



Value Reconstruction and Practical Innovation of Integrating the Spirit of Model Workers and Craftsmen into College Employment Education through the Collaborative Empowerment of Digital Ethics and Artificial Intelligence from the Perspective of New-type Productive Forces

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Abstract. Against the backdrop of artificial intelligence and digital technologies deeply reshaping the global industrial landscape, the development of new forms of productivity poses compound requirements for technological innovation, professional spirit, and digital ethics in the cultivation of talents in colleges and universities. Based on Marx's view of labor, this study analyzes the value isomorphism between the spirit of model workers and craftsmen and new forms of productivity, and innovatively constructs an innovative employment education system with a three-dimensional coupling of "time-space- subject -content". Through theoretical construction, exploration of practical paths, and innovation of mechanisms, it is confirmed that this system can effectively promote the precise connection between the supply side of talent cultivation and the demand side of the industry. Specific practices include: reconstructing a modular curriculum system of "value guidance-skill refinement- digital ethics empowerment", building a school-enterprise collaborative education platform of "double tutors-double bases-double certifications", and constructing a PDCA cycle evaluation system. The study emphasizes that reform should be promoted from three aspects: institutional guarantee, deepening of industry-education integration, and empowerment by digital technologies, so as to provide new ideas for the supply-side reform of higher education, and help achieve the coordinated progress of college employment education and the development of new forms of productivity, especially in cultivating compound talents with both technical capabilities and digital ethical literacy in the era of artificial intelligence.

Keywords: New Forms of Productivity; Spirit of Model Workers and Craftsmen; Employment Education; Three-dimensional Coupling System; Digital Ethics; Artificial Intelligence

1 Introduction

Under the dual influence of digital technology innovation and the adjustment of the global economic landscape, new-quality productive forces with innovation-driven as the core reshape the industrial development model^[1]. Digital ethics issues such as data security and algorithmic bias caused by the widespread application of artificial intelligence put forward compound requirements for the integration of technological innovation, professional spirit, and digital ethics in talent cultivation in universities. University employment education faces transformation opportunities and challenges.

Currently, there are structural contradictions in university employment education in China: courses emphasize knowledge over literacy, practical teaching lags behind the forefront of technology, and the evaluation mechanism is single, making it difficult to meet the needs of new-quality productive forces for compound talents and restricting the career development of graduates and industrial upgrading^[2-4]. Although policies emphasize optimizing employment services according to industrial needs, existing research mostly focuses on skill training, and there is a lack of systematic research on the shaping of professional spirit and digital ethics education, making it difficult for universities to cultivate talents suitable for the era of artificial intelligence.

The characteristics of the spirit of model workers and craftsmen, such as "perseverance, focus, pursuit of excellence, integrity, and innovation", highly conform to the talent needs of new-quality productive forces and are important spiritual resources to address digital ethics challenges. Based on the Marxist view of labor, this study constructs a three-dimensional coupling innovative employment education system of "time-space, subject, and content": in the time dimension, a three-stage progressive cultivation method is adopted; in the space dimension, the resources of four parties are integrated for collaborative education; in the content dimension, a modular curriculum is used to achieve in-depth integration, promoting the transformation of employment education to focus on value shaping, ability improvement, and digital ethics cultivation, and helping the coordinated development of the supply-side reform of higher education and new-quality productive forces.

2 Theoretical Construction and Coupling Mechanism

2.1 Value Isomorphism: A Contemporary Interpretation of Labor Education Theory

Ontological Dimension: The Dialectical Unity of the Labor Theory of Value and Professional Spirit. Marx's labor theory of value reveals the dual material and spiritual attributes of labor, providing a philosophical foundation for the spirit of model workers and craftsmen^[5]. In the context of new-quality productivity, this spirit aligns with the needs of industrial intelligent transformation and becomes a value support for addressing digital ethical challenges^[6]. Introducing it into employment education promotes the transformation of labor education toward a four-in-one model of "value shaping - ability cultivation - spiritual cultivation - digital ethics education."

Epistemological Dimension: The Innovative Turn of Labor Education Paradigms. New-quality productivity drives the transformation of labor education paradigms, with the spirit of model workers and craftsmen and digital ethics education playing crucial roles. The value orientation shifts from skill transmission to the cultivation of professional beliefs and digital ethics—for example, practical training in "model worker and craftsman" studios enhances students' professional stability and ethical awareness. The practical approach transitions from classroom simulations to real digital production scenarios, where school-enterprise cooperation projects shorten students' job adaptation cycles. The evaluation system evolves from single-skill assessment to comprehensive literacy evaluation, incorporating digital ethics to align labor education with industrial demands.

