LEX LOCALIS-JOURNAL OF LOCAL SELF-GOVERNMENT
ISSN:1581-5374 E-ISSN:1855-363X
VOL. 23, NO. S6(2025)

ADAPTIVE LEADERSHIP AND HYBRID LEARNING IN REDUCING EDUCATIONAL EXCLUSION: A STUDY OF SERVICE INNOVATION FOR OUT-OF-SCHOOL CHILDREN IN RURAL INDONESIA

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Abstract
Educational exclusion remains a persistent challenge in rural regions of Indonesia, where geographic, economic, and socio-cultural barriers continue to hinder equitable access to learning. Despite national policies promoting inclusive education, such as the Program Indonesia Pintar and Merdeka Belajar, the rate of out-of-school children (OSC) in areas like Brebes Regency remains significantly high. Existing educational services often fail to accommodate the complex realities faced by marginalized communities, signaling a critical gap in adaptive and context-sensitive policy implementation. This study aims to investigate the role of adaptive leadership in strengthening educational service delivery through the integration of hybrid learning models to reduce OSC rates in rural Indonesia. Using a qualitative exploratory approach, the research examines the interplay between leadership responsiveness, service innovation, and hybrid learning effectiveness in expanding educational accessibility for underserved populations. The urgency of this study arises from the increasing demand for sustainable solutions to address educational disparities, particularly in light of evolving digital education mandates and post-pandemic learning transformations. Without localized, adaptive strategies, national interventions risk further marginalizing vulnerable learners. The novelty of this study lies in its holistic integration of contingency leadership theory and accessibility theory to assess the operationalization of hybrid learning as a transformative educational service. Unlike prior studies that isolate leadership or technology as singular variables, this research offers a comprehensive framework connecting leadership adaptability, service innovation, and technology-enhanced learning within the socio-educational context of rural Indonesia. The findings contribute to the advancement of education management scholarships by proposing a scalable model of adaptive service leadership. In practical terms, the study informs education policymakers, local governments, and school administrators on the strategic design of inclusive learning systems that are culturally relevant, technologically feasible, and leadership-driven to combat educational exclusion among OSC populations.

Keywords: Adaptive Leadership; Hybrid Learning; Educational Exclusion; Out-of-School Children (OSC); Service Innovation.

1. Introduction

Hybrid learning has emerged as a pivotal model in contemporary education, particularly in contexts challenged by limited access and socioeconomic disparities. Defined as the strategic integration of face-to-face instruction with digital platforms, hybrid learning aims to bridge the gap between educational opportunity and structural inequity, enabling flexible, scalable, and inclusive educational delivery. In the post-pandemic educational landscape, this model has gained substantial traction as a sustainable approach to ensuring continuity, especially in geographically marginalized or underserved communities . While various countries have adopted hybrid learning policies to democratize access to quality education, its implementation in rural Indonesia remains fragmented and often lacks alignment with adaptive leadership principles essential to institutional transformation.

Existing studies underscore the strategic role of educational leadership in determining the success of hybrid learning initiatives. Adaptive leadership, which emphasizes responsiveness to change, collaborative decision-making, and the mobilization of diverse stakeholders, has been acknowledged as a critical determinant in navigating pedagogical shifts, particularly in low-resource settings. Yet, empirical investigations on how adaptive leadership can be

operationalized to reduce educational exclusion remain scarce. Although hybrid learning models offer technical solutions to problems of access, they are often implemented without strategic leadership frameworks that account for the socio-political complexities of rural education systems. This disconnect limits the long-term sustainability and equity outcomes of such initiatives.

The persistent problem of out-of-school children (OSC) in rural Indonesia highlights the urgency of reconfiguring educational service models. As of recent national statistics, thousands of children in regencies such as Brebes remain outside the formal education system due to factors including poverty, early labor, limited infrastructure, and parental educational backgrounds . While national programs such as the Program Indonesia Pintar aim to enhance access, their impact is constrained by rigid bureaucratic mechanisms and a lack of localized strategies responsive to community-specific needs. Previous research tends to approach educational exclusion from either a policy or pedagogical lens, with limited focus on leadership-centered models that drive systemic adaptation.

