DOI: 10.53469/jrve.2025.07(06).05

Innovative Pathways for Digital-Intelligent Technology Empowerment in Law Practice Education: A Case Study of the Court Debate Course

Chunxiao Mao

School of Law, Anhui University of Finance & Economics, Bengbu 233030, Anhui, China

Abstract: ***This study examines the integration of digital-intelligent technology in law education through the Court Debate course, drawing on constructivist learning theory and embodied cognition theory. It elucidates the deep coupling mechanism between digital-intelligent technology and practical legal pedagogy, proposing a core logic that enhances educational effectiveness through blended reality scenario reconstruction, dynamic resource intelligent adaptation, and multimodal interaction mechanisms. Addressing three fundamental challenges in traditional practical law education—spatial fragmentation of teaching scenarios, superficial technological implementation, and singular experiential evaluation frameworks—the research presents a systematic solution featuring technology-driven approaches, intelligent empowerment, and coordinated multi-dimensional assessment. The methodology includes developing immersive cross-domain collaborative environments through virtual courtroom simulations, dynamically aligning legal theory with practical knowledge via artificial intelligence, and establishing a tripartite quantitative evaluation model based on multimodal data. The study further constructs a safeguarding framework addressing technological iteration, interdisciplinary faculty development, and technological ethics training to preserve the humanistic values of law education. The findings indicate that digital-intelligent technology effectively bridges the gap between "knowledge" and "practice" in law education through paradigm shifts in immersive contextual learning, dynamic process management, and collaborative subject engagement. This provides innovative pathways for legal professional competency development, facilitating the digital transformation of law education.***

Keywords: Digital-intelligent technology, Law practice teaching, Court Debate Course, Virtual simulation technology**.**

1. Introduction

Law practice education serves as the cornerstone of legal talent development systems, aiming to effectively transform legal knowledge into practical competencies through contextualized professional training. The "Court Debate" course, as an integral component of law practice education, directly cultivates core skills and professional ethics relevant to judicial practice through moot court proceedings, evidentiary analysis, and legal argumentation. However, traditional pedagogical approaches have long been constrained by the rigid limitations of physical spaces, inequitable distribution of educational resources, and superficial application of technological tools, resulting in multiple challenges including "simplified contextual scenarios," "competency gaps," and "monolithic assessment methods." Particularly against the backdrop of increasingly complex and technologically sophisticated judicial practices, traditional law education urgently needs to explore innovative pathways that align with the demands of the digital intelligence era.

The current "Court Debate" course faces structural contradictions in practical teaching: physical space constraints and unbalanced resource allocation weaken cross-domain collaboration and contextual simulation; disconnection between technological tools and pedagogical objectives creates efficiency gaps; and singular evaluation mechanisms fail to capture the multidimensional complexity of law practice. These issues collectively indicate a profound disconnect between theory and practice in law education, while the rapid development of digital intelligent technologies provides both technical support and theoretical breakthroughs for resolving these challenges. Based on technological characteristics and cognitive theory, this study proposes cross-domain collaborative construction of immersive scenarios, intelligent adaptation and delivery of legal resources, and deep feedback mechanisms through multimodal interaction, reconstructing pathways to enhance practical teaching effectiveness. Using the "Court Debate" course as the research subject, this paper focuses on innovative approaches driven by technology, intelligent empowerment, and synergistic multi-dimensional evaluation, revealing the deep coupling mechanisms between digital intelligent technologies and law practice education, while establishing a triple safeguard system of technological iteration, faculty capacity building, and technological ethics training. Results indicate that digital intelligent technologies promote the transformation of legal knowledge into professional competencies through paradigm shifts in deep situational immersion, real-time process response, and multi-agent collaboration, facilitating the digital transformation of practical law education.

2. Theoretical Explication of Digital-Intelligent Technology Empowering Law Practice Education

The essence of empowering law practice teaching with digital-intelligent technology lies in systematic innovation through interdisciplinary theoretical integration. This section establishes a three-dimensional framework based on technological characteristics, educational objectives, and cognitive logic: first, it analyzes the core attributes of digital-intelligent technology, clarifying its underlying logic

as a tool for educational transformation; second, it delineates the value orientation and competency development requirements of law practice teaching; finally, through cross-analysis of constructivism and embodied cognition theory, it reveals the internal mechanisms of technological empowerment. The synergy of these three elements constructs a theoretical framework that provides scholarly support for subsequent pathway innovations.

2.1 Core Connotations and Multidimensional Characteristics of Digital-Intelligent Technology

Digital-intelligent technology represents a cluster of technologies centered on data-driven decision-making, facilitated by artificial intelligence, and delivered through physical-virtual integrated interaction. Its essence lies in the integration, mining, and application of heterogeneous data from multiple sources to achieve intelligent decision-making and dynamic optimization in complex scenarios. Its specific characteristics encompass four aspects. The first is data-driven nature, which relies on large-scale data acquisition and structured processing to construct cross-domain knowledge graphs supporting precise decision-making. The second is intelligent interactivity, which integrates Natural Language Processing (NLP), computer vision, and other technologies to enable real-time feedback through human-machine collaboration. The third is physical-virtual integration, which transcends physical space limitations through Virtual Reality (VR), Augmented Reality (AR), and other technologies to construct operational environments that combine virtual and physical elements. The fourth is dynamic adaptability, which continuously optimizes models based on machine learning algorithms to respond to external environmental changes [1].

