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College Students in the Era of Digital Intelligence Research on Mechanisms for Improving Professional Competence

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ABSTRACT
With the development of intelligent digital technologies, new technologies and new business formats are comprehensively affecting the form of social and industrial development and the structure of industries, which also places new demands on students' professional competence. As an important part of the talent cultivation system, improving college students' professional competence directly affects their career development. Based on this, this study identifies the promoting role of intelligent digital technologies in enhancing college students' professional competence. It also addresses the current challenges in improving students' professional competence and proposes development strategies from several dimensions: relying on intelligent digital technologies to improve the system for cultivating students' professional competence, expanding practical opportunities for students' professional competence through university-industry cooperation, innovating the forms of professional competence training, and strengthening measures to ensure the improvement of students' professional competence, with the aim of supporting the construction of mechanisms for enhancing college students' professional competence.

KEYWORDS
School-enterprise cooperation; Professional quality; Teaching system

1 Introduction

The widespread application of digital intelligence technologies such as artificial intelligence, big data, cloud computing, and the Internet of Things is accelerating society's entry into the era of digital intelligence.The 'Outline for the Construction of a Strong Education Nation (2024–2035)' proposes to 'focus on the development of the digital economy and future industries, strengthen curriculum system reform, and optimize the structure of disciplines and specialties.' Deconstructing and reconstructing college students' professional qualities in the context of the era of digital intelligence is not only a key measure for universities to respond to changes in the external environment, but also a crucial lever for innovative reforms in talent cultivation models. Therefore, this study, based on the background of the digital intelligence era, aims to propose a set of multidimensional innovation strategies that integrate technology, systems, and practices, with the goal of providing a feasible and effective framework for the comprehensive enhancement of college students' professional qualities.On the other hand, some universities have a single approach to cultivating professional qualities, mainly relying on sporadic lectures or short-term activities, and have not established a curriculum system that runs throughout the entire university experience and integrates with professional education, resulting in professional quality education for college students being superficial and lacking continuity.

2 The Role of Digital Intelligence Technology in Enhancing the Professional Competence of University Students

2.1 Conducive to Enriching the Forms of Cultivating College Students' Professional Quality

The introduction of smart digital technologies in enhancing college students' professional qualities in universities can enrich traditional methods. Traditionally, the improvement of college students' professional qualities mainly relies on single classroom teaching, which suffers from monotonous teaching formats and insufficient interaction. With the application of smart digital technologies, teachers can use Virtual Reality (VR) and Augmented Reality (AR) to create virtual workplace environments, allowing students to practice professional skills in simulated scenarios, such as business negotiations and public relations crisis management. This not only enhances students' practical professional abilities but also deepens their understanding of professional qualities. With the application of artificial intelligence technology, teachers can rely on AI algorithmic models to accurately profile students' learning behaviors and skill gaps, thereby customizing personalized learning paths for students and effectively meeting the diverse career development needs of different students. For example, teachers can use tools such as online open courses (MOOCs) and cloud collaboration

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platforms to develop differentiated plans for improving students' professional literacy based on their career development goals. This allows students to learn in a developed environment, extending professional literacy education from the closed classroom to cyberspace, which not only enriches students' learning experiences but also enhances the cultivation of college students' professional literacy.

2.2 Conducive to Expanding the Boundaries of Professional Literacy Learning

The application of digital intelligence technology in enhancing university students' professional competencies can break the physical boundaries of traditional professional skills learning, expanding the dimensions of learning time, space, and resources. In terms of time and space, cloud computing platforms, mobile learning applications, and online collaboration tools enable students to surpass the limitations of fixed campus schedules, allowing them to engage in self-directed learning on online platforms during fragmented periods, evolving from 'periodic learning' to lifelong learning.At the level of course resources, the introduction of big data technology and artificial intelligence technology can greatly enrich students' access to resources. Students can use digital tools to efficiently access high-quality courses, industry reports, real-world cases, and other resources, thereby enhancing the depth of their professional learning. At the level of students' professional practical learning, the virtual training scenarios set up by teachers allow students to transform their professional theoretical knowledge into practical application skills, thereby improving their professional competence.

