

Global Standardization, the PISA Effect, and Education Trade in the Age of the Learning Mind and the Producing Machine: A Cognitive and Socio-Political Synthesis

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Article Info

Keywords

Curriculum as a global product, policy borrowing, policy lending, PISA effect, curriculum transfer and decontextualization, whose standards?, whose knowledge?, cognitive offloading, epistemic autonomy, cognitive architecture, TPACK, metacognitive awareness

Article Type

Op-Ed



Abstract

In an era of rapidly spreading generative artificial intelligence (AI), the production, circulation, and processing of knowledge are moving beyond the monopoly of the human mind and becoming a human-machine partnership. For centuries, producing, circulating, and learning knowledge was the privilege of the human mind; generative AI systems are turning this privilege into a shared domain. Machines that write texts, solve problems, ask questions, and generate explanations are now ordinary features of classrooms, libraries, and research laboratories. Education systems, however, are being shaped not only by a technological and cognitive transformation but also by the understanding of curricula as a global product, by international comparative assessments such as PISA, and by an increasingly commercialized global education market. This article critically examines the benefits and harms of imposed global standards, the influence of PISA on Turkish curricula, and the implications of international curriculum transfer and education trade for stakeholders. In an age when algorithmic work is delegated to machines, it foregrounds epistemic autonomy, metacognitive awareness, and adaptive curricula as the focus of a humane education.

1. Introduction and Theoretical Background

In the twenty-first century, globalization has transcended the borders of nation-states, transforming economic, cultural, and political structures and drawing education systems into a homogenizing center of gravity. In this context, education has become a global commodity shaped less by national development and the construction of social identity than by the expectations of international competition and global capital. Curricula should therefore be examined as one of the most important global apparatuses shaping human and social life. In a process steered by international organizations (OECD, UNESCO, the World Bank, etc.), education policies are carried beyond national borders, and less developed or developing countries are directed to adopt the models of developed countries or supranational norms. This has made the concepts of policy borrowing and policy lending a central field of debate in the educational sciences (Steiner-Khamsi, 2004).

The field of educational sciences is passing through a historical turning point. For centuries, the production and analysis of knowledge and problem solving were regarded as the privilege of the human mind; with the development of generative AI systems, they have become a domain shared between humans and machines. Holistic thinking is an interdisciplinary, paradigmatic thinking skill.

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Duman, B. (2026). Global standardization, the PISA effect, and education trade in the age of the learning mind and the producing machine: A cognitive and socio-political synthesis. *Curricular Studies & Perspectives*, 2(2), 86-92. <https://doi.org/10.29329/csp.2026.XXXX.X>

Using such holistic thinking, paradoxically, in solving problems will turn learning and thinking into a source of enjoyment and bring fresh excitement to learning as well as to teacher education and curricula. When this biological and technological reality is combined with the evidence neuroscience offers on the biological foundations of learning (synaptic plasticity, working memory limits, schema formation; Duman, 2015), instructional design must move beyond content lists toward a structure sensitive to cognitive architecture.

These findings have important implications for curricula. Curricula should be reconceived not as content lists but as learning pathways sensitive to cognitive architecture. Principles such as spaced repetition, retrieval practice, interleaved study, and the timing of feedback are experimentally tested approaches whose effects have been replicated. Over the next decade, with the convergence of learning analytics and neurocognitive research, it is reasonable to expect curricula sensitive to the individual's cognitive profile to become widespread. Yet the future of curricula is not shaped solely by neurocognitive evidence and technological possibilities. Curricula are also positioned on a fault line created by transnational centers of power, the pursuit of standardization, and the ideology of economic efficiency. At this point, large-scale assessments such as PISA (the Programme for International Student Assessment) push education systems toward a “performance”- and “data”-driven structure, turning curricular content into global standards. This standardization process triggers a crisis of “educational globalization,” in which local needs and cultural capital are disregarded and education is seen merely as a technical process that supplies output to the labor market.

Policy borrowing often functions less as a pedagogical necessity than as an instrument of political legitimization. Transplanting a model presumed successful in one country to another region, detached from the historical and sociological context in which it flourished, often results in decontextualization. For example, copying the curricular structures of countries such as Finland or South Korea without analyzing the socio-cultural dynamics behind their educational success leads to rejection or dysfunction within the local educational fabric. This calls for moving beyond the shallow approach that treats curricula merely as “technical texts” and for redefining curricula as political, economic, and cultural “products.”