2.2 The Essential Objectives and Value Orientation of Law Practice Teaching

Law practice education is a contextualized teaching model oriented toward the acquisition of legal professional skills, grounded in the cultivation of professional ethics, and extended through the development of innovative thinking, with its core objectives achieved through multi-level pathways [2]. In terms of skill acquisition, students' law application abilities and courtroom adaptability are enhanced through practical training such as moot court debates and legal document drafting. Regarding situational construction, authentic cases and simulated tribunals recreate judicial environments, strengthening students' concrete understanding of legal procedures, evidentiary rules, and practical issues. Throughout this technology-empowered process, the humanistic core of law education remains paramount, with value guidance integrated into all pedagogical activities. Through deep engagement in judicial scenarios, students develop profound value identification with judicial fairness and procedural justice, ultimately forming an integrated teaching model that combines professional skill training, practical situational experience, and legal spirit cultivation [3].

2.3 Theoretical Logic of Digital-Intelligent Technology Empowering Law Practice Education

The deep integration of digital-intelligent technology with law practice education essentially represents a theoretical reconstruction of traditional educational paradigms. Its compatibility manifests not merely in the physical transformation of teaching environments through technological tools, but more significantly in the innovation of legal talent cultivation paradigms supported by foundational theories in cognitive science and education. digital-intelligent technology primarily empowers law practice education based on two major theoretical frameworks: constructivist learning theory and embodied cognition theory. This section will systematically elucidate the academic logic underlying the empowerment of digital-intelligent technology.

2.3.1 Constructivist Learning Theory Driving Innovation in Contextualized Teaching Paradigms

The core proposition of constructivist learning theory maintains that "knowledge is the product actively constructed by learners through interaction with their environment" [4], rather than a passively received outcome, emphasizing the situational, social, and proactive nature of the learning process [5]. Traditional law practice pedagogy often falls into a "decontextualization" predicament: classroom simulations typically employ simplified cases that strip away complex variables such as evidentiary conflicts and procedural disputes present in authentic judicial settings, resulting in cognitive vacuums for students. In practice, within conventional moot court exercises, students can only engage in argumentation based on predetermined fixed evidence, lacking training in dynamic supplementation of evidence chains or adaptation to unexpected witness testimony shifts, which severely disconnects from high-frequency issues in actual court proceedings such as "evidence ambush" and "procedural objections."

Digital-intelligent technologies provide a technical implementation pathway for constructivist theory through the reconstruction of physical-virtual integrated scenarios and intelligent adaptation of dynamic resources. Firstly, through the utilization of virtual simulation technology, three-dimensional courtroom environments can be constructed with embedded variable parameters, such as unexpected evidence submissions or disruptions from the gallery, compelling students to make autonomous decisions amid dynamic conflicts, thereby achieving situational authenticity. Secondly, cross-regional faculty and students are connected through cloud collaboration platforms, simulating cooperative models of authentic legal professional communities to achieve knowledge socialization. For instance, the "online + offline" hybrid mock trials conducted through partnerships between universities and primary courts enable students to collaborate with remote judges and attorneys to complete the entire litigation process from case filing to judgment. Throughout this process, students develop an understanding of interest negotiations between different roles and professional ethics within the legal system. Third, the intelligent debate assistant based on legal knowledge graphs can provide real-time recommendations of relevant legal provisions and precedential rules. However, the system serves merely as an underlying support tool for learning assistance. Students must independently extract key content from these

materials and complete the entire process of analysis, reasoning, and argumentation on their own. This "limited intelligent assistance" model prevents technological dependency, aligns with constructivism's pedagogical principle of "guiding rather than replacing," and achieves cognitive autonomy.

2.3.2 Embodied Cognition Theory Enhances the Depth of Immersive Learning Experiences

Embodied Cognition theory challenges the dualistic assumptions of traditional "Disembodied Cognition," proposing instead a triadic closed-loop system of "bodily perception—environmental interaction—cognitive formation [6]." In the field of law education, it is emphasized that cognitive processes and bodily experiences are inseparable, with learning outcomes being directly influenced by environmental interactions [7]. The theory exposes two fundamental deficiencies in traditional law education: "physical absence" and "environmental detachment." On one hand, the study of paper case files and oral argumentation fails to activate multi-sensory coordinated cognition, often resulting in students experiencing a competency gap between theoretical understanding and practical application. On the other hand, the spatial displacement between classroom settings and authentic courtrooms undermines students' value identification with judicial authority and procedural formality.

Digital-intelligent technology has operationalized embodied cognition theory through multimodal interaction design and immersive environment construction. Primarily, sensorimotor engagement facilitates cognitive enhancement. Augmented reality technology transforms paper case files into three-dimensional evidence models, enabling students to manipulate physical evidence through gestural interfaces—rotating exhibits and magnifying document details. This direct somatic-evidential interaction significantly enhances evidentiary analytical capabilities. Secondly, spatial immersion facilitates value internalization. VR courtrooms not only simulate physical elements such as the judicial bench and gallery seating, but also establish judicial gravitas through strategic lighting effects and audio design, including gavel strikes and spectator murmurs. Students trained in VR courtroom environments demonstrate enhanced procedural compliance, illustrating technology's implicit role in shaping judicial ethics. Third, multisensory interaction mechanisms in virtual environments can trigger adaptive restructuring of neural networks in the brain. Neuroscientific research demonstrates that such stimulation, by activating the mirror neuron system, facilitates the transformation of legal knowledge from static memorization to automated application—evolving from merely "knowing legal provisions" to developing the practical ability to "master how to apply legal provisions to solve problems [8]."