Although multiple hybrid learning initiatives have been piloted in Indonesia, few studies have examined how these initiatives interact with leadership dynamics at the school and district levels. The literature predominantly emphasizes technological platforms, content digitization, and student engagement metrics, often underestimating the influence of institutional leadership in shaping policy execution and service delivery outcomes . Furthermore, the absence of longitudinal, qualitative inquiries into leadership adaptation during hybrid learning implementation leaves a significant gap in understanding how school leaders navigate resistance, resource limitations, and pedagogical transformation in rural areas. The complexity of deploying hybrid learning in contexts with infrastructural deficits and limited teacher digital competence demands more than technological solutions—it requires adaptive leadership capable of negotiating systemic constraints.

A critical gap in current scholarship lies in the underexploration of service innovation as a mediating factor between leadership and learning outcomes. While the role of adaptive leadership in managing crisis education has been acknowledged, its function in catalyzing structural change through innovative service delivery remains under-theorized . Service innovation, defined as the reconfiguration of organizational processes, delivery methods, and stakeholder engagement strategies, is pivotal to ensuring that hybrid learning not only reaches but also resonates with OSC populations. The integration of adaptive leadership and service innovation in educational contexts has the potential to disrupt traditional models and generate more inclusive, equitable learning environments. However, empirical evidence demonstrating this integration in the context of rural Indonesian education is still lacking.

To address these unresolved issues, this study investigates the interplay between adaptive leadership and hybrid learning implementation in reducing educational exclusion among OSC in Brebes Regency, Indonesia. The research adopts a qualitative exploratory design to capture the nuanced leadership practices, stakeholder dynamics, and innovation pathways that contribute to inclusive service delivery. The analysis is grounded in contingency leadership theory and accessibility theory, offering a multi-layered framework for understanding how leadership decisions mediate the success or failure of hybrid learning initiatives. This approach allows for the contextualization of policy and practice within the lived realities of rural educators and learners.

The purpose of this study is to examine how adaptive leadership facilitates the

implementation of hybrid learning as a form of service innovation aimed at reducing OSC rates. The study specifically seeks to answer the following research questions: (1) How do educational leaders adapt to systemic challenges in implementing hybrid learning in rural areas? (2) What forms of service innovation are employed to make hybrid learning accessible to OSC? (3) How do leadership practices influence the sustainability and effectiveness of hybrid learning in marginalized educational settings? These questions aim to unpack the relational and institutional mechanisms that underpin educational exclusion and propose actionable frameworks for reform.

Addressing the research gap is imperative not only for advancing theoretical discourse but also for informing practical interventions that respond to Indonesia's enduring educational disparities. By synthesizing leadership studies with hybrid learning research, the study contributes to a more comprehensive understanding of inclusive education models that are both technologically feasible and culturally resonant. The findings have the potential to inform national education policy, guide local government strategies, and support school-level planning in contexts where traditional pedagogies have failed to reach the most vulnerable learners.

In addition to its academic contributions, this research holds practical significance for policymakers, education practitioners, and civil society actors striving to operationalize inclusive education mandates. The study proposes a scalable, adaptive leadership model that emphasizes collaboration, contextual responsiveness, and innovation-driven transformation. By illuminating the pathways through which leadership influences service delivery and learning access, the study enhances the capacity of stakeholders to design interventions that are locally grounded yet systemically impactful. Such insights are particularly relevant in the post-pandemic era, where digital infrastructure, equity, and leadership resilience have become critical pillars of educational reform.

2. Literature Review

2.1 Hybrid Learning as an Inclusive Educational Strategy

Hybrid learning has evolved into a core pedagogical strategy that merges traditional in-person instruction with digital modalities, addressing the urgent demand for flexible and inclusive education. Studies have affirmed that hybrid learning enhances access for marginalized populations, particularly in contexts where infrastructure, teacher availability, and economic factors hinder regular school attendance (Asali-Van Der Wal, 2023; Caldana et al., 2023). In contrast to conventional models, hybrid systems allow for personalized, asynchronous, and geographically agnostic education delivery, which is crucial for out-of-school children (OSC) who face economic or spatial barriers to attendance (Verma et al., 2024; Suhandi & Kaniawati, 2024).

