

Article

Responding to Linguistic and Cultural Need: The Design and Evaluation of a Bilingual Storybook Intervention for Bilingual Fante–English Learners in Ghana

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Abstract

In this paper we describe the processes and challenges involved in the design, implementation, and assessment of a small-scale intervention in four primary schools in Ghana's Central Region that aimed to enhance learners' mother tongue and bilingual literacy practices whilst at the same time strengthening their sense of cultural identity. Within the framework of Educational Design Research (EDR), this paper describes the steps that were involved in the development process, from context analysis to the design of a locally developed Fante–English bilingual storybook, as well as the formative evaluation of this prototype. This paper shows how to translate contextual findings into a final product, while sharing with the reader important findings for each phase in the process. Formative evaluation in the form of a teacher workshop, surveys, and classroom observations was used. Results showed that, in the opinion of teachers, Fante–English bilingual books can promote learners' cultural identity, self-awareness, and a sense of prestige when they speak the language. Not only do the books preserve the Fante language and culture, but they show learners that Fante is just as important as English. A second round of formative evaluation showed that additional teacher manual and training could benefit the outcome of the bilingual method.

Keywords: mother tongue education; African languages; bilingual methods; educational design research; African identity



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1. Introduction

It is estimated that 40 per cent of children globally are not accessing education in their mother tongue or the language they speak and understand best¹. Many find themselves marginalized and forced to deny their cultural heritage (UNESCO, 2024). Globally, multilingual learners of minority languages are disadvantaged and face issues of exclusion, as well as linguistic and cultural repression (Flores & Rosa, 2015; Ndhlovu & Makalela, 2021). Since 1953, UNESCO has championed the use of vernacular languages in education to improve learner access and inclusion, especially for communities of minority languages (UNESCO, 1953). UNESCO's advocacy for mother tongue education to enhance learning outcomes is scientifically widely supported (Evans & Acosta, 2020; Heugh, 2006; Nag et al.,

2019). Mother tongue-based multilingual education is highly beneficial, as it allows parents to be engaged in the learning process (Nag et al., 2019); it produces a higher probability for girls and marginalized communities to stay in school (Benson, 2005); and it increases equity in education and preserves cultural and linguistic diversity (Ball, 2010).

The status and role of African languages has been severely affected by colonialism and imperial domination. In many colonial schools, African languages were prohibited to be used and considered as inferior oral languages, unable to be used for communicating scientific knowledge (Khumalo, 2023). Even today, most African countries continue to use European languages in education, in spite of the fact that these models have proven to be unsuccessful (Wolff, 2006) and findings that mother tongue education in African countries is highly beneficial for its learners at all levels of the educational system (Kwaa Prah, 2009; Opoku-Amankwa, 2009; Owu-Ewie, 2006; Qorro, 2009; Vuzo, 2005).

Over the years, the topic of LOI in African contexts has been investigated from various research perspectives. From a sociological perspective, particularly nested within the themes of African emancipation and neocolonialism, Kwaa Prah (2009) argues for the intellectualization of African languages and development of written standards, so that European languages are no longer needed. Approaches from a more political and economic standpoint include the work by Qorro (2009) in Tanzania, who concludes that current LOI policies mainly benefit the elite. Based on classroom observation studies in Benin, Burkina Faso, Guinea-Bissau, Mali, Mozambique, Niger, South Africa, Togo, Tanzania, Ethiopia, Ghana, and Botswana, Alidou and Brock-Utne (2006) revealed that using unfamiliar languages makes teachers use traditional teaching techniques, such as chorus teaching, repetition, memorization, code-switching, and safe talk. Consequently, authentic teaching does not take place. Moreover, a range of negative consequences have been reported in the literature when English is used as LOI in African classrooms. Some of these examples are as follows: problematic communication between teachers and students, i.e., a mismatch between teachers' levels of English and learners' poor understanding of English (Vuzo, 2005); limited comprehension in mathematics (Wilmot, 2011); lower student involvement, less confident students, and lower performance in Math and Science (Andoh-Kumi, 1998).

In spite of the presented evidence, important African stakeholders such as policy-makers, teachers, and parents often insist on using foreign languages as LOI (Qorro, 2009; Trudell, 2007). Parental preference for a European LOI, such as English, French, and Portuguese, over local indigenous languages is particularly strong, as evidenced by studies from South Africa (Msila, 2011), Nigeria (Iyamu & Ogiegbaen, 2007), Mali (Minkailou, 2017), and Mozambique (MINEDH, 2017). In these studies, parents do not only advocate the use of European languages for reasons of, i.e., one language for all, but mainly for reasons of having better access to employment and prestige.

Based on the conviction that language and identities of learners can be great resources for educational success (Duff, 2015), we argue that more research is needed to investigate possibilities for including Mother Tongue-Based Education (MTBE) materials (cf. Opoku-Amankwa et al., 2015) in African schools, aiming to enhance learners' mother tongue literacy practices whilst at the same time strengthening their sense of cultural identity. In this paper, we describe the processes and challenges involved in the design, implementation, and assessment of a small-scale intervention in four primary schools in Ghana's Central Region, to enhance mother tongue and bilingual literacy practices in the classrooms. Within the framework of Educational Design Research (EDR), this paper describes the steps involved in the development process of this intervention: from a context analysis of the local literacy context to the design of a first bilingual storybook prototype, and the formative evaluation of this prototype. This paper should be considered an account of a

developmental exercise in which we demonstrate how to translate contextual findings on language and culture into a final product in the form of teaching and learning materials, while sharing with the reader important findings for each phase in the process. Before we proceed to discuss the Design, Materials, and Methods section, we first present our analysis of the local literacy context.

Languages and Education in Ghana

Ghana is a multilingual country in West Africa, where around 73 indigenous African languages are spoken (Eberhard et al., 2024). According to Obeng (1997), the three major *linguae francae* of Ghana are Akan, Hausa, and English, forming a mix of indigenous, immigrant, and European languages. The Akan language of Ghana comprises two main dialects: Twi and Fante (Mfantse), both dialects have several varieties (Schacter, 1968). They belong to the largest of the five African language groups, the Niger–Congo group, which has been recently estimated to include 1540 different languages (Simons & Charles, 2018). Our study targets mother tongue learners of Fante, which is mainly spoken in the central and southern regions of Ghana, particularly in the coastal areas. Fante is the Ghanaian language taught in schools in the Central Region.

The Central Region is historically noted to be the first area to have had contact with Europeans who visited the shores of Ghana, starting around the 1550s (Gilbert & Reynolds, 2004). The contact influenced the later institutions and cultural adjustment that the indigenes had to live up to. The region is known for having the best schools in the country, but literacy rates are low. According to the 2010 Housing and Population Census, 78.2% of the population above 11 years is literate (Ghana Statistical Service, 2015). However, 2014 data from the Ministry of Education show much lower literacy percentages, see Section 3.1 for more details. Literacy levels are higher in urban than in rural localities for all districts in the Central Region. The predominant occupation of its inhabitants is fishing, while other business activities like trading, tourism, and public sector service are also reported in the Central Region.

Ghanaian languages are an essential component of Ghana's cultural heritage and their preservation is crucial for maintaining a sense of national identity. This identity is expressed in the beliefs, customs, and values that society cherishes (Ammah, 2001). The documentation and development of Fante as a written language can be traced back to the 18th century, when Jacobus Elisa Joannes Capitein, a Dutch missionary, translated the Lord's Prayer into Fante (Tufuor, 2009). By the end of the 18th century, Fante began to be used in educational contexts (Agyekum, 2015). During the British occupation in the 19th century, local missionaries, who laid the groundwork for Fante as a written language, advocated for the use of Fante for both religious and educational purposes.