3. Practical Challenges in the Implementation of "Courtroom Bebate" Course

The practical teaching challenges in "Courtroom Bebate" courses manifest as a tripartite contradiction: contextual fragmentation, technological discontinuity, and evaluative limitations. Instructional environments are constrained by rigid physical parameters and resource allocation imbalances, diminishing cross-domain collaboration and situational immersion. Technological implementation remains superficially instrumentalized, severing the dynamic connection between educational objectives and efficacy. The assessment framework is confined to singular entities and static metrics, obscuring the multidimensional complexity of legal practical competencies. These three factors collectively indicate a profound decoupling of "knowledge" and "practice" in law education, necessitating systematic reconstruction to bridge the theoretical-practical divide.

3.1 Fragmented Educational Environments Constrain the Development of Legal Practical Competencies

The fragmentation of educational environments constitutes a critical bottleneck in cultivating legal practical competencies. Rigid constraints of physical spaces coupled with imbalanced resource allocation lead to disrupted cross-domain collaboration and diminished situational immersion, fragmenting the integrity of judicial procedures and embodied perception of professional ethics. This structural contradiction reduces practical law education to fragmented exercises, inadequately supporting the systematic development of legal professional capabilities.

3.1.1 Spatial Constraints Impede Cross-Regional Collaborative Practice

The essence of law practice education lies in reconstructing judicial scenarios through concrete representation, thereby establishing a generative domain for legal professional competency development [9]. However, traditional "Courtroom Bebate" courses are constrained by the rigid boundaries of physical space, resulting in a fragmentation of the presence in teaching scenarios. This manifests specifically as a contradiction between spatial limitations and pedagogical extensibility. Physical space, serving as the material carrier of teaching activities, inherently restricts the extensibility of the teaching process due to its fixed and enclosed nature. Traditional moot courts rely on the temporal-spatial exclusivity of specific venues, relegating cross-regional collaboration to mere theoretical constructs. This "presence constraint" of space not only impedes the collaborative practice of geographically dispersed teacher-student communities but also reduces teaching scenarios to isolated experiential replications rather than open knowledge co-construction. In practice, law schools in western regions often reduce mock trials to "scripted performances" due to the absence of on-site guidance from experienced judges and attorneys. Students consequently miss opportunities to encounter spontaneous courtroom situations, particularly evidence ambushes and procedural objections. Furthermore, the essence of law practice education lies in activating embodied cognition of judicial ethics and procedural justice through physical presence and participation, such as role-playing and procedural interaction. The fragmentation of physical space leads to disruption of embodied participation and ineffective situational reconstruction, as students' bodies remain anchored in disparate local settings, preventing the formation of coherent interactive networks within a unified judicial context [10]. This fracture deconstructs the core elements of trial proceedings, such as ceremonial nature and evidentiary chain integrity, reducing instruction to merely

symbolic formal exercises.

3.1.2 Imbalanced Resource Allocation Exacerbates the Equity Crisis in Law Education

The distribution logic of educational resources profoundly impacts the effectiveness of practical law education. Under traditional models, the non-equilibrium flow of resources has generated a self-reinforcing "Matthew Effect" mechanism, exhibiting clear resource dependency on power structures and centralized accumulation. Quality judicial cases and practical training resources are not neutral technical entities; their generation, screening, and allocation remain embedded within networks of power and capital. Prestigious institutions, leveraging academic authority and institutional advantages, create gravitational fields that attract resources, while ordinary institutions become trapped in negative cycles of resource scarcity [11]. This centralized aggregation not only solidifies resource distribution pathways but also monopolizes the discourse authority in law education, relegating practical teaching in peripheral institutions to dependent reproduction. Moreover, the imbalance in resource allocation engenders homogenization tendencies in educational contexts [12]. Elite law schools establish exclusive "judicial knowledge enclaves" through resource monopolization, while non-elite institutions are relegated to repetitive, simplified training protocols. This homogenization not only constrains pedagogical diversity but also suppresses critical inquiry and innovation in law education. When resource allocation is dominated by a singular power structure, students' jurisprudential reasoning inevitably becomes conservative, rendering them ill-equipped to address emerging controversies in judicial practice, such as artificial intelligence liability and algorithmic discrimination.

3.2 Educational Efficacy Distortion Induced by Technological Application Discontinuity

The technological application discontinuity dilemma in law practice education essentially represents a structural rupture between instrumental rationality and educational value. When technology should serve as a bridge to reconcile pedagogical disparities, its superficial and fragmented application instead exacerbates the alienation of the educational process, specifically manifested in the instrumental suspension of virtual simulation technology in "Court Debate" courses and the epistemological lag in case study updates.

