

A Critical Review of the Kumon Method: Global Applications and Local Adaptation for Achieving SDG 4 in Bangladesh

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Abstract:

The Kumon Method, a proprietary, self-paced educational strategy, has achieved global scale but remains a subject of critical academic debate. This paper provides a comprehensive, critical review of the method's core principles, global applications, and inherent limitations, with a specific focus on its potential for local adaptation to support the achievement of Sustainable Development Goal 4 (SDG 4: Quality Education) in Bangladesh. Utilizing a desk-based, qualitative research methodology, this study synthesizes evidence from over 50 current, Scopus-indexed scholarly sources, organizational reports, and a key Randomized Controlled Trial (RCT) conducted in Bangladesh. Findings indicate that while the Kumon Method is highly effective in developing foundational cognitive skills specifically computational speed and accuracy and non-cognitive traits like self-esteem and independent learning, its drill-based, standardized approach is criticized for potentially hindering higher-order critical thinking and creativity. Crucially, the paper analyzes the BRAC-Kumon pilot program, which demonstrated substantial short-term gains in math scores among disadvantaged Bangladeshi students. The discussion proposes a novel, hybrid adaptation model for Bangladesh that integrates the Kumon Method's mastery-based learning with context-specific pedagogical and technological solutions to overcome challenges such as high cost, limited instructor training, and the national over-reliance on rote memorization. This

adapted model, emphasizing digital integration and alignment with the national curriculum, offers a pathway to reinforce foundational learning and contribute meaningfully to Bangladesh's pursuit of inclusive and equitable quality education under SDG 4.

Keywords:

Kumon Method, self-directed learning, mastery-oriented education, Bangladesh education framework, SDG 4, quality education, supplementary education, randomized controlled trial.

1. Introduction

1.1. Background and Context

The global educational landscape is undergoing a profound transformation, driven by the dual pressures of rapidly evolving knowledge economies and persistent, systemic learning crises in developing nations. In response, educational frameworks are increasingly looking beyond conventional classroom models to incorporate supplementary, individualized learning tactics designed to remedy deficiencies in standard teaching, particularly in nurturing vital foundational skills like quantitative analysis and verbal competence [1]. Among these auxiliary methods, the Kumon Method stands out as a globally recognized, proprietary, and highly systematic approach. Invented by Toru Kumon in Japan in 1958, the method is rooted in the philosophy of self-learning and mastery, employing a structured series of worksheets to build solid foundational

proficiencies in mathematics and reading [2]. This technique encourages self-regulated advancement through incrementally difficult tasks, permitting pupils to move forward at a personal rhythm, irrespective of their age or school grade [3]. By 2025, the program had extended its reach to over 60 countries, serving millions of students, a testament to its successful global commercialization and perceived effectiveness [4]. However, this widespread application has also made it a subject of intense academic scrutiny, with critics arguing that its drill-based structure may inadvertently hinder the development of higher-order cognitive skills, such as critical thinking and creative reasoning [5].

1.2. The Imperative of SDG 4 in Bangladesh

The relevance of supplementary educational models, such as Kumon, is particularly pronounced in contexts facing acute educational challenges, such as Bangladesh. As a nation committed to achieving the targets of the United Nations Sustainable Development Goal 4 (SDG 4), which mandates "inclusive and equitable quality education and promote lifelong learning opportunities for all" by 2030, Bangladesh confronts a complex set of entrenched institutional obstacles [6]. While the country has made commendable strides in achieving near-universal elementary attendance and gender parity in enrollment, the quality of education remains a significant concern [7]. The system is characterized by a pervasive culture of rote memorization, substantial student dropouts (estimated at 16% at the primary level and up to one-third at the secondary level), and a persistent rural-urban disparity in educational resources and outcomes [8, 9].

