

Philosophical Reflections on Language in Standardized Assessment and Pathways to Achieving Cognitive Justice

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Abstract: Dominating global educational systems, Standardized Assessment functions not merely as a measurement technology but as a form of cognitive hegemony grounded in a particular philosophy of language. This paper employs Zhang Xusheng's theoretical framework of the triadic cognitive structure—soma-emotion-meaning—and the language masking effect from *Knowing and Speaking*, alongside Wang Dongyue's principle of progressive weakening-compensation, to conduct a dual ontological and epistemological dissection of standardized assessment. The study reveals that standardized testing systematically compresses the complex cognitive generative process (RID model) into a singular symbolic rule-based expression, thereby excluding embodied experiences, indigenous emotions, and marginalized groups' modes of meaning-making that cannot be captured by standardized symbols. This evaluative mechanism, founded upon a specific conceptual scaffolding, results not only in disembodied assessment outcomes but also engenders profound epistemic injustice. To pursue genuine fairness in educational evaluation, this paper argues for transcending technical improvements in reliability and validity toward ontological-level cognitive justice. Concrete pathways include restoring embodied assessment to accommodate somatic experience, integrating emotional dimensions into assessment design, and introducing negotiated evaluative mechanisms that embrace pluralistic meanings. Such an approach aims to establish a multidimensional evaluative ecology capable of witnessing and fostering learners' holistic development across the soma-emotion-meaning continuum.

Keywords: Standardized Assessment; Cognitive Justice; Language Masking Effect; Soma-Emotion-Meaning; Conceptual Scaffolding; Educational Evaluation

1 Introduction: From Measurement Techniques to Ontological Reflection

Within the contemporary global educational governance framework, standardized assessments such as PISA (Programme for International Student Assessment), the SAT, and various national unified entrance examinations have become principal instruments for evaluating educational quality, allocating educational resources, and structuring social stratification. Although persistent critiques abound within the educational field—highlighting issues such as the promotion of “teaching to the test,” exacerbation of educational anxiety, and cultural and class biases embedded in test design—these criticisms predominantly remain confined to sociological consequences or technical refinements related to measurement properties, including reliability, validity, and fairness indices.

However, the true power and potential harm of standardized assessment do not merely stem from its “misuse” but are fundamentally rooted in its underlying linguistic philosophical

assumptions and epistemological foundations. Standardized assessment presupposes that knowledge can be fully symbolized, objectified, and precisely measured independently of the embodied perception and emotional experience of the cognitive subject. This presupposition essentially constitutes a specific form of “cognitive hegemony,” which delineates what constitutes “measurable competencies” and what qualifies as “legitimate modes of expression.”

To elucidate the operational mechanisms of this hegemony, the present study introduces Zhang Xusheng's triadic cognitive structure of Soma-Emotion-Meaning and the concept of the Language Masking Effect as articulated in *Knowing and Speaking: An Ontological Inquiry into Human Cognition* [4]. This is integrated with Wang Dongyue's principle of Progressive Weakening-Compensation [3] to conduct a profound philosophical dissection of standardized assessment. This paper argues that the pursuit of fairness in educational evaluation cannot rely solely on statistical model-based de-biasing techniques but must advance toward ontological Cognitive Justice, thereby establishing an evaluative ecology capable

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of encompassing the full spectrum of human cognitive structures.

2 The “Language Masking” Mechanism in Standardized Assessment

Zhang Xusheng’s *Knowing and Speaking* [4] posits that human cognition is not a passive reflection of the objective world but rather an active constructive process of meaning-making within uncertain environments, characterized by the “Discover-Imagine-Regulate” (RID) model. In this process, linguistic symbolic systems play a crucial role in providing cognitive stabilization scaffolding; however, this role is inevitably accompanied by the language masking effect: any symbolic system, while abstracting and simplifying rich experiential realities, simultaneously obscures dimensions that are inexpressible through language.

