Discussion on Introducing Cooperative Education Mode in Applied Undergraduate Colleges

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Abstract. In this paper, the author explores the current problems existing in domestic applied undergraduate colleges and universities in teaching and educating mode, introduces the experience of developing cooperative education mode with the University of Waterloo in Canada as representative of North America, puts forward thoughts on developing cooperative education mode in domestic applied undergraduate colleges. Cooperative joint education mode has created a win-win education ecosystem for the government, enterprises, schools, and students, so that this mechanism can operate steadily while being highly recognized by enterprises, schools, and students. Finally this paper introduces the relevant practices in the Faculty of Information and Computer Science of the Shanghai Business School. The faculty and enterprise jointly reformed the talent training plan, jointly designed the student practical teaching system and professional internships, forming a school enterprise cooperation talent cultivation model. The quality of student employment and social evaluation continue to improve.

Keywords: Applied talent cultivation; University of waterloo; Cooperative education; School enterprise cooperation

1. Introduction

Currently, speeding up the cultivation of high-level technology-applied talents that are scarce in society is an important foundation for realizing national strategies such as Made in China 2025, Internet +, mass entrepreneurship and innovation, and the "Belt and Road" construction. The Central Government and State Council have successively issued a series of policies to promote the transformation for a portion of general undergraduate colleges and universities into applied technology colleges and universities [1].

However, there are still some problems in the process of applied transformation and development of colleges and universities, mainly including:

School-enterprise cooperation has become the direction for the development of applied universities, but the depth of cooperation is insufficient, and the management mechanism is not perfect. The diversification of labor market has triggered changes in the traditional structure and mode of higher education. Driven by external forces, colleges and universities are gradually taking steps away from the ivory tower and cooperating closely with the business community. School-enterprise cooperation has synthesized an important direction for the development of applied undergraduate colleges and universities.

The overall direction of school-enterprise cooperative talent cultivation is to "connect specialty with industry, course with job, and practice with combat". Currently, most colleges and universities of cooperating with schools and enterprises cannot effectively achieve this kind of connection [2]. How to better connect the needs of education and social development is a question that many people in the education community think about, which is also the direction of deepening reforms by integrating maternity and education.

2. Operation Mode of Cooperative School-Enterprise Joint Education

Cooperative Education is known as a "joint education mode", which is an education mode that the University of Waterloo in Canada has continued to develop since its inception, and achieved great success [1]. On the basis of fully understanding the needs of enterprises, schools firmly believe to

improve students' abilities more effectively and better meet the needs of the industry and enterprises through the “career guidance; increasing work experience; and cooperative mode integrating work and study”.

Overview of cooperative process: 4 months before the start of work semester, students enter the job management system to find suitable jobs for themselves among thousands of positions. This system is internal to the school without opening to the public, in which there are company’s recruitment information; Students may apply for positions they are interested in; Companies conduct interviews; Students will experience the complete interview process; Upon completing the interview, companies and students may rank each other; System matches a position for each student; All positions will be reviewed and related to theoretical studies [4].

Typical study/work semester sequence: Complete at least 8 semesters of theoretical and 4 semesters of work by alternating between theoretical and work semesters for 4 months; Semester selection allows students to arrange according to their own learning and application.

Table 1. High and low settings of predictor variables

Year 1			Year 2			Year 3			Year 4			Year 5	
Autumn	Winter	Spring	Autumn	Winter	Spring	Autumn	Winter	Spring	Autumn	Winter	Spring	Autumn	Winter
1A	1B	WT	2A	WT	2B	WT	3A	WT	3B	WT	4A	WT	4B
1A	WT	1B	WT	2A	WT	2B	WT	3A	WT	3B	WT	4A	4B
1A	1B	OFF	2A	WT	2B	WT	3A	WT	3B	WT	4A	WT	4B

In the course of cooperative implementation, schools, enterprises, and students must carry out their own duties respectively, fully perform their duties, and perform the corresponding work in accordance with regulations [5][6].

