

Research on the Contemporary Value of Transdisciplinary Thinking in Huang Yanpei's Grand Vocational Education Philosophy

Zheng Ma*

School of Vocational Education, Tianjin University of Technology and Education, Tianjin, China

*Corresponding author: zheng1850@qq.com

Abstract: With the rapid advancement of technology and accelerated industrialization, engineering practice has garnered increasing global attention. Highly digitalized and intelligent production models have profoundly transformed how people live, work, and learn. The new era revolution demands a significant influx of multidisciplinary professionals, necessitating profound reforms in vocational education's talent cultivation models. The dawn of this new era presents both opportunities and challenges for China's vocational education development. Over a century ago, patriotic educators like Huang Yanpei established modern vocational education to fulfill the mission of saving the nation. Mr. Huang proposed a series of vocational education philosophies and founded the China Vocational School, laying the theoretical and practical foundations for modern vocational education. His contributions hold significant implications for contemporary vocational institutions. [1] This paper focuses on Huang Yanpei's grand vision for vocational education, particularly his cross-disciplinary and social thinking. It aims to offer new perspectives for addressing current challenges in vocational education development, provide valuable insights for achieving high-quality vocational education, and contribute to cultivating technical and skilled talent suited for the new era.

Keywords: Huang Yanpei; Vocational Education; Cross-Boundary Thinking; Social Thinking; Modern Significance.

1. Introduction

With the rapid advancement of technology and accelerated industrialization, engineering practice has garnered increasing global attention. Highly digitalized and intelligent production models have profoundly transformed how people live, work, and learn. The new era revolution demands a significant influx of multidisciplinary professionals, necessitating profound reforms in vocational education's talent cultivation models. The dawn of this new era presents both opportunities and challenges for China's vocational education development.

Over a century ago, patriotic educators like Huang Yanpei established modern vocational education to fulfill the mission of saving the nation. Mr. Huang proposed a series of educational philosophies and founded the China Vocational School, laying the theoretical and practical foundations for modern vocational education. His insights remain highly relevant for contemporary vocational institutions. [1] This paper focuses on Huang Yanpei's grand vision for vocational education, particularly his interdisciplinary and social thinking. It aims to offer new perspectives for addressing current challenges in vocational education development, provide valuable insights for achieving high-quality vocational education, and contribute to cultivating technical and skilled talent suited for the new era.

2. An Overview of Huang Yanpei's Vocational Education Philosophy

Huang Yanpei's vocational education philosophy encompasses five core tenets: The educational objective of "providing employment for the unemployed and fostering job satisfaction among the employed"; The institutional principles of "socialization," "scientificization," and

"democratization"; The pedagogical principles of "integrating manual and intellectual work," "uniting practice with learning," "balancing theory with practice," and "equally emphasizing knowledge and skills"; the talent development goals of "balancing knowledge and ability" and "cultivating both virtue and skill"; and the vocational ethics education principles of "sincere patriotism," "dedication to work and community," and "the sanctity of labor." [2]

Huang Yanpei defined vocational education as follows: "Using educational methods to enable everyone to acquire the means of livelihood and joy according to their individuality, while fulfilling their obligations to the community—this is called vocational education." [2] [3] If humanity is the center of all worldly issues, and life is the center of all human issues, then research on vocational education must start from a human-centered perspective. In terms of educational subjects, training objectives, training methods, and training targets, vocational education possesses distinct typological characteristics from general education, reflecting its extensive connections with various aspects of society. [4] In Mr. Huang Yanpei's development plan, the essential attributes of vocational education are its social nature and cross-boundary character.

3. Huang Yanpei's Transdisciplinary Thinking

Regarding the cross-boundary nature of vocational education, the earliest, most profound, and most comprehensive domestic discourse on this topic was Mr. Huang Yanpei's "Grand Vocational Educationism" theory proposed in the mid-to-late 1920s. He emphasized: "(1) Focusing solely on vocational schools cannot advance vocational education; (2) Focusing solely on the education sector cannot advance vocational education; (3) Focusing solely on the agricultural, industrial, or commercial sectors

cannot advance vocational education." [4] Delivering vocational education necessitates bridging connections across the entire education sector and professional fields, engaging in societal activities, and prioritizing adaptation to external environmental factors.

The advancement of vocational education requires transcending the boundaries between the education sector and the professional sector to achieve deep integration between education and industry. In terms of educational entities and training objectives, vocational education possesses distinct characteristics from general education. It places greater emphasis on practicality and applicability, cultivating versatile talents with practical operational skills and innovative spirit. The scope of vocational education should not be confined to education alone; it should not only focus on individual career development but also on the economic development and social progress of society as a whole.