2.1 Symbolic Compression in the Cognitive Generation Process

Standardized testing, particularly formats dominated by objective items (such as multiple-choice questions) and highly structured writing tasks (such as standardized essay scoring), epitomizes the phenomenon of the language masking effect. Within the RID cognitive generation model, authentic learning and inquiry originate from the problem discovery (D) emerging through the interaction between the body and the environment, proceed through structure generation (I) grounded in metaphor and analogy, and ultimately culminate in rule expression (R) that conforms to social norms.

However, standardized assessment, by predetermining problem scenarios and fixed correct answers, effectively eliminates the students’ “problem discovery” phase and forcibly compresses the complex process of “structure generation” into a mere matching exercise against established “rule expressions.” Students neither need nor are permitted to demonstrate how they perceive problems, experience confusion, or intuitively formulate hypotheses during the test. The focus of evaluation is entirely confined to decontextualized symbolic manipulation skills that have been suspended from their original context. This masking effect results in test outcomes that only reflect students’ proficiency with specific symbolic rules, failing to capture their authentic, dynamic embodied cognitive abilities.

2.2 The Fixation and Exclusivity of Conceptual Scaffolding

To achieve large-scale “objective” measurement, standardized assessment must rely on a highly rigid set of “cognitive stabilization scaffolding.” This scaffolding is jointly constructed by item experts, disciplinary standards, and psychometric models, representing the classificatory systems and logical rules of mainstream culture.

When students engage with test papers, they are not merely responding to questions; rather, they are compelled to conform to a predetermined set of conceptual scaffolding. If a student’s cognitive style—such as holistic thinking rooted in

indigenous cultural frameworks or metaphorical associations derived from unique life experiences—is incompatible with this standardized scaffolding, their performance on the assessment will be interpreted as “low ability.” Consequently, the purported “objectivity” of standardized assessment is predicated upon the structural exclusion of non-mainstream cognitive modes. The differences it measures often do not reflect variations in intellectual capacity but rather disparities in the degree of alignment between students and the dominant “conceptual scaffolding.”

3 Soma, Emotion, and Meaning: Test Violence and Cognitive Injustice

The language masking mechanism inherent in standardized assessment not only results in the partiality of measurement but also exerts profound testing violence upon students across the triadic structure of soma-emotion-meaning. This, in turn, engenders systemic epistemic injustice.

3.1 The Deprivation of Bodily Experience and “Disembodied” Assessment

Within the framework of Knowing-Speaking, the somatic layer constitutes the foundation of cognition. Authentic cognition is invariably embodied, occurring through the physical interactions between the cognitive subject and their physical and social environments. However, standardized assessments are typically administered within highly regulated spatiotemporal contexts—such as quiet, enclosed examination rooms, strict time constraints, and rigid sitting postures. Such environments deliberately sever students’ embodied interactions with authentic contexts.

In this “disembodied” state, cognitive abilities that heavily rely on bodily manipulation, spatial perception, and environmental feedback—such as hands-on experimentation, artistic creation, and on-site problem-solving—are completely excluded from the evaluative perspective. This exclusion constitutes a significant assessment injustice for students who excel in “learning by doing” or possess rich practical experience but lack training in abstract symbolic operations.

3.2 The Suppression and Instrumentalization of Emotional Expression

The Emotional Layer provides value appraisal and motivational arousal within cognition. In authentic learning processes, curiosity, moments of perplexity, the joy of insight, and a passion for the object of inquiry constitute intrinsic drivers of cognitive generation. However, within the logic of standardized assessment, emotions are regarded as “interfering factors” to be excluded (e.g., test anxiety) or as “non-intellectual factors” unrelated to cognition.

The testing process demands that students maintain a detached, mechanistic form of “objectivity,” suppressing personal emotional resonance. This detachment from the emotional dimension not only renders the testing experience monotonous and oppressive but also neglects the ontological value of emotion in creative thinking and the generation

of profound meaning. When assessment systems refuse to document and acknowledge students' emotional engagement during inquiry, they effectively negate the most vital life force inherent in cognitive activity.

3.3 The Unidimensionality of Meaning Construction and Cultural Oppression

The meaning layer involves the construction of symbols and concepts. Students from diverse cultural backgrounds and life experiences generate different meaning schemas when confronted with the same phenomenon. The "standard answer" mechanism inherent in standardized assessment enforces a uniform logic and perspective for all students to interpret the world, resulting in a unidimensional construction of meaning.

