

Research on Strategies for Enhancing the New Quality Competitiveness of Talents in Vocational and Technical Undergraduate Colleges from the Perspective of New Engineering

Zhilu Li*

Xiangsihu College of Guangxi Minzu University, Nanning 530225, Guangxi, China

**Author to whom correspondence should be addressed.*

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Abstract: From the perspective of new engineering, promoting the enhancement of the new quality competitiveness of talents in vocational and technical undergraduate colleges is an important educational task and a key to strengthening the quality and level of talent cultivation. Therefore, it is necessary to continuously improve the educational model and update the educational process in the talent cultivation of vocational and technical undergraduate colleges, guided by strengthening the new quality competitiveness of talents, so as to effectively enhance the new quality competitiveness of talents and better fulfill the task of talent cultivation. This paper proposes strategies for enhancing the new quality competitiveness of talents in vocational and technical undergraduate colleges based on the background of new engineering, serving as a springboard for further discussion.

Keywords: New engineering; Vocational and technical; Undergraduate Colleges; Enhancement of new quality competitiveness

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1. Preface

Against the background of new engineering, the development and operation of vocational and technical undergraduate colleges are facing new opportunities and challenges. New engineering is a new type of discipline that emphasizes the intersection of disciplines and practical applications. This raises higher requirements for talent cultivation in vocational and technical undergraduate colleges, which need to continuously improve their educational models, focus on strengthening the intersection and integration of disciplines, and innovate talent cultivation models, so as to cultivate a continuous stream of applied and practical talents for economic and social development. Furthermore, promoting the enhancement of the new quality competitiveness of talents in

vocational and technical undergraduate colleges in the background of new engineering is also key to ensuring the level of talent cultivation. Therefore, it is necessary to deeply explore and analyze the perspectives from which to strengthen the new quality competitiveness of talents in vocational and technical undergraduate colleges, so as to ensure that they can fully exert their educational functions and provide a continuous stream of high-quality, highly skilled applied talents for the development of various fields in society.

2. Overview of the background of new engineering

New engineering refers to the transformation, upgrading, and innovation of traditional disciplines, forming a new interdisciplinary major. The proposal of this concept fully responds to the new round of technological revolution and industrial transformation, can effectively implement innovation-driven strategies, and contributes to promoting the innovative development of the country and society. It is an important part of responding to national strategies such as “Made in China 2025.” New engineering covers inheritance and innovation, intersection and integration, coordination and sharing. The core element is the upgrading and transformation of traditional disciplines, gradually breaking disciplinary boundaries, and achieving the intersection and integration of multiple disciplines. This not only meets the development needs of disciplinary innovation but also helps to optimize the allocation of educational resources and promote the co-construction and sharing of teaching achievements, thereby helping to improve the quality of social talent cultivation and meet the demand for high-quality talents in the stage of social industrial development.

3. The necessity of enhancing the new quality competitiveness of talents in vocational and technical undergraduate colleges from the perspective of new engineering

In the context of new engineering, enhancing the new quality competitiveness of talents in vocational and technical undergraduate colleges is a necessary measure and a key link to improve the quality and level of talent cultivation. It ensures that talent cultivation meets the rapid development needs of social industries, improves students’ employment rates, and promotes high-quality development in various social fields. Specifically, the necessity of enhancing the new quality competitiveness of talents in vocational and technical undergraduate colleges in the context of new engineering is reflected in the following two points.

Firstly, adapting to the rapid development needs of industries and market changes. With the rapid development of science and technology in China, the social industrial structure has also undergone continuous changes, and the traditional social industrial development model is undergoing profound innovation and reform. In this context, new engineering, as a new discipline, can achieve the intersection and integration of disciplines and practical applications under its guidance, which has become an important force leading the innovation of social industrial development. Therefore, vocational and technical undergraduate colleges must keep up with the pace of the times, fully combine the background of new engineering to adjust and optimize talent cultivation models, and respond to the talent demands of industrial development. Moreover, enhancing the new quality competitiveness of talents in vocational and technical undergraduate colleges also means gradually strengthening talents’ innovation spirit and practical ability construction in the process of talent cultivation. Only on this basis can it be ensured that graduates adapt to market changes, master new technologies and processes, and become an important force to promote social industrial changes. Therefore, it is necessary to focus on

enhancing the new quality competitiveness of talents in the talent cultivation of vocational and technical undergraduate colleges, thereby strengthening the quality and level of talent cultivation.

