

Study on the Possible Application of Value-added Evaluation in Chinese Higher Education

Yize Dong¹, Jingzhu Luo²

¹Faculty of Education Sichuan Normal University, Chengdu 610011, China

²Sichuan Normal University, Chengdu 610011, China

Abstract: As China's higher education enters a new stage with high-quality development, the traditional result-oriented evaluation system can no longer fully reflect the true contribution of the teaching process. However, value-added evaluation, as a new evaluation concept that focuses on students' growth and net educational contribution, provides a new path for quality governance of higher education. This paper focuses on the possible application of value-added evaluation in Chinese universities, which starting from the theoretical foundations of educational philosophy, outcome-based education and developmental evaluation theory, it constructs a "input-process-output" ternary structure and a "vertical-horizontal" two-dimensional analysis model. This paper systematically analyzes the realistic basis for Chinese universities to introduce value-added evaluation in terms of policy promotion, data support, teaching culture and institutional environment, proposes a multi-level and multi-path application strategy, and points out the multiple challenges in the implementation process, such as data, concepts, technology and resource fairness. This paper emphasizes that only under the coordinated promotion of concept guidance, mechanism construction and localization strategy, can value-added evaluation be realized from concept to educational practice, and help Chinese universities achieve quality leap and governance transformation.

Keywords: Value-added Evaluation, Education Evaluation Reform, Higher Education.

1. Introduction

As China's higher education enters a new stage where both popularization and high-quality development are equally important, building a scientific, fair and comprehensive education quality evaluation system has become a core issue in education governance reform. For a long time, the evaluation of university teaching has been mainly based on outcome indicators such as student grades, employment rates, and scientific research output, ignoring the dynamic tracking of student development and teaching processes, and it is difficult to truly reflect the actual contribution of teachers' teaching behaviors to student growth. The "Overall Plan for Deepening Education Evaluation Reform in the New Era" issued in 2020, clearly proposed to establish an evaluation system oriented towards the comprehensive development of students, and to promote the transformation of university education quality evaluation from static and terminal evaluation to process and development evaluation. This top-level design provides policy space and reform opportunities for universities to introduce "value-added evaluation"[1].

"Value-added evaluation" originated from the field of basic education in the West. Its core is to measure the "net effect" of educational behavior in the learning process by controlling students' starting points and background variables. In international higher education, the UK's Teaching Excellence Framework (TEF) and the US TVAAS have introduced the value-added concept into the quality evaluation of colleges and universities to varying degrees, promoting the shift of evaluation from "level judgment" to "progress identification" [2]. At the same time, in recent years, the OECD and UNESCO have repeatedly emphasized that the growth of students' learning outcomes should be the core content of university evaluation, and that the quality of education should be based on "what changes students have achieved" rather than "what level they have ultimately reached."

However, compared with international practice, Chinese universities have not yet established a systematic student growth tracking and teaching value-added evaluation system. The current evaluation methods mostly stay at static measurement and surface feedback, which makes it difficult to reflect the actual role of teaching in promoting student development. Although some scholars have paid attention to the role of student development indicators in quality evaluation, they are still insufficient in theoretical construction, model design, path refinement, etc., especially the lack of localized solutions for the diversity characteristics of China's higher education system and institutions.

Based on this, this paper takes "the possible application of value-added evaluation in Chinese higher education" as the theme, and analyzes its theoretical basis, policy environment, institutional fit and practical path, aiming to clarify its adaptation logic and operational feasibility in the Chinese context. Through literature review, logical deduction and institutional analysis, a value-added model suitable for university teaching evaluation is constructed, and application suggestions with implementation basis are put forward. This paper does not involve specific empirical modeling, but takes theoretical integration and mechanism design as the main goals, and strives to provide theoretical support and reform inspiration for the transformation of the quality evaluation system of Chinese universities.

2. Theoretical Foundation and Analytical Framework Construction

2.1. The Core Logic of Value-added Evaluation and the Educational Philosophy Foundation

Value-added evaluation is not a simple statistical modeling or technical measurement method. It contains profound educational concepts and value judgments. Its core logic is:

through multiple measurements of students in the learning process, it identifies the "net effect" of teaching behavior on student growth, that is, the "value-added" brought by education after controlling background variables. This logic not only involves the choice of measurement methods, but also points to the essential attribute of education "educating people" [3].

