondary school graduates, and training-oriented schools are responsible for cultivating theoretical knowledge, while factory enterprises are responsible for training practical skills. Under this "dual system" model, it makes a perfect connection between students and society, saves social costs, and promotes employment rates. The UK proposes a "sandwich" model of university-enterprise integration, which is commonly known as "theory-practice-theory". The so-called "1+2+1" teaching plan is that students first study in enterprises for one year in practice so that they can have an understanding of the future society, and then learn the theory, and finally practice. The British "sandwich" model is currently the most closely integrated model of theory and practice. The "sandwich" model in the UK is the most closely integrated university-enterprise model.

In view of the training methods of some advanced western universities, some ideas have been raised as to whether "Marxism Chineseization" can be applied to our students. On this basis, our scholars have proposed that university-enterprise integration is a process of mutual selection between enterprises and schools, while others have suggested that university-enterprise integration needs urgent innovation to adapt to the fast-paced pace of today. For example, water conservation and hydropower engineering, as a science major, is more inclined to practical work such as large-scale water conservancy projects, which requires students to adapt to the work and put it into the industry as soon as possible; in addition, the traditional teaching model pays too much attention to the learning and popularization of theoretical knowledge, while the workers in the industry lack knowledge and are more empirical and need the theoretical science of college students. The two principles are complementary, which solve both the

ISSN 2616-5783 Vol.6, Issue 7: 63-67, DOI: 10.25236/AJHSS.2023.060711

lack of practice of fresh graduates and enterprises. The problem of desire for technical guidance Based on the current cultivation mode of colleges and universities, it is very meaningful to reform the current thesis (design) link and promote joint cultivation between schools and enterprises.

## 2. Problems in Cooperation between Schools and Enterprises in China

### *2.1. The government's policies, regulations, and management mechanisms for promoting school-enterprise cooperation are not sound.*

The lack and lag of policies and regulations on school-enterprise cooperation in vocational education between national and provincial governments, as well as the imperfect operating mechanism, are the main reasons for the lack of depth and instability of school-enterprise cooperation[1]. At present, the government's role in coordinating school-enterprise cooperation, joint education, and talent planning is lacking. There has been no introduction of political and legal regulations on school enterprise cooperation, work-study integration, and on-the-job internships, resulting in the failure to truly establish an operational mechanism, system, and model for school enterprise cooperation. Governments at all levels have also not played their due role in formulating regional talent development plans. Unable to timely and regularly release the information on skilled talents required by industry enterprises, the cooperation between schools and enterprises in cultivating talents is not targeted, resulting in vocational colleges setting majors and talent cultivation being a "blind imitation". Therefore, the development of vocational education calls for national and provincial governments to introduce policies and regulations related to school-enterprise cooperation.

### *2.2. Vocational colleges lack the ability to adapt to the needs of industry enterprises.*

The professional settings, training methods, curriculum settings, teaching processes, and other aspects of vocational colleges are not in line with the needs of enterprises, and the institutional mechanism for jointly cultivating talents between schools and enterprises has not been formed. Vocational colleges lack strong cooperation capabilities, product research and development capabilities, and technical service capabilities and are not attractive to cooperative enterprises. Some vocational colleges still pursue the systematization and completeness of theory based on traditional teaching models, lacking targeted, practical, and professional characteristics. They have not yet established an independent practical teaching system that corresponds to the professional abilities of enterprise positions. The knowledge and skills learned by students on campus are far from the requirements of modern enterprises, resulting in vocational college graduates not being able to meet the requirements of on-the-job internships. At present, most vocational colleges' school-enterprise cooperation only stays at the shallow level of accepting student internships by enterprises without deep-level cooperation in terms of training objectives, professional setting standards, training base construction, course development, a practical teaching system, talent cultivation, and evaluation [2-5].