Secondly, enhancing students' employment competitiveness and career development prospects. In the context of new engineering, emphasizing the enhancement of the new quality competitiveness of talents in vocational and technical undergraduate colleges also helps to enhance students' employment competitiveness and provide them with broader career development prospects. This is mainly due to the increasingly fierce market competition in the context of rapid market development in China. To stand out in the fierce market competition, graduates must possess unique new quality competitiveness, such as solid professional skills, rich practical experience, good coordination and cooperation abilities, innovative thinking, and other aspects. Only on this basis can it be ensured that graduates better meet the demand for high-quality talents in social industries and occupy an advantageous position in the employment market. Therefore, it has become a necessary measure for vocational and technical undergraduate colleges to focus on strengthening students' new quality competitiveness based on the background of new engineering. Only on this basis can students' employment competitiveness be effectively improved, enabling them to have good career development prospects and achieve the goal of strengthening the quality of talent cultivation in vocational and technical undergraduate colleges.

4. Challenges faced by vocational and technical undergraduate colleges in enhancing talent competitiveness from a new engineering perspective

4.1. Challenges posed by curriculum optimization and practical teaching

From the perspective of new engineering, vocational and technical undergraduate colleges face dual challenges posed by curriculum optimization and practical teaching in talent cultivation. How they respond to these challenges determines the effectiveness of their talent cultivation and whether they can enhance the competitiveness of their talents. Firstly, to optimize the curriculum system, vocational and technical undergraduate colleges need to fully understand the professional characteristics and industry development requirements in the context of new engineering. They should also focus on integrating emerging technologies and industrial development trends into the curriculum. This requires the colleges to have a strong forward-looking vision and the ability to flexibly adjust their courses. Additionally, practical teaching is a key aspect of improving students' practical operation skills and problem-solving abilities. Therefore, vocational and technical undergraduate colleges need to focus on cultivating students' practical skills in education and teaching, and actively promote the construction of practical teaching bases and improve practical teaching models. This will gradually strengthen students' problem-solving abilities, enabling them to grow into high-quality talents with new competitive qualities.

4.2. Challenges posed by teacher team building

In the context of new engineering, vocational and technical undergraduate colleges face challenges in enhancing the competitiveness of their talents due to teacher team building. The emergence of the new engineering background has raised higher requirements for talent cultivation in vocational and technical undergraduate colleges. Not only do they need to cultivate talents with good professional quality and practical ability, but they also need to ensure that graduates have good innovative thinking and comprehensive quality. This places higher demands on the educational practitioners of vocational and technical undergraduate colleges. In this process, it is necessary for vocational and technical undergraduate colleges to introduce and cultivate high-quality teachers

with a new engineering background. However, this process requires a significant investment of time and resource costs, increasing the difficulty of building the teaching team in vocational and technical undergraduate colleges. On the other hand, how vocational and technical undergraduate colleges can improve the teaching level and scientific research ability of the existing teachers in their colleges is an important requirement. In this process, it is not only necessary to fully consider the requirements of practical teaching, but also to ensure that existing teachers can adapt to the needs of new engineering through training and exercise. This has become an urgent problem to be solved, posing a huge challenge to the construction of the teaching team in vocational and technical undergraduate colleges.