4. Huang Yanpei's Social-Oriented Thinking

Mr. Huang Yanpei's "Grand Vocational Educationism" is also reflected in his core educational philosophy. He believed that the most crucial aspect of vocational schools is their social nature. "Socialization" is "the sole lifeblood of vocational education institutions"; for vocational education, social relevance is as essential as the soul is to a human being. From a social perspective, whether establishing vocational schools, designing programs and curricula, or facilitating graduate employment, "there is no education divorced from society. To determine what kind of education to implement, one must first understand the nature of the society in which it is applied." The development of vocational education must involve investigation and consideration of societal needs, adapting to societal demands. [3] Vocational education must continually adapt to society and serve society; vocational institutions should adhere to a socialized approach to education.

Vocational education must be closely linked to actual societal needs and adapt to societal development demands. It is not merely a place for skill cultivation but also a bridge connecting schools and society. Therefore, it cannot be confined to the school environment. "Any phenomenon that adequately reflects the characteristics, habits, and capabilities of a society should be studied." Education must be viewed beyond its institutional boundaries, focusing on societal needs to develop vocational education. Developing vocational education requires establishing extensive connections with all sectors of society to jointly participate in and advance its growth. Vocational schools should also actively conduct social research to understand societal demands and changes, enabling timely adjustments to teaching content and methods to ensure vocational education evolves in sync with societal needs.

5. Huang Yanpei's Grand Vision for Vocational Education

5.1. Focusing solely on vocational schools cannot advance vocational education

"The establishment of vocational programs must be based entirely on the local conditions of the time," "It depends on the needs of the professional world; determining the curriculum and selecting textbooks requires consulting the

professional community." "It must simultaneously align with the socio-economic structure and integrate with social life to thrive and prosper." Huang Yanpei emphasized cultivating talent according to societal needs while also fostering students' individuality and freedom, developing their professional skills and sound work ethics to advance social development. The establishment and structure of vocational education programs must be grounded in regional economic development and societal demands, aligning with industrial restructuring, technological advancement, and developmental needs.

Vocational schools are fundamentally established to meet societal needs. In essence, vocational education is inherently social in nature, and in its function, it serves to socialize individuals. Vocational schools must prioritize strengthening ties with society and the professional community. Whether in program design, curriculum development, teaching methodology, or faculty recruitment, industry needs must be central considerations. Furthermore, as vocational education deepens its connection with the professional sphere, the latter must also shoulder corresponding responsibilities. Huang Yanpei advocated that industry and schools jointly bear the responsibility for vocational education, ensuring it meets societal demands by cultivating talent suitable for professional needs.

5.2. Focusing solely on the education sector will not advance vocational education

To develop vocational education, one must not focus solely on education. Huang Yanpei believed that vocational education must strengthen its ties with society, consider the needs of society—especially the professional world—and pay attention to the demands of the general public. On the question of how to run vocational schools effectively, Mr. Huang Yanpei argued that "those running vocational schools must simultaneously strive for communication and coordination with all sectors of the education and professional communities. While promoting vocational education, they must also dedicate part of their energy to participating in the broader societal movement. "He further emphasized that beyond internal excellence, "externally, one must participate with utmost enthusiasm in all endeavors and embrace everything with the broadest possible vision. "Vocational education absolutely cannot be confined to book learning." This was both the starting point and the ultimate goal of Huang Yanpei's grand vision for vocational education. Precisely because Huang believed that "the greatest problem in education today is the isolation of schools from society," he criticized the past practice of treating vocational education as solely an educational matter and the lack of close ties between vocational education and agriculture, industry, and commerce. [7]

"This responsibility must be shared with the professional world," he asserted, explicitly proposing the establishment of industry-academia consortiums and joint educational programs. He argued that strengthening ties with the professional sphere could also resolve students' career prospects: "Integrating education with industry—one side cultivates talent, the other solves livelihood issues—simultaneously develops local industries."

In modern society, rapid technological advancement and industrial upgrading cause swift shifts in industry talent demands. Relying solely on the education sector to define vocational education content and direction may fail to capture

these changes promptly, resulting in educational content lagging behind industry needs. Moreover, school-enterprise collaboration has become a vital model for advancing vocational education. Through such partnerships, schools can share resources with enterprises, understand their practical needs, and thereby cultivate students' vocational skills more effectively. An education-centric approach alone may fail to provide students with sufficient practical platforms, hindering the development of their hands-on skills.

The ultimate goal of vocational education is to facilitate student employment. Feedback from the job market serves as a crucial indicator of vocational education's success. An approach focused solely on the education sector may fail to adequately consider labor market demands, resulting in graduates lacking competitiveness in the job market.