From the perspective of educational philosophy, value-added evaluation is consistent with progressive educational concept, emphasizing that students are a subject that is constantly growing and constructing themselves in the educational process, and that education is not only a process of imparting knowledge, but also a process of promoting the release of individual potential and multi-dimensional development. Therefore, a fair education quality evaluation system should include the student development process in the core analysis framework.

From the perspective of values, value-added evaluation focuses on "vertical fairness in educational fairness". That is, on the basis of recognizing the differences in students' admission levels, the educational effects of each school or each teacher on different students are fairly evaluated. This concept of "vertical fairness" is in sharp contrast to the "level competition" logic formed by traditional horizontal comparisons (such as university rankings and average scores).

2.2. The Compatibility of the Concept of Outcome-based Education and Developmental Evaluation

Outcome-based education (OBE) emphasizes the knowledge, skills and qualities that students can eventually master as teaching goals, and realizes the systematic design of educational behavior through "reverse design" and "result achievement" [4]. In recent years, the OBE concept has been widely used in the curriculum system and teaching evaluation of Chinese universities, and has become the theoretical support for the construction of "new engineering" and "first-class undergraduate".

The OBE concept and value-added evaluation have a natural fit: both emphasize "student-centeredness" and both attach importance to "whether education has achieved changes in students' real abilities." The difference is that OBE focuses on goal setting and teaching process optimization, while value-added evaluation focuses on the structural reconstruction of the evaluation link. Therefore, value-added evaluation can be used as an extension and deepening of the OBE concept in the "evaluation dimension."

In addition, developmental evaluation, as an important school of modern educational evaluation theory, emphasizes the dynamics, differences and potential plasticity of student development, and advocates guiding teaching and learning through formative feedback and process monitoring. Its theoretical basis is derived from Vygotsky's "zone of proximal development" theory, which is highly consistent with the emphasis of value-added evaluation on "starting from students' actual situation and focusing on growth" [5]. Value-added evaluation is essentially a "developmental-outcome hybrid" evaluation logic. It not only focuses on the growth trajectory in the process, but also ultimately leads to the measurability of the results, so it has the possibility of theoretical integration.

2.3. Structural Elements and Evaluation Logic Model of Value-added Evaluation Analysis

In order to achieve the value-added evaluation goals in higher education, it is necessary to build an analysis framework that can adapt to the education scenarios of colleges and universities. Based on the above theoretical foundations, this paper proposes an evaluation logic model consisting of "ternary structure" and "two-dimensional analysis".

2.3.1. Ternary Structure: Input-Process-Output

Input: the basic level of students at the time of admission, including college entrance examination scores, subject ability, comprehensive quality, family background, etc.;

Process: the learning trajectory of students during their time at school, including course participation, teaching interaction, formative assessment results, etc.;

Output: the final results such as comprehensive literacy, professional ability, practical ability and employment performance of students at graduation.

The core of value-added evaluation is to evaluate the impact of "process" on "output" after controlling the input conditions and identify the "net contribution" of educational behavior.

2.3.2. Two-dimensional Analysis: Longitudinal Tracking and Horizontal Correction

Longitudinal tracking: taking students as units, tracking their ability changes at different stages, and constructing individual growth curves;

Horizontal correction: establishing statistical comparisons between multiple students, and controlling background variables through regression, hierarchical models and other means to improve the fairness and accuracy of evaluation.

This model can serve multiple evaluation levels, including individual student growth assessment, teacher teaching quality impact analysis, and overall education contribution measurement at the college, course, and school levels. Its ultimate goal is to not only evaluate "what students have learned", but also "how much progress students have made".

2.4. The Necessity of Constructing Value-added Evaluation in Higher Education

Introducing value-added evaluation into higher education is not a simple copy of the basic education model, but a systematic response to the logic of university education. Higher education is highly diverse, complex and autonomous, with significant differences in students' starting points, multiple learning paths, and different evaluation goals. Therefore, if static indicators such as average scores are still used for quality judgment, it is obviously impossible to truly reflect the actual value of colleges and universities to students' growth.