These systemic issues are compounded by chronic underfunding, with national education expenditure hovering at a meager 1.53–1.69% of the Gross Domestic Product (GDP), significantly below the

international benchmark of 4–6% [10, 11]. Furthermore, the pedagogical environment is strained by overcrowded classrooms, with teacher-to-student ratios often exceeding 1:40, which severely limits the possibility of individualized attention and quality instruction [12]. Consequently, a significant portion of the student population fails to achieve the expected proficiency levels by the time they reach Grade 8, indicating a profound learning crisis that threatens the country's long-term human capital development and its commitment to the core tenets of SDG 4 [13]. The search for effective, scalable, and complementary interventions to address these foundational learning deficits is, therefore, a matter of national strategic importance.

1.3. Research Rationale and Objectives

In this critical context, the Kumon Method, particularly through the lens of the BRAC-Kumon collaboration a key pilot program in Bangladesh presents a compelling case study. This initiative, which tested the method's applicability in a low-resource environment, offers crucial empirical data on how a globally standardized model can potentially reinforce essential abilities and contribute to the national educational agenda [14]. However, the wholesale adoption of any foreign educational model without critical adaptation is fraught with risk. A rigorous, evidence-based critique is necessary to determine the genuine utility and the necessary modifications for the Kumon Method within the unique socioeconomic and pedagogical landscape of Bangladesh. This article provides a thorough, Scopus-indexed journal-quality critique of the Kumon Method by integrating evidence from modern scholarly studies, particularly those employing rigorous methodologies like Randomized Controlled Trials (RCTs), and systematically evaluating its suitability for local adaptation in Bangladesh. The specific objectives of this research are:

- To critically review the core principles, global applications, and academic effectiveness of the Kumon Method, synthesizing evidence from recent scholarly literature (2010–2025).
- To analyze the structural challenges and pedagogical context of the Bangladesh education system in relation to the targets of SDG 4.
- To evaluate the empirical findings of the Kumon Method's application in Bangladesh, particularly the BRAC-Kumon pilot and the Sawada et al. (2024) RCT, and its implications for cognitive and non-cognitive skill development.
- To propose a modified, context-sensitive adaptation model for the Kumon Method that addresses local constraints and maximizes its contribution to achieving SDG 4 in Bangladesh.

2. Methodology

2.1. Research Design and Approach

This research is a qualitative, desk-based study that employs a systematic literature review and synthesis to critically assess the role of the Kumon Method on a global scale and its applicability to the education

system of Bangladesh. The methodology is designed to ensure a high level of academic rigor and comprehensive coverage, aligning with the standards required for Scopus-indexed publication. The approach is primarily analytical, synthesizing existing empirical evidence to construct a novel, context-specific adaptation model.

2.2. Data Sources and Search Strategy

The study commenced with a comprehensive, systematic review of the current literature, which included scholarly journals, organizational reports, and case documentation. The search strategy prioritized Scopus-indexed and peer-reviewed publications to ensure the highest quality of evidence. Data sources included major academic databases (e.g., Scopus, Web of Science, JSTOR, ScienceDirect) and institutional repositories (e.g., World Bank, UNESCO, JICA, Kumon Institute of Education). To maintain currency and relevance, the search was strictly limited to publications between 2010 and 2025.

The primary keywords and search strings were systematically combined to cover the three main thematic areas of the research:

Thematic Area	Primary Keywords/Search Strings
Kumon Method	"Kumon Method effectiveness," "self-paced learning," "Kumon Method critical review," "Kumon Method longitudinal study," "Kumon method math learning outcomes"
Bangladesh Education	"challenges of supplementary education in Bangladesh," "shadow education Bangladesh," "Bangladesh education system challenges," "BRAC Kumon partnership"
SDG 4 and Policy	"SDG 4 quality education Bangladesh," "SDG 4 and supplementary education," "education policy Bangladesh"

Initial screening yielded over 150 documents. A final selection of approximately 50 major documents was chosen based on their methodological rigor (e.g., RCTs, meta-analyses, longitudinal studies), direct relevance to the study's objectives, and explicit focus on the developing world context.

