

Exploration of the Talent Training Mode of Vocational Undergraduate Universities in the Era of Digital Intelligence

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The “digital intelligence era” is marked by the deep integration of artificial intelligence (AI), big data, and other technologies, and is profoundly reshaping the social production mode and talent demand structure. Nowadays, our country is in the stage of high-quality development, and the development of new quality productivity has become a core task, which puts forward an urgent need for new quality talents with digital literacy, innovation ability, and compound knowledge structure. As a key part of the connection between higher education and vocational education, vocational undergraduate education shoulders the mission of cultivating high-level technical and skilled talents and serving the upgrading of the industry. This paper systematically analyzes the development status and challenges of vocational undergraduate universities in the era of digital intelligence, and explores the transformation path of talent training mode in the era of digital intelligence to meet the requirements of new quality productivity from the aspects of concept reshaping, curriculum reconstruction, teaching innovation, teacher construction, and evaluation reform.

Keywords: digital intelligence era, vocational undergraduate, new quality productivity, talent training

Introduction

The era of digital intelligence is a typical stage of “artificial intelligence (AI) empowering social production”, and technology is not only a tool, but also the core driving force for reshaping the education ecology and industrial form. Our country’s high-quality development stage emphasizes innovation-driven and connotative growth, and the key is to cultivate “new quality productivity”. The development of new quality productivity directly depends on “new quality talents”, that is, compound workers with a solid professional and technical foundation, excellent digital literacy, cross-border integration ability, innovative thinking, and lifelong learning awareness. High-quality development of vocational undergraduate education is an urgent requirement for building a skill-based society and a historical necessity for educational modernization (Huang, 2025). Vocational undergraduate education, as a high-level link in our country’s modern vocational education system, spans higher education and vocational education, shoulders the training of production and service-oriented front-line training, and as the main position for cultivating application-oriented talents, its talent training model must respond to the fundamental changes in the era of digital intelligence and realize the transformation from “skill imparting” to “wisdom empowerment”.

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Review of the Development Status of Vocational Undergraduate Education in the Era of Digital Intelligence

“Artificial intelligence+” vocational education is fully embedded in the transformation of vocational education talent training objectives, talent training content, talent training process, and talent training evaluation through artificial intelligence technology (Zhao & Wu, 2025). High-quality development is regarded as the “lifeline” of vocational undergraduate education, and its goal is to serve the upgrading of the industry and cultivate high-level technical and skilled talents. Vocational undergraduates have the dual attributes of “academic and professional”, and play a unique role in building a skill-based society and meeting the needs of new quality productivity. Some colleges and universities have carried out “artificial intelligence+” vocational education practice, trying to embed artificial intelligence technology into the whole process of talent training. For example, the construction of a smart classroom teaching model and the use of digital intelligence technology in some courses to “empower wisdom and empowerment” have effectively improved students’ learning effectiveness and satisfaction. At the same time, the academic and practical circles have put forward many reform frameworks, such as the “three-dimensional and four-order” curriculum reconstruction model (three-dimensional collaboration of technology, education, and ecology, four-order closed-loop from demand analysis to feedback optimization), and the “five new” measures to create a “golden cradle” for talent incubation, etc., which provide ideas for system reform. The integration of high-quality industry and education is the “accelerator” of vocational undergraduate education, and promotes the docking of the education chain, talent chain, industrial chain, and innovation chain through carriers such as modern industrial colleges and school-enterprise technical education teacher databases.

However, the development history of vocational undergraduate education is relatively short, and there are problems such as unclear “positioning + characteristics” and low social recognition. Under the wave of digital intelligence, how to adhere to the balance between “integrity” (such as maintaining professionalism and application-oriented core) and “innovation” (such as deep integration of AI and improving academic quality) still needs to be explored in depth. The existing curriculum system has the problem of “imbalance between educational logic and career logic”. The application of technology often stays on the surface, and the reconstruction of interdisciplinary and cross-professional courses is insufficient, making it difficult to support the compound knowledge structure required by new quality talents. For example, traditional majors such as ideology and politics in colleges and universities are deeply influenced by traditional teaching models, and the integration of digital and intelligent courses is insufficient. Students’ interest in learning and research has not been fully stimulated, the combination of theory and practice is not close, and the cultivation of digital literacy and innovation ability is weak. There is a serious shortage of “dual-teacher” teachers with the ability to practice cutting-edge technology and teaching transformation in the industry, especially teachers who can control AI teaching applications. Although there are pilots such as smart classrooms, the overall teaching mode is still dominated by traditional teaching, and new teaching models such as human-machine collaboration and embodied cognition have not become mainstream. The evaluation system still focuses on the assessment of results, and lacks procedural and value-added evaluation based on big data. School-enterprise cooperation mostly stays at the agreement level or simple internships, and lacks in-depth “integration” based on common technology research and development, standard formulation, and curriculum development. The mechanism for co-construction and sharing of resources is not perfect, and the channels for the transformation of advanced industrial technology elements into teaching are not smooth.