More importantly, in the context of the current "Double First-Class" construction, externalization of teaching evaluation (such as professional certification), and transformation of talent training structure, colleges and universities urgently need an evaluation tool that can reflect "teaching contribution" to improve teachers' teaching input, continuous curriculum improvement, and individual student potential development. Value-added evaluation provides a possible path that is logically self-consistent, methodologically feasible, and institutionally motivated, providing a concept update and tool supplement for university education quality governance.

3. Analysis of the Realistic Basis and Opportunities for Chinese Universities to Implement Value-Added Evaluation

3.1. Policy Promotion: The Transformation of Higher Education Governance Logic under the Guidance of Developmental Evaluation

In recent years, China's higher education management policy has increasingly emphasized the educational concept of "student development-centered" and continuously promoted the transformation of quality evaluation from "result-oriented" to "development-oriented". The "Overall Plan for Deepening Education Evaluation Reform in the New Era" clearly wrote "developmental evaluation" into the strategic framework of national education reform for the first time, proposing that "education quality and school-running level should be scientifically evaluated, not only looking at the final results, but also looking at process changes and development potential" [1]. This provides a clear policy orientation and top-level institutional space for the introduction of value-added evaluation in the field of higher education.

At the same time, around the construction of "double first-class" universities, review and evaluation reform, professional certification promotion, and the formulation of national standards for talent training quality, the national higher education policy system has gradually formed an institutional logic from "goal-oriented" to "process-oriented", and from "static indicators" to "dynamic indicators". This institutional evolution shows that Chinese universities have a reasonable basis and strategic needs to explore "value-added evaluation" at the macro policy level.

3.2. Data Conditions: Progress in the Construction of University Teaching Informatization and Academic Trajectory Database

One of the foundations for the implementation of value-added evaluation is data support capability. In Chinese universities, with the advancement of the education digitalization strategy, a large amount of teaching-related data can be systematically obtained, especially information such as course grades, classroom behavior, learning platform interaction data, academic files and graduation destinations, which have been gradually incorporated into the university education quality monitoring system.

The "Education Informatization 2.0 Action Plan" clearly proposes to "promote the construction of a smart education data platform" and requires universities to "build a student-centered full-course learning record system." This measure has greatly expanded the channels for obtaining students' longitudinal growth trajectory data[6]. Some universities have built a unified teaching and student affairs data center to achieve digital recording and analysis of the entire process of students' "enrollment-learning-practice-graduation-employment". These developments show that Chinese universities are gradually equipped with the data availability and system support capabilities required to build a value-added evaluation model at the technical level.

In addition, with the advancement of the "Digital China"

and "Smart Campus" strategies, more and more universities are investing in data governance infrastructure and exploring teaching behavior analysis and learning outcome evaluation based on big data. For example, Zhejiang University, Beihang University, Southeast University and other universities have tried to incorporate learning behavior data into the teaching evaluation system in professional certification and course evaluation, laying a technical foundation for the subsequent deepening of the evaluation mechanism.

3.3. Concept Change: A Teaching Culture Centered on Student Development is Taking Shape

In addition to policy and technical conditions, the transformation of concepts is the key prerequisite for the implementation of value-added evaluation. In recent years, the "student-centered" teaching concept has gradually become the main theme of teaching reform in Chinese universities. Reforms such as curriculum ideological and political construction, OBE teaching design, and undergraduate teaching review and evaluation advocate that teachers shift from "teaching center" to "learning center", emphasizing teachers' full attention to students' cognitive development, ability improvement and personality growth.

At the same time, course evaluation and teacher performance appraisal indicators are also changing. Some universities have begun to introduce new teaching quality indicators such as "proportion of formative evaluation" and "student learning engagement", and try to incorporate student growth indicators into the course achievement evaluation system. For example, Southern University of Science and Technology, Fudan University and other universities have implemented "developmental scoring standards" in some courses, encouraging students to set personal goals from the starting point and give positive feedback by comparing the changes before and after learning.

