

Current Situation and Path of Integrating Labor Education in Curriculum Teaching of Secondary Vocational Majors: Take “Plant Production and Environment” As an Example

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Abstract: The course teaching of secondary vocational majors and labor education have a mutually beneficial and win-win logic relationship. The integration of vocational curriculum teaching with labor education is not only an important way for the innovation and development of vocational colleges, but also a powerful force for training talents needed for industrial transformation and upgrading. The investigation into the current situation of vocational students receiving labor education in the teaching of professional courses found that to improve the comprehensive quality of students, innovative and integrated teaching organization should be adopted. In order to strengthen the organic integration of curriculum teaching and labor education, three principles of intention, nature and effectiveness should be followed in teaching practice. On this basis, through the formulation of integration objectives, mining course content, innovation of teaching implementation, optimization effect evaluation of four practical ways to promote the high quality of curriculum teaching and labor education.

Keywords: Secondary vocational school; Professional course teaching; Labor education; Merge

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1. Introduction

The “Opinions on Comprehensively Strengthening Labor Education in Primary and Secondary Schools in the New Era” issued by the Central Committee of the Communist Party of China and The State Council pointed out that labor education directly determines the value of labor spirit, labor value orientation and labor skill level of socialist builders and successors, and is a necessary way for students to grow up, with a comprehensive education value of moral cultivation, intellectual enhancement, physical strength, and aesthetic cultivation. Under the background of industrial transformation and upgrading in China, vocational education shoulders the important mission of training high-quality technical talents, and it is particularly important to strengthen labor education in vocational colleges. The teaching of professional courses is a powerful force to promote the

innovation and development of vocational colleges and to cultivate the growth of students. The ultimate goal is to achieve the training goal of building a system of high-quality, skilled and application-oriented talents. However, with its own specific educational tasks, it is difficult to systematically, specifically and deeply carry out labor education ^[1]. Therefore, this study tries to explore how to strengthen the organic integration between labor education and professional curriculum teaching based on the characteristics of the development of the era and the demand of the labor market.

2. Professional curriculum teaching and labor education

2.1. Connotation of professional curriculum teaching and labor education

Professional courses are the general name of applied technology theory disciplines in vocational and technical schools, aiming to enable students to master professional theory, practical technology and business management knowledge related to the business requirements of specialized talents in the professional industry. Teaching refers to the bilateral activities that take the course content as the medium, teachers' teaching and students' learning. The study believes that the teaching of professional courses refers to the joint activities of teachers and students in teaching and learning mediated by the content of professional courses in vocational colleges. Its basic contents usually include enabling students to master the basic knowledge and skills of systematic professional science, cultivating students' professional quality, professional ethics and corresponding behavior, and promoting students' physical and mental development.

Labor education, as an indispensable part of the comprehensive development of the education system, mainly includes knowledge, skills and values in daily life labor, production labor and service labor. By giving play to the education function of labor, students are guided to participate in various forms of labor in a purposeful, planned and organized way, and the awareness of labor initiative, emotional attitude and values of loving labor and cherishing labor results are established. Labor education is needed for large-scale production and socialist construction, and the combination of teaching and labor in education is not only a way to improve production but also the only way to train well-developed people ^[2].

2.2. The relationship between professional course teaching and labor education

The teaching of professional courses is to cultivate high-quality talents with professional knowledge and skills, adapt to the needs of enterprises and society, and pay more attention to the teaching of theoretical knowledge and operational skills. Labor education aims at cultivating people with comprehensive development of morality, intelligence, body and beauty, focusing on improving students' hands-on operation and problem-solving ability in practice. The internal consistency of educational content and training goals is the basis of their integration and penetration. In terms of educational content, the nature of the secondary vocational curriculum is centered on vocational labor education, which itself has the nature of "combining education and labor practice," and the labor resources contained in the curriculum are integrated into labor education. In terms of training objectives, the two sides focus on the mastery and application of labor skills of the educated, focusing on the ability of students to create value in their jobs and actual production, to cultivate members of society who conform to the core values of socialism and can adapt to modern production labor and promote the transformation and upgrading of social industries.

