The Transformation of Legal Teaching Models Under the OBE Concept: Based on AI Multi-Modal Technology in a Chinese University

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Abstract

This study examined how three levels of multimodal artificial intelligence (AI) support—primary, advanced, and integrated—were associated with undergraduate law students' professional knowledge, practical skills, and professional development within an Outcome-Based Education (OBE) framework. A quantitative cross-sectional correlational and comparative design was employed. Data were obtained from 268 undergraduate law students in selected Chinese universities through a structured questionnaire. The measurement and structural models were evaluated using structural equation modeling (SEM), and instructional-context scores were compared using an independent-samples t-test. The measures demonstrated satisfactory reliability and convergent validity (Cronbach's α = .84–.92; composite reliability = .86–.93; average variance extracted = .58–.71). The structural model showed an acceptable fit (χ^2/df = 2.31, CFI = .94, TLI = .92, RMSEA = .056, and SRMR = .048) and explained 62% of the variance in professional knowledge, 68% in practical skills, and 59% in professional development. All nine hypothesized paths were positive and statistically significant. Integrated AI support had the strongest association with each competency, particularly practical skills (β = .45, $p < .001$). Students in integrated AI-supported contexts also reported higher overall competency than those in traditional teaching contexts (M = 4.12 vs. 3.54, t = 6.87, $p < .001$). These findings support systematic alignment of multimodal AI activities and assessments with explicitly stated legal learning outcomes. Because the design was cross-sectional, the results indicate associations rather than causal effects.

Keywords: OBE; AI Multi-Modal; Legal Education; Competency-Based Learning; China

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Introduction

The rapid advancement of artificial intelligence (AI) and digital technologies has significantly transformed higher education worldwide, prompting universities to reconsider traditional approaches to curriculum design, teaching, and assessment. In response to these changes, many higher education institutions have adopted the principles of Outcome-Based Education (OBE), which emphasize clearly defined learning outcomes, constructive alignment among curriculum components, and continuous quality improvement. OBE focuses not only on the acquisition of knowledge but also on the development of competencies, skills, and professional attributes that graduates are expected to demonstrate upon completion of their studies (Spady, W. G., 1994; Biggs, J., & Tang, C., 2011).

Within this educational paradigm, legal education faces increasing pressure to prepare graduates who can effectively respond to complex societal and technological challenges. Contemporary legal practice requires professionals to possess not only doctrinal knowledge but also analytical thinking, problem-solving abilities, ethical judgment, digital literacy, and interdisciplinary competencies. However, many law programs continue to rely predominantly on teacher-centered instruction and summative examinations, which often emphasize content memorization rather than the application of legal knowledge in authentic contexts. Consequently, students may have limited opportunities to develop higher-order thinking skills and practical competencies required in modern legal professions (Sullivan, W. M. et al., 2007).

The need for educational transformation has become particularly evident in China, where national educational reforms such as the “New Liberal Arts” initiative and the Outstanding Legal Talent Training Program 2.0 encourage universities to cultivate innovative, practice-oriented, and technology-enabled legal professionals. These reforms highlight the importance of integrating digital technologies into teaching and learning processes while strengthening the alignment between learning outcomes, instructional activities, and assessment practices. Despite these efforts, several educational challenges remain. First, learning outcomes in many law programs are often expressed in broad terms and lack measurable performance indicators, making effective assessment difficult. Second, the use of artificial intelligence in legal education is frequently limited to supplementary functions, such as information retrieval or automated assistance, rather than being systematically embedded within pedagogical design. Third, empirical evidence regarding the effectiveness of AI-supported learning environments in enhancing students’ legal competencies and learning outcomes remains limited, particularly in the context of outcome-based legal education (Luckin, R. et al., 2016).

From an educational perspective, AI technologies offer significant potential to support personalized learning, adaptive assessment, real-time feedback, and competency development. Multi-modal AI systems, which integrate text, audio, image, and interactive

learning resources, may provide more engaging learning experiences and facilitate the achievement of intended learning outcomes. However, the educational value of such technologies depends on their alignment with pedagogical objectives and curriculum outcomes rather than their technological sophistication alone.