With the introduction of English in Ghana under British rule, colonialism brought a shift in the linguistic structure of the country, whereby language and formal literacy became closely linked to the English language, and constructed identities of elitism (Edu-Buandoh, 2016). After independence in 1957, Ghana adopted English as its official language of government, law, and education. During this time, the study of Ghanaian languages was not promoted in formal education, because the identity of the colonizer, including the English language, was considered attractive by educated Ghanaians, providing them respect, authority, and wealth (Edu-Buandoh, 2016). This form of linguistic imperialism privileges those who are able to use the dominant language, and therefore produces injustice and inequality (Phillipson, 2018). Phillipson (2018) argues that linguistic imperialism is considered structural, meaning that more material resources and infrastructure are supplied to the dominant language than to other languages. The status of English as a language of prestige has recently been confirmed in a study by Reilly et al. (2023), showing that

although multilingual repertoires are valued in the Ghanaian labor market, where most people use two or more languages at work, English is perceived as high earning. It should be noted that, through language contact with Ghanaian languages over the years, the English language has been shaped, resulting in the linguistic variety of Ghanaian English, which has its own linguistics features and expressions (Awuah, 2022; Mahama, 2012). In its written form, it closely resembles British English, but in oral language, it uses different accents (Dolphyne, 1995).

Language in education policies in Ghana have changed countless times since colonial rule, changing from English as Language of Instruction (LOI) to African languages and back. Particularly after independence, the language-in-education policy has moved from one form of bilingual education policy to another (Agyekum, 2010; Ansah, 2014; Anyidoho, 2018; Owu-Ewie, 2006). The most recent changes include the 2002 LOI policy, which imposed basic schools to use English as LOI from grade one, which was changed in 2009, when the government introduced the National Literacy Acceleration Program (NALAP), with the aim of training teachers for bilingual education programs at the primary level (Leherr, 2009). Since then, a bilingual education system has been officially in place. It recommends the use of learners' mother tongue (L1) as a medium of instruction for primary school years 1–3, after which the L1 transfers to English (L2). Following Trudell (2023, p. 4), the most common models for including local languages in multilingual education are transition models, whereby the learner's mother tongue is used as LOI in the lower primary grades, followed by another language as LOI. She distinguishes between 'early-exit models', which include the learner's mother tongue as LOI in the early primary grades only, and late-exit models, in which the mother tongue is taught up till upper-primary level, before changing to another LOI.

In spite of the early-exit model used in Ghana, mother tongue-based education (MTBE) materials are unavailable (Opoku-Amankwa et al., 2015). Consequently, teachers resort to using materials in English while orally translating these into local languages. A complicating factor is that in Ghanaian schools, Standard British English is used, rather than Ghanaian English, usually with the help of textbooks developed abroad, making it even harder for learners to identify themselves with any language.

The question arises as to whether implementing a complete bilingual education program in Ghana with a sufficient number of supporting MTBE materials is too challenging, or whether there is a fundamental lack of political support. Opoku-Amankwa et al. (2015) addressed this question by discussing the legitimacy of often-heard challenges that obstruct the development of MTBE materials in Ghana. These 'challenges' include the following: the difficulty in developing materials in so many different languages; a lack of writers and teachers in the local languages; no interest among publishers; and a strong institutional support for English. The authors conclude that pre- and post-independent governments' have not made any rigorous attempt to design and implement a language-in-education policy that incorporates the development of curriculum materials for MTBE. The authors attribute this to a lack of political will, economic reasons, and general misconceptions about MTBE. This is in line with earlier statements by Wolff (2006), who argued that the language question in Africa is being dominated by 'hard-core governmental politics, internal and external' (Wolff, 2006, p. 30).

Although the general impression among most African parents is that European languages should serve as LOIs (see above), a recent study by Anlimachie et al. (2025) showed that families from rural Ghanaian communities prefer their children to acquire competencies in their home language, which they perceived as 'sacred to maintaining their identity and preserving their oral traditions, as well as being the means of learning.' (Anlimachie et al., 2025, p. 9).

2. Design, Materials, and Methods

As previously stated, this study used an Educational Design Research (EDR) approach, which comprises the design, development, and evaluation of educational interventions as a solution to particular educational problems, while simultaneously producing knowledge about the process (Plomp, 2013). Design experiments in educational research were introduced over forty years ago by leading scholars Brown (1992) and Collins (1992). Over the years, the field of Educational Design Research (EDR) has evolved, and it can be defined as follows:

Educational design research is the systematic study of designing, developing and evaluating educational interventions,—such as programs, teaching-learning strategies and materials, products and systems—as solutions to such problems, which also aims at advancing our knowledge about the characteristics of these interventions and the processes to design and develop them.

(Plomp, 2013, p. 9).

The further development and refinement in the field has led to a strong body of literature, which has produced five key characteristics of EDR. First, EDR is the development of theory about learning processes and the means to support that learning. Simultaneously, theoretical knowledge is used as an input for the design of educational innovations that are tested in practice. Theory development as a result of design experiments is generally framed in a modest way. McKenney and Reeves (2012) refer to it as “yielding theoretical understanding” (p. 35). Second, EDR has a practical orientation, as it intends to solve educational problems encountered in real-life settings. Third, EDR has an interventionist approach. An educational intervention, or prototype, is developed based on context analysis and theoretical insights. By intervening in real-life educational settings, such as classrooms, a particular problem in practice is solved. Fourth, design experiments use an iterative approach, meaning that each design cycle uses built-in components of analysis, design, evaluation, and reflection. Based on each design cycle, a further refinement of the intervention or prototype is made. Finally, collaboration with players in educational settings, such as school directors, teachers, and learners, is an important aspect of EDR. For the current study, theoretical yield can be categorized as “local theory” in the words of McKenney and Reeves (2012). They argue that “local theory is produced when limited manifestations of a certain phenomenon are studied (e.g., several iterations of one basic intervention are studied in just a few classrooms)”. These theories can be used to “describe, explain or predict” (p. 35).

We adopted five of the six quality criteria from Nieveen and Folmer’s (2013) model to help systematically identify the nature of the research problem and design a culturally responsive intervention to address it. These criteria included the following: (1) relevance; (2) consistency; (3) expected practicality; (4) actual practicality; (5) expected effectiveness. The final criterium of this model, actual effectiveness, was not included in our study due to time constraints. The five selected criteria were operationalized in two phases: a context analysis and problem identification phase (Phase 1), and a prototyping phase (Phase 2) (Plomp, 2013), see Figure 1.

The main purpose of the context analysis and problem identification phase was to investigate the following questions:

(RQ1) What are the characteristics of language education policies in Ghanaian primary schools, on paper and in practice, and how do these relate to Ghana’s multilingual context?

(RQ2) Is there a need for an intervention that emphasizes the use of Mother-Tongue Based Education (MTBE) materials to strengthen both mother-tongue literacy development and learners' cultural identity?

