Innovation Humanities and Social Sciences Research, Volume 22, Issue 4, 2026. ISSN: 2949-1282
Proceedings of The 11th International Conference on Contemporary Education, Social Sciences and Humanities (ICCESSH 2026)

From Value to Function: The Logical Path and System Construction of Artificial Intelligence Empowering Educational Evaluation Reform

Fang Li[1]

[1] *School of Educational Science, Sichuan Normal University, Chengdu 610066, China*
[1] *Dean's Office, Chengdu Normal University, Chengdu 611130, China*

ABSTRACT
Educational evaluation plays a strategic hub role in the construction of an educational powerhouse. The deep embedding of artificial intelligence technology has brought unprecedented technological possibilities for evaluation reform, as well as triggered a deep tension between instrumental rationality and value rationality. However, existing research is mostly limited to single dimensions such as technological empowerment, institutional change, or value reconstruction, and there are few systematic analyses that integrate value, structure, and function into a unified framework. Therefore, this paper takes "value" as the logical starting point, integrates the two elements of "structure" and "function", and constructs a three-dimensional integrated analysis framework of "value structure function", aiming to systematically explain the value position, structural transformation, and functional evolution of AI enabled educational evaluation reform.

Keywords: *Educational evaluation reform, Artificial intelligence empowerment, Logical approach, System construction.*

1. INTRODUCTION: THE ERA CONTEXT AND THEORETICAL APPROACH OF EDUCATIONAL EVALUATION REFORM

What role does educational evaluation play in the construction of an educational powerhouse? If education development is a battle, then evaluation is the "leading battle" that determines the direction of the battle. The entry of artificial intelligence technology has provided unprecedented technological possibilities for evaluation reform, while also bringing about an unavoidable tension between instrumental rationality and value rationality. Looking through existing literature, most studies focus on technological empowerment, discuss institutional change, or call for value regression, but rarely put these three into the same framework to think about their inherent connections. This article attempts to: take "value" as the logical starting point, integrate "structure" and "function", build a three-dimensional analysis model of "value structure function", re-examine the entire process of embedding artificial intelligence into educational evaluation, see how technology changes the structure of evaluation, and what functional leaps it brings, ultimately asking a question - can instrumental rationality and value rationality truly achieve dialectical unity in this transformation?

1.1 The Strategic Mission of Educational Evaluation Reform and Existing Research Approaches

During a collective study session, General Secretary Xi Jinping stated quite plainly: "Educational evaluation determines the direction of educational development and the success or failure of building a country strong in education" [1]. This statement places educational evaluation at the core of the national education strategy. The "Overall Plan for Deepening the Reform of Educational Evaluation in the New Era", issued in 2020, outlined a "three-step" timeline, with the goal of establishing an evaluation system by 2035 that embodies the characteristics of the times, reflects

Chinese cultural heritage, and meets international standards [2]. By 2025, the “Outline of the Plan for Building a Strong Educational Nation (2024–2035)” further clarified the systematic deployment of AI-enabled education, proposing the establishment of an evaluation and decision-making mechanism based on big data and artificial intelligence [3].

Academic circles have generally charted three research paths in response to this reform. The first is the value-anchored approach, which emphasizes that evaluation must not deviate from the fundamental purpose of nurturing talent, advocating for competency-based education and the integration of teaching, evaluation, and learning. The second is the paradigm shift approach, supported by fourth-generation evaluation theory, which promotes a shift in evaluation from “evaluation of learning” to “evaluation for learning.” The third is the pathway reconstruction approach, which focuses on how digital technologies enable collaboration among diverse stakeholders and facilitate comprehensive evaluation. These three approaches actually point to the same proposition: the scientific and professional standards of the evaluation system ultimately determine the direction and quality of educational development.

1.2 The Historical Opportunities and Core Tension Brought by Artificial Intelligence

The new generation of technologies represented by generative artificial intelligence is reshaping the entire education ecosystem. From a technical perspective, the Internet of Things and image recognition have made real-time data collection a reality. Deep learning can perform joint representation learning on multimodal data, while generative AI can push personalized feedback based on individual student characteristics. The evaluation is shifting from static grading to dynamic process tracking.

