

Research on Effective Connection Construction of 3+2 Connection Training Mode—Taking Zaozhuang University Mechanical Major 3+2 Connection Training As a Research Example

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ABSTRACT

The 3+2 connection training mode bridges the gap between higher vocational education and application-oriented undergraduate education. This brand new training mode aims to integrate these two educational systems so as to cultivate the compound and high-qualified talents. However, with the implementation of 3+2 connection training mode, there comes out some problems like simple superposition and inadequate connection between the higher vocational courses and the undergraduate ones. By analysing the current situation of the 3+2 and its existing connection problems, this paper conducts constructive research on effective connection from three levels, the upper-level quality and system guarantee, the middle-level ternary linkage mechanism and the bottom-level integrated teaching process. This research has built a whole set of teaching quality assurance system as well as a one-stop collaborative education mechanism, it has also designed an integrated teaching process system. With these measures, the higher vocational and undergraduate education will be well connected and integrated, besides, some certain theory and intellectual support are provided for better construction and development of vocational education.

Keywords: 3+2 connection training mode, effective connection, system guarantee, ternary linkage, integrated teaching.

1. INTRODUCTION

In order to construct the national lifelong education system and realize the good demand of the connotation development of vocational education, it is an important link to build the talent transfer “overpass” between higher vocational colleges and applied undergraduate universities [1]. The Ministry of Education emphasized that it encourages undergraduate universities and exemplary vocational colleges to train high-level applied technical talents through cooperative education and joint training in the “Modern Vocational Education System Construction Plan (2014-2020)” [2]. The implementation of the 3+2 connection training mode is to build an overpass for the growth of students. Through segmental connection and joint training, this brand-new education mode aims to truly cultivate compound high-quality talents with profound knowledge structure, solid professional skills and professional accomplishment [3]. Stochastic model checking algorithms rely on a combination of model checking techniques for classical model checking and numerical methods for calculating probabilities. Finally, it achieves the educational effect of “1+1 > 2” and realizes the sustainable development of students [4]. However,

compared with the requirements of building a modern economic system and a strong educational country, China's vocational education still has a series of problems, such as imperfect system construction and standards, insufficient motivation for enterprises to participate in running schools, and uneven quality and level of personnel training [5]. Since 2013, Shandong province has carried out the pilot work of 3+2 sub-training vocational education in some vocational colleges and ordinary applied undergraduate universities [6]. As can be seen from Figure 1, In 2013, 12 pilot majors of 3+2 connection training mode were approved, and the number of pilot majors increased to 100 by 2019. The number of enrolments has increased from less than 1,000 at the beginning to more than 5,000 now. The scale of 3+2 is expanding rapidly, benefiting more and more schools and students. From 2013 to 2015, the number has doubled and reached the largest scale in 2016, with more than 90 pilot majors and more than 6,000 students enrolled. In 2017 and 2018, the number of new colleges, pilot majors and enrolment remained almost unchanged. In 2019, the pilot colleges began to see a decrease in the number of major points and enrolment scale, with 11 fewer majors and 760 fewer students than in 2018. It can be seen from the ladder diagram that starting from 2016, 3+2 connection training mode has begun to shift from a “quantity-based” expansion to a “quality-

based" expansion, from extensional development to connotative development. Also, it has begun to pay more attention to the high-quality, strong professional and excellent training of vocational education, and strive to build a modern vocational education system with Shandong characteristics at the forefront of the country.

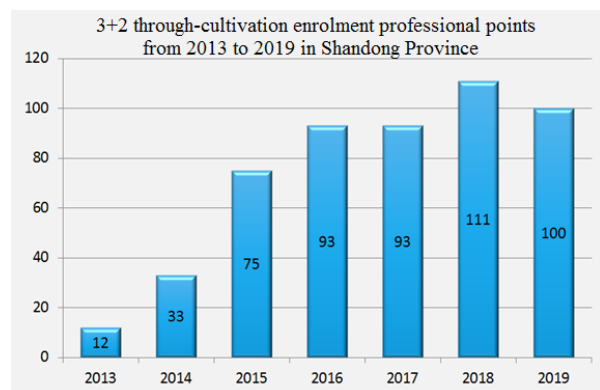


Figure 1. (a) 3+2 enrolment professional points from 2013 to 2019 in Shandong Province

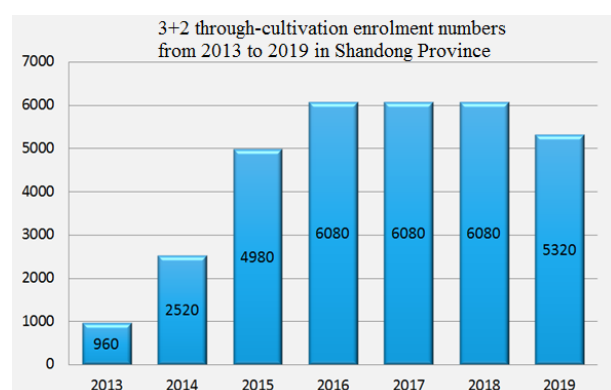


Figure 1. (b) 3+2 enrolment numbers from 2013 to 2019 in Shandong Province

2. CURRENT SITUATION AND EXISTING PROBLEMS OF 3+2 THROUGH-CULTIVATION

2.1. In the implementation of 3+2 connection training mode, the connection between higher vocational education and undergraduate education is insufficient