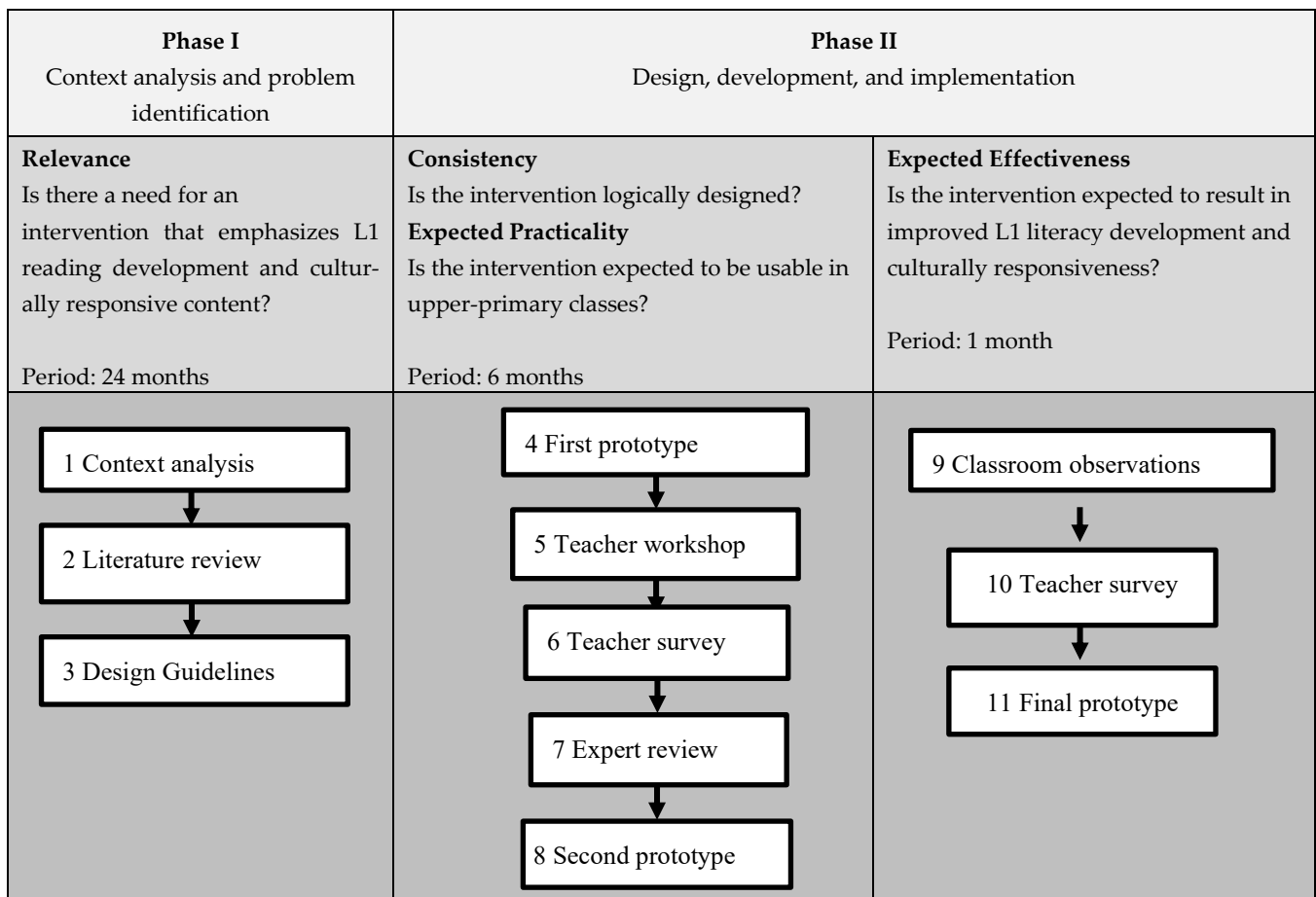


Figure 1. Overview of the EDR framework used in the study.

Two separate baseline studies were conducted, using both quantitative and qualitative research methods, to investigate the language development of upper-primary learners in three schools in Ghana's Central Region. The results of these studies have been published separately (Stoffelsma et al., 2024, 2025, *under review*). Together with a literature review, they form the foundation of the intervention reported in this study (see Section Languages and Education in Ghana, Sections 3.1 and 3.2). Prior to the prototyping phase (Phase 2), we formulated a set of design guidelines which were based on the results of baseline studies and the literature review (see Section 3.3). Based on these guidelines, three prototypes were developed as baseline versions of MBTE materials (see Section 4.1). These prototypes went through a number of formative evaluation cycles, after which they were adapted (see Sections 5.1–5.7). The following four research questions were addressed during the prototyping phase:

(RQ3) Is the intervention logically designed? (Consistency)

(RQ4) Is the intervention expected to be usable in grade 4, 5 and 6 classes? (Expected practicality)

(RQ5) Is the intervention usable in grade 4, 5 and 6 classes? (Actual practicality)

(RQ6) Is the intervention expected to result in ? (Expected effectiveness)

Ethics Approval

The research was approved by the Research Ethics Assessment Committee Humanities at Radboud University, the Netherlands (application nr 2021–9071), and Ghana Education Service. Prior to the research, all parents received a written information sheet in Akan and English explaining the research project. Only children with signed parental consent forms were included in the study.

The remainder of this paper is organized according to the two EDR phases and their research questions. This paper concludes with a discussion and reflection on various stages of the research.

3. Phase 1: Context Analysis and Problem Identification

The study took place in four basic schools in Ghana's Central Region in the Mfantseman district. This district was chosen for two reasons. Firstly, it is relatively close to Cape Coast University, where the research team was located. Secondly, it is a fishing community that consists of mainly Fante speakers, which was the target language of our study. All teachers and students selected for the study could speak both Fante and English. Since our study was related to a larger literacy research project (see details under Section 3.1), in which measuring learners' morphological awareness (MA) was a key objective, it was important to target upper-primary level learners, as MA skills typically develop in learners during the later stages of primary education.

A context analysis, or information gathering phase, plays an important role in EDR. Design research aims at developing the most favorable solutions for a problem in context, rather than comparing whether, in a particular context, method A is more appropriate than method B (Reeves, 2006). In order to inform ourselves about the particular educational and linguistic context of the Central Region, we conducted a literature review, supported with our own observations. The result of this context analysis was reported as part of the introduction of this paper (Section Languages and Education in Ghana). The second part of the context analysis contains two baseline studies that investigated the literacy development of upper-primary school learners (see Section 3.1).

3.1. Literacy Development at Primary School

Very few national studies have been conducted in Ghana to monitor literacy development at the primary level. The most recent results that were available from the government come from the countrywide Early Grade Reading Assessment (EGRA) report, which is a joint cooperation between USAID and GES (Ministry of Education, 2014). The study reports on learners' oral reading fluency (ORF) and reading comprehension levels in eleven Ghanaian languages and English. The study also included a sample from Central Region schools, where Fante was the designated language of instruction. Concerning reading in Fante, the report states that: 'Most pupils (81.1%, $n = 570$) were unable to read a single word of the story' (Ministry of Education, 2014, p. A-32). It also showed that the 19% of learners who could read answered 43% of the comprehension questions correctly (Ministry of Education, 2014). No results of reading in English were mentioned, nor were there any comparisons between reading in mother tongue and English made. In the next paragraph we discuss in further detail what the relations are between mother tongue (L1) and English (L2) literacy development, based on our own baseline studies conducted in 2023 and 2024.

In our recent longitudinal study among 230 bilingual Fante–English learners (aged 8–12), from three primary schools in a coastal village in Ghana's Central Region, we investigated learners' Fante (L1) and English (L2) language development. Notably, we investigated grade 4, 5, and 6 learners' reading comprehension, oral reading fluency, vocabulary knowledge, morphological awareness, word reading fluency, and short-term

memory. More than 99% of the sample reported to have Fante as their mother tongue². For details of the methods used and more complete results, we refer the reader to our online Supplementary Materials. In the next paragraph, we will report the key findings.

Firstly, almost 25% of the upper-primary learners could not read in Fante (L1) and 12% could not read in English (L2). This is a significantly different finding than the earlier-mentioned EGRA study, as our study shows that at higher grades, learners do improve their reading skills. An interesting observation in our study was the fact that reading comprehension in Fante, for those who could read, was significantly better than in English. Although the learners read significantly faster in English than in Fante, this did not result in better comprehension for English. In line with this finding, learners' reading comprehension in Fante was strongly predicted by their Fante fluency. For English, on the other hand, oral reading fluency had no predicting power on reading comprehension. The fact that learner's decoding in English did not necessarily result in text understanding showed a lack of L2 vocabulary knowledge. Both vocabulary knowledge and morphological awareness were found to be important predictors of L1 and L2 reading. Finally, during classroom observations, the lack of Fante textbooks, storybooks, or novels in classrooms and libraries illustrated a severely limited written representation of local language and culture, negatively influencing Fante literacy development and support of cultural identities. This is corroborated by the fact that Ghanaian learners have more exposure to English text resources at school than to printed resources in local languages (Ministry of Education, 2014).

The baseline studies also identified a number of cross-linguistics patterns, whereby Fante reading comprehension, fluency, and vocabulary knowledge predicted reading comprehension, fluency, and vocabulary in English. Vice versa, we found a predicting role of English fluency on Fante fluency, as well as English comprehension on Fante comprehension. These results support the idea that higher-level reading comprehension strategies are transferable between typologically distant languages, as shown earlier by Li et al. (2012), among Chinese–English bilinguals. The finding that metacognitive or higher-order reading skills are possibly transferable between Fante and English suggests that a more general reading comprehension approach could be beneficial for these learners. For example, addressing reading techniques for both the L1 and L2 at the same time, such as teaching text structure, skimming, scanning, inferencing, text genre, or cultural factors that influence L1/L2 text organization.