But the attitude of the academic community is not consistent. Optimists believe that artificial intelligence will make result evaluation more scientific, process evaluation more intelligent, value-added evaluation more convenient, and comprehensive evaluation more complete. Pessimists worry that technological overreach may bring new risks, and digital fetishism may obscure human spiritual existence. There is also a cautious and optimistic stance: while relying on artificial intelligence to reshape the evaluation system, we must also be alert to various potential technological disruptions. This divergence itself reveals a core proposition - how can we find that dynamic balance between technological empowerment and humanistic integrity?

1.3 The Limitations of Existing Research and the Proposal of the "Value Structure Function" Framework

Looking at existing research, it is not difficult to find a common problem: most discussions are limited to a single dimension. The theory of technological empowerment talks about efficiency improvement, the theory of institutional change talks about adaptation and transformation, and the theory of value reconstruction talks about returning to educating people - each has its own reasons, but they work independently. Few studies have integrated these three dimensions to systematically answer the inherent logic between value positions, structural changes, and functional evolution.

The "structure function system" framework proposed by scholars has provided us with important theoretical insights [4]. On this basis, this article takes a step forward by introducing the element of "value anchoring" and building an integrated framework that covers three dimensions: value, structure, and function. The internal logic of this framework is that value anchoring solves ontological problems - what is the purpose of evaluation? The structural reshaping solves the problem of systems theory - what changes have occurred in the various subjects in the evaluation system? The functional transition solves the methodological problem of how technology has evolved the core functions of evaluation? The three dimensions strung together form a complete logical chain of “stance subject function”.

Based on this, this article focuses on three core issues: what value stance should be followed when AI empowers educational evaluation reform? How can digital technology promote the structural reshaping of the evaluation system at the subject level? How can the evaluation function achieve a systematic transition from static description to dynamic intervention, and from result proof to process value-added in core areas?

2. VALUE ANCHORING: ONTOLOGICAL QUESTIONING OF EDUCATIONAL EVALUATION IN THE ERA OF ARTIFICIAL INTELLIGENCE

Discussing educational evaluation in the era of artificial intelligence cannot avoid a fundamental question: what is the essence of evaluation? Will digital transformation shake its ontological foundation? This section unfolds from three levels - essential clarity, understanding correction, and standing firm.

2.1 Essence Clarity: Value Regression Beyond Instrumental Rationality

The concept of educational evaluation has been constantly changing, but no matter how it changes, one core attribute remains stable: evaluation is essentially a value judgment activity. Moreover, it is not a groundless speculation, but a value judgment strictly based on factual judgments. Dewey made it clear in his "Theory of Evaluation" that evaluation is a measure of the value of an object based on the inner needs of a person. Its deep purpose is to guide through values, enabling families, schools, and society to form a joint force, jointly shaping individuals' cognitive landscape, emotional attitudes, and character structures.

In the era of digital intelligence, technology has indeed profoundly changed the form of education, but the essence of evaluation has not fundamentally changed as a result. Digital transformation is essentially an extension and innovation of evaluation paradigms under new technological conditions, with the core still being the cultivation of morality and talent. It must be clear that the subject of evaluation is always people, and technology is just a tool, not a decision-maker. The questions of "why evaluation" and "what evaluation serves" have always been the first to be answered when AI empowers educational evaluation.

2.2 Understanding Correction: From "Value Judgment" to "Value Creation"

The rise of value-added evaluation is itself a correction of traditional static evaluation. Its core concept is not only to focus on "result proof", but also to pay attention to "process value-added", ultimately achieving an epistemological transition from "value judgment" to "value creation". Artificial intelligence provides tangible technological support for this transition - capturing learning difficulties in real time and triggering interventions, constructing dynamic digital portraits of growth, incorporating implicit value-added such as non cognitive literacy into evaluation categories, and significantly shortening feedback cycles. The focus of evaluation has shifted from "proving success" to "creating success", from "nurturing points" to "educating people", and educational equity has also shifted from equal opportunities to equal process and development quality.