2.3. Analytical Framework

The gathered data was subjected to a rigorous two-stage analytical framework:

2.3.1. Thematic Coding and Comparative Analysis

The first stage involved thematic coding to identify and categorize recurrent themes across the global literature on the Kumon Method. Key themes included: (a) self-directed learning benefits, (b) repetition disadvantages and the rote learning critique, (c) cost-effectiveness and accessibility, and (d) cultural fit and adaptation. In parallel, a comparative synthesis was conducted, contrasting the outcomes and obstacles of Kumon's implementation in various global contexts (e.g., Spain, Pakistan, Indonesia, Uganda) with the detailed findings from the key Randomized Controlled Trial (RCT) by Sawada et al. (2024) in Bangladesh. This comparison was crucial for isolating the specific contextual factors relevant to Bangladesh.

2.3.2. Contextual Alignment and Model Construction

The second stage focused on contextual alignment. The synthesized evidence was cross-referenced with official statistics and national education reports from authoritative bodies such as the Organization for Economic Co-operation and Development (OECD), the Bangladesh Bureau of Educational Information and Statistics (BANBEIS), and the Centre for Policy Dialogue (CPD). This ensured that the proposed adaptation model was grounded not only in global empirical evidence but also in the current

socio-economic and pedagogical realities of Bangladesh. The final output of this analysis is the proposed Hybrid Adaptation Model (HAM), detailed in the Discussion section.

2.4. Ethical Considerations and Limitations

As a desk-based review, this study involved no primary data collection with human subjects, thereby minimizing ethical risks. Ethical considerations were limited to ensuring transparent sourcing and

maintaining an unbiased representation of both the positive evidence and the negative critiques of the Kumon Method. The primary limitation of this research is its reliance on secondary sources, which are inherently susceptible to publication and reporting biases. This limitation was systematically mitigated by prioritizing evidence from high-impact, peer-reviewed, and methodologically robust publications, particularly those employing experimental or quasi-experimental designs.

3. Literature Review: The Kumon Method in Global Perspective

3.1. Core Principles of the Kumon Method and its Pedagogical Foundation

The Kumon Method, or *Kumon-shiki*, is more than a set of worksheets; it is a pedagogical philosophy rooted in the conviction that every student possesses an innate, untapped potential that can be unlocked through personalized, independent engagement [15]. Its genesis lies in the personal efforts of Toru Kumon, a Japanese high school math teacher who developed the materials in 1954 to help his son overcome difficulties with arithmetic [16]. This family remedy evolved into a global system that now covers both mathematics and reading, extending from pre-school to advanced levels [17].

The method is structured around three interconnected pedagogical pillars:

3.1.1. The "Just-Right" Level and Mastery-Oriented Learning

The core principle is the establishment of a "just-right" level of study. This is determined by an initial diagnostic test, which places the student at a point where they can achieve a high degree of success with minimal external assistance [18]. The student only advances to the next level of the curriculum after demonstrating total expertise typically a score of 100% on the current set of worksheets. This mastery-oriented education approach is designed to eliminate knowledge gaps, which are a major impediment to learning in conventional systems [19]. By ensuring complete competence at each step, the method aims to build a solid, cumulative foundation, thereby fostering confidence and reducing the discouragement often associated with academic struggle [20].

3.1.2. Self-Directed Learning and Independence

The Kumon Method fundamentally promotes self-directed learning. The worksheets are meticulously designed to be self-explanatory, requiring students to discover the solution methods independently rather than being taught explicitly by an instructor [21]. The role of the Kumon instructor is not to teach but to observe, guide, and motivate, fostering a sense of independence and self-reliance [22]. This emphasis on independent study over automatic procedures is intended to cultivate crucial non-cognitive skills, including perseverance, self-assurance, deductive reasoning, and intrinsic motivation, which are essential for lifelong learning (SDG 4.4) [23, 24].

3.1.3. Repetitive Practice and Automaticity

A defining feature of the method is the requirement for concise, daily practice and recurrent rehearsal [25]. Students typically complete worksheets six days a week, a routine designed to develop speed, accuracy, and, most importantly,

automaticity in foundational skills. The goal is to make basic calculations and reading comprehension so automatic that the student's cognitive load is freed up to tackle more complex problems at higher levels [26]. While this repetition is lauded for its effectiveness in skill consolidation, it is also the primary source of the method's most significant critique, as discussed in Section 3.3.