In conclusion, the context analysis reported in Section Languages and Education in Ghana has identified that using Ghanaian languages in education is important for maintaining learners' cultural identity and language development. Contrary to these findings, LOI policies have continued to fail over the years in offering sufficient MTBE materials to enhance literacy in the mother tongue. Additionally, results presented in Section 3.1 show that many upper-primary learners in the Central Region cannot read in Fante and have poor English comprehension skills. For the particular context of Mfantseman district, where more than 99% of the target population reported to have Fante as their mother tongue, we decided that a bilingual Fante–English intervention would be an appropriate next step.

3.2. Bilingual Storybooks

Based on the findings from the context analysis, we arrived at the following conclusion: Although the Ghanaian Government seems to have been supporting bilingual education on paper since 2009, in practice there is little evidence of these policies, most likely due to a lack of political will (RQ1). Due to very low Fante literacy levels among primary school learners in the Central Region, there is a need for the development of more mother

tongue-based education (MTBE) materials to strengthen learners' mother tongue literacy development as well as their cultural identity. Additionally, a place for enhancing English language learning in the intervention seems warranted due to the low English literacy results, but also in light of the cross-linguistic findings that suggest Fante and English language knowledge can strengthen each other (RQ2).

This conclusion led us to investigate the possibility of designing Fante–English bilingual storybooks for grade 4, 5, and 6. Books that contain stories or texts in two different languages with the purpose of serving a bilingual audience have been labeled dual-language books in the literature. There is a growing body of research that looks at the incorporation of such books into classroom spaces. Dual-language books have been produced since the 1980s in the UK, many of which have been produced by local writers, illustrators, and translators, with the purpose of increasing the status of minority languages in the United Kingdom, such as Chinese, Gujarati, Bengali, Urdu, and Panjabi (Walker et al., 1996). Using bilingual books that allow for code-switching between the L1 and L2 has shown to help students in building their vocabulary (Read et al., 2021), empowering students (Cun, 2022) and increasing their metalinguistic awareness (Zaidi, 2020). Metalinguistic awareness, which involves the knowledge of the language structure and its form, can be significantly improved as the students compare the two texts' language structures and word choices (Sneddon, 2009). Bilingual books serve as great teaching materials that can be helpful in bringing the students' home languages into the classroom, thereby creating an inclusive learning space that sees all languages as equal. Ma (2008) describes how a dual-language Chinese–English storybook aids mutual understanding between a parent not literate in English and her child. In this socio-cultural study, the parent is able to scaffold her child's learning in the reading of the dual-language book, thereby transforming reading into a meaning-making activity. Both the mother and child are learning. Finally, using a dual-language approach for student writing of stories has not only shown to help students develop concepts and formulate ideas, but also produce longer and richer stories than they could have written with their L2 knowledge alone (Cummins et al., 2012).

3.3. Design Guidelines

Based on the positive evidence found in the presented literature regarding dual-language or bilingual books, it was decided to develop bilingual Fante–English storybook prototypes for primary school grade 4, 5, and 6. In order to help with the design of these storybooks, we formulated the following guidelines to serve as guidance:

- (1) Stories must come from the local community, and serve as a basis for enhancing cultural identity, a sense of belonging, and both L1 and L2 language development.
- (2) The books are an addition to the curriculum, and do not replace other teaching materials.
- (3) Language activities that support English vocabulary, morphological awareness, and comprehension should be included for each story, with translations to Fante.
- (4) The language used in each story is the starting point for the language activities.
- (5) A word list in Fante–English should be included at the end of each story.
- (6) Children should be able to identify themselves with the stories and illustrations.
- (7) The Fante and English texts should be presented next to each other so that learners can compare texts.

4. Phase II Design, Development, and Implementation

4.1. First Prototype

For the development process, we followed the communicative approach to EDR (Visscher-Voerman & Gustafson, 2004), acknowledging contextual and cultural influences

on the prototype. This was particularly the case for the actual writing of the stories, as well as the illustrations of the books.

4.1.1. Writing of the Stories

For the writing of the stories, local university students and teachers were invited to submit their story in Fante to a team of three editors who were all linguists (two Ghanaians, one European), who had selected the following writing themes: Cultural heritage, Environment, Health, Social Values, or Plants and Animals. The editors received about fifteen stories, of which thirteen were deemed appropriate, see Table 1. Selection criteria included the following: appropriate language level, sufficiently engaging content for children, rich descriptions and dialogs. Although we requested stories in Fante, most contributors felt more comfortable writing their story in English.

Table 1. Thematic areas and corresponding story titles of grade 4, 5, and 6 bilingual storybooks.

Thematic Areas	Grade 4 Titles	Grade 5 Titles	Grade 6 Titles
Cultural heritage	Honesty is a cherished virtue	The three friends	The benefit of good friendship
Environment	Boama and Baduwaa visit their grandfather	Tree Planting in Town	The Forest
Health	Adepa teaches personal hygiene		The homeless boy who never gave up
Social Values	Storytime	The wise counsellor	Asantewaa and the ring
Plants and Animals	Why ducks live in water and on land	Joojo the lion cub, and the Bridge	

4.1.2. Translation Challenges

Two experts in Fante linguistics and translation studies from the African language department at Cape Coast University translated the stories, whereby the stories were first translated by the more junior linguist and thereafter checked by the more senior linguist. Several translation challenges arose. We interpret and describe these challenges based on the work by Kanyane (2024), who identified two main challenges faced by translators who translate from English to African languages. Firstly, there is often a lack of equivalent words between the source and target language. Secondly, cultural difficulties can complicate translations, caused by differences in the beliefs and cultures between languages. Following Kanyane (2024, p. 4), the following translation strategies can be used to address these challenges: ‘coining, describing, retaining, and borrowing’. Firstly, coining can be used to create a new word in the target language. Secondly, rather than translating the exact word, a description of the word in the target language can be used. Thirdly, one can use the original word from the source language, also referred to as retaining. Finally, the original word from the source language can be used, while allowing it to adapt to the pronunciation and grammar of the target language, a practice which is called borrowing, also referred to as using loanwords.

For our particular stories, some English words, when translated literally into Fante, appeared harsh or inappropriate for children. On the other hand, substituting these words with less severe terms in Fante often led to a loss of the original meaning. For instance, in a grade 5 story entitled *The Wise Counsellor*, there is a statement that reads: *My teacher says I am stupid*. Translating the word *stupid* into Fante as *gyimfo* was deemed too harsh. To address this, the term was replaced with *tsiwui* (literally meaning *dead head*), which conveys the idea of someone who is not too bright, without being excessively harsh. Secondly, certain English words do not exist in Fante and could not be translated directly. As a solution, transliterations and descriptive language were used. For example, terms like *ice cream* and *superman* were transliterated as *aes krim* and *supaman*, respectively. Furthermore, some English words were described in phrases (descriptive language). For instance, the

word *unsafe* was translated as *ahobambɔ nnyi mu* (meaning *there is no protection in it*), which effectively communicates the intended meaning.

Another challenge was dealing with English words that have subtle distinctions but share similar meanings in Fante. For example, *newspaper* and *newsletter* in English both translate to *dawurbɔ krataa* in Fante because *krataa* means paper or letter, and *dawurbɔ* means news. In English, newsletter is linked to composition writing while newspaper is linked to news. This made it difficult to differentiate between the two terms in the translation. In general, *dawurbɔ krataa* is the term used for newspapers in Fante. To highlight the distinctions, *dawurbɔ krataa* was adapted for both terms, with the English equivalent provided in brackets to clarify the differences.