2.3 Stand Firm: the Dialectical Unity of Technological Empowerment and Humanistic Integrity

The masking of morality by technology often stems from the suspension of moral issues by technological culture. In the context of deep intervention in artificial intelligence evaluation, excessive trust in the effectiveness of technology and one-sided pursuit of technological progress can easily lead to unethical evaluation consequences. Therefore, it is necessary to consciously integrate technological rationality with value rationality, clarify the instrumental attributes of technology, and prevent technology from crossing the value boundary.

From a phenomenological perspective, we can clearly see the risk of technological rationality overshadowing the essence of educational evaluation. In the face of the opportunities and challenges of the intelligent age, educational evaluation urgently needs a "demystification" - shifting from the cold algorithmic gaze to the warm life presence. The "dual window" model of integrating quantification and quality is the practical carrier of this concept: the quantification window uses AI to analyze data, and the quality window uses humanities to infiltrate the scene. When the two windows intersect, the evaluator's eyes are no longer just cold numbers, but people with warmth and stories. The saying "there is a story behind scores, and a heart behind statistics" [6] is about this truth.

3. STRUCTURAL RESHAPING: THE SUBJECT TRANSFORMATION OF HIGHER EDUCATION EVALUATION IN THE ERA OF DIGITAL INTELLIGENCE EMPOWERMENT

The value anchoring has clarified the direction, and the next thing to look at is: how does digital technology drive structural changes in the evaluation system at the subject level under the guidance of value? This transformation is unfolding simultaneously in four dimensions: universities, disciplines, teachers, and students.

3.1 Reshaping Governance: The Digital Transformation of University Entities

Universities are the main organizers of educational evaluation. Digital intelligence technology is reshaping its operational logic from three levels: teaching, research, and management.

In terms of teaching governance, by embedding intelligent data analysis systems into daily teaching, accurate profiling of the teaching process can be achieved. Big data technology monitors teaching dynamics in real-time, accurately identifies weak links, and shifts evaluation from periodic spot checks to continuous monitoring. In terms of scientific research governance, intelligent analysis of project lifecycle data is changing the logic of scientific research resource allocation, guiding scientific research output from scale expansion to quality and efficiency. In terms of management and governance, digital intelligence technology extends the evaluation tentacles to the entire scenario of internal governance - establishing unified data collection standards and exchange mechanisms, using artificial intelligence and natural language processing technology for automated parsing and semantic mining, and then using data visualization to transform complex governance information into intuitive decision support tools.

3.2 Diagnostic Empowerment: Precise Monitoring of Subject Subjects

Disciplines are the core engine of higher education development. The embedding of digital intelligence technology enables subject subjects to shift from passive acceptance of periodic evaluations to active implementation of normalized self-diagnosis.

In terms of form, disciplines have transformed from static organizational units to dynamic knowledge ecosystems. Numerical intelligence technology achieves a panoramic scan and systematic diagnosis of the effectiveness of discipline construction through dynamic optimization of the evaluation index system. In terms of operation mode, the discipline has shifted from experience driven extensive development to data-driven precision construction. The construction of disciplinary knowledge graph can reveal the evolution laws and cross fusion trends of internal knowledge structure, providing scientific basis for layout optimization and cultivation of emerging directions. Under the background of the "Double First Class" construction, the evaluation of disciplines empowered by digital intelligence must also adhere to classified development - different disciplines and levels should have differentiated evaluation standards to prevent the "one size fits all" dissolution of disciplinary characteristics.

3.3 Ability Transition: Systematic Reconstruction of Teacher Subject

Teachers are the primary resource of higher education. The intervention of digital technology is driving teachers to transform from single knowledge transmitters to data-driven education experts.

In terms of professional growth, teachers are no longer passively receiving training, but independently planning and developing. Online courses, virtual teaching and research rooms, and other digital carriers have achieved precise supply of training resources and targeted promotion of capacity enhancement. The construction of a digital portrait of teacher competence enables the development of a closed-loop system of "monitoring diagnosis improvement". In teaching practice, teachers have shifted from experiential teaching to evidence-based teaching - artificial intelligence records and intelligently analyzes the entire teaching process, identifies the effectiveness of teaching design through classroom behavior analysis, and diagnoses the adaptability of teaching methods through student feedback analysis [7]. In terms of evaluation transformation, teacher evaluation has shifted from summative assessment to developmental guidance, focusing on the value-added of professional growth and stimulating endogenous motivation.

