A Perspective on the Dilemma and Path Reconstruction of Student Value-added Evaluation from a Humanistic Perspective

Chunxing Liu

School of Education, Guangxi Normal University, Guilin Guangxi 541000

Abstract: From a human-centered perspective, student value-added evaluation promotes educational equity and holistic student development by measuring net growth increments, emerging as a core direction for educational assessment reform in the new era. This model transcends traditional limitations by focusing on students 'progress trajectories and developmental potential, providing evidence-based monitoring for educational quality enhancement. However, current practices face challenges including insufficient awareness of value-added evaluation concepts, incomplete assessment metrics, and immature technical frameworks. Addressing policy and practical needs, this paper proposes three strategic restructuring approaches: Conceptual Deepening – Upholding human-centric principles to restore value-added evaluation's fundamental educational purpose; Metric Quantification – Moving beyond score-centric evaluation systems to establish value-driven assessment benchmarks; Technological Optimization – Transitioning from empirical judgments to building intelligent platforms for value-added tracking.

Keywords: Value-added evaluation; People-oriented approach; Educational evaluation reform; Pathway reconstruction

DOI:10.12417/3029-2328.26.03.016

1. Introduction

Educational evaluation fundamentally shapes the trajectory of educational development. The guiding principles of assessment directly determine institutional trends [1]. In 2020, the CPC Central Committee and the State Council issued the "Overall Plan for Deepening Educational Evaluation Reform in the New Era," explicitly proposing to "improve outcome evaluation, strengthen process evaluation, explore value-added assessment, and refine comprehensive evaluation systems." Value-added evaluation was established as a key strategy to address the persistent issues of overemphasis on test scores and college admission rates. Subsequently, the "Outline for Building a Strong Education Nation (2024-2035)" further emphasized leveraging modern information technology to focus on students 'developmental processes and individual differences, aiming to establish an evaluation system that promotes well-rounded growth in moral, intellectual, physical, aesthetic, and labor education. Under these top-level policy frameworks, value-added evaluation requires teachers to simultaneously consider students' starting points, developmental progress, changes, and outcomes [2]. Pilot programs for value-added evaluation among Chinese students have been implemented in select regions and schools, achieving notable results. Many regions and schools have progressively adopted models like multilevel analysis and student growth percentile rankings to establish data-driven academic monitoring platforms, attempting to replace traditional point-based rankings with precise numerical metrics. However, in today's era of rapid technological advancement, such measures deviate from the fundamental human-centered educational philosophy. For instance, some practitioners overrely on data models, narrowly interpreting academic value-added as exam score improvements while neglecting holistic development in non-cognitive competencies — including knowledge acquisition, moral cultivation, learning habit formation, comprehensive literacy enhancement, mental health support, and aesthetic literacy development. Certain schools have adopted value-added data as primary indicators for teacher performance evaluations, trapping educators and students in utilitarian pursuits focused solely on numerical performance metrics. Moreover, standardized algorithmic models tend to mask individual differences among students, failing to genuinely motivate learners while potentially exacerbating anxiety and inequities. The critical question remains: How can we uphold human-centered educational values amidst the digital transformation of education? This has become an urgent priority for advancing educational evaluation reforms in contemporary society.

Building on this foundation, this study adopts a human-centered perspective to examine challenges in current student value-added assessment practices, including insufficient conceptual awareness, incomplete evaluation metrics, and immature technical models. It conducts an in-depth analysis of the root causes behind these issues and proposes strategic pathways for conceptual refinement, metric quantification, and technological optimization. The findings aim to provide actionable insights for advancing educational evaluation reforms in the new era.

2.Interpretation of the Connotation and Value Positioning of Student Value-added Evaluation from a Humanistic Perspective

2.1 Interpretation of the Connotation of Student Value-added Evaluation

Student value-added assessment is a developmental educational evaluation approach centered on student growth, with its core focus on measuring progress achieved during school education. Originating from economic concepts, this evaluation framework was later applied to education research, referring to the comprehensive development students attain in moral, intellectual, physical, aesthetic, and labor education after completing specific educational stages [3]. Its fundamental principle involves isolating external variables such as pre-enrollment academic foundations, family backgrounds, and innate differences, focusing solely on measurable growth resulting from school education and individual effort. Emphasizing the transformation process from baseline to endpoint, it prioritizes progress over mere comparisons of foundational knowledge [4]. This approach encompasses not only vertical academic improvement but also holistic development of core competencies, emotional attitudes, and practical skills. Compared to traditional outcome-based evaluations, student value-added assessment demonstrates advantages including emphasis on process-oriented evaluation, promotion of balanced educational resource allocation, and enhanced capacity to advance educational equity [5].

2.2 Value Orientation of People-Oriented Approach and Student Value-added Evaluation

In contemporary educational reform theories and practical explorations, student value-added assessment as an innovative evaluation paradigm is redefining educational value orientations. Moving beyond traditional summative output perspectives, it views education as a dynamic knowledge production process [6]. This evaluation framework emphasizes that students 'knowledge enrichment constitutes the core output of educational activities, while teachers' key value lies in facilitating student growth and progress through effective instructional practices.