3.2. Evidence of Effectiveness and Global Applications

The global expansion of Kumon has been accompanied by a significant body of research, with findings that are often context-dependent but generally confirm its efficacy in certain domains.

3.2.1. Cognitive and Non-Cognitive Gains: Global Evidence

Empirical studies consistently highlight the method's strength in improving foundational mathematical and literacy skills. A large-scale study in Spain involving over 30,000 learners found a positive correlation between initial engagement with the Kumon Mathematics Program and enhanced arithmetical expertise [27]. Similarly, research in Pakistan and Indonesia has reported significant numerical enhancements and superior performance in introductory stages compared to traditional instruction [28, 29]. The effect is often most pronounced in the development of computational fluency and speed, as students become highly proficient at completing tasks under time constraints [30]. Beyond academic scores, studies have also documented the development of non-cognitive skills, such as increased perseverance, improved study habits, and a higher sense of self-efficacy, which are vital components of the SDG 4 mandate for holistic education [31, 32].

3.2.2. The Key Empirical Evidence: The Bangladesh RCT

The most relevant and methodologically rigorous evidence for this study comes from the Randomized Controlled Trial (RCT) conducted in Bangladesh by Sawada, Mahmud, Seki, and Kawarazaki

(2024) [33]. This study evaluated the effectiveness of the Kumon method on disadvantaged primary school students in a low-resource setting, providing a crucial empirical anchor for the current review. The RCT's key findings are summarized as follows:

Outcome Measure	Effect Size (SD)	Implication
Cognitive Abilities (Math Test Score)	+0.465 SD	Substantial short-term improvement in foundational math skills.
Time-Adjusted Test Score	+2.085 SD	Dramatic increase in efficiency, primarily driven by a significant reduction in problem-solving time.
Long-Term Cognitive Effect (20 Months)	+0.233–0.235 SD	Modest but positive long-term effect, particularly for younger students, suggesting durability of the intervention.
Non-Cognitive Abilities	Catch-up effects observed	Significant gains in self-esteem and non-cognitive traits for students who started with lower abilities.

It is concluded that the program's benefits exceeded its costs, positioning Kumon as a potentially cost-effective complementary intervention to the existing lecture-style, primary education curricula in Bangladesh [33]. This finding provides a strong empirical justification for the method's potential role in addressing the learning crisis and advancing SDG 4 in the country.

3.3. Critiques and Limitations of the Kumon Method

Despite the empirical support for its effectiveness in foundational skills, the Kumon Method faces significant academic and pedagogical critiques, which must be addressed for any successful adaptation in Bangladesh.

3.3.1. The Rote Learning and Critical Thinking Paradox

The most persistent criticism centers on the method's heavy reliance on repetition, which critics argue fosters rote learning and mechanical execution at the expense of conceptual understanding and higher-order critical thinking [34]. The standardized, formulaic nature of the

worksheets is alleged to discourage unstructured inquiry and creative problem-solving, converting learning into a routine that may induce tedium and stifle intellectual curiosity [35]. While Kumon advocates argue that automaticity frees up cognitive resources for complex thought, critics contend that the lack of open-ended, non-routine problems in the curriculum fails to develop the adaptive expertise required for 21st-century skills [36]. This is a particularly salient point for Bangladesh, where the education system is already criticized for an overemphasis on memorization.

3.3.2. Issues of Cost, Equity, and Accessibility

The commercial model of Kumon presents a major barrier to its equitable application (SDG 4.5). The monthly tuition fees, often ranging from \$100–\$150 per subject in developed countries, translate into a significant financial obstacle in low-income environments [37]. Studies show that continued participation and finer outcomes are typically concentrated in prosperous metropolitan areas, raising

serious concerns about the method's contribution to widening, rather than narrowing, the existing educational disparities [38]. The BRAC-Kumon pilot attempted to mitigate this by offering the program in complimentary venues, but the long-term scalability of a subsidized model remains a fiscal challenge.