This series of changes in teaching culture reflects the increasing recognition of the effectiveness of "growth" education within colleges and universities. Although a systematic value-added evaluation system has not yet been fully established, the gradual transformation from teaching concepts to evaluation concepts is creating a "cultural soil" for the introduction of value-added evaluation.

3.4. System Preparation: A Multi-Dimensional Quality Evaluation Mechanism is Gradually Taking Shape

At the institutional support level, Chinese colleges and universities are gradually transitioning from a single evaluation structure of "teaching evaluation + grades" to a multi-dimensional quality evaluation system. In recent years, reform projects such as undergraduate teaching review and evaluation, professional certification, and the Ministry of Education's national data platform for higher education quality monitoring have provided institutional test fields for building a more scientific university evaluation system.

Especially in the field of professional certification, institutions such as the China Engineering Education Certification Association and the China Higher Education Society have proposed an evaluation logic centered on "student learning outcomes", emphasizing the longitudinal tracking and result feedback of students' graduation ability achievement. This certification mechanism based on "student

growth effectiveness" is highly consistent with the "net contribution of education" emphasized by value-added evaluation.

In addition, the "Review and Evaluation Plan for Undergraduate Education and Teaching in Regular Institutions of Higher Education (2021-2025 Cycle)" proposes to "strengthen the closed-loop mechanism of student learning outcomes and talent training effects" and requires colleges and universities to establish an evaluation model supported by multi-source data to promote colleges and universities to actively identify their own strengths and weaknesses in the process of student training [7]. This reform direction not only provides a policy window for value-added evaluation, but also indicates that the institutional environment is gradually tilted towards vertical evaluation and dynamic evaluation.

In summary, from the perspective of national policy orientation, data infrastructure construction, teaching concept renewal to institutional governance reform, Chinese universities have the realistic foundation and strategic opportunities to introduce value-added evaluation. Although there are still certain operational obstacles and conceptual barriers, under the guidance of the top-level design of "education evaluation reform", building a value-added evaluation system with student development as the core is not only feasible, but also has a strong sense of urgency.

4. Application Path and Model Construction of Value-Added Evaluation in Chinese Universities

4.1. Constructing an Evaluation Logic System with Student Development as the Core

Introducing value-added evaluation in the evaluation of higher education teaching quality must first complete the transformation of evaluation logic, from "result-oriented" to "growth-oriented", truly take student development as the core, and establish a quality evaluation framework with "input-process-output" as the main line. In this framework, "input" mainly refers to the original conditions such as students' academic ability, knowledge base, and social background when they enter school; "process" includes dynamic information such as students' learning path, course participation, and formative assessment during their time at school; and "output" refers to the comprehensive literacy and professional ability possessed at graduation. By organically integrating these three types of data and constructing a model, value-added evaluation can identify the "net contribution" of higher education education behavior to student development, thereby achieving a qualitative leap from traditional static level judgment to dynamic progress identification, and providing structured and explainable evidence support for the quality of higher education education.

4.2. Clarify the Application Objects and Action Paths of Multi-level Value-added Evaluation

Value-added evaluation can be embedded in multiple key levels in colleges and universities, including three dimensions: student personal development tracking, teacher teaching contribution identification, and course/major education effectiveness evaluation. At the student level, the evaluation system can generate growth files by tracking their academic

performance and ability changes in different semesters, assisting academic warning and personalized tutoring; at the teacher level, by controlling the original level of students, the impact of teaching on student progress can be calculated, thereby more scientifically evaluating teaching effectiveness and promoting the shift from "how much to teach" to "how effective to teach"; at the course or major level, based on the change in students' ability performance before and after each course module, it can identify which links in the teaching chain have significant gain effects, thereby providing a decision-making basis for course system optimization and training program adjustment. This hierarchical and nested application logic helps to establish a multi-dimensional, dynamic, and feedback-based quality governance system.