5.3. Focusing solely on agriculture, industry, and commerce cannot advance vocational education.

The phrase "not focusing solely on agriculture, industry, and commerce" implies that vocational education is inherently part of the broader social development system. If society as a whole is not well-developed, agriculture, industry, and commerce will not thrive, making it even harder for vocational education to flourish. Therefore, skill development is not merely an educational issue but a societal one, requiring a solid social foundation for skill formation and fostering a supportive social environment. Vocational education must serve all societal occupations and focus on the broad masses of the lower strata. Beyond establishing various formal vocational schools, it should encompass multi-tiered, diverse forms of vocational education, including programs for special populations.

In response to the demands of the times, he advocated for the establishment of "military vocational education," "disaster victim vocational education," "wounded soldier vocational education," "post-demobilization vocational education," "Qing dynasty bannerman vocational education," and "poor children vocational education." He emphasized that "it is advisable to begin with the common people" as a fundamental principle of vocational education, proposing the pilot implementation of rural vocational education through district-based trials. [8] Following the introduction of the "Great Vocational Education" concept, the focus of China's vocational education efforts shifted from urban to rural areas, marking the beginning of the Chinese Society for Vocational Education's drive for rural reform.

Historically, agricultural, industrial, and commercial sectors each possess distinct developmental needs and industry characteristics. An industry-driven approach ensures vocational education aligns closely with practical demands, cultivating talent that meets sectoral requirements. However, focusing solely on industry perspectives risks overlooking the comprehensive and universal nature of vocational education across sectors and domains. Vocational education must guarantee seamless integration between education and careers, providing students with a smooth transition from learning to employment. The advancement of vocational education requires concerted efforts and collaboration between the education sector and the professional community. The education sector should play a leading and integrating role, providing comprehensive and systematic educational philosophies and resources for vocational education. The professional community should offer practical demands and

feedback, guiding the direction and development of vocational education. Simultaneously, vocational education must emphasize the integration of interdisciplinary knowledge and the alignment between education and careers, ensuring students acquire a comprehensive knowledge system and practical skills to lay a solid foundation for future career development.

6. The Contemporary Significance of Huang Yanpei's Cross-Boundary Thinking

The digital transformation of industries has created a new environment for the reform and development of vocational education, presenting numerous challenges. As we enter a new era, China requires not only scientists and design engineers but also hundreds of millions of field engineers and highly skilled professionals capable of process innovation. In response, the "Proposal of the Central Committee of the Communist Party of China on Formulating the 14th Five-Year Plan for National Economic and Social Development and the Long-Range Objectives Through the Year 2035" states: "Enhance the adaptability of vocational and technical education, deepen the integration of vocational and general education, the fusion of industry and education, and school-enterprise cooperation, and explore an apprenticeship system with Chinese characteristics." To build a modern vocational education system compatible with a modernized economic system, building upon and advancing Huang Yanpei's vision of cross-boundary social collaboration in vocational education, efforts should focus on:

6.1. Promoting Integration Between General and Vocational Education

The mutual integration of vocational education and general higher education represents a significant development of Huang Yanpei's vocational education philosophy in the new era. It is a concrete measure for "advancing vocational education" under the conditions of industrial digital transformation. This integration not only builds an "interchange" for vocational education development but also broadens the pathway connecting basic education to vocational education. It enhances the quality of vocational education enrollment, promotes the integration of education with productive labor [9], and lays a solid foundation for students' future career orientation and professional development.

The essence of integrating general and vocational education lies in merging vocational activities with education. This approach weaves vocational training throughout three stages: vocational cultivation in primary school, career guidance and subject selection in secondary school, and specialized study in higher education. This pathway ensures students can pursue advanced studies or secure livelihoods, constructing a clear road to success. To advance vocational education, efforts must begin at the foundational level. Primary and secondary schools should prioritize vocational awareness education, closely integrating it with labor education. Vocational awareness should serve as a key objective of labor education, while labor education should function as a core component and fundamental pathway for vocational awareness.

Additionally, we must expedite the refinement of a modern vocational education system, establishing a vertically

integrated academic talent cultivation framework encompassing secondary vocational education, junior college, undergraduate, and graduate levels. Undergraduate-level vocational institutions must uphold the distinctive characteristics and fundamental nature of vocational education, maintain a competency-based approach, adopt a career-oriented focus, deepen industry-education integration, and cultivate high-level technical and skilled talents with: - Stronger theoretical foundations - Enhanced practical capabilities - Higher technical proficiency - Broader job applicability - Superior professional ethics - Greater career potential.

