

College-enterprise Collaborative Education Mechanism Based on Modern Apprenticeship

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Abstract: *Collaboration plays a significant role in the attainment of goals. Thus, this paper dealt with a college-enterprise collaborative education mechanism based on a modern apprenticeship. It identified the operation status, the factors in the cooperation, and the countermeasures for the solution of problems. Using a qualitative survey, a questionnaire was administered to 180 participants from 12 vocational colleges in Jiangsu province. It is concluded that the operation status is not very strong; the factors influencing the initiatives of school-enterprise cooperation are more on lack of supervision and initiatives. Countermeasures are focused on building cooperation between schools and enterprises.*

Keywords: *collaborative education, mechanism, modern apprenticeship*

1. Introduction

With the proposal of "Made in China 2025", "Internet plus" and other strategies, China's manufacturing industry begins to gradually transform into intelligent, and the structural adjustment of the manufacturing industry under the new normal will bring great changes to the demand for social labor, resulting in temporary "labor shortage" phenomenon. Its essence is the supply of manufacturing workers and the current industrial structure, technological upgrading, and production transformation do not match (Yunfeng, Sujiang & Xinping, 2018). How to combine school vocational education with enterprise practice work, cultivate high-quality and skilled talents for the society and enterprises, enhance workers' skills, and improve the positive initiative of cooperation between enterprises and schools. It is more and more important to establish a modern apprenticeship school-enterprise cooperative education operation mechanism, which is led by the government, guided by relevant industry organizations, and actively cooperated with enterprises and participated by students (Bin, 2019). Relevant national documents and policies also clearly state that: to fuse the industry and vocational education, strengthen the cooperative education schools and enterprises and cooperation, further improve the modern apprenticeship synergy between colleges' education mechanisms, cultivate high-quality skilled personnel, actively promote and develop modern apprenticeship pilot work, make modern apprenticeship cooperative education mechanism between colleges run more smoothly is the major task of the reform of vocational education in the new period, It is also an inevitable choice to adapt to the rapid development of social economy (Xiao, 2019).

Modern apprenticeship is very different from the traditional apprenticeship in the past. It is a new vocational education system that combines traditional apprenticeship training with the vocational education of modern vocational colleges and realizes the cooperative education of schools and enterprises to actively cooperate and cultivate talents (Olive & Damian, 2018). It reflects a new vocational education ideology dominated by the government, guided and supervised by relevant industry organizations, actively cooperated with schools and enterprises, and actively participated by students (Wei, 2017). It is based on the development of the market economy and the employment demand of enterprises, the two sides of school and enterprise cooperate to educate students actively, teach students (apprentices) basic theoretical knowledge and practical skills, and fully reflect the operation mechanism and mode of modern apprenticeship school and enterprise cooperation education jointly participated by the government, school, industry, and enterprise (Tianfei, 2017). Through the cooperative education of talent training mode and training of high-quality skilled talents for society, adapting to the new industry demand for talent, to alleviate the severe employment situation has very important significance (Dezhong, 2017).

According to the current modern apprenticeship cooperative education mechanism operation situation between colleges to set up the questionnaire, the result of the questionnaire data analysis and statistics, found that the modern apprenticeship synergy between colleges education mechanism in the process of

running the existing problems. And according to relevant national government policy support and funding support, guidance and supervision of the related industries, enterprises, and schools the cooperative education, school teachers training, examination evaluation system, and apprentice double identity and interests guarantee whether the five factors affect the operation of modern apprenticeship cooperative education mechanism between colleges (Huan, 2018), the result of the questionnaire survey data for empirical test and analysis.

2. Methods

2.1 Research Design

The research method adopted in this paper is the quantitative research design. Through the modern apprenticeship, the related theories of collaborative education mechanisms between higher vocational colleges were analyzed, and thus the understanding of the mechanism of modern apprenticeship synergy between colleges' education running status. A questionnaire survey was conducted to determine the current modern apprenticeship cooperative education mechanism operation situation between colleges; the existing problems in the operation process of the cooperative education mechanism of modern apprenticeship; and the effects of the following five factors in the operation of the school-enterprise cooperative education mechanism of modern apprenticeship: policy support and financial support from relevant governments, guidance, supervision of relevant industries, cooperation enthusiasm between enterprises and schools, school teacher training and assessment system, and dual identity and interest protection of apprentices. Through empirical analysis, the effects of these five factors on the operation of modern apprenticeship school-enterprise cooperative education mechanisms were verified. Scientific and reasonable solutions to the existing problems were put forward.