3.4 Customized Growth: Personalized Support for Student Subjects

Students are the ultimate direction of educational evaluation. The core of empowering student evaluation with digital intelligence is to truly implement individualized teaching and transform students from passive evaluation objects to active growth subjects.

On the portrait of growth, students move from vague group positioning to clear individual cognition. The digital panoramic portrait integrates multidimensional data such as academic performance, behavioral trajectory, and interest preferences, accurately identifying the advantages of abilities and development needs. In terms of value-added evaluation, students have shifted from horizontal comparison to vertical advancement - deeply mining the development information hidden behind the data, focusing on the speed and magnitude of individual growth. In terms of employment services, students are moving from one-way transportation to intelligent matching, connecting the two-way channel of "talent supply" and "job demand" through the "talent portrait" and intelligent recommendation mechanism.

4. FUNCTIONAL TRANSITION: MECHANISM INNOVATION OF EMPOWERING EDUCATIONAL EVALUATION WITH ARTIFICIAL INTELLIGENCE

Structural reshaping laid the foundation for functional transition. Artificial intelligence is driving the core function of evaluation to transition from static description to dynamic intervention, and from result proof to process value-added. This transition is particularly prominent in four areas: discipline construction, talent cultivation, resource allocation, and decision support.

4.1 Discipline Advancement: From Periodic Evaluation to Dynamic Monitoring and Prospective Layout

Traditional subject evaluation is periodic and result oriented, which makes it difficult to reflect the development dynamics of the subject in real time and cannot effectively intervene in the construction process. Empowering with digital intelligence enables subject evaluation to move towards a smart governance loop of "monitoring prediction evaluation".

At the monitoring level, relying on a dynamic monitoring platform, key indicators such as scientific research achievements, faculty levels, and academic reputation are tracked throughout the entire period. Big data technology is used for multidimensional diagnosis, and anomaly detection algorithms are used to accurately identify risk points. At the predictive level, relying on artificial intelligence prediction and analysis technology to scientifically predict the evolution trend of disciplines, targeting emerging interdisciplinary fields for early layout, and achieving a strategic transformation from passive response to active shaping. At the evaluation level, digital intelligence technology is used to comprehensively integrate and intelligently analyze key information such as teaching evaluation, scientific research achievements, and faculty strength, and systematically depict the effectiveness map and problem shortcomings.

4.2 Transformation of Education: From Standardized Training to Personalized Support and Precise Intervention

Standardized supply is a fundamental characteristic of traditional talent cultivation, but it is difficult to respond to the diverse needs of students' personalized development. The empowerment of digital intelligence is driving talent cultivation from standardized supply to personalized learning and precise support.

On the personalized learning path, achieve dual intelligent adaptation of path and difficulty. By establishing learning profiles and analyzing big data, teachers can accurately recommend course resources that are suitable for students' learning progress and interests. On the comprehensive support system, build a three in one education network of "platform support - learning insight - early warning intervention". The integrated resource platform allows students to deeply participate in online courses and cloud-based discussions; Stereoscopic chemistry tracking provides data-driven basis for teaching improvement; The intelligent warning system provides early identification and timely intervention for students with academic difficulties, effectively blocking the accumulation of academic risks.

4.3 Resource Refactoring: From Static Allocation to Dynamic Optimization and Precise Delivery

Traditional resource allocation relies heavily on empirical judgment, making it difficult to maximize the efficiency of resource utilization. Empowering with digital intelligence enables resource allocation to shift from experience-based allocation to optimized evaluation and dynamic adjustment.

