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Intelligent Start of Vocational Education: The Advancement of Online Excellent Courses in Higher Vocational Education

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Abstract: In the context of rapid information technology development and smart education reshaping educational paradigms, the construction of online excellent courses in higher vocational education holds significant importance. This paper focuses on smart education and online excellent courses in higher vocational education. It first elaborates on the connotation and characteristics of smart education, as well as the features and significance of online excellent courses. The current status of their development is then introduced, including achievements and successful cases. Subsequently, challenges such as conceptual models, resource platforms, and faculty support are analyzed. Finally, a roadmap for development is proposed, covering innovations in conceptual models, optimization of resource platforms, faculty team building, and improvement of support mechanisms.

Keywords: Intelligent education; Higher vocational education; Online excellent courses; Construction path

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1. Introduction

Amid the rapid evolution of information technology, smart education—a groundbreaking paradigm in education—is fundamentally reshaping higher education. The designation of December 2024 as the "Year of Smart Education" signifies higher education's full transition into an intelligent transformation phase. The deep integration of technologies like artificial intelligence, big data, and cloud computing presents dual opportunities for vocational education: On one hand, technological empowerment breaks traditional time-space barriers, enabling cross-regional resource distribution and precise generation of personalized learning plans, while creating new pathways for cultivating versatile technical professionals in the digital economy [1]. On the other hand, challenges such as regional disparities in educational resources, uneven digital literacy among teachers, and deficiencies in quality assurance systems remain practical obstacles to realizing smart education.

As the core platform of smart education, online excellent courses serve dual purposes: they act as a breakthrough for integrating cutting-edge industry knowledge and innovating teaching models, while also

serving as a key solution to address the supply-demand imbalance in vocational education [2]. This paper systematically explores the development logic of online premium courses in higher vocational education within the context of smart education. Through a three-phase analysis—current status evaluation, problem diagnosis, and pathway construction—the study aims to provide practical references for the digital transformation of vocational education [3].

2. Overview of online excellent courses in intelligent education and higher vocational education

2.1. The connotation and characteristics of intelligent education

Smart education is a new form of education supported by cloud computing, big data, artificial intelligence, and other technologies. Its core is to realize educational equity and personalized cultivation through technology empowerment:

Intelligent: Rely on AI technology to build an intelligent tutoring, assessment, and recommendation system, to achieve "thousand faces" of learning support [4].

Data-driven: Through the collection and analysis of learning behavior data, students' cognitive rules can be accurately grasped to optimize teaching decisions.

Ubiquitous learning: build a full-scenario learning environment with smart devices to enable "anytime, anywhere" learning access [5].

Personalized customization: a dynamic learning path is generated based on students' ability portraits to meet the needs of differentiated development.

2.2. The characteristics and values of online excellent courses

Online excellent courses in higher vocational education are high-quality digital learning resources co-developed by industry experts and teaching teams, featuring three core characteristics: spatiotemporal openness (supporting flexible learning schedules), resource richness (integrating multimedia elements like videos, case studies, and virtual simulations), and deep interactivity (including discussion forums and collaborative project modules). Their value is reflected in the following aspects:

Student level: Provide a flexible and independent learning mode to stimulate the initiative for learning [6].

Teacher level: forcing the innovation of teaching concepts and the improvement of information technology ability [7].

Education ecology level: promote cross-school sharing of high-quality resources, promote education equity and the overall level of vocational education.

3. Current situation: Achievements and practical samples

3.1. Stage achievements of construction

Data from China's Smart Education Platform reveals that by the end of 2023, the platform had aggregated 27,000 high-quality MOOCs across 12 academic disciplines, boasting over 100 million registered users and 2.5 billion visits. This has established a cross-regional resource-sharing network [8]. A flagship institution like Huanghe Water Conservancy Technical University exemplifies this progress through its "Moral Education + Triple Teaching Reform + Three-Level Curriculum System" model. The university has developed 14 national-level premium online courses, forming a model curriculum matrix characterized by advanced design, innovative

content, and challenging objectives [9].

3.2. Innovative practice cases

School-enterprise collaborative course construction mode: Shanxi Finance and Economics College cooperated with Zhengbao Network to build a full-chain service system of "course design, shooting and production, resource review and application feedback," jointly developed courses such as "Enterprise Internal Control," and realized the deep connection between teaching content and industry standards [10].