3.2.1 Insufficient Proliferation of Virtual Simulation Technology Diminishes Authenticity in Educational Contexts

Virtual simulation technology, as an instructional tool in the digital intelligence era, derives its value from the depth of technological integration into educational settings and the adaptability of stakeholders to such technology. However, in contemporary law education, the physical coverage of technological dissemination has not translated into substantive enhancement of pedagogical efficacy. On one hand, the implementation of virtual simulation technology often remains limited to hardware procurement and platform construction, lacking systematic alignment with educational objectives. For instance, while some institutions have acquired VR courtroom equipment, these technologies merely serve as "technical demonstrations" rather than being organically integrated with curriculum design and assessment criteria, consequently reducing technological innovations to mere props in educational performances [13]. On the other hand, the asynchronous digital literacy between educators and students, as dual subjects of technological utilization, constitutes a fundamental contradiction. The faculty cohort, due to inertia in knowledge structures, frequently perceives technological tools as threats to traditional pedagogical authority, selectively circumventing technological integration, and typically limiting usage to PowerPoint-assisted lectures. Students, while possessing superficial technological receptivity, lack the competencies to transform technological experiences into legal cognition, such as reflecting on procedural justice through virtual court simulations [14]. This literacy gap has resulted in a predicament of "tools without methodology," preventing the achievement of a triadic integration of "body-technology-knowledge."

3.2.2 Delayed Case Updates Impede the Dynamic Integration of Moot Court Pedagogy with Judicial Practice

The vital essence of legal practical education lies in its dynamic reflection of judicial practice, while the latency in case material renewal severs the symbiotic relationship between academic instruction and professional praxis [15]. Traditional "Courtroom Bebate" courses predominantly utilize cases from textbooks or historical precedents, establishing a deterministic framework (e.g., fixed evidentiary chains, uncontested legal applications) that starkly contrasts with the complexities of actual judicial proceedings (e.g., surprise evidence, disputes over statutory interpretation). This pedagogical approach frequently places students in an artificial vacuum, ill-equipping them to navigate the "ambiguity challenges" emerging in contemporary legal domains, such as the currently contentious issues of artificial intelligence tort liability demarcation and jurisdictional conflicts in cross-border data governance. Even when virtual simulation technologies are incorporated, the absence of systematic case repository updates may paradoxically reinforce the obsolescence of legal knowledge rather than mitigate it.

3.3 The Data Masking Effect and Power Structure Solidification in Traditional Evaluation Systems

Traditional teaching evaluation systems exhibit limitations and deep-seated contradictions, essentially representing a cognitive disconnect between the systematic presentation of knowledge and the dynamic transformation of professional competencies in law practice education. This disconnect manifests specifically in how traditional evaluation systems excessively focus on standardized assessment of explicit knowledge such as legal provisions and case precedents, while failing to effectively capture the developmental processes of implicit abilities like legal argumentation and situational adaptability, resulting in a profound decoupling of "knowing" and "doing." [16] When evaluation systems cannot capture the multidimensional complexity of legal practice, their feedback mechanisms inevitably deteriorate into superficial depictions of appearances rather than deep formations of substantive capabilities.

3.3.1 Insufficient Data Collection Leading to Multimodal Representation Crisis in Argumentation Processes

The essence of legal practice competency lies in dynamic, contextualized knowledge application. However, traditional "Court Argumentation" evaluation frameworks are constrained by unimodal data acquisition methods, such as textual documentation or verbal assessment metrics, resulting in legal skill representation succumbing to "cognitive reductionism." Notably, non-verbal elements in forensic argumentation remain excluded from evaluative parameters, including micro-expression regulation, somatic communication during evidentiary presentation, and stress responses during logical discontinuities. The absence of this "embodied knowledge" prevents students from understanding "how to convey legal authority through embodied action" through feedback, limiting them to superficial training in "how to memorize legal provisions." Merleau-Ponty's "phenomenology of the body" establishes that cognitive completeness depends on the interaction between body and environment, yet the current evaluation system reduces the body to a meaningless material vessel [17]. Furthermore, conventional assessment of "Courtroom Bebate" relies predominantly on outcome-based metrics such as win rates and frequency of statutory citations, while neglecting the evolutionary trajectory of legal reasoning during argumentation, including the generative logic of analogical reasoning and the iterative refinement of cross-examination strategies. This evaluative approach, which prioritizes results over process, fragments the coherent chain of incremental knowledge acquisition, reducing pedagogical feedback to rigid replication of predetermined solutions rather than fostering students' capacity to flexibly apply legal principles and respond effectively to exigent circumstances in practical contexts [18].

3.3.2 Collusion Mechanism Between Singular Evaluation Subject and Disciplinary Power

The singularity of the evaluation subject reflects the solidified power structure within the law education field, which essentially represents symbolic violence of "teacher-centrism" against pluralistic cognitive perspectives [19]. Educators, as singular evaluative agents, frequently establish assessment criteria based on personal experience, reducing legal practice to mere imitation of existing paradigms, such as specific argumentation templates or standardized evidence examination procedures. This evaluative methodology essentially represents the microcosmic operation of Foucault's "disciplinary power" — cultivating "qualified legal bodies" through standardized grading systems while simultaneously suppressing students' creative responses to judicial indeterminacy [20]. Furthermore, the essence of the legal profession lies in the negotiated practice among diverse stakeholders including judges, attorneys, litigants, and the public; however, a singular evaluative perspective strips away this interactivity. The absence of peer assessment among students and participation from practice specialists excludes dimensions such as "social acceptability of legal argumentation" and "public nature of judicial ethics" from the evaluation framework, resulting in competency development becoming isolated within a "professional insularity."

4. Pathways for Innovation in "Courtroom Bebate" Courses Empowered by Digital-Intelligent Technologies

Digital-intelligent technologies empower innovative transformations in "Courtroom Bebate" courses through the synergistic interaction of technology-driven approaches, intelligent assistance, and assessment reconstruction. This section proposes systematic innovation pathways across three dimensions — teaching scenarios, instructional processes, and evaluation systems — to address practical challenges. Specifically, immersive cross-domain collaborative environments are reconstructed through mixed reality technologies, overcoming dual constraints of physical space and resource allocation; artificial intelligence facilitates dynamic adaptation between legal knowledge and practical competencies, bridging the gap between technological tools and educational effectiveness; and multimodal data supports the development of multidimensional assessment models, breaking through the limitations of traditional evaluation's singularity and static nature.