For modern education systems caught between technological determinism and global standards, the real threat is that individuals lose control over their own learning processes. The cognitive offloading enabled by AI tools frees the human mind from routine tasks, but it also risks eroding deep thinking and complex problem-solving skills. This risk makes it imperative to shift the focus of curricula from “knowledge transmission” to “epistemic autonomy” and “metacognitive awareness.” An educational design in which students understand what, why, and how they learn, can question the sources of knowledge, and can move beyond algorithmic guidance is the most fundamental democratic requirement of the 21st century. Accordingly, the most critical issue in building our theoretical ground is how the balance between technological progress and human subjectivation can be protected against the uniform approaches imposed by the global market. This discussion leads us to reconsider education not as a commercial good but as a universal human right and a process of intellectual emancipation that each society blends with its own reality. Curricula are socio-political arenas of struggle steered by international institutions (OECD, World Bank) and global capital networks (Apple, 2004; Ball, 2012).

Education systems thus face a double tension: on the one hand, human-centered needs that are sensitive to individual cognitive profiles, flexible, and aimed at critical thinking; on the other, the homogenizing and commercializing pressures imposed by the understanding of curricula as a global product (Verger et al., 2016).

2. Imposed Global Standards and the PISA Effect: Rationality, Risks, and Turkish Curricula

2.1. Policy Borrowing, Policy Lending, and Curricula as a Global Product

What I term “Mental Enslavement”—a state in which individuals surrender their own thinking faculties to others, failing to recognize the possibility of mental liberation—along with the grip of various “-isms,” effectively reduces the human brain to a state of mindless servitude. This

phenomenon involves individuals blindly attaching themselves to pre-packaged ideologies, rigid thought patterns, or dogmatic “-isms,” rather than exercising their own cognitive potential and capacity for independent thought; it is, in essence, a form of mental and intellectual enslavement. While the individual may believe they are free, they have, in fact, imprisoned their mind within specific templates, thereby forfeiting their ability to think critically (Duman, 2008).

Today, curricula appear as an apparatus of order that global powers of cultural hegemony transfer to underdeveloped and developing countries, which have been conditioned to receive them voluntarily and willingly. The transnational transfer of curricula is less a mechanical process of transplantation than a complex political and ideological negotiation. The policy borrowing model developed by Phillips and Ochs (2003) presents a dynamic process consisting of external incentives, transfer, decision making, and implementation (Sellar & Lingard, 2013).

Curricula today are instruments of policy lending and full-fledged commodities of global markets. Developed countries and international actors market their own educational models and test-driven standards as global “best practices,” thereby creating a vast education trade sector built on educational technologies, international textbooks, and assessment tools. The curriculum as a global product is constantly renewed, creating a balance of supply and demand. Curricula stripped of local cultural codes and centered on market-oriented skills (coding, STEM, global competences, etc.) turn into standardized, commodified outputs. This undermines the public character of education and reduces individuals to elements of human capital.

2.2. The Rationale for Standardization and Critical Questions: Whose Standards? Whose Knowledge?

Establishing global standards in education enables countries to benchmark their performance internationally, provides quality assurance, and facilitates global labor mobility (Meyer & Benavot, 2013). Yet this pursuit of standardization is far from ideologically and culturally neutral. As critical curriculum theorists frequently emphasize, two fundamental questions are unavoidable when global norms are set: Whose standards? and Whose knowledge? (Apple, 2004; Young, 2008). Within this line of inquiry, the benefits and harms can be summarized as follows. The benefits include transparency, the spread of common competence frameworks (e.g., 21st-century skills), and the development of a culture of data-based policymaking. The most important harms, in turn, are the imposition on peripheral countries of forms of knowledge regarded as legitimate by the Global North or by dominant neoliberal actors, the marginalization of local, cultural, and historical knowledge, and the loss of pedagogical autonomy at the local level (Steiner-Khamisi, 2004).

2.3. The PISA Effect and Its Reflections on Turkish Curricula

PISA assessments, conducted under the OECD, have become the main engine of education reform in developing countries. The OECD and PISA function as a decisive lever in shaping education policies. The PISA effect is defined as the creation of a culture of panic by condemning nations’ educational achievements to a single global ranking and the indexing of reforms to the goal of climbing these rankings (Sellar & Lingard, 2013). In Türkiye, the PISA effect is clearly visible, particularly in the 2005 and 2018 curriculum revisions (Eğitimi Araştırma ve Geliştirme Dairesi Başkanlığı, 2010):

1. *Transition to a skills-based approach and a competence orientation:* In moving from a traditional behaviorist approach to a cognitive and constructivist model, the Turkish education system took the concept of “literacy” measured by PISA as its main reference. The emphasis in curriculum texts on higher-order cognitive skills such as “problem solving,” “critical thinking,” and “making inferences,” aimed at using knowledge in real-life situations rather than merely transmitting it, is directly aligned with the OECD’s competence frameworks.
2. *Transformation of exam formats and question types:* In national centralized examinations such as the LGS and YKS, the shift from traditional multiple-choice knowledge questions to so-called “new-generation questions” focused on text analysis, graph interpretation, and reasoning represents a localization of PISA’s assessment logic. This has also directly affected curricular

content, leading to the redesign of textbooks and classroom practices according to PISA standards.

