

Research on the Integration Mechanism of New Quality Productivity and Network Ideological and Political Education in Vocational Undergraduate Colleges

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Abstract: New-type productive forces, driven by scientific innovation, are characterized by high technology, efficiency, and quality, representing an advanced form of productivity aligned with the new development philosophy of the digital information era. The mindset of new-type productive forces profoundly influences online ideological and political education in higher education institutions, while such education provides solid talent support and ideological guidance for their development. These two aspects mutually reinforce each other, jointly promoting educational innovation and talent cultivation, thereby injecting powerful momentum into societal progress. This study takes new-type productive forces as a focal point to analyze their core characteristics in vocational education contexts and their integration value with online ideological and political education in vocational undergraduate programs. Building on this foundation, five specific integration pathways are proposed: restructuring content systems, innovating delivery formats, transforming interactive methods, optimizing evaluation models, and enhancing collaborative education stakeholders. The aim is to provide theoretical guidance and practical references for advancing high-quality online ideological and political education in vocational undergraduate institutions during the new era.

Keywords: New quality productivity; Vocational undergraduate education; Online ideological and political education; Integration mechanism; Collaborative talent cultivation

Online publication: March 26, 2026

1. Introduction

The current technological revolution, spearheaded by artificial intelligence, big data, and the Internet of Things, is rapidly reshaping global industrial landscapes, with new-generation productive forces emerging as the core driver of socioeconomic development. Vocational undergraduate institutions, serving as crucial platforms for cultivating high-level technical professionals, now face unprecedented opportunities and challenges in implementing online ideological and political education models. However, traditional ideological education content remains misaligned with ethical demands of emerging industries, while teaching methodologies fail to align with digital learning habits. Furthermore, evaluation systems and personalized growth strategies exhibit significant gaps, creating an urgent need to explore innovative

educational approaches that meet the requirements of new-generation productive forces.

2. Core characteristics of new quality productivity in the context of vocational education

New-type productivity represents an emerging paradigm in industrial development, demonstrating distinct contemporary characteristics within vocational education. Technological advancement serves as its most prominent hallmark, with cutting-edge technologies like artificial intelligence, the Internet of Things, and big data deeply integrating into production processes, fundamentally reshaping traditional resource allocation models and value creation logic ^[1]. Vocational institutions must cultivate technical professionals equipped with both digital literacy and intelligent operational capabilities to meet the demands of industrial transformation. Another innovative dimension lies in interdisciplinary integration: the blurring of academic boundaries has given rise to smart manufacturing programs through the convergence of mechanical engineering and information technology, while bioengineering fields emerge from combining biological sciences with engineering practices. This cross-disciplinary integration necessitates vocational education to intensify efforts in cultivating versatile talent. Furthermore, green development principles have become integral to new-type productivity, with ecological responsibility and sustainability emerging as critical value orientations. Consequently, vocational education must incorporate environmental ethics and social accountability throughout professional skill development. Talent adaptability manifests through dual requirements for innovative thinking and practical competencies. New-type productivity demands not only skilled operators proficient in advanced technologies but also problem-solving practitioners capable of addressing complex challenges creatively, a mission that vocational undergraduate education serves as a pivotal platform for fulfilling.

3. Integration value of new quality productivity and online ideological and political education in vocational undergraduate programs

3.1. Enhancing the contemporary adaptability of ideological and political education

In the context of new productive forces, digital transformation has not only given rise to numerous emerging professions but also brought complex ethical challenges such as algorithmic discrimination, data monopolies, and the digital divide. This reality demands that vocational undergraduate institutions integrate network-based ideological and political education to proactively address industrial transformation needs. They should incorporate cutting-edge topics like AI governance, digital citizenship responsibilities, and green development concepts into academic curricula. The interactive and open nature of online platforms provides flexible educational platforms for ideological education, enabling real-time tracking of technological advancements and timely updates to teaching materials. By aligning educational content with future career demands, ideological education transcends abstract moral preaching to become vital value guidance for students' professional development. This approach fundamentally enhances the relevance and effectiveness of education.

3.2. Enhancing the comprehensive effectiveness of talent development

In the era of new quality productivity, talent competition has evolved beyond mere technical skill contests to emphasize comprehensive competencies including value judgment capabilities, innovative thinking qualities, and social responsibility awareness. Integrating online ideological and political education with disciplinary training in higher education institutions allows value guidance to be embedded during professional skill development, achieving dual enhancement of technical proficiency and moral integrity ^[2]. Within this new productivity paradigm, students can simulate real-world occupational scenarios through virtual environments. During simulations, they not only apply professional knowledge to solve technical challenges but also thoroughly evaluate the ethical implications and societal impacts of solutions. Vocational colleges can leverage big data analytics to accurately identify individual students' competency profiles and value orientations, enabling customized career development pathways. When professional learning seamlessly integrates with ideological education

in cyberspace, students' professional competencies and innovative capabilities develop in harmony, ultimately cultivating high-quality technical professionals who possess both solid technical expertise and sound value orientations.