3 Problems Faced in Improving College Students' Professional Qualities

3.1 College Student Career the System for Cultivating Literacy/Competence is not Well Established

At present, the imperfect system for cultivating college students' professional qualities not only affects the improvement of their professionalism but also makes it difficult to establish a good environment for the development of students' professional qualities.On the one hand, some universities neglect the importance of improving college students' professional qualities, simply incorporating the enhancement of these qualities into career guidance courses, which results in a lag in students' learning of knowledge related to professional competencies.

3.2 The Depth of Practical Transformation of college Students' Professional Literacy Knowledge is Insufficient

The practical transformation of college students' professional quality knowledge not only plays a role in improving students' practical abilities in professional positions, but is also crucial for college students to understand social and industrial job roles. However, at present, some universities have not developed comprehensive practical teaching plans aimed at enhancing students' professional quality, resulting in insufficient depth in the practical transformation of college students' professional quality knowledge, mainly reflected in the following two aspects. On one hand, some vocational literacy courses in certain colleges have a 'disconnect' from the professional scenarios of the industry. Some of these courses mainly focus on explaining concepts and principles, using outdated case studies and overly idealized simulated situations, failing to address the uncertainties faced by enterprises operating in the digital intelligence era. This results in a gap between students' knowledge and practical application. On the other hand, the practical teaching of professional quality for some university students in certain colleges has become a mere formality. Even when internships and practical training programs are carried out, due to a lack of detailed process guidance, practical teaching often devolves into mechanical operations. As a result, students are unable to improve their professional qualities through these activities, leaving the cultivation of university students' professional qualities at a stage of 'all talk and no action.'

3.3 College Student Careers the Literacy Teaching System is Singular

Teaching of professional quality for university students is a core link in enhancing students' professional qualities. However, at present, some universities have not innovatively adapted their teaching methods to meet students' needs for professional quality improvement, which limits the development of students' professional skills. First, in teaching professional qualities to university students, the focus is mainly on a 'teacher-centered, classroom-centered, textbook-centered' approach, relying primarily on one-way knowledge transmission and theoretical lectures. This method lacks interactive teaching approaches, such as case discussions, project-driven learning, and flipped classrooms, which can stimulate students' initiative, resulting in a dull teaching process, insufficient student participation, and the inability to incorporate professional quality elements into course content. Second, in the design of teaching content for students' professional quality, some universities tend to adopt a 'standardized' approach, without tailoring it to the specific professional characteristics and career development directions of different students. This leads to course content that

does not align with students' career paths, weakening the cultivation effect.

4 Innovative Strategies for Enhancing College Students' Professional Competence in the Era of Digital Intelligence

4.1 Relying on Digital Intelligence Technology, Improve the System for Cultivating College Students' Professional Qualities

To strengthen the guarantee for the enhancement of college students' professional competence, universities need to carry out top-level design, rely on intelligent digital technologies, and improve the system for cultivating students' professional qualities. First, universities can use artificial intelligence technology to create a professional development profile for each student, dynamically tracking data such as their coursework, social practice, club activities, and skill competitions during their time at school, accurately identifying elements related to professional competence, and providing support for subsequent teaching optimization. Second, universities can establish cross-departmental collaborative groups for professional competence cultivation to break down traditional barriers between the Academic Affairs Office, Student Affairs Office, and Career Guidance Center, achieving coordinated management in curriculum planning, activity organization, and resource allocation, thereby ensuring rational participation from all parties and enhancing the effectiveness of students' professional competence development. Third, universities can establish a quality early-warning mechanism for cultivation, continuously diagnosing the effectiveness of the student professional development system by analyzing teaching process data, student feedback, and employer evaluations in real-time, while providing early warnings and proactive interventions for students whose competence development lags behind, thus achieving self-improvement of the cultivation system.

