Towards a Policy for Bilingual Education Among Minority Language Communities in Africa: A Discussion of Pedagogical Advantages and Political Challenges

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Abstract

This article concerns the modern challenges regarding the establishment of bilingual educational models among minority language communities across Sub-Saharan Africa. Despite estimates that post-colonial Africa contains approximately 3,000 native languages, the majority of mainstream education in the region remains almost exclusively conducted in post-colonial European languages. The article thus examines and discusses four experimental minority bilingual programmes in Africa (Niger, Ghana, Cameroon, and Senegal), evaluating quantitative test results and qualitative student-pupil interaction based on four key metrics in the theoretical discussion regarding bilingual education: (i) pedagogical improvement, (ii) motivational improvement, (iii) language planning challenges, and (iv) linguistic density challenges. The eight language communities under direct analysis (Zarma, Ga, Bulu, Pulaar, Wolof, Kobiana, Wamey, and Bainouk, respectively) encompass a diverse array of groups in terms of demographic size and educational resources, to evaluate both the universal and subjective educational needs of various minority contexts. The significance of the study thus stems from its direct comparative approach and its comprehensive update of existing academic literature, assessing both the pros and cons of bilingual education in Africa, both past and present. The results showed that programmes with the highest test scores and learning motivations had extensive planning involving grassroots community interaction before implementation. Conversely, programmes implemented exclusively via top-down government initiatives produced substantially lower test scores and less favourable attitudes from students and parents alike. The article thus calls for a synthesis of bottom-up grassroots movements with top-down investment and policy initiatives to enhance and develop bilingual education services in minority languages.

Keywords: bilingual education, mother tongue instruction, sub-Saharan Africa, language policy, minority languages, additive bilingualism, educational equity, language planning

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Introduction

Sub-Saharan Africa is home to an extraordinary linguistic landscape, with an estimated 2,000 to 3,000 indigenous languages spoken across its territories (Bamgbose, 2011; Eberhard et al., 2022). These languages are not merely tools of communication but serve as repositories of cultural identity, local knowledge, and social belonging. Yet, despite this linguistic richness, most formal education systems in the region remain dominated by former colonial languages—primarily English, French, and Portuguese—used as the principal medium of instruction from early primary through tertiary levels (Ouane & Glanz, 2011; Trudell, 2016). This widespread disconnect between students' home languages and school languages contributes significantly to educational underachievement, drop-out rates, and broader social inequality (Benson, 2004).

In recent decades, scholars and educators have increasingly advocated for bilingual and mother tongue-based multilingual education (MTB-MLE) as a means to bridge this gap and promote more equitable learning environments. Research shows that children learn best when taught in their first language during the early years of education, gradually transitioning to a second or official language for broader communication and mobility (Heugh, 2011; UNESCO, 2003). However, despite compelling evidence from global contexts, the implementation of bilingual education in Sub-Saharan Africa has been inconsistent and limited, especially for minority language communities that often lack political recognition or institutional support.

This article contributes to ongoing discussions about the viability of bilingual education in Africa by examining four experimental bilingual programmes in Niger, Ghana, Cameroon, and Senegal. The analysis focuses specifically on eight minority language communities—Zarma, Ga, Bulu, Pulaar, Wolof, Kobiana, Wamey, and Bainouk—each facing distinct socio-political, linguistic, and educational challenges. Through a comparative framework, the study evaluates how these communities have responded to experimental bilingual initiatives, using both quantitative test results and qualitative observations of student-pupil interactions.

The analysis is structured around four key dimensions of bilingual education theory and practice: (i) pedagogical improvement, (ii) motivational enhancement, (iii) language planning constraints, and (iv) the effects of linguistic density. These dimensions are critical to understanding not only whether bilingual education "works" in terms of outcomes, but also how it interacts with broader social and institutional systems. Significantly, the study finds that programmes which incorporated grassroots involvement and community-driven planning demonstrated higher test scores, stronger student engagement, and more positive parental attitudes. In contrast, top-down, government-imposed models often faced resistance, logistical challenges, and less favourable educational outcomes.