3. *Quantification and data-driven governance*: The perception of “success” or “failure” created by PISA results has led to quality in education being defined solely through measurable data. Education policies in Türkiye develop instant reflexes in response to fluctuations in PISA scores, turning the curriculum from a long-term structure with philosophical depth into a technical tool for achieving statistical improvement.
4. *Localization of global skills*: The Turkish Qualifications Framework (TQF) included in the 2018 curricula was aligned directly with the European Qualifications Framework; the eight key competences it identifies, ranging from communication in the mother tongue to digital competence, placed the standards demanded by the global labor market at the center of the national curriculum.

Yet these effects also bring serious risks. In countries such as Türkiye, where socio-economic inequalities run deep, the performance pressure created by PISA tightens the grip of an “exam-oriented curriculum” even further. The effort to align the curriculum with global norms carries the risk of neglecting local cultural heritage and distinctive pedagogical needs. When the success of an education system is judged solely by convergence toward OECD averages, the essential functions of education, such as democratization, social justice, and individual self-realization, are overshadowed by a technical scoreboard. In this context, the transformation of Turkish curricula makes the question of where to stand on the delicate balance between global rationality and local realities more critical than ever.

Positive reflections: The intention to move from traditional rote content transmission to a skills-based curriculum structure focused on problem solving and higher-order thinking, encompassing reading, mathematical, and scientific literacy, has been supported. Curriculum reforms (e.g., skills-based approaches and changes in assessment focused on analytical thinking) have been shaped directly by the concern to address the shortcomings identified in the reports of international assessments such as PISA and TIMSS.

Problematic and superficial areas: The concern to climb the PISA rankings has triggered a superficial process of policy borrowing rather than a deep pedagogical transformation (Steiner-Khamsi, 2004). The gap between reforms on paper and pedagogical reality in classrooms has widened, and assessment practices have been confined to teaching to the test. This risks turning the essential function of schools into that of exam preparation centers.

3. Stakeholders in the Context of International Curriculum Transfer and Education Trade

The sale on the global market of curriculum packages produced by developed countries or international foundations (International Baccalaureate [IB], Cambridge, international STEM content, etc.) is the main manifestation of policy lending and international education trade (Verger et al., 2016).

This process gives rise to curriculum transfer and decontextualization (see Figure 1): attempts to graft content born in a particular socio-cultural geography onto entirely different social structures adversely affect the public character of education and its stakeholders.

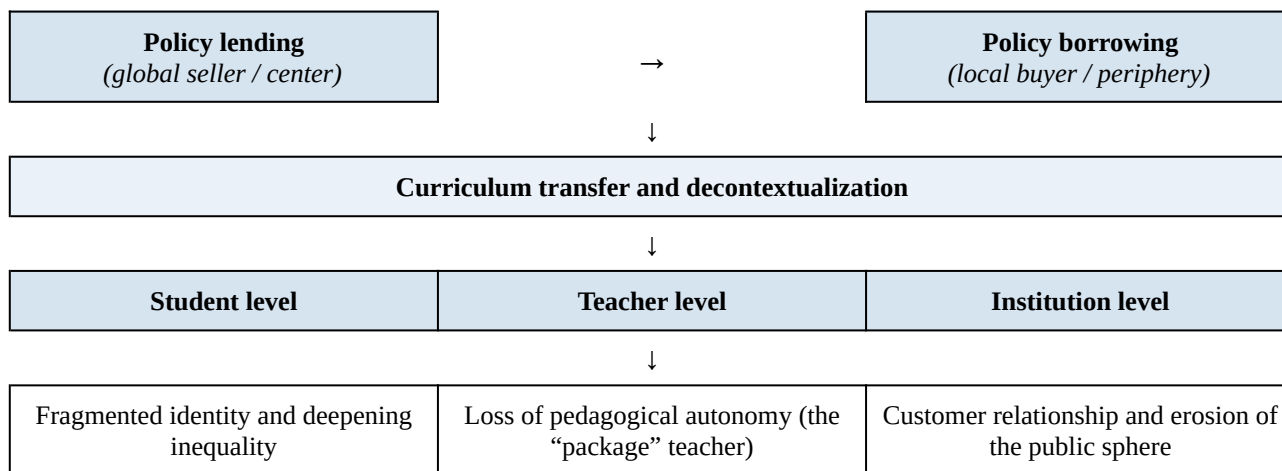
Students: A marked inequality is opening up between elite groups with access to high-fee international programs and the masses educated in standard public schools. Moreover, packaged programs detached from their local context create a risk of alienation from one’s own society and of cognitive and cultural fragmentation.