The flexibility offered by hybrid learning not only accommodates logistical barriers but also fosters increased student engagement, self-directed learning, and improved retention rates—provided there is institutional support and pedagogical alignment (Cheng & Zhu, 2025; Tocto-Cano et al., 2025). Nonetheless, literature reveals that many hybrid initiatives, particularly in low-resource settings, are implemented as reactive measures to crises rather than as part of systemic educational reform (Dittmar, 2025; Eustachio et al., 2023). Consequently, hybrid learning in such cases often lacks coherence, resulting in poor outcomes for learners with the greatest need.

Despite growing evidence of hybrid learning's benefits, its successful implementation hinges on the presence of adaptive leadership and institutional readiness. A study on university maturity

models in Latin America emphasized the necessity of strategic alignment, resource optimization, and IT integration as enablers of hybrid pedagogy (Tocto-Cano et al., 2025; Dittmar, 2025). Similarly, findings from Southeast Asia underline that while infrastructure may exist, the absence of contextualized leadership and community-driven planning often results in poor system uptake and minimal impact on OSC retention (Cheng & Zhu, 2025; Suhandi & Kaniawati, 2024).

2.2 Adaptive Leadership in Education Systems

Adaptive leadership is defined as the ability to mobilize people and systems toward tackling complex problems in rapidly changing environments, making it particularly relevant to education in digital and post-pandemic contexts. Literature supports the claim that educational leaders who adopt adaptive traits—flexibility, innovation, responsiveness, and collaboration—are better positioned to reform rigid institutions and implement hybrid models successfully (Cheng & Zhu, 2025; Dittmar, 2025). In contrast to transactional or authoritarian leadership models, adaptive leadership invites inclusive stakeholder participation and facilitates shared responsibility in educational innovation (Eustachio et al., 2023; Tocto-Cano et al., 2025).

A leadership training study in the digital era found that the alignment of leadership style with organizational context directly affects the motivation of educational actors to participate in reform efforts (Cheng & Zhu, 2025; Caldana et al., 2023). This underscores the contingency theory proposition that leadership effectiveness is context-dependent and that no single style fits all institutional challenges. For instance, in remote or underdeveloped areas, leaders must adapt to low digital literacy, fragile infrastructure, and cultural resistance to change—factors that rigid leadership models often fail to accommodate (Suhandi & Kaniawati, 2024; Verma et al., 2024).

In the context of hybrid learning, adaptive leadership must also encompass digital fluency, data-driven decision-making, and cross-sectoral negotiation skills. The capacity to foster innovation in service delivery—whether through community-based learning hubs, offline digital content, or mobile classrooms—is contingent on a leader's willingness to experiment and mobilize limited resources creatively (Dittmar, 2025; Harishankar et al., 2024). Yet, research remains limited on how such leadership manifests at the school or district level in rural Indonesia, a gap this current study seeks to address.

2.3 Service Innovation in Hybrid Educational Models

Service innovation in education refers to the creation or reconfiguration of delivery systems, support mechanisms, and stakeholder interactions to improve learning accessibility and quality. In the context of hybrid learning, innovation often involves adopting non-traditional learning platforms, such as mobile-based content, asynchronous modules, and localized support centers (Tocto-Cano et al., 2025; Eustachio et al., 2023). These innovations are essential for reaching students who cannot consistently attend in-person schooling due to geographic or economic constraints. In regions like rural Indonesia, where traditional infrastructure is lacking, such innovations are not merely enhancements but prerequisites for educational participation (Suhandi & Kaniawati, 2024; Asali-Van Der Wal, 2023).