4.1.3. Development of Language Exercises

At the end of each story, a number of language exercises were included to enhance English vocabulary learning, morphological awareness, and reading comprehension, with a translation of all exercises into Fante. All exercises were designed by an applied linguist (the first author of this paper), who used existing exercises that were freely available on educational platforms online, to inform the design. A frequently used approach to assist learners of English in building their vocabulary, while controlling for high frequency words, is offering graded readers. The strength of these short storybooks is that they control for lexis and syntax, as well as offer stories with increasing difficulty in terms of language, length, and format, as the reader moves on to a higher level. Due to our bottom-up approach to include written stories from local teachers and students, while giving them the liberty to choose topics and language, the graded reader approach was not feasible. At the same time, no high frequency lists of Fante vocabulary are available. That is why the design of the vocabulary and MA exercises was based on the actual language used in the stories, and differs per story, see Table 2.

Table 2. Overview number of stories, exercises, and key vocabulary per grade.

Grade	Grade 4	Grade 5	Grade 6
Stories	5	4	4
Comprehension questions	18	18	19
Compounding exercises	5	4	2
Inflection exercises	5	2	4
Derivation exercises	5	6	4
Writing exercises	5	4	4
Art and Culture exercises	Art work	Role play	Art work
Key vocabulary	103	118	120

When translating the morphological awareness exercises from English to Fante (including compounding, derivation, and inflection), the translation of bound morphemes such as [-ness] (e.g., darkness, sweetness, coldness), [-ly] (e.g., friendly, strictly, quickly), and [-ful] (e.g., beautiful, colorful, hopeful) posed significant challenges. These morphemes do not exist in Fante, so the translation had to rely on root words or descriptive phrases to convey the intended meaning. This limitation required a creative approach to ensure the message was accurately communicated while preserving the cultural and linguistic context. For instance, some of the words with the abovementioned bound morphemes were translated based on the root word as stated above. For example, the word “beautiful” in Fante is *few*, but there is no equivalent word for “beautifully”, so, the ‘beautifully’ is also

translated as *few*. Similarly, “darkness” is expressed as *sum* in Fante, just like “dark”. This is because the bound morphemes attached to root words in English have no distinct meaning in Fante, making them appear as zero morphs in the Fante language.

A list of keywords (English–Fante) was presented at the end of each story to facilitate vocabulary learning. The selection of these keywords was based on the calculation of English word frequency per story. For this calculation, the BNC-COCA 1–25 k Families word frequency list was used, accessed through the online tool VocabProfiler Classic (Cobb, n.d.). All words that were identified at the 2 K level or higher and all words categorized as Academic Word List (AWL) were included as keywords. A total number of 341 words were included for all three books, see Table 2.

4.1.4. Illustrations

In order for children to identify themselves with the stories and illustrations (design guideline 6), a Ghanaian graphic designer made one illustration per story. All illustrations were colorful and represented Ghanaian children and their natural surroundings (see Figures 2 and 3).



Figure 2. Illustration in the story ‘Boama and Baduwaa visit their grandfather’.



Figure 3. Illustration in the story ‘Storytime’.

5. Formative Evaluation

5.1. Workshop

An important aspect of EDR is the acknowledgement of the social context in which the design is going to be used (Visscher-Voerman & Gustafson, 2004). A strong working relationship had been developed over the course of two years with upper-primary staff from four different schools, where we had been conducting our baseline studies. With these key stakeholders, the concept of bilingual storybooks had been discussed during research meetings and approved.

After the design of the first prototypes, a one-day teacher-training workshop was organized for twelve teachers (grade 4, 5, 6) and school directors from four different schools. They were asked to contribute to the design and to discuss and agree upon the expected practicality (RQ3) and expected effectiveness (RQ4) of the products. Failure of African language programs have been described in the literature, due to a lack of involvement of teachers during the design phase of the project (Onukaogu, 2001). The workshop program included the following: presentation on context analysis and problem identification phase; presentation of design process and challenges with translations; distribution of the first prototypes, i.e., bilingual storybooks for grade 4, 5, 6; working-in-pairs session to design a lesson plan around one story and investigate whether the intervention was logically designed and usable in practice; individual assignment to design additional teaching and learning materials to support the bilingual storybooks (e.g., letter lines, vocabulary flashcards, songs, etc.). The three editors and translator were present to interact with the teachers and directors, as well as to take notes on their findings. The teachers expressed enthusiasm for the bilingual books, particularly for the illustrations and the presentation of two languages in the same page spread. An unexpected finding was that the two teachers who were not mother tongue speakers of Fante found the material very useful as a support tool for themselves, as it helped them learn more Fante words in written form. There were no identified problems with the designs, and only feedback was given on certain translations (see Section 5.3 expert review).

5.2. First Teacher Survey

To further investigate the expected practicality and effectiveness, the stakeholders participated in a brief written survey with 3 open questions at the end of the workshop:

- (1) Do you think the bilingual storybooks can be used in practice? (Expected practicality)
- (2) Do you think the bilingual storybooks will be effective in enhancing the vocabulary and reading comprehension of your learners? (Expected effectiveness)
- (3) Do you think the books can contribute to a stronger sense of identity among your learners?

All answers were collected anonymously. In order to gain an overview of the data, all written answers were typed into Word. Data were sorted and labeled per question, non-cross-sectional data organization was used (Spencer et al., 2012a). An overview of the raw data and coding-scheme can be found in the online Supplementary Materials.

Results indicated that all teachers expected the bilingual books could be used in practice; however, two teachers mentioned that the length of the proposed reading session (10–15 min) seemed too short and expected it to take 20–30 min per day. Only one teacher stated the reading session could not be held every day. Several teachers mentioned planning of reading sessions would be possible, of which three teachers were very specific: before the start of the day activities; during the extra curriculum time that is used for reading; and one teacher suggested learners could come to school earlier and do it before the normal time.

All teachers answered positively to the second question. The main contribution of the books was expected for building vocabulary in both languages (6 teachers mentioned this); improved general knowledge of both languages, including reading and writing

(5); improved comprehension of concepts, including concepts of other subjects like math, science, and history (5); using the languages to translate from English to Fante (3); increasing interest in reading and making lessons more enjoyable (2); personal gain was mentioned as learners would be better able to express themselves and be more comfortable with reading in their mother tongue (2).

All teachers responded positively to the question whether the books could contribute to a stronger sense of identity among their learners. Their answers can be grouped into four themes. Firstly, teachers noted that bilingual books can show learners that speaking Fante is important, promote their identity and self-awareness, and can add a sense of prestige to learners when they speak it. It was noted that the books preserve Fante language and culture and Fante as a valid language, as well as encourage cultural heritage exploration. The second theme concerns learners' feelings of appreciation towards their own language and culture. These answers suggested that learners will appreciate reading in their own language, they will also appreciate their own culture. Learners will realize that reading Fante is just as easy and enjoyable when speaking it. As one teacher stated: *"The learners will be proud of themselves knowing they can now read, write, and comprehend very well in both the Fante and English languages"*. A third line of answers related more to familiarizing the learners with their mother tongue language by learning and recognizing the language structures. Finally, some teachers referred to the fact that the bilingual books can support a general understanding of both Fante and English.

5.3. Expert Review Language Use

The expert review consisted of written feedback on language used in the first prototypes that were distributed during the workshop. All Fante native-speaking teachers were considered experts and requested to provide written feedback on the language used in the stories while preparing their lesson plans. A second opinion was also provided by an English Linguistics University Professor from Cape Coast University, who is also a Fante mother tongue speaker. Two key issues arose: some of the Fante words were deemed not to have been translated correctly, and due to the lay-out process, some of the Fante words were glued together, making them incomprehensible. All errors were noted and processed into second prototypes.

5.4. Second Prototype

The workshop feedback from the teachers showed that expected practicality (RQ3) and effectiveness (RQ4) was high. It was clear that the bilingual storybooks were strongly welcomed as additional MTBE materials by both teachers and school directors. Moreover, on paper, teachers managed to find space in the curriculum to use the books in their classrooms. The second prototype was used to measure actual practicality (RQ5) through classroom observations and a second written teacher survey.

5.5. Classroom Observations

One week after the workshop, a team of five observers visited twelve classrooms at four schools for classroom observations. The team consisted of one Fante–English translator, two linguists, and two teaching assistants. All used the same rubric for the observations (see online Supplementary Materials). Four visited the classrooms in pairs of two, while one worked individually. The teachers were informed beforehand about the observations, and had some days to practice the new method with their learners. During the observations, all learners were provided with a personal copy of the second prototype. Observations lasted between 20 and 40 min. Class size differences between the schools were large. The smallest class included 27 learners, whereas the largest included 67 learners. Three reports were written by the observers which are summarized below.