2.2 Participants

The questionnaire was mainly aimed at students, teachers, and employees of enterprises. They are students and teachers of 12 vocational colleges in the list of pilot units of the modern apprenticeship system in Jiangsu Province published by the General Office of the Ministry of Education. There are 180 representatives of the staff of units with school-enterprise cooperation in these colleges and universities, including 100 students, 50 teachers, and 30 staff of school-enterprise cooperation units. These samples are not representative of the population but are considered sufficient to justify the purpose of this study.

2.3 Instrument

The tool used to collect data in this study was a questionnaire. The questionnaire consists of 20 questions, including single-choice, multiple-choice, and fill-in-the-blank questions. The purpose is to collect the benefits that enterprises, schools, and students will get from the operation of modern apprenticeship's school-enterprise cooperative education mechanism, the factors that affect the initiative of school-enterprise cooperative education, and the existing problems in the operation process and the solutions to the existing problems (Wagner, Teuber, & Backes-Gellner. 2018).

2.4 Procedure

A total of 180 questionnaires were distributed and 180 were recovered, among which 180 were valid. The research process was completed voluntarily with the consent of the respondents. The researcher explained the purpose of the research then the respondents filled in the questionnaires. Afterward, the researcher collected the data questionnaires.

3. Results

This thesis aims to discuss the following results.

Data from Table 1, the national government's policy support and capital investment for the operation of modern apprenticeship school-enterprise collaborative education mechanisms are not very strong. Therefore, it is necessary to strengthen the national government's policy support and capital investment for the operation of the school-enterprise cooperative education mechanism of substitute apprenticeship; and provide a good policy environment for relevant vocational colleges to actively implement the pilot

work of modern school-enterprise cooperative education mechanism of apprenticeship (Mebing, Hui & Jianping, 2018).

Table 1: Government policy support and capital investment

Government policy support and capital investment	percentage
Extremely strong	5%
Very strong	21.1%
Averagely strong	59.4%
weak	8.7%
Very weak	5.6%

Table 2: Guidance and supervision of relevant industries

Guidance and supervision of relevant industries	percentage
Very strong	2.2%
Strong	14.4%
Average	53.3%
Weak	19.4%
Very weak	10.6%
Very weak	5.6%

Data from Table 2, the guidance and supervision of relevant industries are not very strong and thus need to be further improved. Therefore, the process of modern apprenticeship cooperative education mechanism between colleges should strengthen the guidance and regulation related industries, the collaborative education for vocational colleges and enterprises active cooperation with the market economy development and the latest development of post demand of enterprises and information, promote the school and enterprise collaborative education, improve the university-enterprise cooperation initiative (Lijie, 2019).

Table 3: Cooperation enthusiasm between enterprises and vocational colleges

Cooperation enthusiasm between enterprises and vocational colleges	percentage
Very high	5.6%
High	15.6%
Average	53.9%
Relatively low	18.3%
Low	6.7%
Very weak	5.6%

Data from Table 3, the cooperation enthusiasm between enterprises and vocational colleges is on an average level. The process of operation should continue to strengthen the school and enterprise contact and cooperation, cooperative education, schools, and enterprises to participate in school training schemes, curriculum setting, teaching content, and evaluation system, promote the school and enterprise collaborative education better, mutual cooperation, improve the educational efficiency and quality of education of vocational colleges (Xinge, 2020).

Table 4: Training and evaluation system of the school

Teacher training and evaluation system of the school	percentage
excellent	12.2%
good	43.9%
fair	39.4%
poor	4.4%
Very weak	5.6%

Data from Table4, the proportion of the school's teacher training and evaluation system is not perfect and is quite large. Therefore, during the operation of the modern apprenticeship school-enterprise cooperative education mechanism, schools should introduce advanced professional teachers, improve the training system and assessment system, improve the teaching skills of college teachers, and ensure their professionalism and technicality according to their own development and students' learning situation (Junhua, 2020).

Data from Table 5, in the operation process of the school-enterprise cooperative education mechanism

of modern apprenticeship, schools, and enterprises should provide clear provisions and guarantee for students' dual identities and interests. The school and the enterprise should recognize the student identity in the school and the apprentice in the enterprise. Only when the dual identity and interests of students are guaranteed, students can improve their initiative in independent learning, learn useful theoretical knowledge and practical skills, and successfully apply the technology they have mastered to social practice.