2.2 Mechanism Coupling: Construction of a Three-Dimensional Interaction Model

Temporal Dimension: A Full-Cycle Progressive Training System. The temporal dimension establishes a three-stage training path of "cognition - behavior - value." Basic knowledge is implanted in lower grades, reinforced through practice in middle grades, and internalized through internships in senior grades, achieving a ladder integration of the spirit of model workers and craftsmen with digital ethics.

Spatial Dimension: *A Collaborative Education Ecosystem of Government, Universities, Enterprises, and Industries.* The spatial dimension integrates resources from governments, universities, enterprises, and industries. Governments provide institutional guarantees, universities oversee teaching implementation, enterprises offer practical platforms, and industry organizations perform certification and evaluation functions. This breaks down educational spatial barriers and constructs a three-dimensional education scenario.

Content Dimension: *Value Embedding in a Modular Curriculum System.* The content dimension constructs a modular curriculum system of "value guidance - skill refinement - digital ethics empowerment." Through case studies, project-based training, and other methods, it achieves deep integration of the spirit of model workers and craftsmen, digital technology capabilities, and digital ethics education, forming a complete educational chain.

3 Practical Innovation and Implementation Paths

3.1 Reconstruction of the Curriculum System: In-depth Embedding of the Spirit of Model Workers and Craftsmen and Teaching Innovation

Based on the "time-space - subject - content" three-dimensional coupling system, a trinity modular curriculum system of "value guidance - skill refinement - digital ethics empowerment" is constructed to deeply integrate the spirit of model workers and craftsmen, digital technical capabilities, and ethical literacy cultivation. Through differentiated design, the spiritual traits of "perseverance, focus, pursuit of excellence, and innovation while maintaining integrity" run through the entire talent cultivation process.

Combined with the application of artificial intelligence (AI) and digital technologies, a complete educational chain is formed.

Value Guidance Module: Integrating case databases of model workers/craftsmen and typical digital ethics cases, this module uses situational teaching and AI virtual simulation technology to reconstruct real scenarios such as smart factories and data centers. Through immersive case discussions and virtual role-playing, students are guided to understand the connotation of the craftsmanship spirit and recognize ethical issues like data privacy and algorithmic bias in AI applications, thereby strengthening their professional identity and ethical responsibility. Teaching practice shows that this module significantly enhances students' professional value awareness and digital ethics sensitivity, laying a spiritual and ethical foundation for their career development.

Skill Refinement Module: Using real corporate digital projects as carriers, this module adopts a workshop model, where students participate in processes such as AI algorithm optimization and intelligent system development under the joint guidance of university teachers and enterprise technical experts. By simulating complex engineering scenarios through digital twin technology, students practice the spirit of "pursuit of excellence" while solving practical problems, thereby improving their digital technology application capabilities.

Digital Ethics Empowerment Module: Focusing on cutting-edge topics such as AI ethics and data security, this module conducts project-based teaching and encourages interdisciplinary teamwork. Through practices like developing intelligent ethical decision-making systems and designing compliant data application solutions, students transform the spirit of "innovation while maintaining integrity" into the ability to address digital ethical issues.

Additionally, a "Digital Craftsman" immersive learning platform is built using meta-universe technology. Combined with an AI learning analysis system, it real-time monitors students' learning behaviors, intelligently diagnoses knowledge gaps, and pushes personalized learning paths to achieve precise teaching adjustment.

3.2 Construction of Practical Platforms: Digital Technology-Driven Collaborative Education and Ethical Practice System

"Dual-Tutor - Dual-Base - Dual-Certification" Intelligent Collaborative Education Platform

An intelligent collaborative education mechanism of "dual-tutor - dual-base - dual-certification" is established to deepen the integration of university theoretical teaching and enterprise digital practice resources. A cross-disciplinary dual-tutor team, composed of university faculty, enterprise technical experts, and AI ethics scholars, uses intelligent curriculum design systems to jointly formulate training programs and develop teaching resources, ensuring the organic integration of theoretical knowledge, practical skills, and digital ethics education. Relying on virtual simulation training bases and enterprise intelligent production practice bases, a full-process training environment of "online virtual training + offline real-world practice" is constructed. Block chain technology is used to establish a student practice outcome certification system for traceable learning processes. An intelligent dual-track evaluation system is created,

integrating university academic evaluation, enterprise professional competency certification, and digital ethics literacy assessment, with AI evaluation models incorporating enterprise employment standards and ethical norms into the entire talent cultivation process.