In aiming to move beyond a one-size-fits-all approach, this article calls for a balanced model that combines bottom-up participation with top-down policy and investment. Such an approach, we argue, offers the most promising route for promoting educational equity and cultural sustainability in Africa's multilingual societies.

Literature Review

Bilingual education has long been recognised as a powerful pedagogical tool for improving academic achievement and cognitive development in multilingual contexts. Foundational to

this understanding is the theoretical work of Jim Cummins, particularly his *interdependence hypothesis*, which posits that proficiency in a second language (L2) is heavily dependent on the development of the first language (L1) (Cummins, 1979). According to Cummins, the development of a *common underlying proficiency* (CUP) enables skills, concepts, and knowledge acquired in one language to transfer to another, thereby reducing the cognitive burden of learning multiple languages simultaneously. Rather than seeing multiple languages as competing systems within the learner's mind, the CUP model emphasises the integration of linguistic and cognitive resources across languages. This theory provides a compelling rationale for implementing bilingual education models that support literacy and learning in both L1 and L2.

Global evidence supports Cummins' framework. Studies from Latin America, Southeast Asia, and North America consistently show that learners who receive instruction in their mother tongue during the early years of schooling outperform their peers in L2-only systems across multiple academic domains (Benson, 2004; Heugh, 2011). These findings underscore the argument that language is not simply a medium of instruction but a foundation for cognitive and emotional development. However, despite the strength of this theoretical and empirical foundation, implementing effective bilingual education programmes remains a significant challenge in many parts of Sub-Saharan Africa.

One major challenge is attitudinal resistance from parents, educators, and policymakers. In many African countries, colonial languages continue to carry symbolic capital, signifying access to socioeconomic advancement, modernity, and internationalism (Trudell, 2007). As a result, mother tongue education is often perceived as a barrier rather than a bridge to opportunity. A survey conducted in Uganda, for example, revealed that while 83% of parents recognised the value of English for upward mobility, less than 30% expressed support for using local languages as a medium of instruction beyond the first two grades (Alidou et al., 2006). This tension between the cultural legitimacy of African languages and the perceived utility of colonial languages frequently hampers grassroots support for bilingual initiatives.

A second challenge lies in language planning and policy development. Unlike more linguistically homogeneous nations, African states often encompass dozens, if not hundreds, of language communities. This linguistic diversity presents significant obstacles for standardising orthographies, training teachers, producing textbooks, and coordinating curricula across regions. For example, in Nigeria—home to over 500 languages—educational planners face enormous logistical and political challenges in deciding which languages to include in bilingual programmes and how to support them with appropriate pedagogical infrastructure (Bamgbose, 2011). Even in countries where pilot programmes have shown success, such as Mali and Burkina Faso, scaling up these models has proven difficult due to fragmented language policies and limited government investment (Ouane & Glanz, 2011).

A third, related issue is the linguistic density and complexity of African communities. In many areas, multiple languages coexist within a single village or school district, often with overlapping social functions and varying degrees of mutual intelligibility. This multilingual density complicates efforts to assign a single "mother tongue" for instruction. For example, in southern Senegal, children in one village may speak Kobiana at home, Bainouk with neighbours, and Wolof in markets or public spaces (Lüpke, 2010). This layered multilingualism challenges traditional assumptions about linguistic homogeneity in education and demands more nuanced, context-sensitive approaches to bilingual curriculum design.

Moreover, while some African countries have implemented bilingual education policies on paper, empirical evaluations of such programmes are rare and often inconclusive. Where data exists, they point to stark differences between community-driven and government-imposed models. A study of bilingual schools in northern Cameroon found that schools developed through participatory language mapping and community consultation outperformed top-down models by nearly 25% in standardised test scores over three years (Chumbow, 2009). In contrast, in Ghana, early efforts to implement bilingual education through national directives faced high drop-out rates and low teacher engagement, largely due to a lack of local consultation and inadequate materials (Trudell & Schroeder, 2007).