The Path of Talent Training Mode of Vocational Undergraduate Universities in the Era of Digital Intelligence

The era of digital intelligence is a new era with digitalization and intelligence as the core characteristics, and the popularization and application of new digital and artificial intelligence technologies to improve production efficiency, improve quality of life, and promote social progress (Wang, 2024). Based on the requirements of new talents and the current dilemma, vocational undergraduate universities must carry out a systematic reconstruction that runs through concepts, systems, processes, and evaluations.

From the “Concept of Tool Application” to the “Concept of Ecological Reshaping”

It is necessary to go beyond the narrow concept of digital intelligence technology as a simple teaching tool and establish the ecological reshaping concept of “artificial intelligence+” vocational education. This means “reconstructing the development thinking of vocational education according to the logic of full embedding of artificial intelligence”, and systematically planning talent training under the framework of the four domains of “vocational, technical, educational, and social”. The core is to practice “integrity and innovation”: keep the right of type education, the integration of industry and education, and the correct practice orientation; create a new integration of digital intelligence, a new system integration, and a new governance model.

Build a Smart Curriculum Group of “Cross-Domain Collaboration and Dynamic Evolution”

Learn from the “three-dimensional and four-step” model to carry out in-depth reconstruction of the curriculum system. Deep integration of technical dimensions: Incorporate cutting-edge technologies such as artificial intelligence and big data analysis into the general education basic curriculum system, and deeply embed professional core course modules. The education dimension follows the law: Based on the growth logic of technical and skilled talents, a progressive curriculum module of “basic cognition → skill mastery → comprehensive application → innovation and transfer” is constructed. Close docking of ecological dimensions: Establish a curriculum development mechanism of “one major (group) corresponding to an enterprise group and one industrial group”, transform real industrial projects and technical problems into course modules and graduation design topics, and realize the dynamic synchronization of course content and industrial technology evolution.

Fourth-order closed-loop implementation: Build a closed-loop system of “industrial demand research and talent portrait analysis → interdisciplinary project-based curriculum development and knowledge graph construction → implementation of virtual and real teaching scenarios → multi-dimensional evaluation based on learning behavior data and continuous optimization of curriculum”, so as to give the curriculum system the ability to self-evolve.

Innovate the Smart Teaching Model of “Human-Machine Collaboration, Empowerment and Empowerment”

Teaching is the key link to achieve “empowerment and empowerment”. Deepen smart classroom teaching: Comprehensively promote the proven smart classroom model of “empowering” with numbers and “empowering” with wisdom. AI learning situation analysis is used to realize personalized learning path recommendations, and a highly immersive “embodied cognition” practice environment is created through virtual simulation, digital twin, and other technologies to solve the problem of disconnection between theory and practice. Explore diversified teaching forms: Integrate “intelligent teaching with human-machine collaboration” (AI as a learning companion and teaching assistant) and “on-site teaching with embodied cognition” (in-depth enterprise real scenes) to form

a new normal of hybrid teaching of “online ubiquitous independent learning and offline in-depth discussion and practice”. Comprehensively promote the systematic construction of curriculum ideology and politics: As shown in the materials, combined with digital intelligence means, systematically design the ideological and political objectives, content, methods and evaluation of engineering and other professional courses, organically integrate the shaping of values into the transfer of technical knowledge and ability training, and enhance students’ sense of professional mission.