4.1 Technology-Driven Reconstruction of Pedagogical Environments and Optimization of Resource Systems

The fragmentation of learning environments and resource imbalance in law practice education fundamentally stem from the dual failure of traditional educational spatial arrangements and resource allocation logic. Digital-intelligent technologies infuse new vitality into educational domains through the reconstruction of integrated physical-virtual environments and intelligent adaptation of dynamic resources.

4.1.1 Virtual Simulation Courtroom: Constructing Cross - Domain Collaborative Immersive Educational Environments

This initiative establishes a blockchain-authenticated virtual courtroom collaboration platform, enabling geographically dispersed faculty and students to participate synchronously in complex case simulations through digital avatars representing judges, attorneys, witnesses, and other judicial roles. The system facilitates cross-domain integration via cloud-based collaborative architecture. Through distributed node infrastructure, the platform ensures low-latency interactions, preserving the integrity of adversarial proceedings and the procedural formality inherent in judicial settings. For instance, students located in Beijing can assume prosecutorial roles while engaging in evidentiary examination with defense counsel situated in Guangzhou regarding transnational data crime cases. The system automatically documents behavioral metrics for all participants and generates compliance analytics. This foundation is enhanced through embodied immersion design utilizing VR/AR technologies. Utilizing virtual reality (VR) technology to construct three-dimensional courtroom environments that accurately reproduce physical details such as bench configurations and spectator gallery interactions; implementing augmented reality (AR) applications to transform paper-based case files into interactive digital evidence, enabling functionalities such as three-dimensional exhibit manipulation and document annotation overlay [21]. Students' physical movements, gestural manipulations, and

vocal commands are captured in real-time within virtual environments, establishing a cognitive feedback loop of "body-technology-judicial scenario." This significantly enhances the embodied immersion's internalization effect on judicial ethics.

4.1.2 Dynamic Resource Pool: Implementing an Inclusive Sharing Mechanism for Judicial Cases

The system interfaces with the Supreme People's Court's "China Judgment Documents Network" and "Judicial Big Data Research Institute" to construct a case repository intelligently categorized by case type, adjudication procedure, and disputed issues. This enables equitable access to the judicial case-sharing database, addressing resource allocation imbalances. Specifically, Natural Language Processing (NLP) techniques extract legal controversy points, evidential chain logic, and judicial reasoning pathways from judgment documents, generating structured educational resources. For example, regarding emerging cases such as "facial recognition infringement disputes," the system automatically correlates provisions from the Personal Information Protection Law, adjudication rules from similar cases, and contested academic perspectives, providing multidimensional knowledge support for students. Simultaneously, the system embeds Judicial Big Data API interfaces to dynamically capture newly promulgated judicial interpretations, guiding cases, and legislative developments. Implementing semantic association and conflict detection of legal norms through knowledge graph technology ensures synchronization between educational content and judicial practice. For instance, following the release of judicial interpretations regarding the guarantee system in the Civil Code, the system can automatically update the mortgage right implementation pathways in simulated cases, preventing pedagogical lag behind legislative amendments.

4.2 Precision and Dynamism in AI-Assisted Educational Processes

The digital-intelligent transformation of law practice education necessitates transcending the unidirectional dominance of traditional instrumental rationality. Through human-machine collaborative intelligent assistance systems, the symbiotic relationship between "teaching – learning - assessment" can be reconstructed, facilitating a paradigmatic transition from knowledge transmission to competency development.

4.2.1 Bridging the Cognitive Gap Between Legal Theory and Practice Through Artificial Intelligence

The integration of artificial intelligence technologies provides dynamic and precise content delivery for legal practical education, with its core function being the establishment of bidirectional mapping mechanisms between legal knowledge and practical skills. Specifically, legal knowledge graphs constructed from judicial big data encompass entities (such as legal subjects, rights and obligations), relationships (such as statutory citations, case references), and rules (such as evidentiary standards, procedural logical sequences). During moot court proceedings, when students trigger specific keywords, the system provides real-time access to relevant legal provisions, case precedent summaries, and scholarly controversies, while highlighting frequently cited statutes in judicial practice to guide students in constructing practice-oriented argumentative frameworks. Building upon this foundation, Generative Adversarial Networks (GANs) automatically generate parameterized simulated cases based on the focal points of moot court debates, thereby diversifying case resources for the "Courtroom Bebate" curriculum and encompassing multifaceted dispute scenarios. For instance, regarding the contentious issue of "autonomous vehicle tort liability allocation," one can modify parameters such as sensor failure rates and driver intervention levels within accident scenarios to generate debate contexts with divergent attribution pathways. This "uncertainty training" not only circumvents the performative tendencies of traditional case studies but also compels students to confront ambiguity challenges inherent in judicial practice, thereby fostering critical legal reasoning.