The combination of professional course teaching and labor education is essentially the combination of theory and practice, the combination of mental and physical labor, and the embodiment of the typical teaching method of "integrating teaching and doing" ^[3]. By improving the ability and quality of the educated, professional

curriculum teaching promotes students' active participation in labor and optimizes and enhances the efficiency of labor education ^[4]. The organization and development of labor education have a significant impact on the form and value orientation of specialized course teaching. The two complement each other, pay attention to the growth of students and the sustainable development of careers, and guide students to establish the concept of lifelong education and learning to move towards a deeper level of linkage development.

2.3. The significance of integrating professional curriculum teaching with labor education

With the continuous development of the information age, the intelligent industry has been further promoted, intelligent equipment and machines have been widely used, affecting all aspects of research and development, production, sales, management, service, etc., and some occupations and positions have been continuously replaced by artificial intelligence. The substitution of artificial intelligence leads to a change in the educational objectives of traditional vocational education. The demand for technical and skilled talents in the new era puts forward new and higher requirements for the ability structure of the labor force and triggers a new round of iteration of labor skills. The accelerated change of information in the digital era puts forward higher requirements for the literacy and lifelong development of the labor force.

Secondary vocational education, as one of the main bodies of China's labor force training and vocational education, shoulders the mission of cultivating more high-quality technical talents. As an important way to cultivate the craftsman spirit of a great country, the teaching of secondary vocational professional courses should play a key role in the training of technical talents in the transformation and upgrading of the national economy. Labor education can encourage students to form a correct view of occupation and labor, enabling them to independently formulate work plans, obtain information, think independently, analyze, judge and make decisions, learn new technologies, and establish basic attitudes toward society, labor, work and occupation ^[5]. Vocational education emphasizes the cultivation of students' vocational skills, not only technical training but also the promotion of vocational skills and the establishment of professional spirit so that students not only have a skill but also have more dedication and professional quality. Under the background of the development of the era, it is urgent to integrate the teaching of professional courses and labor education in secondary vocational schools to cultivate more technical talents with both virtue and ability and lay a talent foundation for the realization of high-quality development of vocational education.

3. The current situation of students receiving labor education in the teaching of professional courses in secondary vocational schools

To understand secondary vocational students' understanding of labor and their understanding of integrating professional curriculum teaching with labor education, this study designed 15 questions on the three dimensions of labor cognition, labor skills and labor attitude of secondary vocational students. A total of 115 valid questionnaires were collected, all of which were from sophomore secondary vocational students, among which 34 (29.57%) were male students and 81 (70.43%) were female students; 82.61% of the students were not the only child and 97.39% of the students are resident students.

According to the survey, the secondary vocational students have a relatively good labor cognition and labor attitude, 100% of the students recognize the "labor is the most beautiful, the most glorious, the greatest, the noblest labor" view, 99.13% of the students are willing to learn the role models of labor morality and labor spirit. 98.26% of the students believe that they can learn or recognize the content of labor education in the course

of classroom study and homework. According to the survey results, it can be judged that secondary vocational students have relatively correct labor values and basic social responsibility, and have a positive understanding of labor and workers. However, compared with the cognitive attitude of labor, students lack in labor practice, skilled labor technology skills, and good labor habits.

Therefore, the teaching of secondary vocational courses must adapt to the needs of social development, start from the actual situation of students and students' interests, innovate the organizational form of classroom teaching of professional courses, and fully embody the teaching philosophy of professional courses based on students' overall quality, based on vocational ability and oriented on practical ability [6]. Teachers should conduct targeted education for students, guide them to fully participate in teaching practice, and pay more attention to secondary vocational students' ability to independently formulate work plans, obtain information, think independently, analyze, judge and make decisions, and learn new technologies. Under the guidance of action-oriented and competency-based concepts, the integration of theory and practice should be realized, promoting the comprehensive development of secondary vocational students.

Table 1. Results of questionnaire survey on labor education of secondary vocational students

Item	Yes	No
Do you agree that all jobs are equal and there is no distinction between high and low?	94.78%	5.22%
Do you accept the idea that learning is also a kind of labor, and that continuous learning is for better labor?	93.04%	6.96%
Do you agree that mental work is as important as manual work?	96.52%	3.48%
Do you think Mr. Yuan Longping's lifelong dedication to the development of hybrid rice is worth learning?	99.13%	0.87%
Do you agree that labor is necessary for everyone's life, and the idea of getting something for nothing and coveting pleasure is wrong?	92.17%	7.83%
Do you agree that labor is the most beautiful, labor is the most glorious, labor is the greatest, labor is the most noble?	100%	0
Do you agree that you should often participate in volunteer services and public welfare activities within your capacity?	99.13%	0.87%
Are you able to master the basic professional skills of your major and apply them in practice?	95.65%	4.35%
Do you often participate in labor?	84.35%	15.65%
Do you think the teachers of specialized courses have taught the relevant content of labor education?	96.52%	3.48%
Have you learned or recognized the labor education content in the classes or assignments of your major courses?	98.26%	1.74%