4.3. Challenges posed by innovation in talent cultivation mode and quality

The innovation of talent cultivation mode is an important task for vocational and technical undergraduate colleges in the context of new engineering. This task also brings certain challenges to vocational and technical undergraduate colleges. This is mainly because actively promoting the innovation of talent cultivation mode is an important way to improve the quality of talent cultivation, but in practice, vocational and technical undergraduate colleges also face many challenges and influences. For example, promoting the innovation of talent cultivation mode not only requires vocational and technical undergraduate colleges to have the courage and confidence to break the traditional talent cultivation mode, but also requires the joint efforts and cooperation of all teachers and students in the school. Only on this basis can the talent cultivation mode be gradually improved and the talent cultivation process innovated. In addition, this process also requires vocational and technical undergraduate colleges to focus on the organic integration of theoretical teaching and practical teaching, so as to improve students' comprehensive quality and professional ability. This is also a key issue that needs to be solved to promote the innovation of the talent cultivation mode ^[1]. Furthermore, the innovation of talent cultivation mode also needs to focus on the evaluation feedback in the education and teaching stage. In this process, it is necessary to focus on building a dynamic and scientific supervision and evaluation system. Based on this, it reflects the current status of talent cultivation mode construction and talent cultivation quality in vocational and technical undergraduate colleges, and makes flexible adjustments based on the evaluation feedback results, thus helping to strengthen the quality of talent cultivation in vocational and technical undergraduate colleges.

4.4. Challenges posed by talent cultivation exchange, cooperation, and channel innovation

In the context of new engineering, vocational and technical undergraduate colleges need to actively promote exchange and cooperation in talent cultivation, guided by innovative channels of communication and cooperation, to enhance the competitiveness of new talent qualities. However, vocational and technical undergraduate colleges also face challenges in this regard. For example, how vocational and technical undergraduate colleges can find suitable partners and establish good cooperative relationships with them has become a complex and tedious issue. How vocational and technical undergraduate colleges can leverage their strengths and roles in exchange and cooperation has become an important challenge for them ^[2]. Especially in the context of the gradual internationalization of scientific and technological development, the exchange and cooperation channels for talent cultivation in vocational and technical undergraduate colleges also need to be actively innovated and strengthened to align with international standards. Therefore, vocational and technical

undergraduate colleges are required to have stronger market insight and innovation abilities. Only on this basis can they continuously adapt to market changes and international environmental development requirements, helping to strengthen the competitiveness of new talent qualities in vocational and technical undergraduate colleges.

5. Strategies for enhancing the competitiveness of new talent qualities in vocational and technical undergraduate colleges from the perspective of new engineering

5.1. Optimizing the curriculum system and strengthening practical teaching

To effectively improve the quality and effectiveness of talent cultivation in vocational and technical undergraduate colleges and strengthen the competitiveness of vocational and technical undergraduate talents, it is necessary to gradually strengthen the construction of talent cultivation models in vocational and technical undergraduate colleges based on the background of new engineering. This will help improve the level and effectiveness of talent cultivation in vocational and technical undergraduate colleges. The primary task in this process is to optimize the curriculum system and strengthen the construction of practical teaching, thus providing students with a more comprehensive practical teaching model ^[3]. For example, vocational and technical undergraduate colleges can appropriately add courses related to emerging industries in society, such as artificial intelligence technology courses and big data analytics courses. While adding new courses, they should also focus on adjusting the proportion of traditional courses to ensure the scientific nature of each course's proportion. In addition, in practical teaching, vocational and technical undergraduate colleges need to make full use of on-campus training bases and school-enterprise cooperation models, and vigorously build an integrated model of production, education, and research. This will promote the innovation of practical teaching in vocational and technical undergraduate colleges, improve the quality of practical teaching, and strengthen students' practical abilities, thereby helping to enhance the competitiveness of new graduate qualities.

5.2. Strengthening the construction of the teaching team and improving teacher quality

The construction of the teaching team is of key significance and value in talent cultivation in vocational and technical undergraduate colleges. It is also a crucial link in enhancing the competitiveness of new talent qualities in vocational and technical undergraduate colleges in the context of new engineering. In this process, vocational and technical undergraduate colleges need to attract high-quality teachers with a background in new engineering to meet the talent cultivation needs of vocational and technical undergraduate colleges by introducing new talent. Additionally, professional teacher training should be organized regularly in vocational and technical undergraduate colleges to improve the current teachers' teaching abilities and scientific research levels in vocational and technical undergraduates, thereby strengthening the effectiveness of teacher team building ^[4]. For example, within the scope of vocational and technical undergraduate colleges, experts and scholars in the industry can be actively invited to hold academic seminars, or on-campus teachers can be sent to enterprises for on-the-job training. This will enable teachers to understand the cutting-edge developments in the industry, help improve teachers' practical abilities, accumulate practical experience, achieve the effect of improving teachers' overall quality, and enable them to play a role in education and teaching.