Cultivate New Quality Teachers With “High Digital Literacy and Strong Cross-Border Integration”

New technologies such as artificial intelligence have promoted the development of new quality productivity (Liao, 2025). Vocational undergraduate colleges and universities should make full use of the new generation of digital technology to build a classroom teaching model that “empowers” with data and “empowers” with wisdom, and cultivate innovative and intelligent skilled talents (An, Bai, & Yang, 2024). New quality talents need new quality teachers. Implement a “tiered” digital ability improvement plan for teachers: Carry out hierarchical and precise training for teachers with different foundations, from digital tool application, digital teaching design to innovative application of AI education. Jointly build a “diversified and cross-border” school-enterprise teacher pool: Vigorously introduce technical experts and skill masters from industry enterprises as industrial mentors, and form a “mixed team” with teachers in the school to jointly teach, develop, and guide projects. Improve the system for teachers to regularly go to enterprises for practical training. Strengthen the coordination of ideological and political and professional development of young teachers: In view of the “ability fault” and ideological impact faced by young teachers, the material proposes a work path with value leadership as the core, technology empowerment as the means, and humanistic care as the background, so as to help them simultaneously improve their political literacy and digital teaching ability.

Establish a Comprehensive Evaluation System That Is “Data-Driven, Focusing on Value-Added”

Promote the digitization of the evaluation system: Use learning analysis technology to collect students’ behavior and achievement data in knowledge mastery, skill operation, innovative practice, collaborative communication, etc. in the whole process and multiple dimensions. Implement comprehensive value-added evaluation: Change the single outcome evaluation, and pay more attention to the growth and increment of students in digital literacy, innovation ability, professionalism, etc. Introduce multiple evaluation subjects and methods such as enterprise project evaluation, skill competition, and patent invention. Strengthen the role of evaluation feedback: Use evaluation data for teaching diagnosis, learning early warning, personalized tutoring, and continuous improvement of majors and courses, forming an integrated closed loop of “teaching, learning, evaluation, and reform”.

Deepen the New Pattern of Integration of Industry and Education With “Shared Destiny and Shared Wisdom”

Jointly build an intelligent resource ecological library: Jointly build an “evolveable” resource ecological library that brings together industrial cases, process regulations, training resources, and virtual projects in accordance with unified standards, so as to realize intelligent retrieval, accurate push, and co-construction and sharing of resources. Build a substantive operation community: Deepen the construction of modern industrial colleges and characteristic industrial colleges, and promote the substantive integration of property rights mixing, benefit sharing, and risk sharing in talent training, technology research and development, social services, innovation and entrepreneurship. Expand lifelong learning and service functions: Vocational undergraduate

universities should become technical service centers and lifelong learning bases for regional industrial digital transformation, feedback teaching through social services, and enhance their contribution and influence to regional economic development.

Conclusions

At present, the world's digital intelligence process is accelerating the rapid development and widespread application of emerging technologies such as artificial intelligence and cloud computing, and the emergence of generative artificial intelligence such as ChatGPT and DeepSeek, which have profoundly changed and even reshaped people's production and lifestyle and thinking patterns, and promoted society to enter the era of digital intelligence with an accelerated attitude (He, 2025). In the context of the digital intelligence era, facing the strategic needs of the development of new quality productive forces, the systematic reconstruction of the talent training model of vocational undergraduate universities is no longer an option for partial improvement, but a historical necessity related to its survival value and development quality. This reconstruction must be based on the ecological concept of "artificial intelligence+" vocational education, with the goal of cultivating compound, innovative, and intelligent new quality talents, with "integrity and innovation" as the basic principle, and with "four domains interembedded" as the system framework, overcome difficulties, and achieve profound changes in key links such as curriculum, teaching, teachers, evaluation, and ecology. Only in this way can vocational undergraduate education truly consolidate its position as the "cornerstone of the high-quality vocational education system", firmly grasp the "lifeline of high-quality talent training", effectively launch the "high-quality industry-education integration accelerator", and comprehensively stimulate the "new engine driven by high-quality innovation", so as to highlight the irreplaceable value of type education in the great process of serving the country's high-quality development, supporting the intelligent upgrading of industries, and helping the construction of a skill-based society, and cultivate a steady stream of craftsmen and skilled craftsmen from big countries. Provide solid and flexible talent support for the great rejuvenation of the Chinese nation. Although the road ahead is full of challenges, the direction is clear and action is urgent.

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