For marginalized groups—such as ethnic minorities, lower socioeconomic status students, and rural learners—this unidimensionality constitutes a form of cultural oppression. In order to achieve favorable outcomes on assessments, they are compelled to suspend or relinquish their culturally grounded schemata derived from community life, thereby submitting to the mainstream culture's prescribed conceptual scaffolding. This process is isomorphic with what Boaventura de Sousa Santos characterizes as "epistemicide"—through standardized educational assessments, the cognitive modalities of marginalized groups are systematically deemed "invalid" or "erroneous," resulting in their erasure within the global knowledge ecology.

4 Theoretical Dialogue: Beyond Traditional Psychometrics

A ontological critique of standardized assessment necessitates a theoretical dialogue with contemporary critical pedagogy and cognitive science to deepen the understanding of "cognitive justice."

4.1 Dialogue with Critical Pedagogy: The Reproduction of Symbolic Power

Critical pedagogues such as Michael Apple and Wayne Au have long argued that standardized testing functions as a mechanism for the reproduction of cultural capital. Drawing upon the theoretical framework of Knowing and Speaking, we can more clearly elucidate the cognitive mechanisms underlying this reproduction: testing does not neutrally measure "ability," but rather assesses students' mastery of the dominant "cognitive stabilization scaffolding." Middle-class families, endowed with abundant mainstream cultural capital, subtly transmit this scaffolding to their children through everyday interactions; conversely, children from marginalized groups confront a substantial cognitive chasm in bridging this scaffolding. Consequently, standardized assessment transforms social class inequalities into ostensibly objective differences in "cognitive ability."

4.2 Towards Cognitive Justice

"Cognitive Justice" demands the recognition of the equivalence of diverse knowledge systems and modes of cogni-

tion. Gichuru and Rukooko [1], in their examination of academic assessment in African higher education, argue that it is imperative to move away from colonial assessment standards towards cognitive justice grounded in the philosophy of "Ubuntu." Within the contexts of foundational education and large-scale assessment, cognitive justice entails dismantling the monopoly of singular semiotic logics and establishing assessment mechanisms capable of accommodating diverse soma-emotion-meaning configurations. This shift transcends mere technical reform; it represents a fundamental reorientation of educational values.

5 Towards Cognitive Justice: An Ontological Reconstruction of the Assessment Ecology

To achieve cognitive justice in educational assessment, it is imperative to undertake an ontological reconstruction of the existing assessment ecology. This necessitates transcending the narrow pursuit of "reliability and validity" and establishing a multidimensional assessment system that inclusively encompasses the integral structure of "soma-emotion-meaning."

5.1 Restoring Embodied Assessment

Evaluation must break free from the disciplinary constraints of the disembodied examination setting and reintegrate bodily experience. Zheng et al. [5] in their development study of the "Embodied Cognition Scale," demonstrate the feasibility of assessing embodied processes within higher education. In primary and secondary education, there should be a strong advocacy for Performance Assessment and Authentic Assessment.

These assessment approaches require students to complete complex tasks in authentic or highly simulated contexts (such as designing a community garden or conducting a scientific experiment). In these tasks, students' bodily movements, spatial awareness, physical interactions with materials, and social interactions with others constitute crucial evidence for evaluation. By reinstating bodily presence, the assessment system can more comprehensively capture the practical wisdom that cannot be symbolized through traditional paper-and-pencil tests.

5.2 Assessment Incorporating the Emotional Dimension

Cognition and emotion are inseparable, and assessment must acknowledge and document the ontological value of emotion. This does not imply measuring students' "emotional intelligence" through questionnaires; rather, it necessitates creating space within the design of academic assessments for emotional expression and the experience of values.

For instance, in the assessment of Project-Based Learning (PBL), it is imperative not only to evaluate the accuracy of the final knowledge product but also to document students' curiosity demonstrated throughout the inquiry process, their resilience in the face of setbacks, their empathy towards community issues, and the aesthetic experiences gained upon problem resolution. Through reflective writing, oral presentations, or artistic expressions, students can reveal the emotional

dynamics embedded within their cognitive processes, thereby rendering the assessment outcomes more multidimensional and humanized.