4.2.2 Multimodal Data Collection Enhances the Explicit Expression of Tacit Knowledge

The essence of legal practice competency is the embodiment of tacit knowledge (Tacit Knowledge) [22]. Data technology, through multimodal collection and analysis, provides an operational pathway for the explicit expression of implicit capabilities. On one hand, utilizing multimodal learning analytics tools to capture language logic, gesture frequency, micro-expression stability, and other non-verbal behaviors and cognitive conditions through speech recognition, affective computing, and eye-tracking technology throughout mock court debates enhances process evaluation [23]. For instance, the system can detect rapid speech acceleration and pupil dilation during students' cross-examination phases, indicating stress responses triggered by evidentiary contradictions, and subsequently recommend the "Evidence Chain Counter-Interrogation Strategy" training module. Additionally, utilizing natural language processing technology to analyze moot court debate recordings, the system automatically generates quantitative reports encompassing "Legal Basis Accuracy," "Logical Structure Integrity," and "Argumentation Persuasiveness Index," resulting in personalized improvement recommendations. These reports not only identify surface-level errors such as incorrect statutory citations but also reveal deeper logical fallacies through semantic analysis, significantly enhancing feedback efficiency.

4.3 Scientific Assessment of Law Practical Competence through Diversified Evaluation Systems

Traditional evaluation frameworks struggle to capture the multidimensional nature of legal practical competence due to their unidimensional perspective. Digital-intelligent technologies integrate quantitative metrics, practical experience, and peer feedback through multimodal data and composite models. AI analysis reveals implicit logic and behavioral manifestations, establishing a scientific assessment feedback loop that balances competence and value considerations, thereby facilitating the transformation of evaluation toward precision and systematization.

4.3.1 Breaking the Experiential Limitations of Traditional

Assessment Through Quantitative Indicator Systems

The efficacy impasse in pedagogical evaluation stems from the obscuration of legal practice's complexity through singular perspectives. Digital-intelligent technologies facilitate a paradigmatic transformation from "authoritative discipline" to "pluralistic negotiation" by expanding evaluative subjects and reconstructing assessment dimensions. The critical innovation lies in establishing a tripartite quantitative indicator framework integrating "debate performance — legal application — logical rigor," thereby transcending the cognitive constraints of empiricism. Among these criteria, "Debate Performance" encompasses verbal fluency (measured by effective words per minute) and non-verbal influence (correlation between body language and audience engagement). "Legal Application" focuses on the accuracy rate of statutory citations and the relevance of case law references. "Logical Rigor" is evaluated through the completeness of argumentation chains (such as semantic coherence between premises and conclusions) and resistance to counterexamples (effectiveness in countering reductio ad absurdum arguments). These assessments are complemented by a dynamic weighting mechanism that adjusts indicator weights according to pedagogical objectives. For instance, foundational training phases emphasize legal application accuracy (50% weight), while advanced courses intensify focus on logical rigor (40% weight) and innovation (10% weight), reflecting the graduated nature of competency development.

4.3.2 Composite Evaluation Model Deconstructs Symbolic Hegemony of Authority Centers

While traditional evaluation systems remain mired in data collection predicaments, the homogeneous structure of evaluating entities further exacerbates the risk of distortion in assessing legal practice capabilities. The authoritative position of instructors as sole evaluators essentially represents symbolic violence of "teacher-centrism" against diverse cognitive perspectives. Hence, there is an urgent need to construct a composite evaluation model of "Instructors (30%) + AI Systems (40%) + Legal Practitioners (20%) + Peer Assessment (10%)," where multiple entities collaboratively score, transcending singular evaluation approaches. The AI system generates objective metric scores through algorithmic models; legal practitioners evaluate the practical feasibility of argumentation strategies based on judicial experience; peer assessment among students focuses on team collaboration and ethical compliance, such as whether procedural loopholes are maliciously exploited. When scoring discrepancies among these diverse evaluators exceed a predetermined threshold, the system automatically activates a dispute analysis module, which extracts focal points of disagreement and disseminates relevant legal authorities and comparative case analyses, thereby facilitating evaluators' reflection on their cognitive biases.

5. Safeguard Mechanisms for Digital - Intelligent Technology Empowering "Court Debate" Practical Teaching

To achieve sustainable implementation of innovative pathways in the Court Debate Course empowered by digital-intelligent technology, a tripartite safeguard system encompassing technology, faculty resources, and ethics must be constructed. This system serves not only as a supporting framework for technological tool implementation but also as a practical vehicle for balancing humanistic values and technological rationality in law education. Through the synergy of institutional design, capability enhancement, and risk prevention, these innovative pathways can be transformed into reality.

5.1 Dynamic Adaptation and Compliance Assurance of Technical Support Systems

Technical support systems constitute the infrastructure for digital intelligence empowerment, with their core function being the assurance of stability in teaching scenarios and reliability of resources through continuous iteration of technological tools and standardization of data governance.

5.1.1 Dynamic Iteration Mechanism for Legal Knowledge Graph Construction

Based on Natural Language Processing (NLP) and machine learning technologies, semantic integration of judicial big data is performed to construct a multimodal knowledge graph encompassing legal provisions, judicial documents, and academic literature. The system automatically captures guiding cases released by the Supreme People's Court and newly promulgated judicial interpretations to update knowledge nodes in real-time. For instance, following the implementation of the Personal Information Protection Law, the system automatically correlates the "informed consent rule" with application disputes in relevant precedents, forming a dynamic knowledge network. Concurrently, a logical reasoning engine is incorporated to automatically detect potential conflicts between legal norms, generating revision suggestions for teaching reference, optimizing the normativity and timeliness of teaching content, and effectively supporting faculty and students in exploring frontier legal issues.