3.3.3. Instructor Quality and Curriculum Rigidity

Further critiques involve the quality of instruction and the rigidity of the curriculum. The Kumon instructor's role is primarily managerial and motivational, requiring less pedagogical training than a traditional teacher [39]. However, the success of the self-learning model still hinges on the instructor's ability to provide timely, insightful guidance and maintain student motivation, a challenge in contexts with limited access to high-quality training

[40]. The standardized, global curriculum also exhibits a lack of flexibility, making direct synchronization with the diverse and often rapidly changing national curricula of developing countries a complex task [41].

4. Bangladesh's Education System and the Pursuit of SDG 4

4.1. Structural Challenges and Systemic Deficiencies

The education system in Bangladesh, while achieving notable success in expanding access, is fundamentally constrained by deep-seated structural and systemic deficiencies that directly impede the realization of SDG 4's quality and equity targets. The core challenge lies in the stark disconnect between the goal of inclusive, quality education and the reality of a resource-starved, pedagogy-stagnated system [42].

Challenge	Description and Impact on SDG 4	Supporting Data/Source
Low Public Investment	Education expenditure is chronically low, hovering at 1.53–1.69% of GDP. This underfunding is significantly below the UNESCO-recommended 4–6% and leads to severe resource disparities, poor infrastructure, and low teacher salaries [10, 11].	World Bank, 2023; CPD, 2025
High Dropout Rates	Substantial student dropouts, estimated at 16% at the primary level and up to one-third at the secondary level, directly undermine the SDG 4 target of ensuring all children complete free, equitable, and quality primary and secondary education [8, 9].	WENR, 2019; UNICEF, 2020
Poor Learning Outcomes	A pervasive culture of rote memorization and a lack of focus on conceptual understanding mean a quarter to a half of students fail to reach expected proficiency levels by Grade 8, indicating a profound failure to deliver "quality education" (SDG 4.1) [13, 43].	Hossain et al., 2017; CAMPE, 2023
Pedagogical Deficiencies	Overcrowded classrooms (teacher-to-student ratios often exceed 1:40) and a lack of	CAMPE, 2023; Akhtar et al., 2025

	continuous professional development for teachers constrain the shift towards practical, hands-on, and individualized learning [12, 44].	
Shadow Education	The rise of fee-based private supplementary tutoring (shadow education) is a market response to the failing public system. This creates a financial burden on families, exacerbates the rural-urban gap, and raises serious equity concerns (SDG 4.5) [45, 46].	Mahmud, 2021; Bray & Lykins, 2012

4.2.TheRoleofSupplementary Education and the BRAC-Kumon Pilot

The proliferation of supplementary education in Bangladesh, often termed "shadow education," highlights the public's demand for better learning outcomes that the formal system fails to provide [47]. The Kumon Method, introduced through the BRAC-Kumon partnership in 2014, represents a unique, rigorously tested intervention within this supplementary landscape [14]. The BRAC initiative, which piloted the method in complimentary venues, served as a crucial field experiment to test the efficacy of a global, mastery-based model in a low-income context.

The subsequent Randomized Controlled Trial (RCT) by Sawada et al. (2024), which focused on disadvantaged primary school students, provided the first robust empirical evidence of Kumon's potential in Bangladesh. The finding of a 0.465 SD gain in math scores and a 2.085 SD gain in time-adjusted scores is highly significant. In a system plagued by foundational learning deficits, this evidence suggests that a structured, self-paced intervention can effectively and efficiently address the core problem of low academic proficiency [33]. The RCT's conclusion that the program is cost-effective further strengthens the case for its strategic deployment as a complementary tool for public education reform [33]. The success of this pilot validates the potential for the Kumon Method to serve as a powerful,

data-driven intervention for addressing foundational skill deficits, a necessary prerequisite for achieving the higher-level goals of SDG 4.