4.2 Focusing on School-enterprise Cooperation to Expand Practical Spaces for College Students' Professional Development

To address the issue of insufficient depth in the practical transformation of college students' professional quality knowledge, universities need to focus on school-enterprise cooperation and expand the practical space for students' professional quality, thereby establishing a more in-depth practice-based education system. First, universities should leverage digital intelligence technologies to build virtual simulation training centers, where universities and enterprises jointly develop virtual simulation projects based on real business scenarios, such as intelligent supply chain management and digital marketing planning. This allows students to complete corresponding professional practice tasks in virtual settings, thereby enhancing their professional skills and professional quality, and expanding the depth of college students' professional quality development. Second, universities can establish cloud-based project-oriented learning platforms that require deep participation from industry enterprises, students, and teachers. Enterprises can upload their job tasks and industry development trends to the platform, while students undertake corresponding project practices based on their accumulated professional knowledge and entrepreneurial awareness. Teachers provide comprehensive guidance for students' practice and assess students' professional practice through enterprise participation. Continuous project task training helps to enhance students' professional qualities. Third, universities can implement live-streaming courses with corporate mentors. Universities can guide teachers to use live-streaming platforms for teaching and require industry enterprises to participate, explaining industry development trends, job characteristics, and emerging employment opportunities to students. This deepens students' understanding of the future workplace, thereby enhancing their professional qualities.

4.3 Innovate the Teaching Methods for College Students' Professional Quality and Strengthen the Guarantee for Improving College Students' Professional Competence

The integration of intelligent digital technologies in enhancing college students' professional competence relies on diversified teaching methods. To address the current issue of a single teaching system for professional competence in colleges, universities need to innovate the teaching formats for students' professional competence, solidify the support for improving such competence, and build a student-centered, personalized, and highly engaging educational ecosystem. First, universities should promote immersive situational teaching within the curriculum aimed at enhancing students' professional competence. This allows teachers to make full use of technologies such as VR/AR and digital twins to create highly realistic workplace environments in practical applications. Students can then handle complex professional ethical dilemmas, participate in intense team decision-making, and simulate public relations crises in virtual scenarios. Through learning by doing and learning from mistakes, students can deeply understand and cultivate

professional qualities such as resilience, collaboration, and integrity. Second, to enhance the precision of cultivating university students' professional competencies, teachers can leverage artificial intelligence algorithms to analyze students' learning behaviors and weaknesses, intelligently recommending customized learning resources, micro-credential courses, and challenging tasks. By using adaptive learning technologies to dynamically adjust teaching content and difficulty, a personalized competency development plan can be implemented for each student, ensuring that every student receives the instructional support most suitable for their personal development. Third, universities can establish interdisciplinary project-based learning communities that break down professional barriers. Focusing on industry-related problems, students can be regularly organized into online interdisciplinary teams, cultivating critical thinking, digital collaboration, and leadership skills as they collaboratively design solutions. Fourth, universities can use smart classrooms, learning management systems, and other tools to record students' performance data across various teaching activities. Learning analytics can be employed to generate multidimensional competency development assessment reports, providing scientific evidence for teachers to optimize instructional design, thereby creating a teaching ecosystem of "instruction-assessment-feedback-improvement" and providing procedural assurance for the enhancement of university students' professional competencies.

5 Conclusion

In the era of digital intelligence, the professional competence of university students is not only key to their future high-quality employment and entrepreneurship but also an important aspect of innovation in talent cultivation models in higher education. Universities need to recognize the significance of enhancing students' professional competence, comprehensively clarify its value in student development and the reform of professional education, and thereby establish a sound mechanism for improving students' professional competence. This will promote the alignment between talent supply and industry demand, fulfilling the university's responsibility of educating people with integrity and virtue.

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