5.1.2 Establishing Dual Safeguards for Data Security and Privacy Protection

Implement differential privacy techniques to anonymize personally sensitive information in judicial documents [24], ensuring the "Court Advocacy" course case repository complies with the Personal Information Protection Law and Data Security Law requirements. Concurrently, establish a hierarchical data access authorization system to restrict unauthorized users from retrieving complete judgments. While desensitizing judicial data, student behavioral data must also undergo encryption storage. Implement end-to-end encryption for multimodal learning data collected during moot court proceedings, storing it on a private cloud platform that meets Level 3 security protection standards. The data shall be utilized exclusively for educational analysis, with commercial use prohibited, and blockchain technology employed to maintain operational audit trails, ensuring traceability.

5.2 Collaborative Enhancement of Digital Literacy and Interdisciplinary Competencies in Faculty Teams

The digital literacy and interdisciplinary integration capabilities of faculty teams represent critical variables in elevating technology-enabled education from mere "tool application" to genuine "educational innovation." To resolve the disconnect between technological empowerment and faculty competencies in law education, it is necessary to establish sustainable development mechanisms for interdisciplinary integration and collaborative talent cultivation. Enhancing the digital literacy of faculty teams depends not only on reconstructing dual-expertise capabilities in "law + technology," but also requires systematic training and university-enterprise collaboration to achieve the transformation of knowledge into practice [25]. On one hand, establishing legal technology workshops where technical experts teach virtual simulation platform operation, AI-assisted tool debugging, and judicial data analysis skills, while simultaneously implementing a regular rotation system for faculty to courts and law firms. This enables them to deeply understand the technical requirements and ethical challenges of judicial practice through participation in actual case adjudication and legal technology product development. On the other hand, collaborating with legal technology enterprises to build integrated training spaces featuring virtual courtrooms, AI training systems, and judicial big data platforms, where companies provide algorithm optimization and hardware maintenance support while schools contribute teaching scenario requirements, creating a bidirectional mechanism driven by both technological supply and educational demand. Additionally, appointing judges and arbitrators as resident mentors who directly participate in mock trial design, case database updates, and evaluation criteria formulation, infusing cutting-edge judicial experience into the teaching process. This ultimately facilitates faculty transformation from traditional knowledge lecturers to multidimensional educational guides capable of integrating legal practice with technological applications, coordinating resources and addressing needs in teaching, thereby achieving deep alignment between educational scenarios and professional competencies.

5.3 The Dialectical Balance Between Technological Tools and Humanistic Values in Law Education

The digital-intelligent transformation of law education must remain vigilant against the erosion of humanistic values by technological instrumentalism [26]. This requires establishing ethical review mechanisms and educational boundaries for technological applications to achieve symbiosis between tool empowerment and value preservation. Primarily, to address potential algorithmic bias risks, a fairness assessment framework encompassing dimensions such as gender neutrality and regional balance should be constructed. For instance, case generation should avoid presupposing litigation disadvantages for specific groups and ensure coverage of judicial practice disparities between eastern coastal and central-western regions. After identifying algorithmic bias through adversarial testing, mandatory human review protocols must be activated, wherein educators and ethics committees collaboratively recalibrate model parameters to ensure case diversity and equity at the source level. Furthermore, it is imperative to establish technology's auxiliary position within educational contexts. While virtual simulation technologies can effectively model courtroom procedural workflows, instructors must retain pedagogical authority when addressing complex value judgments involving judicial ethics deliberation and conflicting legal principles, thus preventing technological oversimplification of fundamental legal inquiries. Concurrently, humanistic elements should be proactively integrated into intelligent tool design—for instance, incorporating judicial oath ceremonies within virtual courtroom environments to reinforce students' reverence for judicial authority through immersive experiences, or implementing ethical reflection recommendations within AI-generated feedback reports to guide students in evaluating whether litigation strategies align with proportionality principles and other legal doctrines.

6. Conclusion

The deep integration of digital-intelligent technology with law practice education has injected innovative vitality into the Court Debate Course and the entire legal talent cultivation system. Through theoretical exposition and pathway exploration, this paper demonstrates that digital-intelligent technology effectively resolves core dilemmas in traditional law practice teaching—such as scenario fragmentation, resource imbalance, and evaluation singularity—by reconstructing virtual-physical integrated scenarios, intelligently adapting dynamic resources, and providing immersive experiences through multimodal interaction. The cross-domain collaborative capabilities of virtual simulation courtrooms, the precise knowledge provision of AI-assisted systems, and the scientific feedback mechanisms of diversified evaluation frameworks have not only enhanced the effectiveness of legal professional skills training but also strengthened students' value identification with judicial ethics and procedural justice through technological empowerment. The research further proposes a triple safeguard mechanism of technological support, faculty competence, and ethical risk management, emphasizing that the digital-intelligent transformation of law education must be founded on dynamic knowledge graph updates, interdisciplinary faculty collaboration, and the protection of humanistic values to prevent the alienation of educational ontology by technological instrumentality. The proposal of this innovative pathway not only provides an actionable solution for practical law education but also offers theoretical reference for paradigm innovation in legal professional training. However, the educational application of digital intelligent technology still faces challenges including technological iteration costs, standardization issues in cross-regional collaboration, and profound controversies surrounding algorithmic ethics. Future research needs to further explore interdisciplinary mechanisms between law and technology, focus on technological inclusivity pathways for peripheral institutions, and validate the long-term effectiveness of digital empowerment through empirical studies. Only through continuous cultivation of the dialectical balance between technological rationality and humanistic values can law education truly achieve a paradigm shift from "knowledge transmission" to "capability generation," nurturing composite legal talents with both professional competence and innovative capabilities for the construction of a rule-of-law China.