5.3. Innovating talent cultivation models to improve talent cultivation quality

Vigorously innovating talent cultivation models is an important measure that helps improve the quality of

talent cultivation in vocational and technical undergraduate colleges and strengthen the competitiveness of new talent qualities. Therefore, vocational and technical undergraduate colleges need to actively innovate their talent cultivation models, focusing on improving talent cultivation quality as the core to drive the education and teaching process. For example, vocational and technical undergraduate colleges can strongly build an integrated model of production, education, and research through deep cooperation between the colleges, enterprises, and scientific research institutions to achieve joint talent cultivation among the three parties. This not only ensures the orderly progress of the talent cultivation process but also stimulates the vitality of talent cultivation in vocational and technical undergraduate colleges. In addition, vocational and technical undergraduate colleges also need to establish cooperation projects with enterprises to promote personalized student development through school-enterprise cooperation. By providing students with enterprise positions that meet their professional growth needs, students can strengthen their mastery of professional knowledge through practical operations in enterprise positions and gain a certain understanding of new industry trends. This not only improves the quality of talent cultivation in vocational and technical undergraduate colleges but also helps form a more complete talent cultivation model, strengthening the new quality competitiveness of talents in vocational and technical undergraduate colleges and completing high-quality talent cultivation tasks.

5.4. Strengthening international exchange and cooperation to broaden the horizon of talent cultivation

In the context of new engineering, cultivating the new quality competitiveness of talents in vocational and technical undergraduate colleges requires focusing on strengthening international exchange and cooperation. This will broaden the horizon of talent cultivation and improve the quality of talent cultivation. For example, vocational and technical undergraduate colleges can strengthen cooperation and exchange with some international vocational education institutions, carrying out mutual visits between teachers and students and academic exchange activities to learn from international vocational education experiences and broaden the horizon of talent cultivation. Furthermore, vocational and technical undergraduate colleges can appropriately introduce some high-quality foreign education resources, such as online education courses and textbooks, which not only enrich students' learning content but also cultivate their international perspective and cross-cultural communication abilities. This will enhance the new quality competitiveness of talents in vocational and technical undergraduate colleges and improve the quality and effectiveness of talent cultivation.

6. Conclusion

In summary, in the talent cultivation of vocational and technical undergraduate colleges, vigorously strengthening the new quality competitiveness of talents is an important educational task and a key teaching goal in the context of new engineering. Therefore, it is necessary for vocational and technical undergraduate colleges to continuously innovate talent cultivation models, update talent cultivation processes, and promote education and teaching with the goal of cultivating new quality competitiveness among graduates. This, in turn, will help enhance the quality and effectiveness of talent cultivation in vocational and technical undergraduate colleges.

Disclosure statement

The author declares no conflict of interest.

References

- [1] Mu LH, Chang S, 2021, Research on the Evaluation of Talent Cultivation Quality in Applied Undergraduate Colleges under the Background of New Engineering. *Science and Technology Innovation Herald*, 2021(12): 226–228.
- [2] Zhang SJ, Liao PJ, 2022, Research on the Transformation of Innovation and Entrepreneurship Courses in Applied Undergraduate Colleges from the Perspective of New Engineering. *Straits Technology and Industry*, 35(11): 63–67.
- [3] Pang H, 2021, Innovation of Tourism Management Undergraduate Education Training Model from the Perspective of New Engineering under the Background of High Quality. *Journal of Changchun Institute of Technology (Social Science Edition)*, 2021(3): 128–130.
- [4] Hui ZZ, Wang YP, Tang J, et al., 2023, Teaching Reform and Exploration of Polymer Physics Courses in Applied Undergraduate Colleges from the Perspective of New Engineering. *Journal of Huaibei Normal University (Natural Science Edition)*, 2023(4): 89–92.

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