Table 5: Student's double identity and interest guarantee

Student's double identity and interest guarantee	percentage
Much guaranteed	7.7%
Guaranteed	47.2%
Slightly guaranteed	39.4%
Not guaranteed	5.6%
Very weak	5.6%

Table 6: Factors influencing the initiative of school-enterprise cooperation

Factors	percentage
Lack of government encouragement, preferential policy support, and capital investment	62.7%
Lack of relevant industry organizations to carry out strong market guidance and supervision	80.6%
The relevant interests of enterprises cannot be well protected, and the initiative of cooperation is not high	88.3%
The school lacks relevant technical skills teachers, and the assessment system is not perfect	72.2%
School-enterprise collaborative education scheme is not clear, and the training content and plan are limited	57.2%
The dual identity and interests of students have not been effectively guaranteed, and low participation	46.1%
others	19.4%
Very weak	5.6%

Data from Table6, the topmost factor points to a lack of supervision and initiatives. In the operation of modern apprenticeship school-enterprise cooperative education mechanism, such factors as support and financial assistance from government policies, guidance and supervision from relevant industries, improvement of school teacher training and assessment system, and active cooperation between schools and enterprises account for a large proportion in the process of school-enterprise cooperation. Therefore, we should analyze these influencing factors to promote better education and active cooperation between schools and enterprises (Mei, 2018).

Table 7: Countermeasures to solve problems in the operation

Countermeasures	percentage
The school and enterprise jointly formulate teaching plans and teaching contents	69.4%
School and enterprise jointly develop and use teaching materials and curriculum	74.4%
The school and enterprise work together to perfect and improve the teacher evaluation system	83.9%
The school and enterprise jointly establish an integrated training experiment base	72.2%
The school and enterprise should jointly cultivate a double-qualified teacher team	56.1%
The dual identity and interests of students are protected jointly by the university and the enterprise	47.2%
others	19.4%
Very weak	5.6%

Data from Table 7, in the process of school-enterprise collaborative education and cooperation, schools and enterprises account for a large proportion of curriculum setting, teaching plan and teaching content formulation, teacher training, and improvement of assessment and evaluation system. Therefore, in the process of school-enterprise cooperation, schools and enterprises should pay attention to the setting of teaching courses, the formulation of teaching programs and teaching contents, as well as the improvement of teacher training and evaluation systems, to promote better education and active cooperation between schools and enterprises.

4. Discussion

Through the design of this questionnaire, we have a further understanding of the operation of the school-enterprise cooperative education mechanism of modern apprenticeship in China; the influencing factors affecting collaborative education active cooperation between colleges; find the modern apprenticeship synergy between colleges' education mechanism in the process of running the existing problems; to timely analyze and summarize existing problems, put forward scientific and reasonable solution, for other vocational colleges to implement modern apprenticeship cooperative education mechanism between colleges; and provide certain guidance and reference.

Among the influencing factors, it is found whether to protect the dual identity and interests of students, whether to organize students to conduct practice and training in relevant enterprises regularly, and whether to invite masters of relevant enterprises to give special lectures. In addition, to some extent, these validation results have a significant level though some are not very significant.

To verify the stated above, results are analyzed and summarized, which can be concluded that the influencing factors on the operation of modern apprenticeship cooperative education mechanisms between colleges mainly include: government policy support and capital investment, guidance and supervision of the relevant industry organization, vocational school teachers team construction and examination evaluation system, collaborative education actively cooperation between colleges and students' status and interests protection, etc. It further verifies the necessity and feasibility of the operation mechanism and mode of modern apprenticeship school-enterprise cooperative education, which is led by the national government, guided by relevant industry organizations, actively cooperated with school-enterprise cooperative education and actively participated by students, and has achieved good results to a certain extent

5. Conclusion

Based on the results, it is concluded that the operation status and the guidance and supervision of relevant industries are not very strong; the cooperation enthusiasm between enterprise and vocational colleges, the training and evaluation system of the school, and the student's identity and guarantee of interest are on an average level.

The factors that influence the initiatives of school-enterprise cooperation are lack of supervision and initiative. The countermeasures to solve the problem in the operation are cooperation between the school and the enterprise to produce teaching materials and come out with training.

Recommendation

Therefore, based on this constraint, we suggest that future researchers should expand the quantitative component through surveys and include a larger sample of institutions in different provinces, which will provide a broader perspective for the school-industry collaborative education mechanism based on modern apprenticeships.

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