3.3. Promoting systematic restructuring of the educational ecosystem

The development logic of new productive forces requires vocational undergraduate institutions to establish an open, collaborative education ecosystem. The widespread application of network technologies provides technical support for deep university-enterprise cooperation. Real-world corporate projects can be transmitted in real-time to classrooms, while industry professionals can remotely participate in instructional guidance. Meanwhile, ideological and political education resources from schools can be integrated into corporate training systems. Digital platforms enable consolidation of decentralized educational entities, creating a diversified education network system involving schools, enterprises, industry organizations, and social institutions. Under this resource-sharing mechanism, the quality of ideological and political education becomes richer and more dynamic. Additionally, educational evaluations become more objective and comprehensive, with corporate mentors' assessments of students' professional ethics, industry associations' certifications of professional ethics standards, and feedback from social organizations on public welfare practices all serving as crucial references for evaluating ideological education outcomes.

4. Integration pathways of new quality productivity and online ideological and political education in vocational undergraduate universities

4.1. Reconstructing content framework to align with cutting-edge ethical issues in industry

Vocational undergraduate institutions should establish a discipline-oriented ideological and political education content delivery model to facilitate organic interaction between value education and industrial development. Educators can systematically analyze ethical issues emerging in emerging technological fields based on technical characteristics and societal impacts of different professional clusters, transforming them into modular teaching resources integrated into existing curriculum frameworks^[3]. This content restructuring should address both the moral attributes of technologies and potential social responsibility challenges during application processes, thereby constructing a multidimensional value education system encompassing technological ethics, professional integrity, and social accountability. Concurrently, dynamic content update mechanisms must be implemented. Faculty teams should maintain regular industry engagement channels to promptly identify ethical risks in technological advancements, converting them into engaging teaching materials for ideological education. Taking the "Artificial Intelligence Technology" program as an example, instructors can design specialized modules on "Algorithmic Fairness and Social Responsibility" using real-world applications of intelligent algorithms in recruitment, lending, and judicial systems. These modules should guide students to analyze potential gender discrimination and racial biases in machine learning models, explore how developers incorporate fairness principles during algorithm design, discuss corporate social responsibilities in AI system deployment, and demonstrate the practical significance of ethical review through real algorithm audit cases. This approach ultimately establishes a comprehensive cognitive framework integrating "technological competence + ethical literacy + social responsibility".

4.2. Innovating carrier forms to create virtual-physical coexistence educational scenarios

The era of new productive forces has brought revolutionary demands for transformative educational platforms in ideological and political education at vocational undergraduate institutions. Traditional single-media formats like text, images, and videos can no longer meet the practical needs of deep value guidance. Cutting-edge technologies such as virtual reality (VR), augmented reality (AR), and digital twins provide robust technical support for creating immersive educational scenarios, enabling students to experience complex moral dilemmas and make value judgments and ethical reasoning within virtual environments^[4]. These platforms not only transcend physical spatial constraints but also recreate extreme scenarios and boundary cases rarely encountered in real-world settings, allowing students to undergo profound

value cultivation in safe and controlled environments. The widespread adoption of mobile internet technologies has laid a solid foundation for ubiquitous ideological education dissemination. Lightweight platforms like WeChat mini-programs, short video platforms, and podcast audio seamlessly integrate value guidance into students' daily learning routines, achieving subtle yet impactful educational outcomes. Taking the "Intelligent Manufacturing" program as an example, instructors can utilize VR technology to simulate entire smart factory production lines. When students don VR headsets and enter virtual factory environments, they encounter real-world ethical dilemmas such as "how to balance production efficiency with environmental standards", "whether to truthfully report product quality defects" and "whether industrial robot replacement aligns with social responsibilities". Each decision generates distinct consequence feedback, prompting students to internalize correct value concepts through repeated trial-and-error processes and reflective practice. Teachers may also distribute companion mobile micro-applications that periodically deliver case studies and thought-provoking questions on the latest technological ethics in smart manufacturing. Students can utilize their spare time to engage in this fragmented learning approach, thereby continuously reinforcing their value awareness.