Therefore, this study proposes an AI-driven multi-modal Outcome-Based Education (OBE) model for legal education in Chinese universities. The proposed model aims to enhance constructive alignment among learning outcomes, instructional strategies, assessment mechanisms, and AI-supported learning activities. By integrating educational theory with emerging digital technologies, the study seeks to provide an evidence-based framework for improving teaching effectiveness, student competency development, and the sustainable transformation of legal education in the era of artificial intelligence.

Objective

1. To evaluate the reliability, convergent validity, and overall fit of the measurement and structural models linking multimodal AI support to legal competency.

2. To examine the relationships of primary, advanced, and integrated multimodal AI support with students' professional knowledge, practical skills, and professional development.

3. To compare overall competency scores between students learning in integrated AI-supported contexts and those learning in traditional teaching contexts

Review of literature and ideas

Outcome-Based Education and Legal Education Reform

Outcome-Based Education (OBE) has become a prominent framework for higher education reform, emphasizing measurable learning outcomes and competency achievement rather than instructional inputs (Spady, W. G., 1994). Central to OBE is the principle of constructive alignment, which requires coherence among learning outcomes, teaching activities, and assessment methods to ensure effective learning and continuous improvement (Biggs, J., & Tang, C., 2011).

The rapid advancement of digital technologies and artificial intelligence (AI) has further accelerated the transition toward learner-centered and competency-based education. Higher education institutions are increasingly expected to develop graduates equipped with critical thinking, digital literacy, problem-solving abilities, and lifelong learning competencies (Holmes, W. et al., 2019). However, legal education remains largely dependent on lecture-based instruction and knowledge-focused examinations, limiting opportunities for students to develop professional competencies required in contemporary legal practice. Sullivan, W. M. et al. (2007) argued that legal education should integrate legal reasoning, practical skills, and professional identity formation. Similarly, Susskind, R. (2019) emphasized that legal

education must adapt to technological transformation and the growing influence of AI on legal services and governance.

Therefore, legal education requires innovative competency-based approaches that align intended learning outcomes with professional expectations while integrating emerging technologies to enhance learning effectiveness.

Professional Competency in Legal Education

Professional competency in legal education comprises three interrelated dimensions: professional knowledge, practical skills, and professional development (Sullivan, W. M., et al., 2007). Professional knowledge includes legal concepts and analytical reasoning, while practical skills encompass legal research, advocacy, negotiation, communication, and problem-solving. Professional development refers to ethical judgment, professional responsibility, and identity formation.

These competencies are supported by Experiential Learning Theory, which emphasizes learning through experience, reflection, conceptualization, and application (Kolb, D. A., 1984). Experiential learning activities such as moot courts, legal clinics, simulations, and case-based learning enable students to apply theoretical knowledge in authentic contexts and strengthen professional competencies.

Despite their importance, many law schools face challenges in providing sustained experiential learning opportunities due to curriculum constraints and limited resources. Consequently, graduates often possess strong theoretical knowledge but insufficient practical readiness, highlighting the need for more innovative and competency-oriented educational models.

AI Multi-Modal Technology in Higher Education

Recent developments in AI, particularly multimodal AI capable of processing text, speech, images, and interactive data, have created new opportunities for educational innovation. AI applications in higher education include adaptive learning systems, intelligent tutoring, automated assessment, and learning analytics, all of which support personalized and data-driven learning experiences (Luckin, R. et al., 2016).

Zawacki-Richter, O. et al. (2019) reported that AI in higher education is primarily applied to intelligent tutoring, assessment automation, and learner profiling. However, most implementations remain fragmented and are not fully integrated with curriculum design and learning outcomes. In legal education, technologies such as legal research systems, automated document analysis, and online courts are transforming professional practice (Susskind, R., 2019). Nevertheless, AI continues to function mainly as a supporting tool rather than as a systematic mechanism for educational transformation.

Conceptual Framework and Hypotheses

The framework distinguishes three levels of support. Primary AI refers to basic assistance with information access and routine learning tasks. Advanced AI refers to adaptive feedback, analytics, and interactive support. Integrated AI refers to coordinated use of multimodal tools across learning activities, authentic simulations, feedback, and assessment. Each level is hypothesized to be positively related to the three competency outcomes.