Innovation of blended teaching: The course "Online store operation and promotion" in Anhui Vocational Institute of Commerce adopts the mode of "online self-study before class, project practice during class, and cloud feedback after class," combining theoretical teaching with practical online store operation. The award rate of students in vocational skills competitions has increased by 30% [11].

Through collaborative partnerships between schools and enterprises, as well as symbiotic growth between teachers and resources, Wuhan City Vocational College has pioneered a new model for smart vocational education platforms [12]. By leveraging regional educational strengths, adopting an application-oriented approach, integrating industry-education collaboration, and prioritizing student-centered development, the college has made significant strides in enhancing quality resource supply, improving teachers' digital literacy, advancing teaching model reforms, and expanding resource application scenarios.

Digital intelligence empowers an integrated "job-course-competition-certification" framework: Wuhan City Vocational College's "Architectural Drawing and CAD Design' course implements a curriculum-based ideological education system guided by "One Standard, Two Confidences, Four Cultivations" [13]. Adopting outcome-oriented student-centered pedagogy with task-driven approaches, the program utilizes MOOC resources and digital teaching materials through a dynamic "4+2" blended online-offline model. This innovative methodology achieves flipped classroom transformation while refining the "Four Dimensions and Six Evaluations" assessment framework, ultimately realizing holistic competency development.

Intangible cultural heritage and digital intelligence empower vocational education: The "Tea Art and Tea Ceremony" course at Wuhan City Vocational College is deeply rooted in the Jingchu region. Using tea as a medium, it integrates ideological and political education to foster high-quality development. Cloud-based management systems drive teaching innovation, while creative inheritance of intangible cultural heritage creates premium courses. By deepening the integration of science and education, the program advances industry-education collaboration, with post-class digital services enhancing distinctive educational approaches.

4. Realizing challenges: Ideas, resources, and barriers to sustainment

4.1. Lagging concepts and models

Teaching center shift: some courses are still teacher-centered, lack mining of students' learning data and personalized support, and have insufficient design of interactive links [14].

Shallow integration of production and education: the curriculum content is disconnected from the process of professional positions, there is no case introduction of real working scenes, and students' practical ability is insufficient.

4.2. Shortcomings of resources and platforms

Imbalance of resource supply: high-quality courses are concentrated in top universities, some courses are outdated, the application rate of new technologies, such as virtual reality, is less than 15%, and there is a lack of

a stratified design for different academic levels.

Limitations of platform functions: Some teaching platforms have problems such as fuzzy classification, single interactive tools, and poor stability during peak periods, which affect the teaching experience [15].

4.3. Teacher and mechanism dilemma

Digital literacy gap: 35% of teachers lack skills such as video production and data-driven teaching, and the mechanism of interdisciplinary teamwork is not perfect.

Lack of motivation and evaluation: colleges and universities have a vague understanding of the workload of curriculum construction, the evaluation system relies too much on exam results, and the participation of enterprises and students is insufficient.

5. Construction path: Technology empowerment and system reconstruction

5.1. Concept innovation: Building a "student-centered + industry-education integration" model

Learning-based teaching: dynamically adjust teaching strategies through learning behavior data analysis (such as watching time and correct answer rate), introduce project-based learning (PBL), problem-oriented learning (QBL), and other modes, and cultivate students' ability to solve complex problems.

Integration of course, competition, certificate, and integration: integrate vocational standards (such as digital image processing) and skills competition content (such as national vocational college skills competition) into the curriculum outline to realize the integrated design of "teaching, competition, and certification."

5.2. Resource upgrading: Building a dynamic and hierarchical resource system

Industry depth involvement: invite enterprise technical backbone to participate in curriculum development, and update no less than 20% of cutting-edge content every semester (such as the latest application cases of artificial intelligence in the digital media technology industry).

Hierarchical resource design: The curriculum resources are divided into a basic layer (knowledge explanation), an improvement layer (case analysis), and an expansion layer (industry frontier). Students can independently choose the learning path through the intelligent recommendation system.

5.3. Platform optimization: Strengthening technical support and user experience

Function iteration: upgrade the intelligent search (supporting semantic retrieval), real-time interaction (such as bullet screen answering, group discussion), process evaluation (automatic generation of learning growth report), and other functions of the platform.

Technical support: Cloud computing technology is introduced to improve the concurrent processing capacity of the platform, ensure smooth access during peak hours, and strengthen data security protection.

