Exploration of the Integrated Vocational and General Education Talent Cultivation Model in Higher Education from the Perspective of Industry–Education Integration

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Abstract: *With the development of the social economy and the transformation of industrial structures, higher education faces new challenges in talent cultivation, particularly in the collaborative development of academic education and vocational education, which urgently requires innovation. From the perspective of industry-education integration, this study systematically explores the theoretical foundation, structural construction, and optimization pathways of the integrated vocational and general education talent cultivation model in higher education. The study finds that industry-education integration provides external driving forces for the integration of vocational and general education through the deep linkage between educational systems and industrial systems; the integration of vocational and general education, in turn, achieves the coordinated enhancement of academic literacy, professional competence, and personal development through curriculum integration, diversified learning pathways, and the optimization of talent cultivation mechanisms. On this basis, the study proposes constructing multidimensional and collaborative talent cultivation objectives, a cross-boundary integrated curriculum system, and diversified learning pathways, and promoting model optimization through systematic talent cultivation mechanisms, collaborative resource integration and sharing, and innovative iteration. The study provides theoretical support and practical reference for higher education to build an open, flexible, and sustainable model for cultivating compound talents.*

Keywords: *industry-education integration; integration of vocational and general education; higher education; talent cultivation model; curriculum integration*

Introduction

With the accelerated advancement of the knowledge economy and technological innovation, higher education faces an urgent demand to cultivate compound and innovative talents. Traditional single-focused academic or vocational training models can no longer meet the comprehensive development needs of students in terms of theoretical literacy, practical ability, and overall competence. The integrated vocational and general education talent cultivation model under the perspective of industry-education integration emphasizes the bidirectional linkage between academic education and vocational education, highlighting the multidimensional integration of curriculum, skills, and literacy, and thereby provides a new development approach for higher education. Studying this model holds significant theoretical value and practical necessity: theoretically, it expands interdisciplinary research across pedagogy, talent studies, and cognitive psychology, providing systematic support for talent cultivation systems; practically, it can optimize curriculum systems, enrich learning pathways, and enhance students' interdisciplinary adaptability and innovative potential. Therefore, exploring the integrated vocational and general education talent cultivation model in the context of industry-education integration not only aligns with the trends of modernizing education but also represents a core pathway to promoting high-quality development in higher education.

1. Theoretical Foundation of Integrated Vocational and General Education under the Perspective of Industry-Education Integration

1.1 Definition and Connotation of Industry-Education Integration and the Integration of Vocational and General Education

The core of industry-education integration lies in establishing a deep linkage between educational systems and industrial systems, enabling educational activities to accurately reflect the trends of social development and technological evolution. Its function is not limited to the optimized allocation of educational resources but constitutes a systemic educational philosophy and strategic arrangement, aiming to achieve multiple objectives—knowledge creation, competency cultivation, and value shaping—through the organic alignment of teaching content with industry demands. In this model, education is no longer a relatively closed process of knowledge transmission but forms a dynamic and open learning environment based on real industrial scenarios, promoting learners' development of comprehensive competence and innovative potential through cross-boundary learning and practical exercises. Consequently, industry-education integration not only expands the boundaries of education but also enhances its adaptability and foresight.

In correspondence, the integration of vocational and general education, as an important trend in educational development, emphasizes the bidirectional linkage and mutual support between vocational education and general education, aiming to break through the structural barriers of binary separation and promote the collaborative development of academic education and skill-based education. This integration manifests not only in curriculum-level alignment but also as an update of educational philosophy, emphasizing the generation of practical abilities and comprehensive competence alongside knowledge accumulation, thereby enhancing learners' flexibility in future career choices and social adaptation. Within the broader context of industry-education integration, the integration of vocational and general education becomes a crucial pathway for horizontal connectivity within the educational system; together, these approaches construct an education ecosystem that combines vertical embedding with horizontal linkage, driving higher education toward systematization, complexity, and diversification [1].

1.2 Theoretical Basis for the Integration of Vocational and General Education in Higher Education

The promotion of integrated vocational and general education in higher education has a solid theoretical foundation. From the perspective of pedagogy, traditional single-focused academic approaches can no longer meet learners' demands for comprehensive development. Integrated vocational and general education emphasizes the organic unity of knowledge mastery, competency cultivation, and value construction by creating a learning environment that fosters the collaboration of theory and skills. This model not only promotes the multidimensional construction of knowledge and the diversification of competency development but also breaks down disciplinary barriers, enabling learners to form positive interactions among academic exploration, skill training, and comprehensive competence enhancement. Educational theory emphasizes that learning effectiveness stems from the integration of cognition, skills, and attitudes, and integrated vocational and general education represents a concrete and systematic practice of this principle.