Three-Level Practice System of "Digital Master Studios - Smart Innovation Workshops - Global Digital Skills Competitions"

A three-level practice platform of "Digital Master Studios - Smart Innovation Workshops - Global Digital Skills Competitions" is built to form a hierarchical and complementary system for inheriting the craftsmanship spirit and practicing digital ethics. Digital Master Studios, led by model workers, industry experts, and AI ethics scholars, focus on smart technology research, digital craftsmanship inheritance, and ethical standard research, playing a leading role. Smart Innovation Workshops, equipped with AI development platforms and data security laboratories, provide practical spaces for students to engage in technological innovation, project research, and ethical verification. Global digital skills Competitions include events such as AI ethics design and data compliance application, serving as platforms for achievement exhibition and stimulating students' innovative vitality and digital ethics practice capabilities through competition-driven learning and teaching.

3.3 Units Innovation of Evaluation Mechanism: Smart-Driven PDCA Cycle Ethical Evaluation System

Based on the concept of total quality management, an intelligent PDCA cycle evaluation system is constructed, guided by the spirit of model workers/craftsmen and digital ethics^[7].

Plan Stage: Aligning with the KSA (Knowledge - Skill - Attitude) model and IEEE global AI ethics standards, spiritual elements such as "perseverance, focus, pursuit of excellence, and innovation while maintaining integrity" and digital ethics norms are translated into specific evaluation indicators. An AI-based index weight calculation model is used to form a scientific quantitative system.

Do Stage: Digital tools such as learning analysis systems and wearable devices are used to collect data on students' learning behaviors, project practices, and ethical decisions throughout the process, constructing dynamic digital profiles.

Check Stage: Multi-stakeholder evaluation involving university teachers, enterprise mentors, industry experts, ethics scholars, and students is organized. Combined with AI evaluation models and block chain-certified data, objective and comprehensive evaluation is ensured.

Act Stage: Intelligent decision-making systems analyze evaluation feedback and automatically generate curriculum adjustment and teaching improvement plans, achieving dynamic adaptation of training programs to industrial demands and ethical norms.

This evaluation system incorporates the cultivation effects of craftsmanship spirit and digital ethics into core assessments, promoting the transformation of employment education toward "intelligent process management + value-ethical guidance" and providing scientific guarantees for improving talent cultivation quality. Through the cyclic optimization mechanism, the effective implementation of craftsmanship spirit

and digital ethics in employment education is ensured, achieving continuous improvement in education quality.

4 Countermeasures and Suggestions

4.1 At the Institutional level: Improve the Policy Guarantee and Digital Ethics Value Guidance System

Educational policies are key levers for guiding the direction of talent cultivation and shaping social values. The Ministry of Education should take the lead in formulating the "Implementation Outline for Digital Labor Education in the New Era", and incorporate both the spirit of model workers and craftsmen and the cultivation of digital ethics into the core index system for evaluating the quality of talent cultivation in universities. In policy design, it should be clearly required that universities integrate content such as artificial intelligence ethics and data security specifications into the curriculum standards, and establish a selection system for "Demonstration Schools for Digital Craftsman Ethics Education", and regularly evaluate educational effectiveness through a special supervision mechanism. For example, universities should be required to establish an "Algorithm Ethics Review Committee" to conduct ethical reviews of teaching and research projects involving artificial intelligence to ensure that educational practices are consistent with the value orientation of the digital age. This institutional innovation not only strengthens the cultivation of professional spirit, but also constructs an ethical defense line against the risks of digital technology, and promotes the formation of an educational environment that respects the spirit of craftsmanship and digital ethics in the whole society.

4.2 At the Practical Level: Deepen the Mechanism of Integration of Industry and Education and Intelligent Collaborative Education

The integration of industry and education is the core path to achieve the precise connection between education and industrial needs, which contains the responsibility ethics of education in responding to social needs. It is recommended to build a "City-Industry-University" intelligent innovation community, rely on artificial intelligence and big data technology to build a dynamic monitoring platform for industrial needs, analyze the trends of industry technological changes and digital ethics risks in real time, and provide data support for educational practices. For example, a "Digital Ethics Practice Workshop" should be established in demonstration bases for the integration of industry and education, and students should be jointly guided by enterprise technical experts and ethics scholars to carry out practical projects such as data compliance and algorithm fairness. When promoting the "Dual Tutors - Dual Certification" model, digital ethics capabilities should be included in the assessment standards for enterprise tutors, and enterprises should be required to incorporate ethical norm training into real projects to ensure that talent cultivation not only meets the technical needs of the industry, but also has the awareness of professional ethics and social responsibility in the digital age.