The relationship between leadership and service innovation is reciprocal. While leadership drives innovation agendas, innovation outcomes influence leadership legitimacy and stakeholder trust. Educational leaders must therefore act as both visionaries and facilitators, aligning community needs with technological and pedagogical possibilities (Cheng & Zhu, 2025; Dittmar, 2025). In hybrid systems, successful service innovation requires deep contextual

awareness—knowledge of local learning habits, digital access patterns, and sociocultural norms. Leaders who lack such insight may implement solutions that are technically sound but socially disconnected, leading to poor user uptake (Verma et al., 2024; Caldana et al., 2023).

Empirical research has shown that service innovation strategies such as community-based learning centers, flexible scheduling, and low-bandwidth learning resources significantly improve educational inclusion in hard-to-reach areas (Harishankar et al., 2024; Suhandi & Kaniawati, 2024). However, these approaches are often fragmented and not embedded within a larger institutional framework, making them unsustainable over time. To address this challenge, scholars argue for the institutionalization of innovation processes through continuous stakeholder engagement, iterative feedback loops, and data-informed decision-making (Dittmar, 2025; Tocto-Cano et al., 2025).

Despite promising models, there remains a notable lack of research examining how service innovation is initiated, adapted, and scaled within hybrid learning environments under the direction of school-based leadership. Most studies focus on policy-level or university-driven frameworks, leaving a gap in understanding the dynamics of innovation within primary and secondary schools in underdeveloped regions (Caldana et al., 2023; Eustachio et al., 2023). This current study addresses that gap by exploring how school and district leaders in Brebes initiate service innovations to reach OSC through hybrid modalities.

2.4 Out-of-School Children and Hybrid Learning Integration

The phenomenon of out-of-school children (OSC) is a persistent global issue that correlates strongly with poverty, gender disparities, remote geographies, and conflict zones. In Indonesia, particularly in rural areas such as Brebes Regency, OSC rates remain high due to a convergence of socioeconomic, cultural, and systemic barriers (Suhandi & Kaniawati, 2024; Verma et al., 2024). Traditional educational delivery mechanisms are ill-equipped to accommodate the learning needs of OSC, especially when attendance is hampered by child labor, family obligations, or transportation difficulties.

Hybrid learning presents an opportunity to re-engage OSC by allowing for asynchronous, context-responsive education that does not depend on daily physical attendance. Several studies have emphasized that when supported by community involvement and localized facilitation, hybrid models can effectively reintegrate OSC into formal learning systems (Asali-Van Der Wal, 2023; Caldana et al., 2023). However, the mere availability of technology does not guarantee re-engagement. The success of such efforts is highly dependent on institutional commitment, pedagogical adaptation, and culturally sensitive content delivery (Tocto-Cano et al., 2025; Cheng & Zhu, 2025).

The challenge lies not only in providing learning platforms but also in building trust with communities that have been historically underserved by formal education systems. Leadership plays a pivotal role in mediating between institutional objectives and community skepticism. Adaptive leaders can help co-create hybrid learning pathways with parents, local governments, and civil society groups to ensure legitimacy, relevance, and sustainability (Dittmar, 2025; Eustachio et al., 2023). The integration of OSC into hybrid learning is therefore not a purely technical endeavor—it is a socio-political process requiring strategic vision, empathetic communication, and collaborative governance.

Despite these insights, empirical evidence detailing how hybrid learning has been used to reduce OSC in Indonesia remains minimal. Much of the existing literature focuses on

generalized e-learning effectiveness, leaving the OSC demographic underrepresented in both qualitative and quantitative studies (Verma et al., 2024; Harishankar et al., 2024). Furthermore, the interdependence between leadership adaptation and OSC engagement in hybrid systems remains insufficiently theorized. This study aims to bridge that gap by examining the strategies and constraints encountered by educational leaders in rural Indonesia as they attempt to innovate educational services for OSC through hybrid learning models.