5.Discussion: Critical Analysis and Local Adaptation for SDG 4 in Bangladesh

5.1. The Strategic Alignment: Kumon as a Foundational Intervention

The Kumon Method offers a powerful, strategic fit for addressing the most critical flaw in the Bangladeshi education system: the widespread prevalence of foundational knowledge gaps. The system's current culture of rote memorization, driven by large class sizes and a high-stakes examination environment, pushes students forward without ensuring mastery, leading to cumulative learning deficits [43]. Kumon's core philosophy "self-learning at the right level" and mastery before advancement is a direct, evidence-based countermeasure to this systemic failure [18].

The empirical success of the BRAC-Kumon RCT in improving computational fluency and speed (as reflected in the 2.085 SD time-adjusted score) is particularly relevant. In a country where basic numeracy and literacy are often the bottlenecks to higher-level learning, this automaticity frees up the student's cognitive capacity to tackle more complex tasks in the national curriculum [26]. Furthermore, the method's documented success in cultivating non-cognitive skills

such as self-esteem, perseverance, and independent study habits directly supports the broader, holistic goals of SDG 4, which emphasizes lifelong learning and inclusive education [24, 32].

5.2. The Critical Challenge: Mitigating the Rote Learning Paradox

Despite the strong empirical evidence for foundational skill improvement, the Kumon Method's standardized, drill-based nature presents a critical challenge in the Bangladeshi context: the risk of reinforcing the very rote learning culture that the country is trying to overcome [34, 43]. The wholesale adoption of Kumon, without adaptation, could merely substitute one form of mechanical execution (school-based memorization) with another (worksheet-based repetition), potentially stifling the development of critical thinking and creative problem-solving skills essential for a modern workforce and the ultimate goal of quality education (SDG 4.1) [36].

This paradox necessitates a nuanced approach that leverages Kumon's strengths while mandating a pedagogical overlay focused on higher-order thinking (HOT). The adaptation must be designed to ensure that the automaticity gained through the worksheets is a means to an end (conceptual understanding and problem-solving), not the end itself.

5.3. The Hybrid Adaptation Model (HAM): A Pathway to SDG 4

To overcome the dual challenges of cost/equity and pedagogical rigidity, this paper proposes a Hybrid Adaptation Model (HAM) for the strategic deployment of the Kumon Method in Bangladesh. This model is built on three interconnected pillars designed to maximize efficacy and align with the principles of SDG 4.

5.3.1. Pillar 1: Affordability and Equity (SDG 4.5)

The primary barrier to scaling Kumon is its commercial cost, which excludes the vast majority of the population (SDG 4.5). The HAM proposes a multi-pronged financial strategy:

Tiered Subsidy Structure: Formalizing a tiered fee structure, as partially demonstrated by the BRAC model, where profits from high-income, urban centers are legally mandated to subsidize low-cost or complimentary access in rural and disadvantaged areas. This creates a sustainable, self-funding mechanism for equity [38].

Digital and Print-on-Demand: Reducing the reliance on expensive, imported, pre-printed worksheets by transitioning to a low-cost, digital, or print-on-demand model. This drastically cuts operational costs and increases resource efficiency (SDG 4.c) [37].

Integration with Public

Schools: Exploring a Public-Private Partnership (PPP) model where the Kumon worksheets are integrated as a supplementary, after-school component within existing public-school infrastructure, leveraging existing buildings and reducing the need for new, expensive centers.

5.3.2. Pillar 2: Pedagogical Contextualization (SDG 4.1)

To address the rote learning critique and align with the national curriculum's shift towards conceptual learning, the HAM introduces a mandatory "Kumon-Plus" component:

The "Kumon-Plus" Curriculum: This component would be a mandatory, non-worksheet-based session focused on applying the foundational skills learned in Kumon to complex, non-routine problems, conceptual discussions, and collaborative

group work. For example, a student who has mastered multiplication through Kumon would then use the "Plus" session to solve a real-world, multi-step problem related to local market economics or resource allocation, thereby fostering critical thinking (SDG 4.1) [36].

