Analysis on the Training Model of "Integration of Industry and Education with Dual Education Mode" for Composite Talents in Mechanical and Electrical Engineering in Higher Vocational Education

Wenhua Gong
Xiangyang Polytechnic, Hubei 441050, China.

Abstract: Currently, there is a significant gap between the training objectives and the actual situation of electromechanical talents in higher vocational colleges. Many teachers in electromechanical departments do not meet the required qualifications and are unable to adapt to the developments of the new era. The talent training mode is insufficiently comprehensive, and the criteria for talent assessment are not unified. In response to these issues, it is necessary to promptly change the mindset, innovate educational ideas, focus on the present while planning for the future, clarify training objectives, adopt a dual education model that integrates production and education, strengthen the faculty, utilize their potential, and improve the overall educational quality to provide guarantees for talent development.

Keywords: Integration of Production and Education; Dual Education; Higher Vocational Electromechanical; Training Model

Introduction

In the current stage of social development, the cultivation of versatile talents is essential, and the country has issued numerous institutional regulations focusing on the training of such talents. Higher vocational schools serve as the breeding ground for skilled talents and bear the responsibility of producing talent to meet the demands of society and the job market. Many talents in the manufacturing sector emerge from the electromechanical profession. Therefore, it is crucial to employ a production-education integration and dual education training model to enhance students' comprehensive qualities, ensuring the sustained development of both society and enterprises.

1. Difficulties in Cultivating Versatile Talents in Higher Vocational Electromechanical Education

1.1 Inadequate Capability of Electromechanical Teachers in Higher Vocational Colleges

Many teachers in the electromechanical field are recent graduates. While they may meet the academic qualifications, there are very few teachers from government agencies, research fields, or enterprises. As a result, they lack relevant practical experience and find it challenging to fully demonstrate the skills required in the profession to their students. Additionally, some teachers have insufficient expertise in their subject area and are not aware of industry trends, making it difficult for them to excel in the field. Moreover, some teachers have a limited knowledge base, only familiar with fundamental theoretical knowledge, and fail to meet the related requirements in moral qualities, innovation, and collaboration. Their research and teaching abilities may also be insufficient.

Unreasonable assessment criteria also contribute to a lack of motivation in the process of cultivating versatile talents. While professional ethics remains a primary factor in assessing teachers, solely relying on this aspect makes it difficult to evaluate teachers adequately. The criteria for assessing professional titles include teaching quality, completion of research projects, and the quantity of published papers, where practical ability serves only as a reference and not a mandatory factor. All of these aspects reflect the inadequate capability of electromechanical teachers in higher vocational education when it comes to cultivating versatile talents.

1.2 Insufficiently Perfected Talent Cultivation and Curriculum System

In the 2025 industry planning and talent standard setting, there is a risk of reducing or merging many electromechanical majors in higher vocational education. This requires higher vocational institutions to have a forward-looking perspective when setting up electromechanical majors, being willing to abandon outdated majors and focus on those with better development prospects. Besides, to achieve the goal of cultivating versatile talents, it is essential to restructure the curriculum system. However, some courses currently have overlapping content that could be integrated into one, and an unreasonable curriculum system can affect the number of course hours, making it difficult for students to delve into theoretical knowledge and improve their practical skills.

1.3 Outdated Talent Evaluation Methods

For a long time, talent quality has been evaluated based on examination scores, neglecting students' innovative and applied abilities. Moreover, the criteria for evaluation lack a standardized basis, varying between the state, society, and schools. Under the influence of this evaluation mindset, it becomes challenging to cultivate versatile talents with a strong grasp of professional knowledge and high moral standards.

2. Production-Education Integration with Dual Education Strategy for Cultivating Versatile Talents in Higher Vocational Electromechanical Education

2.1 Shift from Inertial Thinking Patterns

Currently, the cultivation of versatile talents in higher vocational electromechanical education tends to employ conventional ways of thinking and problem-solving, lacking forward planning. Outdated ideologies and a reluctance to break away from the norm can be highly detrimental, resulting in a significant gap between ideals and reality. To address this issue and cultivate high-quality versatile talents, it is crucial to reverse these erroneous mindsets, embrace new perspectives to find effective solutions to problems, and meet the diverse demands of the modern world.