3. Role and Effect of Cooperative Joint Education Mode

It is evident from the results of the University of Waterloo's consistent implementation of cooperative education mode that this engineering-integrated education mode has undoubtedly achieved great success. The key of success for this mode is that it has found a win-win education ecosystem mode for governments, schools, enterprises, and students so that all parties involved can obtain and meet their needs. This is the driving force and guarantee that the cooperative education model can operate healthily and healthily [7].

3.1 For Governments. The responsibility of governments is to formulate policies to promote economic development and serve people's livelihood.

Governments support, guide, and encourage enterprises to actively participate in the cooperative joint education mode by formulating a series of economic policies so as to improve the skill level of talents in rapidly developing high-tech industries, solve the problem that society's demand for advanced applied technical talents is not being met from the supply side, and promote regional industrial and social economic development. Meanwhile, it is able to effectively solve the employment problems of university students, maintain social stability, and enhance people's livelihood satisfaction [8].

From the perspective of University of Waterloo's cooperative education mode, the governments have played a very important and positive role in it. The national, provincial, and municipal governments have formulated many economic and tax policies to support and encourage schools and enterprises in the cooperative education mode, which is the core driving force behind the operation of the cooperative education mode.

3.2 For Schools. Schools strive for inspiring students to contact every job that is valuable to society. Cooperative education mode becomes a bridge between theoretical learning and work practice. Cooperative education model is of great significance for the construction of applied majors. It makes majors more attractive; attracts more high-quality students; by providing more effective

teaching methods, knowledge is transferred between schools and enterprises, and majors establish links between courses, commerce, and industry; enhances theoretical practical knowledge, and thereby better supports local economic construction.

These tasks will undoubtedly greatly and effectively enhance the school's influence, enhance the school's brand reputation, provide sufficient impetus for the school's continuous development in education, industry, social economy, etc., so that schools and professional construction can maintain a leading position in education and career development management, and become the first choice for enterprises and students.

3.3 For Enterprises. Cooperative education mode makes enterprises' talent employment mode more, reduces employment costs, brings innovative vitality to enterprises through the continuous participation of students, which is very beneficial to the healthy development of enterprises. Meanwhile, enterprises actively participate in cooperative mode so as to obtain policy support from the national government, provincial government, and municipal government, as well as enjoy financial support from various sources in terms of taxes and subsidies. Take the University of Waterloo as an example, enterprises can obtain the support from all levels of governments, including: Canadian government provides financial support for student work-integrated study programs; Canada's tax relief policy for enterprises of participating in cooperative: 20% to 30% tax relief.

3.4 For Students. Through cooperative education mode, students have already gained 2 years of practical work experience at the time of graduation; Secondly, they are able to establish a certain number of work contacts through 2-year work experience, and they are more proficient in choosing a career, and even help the development of enterprises. It is evident from the results of University of Waterloo's cooperative education mode that the employment satisfaction of students who graduated from the cooperative mode is higher than that of the traditional education mode, and the remuneration is also higher. According to data from the University of Waterloo, 91% of college students participating in cooperative education mode will be hired after graduation, in which 96% can find a matching job with their skills, and 79% have a salary higher than the average for graduates in the same position.

4. Discussion on Cooperative Education Mode in Applied Undergraduate Colleges

We have described the problems existing in the traditional education mode in detail, and the advanced nature of cooperative education mode. It is believed that the introduction of cooperative education mode for applied undergraduate programs in China will help solve these problems and play the following positive role in addressing the talent needs of society:

- Students are able to establish a clear direction of employment during college, so that they are more oriented and motivated in their studies;
- Students' learning can be improved in a rolling manner from theory to practice and back to theory;
- Students are able to gain practical and socially recognized work experience during college;
- High-tech enterprises are able to hire manpower in a more flexible manner;
- The development of enterprises can supported by abundant human resources at a lower cost;
- Students' employment counterpart ratio will be increased, so that their studies can be used for as long as they are learned.

It can be seen that implementing cooperative education mode in applied undergraduate education can indeed solve some currently difficult problems, as well as have certain advantages in better cultivating applied technical talents and serving the social economy more effectively.

In the University of Waterloo's cooperative education mode, various active support and incentive policies formulated by the government are an important driving force for the normal operation of cooperative. From the case of the University of Waterloo, we can see that governments at all levels have provided strong support to enterprises participating in cooperative joint education in terms of financial support and tax meetings.