Curriculum Synchronization: The "Kumon-Plus" content must be explicitly synchronized with the national curriculum, ensuring that the supplementary effort directly reinforces and accelerates the student's progress in their formal schooling.

5.3.3. Pillar 3: Digital Integration and Instructor Quality (SDG 4.c)

The success of any educational intervention hinges on the quality of its instructors (SDG 4.c). In Bangladesh, where teacher training is a persistent challenge, the Ham proposes leveraging technology to standardize and scale quality control:

Online, Standardized Instructor

Training: Utilizing low-cost digital platforms for continuous, standardized training and certification of local instructors. This addresses the quality concern by ensuring all instructors are proficient in both the Kumon methodology and the "Kumon-Plus" pedagogical approach [40].

Remote Monitoring and Data Feedback:

Implementing a simple, remote monitoring system to track student progress and instructor adherence to the methodology. This data-driven feedback loop, similar to the rigorous data collection in the RCT, allows for continuous quality assurance and targeted intervention, overcoming the challenge of supervising a large, decentralized network of centers [33].

5.4. Policy Implications for Educational Reform

The findings of this review and the proposed Hybrid Adaptation Model offer

clear policy implications for the Bangladeshi government and its development partners:

Validation of Foundational

Interventions: The empirical success of the BRAC-Kumon RCT should be recognized as validation that targeted, mastery-based interventions are highly effective in addressing the learning crisis. Policy should prioritize similar programs that focus on foundational skills as a prerequisite for higher-level education reform.

Formalizing PPPs for Scale: The government should move to formalize Public-Private Partnerships (PPPs) with organizations like BRAC-Kumon, providing regulatory support and infrastructure access in exchange for a commitment to the HAM's equity and pedagogical standards.

Shifting from Input to Outcome

Metrics: The focus of educational policy must shift from mere enrollment numbers (input) to demonstrable learning gains (outcome), utilizing the rigorous, time-adjusted metrics employed in the Sawada et al. (2024) study to measure the true impact of all supplementary and formal education initiatives.

6. Conclusion and Future Research

6.1. Conclusion

This critical review confirms the strategic utility of the Kumon Method as a powerful foundational intervention in the context of Bangladesh's learning crisis. The empirical evidence from the BRAC-Kumon pilot, particularly the rigorous RCT by Sawada et al. (2024), demonstrates a significant, cost-effective capacity to improve foundational cognitive skills and cultivate essential non-cognitive traits among disadvantaged students. However, the review also highlights the critical challenges of cost, equity, and the risk of reinforcing a culture of rote learning. The

proposed Hybrid Adaptation Model (HAM) built on the pillars of tiered affordability, pedagogical contextualization ("Kumon-Plus"), and digital integration offers a strategic, context-sensitive pathway to leverage Kumon's strengths while mitigating its weaknesses. By adopting this adapted approach, Bangladesh can effectively utilize a global educational tool to address its systemic learning crisis, reinforce foundational education, and make substantial, equitable progress toward the inclusive and quality education targets of SDG 4.

6.2.Recommendations for Future Research

To fully validate the proposed Hybrid Adaptation Model and inform future policy, the following research avenues are recommended:

Long-Term Longitudinal Studies: A multi-year follow-up on the BRAC-Kumon participants is essential to assess the persistence of cognitive and non-cognitive gains beyond the initial 20-month period, specifically tracking their performance in secondary school and national examinations.

Comparative Cost-Effectiveness

Analysis: A detailed, rigorous comparative analysis of the Hybrid Adaptation Model (HAM) against other proven, low-cost, high-impact interventions (e.g., Teaching at the Right Level - TaRL) is required to determine the optimal resource allocation for foundational skills in the Bangladeshi context.

Qualitative Impact on

Critical Thinking: Qualitative and mixed-methods studies are necessary to assess whether the proposed "Kumon-Plus" curriculum successfully mitigates the risk of rote learning and genuinely fosters higher-order critical thinking skills among Bangladeshi students, thereby ensuring

alignment with the holistic quality goals of SDG 4.

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