From the perspective of talent studies and cognitive psychology, modern society increasingly demands compound and innovative talents, and integrated vocational and general education aligns with this trend. Through interdisciplinary learning experiences and multitask training, students can achieve cognitive transfer and skill recombination across different knowledge systems. Cognitive psychology research shows that cross-boundary exploration in complex learning tasks contributes to learners' development of deep thinking, problem-solving abilities, and knowledge transfer skills; interdisciplinary theory further highlights that complementarities among different disciplines help learners form multidimensional cognitive frameworks, enhancing adaptability and creativity. Therefore, integrated vocational and general education is not only an update of educational models but also a necessary choice under the combined theoretical logics of pedagogy, talent studies, and psychology, and its inherent rationality provides a solid theoretical foundation for the integration of industry-education practices with vocational and general education .

1.3 The Logical Convergence of Industry-Education Integration and the Integration of Vocational and General Education

Industry-education integration and the integration of vocational and general education are highly compatible at the logical level, and their combination provides a new pathway for the systematic optimization of talent cultivation models in higher education. In terms of objectives, industry-education integration emphasizes the effective alignment between talent cultivation and industry demands, while the integration of vocational and general education focuses on balancing academic literacy with professional competence; both prioritize the enhancement of learners' comprehensive competence. This homogeneity of objectives provides a value basis for the formation of multidimensional talent cultivation models, enabling education to meet not only the macro-level demands of social development but also the diverse developmental needs of individual learners. Through this collaborative logic, talent cultivation systems evolve from being fragmented to integrated, forming a coupled structure characterized by systematization and comprehensiveness [2].

At the level of pathways and mechanisms, industry-education integration strengthens the combination and transformation of knowledge and skills by introducing industrial resources and applied scenarios, while the integration of vocational and general education promotes complementary penetration and coordinated evolution across different types of education through curriculum optimization and the diversification of learning pathways. In practice, the two approaches mutually support each other: industry-education integration provides learners with a platform for authentic skill transformation and value realization, while the integration of vocational and general education ensures learners achieve flexible adaptation and transfer across interdisciplinary and cross-domain learning. In terms of outcomes, industry-education integration serves as the external condition driving the development of vocational and general education integration, whereas the latter provides the internal logic ensuring the implementation of industry-education integration; together, they construct a bidirectional driving system for innovation in higher education talent cultivation models, enabling the education system to achieve coordinated expansion both vertically in depth and horizontally in breadth.

2. Structural Construction of the Integrated Vocational and General Education Talent Cultivation Model in Higher Education

2.1 Multidimensional and Collaborative Talent Cultivation Objectives

The core of the integrated vocational and general education talent cultivation model in higher education lies in constructing a multidimensional and collaborative system of talent cultivation objectives, whose essence is to transcend the limitations of single-focused knowledge transmission or skill training and achieve the organic integration of academic literacy, professional competence, and personal development. Traditional cultivation models often overemphasize the accumulation of academic knowledge while neglecting the comprehensive competence required by students in complex social contexts, leading to a disconnect between theory and practice. The integrated vocational and general education model coordinates multidimensional objectives, enabling talent cultivation to simultaneously address scientific inquiry and technical capability, cultivating both academically oriented talents with critical and systematic thinking and application-oriented talents capable of meeting industry demands and social challenges.

Within this model, multidimensional and collaborative talent cultivation objectives do not merely represent a parallel juxtaposition of academic and vocational elements; they form cross-domain complementarity and dynamic coupling. The academic dimension emphasizes the cultivation of critical thinking, systematic analysis, and knowledge innovation; the vocational dimension focuses on practical skills, problem-solving, and job competency development; the personal dimension targets the shaping of responsibility, ethical judgment, and lifelong learning ability. The interaction and integration of these multidimensional objectives enable students to establish bidirectional channels between theory and practice, develop cross-disciplinary and cross-domain cognitive advantages, and demonstrate greater flexibility and adaptability in future career choices and social role transitions [3].

2.2 Cross-Boundary Integration of the Curriculum System

The cross-boundary integration of the curriculum system is a key component in realizing the integrated vocational and general education talent cultivation model. For a long time,

academic-oriented courses and vocational-oriented courses have remained largely independent, resulting in fragmented knowledge systems and one-sided competency development. Integrated vocational and general education emphasizes breaking down these barriers by organically combining foundational disciplines, specialized courses, and skill training, and forming a systematic integration across disciplines and majors to create a curriculum structure that is both compound and adaptable. Within this framework, courses are no longer confined to the linear progression of disciplinary knowledge but achieve complementary and transferable knowledge through cross-boundary integration, promoting dual advancement at both the cognitive and skill levels.