5.3 Negotiated Assessment of Multiple Meanings and Translanguaging Practices

To disrupt the unidimensional monopoly of standardized answers over meaning construction, assessment systems must incorporate negotiation mechanisms that allow students to demonstrate their unique “Problem Discovery-Structure Generation” (RID model) processes.

Portfolio Assessment and Dynamic Assessment represent effective approaches to achieving this objective. These methods emphasize the trajectory of students’ cognitive development rather than a snapshot at a single point in time. More importantly, the incorporation of translanguaging practices within the assessment process is imperative. Tian et al. [2], in their systematic review, demonstrate that permitting translanguaging in assessment fosters educational equity and justice. By allowing students to utilize multiple linguistic resources—including their mother tongue, dialects, or informal language varieties—to articulate their reasoning processes, assessment systems can transcend the language masking effect inherent in dominant languages. This enables a genuine engagement with the marginalized students’ deep-seated conceptual scaffolding, thereby facilitating an inclusive recognition of diverse meanings.

6 Conclusion: Progressive Weakening-Compensation and a Holistic Perspective on Assessment

According to Wang Dongyue’s principle of “Progressive Weakening-Compensation” [3], human cognitive capacity has evolved as a complex compensatory mechanism to address vulnerabilities inherent in survival. When educational assessment alienates and compresses this intricate mechanism into a mechanical response to a singular symbolic rule, it not only distorts the essence of education but also undermines the cognitive diversity and flexibility essential for human civilization to confront an increasingly complex future.

6.1 A Philosophical Reflection on the Language of Standardized Assessment

Philosophical reflections on the language of standardized assessment reveal that any attempt to exhaustively capture and measure human cognition through a unified symbolic system inevitably falls into the trap of the language masking effect, unavoidably engendering cognitive injustice. The fundamental purpose of educational evaluation should never be to sort and eliminate students according to industrialized standards; rather, it must bear witness to, document, and promote the holistic development of each learner within their unique life context, encompassing the integrated soma-emotion-meaning triadic structure.

6.2 Reconstructing the Assessment Ecology Towards Cognitive Justice: A Complex Systemic Endeavor

The ecological reconstruction of assessment aimed at achieving cognitive justice constitutes a formidable and complex systemic undertaking. This endeavor necessitates the concerted efforts of educational researchers, policymakers, and frontline educators to dismantle the prevailing myth of technical rationality and to re-examine the ontological significance of “assessment” with a profound sense of reverence. Only by establishing an assessment system that embraces diverse cognitive modalities and respects the integrity of lived experiences can education genuinely become a force propelling humanity toward freedom and emancipation.

7 Further Empirical Cases and Implications for Application

To more intuitively demonstrate the practical application of the concept of cognitive justice in educational assessment, this section will integrate several cutting-edge empirical cases to explore how the assessment ecology can be reconstructed within specific instructional contexts.

7.1 Embodied Assessment Practices in Mathematics Education

Mathematics has long been regarded as the most quintessentially abstract semiotic discipline and a principal domain heavily impacted by standardized assessment. However, research in cognitive science indicates that the mastery of mathematical concepts is profoundly dependent on early bodily movements and spatial perception. In traditional standardized mathematics testing, students are required merely to perform symbolic manipulations on paper, which often results in their understanding of mathematical concepts remaining at the superficial level of “rule expression” (R), lacking the deeper level of “structure generation” (I).

In a mathematics education intervention aimed at promoting cognitive justice, researchers introduced embodied assessment. For instance, when evaluating students’ understanding of geometric figures, teachers not only required them to calculate area and perimeter but also asked them to demonstrate their spatial awareness through bodily movements (such as using their arms to simulate angles or walking around the classroom to trace the trajectories of shapes). This mode of assessment not only more accurately reflects students’ intuitive grasp of geometric concepts but also provides opportunities for those who perform poorly on written tests yet possess strengths in spatial perception to showcase their abilities.