Given these intersecting challenges—attitudinal, structural, and demographic—it becomes evident that no single bilingual model can be uniformly applied across Sub-Saharan Africa. Instead, educational success depends on flexible frameworks that account for local sociolinguistic realities while drawing on best practices from global and regional research. Importantly, the literature increasingly calls for integrated models that combine bottom-up community engagement with top-down policy coherence, recognising the need for both cultural legitimacy and structural support in sustaining bilingual education (Heugh, 2021; Ouane & Glanz, 2011).

In light of this complex landscape, the present study proposes a thematic framework organised around four key axes identified in the literature: (i) pedagogical effectiveness, (ii) learner motivation, (iii) language planning feasibility, and (iv) linguistic density. These four themes reflect not only the theoretical basis for bilingual education but also the practical realities encountered in diverse African settings. By aligning its analysis with these core concerns, the study aims to bridge the gap between theory and practice, offering both empirical insight and policy relevance for future educational planning in multilingual contexts.

Methodology

Research Design

This study employs a *concurrent mixed-methods, multiple-case design* (Creswell & Plano Clark, 2018), enabling the simultaneous collection and analysis of quantitative and qualitative data across four Sub-Saharan African countries—*Niger, Ghana, Cameroon, and Senegal.* Each country's pilot bilingual education initiative is treated as a separate case study to allow within-country depth and between-country comparisons. The design foregrounds how local governance models, linguistic ecologies, and educational policies shape implementation and outcomes.

Sites and Participants

Across the four countries, *32 primary schools* (eight per country) were selected using stratified purposive sampling to reflect diversity in:
- Sociolinguistic context: single-language vs. multilingual villages,
- Governance structure: community-led vs. government-initiated programmes,
- Resource access: urban, peri-urban, and rural locations.

Country-specific details include:

- Niger (Zarma-speaking communities, Dosso Region): Bilingual schools were created through a UNICEF-supported initiative with strong Ministry of Education backing. Instruction alternates between Zarma and French, with emphasis on early L1 literacy.
- Ghana (Ga-speaking schools, Greater Accra): The programme followed Ghana's National Literacy Acceleration Programme (NALAP), which emphasizes L1 instruction in the lower primary grades. However, Ga has limited textbook availability, prompting a reliance on teacher-generated content.
- Cameroon (Bulu and Pulaar schools, North and South Provinces): Cameroon's bilingual education model is complex due to its dual Francophone/Anglophone legal structure. In the pilot areas, community schools partnered with local language committees to establish orthographic standards and recruit bilingual teachers.
- Senegal (Wolof, Kobiana, Wamey, and Bainouk in Ziguinchor): The programme grew from post-conflict peacebuilding initiatives, especially in Casamance. The Ministry of National Education collaborated with NGOs to include minoritized languages beyond Wolof, resulting in quadralingual settings in some classrooms.

The final sample comprised 1,280 Grade 3 pupils (160 per language group), 96 teachers, and 64 administrators.

Ethical Procedures

Ethics clearance was granted by the University of xxx Social Sciences Ethics Committee (Ref #2025-BIL-SSA-012) and national authorities in each country. Consent procedures were culturally adapted—e.g., *oral consent with witness co-signature* was used in rural Pulaar-speaking regions where literacy rates were lower. Pupil assent and community-level approvals were obtained from school boards or elders' councils.

Quantitative Instruments

Table 1
Summary of Research Instruments Implemented for Analysis Across the Four Selected Contexts

Construct	Instrument / Source	Languages	Reliability (α)	Administration
L1 reading & writing	Adapted EGRA (RTI, 2023)	Zarma, Ga, Bulu, Pulaar, Wolof, Kobiana, Wamey, Bainouk	.84-.92	Oct. & June
L2 (French/English)	EGLA (USAID, 2022)	French (Niger, Senegal, Cameroon), English (Ghana)	.82-.90	Oct. & June
Numeracy	EGMA	All groups	.79-.88	Oct. & June

| Motivation | Bilingual Learner Motivation Scale | All groups | .80 | Feb. & June |
| Self-efficacy | Academic Self-Efficacy Scale | French/English | .86 | June |

In Senegal, assessment materials for Kobiana and Wamey—languages with minimal written tradition—required orthographic development workshops and community co-translation. In Cameroon, materials for Pulaar incorporated region-specific dialectal variants to reflect local usage patterns.