6.2. Innovating the Chinese Apprenticeship System

Strengthening communication with industry not only reflects the cross-disciplinary nature of vocational education but also embodies a key feature of Huang Yanpei's grand theory of vocational education. This feature emphasizes that vocational education transcends the confines of the school, requiring the breaking down of barriers between education and industry to achieve deep integration. Given the current state of vocational education development, China has proposed an apprenticeship system with Chinese characteristics. This system aims to cultivate more high-quality skilled talents that meet societal needs through school-enterprise cooperation and the integration of work and study.

To advance this Chinese-style apprenticeship system, the key lies in mobilizing enterprises to actively participate in vocational education, achieving collaborative talent development between schools and businesses. As direct beneficiaries of vocational education, enterprises' level of involvement directly impacts its quality and effectiveness. Therefore, we must explore more effective incentive mechanisms to attract enterprises to deeply engage in vocational education. On one hand, the government can explore directing the "education surcharge" primarily toward employee training [9]. Through policy guidance, enterprises can be encouraged to allocate more resources to employee training, thereby enhancing their vocational skills. Simultaneously, enterprises deeply engaged in industry-education integration within vocational education could receive preferential reductions in education surcharges, further stimulating their enthusiasm for participation. On the other hand, institutions and enterprises should fully leverage information technologies of the new era to accelerate the coordinated development of industry colleges, public training bases for industry-education integration, and industrial internet platforms [10]. This blended virtual-physical training environment provides students with more authentic and diverse practical opportunities, helping them better master vocational skills. Simultaneously, establishing a network of industry-education integration alliances, vocational education groups, and vocational education service centers—social intermediary organizations with coordination and service functions—is a crucial measure to promote school-enterprise collaborative education. These entities can serve as new social organizational vehicles integrating government coordination with market guidance, providing robust support for the smooth operation of China's distinctive apprenticeship system.

7. Conclusion

As a pioneer and founder of modern vocational education in China, Mr. Huang Yanpei established the China Vocational School as his practical base. His vision of comprehensive vocational education not only constructed the theoretical framework and practical paradigm for modern vocational education but also provided theoretical guidance for its development in the new era through open, inclusive cross-disciplinary thinking and a social mindset rooted in people's livelihoods. His core principle that "vocational education must connect with society, integrate with occupations, and engage with the people" profoundly reveals the essential laws and developmental logic of vocational education. Advancing high-quality vocational education in the new era requires both inheriting and innovating upon Mr. Huang Yanpei's educational wisdom. We must break the closed loop of education, uphold socialized schooling, proactively align with industrial demands, and consolidate social synergy to build a new collaborative education model involving government, industry, enterprises, and institutions. We must broaden the boundaries of education, using cross-disciplinary thinking to deepen and solidify the integration of general and vocational education, promoting the mutual exchange of educational resources and complementary educational models. We must build upon local practices to accelerate the development of a modern apprenticeship system with Chinese characteristics, enhancing the relevance and adaptability of technical and skilled talent cultivation. This will ensure vocational education takes root in China, aligns with industrial needs, and serves public development. It will provide robust support for cultivating more high-quality technical and skilled professionals, master craftsmen, and national artisans who meet the demands of the new era, injecting sustained momentum into building China into an education powerhouse and a skills powerhouse.

References

- [1] Huang, Y. P. (1926). Seeking comrades' opinions on proposing the grand vocational education doctrine. *Education and Vocational Training*, (71), 1–4.
- [2] Huang, Y. P. (1921). Foreword. *Education and Vocational Training*, (25), 1.
- [3] Editorial Department. (1985). *Selected educational writings of Huang Yanpei*. Shanghai Education Press.
- [4] Wang, S. D. (2023). Characteristics and contemporary value of Huang Yanpei's vocational education philosophy. *Educational Science*, 39(3), 75–81.
- [5] Qian, C. Q., & Liu, N. N. (2018). Huang Yanpei and Chinese vocational education. *Chinese Archives*, (11), 80–81.
- [6] Zhang, X. F. (2014). Research on the characteristic traits of educators: Taking renowned educators of the Republic of China Period as examples. *Research on Teacher Education*, 26(5), 73–80.
- [7] Dong, R. Z. (2008). Research on vocational education system reform from the perspective of a "broad view of vocational education" [Doctoral dissertation]. East China Normal University.
- [8] Wang, X. F., & Zhao, J. Z. (n.d.). How vocational education can strengthen industry-education integration: Transcript of the online roundtable forum from Educator Magazine. *Educator Magazine*, 1–4.

- [9] Zhang, J. J., & Cui, F. Z. (2022). The essential characteristics of Huang Yanpei's vocational education philosophy and the construction of a modern vocational education system. *Education and Vocational Training*, (13), 5–11.
- [10] Li, M. Q., & Yang, Q. Y. (2017). Basic characteristics, influence, and modern application of Huang Yanpei's vocational education thought. *Education and Vocational Training*, (2), 5–10