4.3. Transform interaction methods and establish a human-machine collaborative education mechanism

Traditional online ideological and political education often faces limitations in faculty availability and time allocation, making it challenging to provide personalized guidance and value-oriented instruction. Intelligent technologies driven by new productive forces offer innovative solutions to this dilemma. Developing AI-powered educational support systems can provide students with round-the-clock value consultation and moral reasoning assistance. These intelligent assistants not only address ethical dilemmas encountered during academic studies but also analyze students' value orientations through deep learning algorithms, delivering targeted guidance. This paradigm shift transforms educators from mere knowledge transmitters into scenario designers and value dialogue facilitators, requiring enhanced innovative thinking and technical expertise. In human-machine collaboration models, AI systems handle routine tasks like Q&A processing, learning trajectory tracking, and risk alerts, while teachers focus on creating complex scenarios, mediating deep value conflicts, and intervening at critical growth milestones. Taking the "Modern Logistics Management" program as an example, instructors can design virtual supply chain ethics decision-making scenarios where students confront value conflicts between cost control and environmental protection, efficiency enhancement and employee rights protection within multi-dimensional contexts. AI assistants continuously record student decision-making logic and provide multi-angle ethical analyses, while teachers participate in discussions at pivotal decision points to guide students in exploring social responsibilities and professional ethics within modern logistics industries. This division of labor between humans and machines effectively alleviates the practical pressure of excessive workloads on ideological and political education teachers, while leveraging big data analytics to identify potential deviations in students' values, thereby providing a scientific basis for targeted educational interventions.

4.4. Optimizing the evaluation model by embedding a dynamic developmental indicator system

Driven by new productive forces, online ideological and political education requires establishing a diversified evaluation model that integrates technological characteristics with educational principles. By combining learning analytics technology with educational measurement theories, we can develop a dynamic assessment mechanism that focuses on both outcomes and processes. This evaluation framework encompasses multiple dimensions, including cognitive aspects such as value comprehension ability, emotional dimensions like value identification levels, and behavioral dimensions such as value practice manifestations. Meanwhile, big data mining technologies should be utilized to track key behavioral indicators including students' interaction patterns, discussion quality, and collaborative performance on online learning platforms. The evaluation system must also establish personalized growth portfolios to record time-series data of students' ideological and political literacy development, identifying critical junctures and influencing factors in value concept transformation. Taking the "Digital Media Technology" program as an example, instructors can design project-based assessment tasks

requiring students to collaboratively complete research projects on “content moderation mechanisms in short video platforms”. The evaluation system will automatically document students’ depth of technical ethics considerations during online discussions, their accountability performance in teamwork, and shifts in value orientation reflected in final projects. Educators can leverage these data to generate personalized ideological and political literacy development reports for each student, highlighting growth trajectories and improvement directions in media responsibility awareness and innovative ethical thinking. This evaluation approach not only provides teachers with precise teaching feedback but also enables students to clearly visualize their value concept evolution, thereby enhancing the intrinsic driving force of ideological and political education.

4.5. Collaborative education entities, integrated digital education network of schools, enterprises, and societies

Driven by new quality productivity, online ideological and political education in vocational undergraduate programs must transcend traditional single-subject pedagogical models to establish a diversified, collaborative digital education ecosystem. Institutions should proactively engage with enterprises across industrial chains to build sustained school-enterprise partnerships, transforming real-world technical ethics cases, professional standards, and corporate responsibility frameworks into dynamic teaching materials for digital ideological education. As vital bridges connecting academia and industry, trade associations can provide up-to-date industry standards, professional ethics guidelines, and technological trends to enrich specialized educational content. Community organizations can offer technical practice platforms enabling students to experience the social value and accountability of technological applications through volunteer services and social practices^[5]. Digital platforms serve as key collaborative vehicles, allowing stakeholders to jointly develop and maintain online resource libraries with real-time content updates, fostering dynamic knowledge co-creation mechanisms. Taking the “New Energy Vehicle Technology” program as an example, faculty members can collaborate with local new energy enterprises and environmental organizations to create online course modules on “Green Manufacturing Ethics”. Enterprises will provide practical case studies on battery recycling processes and environmental compliance standards, while environmental groups share ecological conservation philosophies and sustainable development best practices. Educational institutions are responsible for integrating these resources into systematic ideological education materials. Students engage in online learning about corporate environmental responsibility systems and recycling technical standards, participate in community-based volunteer programs for used battery recycling, and conduct real-time discussions with corporate engineers and environmental experts through digital platforms. This multi-stakeholder participatory education model not only expands the scope of ideological and political education content but also enables students to gain early exposure to the value systems and professional responsibilities inherent in real-world occupational environments.

5. Conclusion

The deep integration of new quality productive forces with online ideological and political education in vocational undergraduate institutions has become an inevitable trend of our time. This integration not only effectively addresses the new demands for talent competence arising from industrial upgrading, but also drives innovative breakthroughs in ideological and political education during the digital transformation process. Vocational colleges must proactively embrace technological changes, establish a diversified and collaborative educational ecosystem, and achieve an organic integration of professional education with value guidance. In the future, this integrated model will provide robust support for cultivating high-quality talents with both moral integrity and technical expertise, thereby serving the national innovation-driven development strategy.

Disclosure statement

The author declares no conflict of interest.

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