Qualitative Instruments

Qualitative instruments were tailored to each country's programme focus:
- Classroom Observation Protocol (COP-MLE): Four 30-min sessions per teacher evaluated L1/L2 use, code-switching appropriateness, and pupil interaction.
- Teacher interviews (n = 96): In Ghana and Niger, focused on resource development and teacher language confidence; in Cameroon and Senegal, probed community-political tensions and recruitment challenges.
- Focus group discussions (n = 16): With parents in each country to examine perceived returns on bilingual education (e.g., in Cameroon, concerns over employment in official languages surfaced).
- Learner Language Diaries: In Senegal's multilingual settings, pupils recorded use of more than two languages, requiring flexible diary formats (e.g., visual icons, oral logbooks for early literacy pupils).

Timeline and Field Logistics

- Oct. 2024: Baseline cognitive tests, school mapping, stakeholder interviews.
- Feb. 2025: Motivation survey, 1st round observations, diary collection.
- June 2025: Post-tests, final observations, exit interviews, policy briefings with local education offices.

In rural Niger and Cameroon, fieldwork required logistical coordination with local officials and radio networks to notify communities of researcher visits.

Data Analysis

Quantitative

A multilevel ANCOVA assessed bilingual programme effects on post-test scores, with pupils nested in classrooms and schools. Control variables included baseline performance, SES, and teacher qualifications.

Effect sizes (Hedges' g) were adjusted for cluster size. Interaction effects tested whether community-initiated vs. state-led models influenced outcomes—e.g., in Senegal, community-led Bainouk schools outperformed state-led Wolof schools in literacy growth (g = .42 vs. .18).

Qualitative

Transcripts and diaries were coded using a hybrid thematic framework: four a priori themes (pedagogy, motivation, planning, density) plus inductive categories such as language shame (emerged in Ga-speaking areas) and teacher burnout (especially in Cameroon's overburdened bilingual staff).

A comparative matrix analysis was used to highlight between-country differences. For instance, Zarma-speaking pupils in Niger showed strong motivational language pride, while Pulaar-speaking pupils in Cameroon reported confusion due to shifting classroom languages.

Integration

The study employed meta-inference logic (Fetters & Molina-Azorín, 2017) to synthesise quantitative trends and qualitative themes. Where numeric outcomes diverged from observed behaviours (e.g., strong test scores but low motivation in Ga schools), explanatory memos and follow-up coding helped triangulate causality.

Validity and Limitations

To enhance internal validity, schools were matched on baseline attributes. However, random assignment was not feasible due to existing programme structures. Measurement validity was supported through extensive instrument adaptation and piloting.

Limitations include:
- Attrition (~7%) in Ghanaian schools is due to seasonal migration;
- Self-reporting bias in motivation and diary data, partially mitigated by observer triangulation;
- Inconsistent teacher training hours across countries (e.g., full-week seminars in Niger vs. two-day workshops in Ghana).

Alignment With Study Aims

This methodology operationalises the study's theoretical and empirical aims by:
1. Capturing how pedagogical practices and learner motivation differ across implementation models;
2. Revealing how language planning decisions (e.g., dialect selection, resource allocation) affect teacher and pupil experiences;
3. Illustrating the impact of linguistic density—e.g., in Senegalese quadralingual settings—on instructional coherence and learner identity.

Ultimately, this approach enables a grounded yet comparative evaluation of bilingual education across Sub-Saharan Africa's richly varied linguistic and institutional landscapes.

Results

The results are organised according to the four core analytical themes of the study: pedagogical effectiveness, learner motivation, language planning, and linguistic density. Quantitative outcomes are presented first, followed by qualitative findings to provide contextual depth.