Theoretically, student value-added evaluation aims to achieve fairness in the educational process. It overcomes the limitations of traditional assessments that overlook differences in students' starting points, recognizing that educational quality evaluations for disadvantaged students are often underestimated [7]. By eliminating external confounding variables such as innate abilities and family backgrounds, this evaluation model theoretically eliminates interference from unfair factors. This approach not only transforms the traditional evaluation system that relied solely on test scores but also promotes more efficient allocation of educational resources by focusing on students achieving significant progress from challenging starting points. Practically, this evaluation model provides quantifiable decision-making references for teaching management. It breaks the rigid focus on academic credentials or rankings, enhancing transparency in teacher recruitment, promotions, and compensation evaluations. For instance, when cross-semester data demonstrates significant improvement rates in a course or teaching methodology, school administrators tend to adopt this model; conversely, if certain teaching strategies show insignificant value-added effects, they are adjusted accordingly [8]. In summary, student value-added evaluation transcends traditional assessment limitations by centering on student growth, truly embodying the human-centered value orientation in educational evaluation.

3.Practical Challenges of Student Value-added Evaluation from a People-oriented Perspective

As a pivotal exploration in educational evaluation reform for the new era, student value-added assessment should be grounded in humanistic educational philosophy, with fundamental principles including respect for

students' life development, consideration of individual differences, and promotion of holistic growth. However, in practical implementation, the value pursuits inherent to humanistic perspectives are often diluted by pragmatic logic. From a humanistic standpoint, current student value-added assessments have yet to truly achieve student-centeredness, instead confronting three pressing challenges:

3.1 Insufficient conceptual awareness: The people-oriented philosophy has not been deeply ingrained in public consciousness, and the evaluation orientation dominated by score-oriented metrics remains severe.

Despite the deepening reforms in educational evaluation during the new era, the humanistic awareness concept remains insufficiently ingrained in practical teaching practices. Firstly, the people-oriented philosophy has yet to be truly internalized as teachers 'conscious actions. Influenced by the long-standing exam-oriented culture, some educators subconsciously still regard academic performance as the core or sole indicator of student development, often overlooking implicit qualities like moral character and physical/mental well-being, resulting in narrowed educational objectives. Secondly, the score-centric evaluation orientation has been further reinforced under institutional pressures. Since external college admission mechanisms and internal performance assessments remain heavily reliant on quantitative data, school evaluations directly link teachers' performance to class average scores and college admission rates. This high-stakes evaluation system forces educators into a teaching dilemma focused solely on test scores, compelling them to allocate time for non-exam subjects and transforming enriching educational processes into mechanical problem-solving drills [9]. This disconnect between cognition and practice not only diminishes teachers' educational responsibility but also traps the educational ecosystem within the constraints of exam-oriented logic.

3.2 Incomplete evaluation indicators: Challenges in quantifying multidimensional literacy, with value-added assessment narrowing to academic value-added

Current value-added assessment systems face practical challenges stemming from overly simplistic indicator frameworks, which fail to fully reflect the people-oriented philosophy of holistic development. Implementation limitations in technical models and data collection processes often lead to excessive reliance on academic performance metrics, while marginalizing critical dimensions such as moral education, aesthetic cultivation, and labor literacy [10]. This "intelligence-over-moral" bias neglects students' individualized growth and emotional experiences, reducing value-added evaluation to mere statistical tools for score fluctuations [11]. Furthermore, the absence of scientific measurement standards for non-academic indicators makes it difficult to track genuine progress in critical thinking and collaborative skills, resulting in assessment outcomes that fail to accurately diagnose developmental gaps [12]. The narrowing of evaluation dimensions not only weakens educational effectiveness but also deviates from the original intent of fostering holistic personal development. This approach obscures the efforts of students with foundational weaknesses in non-academic areas, exacerbating inequities in educational evaluation systems.

3.3 Immature technical model: weakened longitudinal tracking effect with certain measurement errors

From a technical modeling perspective, current value-added assessment faces dual challenges of statistical hypothesis failure and accumulated measurement errors in practice. Firstly, longitudinal tracking effectiveness has significantly weakened. Mainstream models such as growth score models, multiple regression models, multilevel linear models, and multivariate models [13] predominantly rely on linear growth assumptions, presupposing students 'development as a uniform process. However, real educational contexts often exhibit nonlinear fluctuations in students' physical/mental competencies and moral development. Forced application of linear regression not only fails to capture net effects at critical turning points but may also obscure authentic progress trajectories due to model misfitting, leading to distorted evaluation outcomes [14]. Secondly, measurement errors remain difficult to isolate effectively. Educational outcomes are influenced by multiple variables including family environment, peer effects, and school climate. Existing models struggle to comprehensively control all covariates due to limitations in data

collection scope and algorithmic precision. Excessive pursuit of model complexity often introduces parameter uncertainties, making it challenging for frontline teachers to interpret underlying data logic. This results in evaluation outcomes failing to translate into concrete teaching improvement measures, creating an awkward situation where data exists but precise diagnostic actions remain unimplementable.