5.4. Teachers and the mechanism guarantee

Capacity upgrading plan: Implement the "Three-year Action on Digital Literacy of Teachers" through workshops, enterprise practice, and other ways, so that teachers can master virtual simulation teaching, data visualization, and other skills.

Incentive and evaluation reform: the achievements of curriculum construction will be included in the indicators of professional title evaluation, and a special construction fund will be set up; a diversified evaluation

system of "student evaluation + peer evaluation + enterprise evaluation" will be established to highlight the assessment of practical ability and professional quality.

6. Conclusion and outlook

The development of high-quality online courses in higher vocational education in the context of smart education represents both a technology-driven teaching revolution and a process of reconstructing vocational education's adaptability. Currently, it is essential to adopt a "student-centered, industry-education integration, and technology empowerment" approach to break through three major barriers in concepts, resources, and mechanisms. In the future, with the deepening application of technologies like AI and blockchain, these online courses will evolve into advanced forms characterized by "intelligent content generation, self-optimizing learning paths, and precise career prediction," ultimately becoming a cornerstone of China's international vocational education.

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References

[1] Liu X, 2023, Exploration of Continuous Improvement and Refinement Strategies for Excellent Online Open Courses in Higher Education Institutions. Journal of Shaanxi Open University, 25(01): 19–25.

[2] He S, Sun C, Ji T, 2024, Exploration of Digitalization Empowering the Integration of Industry and Education in Vocational Education. Education and Career, (03): 23–28.

[3] Yang R, 2024, The Construction and Practice of High-Quality Online Open Courses in Higher Vocational Education under the Background of "Job Course Competition Certificate" Integration: Taking the "E-commerce Visual Design" Course as an Example. Fujian Textile, (05): 72–76.

[4] He H, 2024, Exploration of the Difficulties and Paths in the Construction of Online Open Courses in Higher Vocational Education under the Background of "Job Course Competition Certificate" Integration. Journal of Zhangjiakou Vocational and Technical College, 37(04): 66–68.

[5] Xia L, Liang C, 2022, The Development of Smart Education under the Background of Rapid Iteration of Big Data Technology. Education and Teaching Forum, (51): 41–44.

[6] Xu D, Gan S, 2022, Construction and Application of Smart Education Platform in Vocational Colleges. Science and Education Guide, (25): 29–31.

[7] Miao X, Liu M, 2023, Difficulties and Countermeasures in the Construction of Online Excellent Courses in Local Vocational Colleges. Journal of Henan Institute of Technology, 31(02): 51–55.

[8] Zhang R, Zhao Y, 2022, Research on the Construction Strategy of High Quality Online Courses in Higher

Vocational Education under the Background of Blended Teaching. Industrial Technology and Vocational Education, 20(06): 16–19.

[9] State Council, 2019, Notice on Issuing the National Vocational Education Reform Implementation Plan, viewed November 21, 2025, https://www.gov.cn/zhengce/zhengceku/2019-02/13/content_5365341.htm

[10] Ministry of Education, 2003, Notice of the Ministry of Education on the Launch of the Construction of Excellent Courses in Teaching Quality and Teaching Reform in Higher Education Institutions, viewed November 21, 2025, http://pt.csust.edu.cn/meol/homepage/common/infoview.jsp?resId=1179

[11] Li Y, Xiao M, 2022, How to Improve the Learning Effectiveness of High-Quality Online Open Courses. Office Automation, 27(08): 9–11.

[12] Cao Z, Chang Z, Zhang J, 2023, Construction and Application of Online Excellent Courses in Vocational Education: Based on Data Analysis and Mining of National Online Excellent Courses in Vocational Education in 2022. China Vocational and Technical Education, (23): 18–26.

[13] Wang Y, Jiang J, 2014, Smart Education: Conceptual Features, Theoretical Research, and Application Practice. China Education Informatization, (01): 10–13.

[14] Liu Z, 2022, Problems and Suggestions in the Construction of Online Elite Courses in Higher Vocational Colleges——Analysis Based on 50 Typical Cases. Industrial Technology and Vocational Education, 20(06): 20–23.

[15] Liu Y, 2022, Construction and Application of Online High-Quality Courses on Graphic Design and Production Based on the “Smart Vocational Education” Platform. Art Education Research, (12): 116–117.