2.2 Innovate Talent Training Plans

The talent training plan for cultivating versatile talents in higher vocational electromechanical education revolves around the defined objectives. Several essential elements must be considered in this plan: First, the planners must possess sufficient expertise as their professionalism influences the scientific nature of the training plan. Hence, the selection of personnel should be cautious, adopting a procurement service model and inviting authoritative figures such as government officials, industry experts, and related management personnel to collaborate in creating the talent training plan. Second, emphasis should be placed on key aspects. On one hand, strengthening cooperation between schools and enterprises, jointly compiling teaching materials, and organizing specialized technical lectures will enable students to keep abreast of the latest technological developments, equipment, and processes. On the other hand, increasing the number of extracurricular practical activities will equip students with problem-solving skills relevant to production and operation. Additionally, students should actively participate in various national skill competitions to enhance their overall abilities and awareness of the benefits of certifications. The cultivation of versatile talents not only requires proficiency in electromechanical knowledge but also encompasses other relevant areas such as humanities, geography, science, law, etc., to achieve comprehensive development. Third, throughout the entire process of cultivating versatile talents in higher vocational electromechanical education, socialist core values and traditional culture should be incorporated, and courses compatible with specific job requirements should be selected. Theoretical knowledge must be practically applied in actual work scenarios.

2.3 Establish a Dual System

The establishment of a dual system requires joint efforts from both schools and enterprises. It involves a reasonable allocation of

the proportion of theoretical courses and practical skills courses, utilizing the alternating school-enterprise teaching model, and organizing regular assessments. The sharing of faculty and research results between enterprise training rooms and school laboratories should take place. With the guidance of professional technical masters from enterprises, teachers can divide students into different learning groups and manage them uniformly, ensuring that students acquire the necessary skills for various positions. As internet technology continues to evolve, the structure of the curriculum system should also be continuously innovated. Leveraging internet platforms, various teaching resources in higher vocational electromechanical education can be integrated to establish a curriculum system that aligns with the development of the times. This can break free from the limitations of traditional classroom environments and introduce online teaching modes, enabling learning from any location. Furthermore, comprehensive cultivation of talents is essential. Talents should not only possess proficient technical abilities but also demonstrate noble moral character. The theoretical knowledge learned should be flexibly applied in practical operations. Talent cultivation should not be confined to individual courses or class hours; it should cover all aspects of both classroom and extracurricular activities, including social practice, in order to foster truly knowledgeable and skilled versatile talents.

2.4 Enrich Assessment Participants and Improve Evaluation Elements

Under the background of production-education integration, the assessment participants should be diversified, breaking away from the traditional model where a single full-time teacher determines students' grades. Instead, multiple entities, including teachers and experts hired from within the school or externally, should assess the quality of talent cultivation from different perspectives. Additionally, evaluation elements should be improved, encompassing dimensions such as moral character, knowledge reserves, innovative consciousness, and adaptability. Students' attainment of talent standards should be comprehensively assessed based on these elements.

3. Conclusion

In conclusion, higher vocational institutions should adhere to the guiding principles of production-education integration and dual education. They should understand the actual conditions of the school and students, transform outdated teaching ideologies, establish a dual system, innovate the structure of curriculum knowledge, continuously optimize evaluation elements, and contribute to the cultivation of versatile talents in higher vocational electromechanical education while enhancing the quality of vocational talent development.

References

[1] Shi JY. Exploration and Practice of the Training Model for Composite Talents in Jewelry Majors in Higher Vocational Education: Taking Liaoning Electromechanical Vocational and Technical College as an Example [J] Journal of Ningbo Vocational and Technical College, 2021,25 (05): 44-48.

[2] Gao J. Research on the training mode of compound technical and skilled talents in higher vocational economy and trade in Shandong Province under the background of the “the Belt and Road” [J] China Market, 2021, (29): 28-29.

[3] Wang XQ. The implementation path of the “dual integration, dual guarantee” vocational electromechanical composite talent training model - based on the “Manufacturing Talent Development Planning Guide” [J] Mechanical Vocational Education, 2019, (09): 1-5.

About the author: Wenhua Gong, male, the Han Nationality, birthplace: Qichun Hubei, date of birth: 1966-12, affiliation: Xiangyang Polytechnic, associate professor, degree: Bachelor, major: mechanical manufacturing and automation, mechatronics.