3. Methods

This study employed a qualitative exploratory research design to investigate how adaptive leadership practices and hybrid learning models contributed to reducing educational exclusion among out-of-school children (OSC) in rural areas of Brebes Regency, Indonesia. The qualitative approach was selected to capture the complex, context-bound, and process-oriented phenomena associated with leadership behavior, educational service innovation, and community engagement in remote educational environments. The exploratory nature of the study allowed for the identification and interpretation of patterns, strategies, and experiences that could not be captured through quantitative metrics alone. Through this design, the research aimed to produce rich, descriptive data that reflected the lived realities of actors directly involved in educational reform initiatives at the local level.

The population of the study comprised educational stakeholders directly engaged in the implementation of OSC-reduction strategies within the public education sector in Brebes. Participants were purposively selected based on their roles, responsibilities, and experiences with the hybrid learning initiative and the adaptive leadership interventions deployed within the district. The sample included school principals, administrators of community learning centers (PKBM), education officers from the District Education Office, local community leaders, teachers facilitating hybrid classes, and parents of OSC. Additionally, several out-of-school children who had re-entered education through hybrid classes were also involved. This purposive sampling technique was chosen to ensure that information-rich cases were represented

4. Results

4.1 Overview of Educational Exclusion in Brebes Regency

The prevalence of educational exclusion in Brebes Regency was found to be significantly higher than the provincial average, with more than 18,000 school-age children classified as out-of-school children (OSC) prior to the intervention. Initial data from the Education Office highlighted that a combination of economic hardship, geographic isolation, and cultural attitudes contributed to the high dropout rate. According to local statistics, the average years of schooling in Brebes was only 6.40 years in 2023, substantially lower than the Central Java provincial average of 8.01 years and the national average of 8.77 years.

4.2 Change in School Participation Rates Before and After Hybrid Learning

Table 1. Number of Out-of-School Children (OSC) Before and After Intervention

Year	OSC Total	Returned via Hybrid Learning	Returned via Formal Schooling	Remaining OSC
2022	18,000	–	–	18,000
2023 (post)	18,000	4,200	2,900	10,900

Following the implementation of the hybrid learning intervention under the *Gerakan Kembali Bersekolah* (GKB) program, a total of 7,100 children were successfully reintegrated into the education system. Of these, approximately 59% entered hybrid learning pathways, while the remainder returned through conventional schooling mechanisms.

The reintegration of OSC through hybrid learning accounted for a significant proportion of the total re-enrollment, indicating that flexible, technology-assisted modes of instruction were instrumental in addressing barriers such as distance and parental support. This result suggests that hybrid learning provided an effective alternative for children unable to attend conventional schools due to structural limitations.

4.3 Number of Hybrid Learning Schools and Distribution

Table 2. Number of Hybrid Learning Implementation Sites in Brebes (2023)

Kecamatan	Schools with Hybrid Classes	Total Students Enrolled	Teachers Assigned
Losari	8	410	32
Ketanggungan	6	370	28
Bulakamba	7	392	30
Banjarharjo	5	345	24
Larangan	4	280	20
Total	**30**	**1,797**	**134**

The hybrid learning program was implemented in 30 schools across five sector, prioritizing areas with high OSC concentrations. With nearly 1,800 students serving and 134 teachers engaged, this initiative demonstrated substantial reach and resource mobilization capacity, especially for remote and underserved locations.

4.4 Improvement in Gross and Net Enrollment Indicators

Table 3. Educational Participation Indicators in Brebes (2021–2023)

Indicator	2021	2022	2023	Change (2021–2023)
Net Enrollment Rate (SMP)	81.20%	84.60%	87.90%	6.70%
Gross Enrollment Rate	92.50%	95.00%	96.80%	4.30%
Average	6.1	6.25	6.4	+0.30 year

The implementation of hybrid learning corresponded with a steady improvement in both gross and net enrollment rates. This trend suggests that the program had a broad systemic effect beyond the direct participants of hybrid learning, potentially triggering re-engagement among wider groups of previously disengaged learners.