Teachers: The teacher is removed from the role of an architect who designs the learning process and offers moral and social guidance, and is reduced to a technician implementing imported packages. This narrows the distinctive pedagogical space that the TPACK (Technological Pedagogical Content Knowledge) approach, which advocates the integration of technology and content, grants to teachers.

Schools and parents: In a commercializing market, schools are turned into competitive enterprises focused on customer satisfaction, and parents into consumers of education (Ball, 2012).

Figure 1

International Education Trade and the Curriculum Market



4. Curriculum Transfer, Decontextualization, and the Problem of “Whose Knowledge?”

Efforts by countries with different socio-economic, cultural, and political structures to integrate other countries’ successful educational models (e.g., the Finnish or East Asian models) directly into their own systems give rise to the problem of curriculum transfer and decontextualization (contextual decoupling). Grafting a policy onto another country after detaching it from the context in which it was produced often leads to structural incompatibilities and resistance. In this context, Michael Apple’s (2000) classic question takes on central importance: “Whose standards? Whose knowledge?” Although global standards and international programs are presented as neutral and universal, they are in fact products of particular hegemonic cultures, economic elites, and Western-centered epistemologies. When the local curriculum is sacrificed to global standards, the country’s own history, cultural memory, and local artistic and philosophical heritage are excluded as “unnecessary” or as “an obstacle to international competitiveness.” This, in turn, triggers cultural alienation and the erosion of social memory.

5. Synthesis and Insights: The Curriculum of the Future in the “Learning Mind, Producing Machine” Paradigm

When compared with the imposition of global standards, the transformation driven by AI and neuroscience reveals a fundamental methodological contradiction, a paradox: in an age when AI takes over algorithmic, standard, and formal mental work, the continued attempts of education systems to shape the human mind through standardized global templates constitute a major anachronism. On this basis, the following synthesis-level conclusions are reached:

1. *Cognitive offloading versus epistemic autonomy:* Although AI tools or ready-made curriculum packages may boost performance in the short term, delegating the responsibility for thinking to machines or external packages weakens lasting learning in the long term. Instead of ready-made standard packages, students should be helped to develop epistemic autonomy and metacognitive awareness, questioning the sources of knowledge and asking whose knowledge it is.
2. *Reasoning versus the “appearance of reasoning”:* Standardized international tests (PISA, etc.) and the outputs of generative AI often present an “appearance of reasoning.” However, standardized programs that are detached from their context and insensitive to the biological architecture of learning (spaced repetition, retrieval practice, interleaved study) cannot ensure lasting and deep conceptual understanding.

3. *From fixed packages to flexible curricula sensitive to biological architecture:* The curricula of the future cannot be fixed content packages circulating as commercial objects in the global market. They must be adaptive, flexible structures that set core principles and outcomes but are shaped by the individual's cognitive profile and local context.
4. *Remaining human and the changing role of the teacher:* However much technological and commercial globalization grows, the teacher's guiding role in motivation, belonging, ethical responsibility, and critical thinking will remain irreplaceable.

6. Thought-Provoking Implications

In light of this synthesis, the following implications emerge regarding imposed global standards and curriculum transfer:

The imported reform paradox: When successful models “borrowed” from abroad are applied independently of the ecosystem of their original context (teacher quality, economic prosperity, a culture of social trust), they are rejected by the system, like a body rejecting a donor organ, or remain merely formal.

The colonizing dimension of standardization: By declaring the indigenous epistemologies of less developed countries “primitive” or “dysfunctional,” global standards can function as a new-generation instrument of intellectual exploitation built on knowledge (cognitive colonialism).

The necessity of a hybrid (glocal) model: The solution is neither an inward-looking education policy that rejects global realities altogether nor a blind imitation of the West. It is to build glocal curriculum development paradigms that pass globally relevant skills through the filter of local cultural richness and a refined national consciousness.

7. Conclusion

In a world where machines can think, or at least present the appearance of thinking, the aim of human education cannot be to store standardized fragments of information or to implement imported package programs. While imposed global standards and commercialized curriculum transfers try to force the human mind into molds, neurocognitive evidence and the possibilities offered by generative AI point to a flexible, original, and critical learning paradigm.

The future of the Turkish education system lies not in superficial policy-borrowing processes driven by ranking anxiety but in original policy designs that are sensitive to the cognitive architecture of the human mind, strengthen teacher autonomy and TPACK competence, and are grounded in ethical principles and the local context.

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