Start of the lessons: Most teachers introduced their lessons effectively. All lessons began with strategies designed to engage and motivate learners, with teachers referring to words or concepts from the bilingual books that were treated in prior lessons.

Language used: Most classes were conducted in Fante, using the Fante stories, with code-switching to English in some classes.

Lesson activities: Key topics that were treated during the observations were all similar. First, there was the introduction of the lesson, with reference to prior lessons, followed by the reading aloud of the story in Fante by the teacher and some learners. Finally, there was the discussion of key vocabulary. Two teachers were observed teaching morphological awareness, with some able to include additional activities to the storybooks, such as word lines, flashcards, or games. Most teachers emphasized pronunciation, oral reading, and vocabulary building. Observers in grade 4 noted the encouragement of critical thinking and collaboration, making the session dynamic and exciting. Some teachers used the bilingual storybooks to teach Fante and English simultaneously, explaining keywords and, in some cases, incorporating etymology to enhance vocabulary retention. Some writing on the blackboard of words and sentences by learners was observed in grade 5 and 6.

Teaching approaches: Teachers demonstrated varied approaches to teaching and learning, as well as the use of resources. Many used the blackboard, for example, to write keywords from the stories or word parts. One grade 5 teacher used a thought-provoking question that sparked curiosity and connected the topic to real-world examples, one teacher included group work (grade 4).

Active learning: Students were not actively encouraged to write in their notebooks or to copy from the blackboard, but mostly read aloud from the blackboard or repeat after the teacher. In one grade 5 classroom, every student was asked to read at least one sentence aloud, ensuring inclusivity and active engagement. However, in all other classes, learner engagement for reading aloud was limited. Teachers did most of the reading themselves, while the learners followed the passages in their own book. Difficult words were repeated through whole-word chorusing with the entire class. Some learners (max 3) were invited to read aloud to the class, while the others did not experience this opportunity.

Learner engagement: The majority of the learners were actively engaged in following the reading passages and seemed very much to enjoy the books. Learners in all classes paid attention during the lessons and were sometimes invited to contribute to questions unexpectedly.

5.6. Second Teacher Survey

Six weeks after the distribution of the bilingual books, all twelve teachers were asked to answer a list of written questions on paper about their use of the books in practice. Their answers to six questions relevant to the actual practicality of the books are reported here. For each question, the responses were categorized into occurring themes. Themes that occurred were grouped and analyzed according to frequency. The coding frame is presented in the online Supplementary Materials. A central feature of descriptive analysis is the language of the interviewees (Spencer et al., 2012b). Therefore, quotes form part of the report, with each quote reported in italics.

5.6.1. Teacher Questions

1. How many stories have you read to your class from the bilingual storybook?
2. Until now, which versions of the stories have you read in your classroom, Fante or English? Or both?
3. Are your learners interested in the stories? If yes, how can you tell? If not, why do you think that is?

4. Were your learners able to do the exercises? (*please be specific; which exercises did they do, which exercises did they not do, why?*)
5. Which kind of exercises were most useful to learn English? The reading comprehension questions, the word structure exercises (derivation, inflection, compounding), or the vocabulary exercises?
6. Some teachers mentioned that the bilingual books can help make your learners proud of their mother tongue and strengthen their cultural identity. Do you agree with this? If yes, can you give some examples from your classroom?

5.6.2. Summary of Findings

Since the distribution of the bilingual storybooks six weeks prior to the survey, the grade 4 classes had read thirteen stories altogether, while the grade 5 and grade 6 classes had read ten stories. All teachers reported to have read both the Fante and English versions of the stories.

All teachers confirmed their learners were interested in the stories. They stated learners' interest was noticeable because of *the way they were involved in classroom reading, how they answered questions, and could explain everything; how they actively and eagerly answered oral questions; and because of the way they contributed in class*. Teachers noted *full and maximum participation* during the bilingual storybook sessions. Two teachers mentioned that their learners were *happy when it was time for bilingual stories* and one teacher stated that her learners *always want to know when the next lesson will be*.

When asked if their learners were capable to do all the exercises, the answers were rather mixed. Some teachers confirmed that their learners were able to do all exercises, whereas others stated they only did some, such as comprehension, derivation, sentence formation, and art work (grade 4). When we followed up on their answers, it turned out that some teachers had reserved part of the exercises for the next term. This way, the use of the books and exercises could be spread throughout the year. It was clear that, eventually, all teachers planned to do all the exercises.

Regarding the usefulness of the exercises for learning English, the majority of the teachers reported that they found *all exercises useful*; particular mention was made of comprehension questions about the stories, vocabulary, and derivation exercises. One teacher mentioned that all exercises were useful *because they help in their holistic development of both languages*.

All teachers agreed that the bilingual books can help make their learners proud of their mother tongue and strengthen their cultural identity. Teachers reported that the bilingual books *help the learners to read in Fante with understanding* and that learners can now *express themselves well in the Fante language using the words from the stories*. It has also helped learners to learn new Fante words and *to know the correct pronunciation of some words in Fante*. For example, the words *abɔmbɔfo* (hunters); *asotwe* (punishment); *worutwitwa* (cutting); and *ekyikyikyir* (far away) were all pronounced wrongly in learners' spoken language, but the written language from the books helped them to pronounce the words correctly. It was also noted that some learners were *able to read fluently in their mother tongue and with enthusiasm*. Two teachers mentioned that learners are *keen to translate the English words* they come across into their mother tongue. Finally, one teacher stated that the bilingual method helps his learners *to know that both languages, Fante and English, are of equal importance*.

5.7. Final Prototype

The actual practicality of the second prototype (RQ5) was formatively tested through the reported classroom observations and the second teacher survey. Based on these results, we can conclude that the actual practicality was adequate. Some teachers were spreading

the use of the books across the year, indicating they valued the content. Although the second prototype itself did not require further adjustments, it was decided that three topics needed further elaboration in the form of an additional teacher manual and teacher training to further support the impact of the bilingual storybooks. Firstly, not all teachers were comfortable with treating morphological awareness and could benefit from further training and exposure to more diverse MA activities. Secondly, during classroom observations, no active emphasis was noted on the joy and importance of learning Fante. Teachers could be supported in various ways to teach learners the importance of mother tongue education. Thirdly, most teachers demonstrated a teacher-centered teaching approach. Interactive teachings styles such as group work or paired reading, rather than class chorusing, could benefit the outcome of the bilingual method. Moving from teacher-centered to learner-centered teaching is a long and continuous process that warrants further training. Finally, it would benefit the outcome of the method if learners would be engaged in more writing activities, which were hardly observed. Development of the teacher manual and follow-up teacher training is foreseen for 2025, whereby Ghana Education Service (GES) staff will be included in the training and distribution of the manual. An online repository will become available, where the teacher manual and best practice videos will be freely accessible.

6. Conclusions and Reflection

Research shows that recognition and utilization of learners' native language and their identities as educational resources can positively impact their learning success (Cummins, 2001; Garcia & Kleyn, 2016; Norton, 2013). The current study has demonstrated how to solve the lack of mother tongue-based education materials and to enhance learners' sense of identity. The study followed the Educational Design Research approach and described the design, development, and implementation of locally produced Fante–English bilingual storybooks for primary schools in Ghana's Central Region. The EDR intervention passed through a number of iterations, or "micro-cycles of research" (Plomp, 2013, p. 17). Two cycles of formative evaluation were used, during which we systematically followed five of the six quality criteria from Nieveen and Folmer's (2013) model. During the evaluation cycles, we tried to connect theory, design, and practice.

