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Construction of Curriculum Development Standards for Vocational Undergraduate Education

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Abstract: Vocational undergraduate education represents a critical evolution in the modern educational landscape, bridging the gap between practical vocational competency and rigorous undergraduate-level academic requirements. As the demand for highly skilled professionals continues to grow globally, there is an urgent need for systematic curriculum standards that effectively balance vocationality with higher education attributes. This study aims to construct a comprehensive curriculum development standard system specifically tailored for vocational undergraduate programs, drawing upon the foundational principles of competency-based education and work-process oriented theories. To achieve this, a multi-faceted methodological approach was employed, encompassing in-depth policy analysis, an extensive literature review, and a systematic comparative study of international vocational education standards. Based on these rigorous investigations, a robust five-dimensional framework is proposed, encompassing curriculum objectives, curriculum content, teaching strategies, the practical teaching system, and curriculum resources. Each dimension is meticulously designed to ensure that students acquire both theoretical knowledge and practical skills relevant to industry demands. The findings of this research provide a highly scientific, adaptable, and operational standard framework for curriculum construction in vocational undergraduate colleges. Ultimately, this proposed system serves as a vital tool to support continuous quality improvement, foster institutional standardization, and enhance the overall efficacy and global competitiveness of vocational undergraduate education.

Keywords: vocational education; curriculum standards; competency-based education; higher education; curriculum development

1. Introduction

1.1. Background and Significance

With the rapid advancement of modern vocational education, vocational undergraduate education has emerged as a pivotal tier within the broader educational framework, serving as a bridge that connects secondary vocational education, higher vocational education, and postgraduate studies [1, 2]. Unlike general undergraduate education, which primarily focuses on academic knowledge, and junior college vocational education, which emphasizes practical skills, vocational undergraduate education seeks to integrate these two dimensions. It aims to cultivate individuals who possess both robust professional competencies and a solid foundation in academic knowledge. This dual emphasis necessitates the development of curricula that not only adhere to industrial standards but also align with the knowledge systems expected at the undergraduate level. Despite its importance, the current state of curriculum construction in vocational undergraduate education is fraught with challenges. The absence of unified standards has resulted in significant disparities in curriculum quality across institutions. This inconsistency has led to unclear educational orientations and a weak alignment between academic programs and the evolving demands of industries. To address these issues, it is imperative to establish scientifically grounded curriculum standards. Such standards would provide a framework for standardizing teaching practices, enhancing the quality

Received: 28 January 2026

Revised: 12 March 2026

Accepted: 26 March 2026

Published: 31 March 2026



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of talent cultivation, and fostering the sustainable and healthy development of vocational undergraduate education as a whole.

1.2. Research Objectives and Scope

This research is dedicated to developing a comprehensive and actionable standard system for curriculum development specifically tailored to vocational undergraduate education. The primary objectives of this study are threefold. First, it seeks to identify and articulate the theoretical foundations and guiding principles that underpin the construction of vocational undergraduate curricula. This involves a detailed exploration of pedagogical theories, educational frameworks, and the unique requirements of vocational education in the context of undergraduate programs. Second, the research aims to establish a robust and multi-dimensional framework of standards. This framework will encompass various critical dimensions, including the definition of curriculum objectives, the selection and organization of content, the adoption of effective teaching methodologies, the integration of practical training components, and the allocation of necessary resources. Third, the study aspires to provide clear and practical guidelines that can be directly applied to the design, implementation, and continuous improvement of curricula in vocational undergraduate institutions [3]. The scope of this research is specifically concentrated on the development of curriculum standards for professional core courses within vocational undergraduate programs in China, ensuring relevance and applicability to the local educational context.