7.2 Translanguaging Practices and Portfolio Assessment in Language Learning

In multilingual environments or immigrant communities, language assessment faces significant challenges regarding fairness. Traditional standardized language tests typically evaluate students’ proficiency in a single target language (e.g., Standard English), treating their mother tongues or dialects as

errors to be corrected. This mode of assessment not only results in a pronounced language masking effect but also inflicts harm on students' cultural identities.

Tian et al. [2] conducted a systematic review emphasizing the significance of translanguaging practices in assessment. In the context of writing evaluation at a multilingual school, teachers employed a portfolio assessment approach integrated with translanguaging. Students were encouraged to compose initial drafts using a hybrid of their first language and the target language to fully articulate their complex "problem discovery" (D) and emotional experiences. During subsequent revisions, teachers guided students in progressively transforming these rich semantic schemata into academically conventional "rule-governed expressions" (R). The final assessment prioritized not only the grammatical accuracy of the completed texts but also the students' demonstrated capacity for cross-linguistic meaning negotiation throughout the writing process. This evaluative approach effectively disrupted the cognitive hegemony of a single language, thereby realizing respect for and inclusivity of students' diverse multicultural backgrounds.

7.3 Recording the Emotional Dimension in Scientific Inquiry

Scientific inquiry is not only a process of rational logical reasoning but also an experiential journey replete with emotional fluctuations. However, traditional evaluations of scientific laboratory reports typically focus solely on the accuracy of data recording and the logical coherence of conclusions, entirely neglecting students' emotional experiences during the experimental process.

To incorporate the emotional dimension within assessment, some innovative science curricula have introduced the "Inquiry Journal" as an evaluative tool. In the Inquiry Journal, students are required not only to document experimental data but also to record their feelings of frustration when encountering difficulties, moments of surprise upon discovering new phenomena, and emotional resonance experienced during collaboration with peers. Educators, in their evaluative practices, consider students' emotional engagement and emotion regulation abilities as critical reference indicators. This mode of assessment not only offers a more comprehensive reflection of students' scientific literacy but also contributes to fostering their psychological resilience when confronting unfamiliar challenges.

8 Institutional Reconstruction: Challenges in Policy and Practice

Translating the concept of cognitive justice into institutional practices within educational assessment faces substantial challenges. This endeavor requires not only a paradigm shift in educational philosophy but also multifaceted support encompassing policy, resources, and technology.

8.1 The Diversification Turn in Assessment Policy

Educational administrative authorities must dismantle the monopolistic dominance of standardized assessment at the policy level. This necessitates the introduction of diversified evaluation criteria in critical processes such as academic selection and school accountability. For instance, beyond uniform standardized test scores, comprehensive evaluations of students' competencies—such as results from performance-based assessments and portfolio assessments—should be incorporated into admission considerations. Concurrently, policymakers need to acknowledge that establishing a pluralistic evaluation system requires greater investment of resources and time, and cannot be justified by appeals to "efficiency" that perpetuate the hegemony of standardized testing.

8.2 Enhancing Teachers' Assessment Literacy

Teachers are the pivotal agents in the implementation of diversified assessment. However, many educators have become habituated to the logic of standardized assessment through their own educational experiences, resulting in a lack of professional competence to enact innovative assessment approaches such as embodied assessment and translanguaging practices. Therefore, teacher professional development programs must prioritize the enhancement of "assessment literacy" as a core component. This entails not only the transmission of specific assessment techniques but, more critically, the cultivation of teachers' awareness of cognitive justice, enabling them to keenly detect and critically reflect upon the language masking effects and conceptual scaffolding biases embedded within routine assessment practices.

8.3 Ethical Examination and Innovative Applications of Technology

In the era of artificial intelligence and big data, educational assessment technologies are undergoing rapid transformation. On one hand, AI technologies—such as automated essay scoring and adaptive testing—may further reinforce the language masking effect inherent in standardized assessment. On the other hand, these emerging technologies also present new possibilities for realizing cognitive justice. For instance, through wearable devices and multimodal data analysis, it becomes feasible to more objectively capture and analyze students' bodily movements and emotional states during the learning process, thereby providing technological support for embodied assessment and affective evaluation. Consequently, it is imperative to subject educational assessment technologies to rigorous ethical scrutiny to ensure their application promotes cognitive justice rather than exacerbates cognitive hegemony.