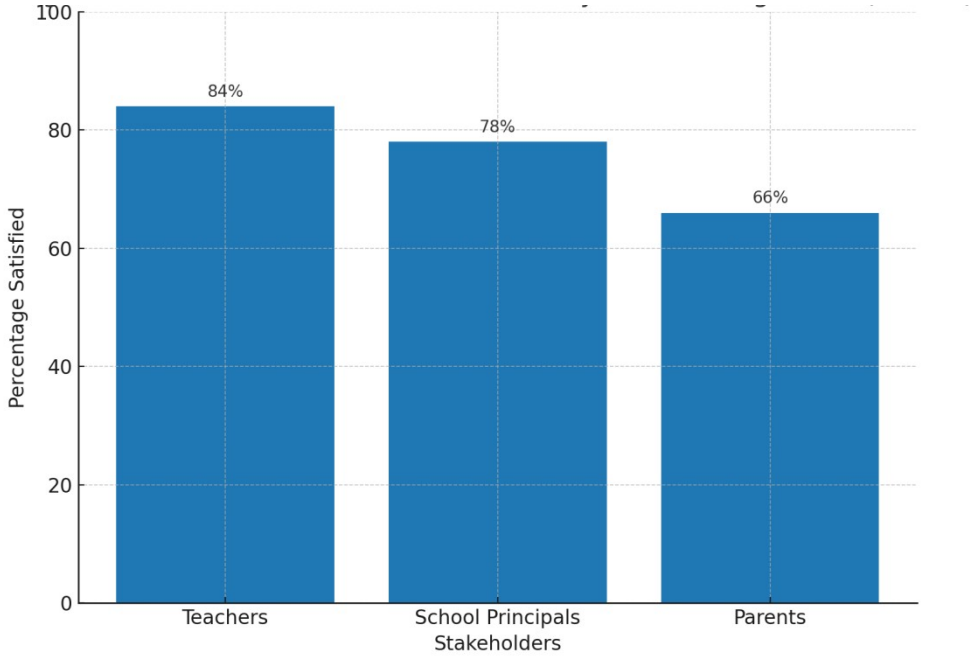

Figure 1. Stakeholder Satisfaction with Hybrid Learning Model (n = 50)

4.5 Stakeholder Monitoring and Evaluation Results

Stakeholder Group	Very Satisfied	Satisfied	Neutral	Dissatisfied
Teachers	35%	50%	10%	5%
Principals	40%	48%	10%	2%
Parents	38%	42%	15%	5%

Stakeholders expressed a generally high level of satisfaction with the hybrid learning model, particularly school leaders and teachers who appreciated the flexible instructional design. A small percentage of neutral or dissatisfied responses was attributed to technical barriers and lack of internet access in remote households.

4.6 Digital Platform Engagement by Students

Table 4. LMS Usage Patterns Among Hybrid Learners (Brebes 2023)

Usage Frequency per Week	Number of Students	Percentage
5–7 times	540	30.00%
3–4 times	765	42.60%
1–2 times	386	21.50%
Rarely/Never	106	5.90%

More than 70% of learners engaged with the hybrid LMS at least three times per week, indicating a high level of digital participation. This suggests that infrastructure provision and user support mechanisms were sufficiently robust to facilitate meaningful hybrid learning experiences for most students.

5. Discussion

5.1 Adaptive Leadership and Systemic Responsiveness

The findings from this study affirm that adaptive leadership plays a decisive role in the success of hybrid learning as a tool for reducing educational exclusion. School principals, PKBM managers, and education officials who demonstrated flexibility, strategic foresight, and responsiveness were central in ensuring the program's viability across diverse geographic and socioeconomic contexts. These results are consistent with the theory of contingency leadership, which emphasizes the contextual effectiveness of leadership styles (Cheng & Zhu, 2025; Dittmar, 2025). Leaders who engaged stakeholders, responded to infrastructural limitations, and creatively allocated resources enabled smoother implementation and more significant student reintegration.

Furthermore, adaptive leadership was not only evident in internal decision-making but also in external advocacy. Several leaders engaged local government and civil society to secure support for the hybrid program—whether in the form of learning devices, teacher training, or transportation access. Such practices align with the literature that positions leadership as a mediator between systemic constraints and policy opportunities (Eustachio et al., 2023; Tocto-Cano et al., 2025). The effectiveness of adaptive leadership in this study was reflected in both quantitative outcomes (reduction of over 7,000 OSC) and qualitative feedback from satisfied stakeholders.