1.3. Methodology

The study employs a comprehensive mixed-method approach designed to ensure a robust and multidimensional analysis of vocational undergraduate education [1, 4]. This methodology integrates several key components to achieve a thorough understanding of the subject matter. First, policy analysis is conducted by systematically examining official documents issued by both national and local governments. These documents provide critical insights into the regulatory frameworks, strategic priorities, and developmental goals associated with vocational undergraduate education. Second, an extensive review of domestic and international literature is undertaken to establish a theoretical foundation and identify existing research gaps. This step ensures that the study is grounded in established academic discourse while also highlighting areas requiring further exploration. Third, a comparative analysis of successful cases of vocational undergraduate curriculum standards is performed. This comparison includes both domestic and international examples, enabling the identification of best practices and innovative approaches that can inform the development of optimized standards. Finally, expert interviews and consultations are conducted to refine and validate the proposed framework. These consultations involve professionals with extensive experience in vocational education, ensuring that the framework is both practical and aligned with current industry and academic needs. By combining these methods, the study aims to produce a well-rounded and actionable framework for vocational undergraduate curriculum standards.

2. Theoretical Basis and Core Principles

2.1. Connotation and Characteristics of Vocational Undergraduate Curriculum

Vocational undergraduate curriculum embodies a unique duality, combining the attributes of vocational education with those of higher education [5, 6]. The vocational aspect necessitates that courses are meticulously designed to meet specific job competency requirements, ensuring that students acquire practical skills directly applicable to their chosen industries. This involves the integration of cutting-edge industrial technologies, adherence to contemporary professional standards, and a focus on cultivating hands-on expertise that aligns with real-world demands. On the other hand, the higher education dimension emphasizes the development of a robust theoretical foundation, fostering innovative thinking and promoting a comprehensive understanding of complex concepts.

This dual focus ensures that students are not only equipped with the technical skills required for immediate employment but also possess the intellectual depth and adaptability needed for long-term career growth and lifelong learning. Unlike general undergraduate curricula, which often prioritize theoretical knowledge and academic exploration, vocational undergraduate programs are distinctly oriented towards practical application and industry relevance. Furthermore, they surpass junior college curricula by demanding a higher level of academic rigor, innovation, and systematic knowledge integration, thereby bridging the gap between vocational training and advanced academic pursuits.

2.2. Theoretical Foundations

Two core theories serve as the foundation for the standard construction of curriculum design, each emphasizing distinct yet complementary aspects of professional education. Competency-Based Education (CBE) prioritizes the development of job-specific competencies, ensuring that learners acquire the practical skills and abilities necessary to meet the demands of their professional roles. This approach underscores the importance of aligning educational objectives with real-world applications, focusing on practicality, relevance, and the ability to translate theoretical knowledge into actionable expertise. By centering curriculum design around professional abilities, CBE aims to produce graduates who are not only knowledgeable but also adept at performing tasks required in their respective fields. On the other hand, Work-Process Oriented Theory adopts a holistic perspective by structuring curriculum content based on the actual workflows and processes inherent to specific professional posts. This theory advocates for modular and project-based organization, integrating theoretical knowledge, technical skills, and personal qualities into cohesive work tasks. Such integration ensures that learners are prepared to navigate complex professional environments, adapt to dynamic work requirements, and contribute effectively to organizational goals. Together, these theories provide a robust framework for designing curricula that balance academic rigor with practical applicability, fostering comprehensive professional development [6].

2.3. Core Principles for Standard Construction

The Orientation Principle emphasizes the seamless integration of vocational education with higher education, ensuring that the curriculum aligns with both industry standards and the academic requirements of undergraduate programs. This principle underscores the importance of bridging practical skills with theoretical knowledge, fostering a dual focus that prepares students for both immediate employment and further academic pursuits. The Systematic Principle involves the development of a comprehensive, multi-layered standard system that addresses various aspects of education, including learning objectives, curriculum content, teaching methodologies, practical training, and resource allocation. This structured approach ensures that all components of the educational framework are interconnected and mutually reinforcing, creating a cohesive learning environment. The Practical Principle highlights the necessity for standards to be both operational and adaptable, catering to the dynamic and diverse needs of vocational undergraduate education. This adaptability ensures that the curriculum remains relevant and effective in addressing real-world challenges. Lastly, the Forward-Looking Principle integrates emerging technologies, innovative processes, and evolving industry norms into the curriculum [7, 8]. By doing so, it ensures that the educational content remains current and anticipates future developments in the industrial landscape, equipping students with the skills and knowledge required to thrive in a rapidly changing professional environment.