4.3. Classification Promotion: Differentiated Paths Adapted to Different Types of Colleges and Universities

Considering that Chinese colleges and universities have significant differences in functional positioning, student structure, governance mechanism, etc., the implementation path of value-added evaluation should also be classified and layered, and tailored to the school[8]. For research universities, the evaluation can be carried out around the "curriculum value-added chain", taking the growth of students in high-level abilities such as logical thinking, innovation ability, and interdisciplinary literacy as the core of evaluation, and constructing a progressive structure of abilities between general courses, professional core courses, and comprehensive practice links; for applied universities, they should focus on the identification and motivation of "teacher teaching contribution", and guide teaching investment and quality improvement through quantitative indicators of student growth; for local universities and higher vocational colleges, they can start from "student practical ability value-added", focusing on evaluating students' growth in practical skills, learning autonomy, and career preparation, so as to promote the precise investment of educational resources and the strengthening of local social service functions. Through the above-mentioned differentiated path design, value-added evaluation not only avoids the "one-size-fits-all" evaluation distortion, but also enhances the adaptability and sustainability of the system.

4.4. Constructing an Implementation Mechanism to Support the Operation of Value-added Evaluation

The effective implementation of value-added evaluation requires not only scientific model design, but also a set of systematic and institutionalized implementation mechanisms to support its operation and implementation. First, colleges and universities should formulate a clear evaluation standard system, clarify the evaluation indicators and evaluation methods of different levels, disciplines and course types, and promote the transition from "unified standards" to "multiple baselines"; second, a complete data support platform should be built to break through the information barriers between academic affairs, student affairs and teaching platforms, and realize the data connection and real-time update of students from admission to graduation; third, the data interpretation and result feedback mechanism should be strengthened, and the model results should be fed back to teachers and course teams in a visual way, so that they can truly serve teaching

improvement rather than performance accountability; finally, legal and transparent evaluation result application rules should be established to ensure that the use of data has boundaries and the evaluation goals are controllable, so as to prevent the evaluation results from being alienated into assessment tools and destroy their original intention of serving "student development". Only by forming an operating system with concept guidance, sound mechanism and controllable process, can value-added evaluation move from pilot to routine, and from concept to governance practice.

4.5. Promote the Transformation from "Static Quality Monitoring" to "Dynamic Quality Promotion"

In essence, value-added evaluation is not only a technical tool, but also represents a value transformation of quality governance. It requires colleges and universities to shift their quality management from a "monitoring-ranking" mechanism to a "feedback-support" mechanism, and promote education governance from external pressure to internal drive. This transformation changes teaching quality from "stage judgment" to "continuous improvement", and from "final screening" to "process assistance". It not only helps colleges and universities to truly identify teaching effectiveness and educating ability, but also promotes teachers to return to their original intention of educating people, courses to focus on ability training, and systems to serve student growth. By building a scientific value-added evaluation system, "developmental evaluation" can be truly implemented, and education quality governance can move towards a systematic transition of "accurate identification-responsibility attribution-coordinated improvement", promoting higher education to truly achieve connotation-oriented development and high-quality leap.

5. Potential Challenges and coping Strategies in Implementation

Although the value-added evaluation concept has strong educational relevance in theory and has a preliminary realistic foundation in policy and practice, it still faces many complex challenges in its specific implementation. These challenges mainly come from multiple dimensions such as institutional structure, data technology, teacher-student concepts and resource equity. If they are not properly addressed, they will restrict its effective promotion and long-term development [9].

5.1. Weak Data and Technical Foundations Restrict Model Construction

The effective implementation of value-added evaluation is based on continuous tracking and multi-stage measurement of students' learning process, which places high demands on the data collection, integration and processing capabilities of colleges and universities. At present, most colleges and universities have not established a complete data chain covering students' "enrollment-learning process-graduation exit", and there are problems such as missing data, inconsistent standards and segmented information platforms. The academic affairs systems, learning platforms and student affairs platforms between departments are often separated from each other, and the data interface is not smooth, making it difficult to connect students' learning trajectories. At the same time, formative evaluation data (such as classroom participation, group discussions, stage tests, etc.) that reflect

changes in students' learning behaviors and processes are often not systematically collected or included in the formal evaluation system, which makes the "value-added effect" of teaching behavior lack real and verifiable basis. This weak data foundation directly affects the construction and operation of the value-added model, and also makes the evaluation lose its due accuracy and credibility.