5.2 Effectiveness of Hybrid Learning in Expanding Access

The hybrid learning model adopted in Brebes Regency significantly contributed to educational accessibility, particularly for children in remote or economically constrained families. By allowing asynchronous engagement, limited physical attendance, and digital content access, hybrid learning reduced the rigidity that often deters vulnerable children from re-entering formal schooling. The reintegration of 4,200 children into hybrid classes reflects the system's capacity to overcome traditional attendance barriers, in line with global findings on hybrid and flexible learning models (Asali-Van Der Wal, 2023; Suhandi & Kaniawati, 2024).

Stakeholder satisfaction, especially among school leaders and teachers, further reinforces the model's practical value. A majority of respondents in the satisfaction survey rated the program positively, citing improved reach, reduced teacher burden, and meaningful learner engagement. These perceptions are consistent with existing literature which asserts that hybrid learning enables pedagogical innovation and improves learner autonomy when implemented with sufficient support (Verma et al., 2024; Caldana et al., 2023). Nonetheless, barriers such as internet instability and low digital literacy among parents were also acknowledged, indicating areas where infrastructure and community support still need reinforcement.

5.3 Educational Service Innovation and Systemic Transformation

The Brebes case illustrates that hybrid learning is not merely a technological fix but a manifestation of broader service innovation in public education. Beyond digital platforms, innovations such as mobile teaching, community-based learning hubs, and psychosocial mentoring were essential to the program's success. These interventions redefined traditional

concepts of schooling, allowing education to reach children in the margins of both space and policy. Such outcomes reflect international findings that service innovation, when combined with leadership adaptability, generates inclusive outcomes in constrained systems (Tocto-Cano et al., 2025; Dittmar, 2025).

Importantly, these service innovations were not stand-alone interventions but part of an integrated response system under the Gerakan Kembali Bersekolah (GKB). The strategic alignment of hybrid learning with psychosocial support, outreach programs, and regulatory innovations (such as SOPs and bupati decrees) ensured coherence and sustainability. This is in line with literature emphasizing the role of system-level alignment in maintaining the effectiveness of innovations (Caldana et al., 2023; Eustachio et al., 2023). Such alignment also enhanced community trust and engagement, especially in contexts where formal schooling had previously failed to accommodate localized realities.

5.4 Impact on Enrollment and Educational Equity

Quantitative data revealed a steady improvement in key educational indicators following the hybrid learning intervention. Net enrollment rates increased by 6.7% between 2021 and 2023, with gross enrollment and average years of schooling also recording positive trends. These statistics reflect the broader impact of the program, extending beyond direct hybrid class participants. Such diffusion effects are well-documented in education innovation literature, where flagship programs inspire policy mimicry or shift community norms (Cheng & Zhu, 2025; Suhandi & Kaniawati, 2024).

Moreover, the focus on OSC populations ensured that equity—not just efficiency—was central to the intervention. The hybrid model was designed to accommodate irregular schedules, limited connectivity, and personalized learning needs. As such, the initiative did not merely increase access but ensured that access was meaningful and sustainable. This aligns with accessibility theory, which asserts that education must be available, acceptable, and adaptable to be truly inclusive (Verma et al., 2024; Peters, 2004, as cited in Caridah, 2024).

5.5 Constraints and Implementation Challenges

Despite its success, the program faced several operational and systemic constraints. Technological infrastructure remained uneven, with some regions lacking reliable electricity or internet access. Although school leaders attempted to address these through printed modules and offline apps, digital inequality still constrained full participation. Additionally, some teachers reported difficulty adapting to blended instruction, indicating a need for sustained capacity building. These challenges mirror broader findings that hybrid learning requires not only devices and platforms but also pedagogical reorientation and ongoing support (Harishankar et al., 2024; Dittmar, 2025).