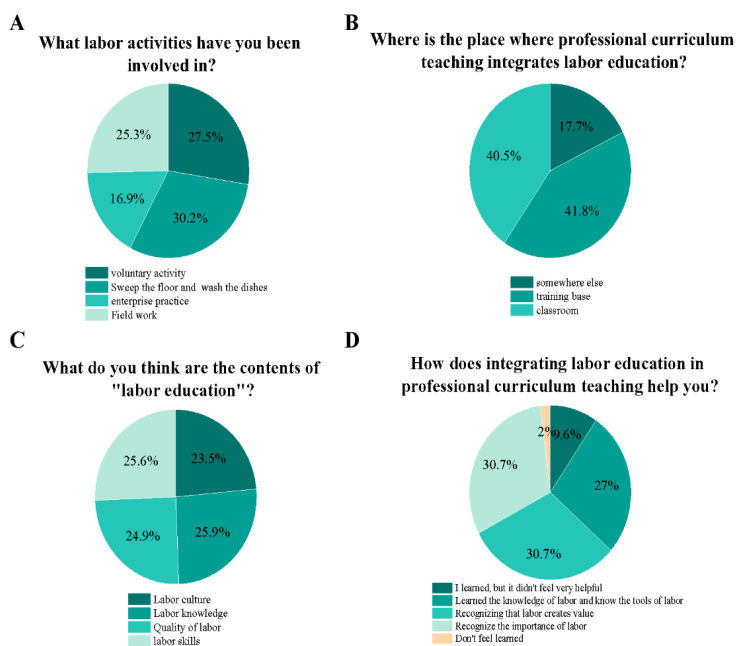


Figure 1. The results of the vocational school students' labor education questionnaire survey.

4. The practical principle of integrating labor education in the curriculum teaching of secondary vocational majors

The labor market needs labor talents who love their jobs and are down-to-earth, social and economic development needs to create talents who actively participate in and are not afraid of hardship, and national industrial transformation and upgrading needs technical talents who are rigorous and focused and strive for excellence. Secondary vocational teachers should identify the “meeting point” between professional curriculum teaching and labor education, establish a “generative” relationship ^[6], do a solid job in pre-class preparation, formulate practical teaching objectives according to different teaching contents and learning conditions, adopt teaching methods and teaching methods suitable for students’ development and in line with the laws of vocational education, and guide students to be action-oriented. The integrated development of curriculum teaching and labor education of secondary vocational majors must follow the core concept of cultivating students’ good life attitude, forming correct career selection concepts, improving students’ comprehensive quality, and following the principle of intentional, natural, and effective integration (Figure 2).

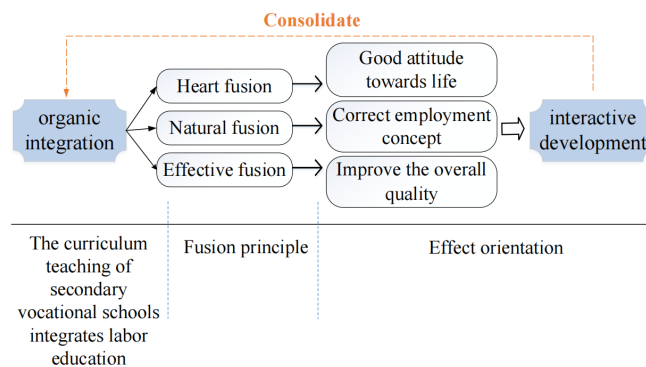


Figure 2. Practical principles of integrating labor education in curriculum teaching of secondary vocational majors.