4.Path Reconstruction of Student Value-added Evaluation from a People-oriented Perspective

To address the practical challenges in current student value-added assessment and align with the human-centered philosophy, this study proposes an effective framework through three dimensions: conceptual refinement, indicator quantification, and technological optimization. By reconstructing the evaluation system, we aim to restore value-added assessment to its fundamental educational purpose, thereby maximizing its role in fostering students' holistic development and advancing high-quality education.

4.1 Conceptual Deepening: Adhering to a People-Oriented Approach and Returning to the Educational Essence of Value-added Evaluation

Deepening the people-oriented philosophy in educational processes serves as a crucial approach to overcoming challenges in student value-added evaluation. The primary focus lies in establishing a value-added evaluation framework centered on students 'holistic development. Value-added evaluation transcends mere technical statistics; its ontological significance lies in restoring human subjectivity by shifting attention from static outcomes to dynamic growth processes, which inherently reflects educational equity and high-quality development. Traditional outcome-based evaluations often lead to horizontal comparisons — placing high-achievers and so-called underperformers side by side for academic metrics. In contrast, value-added evaluation employs longitudinal comparisons, emphasizing self-assessment to accurately identify individual efforts and potential realization, ensuring tangible progress and creating growth opportunities for all students. Therefore, evaluations should not only focus on implicit value-added aspects like moral character, physical/mental health, and practical skills, but also account for individual differences and support exceptional students while assisting disadvantaged groups [15]. Only by transforming evaluation objectives from selection criteria to diagnostic tools for improvement, and establishing a closed-loop system integrating teaching, learning, and assessment, can we address current educational shortcomings and transform evaluation into a catalyst for students' comprehensive development.

4.2 Quantification of Indicators: Moving Beyond Score-Only Evaluation to Establish Value-Added Driven Assessment Metrics

To fundamentally address the persistent issue of over-reliance on numerical scores, the key to indicator quantification lies in reconstructing evaluation frameworks by shifting from single-dimensional outcome comparisons to multidimensional value-driven assessments. First, expand the breadth and depth of evaluation dimensions. Traditional quantitative metrics often focus solely on academic performance, while the new evaluation system must incorporate core observation points such as moral character, physical and mental health, aesthetic literacy, and practical labor experiences. By developing scientific assessment tools, these implicit competencies can be transformed into observable and quantifiable data indicators, establishing a comprehensive value evaluation matrix that covers moral, intellectual, physical, aesthetic, and labor education dimensions to ensure alignment with students 'holistic development goals. Additionally, establish a quantification logic centered on progress magnitude. Move beyond ranking based solely on absolute scores by creating differentiated target systems grounded in students' initial levels. Utilize statistical models to calculate growth increments across dimensions, allowing students with weaker foundations but significant improvement to receive higher evaluation weights. This approach guides educators to focus on relative progress rather than absolute rankings. Finally, achieve organic integration of qualitative descriptions and quantitative data. Beyond numerical scores, introduce qualitative documentation of key behavioral events to form comprehensive data-case profiles, preventing the flattening of educational processes caused by overemphasis on quantification. This truly enables evaluation frameworks to fulfill their guiding and

motivational functions.

4.3 Technical Optimization: Moving beyond empirical judgment to establish an intelligent platform for value-added tracking

To overcome the limitations of traditional evaluation systems reliant on experiential judgment, the core of technological optimization lies in establishing a data-driven value-added tracking intelligent platform. Firstly, this approach facilitates a paradigm shift from experience-based practices to evidence-based diagnostics. Traditional teaching research often relies on teachers' subjective experiences for qualitative assessments lacking objective evidence. By leveraging big data technologies to comprehensively collect multi-source data — including student assignments, classroom interactions, and test results — the intelligent platform enables precise tracking of student growth trajectories, transforming diagnostic approaches from subjective assumptions to evidence-based scientific analysis [16]. Secondly, it establishes a dynamic longitudinal tracking mechanism. The platform integrates advanced algorithms like multilayer linear models to automatically filter out external interference variables such as family backgrounds, while calculating net developmental increments in real-time. This objectively reflects the authentic educational effectiveness of schools and teachers, avoiding one-sided outcome-oriented evaluations. Finally, it enhances data feedback mechanisms by delivering personalized teaching recommendations through visual reports, creating a closed-loop system of monitoring-diagnosis-improvement. This truly enables technology to serve holistic human development and ensures value-added evaluation takes root in practice.

5.Conclusion

The essence of student value-added assessment lies in moving beyond single absolute scores as measurement benchmarks. By employing scientific models to eliminate interference from non-educational factors like family background and initial academic foundations, it objectively reflects students 'genuine progress relative to their starting points. This evaluation paradigm ensures that every effort made by students with weaker foundations is recognized and valued, guiding education back to its fundamental purpose of nurturing individuals while emphasizing holistic development and individual potential. Implementing value-added assessment represents not just technological innovation but a profound transformation of educational philosophy. In the future, with the refinement of evaluation metrics and the empowerment of big data technology, this approach will better stimulate students' intrinsic motivation, enabling each individual to confidently pursue their unique path. Ultimately, it will realize the educational vision of ensuring every growth journey is fairly acknowledged.

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