Higher vocational education and applied undergraduate education belong to two different stages and different types of education in China's higher education system [7]. Since the trial implementation of the joint training mode, the two types of colleges and universities have adopted the respective responsibility system in two stages, respectively responsible for the teaching, management, faculty team

and student assessment in their respective training stages, lacking the inter-stage division of cooperation and resource sharing [8]. There is no clear definition of the training position for students. In the end, the two training orientations and training goals are simply piled up together, failing to realize and play the value and significance of 3+2 segmented connection for talent training.

2.2. In the implementation of 3+2 connection training mode, the deep collaborative education mechanism has not been formed

Students attach importance to skills in higher vocational education and carry out a certain range of school-enterprise production-education joint training to improve their practical ability. Theoretical teaching is based on necessity and sufficiency. Students emphasize theory at the undergraduate level. The systematization and comprehensiveness of theoretical knowledge are emphasized, but the skill training has not been formed a link with the higher vocational stage, or even appears a fault. The fully integrated talent positioning, training objectives, curriculum system, teacher echelon, and teaching environment have not yet been established, there is a big gap between the actual training quality of students and the expectations.

3. 3+2 CONNECTION TRAINING MODE EFFECTIVE CONNECTION CONSTRUCTION MEASURES

Policies and systems are the basis and criteria for cultivating and constructing; enterprise docking is the booster for school-school connections; talent positioning is the general outline of talent training; curriculum system is the core link of talent training; the third-party evaluation is the driving force to ensure continuous improvement and optimization of training quality. This paper relies on the pilot major of "Zaozhuang University-Zaozhuang Vocational College 3+2 Cross-linking and Segmental Training", which has a total of 42 students at the two levels of 2018 and 2019. In this paper, construction is carried out from four aspects: guarantee system, collaborative education, integrated teaching and evaluation mechanism. The overall framework of construction measures is shown in Figure 2. Through the implementation of the project, a closed-loop mechanism of continuous improvement is formed to realize the effective connection of through-cultivation. Various mechanisms, policies, and files, including teaching quality evaluation system, professional construction implementation plan, school-school-enterprise collaborative education mechanism, teacher team building standards, student training evaluation and other construction standards are formulated and formed.

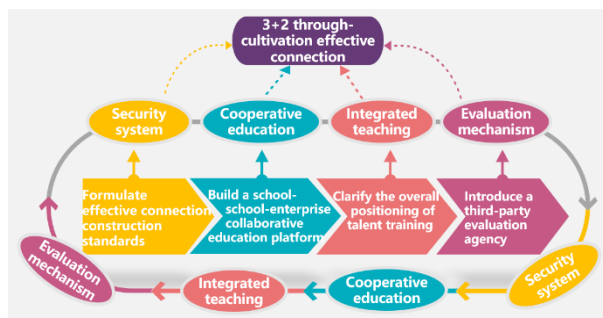


Figure 2. 3+2 effective connection construction measures

3.1. The construction of 3+2 effective connection quality assurance mechanism

First of all, the construction standard of effective connection of through-cultivation is formulated. Taking this as a criterion, a school-school-enterprise joint working group is established and the responsible subjects are defined for the implementation and coordination of policies. A 3+2 teaching quality evaluation system for the whole process is established. All these will provide theoretical support for 3+2 connection training mode and effective connection and provide standards for teaching implementation. The establishing of teaching process supervision and feedback mechanism ensure continuous improvement of teaching links.

3.2. The establishment of a school-school-enterprise ternary linkage and a one-stop collaborative education platform

Through the precise docking of enterprises, the in-depth industry-education integration mode can be carried out and the main responsibilities and obligations of each training subject can be clarified. The main tasks of higher vocational education: master basic professional knowledge and cultivate professional application skills; the main tasks of undergraduate education: strengthen the professional knowledge system, expand innovative design capabilities; the main tasks of collaborative enterprises: connect the higher vocational undergraduate education, help students from the establishment of career planning files to complete the transformation of the quasi-professional. At the same time, communication and coordination mechanism is established to avoid the phenomenon of bickering with each other. So a long-term mechanism of school-enterprise cooperation and collaborative education will be formed, and five steps of classroom-practice-training-innovation-actual combat in the 3+2 stage will be gradually realized, so as to realize the cultivation of prospective professionals. Through the establishment of standards for connection construction, enterprises will become a booster for school-

school connections and at the same time play a role of mutual supervision and restraint. The ternary linkage and one-stop collaborative education model are shown in Figures 3 and 4.