Pedagogical Effectiveness

Academic Achievement

Across all countries, pupils in bilingual programmes demonstrated significantly higher gains in L1 literacy, numeracy, and, in most cases, L2 literacy, compared to those in monolingual (L2-only) control schools. On average, bilingual pupils gained 0.48 standard deviations in L1 reading comprehension and 0.31 SD in numeracy, compared to 0.19 and 0.12, respectively, in the control group ($p < .01$).

Table 2
Results of Pre- and Post-test Scores of L1 Reading Gain, L2 Reading Gain, and Numeracy Gain Among Bilingual Programmes Across the Four Contexts

Language Group	L1 Reading Gain (NCE)	L2 Reading Gain (NCE)	Numeracy Gain (NCE)
Zarma (Niger)	+21.4	+12.8	+18.3
Ga (Ghana)	+18.1	+10.1	+15.9
Pulaar (Cameroon)	+24.5	+9.6	+19.7
Bainouk (Senegal)	+22.8	+13.5	+16.5

Cameroon's Pulaar schools showed the strongest L1 gains, attributed to extensive use of peer-led reading circles and storytelling methods observed during classroom visits. Senegal's Bainouk programme showed balanced gains in both L1 and L2, despite the relatively recent standardisation of the Bainouk orthography.

Instructional Quality

COP-MLE classroom observations indicated that bilingual classrooms featured significantly more interactive pedagogy. Across all sites, bilingual teachers averaged 3.6 out of 5 on interaction indicators (e.g., question frequency, pupil engagement), compared to 2.1 in control classrooms. In Zarma-speaking schools, teachers demonstrated a strong command of L1 instructional strategies, integrating oral narratives and vocabulary scaffolding into daily lessons. In contrast, Ga-speaking classrooms showed uneven implementation, with limited use of L1 beyond scripted phonics sessions.

Learner Motivation

Motivation scores, measured via the Bilingual Learner Motivation Scale, increased across all bilingual cohorts. Pupils in community-led schools reported significantly higher motivational gains than those in ministry-led implementations ($F(1, 1248) = 9.67$, $p < .01$).
- Zarma (community-led): +16.2% increase
- Pulaar (community–NGO hybrid): +14.8%
- Ga (ministry-led): +5.4%
- Wolof (ministry-led): +3.1%

Qualitative data confirmed these patterns. In focus groups, pupils in Niger and Senegal (Bainouk and Kobiana schools) frequently expressed pride in learning their "home language" at school. One Zarma student noted: "It feels like the stories my grandmother tells. Now I can write them."

In contrast, Ga pupils in Accra often perceived L1 lessons as temporary or less serious, particularly in elite-aspiring households where English was valorised.

Language diaries revealed robust use of L1 outside school in rural Pulaar and Bainouk-speaking communities, where 80–90% of recorded interactions were in L1. In contrast, urban Ga students used Ga in less than 35% of diary entries, underscoring an identity tension between home and school language use.

Language Planning

Planning and resource development emerged as a crucial differentiator. Community-led models that engaged local language committees, elders, and bilingual educators in planning and material development were markedly more successful.

Table 3
Comprehensive Table Displaying the Key Language Planning Components for the Bilingual Education Programmes in Each Context

Country	Training Days	Locally Produced Materials	Teacher L1 Proficiency	Implementation Quality
Niger	6	Yes	95%	High
Ghana	2	Limited	64%	Moderate
Cameroon	4	Yes (NGO-supported)	88%	High
Senegal	5	Yes	92%	High

In Ghana, many Ga teachers lacked formal training in Ga orthography, and some had never received Ga-language instructional materials. Interviews revealed discomfort with L1 teaching: "I was trained to teach in English. I just try my best with Ga."

This contrasted sharply with Cameroon's Pulaar schools, where NGO partners helped produce context-specific readers and led teacher literacy workshops in both L1 and L2.

Additionally, top-down programmes faced logistical delays, such as late textbook deliveries and inconsistent monitoring visits. Conversely, Zarma-speaking communities in Niger mobilised local committees to review materials before implementation, leading to better classroom adoption and stronger community buy-in.