Acknowledgement

This paper is supported by the fund project:

"Ministry of Education Industry-Academia Collaborative Talent Cultivation Program" (231003242314645) & "2024 Anhui University of Finance & Economics;

University-Level Undergraduate Teaching Quality and Teaching Reform Project Curriculum-based Ideological and Political Education Model Course" (ackcszk2024004).

References

[1] Wang Bing. What is Data-Intelligence: Multiple Meanings of Data-Intelligence, 42 Journal of Intelligence 71, 71-76(2023).
[2] Xue Jingchao. Research on the Cultivation of Practical Abilities for Law Students, 4 Education Exploration 96, 96-99(2015).
[3] Cai Lidong. Liu Xiaolin, The Nature and Implementation Methods of Legal Practice Teaching in the New Era, 5 Law and Social Development 93, 93-101(2018)
[4] Peng Lei & Yang Lv. Research on the Cultivation of Professional Competency and Evaluation Index System for Law Students: A Constructivist Learning Theory Perspective, 12 Journalof Hubei Universityof Economics (Humanitiesand Social Sciences) 181, 181-190(2015).
[5] Chen Chenzi. A New Interpretation of College Students' Self-Education Ability from the Constructivist Perspective, 18 The Party Building and Ideological Education in Schools 76, 76-77(2016).
[6] Ye Haosheng. The Body and Learning: Embodied Cognition and Its Impact on Traditional View of Education, 4 Edeucational Researh 104, 104-114(2015).
[7] Ding Jing. Pedagogical Optimization Strategies for Undergraduate Law Major of Open Education from Perspective of Embodied Cognition Theory, 41 Vocational and Technical Education 31, 31-36(2020).
[8] Sun Xiaofang, Zhao Jingyu & Rao Peilun. Effects of Multisensory Information on Perceived Control in Virtual Realiity, 28 Chinese Journal of Ergonomics 10, 10-15(2022).
[9] Li Wenli, Wang Lin. Reform of Practical Legal Education in Agricultural University Law Programs under the 'Double First-Class' Initiative: A Case Study of Criminal Law at South China Agricultural University, 8 Western China Quality Education 17, 17-20(2022).
[10] Liu Xiaobing. Role Demonstration and Skill Training in Experiential Legal Teaching, 45 Journal of CUPL 147, 147-160(2015).
[11] Ju Xuenan et al.. Matthew Effect in Higher Education and Academic Research, 4 Theory of Educational Technology 12, 12-34(2018).
[12] Liao Yongan. Supply-side Structural Reform in China's Legal Education, 4 Social Sciences in Hunan 53, 53-60(2017).
[13] Song Jing, Wu Zhengwu, Han Quanjie. Research and Application of Virtual Reality Court Technology Architecture, 16 Journal of CAEIT 820, 820-826(2021).
[14] Gu Xiaoqing, Zhu Yuankun. A Study on the Acceptance of Technological Products in Education: Differences and Mutual Influences Between Teachers and Students, 8 e-Education Research 21, 21-28(2012).
[15] Li Dan. Reconstruction of Legal Case Teaching Approaches from the Perspective of Practical Teaching, 6 Higher Education Exploration 86, 86-90(2020).
[16] He Zhipeng. Rethinking Practical Legal Education in China: A Critical Review, 4 Contemporary Law Review 151, 151-160(2010).
[17] Renaud Barbaras. Merleau-Ponty: Consicousness and Body, 20 Journal of Tongji University (Social Science Edition) 1, 1-5(2009).
[18] Zhang Xuerong, Qiao Yiyue. Analysis on Implementation Effect of Learning Process Assessment — A Case Study of G Major in N University, 39 Vocational and Technical Education 55, 55-59(2018).
[19] Cai Jing, Tian Youyi. Re-examining and Restructuring Teacher-Student Relationships from the Perspective of Teacher Power, 5 Contemporary Education Sciences 25, 25-30(2017).
[20] Liu Jilin. Review on Higher Education Evaluation from the View of Microcosmic Power Theory, 9 Research in Educational Development 31, 31-33(2009).
[21] Song jing, Wu Zhengwu & Han Quanjie. Research and Application of Virtual Reality Court Technology Architecture, 16 Journal of CAEIT 820, 820-826(2021).
[22] Yan Shouxuan, Gong Ke. Bringing Knowledge back to Practice: Knowledge Logic and Learning Turn of Disciplinary Practice, 45 Curriculum, Teaching Material and Method 66, 66-74(2025).
[23] Chen Kaiquan et al.. Multi-modal Learning Analysis, Adaptive Feedback and Human-computer Coordination of Artificial Intelligencein Education, 37 Journal of Distance Education 24, 24-34(2019).
[24] Zhu Yue. Practical difficulties and solutions of differential privacy for personal information protection, 50 Information and Communications Technology and Policy 37, 37-44(2024).
[25] Wang Hui. Thoughts on the Construction of Dual-Qualified Faculty Teams in Legal Education, 4 China Higher Education71, 71-73(2020).
[26] Yu Yingxiang. Controversy and Thinking on Digital Humanities Research, 42 Library Journal 98, 98-105 (2023).