### *2.3. Insufficient motivation for enterprises to participate in the development of vocational education*

As the main body of the market economy, enterprises take profitability as their main business objective, and their participation in the development of vocational education is driven by their business objectives. A considerable number of enterprises view participation in vocational education as a direct or indirect loss of profits. Whether or not to participate in the development of vocational education cannot have an impact on the investment and income of enterprises. Therefore, without corresponding incentive policies and regulatory constraints, enterprises may not necessarily obtain human resources through direct participation in vocational education. The awareness of enterprise cooperation is weak, and talent cultivation is not included in the enterprise value chain. School-enterprise cooperation is regarded as a way to select talents, and the process of vocational education talent cultivation is not paid attention to. The main reason why enterprises are unwilling to cooperate with vocational colleges is to increase management costs for enterprises. Enterprises should arrange dedicated personnel for management; enterprises need to arrange accommodation for students, which requires fees and even cannot solve the problem of accommodation; students have low production efficiency and are prone to producing waste during operation, which increases the cost of raw materials. The second is to increase risks for enterprises. In the event of an accident during the actual operation of production for students, the enterprise shall bear medical expenses or pension expenses. Thirdly, it is difficult to ensure the quality of products, which affects the reputation of the enterprise.

ISSN 2616-5783 Vol.6, Issue 7: 63-67, DOI: 10.25236/AJHSS.2023.060711

## 3. Methodology and Effectiveness

The implementation of the pedagogical changes I have proposed is as follows:

(1) In order to guarantee the normal progress and feasibility of the cultivation method of "joint guidance of undergraduate thesis (design) by school and enterprise", it is planned to sign the agreement of "joint cultivation program between school and enterprise" between the pilot university and the enterprise side enterprise, which must clearly point out several points: 1. ensure the safety of students' responsibility areas; 2. both sides must clarify their respective counseling content; 3. supervise and guide students to complete the content of the thesis (design) within the specified time; etc. In addition, both school and enterprise should take the initiative to pay attention to this joint training program, so the school should select the appropriate company as Party B according to the students' specialties and take the initiative to provide Party B with the research topics and basic requirements for the thesis (design), while Party B should select one to two professional working technicians as on-site instructors to participate in the agreement docking and as the first person in charge.

(2) For example, the supervisory position is a construction worker for the Zhengzhou Jalu River Comprehensive Management PPP Project. Firstly, the teacher of the school will lead the students in discussing the outline, topic, and purpose of the thesis (design) together with the technical staff of the project (the first person in charge of Party B), as well as the assigned position and the length of the assignment, and communicating with each other. The technical person in charge of the project was required to introduce to Party A and the students the project overview, main responsibilities, precautions, etc. of the Jalu River Comprehensive Management PPP Project and introduce in a targeted manner how the construction workers used the total station, tied the roof reinforcement of the Lake Island Café, and read and construct according to the design drawings of the Zhengzhou Water Conservancy Architectural Survey and Design Institute (example figures 1–4).

*Figure 1: Pit measurement*

*Figure 2: GPS measurement*

*Figure 3: Jalu River Lake Island Roof Construction*

ISSN 2616-5783 Vol.6, Issue 7: 63-67, DOI: 10.25236/AJHSS.2023.060711

*Figure 4: Technical staff teaching site*

(3) Develop the students' ability to review literature and write a thesis. Students are required to independently embark on writing a dissertation during the three-month internship period. The content includes the ability to review Chinese and foreign references, a thesis outline for writing, and the ability to organize and summarize the first draft. When the first draft is completed, the first teacher in charge of the school will provide guidance and answer questions.

(4) Students learn the post-construction process and operation process by hand under the guidance of the person in charge of Party B and participate in the students' experiment and tracking research. Do a regular meeting once a week so that students will have daily problems, thesis (design) progress, and ideas to report, and so that there will be more communication between teachers and students.

(5) The final stage of the thesis (design) needs more teacher-student communication to ensure the quality of the thesis (design). The school teacher should be responsible for the language organization and the logic between chapters in the content of the thesis (design), while the on-site supervisor should control the accuracy and researchability of the techniques and methods used by students.

Innovation and breakthrough

(1) Transform education and establish the concept of university-enterprise integration.

In the face of the urgent shortage of technical talents in society, based on the background of China's new economic policy, our colleges and universities of science and technology should conform to the general environment, take the initiative to develop toward industrialization, talents, and technology, and actively explore the new concept and new mode of university-enterprise integration. In addition to witnessing the integrated development of foreign schools and enterprises, university-enterprise integration has been actively encouraged to develop in a market-oriented way through policy guidance.

(2) Formulating policies and encouraging more enterprises to participate

According to incomplete data, since 1985, China has continuously improved productivity through large-scale investment, pushed forward the pace of learning-by-doing, promoted the development of university-enterprise integration, and achieved the active participation of science and technology undergraduates in the thesis (design), which links also to the top job placement. Therefore, promote institutional innovation and target a series of policies to reduce the economic cost of enterprises.