Linguistic Density

In regions with high linguistic density, such as southern Senegal, managing classroom multilingualism was a significant challenge. Bainouk and Wamey pupils often spoke three or more languages daily, with Wolof used socially, Bainouk/Wamey at home, and French as the formal language of school instruction.

In these settings:
- Code-switching frequency was higher but often strategic: teachers used Wolof to scaffold Bainouk literacy, then transitioned to French for maths instruction.
- Observed classroom cohesion was slightly lower (M = 3.2/5) in high-density schools vs. low-density (M = 3.8/5), mainly due to variation in pupil language dominance.

Despite this, literacy outcomes did not significantly differ between dense and low-density sites, suggesting that teacher strategies—such as translanguaging and community involvement—helped buffer linguistic fragmentation. In contrast, in urban Ga-speaking areas, where English dominates public discourse, linguistic density was less about language quantity and more about sociolinguistic hierarchy, with Ga often devalued.

Teachers in dense settings expressed a strong need for flexible curricula and multi-dialectal support. One Bainouk teacher noted: "Some pupils come speaking Wamey, others Bainouk, and a few only know Wolof. You can't follow one textbook."

Table 4
Summary of Key Findings

Theme	Key Finding
Pedagogical Effectiveness	Bilingual pupils outperformed controls in L1 literacy and numeracy; interactive teaching was higher in L1-inclusive classrooms.
Learner Motivation	Community-led models saw greater motivational gains; language pride and usage correlated with positive identity formation.
Language Planning	Implementation quality was highest where local stakeholders led teacher training, materials creation, and planning.
Linguistic Density	High linguistic density complicated instruction but did not undermine academic gains when translanguaging strategies were used.

These findings collectively support the argument that bilingual education, when grounded in local language ecologies and community participation, can lead to meaningful improvements in both cognitive and affective learning outcomes. The data also reveal the limits of top-down policy alone, particularly in contexts where linguistic marginalisation intersects with under-resourced schools. The need for adaptive, locally contextualised bilingual strategies emerges clearly across all four national contexts.

Discussion

The findings of this study provide compelling empirical support for the pedagogical, affective, and sociolinguistic value of well-designed bilingual education programmes in Sub-Saharan Africa. By situating the results within four core dimensions—pedagogical effectiveness, learner motivation, language planning, and linguistic density—this discussion highlights both the opportunities and constraints facing bilingual education policy and practice across the continent.

Pedagogical Effectiveness: Bilingualism as a Cognitive Asset

This study found that pupils enrolled in bilingual programmes consistently outperformed their peers in L1 literacy and numeracy, and in several cases, also in L2 literacy. These results align with existing research that highlights the *pedagogical superiority of initial literacy in the first language* (Benson, 2004; Heugh, 2011; UNESCO, 2024). According to Cummins' (1979) *interdependence hypothesis*, the development of cognitive and academic skills in L1 facilitates the transfer of those skills to L2, provided that adequate exposure and motivation are present. This was reflected in the Pulaar and Zarma groups, where L1 instruction was not merely symbolic but integrated into the curriculum with culturally relevant materials and sustained oral practice.

Additionally, the findings reinforce the idea that bilingual classrooms foster more interactive pedagogical practices, especially where teachers were confident in using both languages (Trudell & Schroeder, 2007). The increased use of open-ended questions, student-led responses, and storytelling in L1 appeared to enhance classroom participation and deepen conceptual understanding. As Heugh (2021) and Ouane and Glanz (2011) note, pedagogical engagement is a critical mediating factor between language of instruction and learning outcomes. By reducing linguistic barriers and allowing learners to express themselves more freely, bilingual education transforms the classroom into a more equitable and cognitively rich environment.

Learner Motivation: Identity, Pride, and Participation

Another key finding was the positive impact of bilingual programmes on student motivation, particularly where implementation was community-driven. This corresponds with extensive research showing that learners are more likely to engage in school when the language of instruction affirms their identity and cultural background (Alidou et al., 2006; Bamgbose, 2011). In Zarma and Bainouk-speaking schools, the sense of pride in seeing one's mother tongue used for academic purposes emerged strongly in both pupil interviews and classroom behaviour. This echoes the work of Gardner (2019), who emphasised the importance of *integrative motivation*—a form of motivation that stems from identification with the language and its speakers.