3. International and Domestic Status and Experience Reference

3.1. International Development Status

Internationally, vocational undergraduate education, such as applied bachelor's degree programs, has achieved a high level of maturity in terms of curriculum standards

and implementation. For instance, Germany's dual system is widely recognized for its emphasis on integrating school-based learning with enterprise-based training, fostering a seamless connection between theoretical knowledge and practical application. This model not only enhances students' employability but also ensures that the workforce aligns closely with industry needs. Similarly, Australia's training package system is structured around competency-based frameworks, which prioritize the development of specific skills and unify vocational standards across the nation. This approach ensures consistency and quality in vocational education while addressing the diverse needs of various industries. In the United States, competency-based curriculum design is a cornerstone of vocational education, focusing on measurable outcomes and the integration of general education with specialized professional training. This holistic approach prepares students to adapt to dynamic workplace environments while maintaining a strong foundation in critical thinking and problem-solving. These international practices underscore the importance of competency orientation, the integration of work processes into education, and robust school-enterprise collaboration. Collectively, they offer valuable insights and practical references for the ongoing development and refinement of vocational education systems in China.

3.2. Domestic Development Status and Problems

China's vocational undergraduate education is currently in its nascent stage of development, presenting numerous challenges that require systematic attention and resolution. One of the primary issues is the lack of a clear and unified orientation for curriculum design, which results in inconsistencies across institutions. Many colleges and universities tend to replicate the curriculum models of junior colleges or general undergraduate programs, which fail to address the unique characteristics and objectives of vocational undergraduate education. This approach often leads to a disconnect between academic content and industry requirements, undermining the practical applicability of the education provided. Furthermore, the absence of standardized frameworks exacerbates the problem, leaving institutions without clear guidelines to develop curricula tailored to vocational needs. Practical teaching, which is a cornerstone of vocational education, remains insufficiently integrated, limiting students' hands-on experience and readiness for real-world challenges. Additionally, the reliance on single curriculum resources restricts diversity and innovation, further hindering the development of a robust vocational education system. Addressing these issues requires a concerted effort to establish a comprehensive and industry-aligned curriculum framework that supports the growth and evolution of vocational undergraduate education in China.

3.3. Experience Reference

Drawing from a combination of international practices and the unique characteristics of domestic development, the construction of standards in this context should prioritize the cultivation of professional competencies as its central focus. This approach emphasizes the importance of aligning educational content with real-world work processes, ensuring that students are equipped with the practical skills necessary to meet industry demands. To achieve this, it is essential to strengthen the integration of theoretical knowledge with hands-on application through enhanced practical teaching methodologies. Furthermore, fostering collaboration between educational institutions and enterprises is critical, as it bridges the gap between academic learning and professional practice. Such partnerships can provide students with opportunities to engage in real-world projects, thereby enhancing their problem-solving abilities and innovative thinking [9, 10]. Additionally, the incorporation of undergraduate-level theoretical frameworks ensures a robust foundation for advanced learning while simultaneously nurturing creativity and adaptability in a rapidly evolving professional landscape.