4.1. Cultivate a good attitude towards life through integration

According to Kechensteiner, the basic path of education is to make students useful people, able to understand work and have the will and ability to complete the work. In the process of integrated teaching, it is important to give full play to the role of the whole process of comprehensive education. All teachers of professional courses should fully explore the labor education resources contained in the education process, and consciously combine the content of professional courses with the actual life of students so that students can receive the influence of labor education in the daily learning of professional courses. It is important to strengthen the moral function of labor education, encourage students to form the idea of “relying on their labor to solve all problems in production and life,” “all working people and all forms of labor deserve to be respected,” and resolutely resist the wrong ideas of obtaining something for nothing and neglecting labor and working people. In the learning of professional knowledge, students are shaped to have a correct socialist labor view and optimistic attitude toward life, so that students learn to work honestly and creatively, and actively participate in socialist modernization.

4.2. Natural integration to cultivate a correct career concept

“The curriculum of integrated discipline labor education refers to the education of labor concept, labor spirit, and labor skills embedded in the implementation of discipline education by making use of the internal correlation between labor education and discipline education, to improve students’ labor literacy in a permeating and edifying way ^[7].” Secondary vocational curriculum teaching and labor education are consistent in terms of

educational content and training objectives. The professional curriculum itself has the nature of “combining education and labor practice.” In terms of training objectives, both sides focus on the mastery and application of labor skills of the educated and focus on the ability of students to create value in their jobs and real lives. When exploring the integration elements, teachers choose appropriate curriculum content, avoid rigid, and integrate labor education flexibly and naturally so that students realize that there are only differences in the division of labor, have a positive impact on ideology, and guide students to form a correct career choice concept in terms of professional quality and social responsibility.

4.3. Effective integration to improve students’ comprehensive quality

Based on the integration of heart and nature, professional curriculum teaching should ensure the effect of integration when permeating labor education. The teaching content should be fully connected with the daily life of students, the teaching objectives should be clear, achievable, and easy to evaluate, and the teaching contents of professional courses should be completed. At the same time, appropriate teaching methods should be used to deliver labor education knowledge that conforms to the rules of education to students, to ensure students’ acceptance of the learning content and to help students form correct labor values. Under the guidance of action-oriented and competency-based concepts, students are encouraged to develop the ability to make independent decisions, make plans and complete tasks, establish the concept of lifelong education and learning, apply what they learn, cultivate their morality, and enhance their intelligence. The combination of education and labor practice, and the combination of labor practice and moral, intellectual, physical, and American education make “labor,” “educational” and promote the overall improvement of students’ comprehensive quality.

5. The practical path of integrating the curriculum teaching of secondary vocational majors with labor education

The integration of labor education in the curriculum teaching of secondary vocational majors plays a positive role in students’ solid grasp of knowledge and skills, in-depth training of emotional attitude, and practical enhancement of comprehensive quality. To give full play to the role of integrated education and promote the joint development of both sides with high quality, the study will take the basic course “Plant Production and Environment” for secondary vocational majors as an example to discuss from four aspects, namely, formulating integration goals, mining course content, innovating teaching implementation, and optimizing effect evaluation (Figure 3).

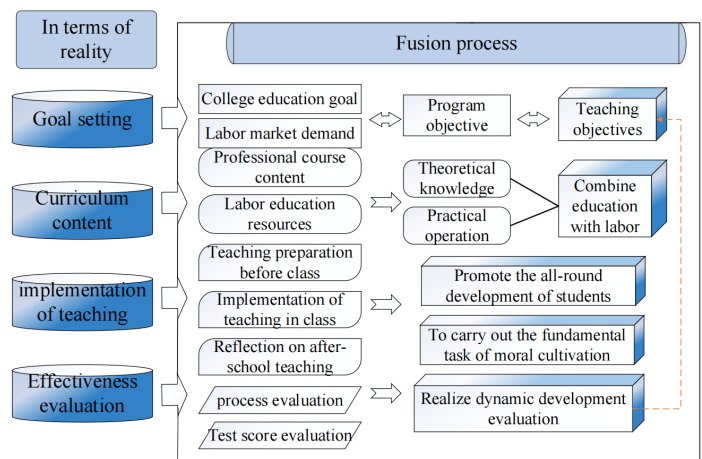


Figure 3. Path selection of integrating professional curriculum teaching with labor education.