Our study has shown that, within the framework of EDR, involving key stakeholders and local contributors is very important when developing educational materials. Not only were the bilingual stories written by local students and teachers, but we also made sure that the graphic designer, translator, and two of the three editors were Ghanaian to support local impact. The creation of these bilingual resources is a step towards fulfilling good practice in inclusive high quality language education. Using a bottom-up approach, whereby the language richness of the written stories determined the level of the learners' exercises, seemed quite a risk at the start. Rather than following the common 'graded reader approach' for teaching vocabulary, the designer of the exercises depended on the language richness of the stories. It turned out that sufficient possibilities were available to design exercises that targeted reading comprehension, inflection, derivation, compounding, and vocabulary development.

Since the bilingual books were an addition to existing teaching and learning materials, there were no strict protocols or national standards to follow for the exercise design. A recommendation from the Ghana Education Service (GES) under the Ministry of Education will stimulate teachers to use these educational resources as Supplementary Materials in their classrooms. The first reactions from these policy-makers are positive. A GES delegation from two districts was present during the teacher training and showed interest in expanding the method towards more lower primary grades. It is crucial to include district or national education officials during the design process and training, as their

support can eventually lead to an upscaling of the project outcomes at the national level. The professional development training in our project was a platform to inform teachers about the bilingual materials as well as provide them with feedback and suggestions for future use. The hands-on format, whereby participants were stimulated to create their own supplementary classroom materials, was highly appreciated by the participants.

Based on our classroom observations and survey results, the first results look promising. The fact that bilingual books can also be a solution for teachers who do not master the L1 of the region is an unexpected added value. Like all interventions, the implementation depends on reality on the ground, such as time schedules, teacher enthusiasm, and learner motivation. The study has implications for further research. The next phase of this research warrants further investigation of the actual effectiveness stage, i.e., the sixth quality criteria of the [Nieveen and Folmer \(2013\)](#) model.

In Ghana, English remains the privileged language of education, not only because of the demand for the language-in-school assessment, but also for its use in further education and employment. This focus on English in Ghanaian classrooms results in a loss of children's cultural and linguistic identities and practices ([Erling et al., 2024](#)). Our study contributes to the larger field of mother tongue-based education in these countries by providing a framework for the development and evaluation of locally designed teaching and learning materials to improve learner access and inclusion.

7. Limitations

In the current study, we managed to describe two iterations of formative evaluation. A follow-up study should investigate whether the use of bilingual storybooks contributes to any strengthened sense of identity among the learners and improved language proficiency in Fante or English. The use of control and experimental groups will be paramount for that study, including a pre-test–post-test design.

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Notes

- ¹ In this article, we use ‘mother tongue’ as an umbrella term for the language a person speaks and understands best, which can also be labeled as their first language or native language. By choosing the term ‘mother tongue’, we follow Ghanaian academic and political discourse regarding national language policies (for example: Agyekum, 2010; Ansah, 2014; Anyidoho, 2018; Opoku-Amankwa et al., 2015; Owu-Ewie, 2006). The authors acknowledge that the concept of mother tongue education has limitations. For example, because children’s actual home language might be different from the standardized language versions used in education (Weber, 2014). Also, because negative attitudes of people toward local languages might obstruct the effective implementation of mother tongue-based language policies (Cruz & Mahboob, 2018).
- ² The figure of 99% is based on our own research data gathered at four schools in the same community (with approximately 25,000 inhabitants), located in Mfantseman District (or Fante District), which is one of the 22 districts in Central Region.

References

- Agyekum, K. K. (2010). Language shift: A case study of Ghana. *Sociolinguistic Studies*, 3(3), 381–403. [CrossRef]
- Agyekum, K. K. (2015). *Language and education in Ghana: The case of Akan and English in the classroom*. University of Ghana.
- Alidou, H., & Brock-Utne, B. (Eds.). (2006). *Teaching practices—Teaching in a familiar language*. ADEA.
- Ammah, J. O. A. (2001). *Inclusion practices of secondary physical education teachers* [Doctoral dissertation, Ohio State University]. OhioLINK Electronic Theses and Dissertations Center. Available online: http://rave.ohiolink.edu/etdc/view?acc_num=osu1486394475979455 (accessed on 12 June 2024).
- Andoh-Kumi, K. (1998). Medium of instruction at the basic education level: Does it matter? *Legon Journal of the Humanities*, 11, 119–146.
- Anlimachie, M. A., Abreh, M. K., Acheampong, D. Y., Samuel, B., Alluake, S., & Newman, D. (2025). Enacting culturally responsive pedagogy for rural schooling in Ghana: A school-community-based enquiry. *Pedagogy, Culture & Society*, 33(1), 141–159. [CrossRef]
- Ansah, G. N. (2014). Re-examining the fluctuations in language in-education policies in post-independence Ghana. *Multilingual Education*, 4(1), 12. [CrossRef]
- Anyidoho, A. (2018). Shifting sands: Language policies in education in Ghana and implementation challenges. *Ghana Journal of Linguistics*, 7(2), 225–243. [CrossRef]
- Awuah, T. N. (2022). English language teaching: Which approach should we use in our Ghanaian classrooms? *European Journal of English Language Teaching*, 7(2), 217. [CrossRef]
- Ball, J. (2010). *Educational quality for children from diverse language backgrounds: Mother tongue-based bilingual or multilingual education in the early years*. UNESCO International Symposium, Translation and Cultural Mediation.
- Benson, C. (2005). *Girls, educational equity and mother tongue-based teaching* (p. 14). UNESCO Asia and Pacific Regional Bureau for Education.
- Brown, A. (1992). Design Experiments: Theoretical and methodological challenges in creating complex interventions in classroom settings. *The Journal of the Learning Sciences*, 2(2), 141–178. [CrossRef]
- Cobb, T. (n.d.). *VocabProfilers*. n.d. Available online: <https://www.lex tutor.ca/vp/> (accessed on 12 June 2024).
- Collins, A. (1992). Towards a design science of education. In E. Scanlon, & T. O’Shea (Eds.), *New directions in educational technology* (pp. 15–22). Springer.
- Cruz, P. A. T., & Mahboob, A. (2018). Critiquing mother tongue-based language-in-education policies: A focus on the Philippines. In I. P. Martin (Ed.), *Reconceptualizing English education in a multilingual society: English in the Philippines* (pp. 47–65). Springer Singapore. [CrossRef]
- Cummins, J. (2001). HER classic reprint: Empowering minority students: A framework for intervention. *Harvard Educational Review*, 71(4), 649–676. [CrossRef]
- Cummins, J., Mirza, R., & Stille, S. (2012). English language learners in Canadian schools: Emerging directions for school-based policies. *TESL Canada Journal*, 29, 25. [CrossRef]
- Cun, A. (2022). Interactive digital book reading in families with refugee backgrounds. *Journal of Research in Childhood Education*, 36(4), 1–15. [CrossRef]
- Dolphyne, F. (1995). A note on the English language in Ghana. In A. Bamgbose, A. Banjo, & A. Thomas (Eds.), *New Englishes: A west African perspective* (pp. 27–33). Mosuro.
- Duff, P. A. (2015). Transnationalism, multilingualism, and identity. *Annual Review of Applied Linguistics*, 35, 57–80. [CrossRef]
- Eberhard, D. M., Simons, G. F., & Fennig, C. D. (2024). *Ethnologue: Languages of the world* (27th ed.). SIL International. Available online: <http://www.ethnologue.com> (accessed on 5 July 2024).
- Edu-Buandoh, D. (2016). Identity and representation through language in Ghana: The postcolonial self and the other. *International Journal of Society, Culture and Language*, 4(1), 34–44.