4. Construction of Curriculum Development Standard System

4.1. Curriculum Objectives Standard

Curriculum objectives should be structured to address three fundamental levels: knowledge, skills, and literacy. These levels must align with the requirements of professional competencies, industry benchmarks, and the broader expectations of undergraduate education. Knowledge objectives emphasize acquiring a comprehensive understanding of foundational professional knowledge and core theoretical concepts, as well as gaining insights into the evolving trends within the relevant industry. Skill objectives focus on developing specialized technical expertise and practical abilities that enable individuals to address complex challenges and solve intricate problems within their professional domains. Literacy objectives aim to nurture essential qualities such as professional ethics, a strong sense of innovation, effective teamwork capabilities, and a commitment to lifelong learning. By integrating these dimensions, the curriculum ensures a holistic approach to education, fostering individuals who are not only technically proficient but also ethically grounded and adaptable to dynamic professional environments. This systematic framework serves as a cornerstone for cultivating well-rounded graduates equipped to contribute meaningfully to their respective fields and society at large [11].

4.2. Curriculum Content Selection and Organization Standard

Content selection within the curriculum framework emphasizes the identification and inclusion of core knowledge and skills essential to specific post groups, ensuring alignment with the practical demands of actual work scenarios. This approach integrates advancements in technology, innovative processes, and updated norms to maintain relevance and applicability. A balanced emphasis is placed on theoretical knowledge and practical application, fostering a comprehensive learning experience. The organization of content is strategically designed to enhance learning outcomes through modularization, project-based methodologies, and task-oriented structures. By adopting these methods, the curriculum system is constructed around work processes as the central theme, effectively bridging the gap between academic learning and professional practice. This approach challenges and moves beyond traditional discipline-based structures, promoting a dynamic and adaptable educational framework. Such a system not only supports the development of technical competencies but also encourages critical thinking and problem-solving skills, preparing learners to meet the evolving demands of their respective industries.

4.3. Teaching Methods and Strategies Standard

Recommended teaching methods for vocational undergraduate students emphasize the integration of theoretical knowledge with practical application to ensure a comprehensive learning experience. Approaches such as theory-practice integrated teaching, situational teaching, project-based teaching, and flipped classroom methodologies are particularly effective in addressing the unique needs of these learners. These methods aim to create dynamic and interactive learning environments that encourage active student participation and engagement. The teaching strategies prioritize a student-centered approach, fostering autonomy and responsibility in the learning process. By emphasizing hands-on activities and real-world applications, students are better equipped to develop practical skills and innovative thinking. Additionally, combining individual learning with collaborative team-based activities helps to cultivate interpersonal skills and teamwork, which are essential in professional settings. This holistic approach not only enhances students' ability to apply theoretical concepts in practice but also prepares them to adapt to the evolving demands of the workforce, promoting lifelong learning and professional growth.

4.4. Practical Teaching System Standard

Practical teaching objectives are designed to develop students' professional practical abilities and their adaptability to specific job roles, ensuring a seamless connection between academic learning and industry practices. This system encompasses various components, including experiments, hands-on training, internships, comprehensive

design projects, and activities focused on innovation and entrepreneurship. These elements are structured in a progressive manner, allowing students to gradually build their skills and competencies over time. The practical teaching system also emphasizes the importance of creating conducive conditions for effective learning. This includes the establishment of well-equipped practical teaching bases, both on-campus and off-campus, which provide students with access to real-world environments and resources. Additionally, the role of practical teaching instructors is critical; these educators are expected to possess dual qualifications, combining academic expertise with industry experience to bridge the gap between theory and practice. Effective management of practical teaching activities is another key aspect, ensuring that all components are systematically organized and aligned with educational objectives.

4.5. Curriculum Resources Construction Standard

Textbooks and teaching materials play a pivotal role in the development of a robust curriculum. To ensure a comprehensive learning experience, characteristic textbooks are designed to integrate theoretical knowledge with practical applications. These materials are meticulously developed to include work manuals and case books that provide learners with hands-on examples and real-world scenarios. In the realm of digital resources, significant emphasis is placed on constructing online courses that cater to diverse learning needs. Virtual simulation experimental resources are developed to offer immersive learning experiences, enabling students to engage with complex concepts in a controlled, interactive environment. Additionally, teaching video libraries serve as a repository of visual learning aids, while test banks are curated to support assessment and evaluation processes. Furthermore, the establishment of industry-specific case libraries and enterprise project resources ensures that students gain exposure to practical, industry-relevant knowledge. Practical teaching resource sharing platforms are also created to facilitate collaboration and resource exchange among educators and institutions, fostering a more interconnected and resource-rich educational ecosystem.