The construction of an intelligent evaluation model integrates big data analysis and artificial intelligence algorithms, with subject development trends, student scale, and teaching task volume as multidimensional variables, to achieve dynamic optimization of resource allocation. In terms of precise allocation in multiple fields, teaching resources achieve maximum efficiency through in-depth exploration of facility usage frequency and effectiveness, research resources optimize funding allocation structure through analysis of input-output efficiency, and human resources provide scientific basis for job appointment and professional title promotion through comprehensive analysis of teaching workload, scientific research achievements, student evaluation, etc. The establishment of a dynamic adjustment mechanism enables resource allocation to move from annual planning to real-time monitoring and dynamic response, forming a closed loop of "monitoring - evaluation - adjustment - optimization".

4.4 Decision Iteration: From Empirical Reasoning to Intelligent Deduction and Agile Response

Traditional educational decision-making relies heavily on the experience and judgment of managers, with insufficient data support, making it difficult to avoid decision-making biases. Empowering with digital intelligence promotes decision support from empirical judgment to intelligent decision-making and scientific prediction.

The construction of evidence-based decision-making foundation relies on in-depth mining and systematic integration of multidimensional data such as discipline construction, talent cultivation, and resource allocation, allowing universities to comprehensively examine their own development trends. The application of intelligent decision-making models, integrating big data and artificial intelligence algorithms, enables dynamic evaluation and multi-objective optimization of alternative solutions, driving the transition of university governance from "experience dependence" to "data intelligence". In terms of risk warning and agile response, through real-time monitoring of operational data, intelligent systems can promptly detect potential risks and issue warning signals. In the face of emergencies, they can also quickly generate optimal disposal plans.

5. SYSTEM ARCHITECTURE: GOVERNANCE MECHANISM AND OPERATIONAL GUARANTEE OF DIGITAL INTELLIGENCE EMPOWERED EDUCATION EVALUATION

The in-depth promotion of value anchoring, structural reshaping, and functional transition cannot be separated from the systematic guarantee at the institutional level. It is necessary to establish a governance system that integrates management, services, interests, and responsibilities to work together.

5.1 Data Collaborative Governance Mechanism: Breaking down Barriers and Integrating Standards

The core is to achieve management process reengineering through digital technology, break down organizational barriers, establish and improve cross departmental data sharing and coordination mechanisms, and unify data standards. The financial dimension achieves automation and intelligence, while the human dimension utilizes intelligent tools for full cycle management. The establishment of a mechanism for the integration and sharing of data standards provides accurate and timely information support for management decisions.[8]

5.2 Global Service Sharing Mechanism: Resource Integration and Process Integration

The core objective is to achieve global coordination and intelligent scheduling of service resources. Horizontally breaking down information barriers between universities, achieving student information collaboration and cross campus allocation of educational resources; Vertically connecting educational institutions at different levels, forming a seamless support network covering the entire growth cycle of students. The

collaborative digital intelligence practice center of school enterprise social integration can integrate diverse resources and build a practical path of virtual real linkage.[9]

5.3 Mechanism for Balancing Rights and Interests: Diversified Participation and Fair Adjustment

The core essence lies in relying on an intensive data platform to achieve precise identification and scientific balance of diverse stakeholders' interests and demands. By implementing a closed-loop governance mechanism of "data integration scientific decision-making precise allocation", limited educational resources can be optimally allocated among multiple stakeholders such as government, universities, students, and enterprises. The cornerstone of this community is a sound data standard and a systematic review of algorithm bias, ensuring the accuracy and reliability of evaluation data and the fairness and impartiality of technical applications.[10]

5.4 Ethical Security Prevention and Control Mechanism: Algorithm Audit and Privacy Protection

The core objective is to achieve penetrating supervision of all elements of higher education operation through digital technology. It is necessary to build a responsibility implementation loop covering "service - funding - resources" in dimensions such as education services, funding, and management. At the same time, it is also necessary to face the risks of privacy breaches and algorithmic black boxes behind technological empowerment, establish a governance system that couples algorithmic auditing with human supervision, use encryption computing, data anonymization and other technologies to ensure data security, and safeguard the fairness and scientificity of educational evaluation with institutional strength, preventing students' complete personalities from being simplified into computable data points [11].