Another constraint was the low initial involvement of parents, many of whom had limited education and digital exposure. Community resistance, especially in conservative areas, posed further barriers to participation. These issues underscore the need for robust socialization strategies and the active role of community organizations in bridging trust and technology (Suhandi & Kaniawati, 2024; Tocto-Cano et al., 2025). Addressing such challenges is crucial for scaling the program beyond its current pilot scope.

5.6 Positioning Within Broader Educational Reform

The experience in Brebes also highlights the strategic relevance of hybrid learning in broader national reform agendas, such as the Merdeka Belajar initiative. By institutionalizing flexible and learner-centered practices, the hybrid program aligned with Indonesia's policy shift toward

autonomy, personalization, and digital integration. The hybrid learning policy in Brebes thus exemplifies how subnational units can localize national mandates effectively through adaptive leadership and innovation. This model holds potential for replication in other regions, provided that local leadership capacities and stakeholder ecosystems are equally mobilized.

6. Conclusion

The present study offers critical insights into how adaptive leadership and hybrid learning can serve as strategic tools in addressing educational exclusion among out-of-school children (OSC) in rural Indonesia. Through a methodologically rigorous mixed-methods approach, this research has demonstrated that educational service innovation, when supported by responsive governance and community engagement, can significantly improve access, equity, and quality of education for marginalized populations.

At the core of this study lies the affirmation that adaptive leadership is a pivotal factor in educational transformation. Leaders at various institutional levels—school principals, PKBM managers, and local education officials—demonstrated context-sensitive strategies to navigate challenges and leverage local potential. Their ability to mobilize resources, engage stakeholders, and localize policies has enabled the successful implementation of hybrid learning as an alternative educational pathway. These leadership practices provided a buffer against systemic rigidity and technological constraints, echoing theoretical models that emphasize flexibility, distributed decision-making, and cross-sectoral collaboration.

The hybrid learning model itself emerged not merely as a pedagogical innovation but as a systemic reform mechanism. It redefined learning spaces and schedules, breaking barriers of geography, poverty, and social exclusion. By combining asynchronous digital modules, limited face-to-face engagement, and community-based learning supports, the model responded to the actual learning conditions of OSC, particularly in areas with limited infrastructure. The empirical data substantiated these claims: over 7,000 OSC were re-engaged through the hybrid model, while key indicators such as net enrollment, gross enrollment, and average years of schooling showed measurable improvement within two years of implementation.

Another notable contribution of this study is the demonstration that hybrid learning thrives not in isolation but within a robust ecosystem of educational service innovation. The integration of psychosocial mentoring, mobile teachers, SOP-based implementation frameworks, and community partnerships formed a systemic web of support. These multi-pronged interventions illustrate that educational inclusion requires more than classroom reform—it demands an institutional culture that values flexibility, sustainability, and shared ownership. This finding reinforces the relevance of systems theory in education, where interrelated structures and actors co-produce meaningful outcomes.

Despite its success, the implementation also revealed several structural and operational limitations. Challenges such as uneven digital infrastructure, limited teacher capacity in blended pedagogy, and community skepticism highlighted the importance of adaptive capacity building and targeted socialization. These findings underscore that while hybrid learning can be a viable alternative, its scalability hinges on investments in infrastructure, training, and inclusive policy design.

This study also contributes to the broader discourse on Indonesia's Merdeka Belajar and SDG-4 agendas by illustrating how subnational actors can effectively localize national policy frameworks through innovation and leadership. The case of Brebes demonstrates that decentralized innovation—

when guided by evidence, community insight, and committed leadership—can yield transformative results even in disadvantaged settings.

In conclusion, the integration of adaptive leadership and hybrid learning has proven to be a contextually effective approach in re-engaging out-of-school children and transforming rural educational services. This study not only advances theoretical understanding of adaptive governance and learning innovation but also provides a practical framework for policymakers, school leaders, and development practitioners. Future efforts must focus on institutionalizing these models through sustainable funding, continuous capacity development, and inter-sectoral coordination. With such measures, hybrid learning can evolve from a recovery mechanism into a mainstream strategy for educational equity in Indonesia and beyond.

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