4.3 At the Technical Level: Strengthen the Digital Empowerment and Educational Ethics Guarantee System

In the wave of digitization, the application of technology needs to follow ethical principles such as educational equity and the protection of individual rights and interests. Relying on the national digital education strategy, a national-level "Digital Craftsman Resource Database" should be built, and block chain technology should be used to achieve the trusted sharing of high-quality curriculum resources, break the barriers of resources between regions and universities, and ensure fair educational opportunities. Develop an artificial intelligence-based professional quality certification system that not only evaluates students' technical skills, but also analyzes their digital ethics decision-making ability through behavioral data, and forms a dynamic and visual ethical quality portrait. At the same time, when using AIGC technology to provide personalized employment guidance for students, a strict privacy protection and algorithm transparency mechanism should be established to avoid the risk of data abuse, and ensure that the application of educational technology within the ethical framework improves the scientificity and fairness of the matching in the job market.

5 Future Prospects

5.1 Deepening and Expansion of Theoretical Research: multidisciplinary Integration and Construction of Digital Ethics Paradigm

As the new productive forces expand into cutting-edge fields such as artificial intelligence and quantum information, it is necessary to deeply study the integration mechanism of the spirit of model workers and craftsmen and digital ethics in new labor scenarios from the perspectives of multiple disciplines such as educational ethics and philosophy of science and technology. For example, explore issues such as the ethics of human-machine collaboration in virtual labor and the boundaries of professional responsibilities in the metaverse space, and construct a trinity theoretical framework of "Technology-Ethics-Professional Spirit". Combine psychological research on the formation mechanism of individual professional identity in the digital environment, and use sociology to analyze the reconstructive role of digital technology in labor ethics relations, providing more explanatory theoretical support for university employment education to ensure that talent cultivation not only adapts to technological changes, but also adheres to the bottom line of humanistic values.

5.2 Innovative Breakthroughs in Practical Modes: Empowerment of Intelligent Technology and Personalized Ethics Education

In the future, it is necessary to vigorously promote the intelligent transformation of employment education, use metaverse technology to build immersive digital ethics practice scenarios, such as simulating real problem situations such as emergency handling of data breaches and correction of algorithmic biases, to cultivate students' ethical decision-making ability. When developing a personalized career planning system based

on large language models, an ethical review module should be embedded to ensure that career advice complies with the principles of fairness and transparency. While promoting the integration of cutting-edge enterprise technologies and the curriculum system, a "Dynamic Response Mechanism for Technological Ethics" should be established. For example, when new digital ethics norms emerge in the industry, the curriculum content update and teaching plan adjustment should be automatically triggered. In addition, by sharing digital ethics education resources through cross-border industry-education alliances and drawing on international experiences such as the European Union's Artificial Intelligence Act, China's ability to respond to global digital ethics challenges in employment education can be improved.

5.3 Optimization and Improvement of the Long-term Mechanism: Multi-party Collaboration and Lifelong Ethics Education System

Build a collaborative governance mechanism among educational departments, technology enterprises, industry associations and universities, establish a "Joint Conference System for Digital Ethics Education", regularly discuss new ethical issues brought about by technological development and formulate countermeasures. When using big data to monitor industrial needs and the effectiveness of talent cultivation, ethical principles such as data minimization and purpose limitation should be followed to ensure information security. Incorporate the cultivation of the spirit of model workers and craftsmen and digital ethics into the lifelong education system, develop "Continuing Education Courses in Digital Ethics" for professionals, and achieve full-cycle coverage of professional spirit cultivation through an online-offline hybrid model. Ultimately, a closed-loop system of "consolidating the foundation through school education, strengthening practice through vocational training, and promoting improvement through social education" should be formed to provide sustainable talent support with both technological innovation capabilities and ethical responsibilities for the development of new productive forces.

6 Conclusion

Against the backdrop of industrial restructuring driven by artificial intelligence and digital technologies, this study identifies the structural contradictions between college employment education and the demands of new-quality productive forces. Through the theoretical perspective of Marxist labor concepts, it expounds the value isomorphism between the spirit of model workers and craftsmen and new-quality productive forces in terms of labor value theory and educational paradigm innovation. Based on this, the study indicatively constructs a three-dimensional integrated employment education system of "time-space - subject - content," and achieves precise alignment between talent cultivation and industrial needs through modular curriculum reconstruction, school-enterprise collaborative platform development, and intelligent evaluation mechanism construction, effectively enhancing students' professional literacy, digital skills, and ethical awareness. The research confirms that deeply integrating the spirit of model

workers and craftsmen with digital ethics education into employment education is a key path to addressing challenges in the AI era and cultivating compound talents with "technical proficiency, humanistic sentiment, and a sense of responsibility." In the future, systematic reforms should be continuously promoted in terms of institutional guarantees, deepening industry-education integration, and digital technology empowerment to drive the synergistic development of college employment education and new-quality productive forces, providing theoretical and practical examples for the innovative development of modern vocational education systems.

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