6. CONCLUSION

At the theoretical level, this article, firstly, constructs a three-dimensional integrated analysis framework of "value structure function", providing a systematic perspective for understanding the empowerment of artificial intelligence in educational evaluation reform. Secondly, on the basis of the existing "structure function system" framework, the value dimension is introduced, revealing the inherent logical relationship between value guidance, structural support, and functional realization. Finally, the logical hierarchy of AI enabled educational evaluation reform is systematically explained from three levels: ontology, systems theory, and methodology. At the practical level, this article provides action directions for different entities, and policy makers need to improve institutional norms, optimize evaluation indicator systems, and strengthen data governance capabilities. Schools can explore the implementation mechanism of human-machine collaborative evaluation, build a full process evaluation system, and improve the intelligent support system for value-added evaluation. Teachers need to enhance their intelligence literacy and evaluative judgment ability, and cultivate their teaching evaluation ability through human-machine collaboration.

Facing the future, the integration and application of cutting-edge technologies such as multimodal perception and affective computing should be driving educational evaluation from the representation of "explicit behavior" to insight into the "implicit world", providing a more scientific measurement path for higher-order abilities and character literacy. A new paradigm of educational evaluation that is more scientific, comprehensive, and developmental should be accelerating its formation. In this paradigm, technological empowerment and humanistic orthodoxy should be dialectically unified, instrumental rationality and value rationality coexist harmoniously, and educational evaluation ultimately can return to the construction of human subjectivity, providing solid support for the construction of an educational powerhouse.

ACKNOWLEDGMENTS

Fund projects: Special Project for Education Evaluation Reform in Sichuan Province in 2025 (2025JPG-CDSFXY-001), Key Project of Sichuan Provincial Key Laboratory of Digital Development and Evaluation of Education (JYSZH202502).

REFERENCES

[1] Xi Jinping. “Solidly Advancing the Construction of an Education Powerhouse” [J]. Seeking Truth, 2023(18):4-9.

[2] “The CPC Central Committee and the State Council Issue the ‘Comprehensive Plan for Deepening the Reform of Educational Evaluation in the New Era’” [N]. People’s Daily, 2020-10-14(1).

[3] The Central Committee of the Communist Party of China and the State Council Issue the “Outline of the Plan for Building a Powerhouse in Education (2024–2035)” [N]. People’s Daily, 2025-01-20(6).

[4] Cai Yuanqing, The Logical Mechanism and Optimization Path of Higher Education Evaluation in the Era of Digital Intelligence Empowerment [J]. Higher Education Development and Evaluation, 2026(2): 32-40.

[5] Qu Tiehua, Gao Haibing, The Ontological Inquiry of the Digital Transformation in Educational Evaluation [J]. Journal of China Examinations, 2025(7): 10-19.

[6] Deng Lei, Dai Shaodong, Phenomenological Reflection on the Reform of Educational Evaluation in the Age of Artificial Intelligence [J]. Higher Education Development and Evaluation, 2025(10): 396-406.

[7] Yang Xianmin, Zeng Jiayao, Li Xin, Refining and Implementing AI-Education Application Scenarios: A Study Based on Exploratory Multi-Case Research [J]. Open Education Research, 2025(1): 82-92.

[8] Li Guo, Luo Yaxuan, Chen Wei, AI-Empowered Reform of Higher Education Evaluation: Bottlenecks and Countermeasures [J]. High-Technology & Commercialization, 2026(1): 38-41.

[9] Tao Manjing, The Logical Dimensions of Digital and Intelligent Technologies Driving the Substantive Development of Ideological and Political Education in Higher Education Institutions [J]. Studies in Ideological Education, 2025(12): 117-121.

[10] Gao Yifei, Wang Shunan, Long Baoxin, Characteristics, Risks and Solutions of Educational Evaluation in Digital Age [J]. Teaching and Administration, 2025(36): 97-102.

[11] Deng Lei, Dai Shaodong, Educational Evaluation Reform Under the New Demographic Pattern: Value Reshaping and Technological Empowerment for the Construction of a Leading Country in Education [J]. Modern Distance Education Research, 2025(2): 13-22.

[12] Zheng Qinhua, Artificial Intelligence Empowering the Reform and Innovation of Educational Assessment [J]. Journal of Wuhan University(Natural Science Edition), 2025(5): 589-590.