5. Pilot Application and Optimization Suggestions

5.1. Pilot Design

The constructed standard system has been selected for pilot testing within a core course of a vocational undergraduate major at Hainan Vocational University of Science and Technology. This pilot initiative is designed to evaluate the practical applicability and effectiveness of the system in a real-world educational setting. The process begins with a comprehensive curriculum design phase, where the course content is meticulously aligned with the objectives of the standard system. Following this, the teaching implementation phase ensures that instructional methods and materials are systematically integrated to reflect the system's principles. Data collection is conducted throughout the pilot to gather quantitative and qualitative insights into the system's performance, including student engagement, learning outcomes, and instructor feedback. Finally, an effect evaluation phase is carried out to analyze the collected data, identify areas for improvement, and provide evidence-based recommendations for optimizing the system for broader application.

5.2. Pilot Results and Feedback

Pilot results demonstrate that the implementation of the standard system has significantly contributed to the refinement of curriculum orientation, ensuring that educational objectives align more closely with professional requirements and industry standards. The optimization of content structure has facilitated a more logical and coherent progression of topics, enabling students to build foundational knowledge before advancing to more complex concepts. This systematic approach has enhanced the pertinence and practicality of teaching, making the learning experience more relevant to real-world applications. Furthermore, the standard has been instrumental in fostering students' professional competencies, equipping them with the skills and knowledge

necessary to excel in their respective fields. It has also sparked greater interest and engagement among students, as they perceive the curriculum to be more aligned with their career aspirations. Feedback from stakeholders, including educators, students, and enterprise experts, underscores the scientific and reasonable nature of the standard. However, it has been noted that further refinements are necessary to enhance its flexibility and adaptability, particularly to accommodate the diverse requirements of different academic majors and disciplines. This feedback highlights the importance of iterative improvements to ensure the system remains responsive to evolving educational and industry needs.

5.3. Optimization Suggestions

To enhance the effectiveness of educational standards, it is essential to strengthen the adaptation of these standards to the specific requirements of various academic majors. This involves formulating detailed and precise implementation guidelines tailored to the unique characteristics and professional demands of each field of study. Such guidelines should address the nuances of different disciplines, ensuring that the standards are both practical and relevant. Additionally, the establishment of a dynamic update mechanism is crucial [12]. This mechanism would allow for the timely adjustment of standards in response to rapid industrial advancements and evolving job market demands, ensuring that educational outcomes remain aligned with real-world requirements. Furthermore, fostering robust collaboration between educational institutions and enterprises is vital. By involving industry stakeholders in both the formulation and implementation of standards, it becomes possible to ensure that these standards accurately reflect the practical needs of the workforce, thereby bridging the gap between academic training and professional expectations.

6. Conclusion and Future Research

This study develops a five-dimensional curriculum development standard system for vocational undergraduate education, encompassing curriculum objectives, curriculum content, teaching methods, practical teaching, and curriculum resources. As an integrated framework, the system is designed to reflect the dual characteristics of vocational undergraduate education, namely its orientation toward professional practice and its commitment to the academic requirements of higher education. On this basis, it seeks to promote closer alignment between talent cultivation goals, occupational competency requirements, and the internal logic of curriculum design and implementation. The proposed system is grounded in competency-based education and work-process-oriented principles, which provide a clear theoretical foundation for defining learning outcomes, organizing teaching content, selecting instructional approaches, and evaluating implementation quality. In practical terms, the framework demonstrates strong scientific rigor, structural coherence, and operational feasibility, making it suitable for use in curriculum planning, revision, and quality assurance. The pilot application further indicates that the standard system can effectively support curriculum construction, improve the consistency and relevance of teaching arrangements, strengthen the integration of theory and practice, and contribute to the enhancement of talent cultivation quality in vocational undergraduate programs.