- H1: Primary AI support is positively associated with professional knowledge.
- H2: Primary AI support is positively associated with practical skills.
- H3: Primary AI support is positively associated with professional development.
- H4: Advanced AI support is positively associated with professional knowledge.
- H5: Advanced AI support is positively associated with practical skills.
- H6: Advanced AI support is positively associated with professional development.
- H7: Integrated AI support is positively associated with professional knowledge.
- H8: Integrated AI support is positively associated with practical skills.
- H9: Integrated AI support is positively associated with professional development

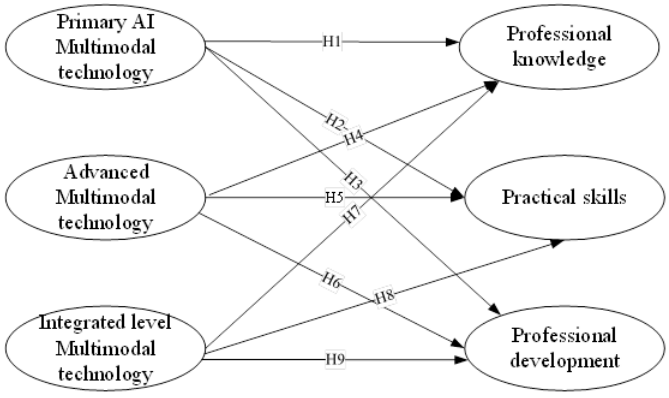


Figure 1 Research Framework of the OBE-AIMT Model in Legal Education

Research Scope

This study focuses on the transformation of legal teaching models in Chinese universities under the Outcome-Based Education (OBE) framework, supported by AI multimodal technology. The scope of the research is defined in four dimensions: conceptual, content, population, and methodological.

First, in terms of conceptual scope, the study integrates three theoretical foundations: OBE theory (Spady, W. G., 1994), constructive alignment in higher education (Biggs, J., & Tang, C., 2011), and AI applications in education (Luckin, R. et al., 2016). The research conceptualizes AI multi-modal technology at three levels: primary, advanced, and integrated, and examines their differentiated effects on legal learning outcomes.

Second, regarding content scope, the study concentrates on three core dimensions of legal competency: (1) professional knowledge, (2) practical skills, and (3) professional development, including ethical judgment and professional identity (Sullivan, W. M. et al., 2007). The research does not cover broader institutional governance reform but specifically targets teaching model transformation.

Third, in terms of population and geographical scope, the study is conducted in selected Chinese universities offering undergraduate law programs. Participants include law students and instructors involved in AI-supported OBE-oriented courses.

Fourth, methodologically, the study adopts a mixed-methods design combining survey instruments, classroom observations, interviews, and multi-modal learning data analysis to evaluate the effectiveness and sustainability of the proposed OBE-AIMT model.

Research Methodology

A quantitative cross-sectional correlational and comparative design was used. The correlational component tested the nine structural relationships in the OBE-AIMT framework, while the comparative component examined whether overall competency differed between integrated AI-supported and traditional teaching contexts. This design is appropriate for estimating relationships and group differences but does not establish temporal order or causality.

Participants and Sampling

The participants were 268 undergraduate law students enrolled in selected Chinese universities. Stratified sampling was used to obtain representation across the participating settings. The achieved sample size was used for all reported measurement and structural analyses. The allocation of participants to the integrated AI-supported and traditional teaching groups should be reported before journal submission.

Variables and Instrument

The structured questionnaire measured three predictor constructs: primary, advanced, and integrated multimodal AI support, and three outcome constructs: professional knowledge, practical skills, and professional development. Responses were used to estimate the measurement and structural models. Internal consistency was assessed using Cronbach's alpha and composite reliability (CR), while convergent validity was evaluated using average variance extracted (AVE).

Data Collection and Ethics

Data were collected from eligible undergraduate law students after they received information about the study. Participation should be described as voluntary, and the manuscript should report how informed consent, confidentiality, data protection, and institutional ethics requirements were addressed.

Data Analysis

Descriptive statistics were calculated before measurement-model evaluation. Cronbach's alpha, CR, and AVE were used to assess reliability and convergent validity. SEM was then used to evaluate model fit and test H1–H9. Model fit was assessed using χ^2/df, the comparative fit index (CFI), Tucker–Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). Standardized path coefficients (β) and p-values were reported. An independent-samples t test compared overall competency scores between the integrated AI-supported and traditional teaching contexts. Statistical significance was evaluated at $p < .05$.