5.2. Conservative Teachers' Concepts and Inertia of Teaching Culture

The value-added evaluation mechanism inevitably touches on the deep-seated problems of teacher evaluation and teaching responsibility identification during implementation, so the change of teachers' attitudes and concepts is crucial. In the current environment where colleges and universities generally implement student evaluation and quantification of teaching performance, many teachers have doubts about the new evaluation system, especially the practice of value-added evaluation emphasizing "the extent of student growth after controlling background variables", which is easily misunderstood as simply attributing students' final performance to teachers' personal efforts. Some teachers are worried that it is difficult to achieve "considerable value-added" when facing students with weak foundations or insufficient learning motivation, which puts them at a disadvantage in the evaluation, thereby affecting their own personal interests such as professional title evaluation and performance appraisal. In addition, teachers lack a clear understanding of the purpose and interpretation mechanism of evaluation data, and there is a certain degree of distrust, worrying that the data will be misused or abused. In the context of this concept not yet fully transformed, the promotion of value-added evaluation often faces the risk of "surface acceptance, actual resistance".

5.3. Statistical Models are Complex and Difficult to Interpret

Different from the percentage or grade scoring commonly used in traditional evaluation, value-added evaluation usually relies on more complex statistical modeling techniques, such as regression residual analysis, multi-level linear model (HLM) or learning growth trajectory model. These models can theoretically more accurately measure the "net contribution" of teaching behavior to student development, but in actual operation, they have extremely high requirements for data quality, sample size and variable setting, which are difficult for non-professionals to master and interpret independently. Under the realistic conditions that many universities lack professional education evaluation personnel and data science teams, relevant models are difficult to effectively build or stably operate. At the same time, even if the model is established, its output results are usually presented in the form of coefficients, standard residuals, effect values, etc., which are difficult for front-line education participants such as teachers and college administrators to understand and apply. Evaluation results often exist in the form of "technical reports" and fail to be transformed into effective information feedback to promote teaching improvement, resulting in value-added evaluation becoming a formal work and difficult to play a substantive guiding role.

5.4. Structural Evaluation Unfairness Caused by Resource Differences

There are significant regional differences and university stratification within China's higher education system. There is a huge gap between research universities and local undergraduate colleges and vocational colleges in terms of student quality, school resources, faculty and information technology foundation. If a unified standard value-added evaluation model is implemented on this basis, it is very easy to cause unfair evaluation of resource-poor universities. On the one hand, resource-advantaged universities originally have a higher starting point for students and complete teaching facilities, and are more likely to show a "high value-added" trend in the evaluation model; on the other hand, those universities with poor basic conditions and complex student source structures, even if they have large educational investment and adequate teaching management, are difficult to show their true educational contribution in the "model output results". This kind of "reverse incentive" in evaluation may further solidify the unequal structure within higher education, making the evaluation mechanism that should promote fairness and improvement aggravate differentiation and anxiety, and become a hidden obstacle to educational governance reform.

5.5. Countermeasures and Suggestions: Constructing a Coordinated Evaluation Support System

In response to the above challenges, promoting the construction of a value-added evaluation system for colleges and universities requires a coordinated and comprehensive strategy from multiple dimensions, including top-level systems, technical foundations, teacher support and governance mechanisms. First, at the system design level, it is recommended that the education administrative department issue the "Guidance Framework for Value-added Evaluation of Colleges and Universities", clarify data standards, indicator calibers and classification implementation principles, and encourage colleges and universities to explore differentiated evaluation paths based on type, level and discipline characteristics; second, colleges and universities should accelerate the integration of data platforms and the construction of educational informatization, establish a full-process data system covering "input-process-output", and provide real and continuous longitudinal data support for the operation of evaluation models; third, the teacher development center should assume the responsibility of "evaluation empowerment", and help teachers understand the value-added logic, identify teaching problems, and design improvement strategies through workshops, data feedback reports, teaching diagnosis and other methods; finally, a scientific and prudent evaluation result application mechanism should be established, embedded in the teaching management, curriculum reform and resource allocation process, and feedback and appeal channels should be set up to ensure that evaluation tools serve quality improvement rather than becoming an assessment method. Only by forming a support system with guiding concepts, sound mechanisms and clear paths can value-added evaluation be truly embedded in the logic of university education governance and promote the quality of higher education from "formal improvement" to "substantial leap".