5.1. Formulate integration goals to indicate the direction of talent training

The formulation of curriculum objectives should fully integrate the education objectives of secondary vocational schools and the demand for talents in the labor market, and then optimize the classroom teaching objectives. The main task of training talents in secondary vocational colleges is to cultivate morality and cultivate talents, and labor education, as one of the main ways to implement morality and cultivate talents, should play a role of “cultivating virtue through labor and promoting integrity through labor”^[8], and establish a natural and organic connection between professional course content and moral, intellectual, physical and aesthetic education. On the one hand, it can promote the improvement of students’ vocational skills. On the other hand, it can promote the comprehensive development of students. Through integration and innovation, students can understand and get in touch with society, combine theoretical knowledge with social practice, promote the use of hand and brain, improve social adaptability, achieve high-quality and high-level development, and thus improve the quality of talent training^[9]. Combining the teaching practice and the students’ real situation, the curriculum objectives can not only ensure the smooth realization of the expected objectives but also train technical talents for society more efficiently. Therefore, this study integrates the training goal of labor education into the curriculum goal of “Plant growth and environment.” In terms of curriculum knowledge, the training goal is set as “students systematically learn the morphological structure, growth, development and reproductive laws of plants, master the relationship and mechanism between plants and soil environment, water, temperature and nutrients during the growth process, correctly understand the impact of human labor behavior on plant growth and development, and form correct labor cognition.” The ability goal is “Through experiments and practice, students can understand the anatomical structure of plant cells, tissues and organs, master the correct use of microscopes and plant film-making techniques, hone students’ will in tedious operations, cultivate students’ good working habits and improve working ability.” Next, the curriculum training goal is refined into the teaching goal of each class, so that students can get corresponding development in knowledge, skills and values. For example, when learning plant production and soil fertilization, students will penetrate labor knowledge, understand the history of labor, understand the concept of labor, master the operational skills of soil evaluation and soil cultivation, feel the great spirit of Shi Guangyin’s management of desert sand and alkali flats, and Ge Gan’s management of land salinization, and firmly establish the belief that labor is the greatest and most glorious.

5.2. Mining course content to build a complete discipline structure

When organizing the content of labor education contained in the professional curriculum, it is necessary to meet three major standards, namely continuity, sequence and integration. Ensure that students have the opportunity to continue to repeat the learned labor knowledge, continuous training and development of the skills they want to achieve in the professional courses. Every time students learn subsequent labor knowledge, they build based on existing labor experience, and it is a broader and deeper learning than the previous learning experience. Finally, integration is emphasized, and the professional knowledge and labor experience students learn will help students to obtain a unified labor concept one by one, and gradually unify with their behavior. This paper takes the textbook of the fourth edition of Plant Production and Environment (Planting Major), a basic course for secondary vocational majors, as an example to deeply analyze the labor education elements implied in the content of professional courses (**Table 2**).

5.3. Implementation of innovative teaching implementation of specialized labor cooperation education

Based on the understanding of the learning situation and the course content, the appropriate teaching methods are selected, and the digital teaching resources are fully utilized to improve the infectivity, interest and participation of students in the teaching of professional courses. For example, learning about the basic properties of soil is based on a situational approach. At the beginning of the class, the multimedia played the video of Ge Gan’s management of land salinization in Ningxia, leading to the learning content of this lesson. In the middle of the class, students were guided to use virtual simulation technology to determine soil pH and feel the changes in labor methods enabled by technology. At the end of the class, students will be organized to discuss their feelings on the deeds of model workers based on the professional knowledge of this class, and students will be guided to understand the connotation and significance of love and dedication, diligence and pragmatism to study hard, study deeply and innovate boldly in the future study and life.

After class, teachers reflect on the existing problems in teaching implementation according to the effect of classroom implementation and students’ participation. The explanation and learning of professional knowledge are still the top priority of teaching implementation, guiding students to understand the relevant content of labor in a penetrating or deepening way, and students can contact and apply the professional knowledge they have learned in real life. Through the infiltration of labor education, students can help them overcome the idea of “seeking pleasure and ignoring labor.”