Results

Measurement Quality and Model Fit

Cronbach's alpha values ranged from .84 to .92, and CR values ranged from .86 to .93, exceeding the commonly accepted threshold of .70. AVE values ranged from .58 to .71 and therefore supported convergent validity. The structural model showed an acceptable fit to the data: χ^2/df = 2.31, CFI = .94, TLI = .92, RMSEA = .056, and SRMR = .048. These results addressed Objective 1 by supporting the internal consistency, convergent validity, and overall fit of the model.

Structural Relationships

All nine hypothesized relationships were positive and statistically significant. The model explained 62% of the variance in professional knowledge, 68% in practical skills, and 59% in professional development. Across all three outcomes, coefficients increased from primary to advanced and integrated AI support. Integrated AI support had the strongest association with professional knowledge (β = .41, $p < .001$), practical skills (β = .45, $p < .001$), and professional development (β = .39, $p < .001$). These findings addressed Objective 2.

Table 1 Measurement quality, model fit, and explained variance

Domain	Indicator	Value	Interpretation
Reliability	Cronbach's α	.84–.92	Acceptable
Reliability	Composite reliability	.86–.93	Acceptable
Validity	AVE	.58–.71	Supported
Model fit	χ^2/df	2.31	Acceptable
Model fit	CFI	.94	Acceptable
Model fit	TLI	.92	Acceptable
Model fit	RMSEA	.056	Acceptable
Model fit	SRMR	.048	Acceptable
Explained variance	Professional knowledge R^2	.62	—
Explained variance	Practical skills R^2	.68	—
Explained variance	Professional development R^2	.59	—

Hypothesis	Structural path	β	p value	Decision
H1	Primary AI ⟶ Professional knowledge	.29	< .001	Supported
H2	Primary AI ⟶ Practical skills	.22	< .01	Supported
H3	Primary AI ⟶ Professional development	.18	< .05	Supported
H4	Advanced AI ⟶ Professional knowledge	.34	< .001	Supported
H5	Advanced AI ⟶ Practical skills	.38	< .001	Supported
H6	Advanced AI ⟶ Professional development	.31	< .001	Supported
H7	Integrated AI ⟶ Professional knowledge	.41	< .001	Supported
H8	Integrated AI ⟶ Practical skills	.45	< .001	Supported
H9	Integrated AI ⟶ Professional development	.39	< .001	Supported

Conclusion, Discussion, Suggestion

Conclusion

This study examined the transformation of legal teaching models in Chinese universities under the Outcome-Based Education (OBE) framework supported by AI multi-modal technology. By integrating educational theory, legal competency development, and technological innovation, the study proposed and empirically tested the OBE-AIMT model as a systematic pathway for competency-based reform.

The findings confirm that AI multi-modal technology significantly enhances three core dimensions of legal education: professional knowledge, practical skills, and professional development. A progressive effect was observed across technological levels, with integrated AI demonstrating the strongest impact on all competency dimensions. The structural model showed strong explanatory power and satisfactory model fit, providing robust empirical support for the effectiveness of the proposed framework.

The study contributes theoretically by constructing an integrated model that bridges OBE principles with AI-enabled pedagogical mechanisms. Practically, it offers a structured blueprint for law schools seeking sustainable and evidence-based teaching reform.

Overall, the OBE-AIMT framework provides a viable pathway for advancing competency-oriented, data-driven, and human–machine collaborative legal education in the intelligent era.

Discussion

This study examined the transformation of legal teaching models in Chinese universities under the Outcome-Based Education (OBE) framework supported by AI multi-modal technology. By integrating educational theory, legal competency development, and technological innovation, the study proposed and empirically tested the OBE-AIMT model as a systematic pathway for competency-based reform.

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Suggestions and Implications

Based on the empirical findings and theoretical analysis, this study proposes the following suggestions and implications for policy, institutional practice, and future research.

1. Policy Implications

At the policy level, educational authorities should promote the systematic integration of Outcome-Based Education (OBE) and AI multi-modal technology in legal education reform. Rather than encouraging isolated technological adoption, national and institutional guidelines should emphasize constructive alignment among learning outcomes, teaching activities, and data-driven assessment mechanisms (Biggs, J., & Tang, C., 2011; Spady, W. G., 1994). Clear standards for AI-supported competency evaluation, data governance, and ethical compliance should also be established to ensure fairness, transparency, and responsible innovation.