In terms of talent cultivation, enterprises objectively have costs and expenses. When students enter an enterprise to receive training, the enterprise needs to arrange people to train them, including the

office environment, office supplies, and accommodation arrangements, all of which require financial support. Help students improve their skills and integrate into the actual work of the enterprise as soon as possible. Students' internship wages, job management, and assessments do not require investment from the enterprise. However, enterprises in China have received relatively little financial support from the government level in participating in cultivating senior talents. Objectively, it has been determined that enterprises are not very willing or proactive to participate in this work, and that the operation of cooperative lacks important driving force.

5. Shanghai Business School's Trial and Innovations in Cooperative Education Mode

Shanghai Business School responds positively to the country's call for deepening the integration of industry and education. The Faculty of Information and Computer Science has successfully applied for the Ministry of Education-ZTE ICT Industry-Education Integration Innovation Base Project in 2016, opening a new chapter of in-depth school-enterprise cooperation.

Under the new cooperation mode, the enterprise has designated ICT industry engineers with extensive work implementation experience to the school to carry out project management and teaching work, which has achieved good results. At the same time, with the support of the Shanghai Municipal Education Commission and the leaders of the Shanghai Business School, the college began actively experimenting with innovative co-op education models that meet the characteristics of the Shanghai Business School. The following are some of the work carried out by the college in advancing cooperative education mode:

- Field research and study of the University of Waterloo's cooperative education mode;
- Formulate personnel cultivation programs of including cooperative education mode;
- Formulate cooperative education mode management documents;
- Construction of cooperative education mode informatization platform;
- Establish school-enterprise alliances based on cooperative education cooperation.

In the past three years, the Faculty of Information and Computer Science has provided more than 800 graduates to the society. According to a statistical report by Macquarie, the satisfaction rates of graduates in 2017, 2018, and 2019 were 88%, 90%, and 92%, respectively; the student employment rates are 98.67%, 98.63%, and 99.1%. The graduation rate and signing rate of college students have always been among the top in similar majors in local undergraduate colleges in Shanghai. The average income, employer satisfaction, and student and parent satisfaction of college graduates have been continuously increasing, with employer satisfaction rates of 82%, 92%, and 96% in the past three years, respectively; Alumni satisfaction rates were 98%, 94%, and 99%, respectively; The employer has provided clear feedback on the training objectives of professional talents, the quality of training has been increasing year by year, and students have mastered the professional skills required for enterprise positions during their school years, resulting in strong work abilities.

6. Summary

It can be concluded from the above-mentioned discussion that there are still some problems with industry-academia integration, and solving these problems is critical to today's growing shortage of senior applied technical personnel in social and economic development. University of Waterloo's practice in Canada's cooperative joint education mode has proved that this mode can effectively solve these problems, and play a positive role in various aspects such as school talent development, enterprise employment, student employment, and economic development promotion. Cooperative joint education mode has created a win-win education ecosystem for the government, enterprises, schools, and students, so that this mechanism can operate steadily while being highly recognized by enterprises, schools, and students.

At a time when China is vigorously promoting industry-education-integrated school-enterprise cooperation, the traditional education mode is still taking the leading role in higher education domestically. The higher education management methods, talent cultivation plans, school management systems, and supporting campus construction in our country are still being built on the

basis of the traditional education mode. Generally speaking from the grand environment, we do not yet have the conditions to directly copy cooperative joint education mode. However, we can try to gradually build such an environment and create such conditions, particularly with respect to the financial support and tax relief for enterprises of participating in talent cultivation politically, it is able to try the innovations and perform some beneficial explorations.

Only when enterprises can truly benefit from the process of participating in talent cultivation, they will take the student cultivation as part of their own work, so that more and more enterprises will participate in the talent cultivation program. At that time, school-enterprise cooperation will actually complete the transition from fit-in to interaction, and from interaction to integration. Schools and enterprises will be combined as one based on the mutual interaction and integration, and jointly make efforts for the talent cultivation of applied high-tech talents.

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