Cross-boundary integration manifests not only at the content level, through the interpenetration of multidisciplinary knowledge, but also at the structural level, through the systematic linkage of learning modules. Humanities courses provide students with value cognition and cultural literacy, natural science and engineering courses strengthen logical reasoning and technical ability, and interdisciplinary modules establish logical connections among different knowledge areas through project-driven and task-oriented approaches. Such curriculum design guides students to achieve cross-boundary transfer and integrated innovation in complex problem contexts and, through dynamic adjustment of the curriculum structure, ensures alignment with societal needs, industry changes, and disciplinary frontiers. The cross-boundary integration of the curriculum system not only enhances the systematic nature of educational provision but also offers students a broader landscape of knowledge and skill development.

2.3 Diversified Expansion of Learning Pathways

The diversified expansion of learning pathways is an important aspect of the structural construction of the integrated vocational and general education talent cultivation model. Traditional learning pathways are often singular, requiring students to follow a fixed course sequence with limited flexibility to choose according to personal interests, abilities, and development directions. The integrated vocational and general education model designs diverse learning pathways, providing students with more personalized and autonomous growth trajectories. Theoretical learning, skill training, and innovative exploration intertwine along different pathways, enabling students to achieve the organic integration of knowledge, competence, and values throughout the learning process [4].

This diversification is reflected not only in the variety of teaching formats but also in the openness of learning content and methods. Blended online and offline learning broadens students' channels for acquiring knowledge, while digital platforms provide real-time updated learning resources and interactive spaces; cross-domain learning pathways break professional boundaries, allowing students to transfer freely across disciplines and develop cross-boundary thinking and compound competencies; project-based learning pathways introduce authentic tasks, prompting students to internalize knowledge and generate skills through problem-solving processes. The diversified expansion of learning pathways enhances students' learning autonomy and strengthens the adaptability of the educational system, enabling the integrated vocational and general education model to better respond to the complex and dynamic demands of society as well as the diverse developmental needs of individuals.

3. Optimization Pathways of the Integrated Vocational and General Education Talent Cultivation Model under the Perspective of Industry-Education Integration

3.1 Systematic Optimization of Talent Cultivation Mechanisms

The optimization of the integrated vocational and general education talent cultivation model in higher education must rely on a systematic talent cultivation mechanism as its core support. Single-focused teaching improvements or the setting of partial objectives often fail to establish a long-term mechanism, leading to a disconnect between talent cultivation goals and learning outcomes. Therefore, systematic optimization should emphasize the overall coordination and intrinsic coupling of objectives, content, methods, and evaluation. At the objective level, a balanced relationship should be established among academic literacy, professional competence, and personal development, achieving a dual focus on both academic-oriented and application-oriented talents, and ensuring that students gain comprehensive development in knowledge accumulation, skill mastery, and value formation. At the content level, an integrated knowledge system combining theoretical learning, skill training, and value cultivation should be constructed, ensuring that the educational process possesses both depth and breadth.

At the methodological level, teaching models should transcend the limitations of traditional

classroom instruction and single-skill training, incorporating diversified approaches such as inquiry-based, project-based, interactive, and case-driven methods, using authentic contexts to promote skill generation and knowledge transfer. The evaluation mechanism should establish a multidimensional indicator system, including process tracking, competency growth, and comprehensive quality development, avoiding the limitations of outcome-oriented assessments on educational effectiveness. Through the cyclical interaction among objectives, content, methods, and evaluation, a closed-loop optimization mechanism is formed, allowing the talent cultivation model to iterate dynamically and improve continuously, thereby maintaining the vitality and adaptability of higher education talent cultivation.

Furthermore, systematic optimization not only requires the completeness of educational elements but also emphasizes the intrinsic interaction and feedback among these elements. Multidimensional objectives are realized through curriculum and teaching methods, the multilayered nature of content is reflected through the expansion of learning pathways, and evaluation feedback provides a scientific basis for the dynamic adjustment of objectives and content. Through this cyclical optimization mechanism, the talent cultivation model can achieve deep integration of theory, practice, and competence, effectively supporting students in performing diverse roles in complex social environments, while laying a solid foundation for the continuous innovation and development of higher education [5].