2. Institutional and Pedagogical Implications

For universities and law schools, the findings suggest that integrated-level AI implementation produces the strongest impact on professional knowledge, practical skills, and professional development. Therefore, institutions should move beyond basic digital tools and develop platform-based ecosystems that support immersive simulation, intelligent feedback, and continuous performance analytics (Luckin, R. et al., 2016).

Faculty development is equally critical. Teachers should receive structured training in OBE curriculum design, AI-supported instructional strategies, and multi-modal assessment techniques. Interdisciplinary collaboration between law faculties and technology experts can further enhance implementation effectiveness.

3. Practical Implications for Legal Education

The study demonstrates that AI multi-modal environments significantly enhance experiential learning, particularly in practical skills development. Law schools should integrate virtual moot courts, AI-assisted drafting feedback, and scenario-based ethical simulations into core courses. Such applications align with experiential learning principles and support professional identity formation (Kolb, D. A., 1984; Sullivan, W. M. et al., 2007).

4. Research Implications and Future Directions

Future research should explore longitudinal effects of AI-supported OBE models, examine cross-institutional comparisons, and investigate moderating variables such as student digital literacy and faculty readiness. Further studies may also examine governance mechanisms to address ethical challenges, including data privacy, algorithmic bias, and academic integrity concerns.

In conclusion, this study provides evidence-based guidance for advancing competency-oriented, technology-integrated legal education in Chinese universities. The OBE-AIMT framework offers a sustainable pathway toward human–machine collaborative learning that aligns with the demands of intelligent-era governance and legal professional transformation.

Knowledge of Research

This study contributes to the growing body of knowledge on educational innovation by proposing an integrated framework that combines Outcome-Based Education (OBE) principles with artificial intelligence (AI) multi-modal technologies in the context of legal education. Theoretically, the study extends the application of OBE beyond conventional curriculum and assessment design by incorporating AI-supported learning environments as a mechanism for enhancing competency development and learning achievement. The proposed OBE–AIMT model demonstrates how learning outcomes, instructional strategies, assessment methods, and AI technologies can be systematically aligned to support constructive alignment and continuous learning improvement (Biggs, J., & Tang, C., 2011; Spady, W. G., 1994).

In addition, the study contributes to the literature on competency-based legal education by providing a conceptual framework that integrates professional knowledge, practical legal skills, and professional development within a technology-enhanced learning ecosystem. This contribution addresses existing gaps in legal education research, where AI technologies have often been examined as isolated instructional tools rather than as components of a comprehensive pedagogical framework (Sullivan, W. M. et al., 2007; Luckin, R. et al., 2016). The findings suggest that multi-modal AI technologies can facilitate active learning, personalized learning experiences, and competency achievement, which are essential elements of contemporary higher education.

From a methodological perspective, this study enriches educational research by applying a mixed-methods approach combined with Structural Equation Modeling (SEM) to examine the relationships between different levels of AI integration and student learning outcomes. The use of SEM provides empirical validation of the proposed theoretical model and offers evidence regarding the mechanisms through which AI-supported learning environments influence competency development. Such an approach contributes to the

advancement of evidence-based educational research and responds to calls for more rigorous investigations into the effectiveness of AI applications in higher education (Hair, J. R. et al., 2010; Zawacki-Richter, O. et al., 2019).

Practically, the study offers a scalable and replicable framework for curriculum developers, educational administrators, and law schools seeking to transform teaching and learning practices in the digital era. The model provides guidance for integrating primary, advanced, and fully integrated AI technologies into curriculum design, instructional delivery, and assessment processes while maintaining alignment with intended learning outcomes. This framework supports the development of future legal professionals who possess not only legal expertise but also digital literacy, critical thinking, problem-solving abilities, and lifelong learning competencies required in contemporary legal practice (Kolb, D. A., 1984; Susskind, R., 2019).

Overall, this research enriches the theoretical foundation of legal education in the age of artificial intelligence by proposing a competency-oriented, data-driven, and human–AI collaborative educational model. The findings contribute to educational policy and practice by providing evidence that AI technologies, when systematically aligned with OBE principles, can support sustainable teaching transformation and improve the quality of professional education in higher education institutions.

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