(3) Build university-enterprise internship bases and innovate a long-term cooperation platform.

Give full play to the strengths of our science and technology majors and actively create a joint construction base between the school and enterprises to solve the long-term practical teaching problems and teaching links of the school. As far as the graduates of science and technology majors are concerned, our college should actively establish long-term university-enterprise integrated training cooperation with the Three Gorges Group, the Xiaolangdi Project, the Gezhouba Group, the South-to-North Water Diversion Project Group, etc. to create a win-win model.

## 4. Awareness

Graduation thesis (design) is a necessary link for graduates of science and technology colleges and universities, in which graduation thesis provides the ability to write scientific research papers for students who go on to higher education; graduation design provides a good springboard for freshmen students who are about to go to the workplace and better adapt to the workplace life. This link is not only a perfect connection between theoretical knowledge and practical operations learned in college but also a perfect review and summary of the study life during college. Therefore, thesis (design) is an

ISSN 2616-5783 Vol.6, Issue 7: 63-67, DOI: 10.25236/AJHSS.2023.060711

important teaching task for universities of science and technology.

The thesis (design) is a teaching-plus-practice link that must achieve mutual balance and unity between practice and teaching. Therefore, in the selection of topics, we must: (1) combine teaching and realistic engineering, not only to grasp the basic thesis writing ability of students but also to make up for the shortcomings of undergraduates: practical hands-on ability and basic quality training. Therefore, in the whole link of the thesis (design), the thesis (design) should not only be satisfied with the theoretical paper text but also connect with the practical application of theoretical knowledge to the actual engineering; (2) considering the slight difference between the students' major and the top job, in addition to facing the background of the cross-disciplinary pandemic, make the students work as close as possible to the major, understand some broader knowledge, and better The results of this thesis (design) are The results of this thesis (design) are required to: (a) submit a thesis (design) report; (b) draw a CAD drawing on A4 paper related to the top job position (specific content according to the instructor's requirements); (c) write a short literature review similar to the major; (d) translate two SCI papers similar to the major in the past three years and hand copy them; (e) write a The number of words in the top internship experience is not less than 3000 words. (3) On the premise of ensuring the students safety during the internship, create some value for the enterprise as much as possible and give the students a certain labor cost, so that the enterprise is willing to cooperate and the students take the initiative to participate, and finally achieve a mutually beneficial and win-win situation for all three parties.

Throughout the thesis-design process, it must be recognized that students are the protagonists in the whole process. Therefore, with students as the center and supervisors as the support, students' hands-on skills, language skills, social skills, thesis (design) writing skills, and how to deal with problems are enhanced so that students can better adapt to the next stage of their lives, and moreover, the thesis ( problems are enhanced so that students can better adapt to the next stage of their lives, and moreover, the thesis (design) serves as a springboard to the next level rather than a task. Compared with the traditional undergraduate training mode, the training system of university-enterprise integration is more prominent in the participation and cooperation between enterprises and schools and has a guiding role in practical teaching. In addition, with the unprecedented changes in the century and the changes in the economic system reform, China is in urgent need of application-oriented talents, and university-enterprise integration is the general trend, so it is especially important to promote the development of high-quality talents and make university-enterprise integration advance in each university. Therefore, it is especially important to promote the development of high-quality talents and the integration of school and enterprise in each university.

## References

*[1] Zhang Zhiqiang. Research on the Problems and Countermeasures of School Enterprise Cooperation [J]. China Vocational and Technical Education, 2012 (04): 62-66.*
*[2] Pan Haisheng, Wang Shibin, Long Deyi. Analysis of the current situation and influencing factors of school enterprise cooperation in higher vocational education in China [J]. Research on Higher Engineering Education, 2013 (03): 143-148.*
*[3] Wu Jianshe. Five Difficulties to Be Solved in the Implementation of Modern Apprenticeship System in Higher Vocational Education [J]. Higher Education Research, 2014, 35 (07): 41-45.*
*[4] Hong Zhenyin. Several Issues and Reflections on Deep Cooperation between Schools and Enterprises in Higher Vocational Education [J]. Higher Education Research, 2010, 31 (03): 58-63.*
*[5] Editorial department. 2017 Annual Report on Frontiers and Hot Issues in China's Education Research [J]. Education Research, 2018, 39 (02): 10-24.*