9 Conclusion: Reshaping the Cognitive Ecology of Educational Assessment

Educational assessment functions not merely as a tool for measuring student abilities but also as a critical mechanism for shaping educational values and determining social stratification. The dominant position of standardized assessment within contemporary educational systems reflects not only

a pursuit of efficiency and so-called “objectivity” but also profoundly embodies the Western-centric phenomenon of cognitive hegemony. By compressing the complex processes of cognitive generation—exemplified by the RID model—into singular symbolic rule-based representations, standardized testing systematically excludes embodied experiences, indigenous affectivities, and the meaning-making modalities of marginalized groups that cannot be captured by standardized symbolic forms. This exclusion engenders significant epistemic injustice.

This article undertakes a profound ontological and epistemological analysis of standardized assessment, grounded in Zhang Xusheng’s triadic cognitive framework of soma-emotion-meaning and the language masking effect [4], alongside Wang Dongyue’s principle of progressive weakening-compensation [3]. We argue that the pursuit of fairness in educational evaluation cannot be confined merely to technical enhancements of reliability and validity; rather, it must advance toward the ontological dimension of cognitive justice.

Reconstructing an evaluative ecology that achieves cognitive justice necessitates transcending the monopoly of a singular symbolic logic to establish a multidimensional assessment system that inclusively encompasses the integrated structure of “soma-emotion-meaning.” This entails the restoration of embodied assessment to accommodate bodily experiences, the incorporation of emotional dimensions within assessment design, and the introduction of negotiated evaluative mechanisms that embrace multiple meanings—such as portfolio assessment, dynamic assessment, and translanguaging practices. These initiatives not only signify respect for the cognitive modalities of marginalized groups but also constitute a defense of the integrity of human cognition.

In the context of the profound development of artificial intelligence and globalization in the twenty-first century, a singular cognitive paradigm is increasingly inadequate to address the growing complexity of global challenges. The fundamental purpose of educational assessment should never be to sort and eliminate students according to industrialized standards. Rather, it must bear witness to, document, and promote the holistic development of each learner within their unique life context, encompassing the integrated “soma-emotion-meaning” triadic structure. Only by establishing an evaluative system that embraces diverse cognitive modalities and respects the integrity of lived experience can education truly become a force for human freedom, emancipation, and the realization of civilizational coexistence.

10 Appendix: Theoretical Framework and Core Concepts

To facilitate readers’ deeper understanding of the theoretical foundations underpinning this study, a concise exposition of the core concepts articulated in Zhang Xusheng’s *Knowing and Speaking* [4] and Wang Dongyue’s *General Theory of Material Evolution* [3] is provided below:

- **Three-Layer Cognitive Structure (Soma-Emotion-Meaning Framework):** Refers to human cognition as constituted by three interwoven dimensions—the somatic layer, which processes sensory interactions with the environment; the emotional layer, which provides value appraisal and motivational arousal; and the meaning layer, which engages in symbolic, conceptual, and logical construction.
- **RID Model (Discover-Imagine-Regulate):** Describes the dynamic process by which cognitive agents establish an order of meaning within uncertain environments, comprising problem discovery (Discover), structural generation (Imagine), and rule expression (Regulate).
- **Cognitive Stabilization Scaffolding:** The symbolic matrix developed by specific cultural communities to maintain an order of meaning, encompassing classification systems, conceptual networks, evaluative criteria, and logical rules. Standardized assessment represents an extreme crystallization of this scaffolding.
- **Language Masking Effect:** The phenomenon whereby linguistic symbol systems, in naming and categorizing the world, inevitably highlight certain experiential dimensions while obscuring others. Standardized testing, by restricting modes of expression, amplifies this masking effect.
- **Progressive Weakening-Compensation Principle:** An ontological hypothesis proposed by Wang Dongyue [3], positing that species with lower existential status (such as humans) increasingly rely on highly developed attributes (e.g., cognitive abilities) to compensate for survival. When educational evaluation excessively depends on a singular symbolic system, it effectively undermines humans’ compensatory capacity to navigate complex environments—that is, cognitive diversity.

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