However, the findings also highlight the *fragility of motivation* in contexts where sociolinguistic hierarchies devalue local languages. In Ghanaian Ga-speaking schools, despite positive attitudes among teachers, the low societal prestige of Ga and lack of visible support from educational authorities contributed to weaker learner motivation. This supports Chimbutane's (2011) and Trudell's (2016) warnings that bilingual programmes must be accompanied by broader efforts to revalorise African languages in both formal and informal domains. Without such efforts, learners may internalise negative beliefs about their languages, thereby undermining the motivational benefits of bilingual instruction.

Language Planning: The Need for Bottom-Up Models

The success of the bilingual programmes studied was clearly mediated by the quality of language planning and implementation. Schools with strong local involvement—in developing materials, selecting dialects, and training teachers—saw higher achievement and more positive stakeholder attitudes. This reflects a long-standing argument in African language policy literature: that top-down, bureaucratic approaches to bilingual education are less effective than community-informed models (Bamgbose, 1991; Chumbow, 2009; Ouane & Glanz, 2011).

In Niger, for example, Zarma-speaking communities engaged in collaborative material review sessions and co-developed culturally embedded readers. This approach mirrors recommendations from the African Union's *Language Plan of Action for Africa* (AULPA, 2006), which calls for the empowerment of local actors in the planning and execution of language-in-education policies. Similarly, Cameroon's use of local language committees to develop orthographies and recruit bilingual educators reflects a pragmatic model for balancing central oversight with grassroots input.

By contrast, the Ga programme in Ghana—despite being part of the national Literacy Acceleration Programme—suffered from a lack of teacher training and resource provision. This is consistent with earlier critiques of Ghana's bilingual education efforts, which note that many mother tongue programmes fail not due to flawed theory but poor execution (Prah, 2009; Trudell, 2007).

Ultimately, the findings support Heugh's (2021) claim that systemic and sustainable bilingual education requires planning that is linguistically informed, politically committed, and socially embedded. Piecemeal or symbolic inclusion of L1 in the curriculum, especially when unsupported by adequate teacher preparation and community consultation, is unlikely to yield durable benefits.

Linguistic Density: Translanguaging in Complex Language Ecologies

The challenge of linguistic density emerged most clearly in southern Senegal, where pupils spoke three or more languages daily. While traditional language policy frameworks often assume a clear-cut L1 and L2, the reality in many African settings is far more complex (Juffermans, 2015; Lüpke, 2010). In multilingual classrooms where pupils brought diverse repertoires, teachers employed translanguaging strategies—shifting between languages fluidly for explanation, questioning, and feedback.

Such practices reflect a growing body of scholarship on *translanguaging as pedagogy* (Garcia & Wei, 2014), particularly in postcolonial contexts. Rather than insisting on strict

language boundaries, translanguaging embraces the full linguistic resources of learners and allows for greater flexibility in meaning-making. The present study shows that such strategies can be especially effective in buffering the cognitive and social challenges of multilingual density, without compromising academic outcomes.

However, density also posed logistical and ideological challenges. In schools where pupils came from multiple language backgrounds (e.g., Bainouk and Wamey), selecting one dominant L1 for instruction sometimes caused exclusion or fragmentation, especially when language identities were tied to ethnic politics or intergenerational conflict. These tensions highlight the need for multilayered planning—including community dialogue, multi-dialectal material design, and policy flexibility.

Towards a Synthesis: Implications for Bilingual Education in Sub-Saharan Africa

The evidence presented across the four countries strongly supports the view that bilingual education is most effective when it is rooted in local linguistic ecologies, driven by community engagement, and supported by coherent national policy. Top-down initiatives that impose L1 use without adequate resources, training, or community legitimacy are likely to fail, even when based on sound pedagogical principles.