Table 2. Labor education resources in Plant Production and Environment

Elements of labor education	Integrating point	Case analysis	Anticipated goal
Working spirit	Project 3: Plant production and soil fertilization Task 3.2: Basic properties of soils Project 5: Plant production and light energy utilization Task 5.1: Metabolism of plants	Ge Gang: Land salinization treatment; Calvin: Discovered the Calvin cycle	Dedicated, diligent and pragmatic
Spirit of model worker	Project 1: Overview of plant production and environment Task 1.2: Two elements of plant production Project 4: Plant production and scientific water use Task 4.2: Water regulation of plant production	Yuan Longping: Research on hybrid rice technology; Shi Guangyin: Treatment of desert sand and alkali flats	Hard work, dedication to society
Craftsmanship spirit	Project 2: Growth and development of plants Task 2.2: Plant organization Task 2.3: Vegetative organs of plants	Hands-on production of plant film; Observe the morphology and structure of plant organs with proper microscopy	Rigorous focus, craftsman spirit, work hard to improve your skills
Labor safety	Project 6: Plant production and temperature regulation Task 6.2: Temperature control of plant production Project 7: Plant production and agrometeorology Task 7.1: Meteorological conditions for plant production	Inclement weather seriously threatens agricultural production safety and people’s life safety	Labor safety, production safety
Labor culture	Project 3: Plant production and soil fertilization Task 3.4: Techniques for reducing weight and increasing the efficiency of crops	General Secretary Xi Jinping’s important speech at the National Labor Model and Advanced Worker Commendation Ceremony	Labor consciousness, professional honor, active participation in socialist modernization

5.4. Optimization effect evaluation feedback integration implementation

To integrate professional curriculum teaching with labor education, a reasonable evaluation principle should be established: both the teaching law and the achievement of the two objectives should be considered comprehensively, and the curriculum objectives and teaching objectives should be amended in time according to the evaluation results. Pay attention to multiple evaluations, using process evaluation, comprehensive evaluation, development evaluation, self-evaluation and mutual evaluation of various evaluation methods, pay attention to the evaluation of students' mastery of professional knowledge and skills, but also pay attention to the evaluation of students' labor consciousness, labor literacy, labor skills dynamic development. The evaluation of student's learning process should pay attention to the formation of students' labor values, emotions and attitudes, and build an evaluation mechanism to promote students' labor literacy and comprehensive development.

In the assessment of the "Plant Production and Environment" course, the grading system should be implemented, including the assessment of professional knowledge and ability, as well as the assessment of labor consciousness, labor skills, and other labor education implementation effects. The evaluation includes two parts: examination score evaluation and process evaluation, focusing on the dynamic assessment of students' labor literacy and development status. Among them, process evaluation mainly refers to the beginning, the middle and the end of the semester. For students' behavior norms (attendance, standardized dress, preparation of school supplies, polite cultivation, sense of responsibility, following rules and regulations, etc.), knowledge and skills (data access, self-learning ability, ability to relate knowledge before and after, ability to propose and solve problems, etc.), learning attitude (learning initiative, class participation, group cooperation, labor attitude, etc.), and operational ability (practical training basis after class corresponding assessment shall be made for the operation, a correct reading of the instrument, standard recording of data, equipment maintenance, cleaning and rectification of the operating environment, etc.), operation (correct rate of operation, seriousness of experiment report, etc.), self-evaluation and mutual evaluation (classroom discipline, activity participation, note-taking, labor quality and professional quality, etc.)^[10] (Figure 4).

Term stage	Essential information	Process evaluation 60%						Examination evaluation	40%	Class
	Name	Behavior	Knowledge	Attitude	Operation	assignment	Self-evaluation mutual evaluation			
Beginning of a semester	XX									
Midterm	XX									
The end of a term	XX									

Figure 4. Dynamic assessment and evaluation of Plant Production and Environment course. Note: The grading criteria are 90 points and above for A, 75 to 89 points for B, 60 to 74 points for C, and less than 60 points for D.

6. Conclusion

The integration of labor education in the curriculum teaching of secondary vocational majors is an important way for vocational colleges to realize the fundamental task of cultivating morality and educating people, and it is also an inevitable requirement for improving the comprehensive quality and survival ability of the educates. Taking the basic course "Plant Production and Environment" as an example, through discussing the "three principles" and "four paths" of integrating professional curriculum teaching with labor education, this paper aims to accelerate the establishment of a talent training platform for collaborative education between secondary

vocational majors and labor education, optimize the training program of curriculum labor education talents, and promote the implementation of labor education in secondary vocational colleges. Guide students to develop labor literacy in the whole process. Professional curriculum educators continue to improve teaching quality and labor education ability, accumulate labor education teaching cases, make full use of digital teaching resources, and strengthen the organic integration of labor education and secondary vocational curriculum teaching, making it an important way to train technical and skilled talents to meet the needs of the labor market and promote the industrial upgrading of modern society.

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