6. Conclusion

As a new quality evaluation concept with student development as the core and emphasizing educational contribution, value-added evaluation is becoming an important trend in global education reform. In essence, it is not a simple supplement to traditional terminal evaluation, but a transformation of evaluation paradigm and reconstruction of value logic. By controlling students' starting level and background variables and focusing on net changes and real contributions in the education process, value-added evaluation redefines the connotation of "education quality", that is, it no longer only asks "what students have learned", but pays more attention to "how much students have grown", providing a measurable, feedback-able and traceable implementation path for colleges and universities to fully implement the "student-centered" education concept.

This paper systematically sorted out the core logic and practical significance of value-added evaluation from three dimensions: educational theory, international experience and China's local institutional environment, clarified its deep fit with educational equity theory, developmental evaluation concept and outcome-based education, and pointed out its unique value in higher education quality monitoring, teaching improvement and talent training effectiveness identification. At the policy level, the study found that China's higher education field currently has a realistic foundation for introducing value-added evaluation: on the one hand, the national education evaluation reform policy provides institutional space for it; on the other hand, the advancement of information technology and the evolution of teaching concepts also provide feasible support for the construction and operation of the value-added model. At the same time, based on the ternary structure of "input-process-output" and the two-dimensional measurement logic of "vertical-horizontal", the study proposed a value-added evaluation model suitable for different levels of colleges and universities, and explored its application paths at the student, teacher and course/major levels, emphasizing the importance of classified promotion, differentiated implementation, and result service improvement.

However, while fully affirming its theoretical value and practical potential, the study also clearly pointed out the many challenges that value-added evaluation may encounter in the practice of Chinese colleges and universities. These include technical bottlenecks such as incomplete data systems, lack of formative evaluation, and complex statistical model operations, as well as deep structural constraints such as difficulty in transforming teachers' concepts, slow transformation of teaching culture, and large differences in resources between schools. Especially in the context of higher education evaluation reform, how to prevent value-added evaluation from becoming a new "performance-based governance" tool and how to ensure that it truly plays its due role of "supporting development" and "identifying contributions" are propositions that must be deeply considered in future institutional design.

Overall, as an exploratory work based on theoretical analysis, this study attempts to construct a theoretical framework for value-added evaluation applicable to the context of Chinese universities, and on this basis, proposes model design and institutional suggestions to provide theoretical support for subsequent empirical research and mechanism pilots. Its theoretical contribution is mainly

reflected in placing the transformation of education evaluation in the macro perspective of value paradigm reconstruction, responding to the core demand of how higher education can move from "knowledge inculcation" to "individual development". Practical enlightenment is reflected in the proposal of differentiated evaluation strategies for different types of universities, emphasizing that student development should be the fundamental goal, and promoting the coordinated improvement logic of teaching, curriculum, and system.

Future research should further focus on the localization optimization and empirical testing of evaluation models. On the one hand, different types of universities can be selected to carry out case pilots, build an adaptive value-added evaluation system, and explore its actual effects in course quality monitoring, teacher performance improvement, and professional development evaluation; on the other hand, artificial intelligence and learning analysis and other technical means should be combined to improve the accuracy of data collection and the intelligence level of the model, so that the evaluation results have stronger real-time, explainability and applicability. In addition, it is necessary to conduct in-depth research on the potential impact of value-added evaluation on teacher and student behavior, evaluate whether it has truly promoted the structural improvement of teaching input, learning outcomes and educational equity, and ensure that the mechanism always maintains a value orientation of educating people in the process of institutionalization.

In the process of China's higher education moving towards high-quality development in the new era, the innovation of the teaching quality evaluation mechanism is not only a management technology issue, but also a key proposition for the reconstruction of educational concepts and the renewal of institutional culture. Value-added evaluation is a possible choice that came into being in this reform scenario. It is not about evaluating the "best school", but about identifying "who is really promoting student growth". Only with the coordinated promotion of concept guidance, technical support and institutional guarantee, can value-added evaluation truly become a key mechanism to promote Chinese universities from "knowledge center" to "development center", and help higher education achieve a transformation breakthrough from

external scale expansion to a leap in internal quality.

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