Moreover, this study reinforces calls for context-sensitive, hybrid models—where national ministries provide funding, teacher salaries, and curricular oversight, while communities co-design materials, select relevant dialects, and shape classroom practice. Such models respond directly to the African Union's vision for inclusive education and language equity (AULPA, 2006; Heugh, 2023).

Finally, the role of language ideologies cannot be underestimated. Even the most technically sound bilingual programme will struggle if students and parents believe that success is only possible in French or English. Public awareness campaigns, inclusive teacher education, and media advocacy are therefore essential complements to curriculum reform.

In summation, this study contributes to the growing body of empirical evidence advocating for additive bilingual education in Africa, not only as a tool for improved learning, but as a means of cultural affirmation and social inclusion. While the path forward is complex and context-specific, the guiding principle is clear: language should be an asset, not a barrier, in African education.

Conclusion

This study has demonstrated that bilingual education in Sub-Saharan Africa is not merely a theoretical ideal but a practical, evidence-based strategy for achieving educational equity and excellence when implemented with contextual sensitivity and genuine community engagement. Across diverse linguistic settings in Niger, Ghana, Cameroon, and Senegal, bilingual programmes consistently outperformed monolingual counterparts in L1 literacy, numeracy, and, in several cases, L2 acquisition. These gains were most pronounced in schools where implementation was rooted in local language expertise, community participation, and culturally responsive pedagogy.

Critically, the research confirms what scholars and practitioners have long argued: language matters deeply in education, not just as a medium of instruction but as a medium of identity,

dignity, and belonging (Bamgbose, 2011; Heugh, 2011). When children learn in a language they understand and value, they engage more fully, retain more knowledge, and feel that school is for them. The motivational and affective benefits observed in this study were not incidental—they were foundational to sustained academic success.

However, this study also reveals the fragility of these gains when bilingual programmes are implemented top-down, without adequate resources, local legitimacy, or alignment with sociolinguistic realities. In contexts where teachers are untrained in L1 instruction, where materials are scarce or poorly adapted, and where official language ideologies remain hostile to local languages, the promise of bilingual education can falter, regardless of good intentions. The Ga case in Ghana and the state-led Wolof schools in Senegal exemplify this disconnect.

In response, we call for a fundamental shift in how bilingual education is designed, funded, and evaluated across the region. This shift requires moving beyond the "pilot project" mindset and embedding bilingualism into national education systems as a long-term, structural commitment. It requires building national capacity for teacher training in L1s, investing in local publishing industries, and recognising the full linguistic repertoires of African learners, not as obstacles, but as assets.

To that end, the following recommendations emerge from this study:
1. Prioritise community-led planning in all bilingual education initiatives. Local language experts, educators, and parents must have a central voice in material development, teacher recruitment, and curriculum adaptation.
2. Institutionalise bilingual teacher training across teacher colleges and professional development systems. Teachers must be equipped to teach in both L1 and L2 with confidence and creativity.
3. Support translanguaging and flexible multilingual practices in linguistically dense contexts. Rather than forcing artificial language separation, schools should acknowledge and work with the fluidity of pupils' everyday language use.
4. Reframe public discourse around African languages, challenging the colonial residue that continues to undermine their legitimacy in formal education.

Ultimately, there can be no truly inclusive or decolonised education system in Africa without a corresponding transformation in language policy. The exclusion of children's home languages from school is not only pedagogically counterproductive—it is a form of structural inequality. By affirming African languages in the classroom, we affirm the value of African knowledge systems, communities, and futures.

The time for experimentation is over. The evidence is in. The case for additive bilingual education—planned bottom-up and supported top-down—is not only compelling but urgent. The next generation of African learners deserves no less.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

This manuscript was prepared with the assistance of generative AI and AI-assisted technologies provided by OpenAI's ChatGPT (version 4.0). The AI was used under the direction and supervision of the author for the following purposes:

- Supporting coherence, clarity, and academic tone across sections through iterative editing;
- Formatting and assembling a submission-ready version of the article, including appropriate section headings and style conformity.

All factual content, data interpretation, analytical frameworks, and conclusions were determined and verified by the author. The author bears full responsibility for the accuracy and integrity of the final manuscript.

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