Figure 3. School-school-enterprise ternary linkage platform model

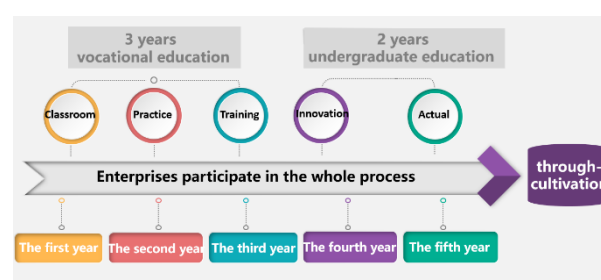


Figure 4. Enterprise participation in the whole process of a one-stop collaborative education platform

3.3. The formulation of the general orientation of talent training and the construction of six integrated teaching links

The training of students must ultimately be implemented in teaching. Effective connection means jointly building a talent training plan; building a curriculum system; researching and developing teaching resources, building an internship training base, sharing a mixed faculty team and forming an echelon construction; implementing the training process; evaluating the quality of training and realize the effective connection of through-cultivation. Establishing an integrated talent positioning and training goal can ensure that the school-school-enterprise tripartite work independently and restrict each other; setting up an integrated curriculum system can ensure that the knowledge structure is clear and progressive; building an integrated integration of production and education mechanism can ensure that students complete the transformation of quasi-professionals; developing integrated teaching materials can ensure that theoretical knowledge is connected and in-depth; innovating and integrating practice teaching system can ensure the practical skills develop from application to innovation; cultivating an integrated echelon of teachers can ensure the division of labor is clear in the training process. The integrated teaching link is shown in Figure 5, which

realizes that the entire knowledge system structure is rule-based and progressive. In the teaching link, the "skill penetration and training connection" are truly realized. Then the high-quality and multi-disciplinary talents with profound knowledge structure, solid professional skills and professional accomplishment will be truly cultivated.



Figure 5. Six integrated teaching links

3.4. The introduction of third-party evaluation institutions and establishment of evaluation system

In order to achieve 3+2 intensive training, a third-party evaluation mechanism must be introduced to ensure that the entire training process and the school-school-enterprise tripartite evaluation and student outcomes evaluation are set to satisfy the entire training process which make the entire training process meet closed-loop feedback and continue to improve, and truly give play to the significance of 3+2 through training vocational education.

4. THE SIGNIFICANCE OF 3+2 CONNECTION TRAINING MODE EFFECTIVE CONNECTION CONSTRUCTION

4.1. It is conducive to better optimize and improve the 3+2 connection training mode and promote the more efficient integration of higher vocational colleges and universities

By analysing the existing problems of the current 3+2 training mechanism, a quality evaluation system is established which can ensure the effective connection of training; clarify the rights and obligations of the joint training subjects; establish a supervision and control system to ensure higher vocational undergraduates make full use of their respective advantageous resources and earnestly perform their respective talent training responsibilities; establish a communication and coordination system to effectively solve various problems

of 3+2 connection training mode. At the same time, the third-party organization is established to ensure the effective implementation of the policy mechanism; supervise the entire talent training process, evaluate the effect of talent training, and truly realize "professional succession, segmented training, and ability progressive".

4.2. It is conducive to further deepening the integration between schools and enterprises, promoting enterprises' in-depth participation in collaborative education, and building a community of Shared future between schools and enterprises

Through the establishment of a school-enterprise joint collaborative education mechanism, enterprises are promoted to participate in collaborative education and a collaborative education platform are build. On the one hand, with the help of the advantageous resources of enterprises, it can precisely connect with the actual needs of industrial development to enhance the employment competitiveness of students. On the other hand, it makes enterprises become the facilitator of communication and coordination among higher vocational colleges, jointly discussing talent cultivation positioning, making talent cultivation plans and building curriculum system. Finally students' knowledge expansion and ability advancement will be realized by 3+2 connection training mode.

4.3. It is conducive to create a progressive teaching process, optimize the major training, and highlight the characteristics of long-term, and high-quality talent training

At present, most of the 3+2 undergraduate training goals and upgrading training goals are not different, but the two before entering the undergraduate talent positioning is different, the course system is different, the growth environment is different. So simply combining the two will affect the quality of student cultivation. Through the establishment of six integrated teaching links, that is to build an integrated talent positioning and training goals, set up an integrated curriculum system, build an integrated collaborative education mechanism, develop integrated teaching materials, innovate integrated practice teaching system, cultivate integrated teacher echelon. All these provide a quality guarantee to ensure effective connection.

5. CONCLUSION

Higher vocational college level has always been the dead-end of higher vocational student education. The implementation of 3+2 connection training mode is to build an overpass for students' growth. This paper constructs various guarantee mechanisms for the effective

connection of 3+2 connection training mode, builds a school-school-enterprise ternary collaborative education platform and constructs six integrated teaching links. Through these measures, talent training is accurately located, a curriculum system is scientifically built, a deep knowledge structure is truly cultivated. At last, it provides the necessary conditions for realizing the sustainable development of students.

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