3.2 Integration and Sharing of Collaborative Resources

The deepening of the integrated vocational and general education talent cultivation model requires efficient integration and sharing of collaborative resources as a key support. Educational resources in higher education are often dispersed across different disciplines, majors, and platforms, and a lack of effective integration can lead to fragmented knowledge structures and disjointed competency development. Resource integration requires breaking down disciplinary and departmental boundaries, cross-boundary fusion of course materials, laboratory resources, research platforms, and digital tools, and the construction of a structured and hierarchical educational support system. This not only enhances resource utilization efficiency but also creates a cross-disciplinary and multidimensional learning environment for students, enabling theoretical learning, skill training, and value formation to be supported holistically within a unified framework.

The establishment of a resource-sharing mechanism further amplifies the value of educational resources. Sharing is not only reflected in quantitative expansion but also in qualitative complementarity and optimization. Knowledge from different disciplines, when integrated, generates innovative potential, and resources at different levels, when shared, enhance vertical continuity, providing students with deeper learning extension opportunities. Digital technology provides strong support for sharing; through intelligent learning management platforms, virtual laboratory systems, and data-driven teaching analytics tools, course materials, case studies, and instructional methods can be updated in real time and widely disseminated, enhancing learning flexibility and openness.

The effective integration and sharing of collaborative resources not only promotes intrinsic integration among educational elements but also offers students diverse and personalized development pathways. Through resource integration, students can achieve higher cognitive transfer in cross-disciplinary practice and inquiry; through the sharing mechanism, learners can transfer freely across different knowledge domains, achieving cross-boundary learning and comprehensive competency enhancement. Ultimately, this mechanism provides robust support for the sustainable development of the integrated vocational and general education talent cultivation model in higher education, making talent cultivation more systematic, flexible, and adaptable.

3.3 Innovative Development Directions of the Talent Cultivation Model

Under the context of industry-education integration, the development of the integrated vocational and general education talent cultivation model must be driven by innovation and guided by foresight. With continuously evolving knowledge systems and increasingly diverse social demands, a single education model can no longer meet the requirements for cultivating compound talents. The future development of the talent cultivation model should focus on cross-boundary integration, intelligent support, and continuous iteration, aiming to construct an open, flexible, and innovative educational system. Cross-boundary integration seeks to break down disciplinary, professional, and industry boundaries, enabling the free flow and reorganization of educational resources, and allowing students

to achieve knowledge transfer and methodological innovation within interdisciplinary platforms [6].

Intelligent support emphasizes the in-depth application of artificial intelligence, big data, and learning analytics technologies in teaching, using personalized recommendations, real-time assessment, and data-driven instructional adjustments to achieve precision, customization, and efficiency in learning. Students can dynamically adjust their learning pathways according to their individual characteristics and developmental needs, enhancing autonomous learning and practical innovation capabilities. Continuous iteration of the model constitutes the core of educational innovation; the education model should not remain static but function as a dynamic structure that evolves with environmental changes, knowledge updates, and talent demands.

Through the combined mechanisms of cross-boundary integration, intelligent support, and continuous iteration, the integrated vocational and general education talent cultivation model can comprehensively optimize educational resources, curriculum design, and learning pathways, forming a system characterized by openness, flexibility, and creativity. Under this model, higher education can cultivate compound talents who possess academic literacy, professional competence, and innovative capacity, while simultaneously promoting continuous reform and high-quality development of the educational system, thereby providing society with a more adaptable and competitive talent pool.

Conclusion

This study systematically analyzes the theoretical foundations, structural construction, and optimization pathways of the integrated vocational and general education talent cultivation model in higher education under the perspective of industry-education integration, revealing the high degree of alignment between industry-education integration and the integration of vocational and general education in terms of goal setting, curriculum systems, learning pathways, and talent cultivation mechanisms. The research indicates that multidimensional and collaborative talent cultivation objectives, cross-boundary integrated curriculum systems, and diversified learning pathways can effectively promote the development of students' comprehensive competence, while systematically optimized talent cultivation mechanisms, the integration and sharing of collaborative resources, and innovative iteration provide support for the sustainable development of the model. In the future, the development of the integrated vocational and general education talent cultivation model in higher education should further emphasize interdisciplinary integration, intelligent instructional support, and dynamic iteration of the model, achieving personalized, flexible, and forward-looking education through technology-driven and system-updating approaches, providing a long-term mechanism for cultivating compound talents, and promoting new breakthroughs in openness, innovation, and sustainability in higher education.

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