Future research should further deepen and refine this work in several directions. First, it is necessary to formulate more detailed and discipline-specific standards for different majors, so that the general framework can be translated into operational indicators that reflect the characteristics, competency structures, and practical requirements of particular professional fields. Second, the construction of a digital management platform for curriculum standards should be advanced to support dynamic updating, process monitoring, data integration, and evidence-based evaluation, thereby improving the efficiency, transparency, and sustainability of curriculum governance. Third, broader promotion and large-scale application are needed across a wider range of institutions and program types in order to test the adaptability, stability, and generalizability of the

standard system under diverse educational conditions. Through continuous implementation, feedback collection, and iterative optimization, future studies can further enhance the precision, applicability, and long-term value of the system, while also providing stronger support for high-quality curriculum development and the continuous improvement of vocational undergraduate education.

Funding: Project supported by the 2025 Key Education and Teaching Reform Research Project of Higher Education in Hainan Province: Research on Curriculum Construction Standards and Evaluation Methods for Vocational Undergraduate Colleges (Project No.: Hnjg2025ZD-74) and the 2025 Entrusted Project for Industry-Education Integration Curriculum Reform launched by the Center for School Planning & Development, Ministry of Education: Research on Construction Standards for Core Professional Courses of Vocational Undergraduate Colleges (Project No.: CSDP25LF4A409)

References

1. Y. Lin, "Analysis on the implementation of education curriculum in vocational reform from the perspective of 'ideology and politics in curriculum.'"
2. P. Chen, A. Goncharova, M. Pilz, D. Frommberger, J. Li, O. Romanova, and Y. Lin, "International curriculum comparison in vocational education and training: A collaborative development of an analysis instrument," *International Journal for Research in Vocational Education and Training (IJRVET)*, vol. 8, no. 4, pp. 16–43, 2021.
3. T. Zaporozhchenko, O. Matviienko, M. Chepelevska, N. Nedosiakova, I. S. Artemieva, and T. A. Petukhova, "Implementation of Vocational Education Standards in the Context of Postmodern Trends."
4. S. Hodge, "Standardised curriculum and hermeneutics: The case of Australian vocational educators," *Journal of Curriculum Studies*, vol. 50, no. 1, pp. 38–55, 2018.
5. A. Wolf, *Review of vocational education*. London: DfE, 2011.
6. P. Griffin, S. Gillis, and L. Calvitto, "Standards-referenced assessment for vocational education and training in schools," *Australian Journal of Education*, vol. 51, no. 1, pp. 19–38, 2007.
7. D. P. Resnick and L. B. Resnick, "Standards, curriculum, and performance: A historical and comparative perspective," *Educational Researcher*, vol. 14, no. 4, pp. 5–20, 1985.
8. T. Weigel, M. Mulder, and K. Collins, "The concept of competence in the development of vocational education and training in selected EU member states," *Journal of Vocational Education & Training*, vol. 59, no. 1, pp. 53–66, 2007.
9. N. E. Soares Júnior and L. F. F. Borges, "Curriculum policies for vocational education and teaching work," *Educação e Pesquisa*, vol. 47, p. e222664, 2021.
10. S. Billett, *Vocational education: Purposes, traditions and prospects*. Springer Science & Business Media, 2011.
11. M. Young and J. Hordern, "Does the vocational curriculum have a future?" *Journal of Vocational Education & Training*, vol. 74, no. 1, pp. 68–88, 2022.
12. W. Beywl and S. Speer, "Developing standards to evaluate vocational education and training programmes," *The foundations of evaluation and impact research*, vol. 58, pp. 51–115, 2004.

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