- Erling, E. J., Mukherjee, S. J., Safford, K., & Tugli, F. M. (2024). Ideologies of English and language of instruction in Ghana: Educator perceptions and pressures. In C. Reilly, F. Chimbutane, J. Clegg, C. M. Rubagumya, & E. J. Erling (Eds.), *Multilingual learning: Assessment, ideologies and policies in sub-Saharan Africa*. Routledge.
- Evans, D. K., & Acosta, M. A. (2020). *Education in Africa: What are we learning (center for global development working paper)*. World Bank.
- Flores, N., & Rosa, J. (2015). Undoing appropriateness: Raciolinguistic ideologies and language diversity in education. *Harvard Educational Review*, 85(2), 149–171. [CrossRef]
- García, O., & Kleyn, T. (2016). Translanguaging theory in education. In *Translanguaging with multilingual students* (pp. 9–33). Routledge.
- Ghana Statistical Service. (2015). *Ghana poverty mapping report*. Ghana Statistical Service. Available online: <https://www.statsghana.gov.gh> (accessed on 15 June 2024).
- Gilbert, E., & Reynolds, J. T. (2004). *Africa in world history, from prehistory to the present*. Pearson Education.
- Heugh, K. (2006). Theory and practice—Language education models in Africa: Research, design, decision making and outcomes. In H. Alidou, A. Boly, B. Brock-Utne, Y. S. Diallo, K. Heugh, & H. E. Wolff (Eds.), *Optimizing learning and education in Africa—The language factor. A stock-taking research on mother-tongue and bilingual education in sub-Saharan Africa*. ADEA.
- Iyamu, E. O. S., & Ogiegbaen, S. E. A. (2007). Parents and teachers' perceptions of mother-tongue medium of instruction policy in nigerian primary schools. *Language, Culture and Curriculum*, 20(2), 97–108. [CrossRef]
- Kanyane, F. M. (2024). An encounter with some translators: Challenges they faced when translating long walk to freedom. *Southern African Linguistics and Applied Language Studies*, 42(2), 248–260. [CrossRef]
- Khumalo, L. (2023). *Developing (South) African languages for the digital future (Keynote address)*. BAAL Language in Africa SIG Annual Conference 2023: The Use of African Languages in Education and New Technologies: Issues and Challenges for Decolonial Times, Online.
- Kwaa Prah, K. (2009). Mother-tongue education in Africa for emancipation and development: Towards the intellectualisation of African languages. In B. Brock-Utne, & I. Skattum (Eds.), *Languages and education in Africa* (pp. 83–104). Symposium Books.
- Leherr, K. (2009). *National Literacy Acceleration Program (NALAP) baseline assessment Ghana*. Education Development Center.
- Li, T., McBride-Chang, C., Wong, A., & Shu, H. (2012). Longitudinal predictors of spelling and reading comprehension in Chinese as an L1 and English as an L2 in Hong Kong Chinese children. *Journal of Educational Psychology*, 104(2), 286–301. [CrossRef]
- Ma, J. (2008). 'Reading the word and the world'—How mind and culture are mediated through the use of dual-language storybooks. *Education 3–13*, 36(3), 237–251. [CrossRef]
- Mahama, E. S. (2012). Ghanaian English and its implications for academic writing: A case study of English on the Navrongo campus of university for development studies, Ghana. *Research on Humanities and Social Sciences*, 2(11), 56–63.
- McKenney, S., & Reeves, T. C. (2012). *Conducting educational design research*. Routledge.
- MINEDH. (2017). *Language mapping study in Mozambique*. Ministry of Education and Human Development Mozambique. Available online: https://pdf.usaid.gov/pdf_docs/pa00n7sd.pdf (accessed on 15 February 2025).
- Ministry of Education. (2014). *Ghana 2013 early grade reading assessment and early grade mathematics assessment: Reports of findings*. GES.
- Minkailou, M. (2017). Attitudes towards the use of Sonjay as a language of education in Gao (Northern Mali). *International Journal of English Language, Literature in Humanities*, 5(5), 270–288.
- Msila, V. (2011). "Mama does not speak that (language) to me": Indigenous languages, educational opportunity and black African preschoolers. *South African Journal of Childhood Education*, 1(1), 48–67. [CrossRef]
- Nag, S., Vagh, S. B., Dulay, K. M., & Snowling, M. J. (2019). Home language, school language and children's literacy attainments: A systematic review of evidence from low- and middle-income countries. *Review of Education*, 7(1), 91–150. [CrossRef]
- Ndhlovu, F., & Makalela, L. (2021). *Decolonising multilingualism in Africa. Recentering silenced voices from the Global South*. Multilingual Matters.
- Nieveen, N., & Folmer, E. (2013). Formative evaluation in educational design research. In T. Plomp, & N. Nieveen (Eds.), *Educational design research. Part A: An introduction*. SLO Netherlands Institute for Curriculum Development.
- Norton, B. (2013). Identity, literacy, and the multilingual classroom. In *The multilingual turn* (pp. 103–122). Routledge. Available online: <https://faculty.educ.ubc.ca/norton/Norton%20in%20May%202013.pdf> (accessed on 12 June 2024).
- Obeng, S. G. (1997). An Analysis of the linguistic situation in Ghana. *African Languages and Cultures*, 10(1), 63–81. [CrossRef]
- Onukaogu, C. E. (2001, July 17). *Second language teaching and learning: The Nigerian experience*. Annual Meeting of the International Reading Association, Washington, DC, USA.
- Opoku-Amankwa, K. (2009). English-only language-in-education policy in multilingual classrooms in Ghana. *Language, Culture and Curriculum*, 22(2), 121–135. [CrossRef]
- Opoku-Amankwa, K., Edu-Buandoh, D. F., & Brew-Hammond, A. (2015). Publishing for mother tongue-based bilingual education in Ghana: Politics and consequences. *Language and Education*, 29(1), 1–14. [CrossRef]
- Owu-Ewie, C. (2006). The language policy of education in Ghana: A critical look at the English-Only language policy of education. In J. Mugane (Ed.), *Selected proceedings of the 35th annual conference on African linguistics* (pp. 76–85). Cascadilla Proceedings Project. Available online: <https://www.lingref.com/cpp/acal/35/paper1298.pdf> (accessed on 25 June 2020).

- Phillipson, R. (2018). Linguistic imperialism. In *The encyclopedia of applied linguistics* (pp. 1–7). Wiley. [CrossRef]
- Plomp, T. (2013). Educational design research: An introduction. In T. Plomp, & N. Nieveen (Eds.), *Educational design research. Part A: An introduction*. SLO.
- Qorro, M. A. S. (2009). Parents' and policy makers' insistence on foreign languages as media of education in Africa: Restricting access to quality education—For whose benefit? In I. Skattum (Ed.), *Languages and education in Africa: A comparative and transdisciplinary analysis*. Symposium Books.
- Read, K., Contreras, P. D., Rodriguez, B., & Jara, J. (2021). ¿Read Conmigo?: The effect of code-switching storybooks on dual-language learners' retention of new vocabulary. *Early Education and Development*, 32(4), 516–533. [CrossRef]
- Reeves, T. C. (2006). Design research from a technology perspective. In J. Van den Akker, K. Gravemeijer, S. McKenney, & N. Nieveen (Eds.), *Educational design research* (pp. 52–66). Routledge.
- Reilly, C., Scandurra, R., ResCue, E., Hermannsson, K., & Gayton, A. (2023). Language and employment in Ghana: Capturing the multilingual reality. *Journal of Multilingual and Multicultural Development*, 44(9), 807–826. [CrossRef]
- Schacter, P. (1968). *A phonology of Akan: Akuapem, asante, fante*. UC Press.
- Simons, G. F., & Charles, D. F. (2018). *Ethnologue: Languages of the world* (21st ed.). SIL International.
- Sneddon, R. (2009). *Bilingual books: Biliterate children learning to read through dual language books*. Trentham Books and Mantra Lingua.
- Spencer, L., Ritchie, J., & O'Connor, W. (2012a). Analysis: Practices, principles and processes. In J. Ritchie, & J. Lewis (Eds.), *Qualitative research practice* (pp. 199–218). Sage.
- Spencer, L., Ritchie, J., & O'Connor, W. (2012b). Carrying out qualitative analysis. In J. Ritchie, & J. Lewis (Eds.), *Qualitative research practice* (pp. 219–262). Sage.
- Stoffelsma, L., Mwinlaaru, I. N., & Quansah, S. (2024). *Bilingual education in Ghana's Postcolonial English Context: Investigating L1 and L2 literacy skills to improve quality learning*. British Association of International and Comparative Education (BAICE)—Transgression and transformation: (Re)bordering Education in Times of Conflict and Crises, Sussex University.
- Stoffelsma, L., Quashigah, M. S., & Mwinlaaru, I. N. (under review). *Reading achievement among bilingual children in a postcolonial English context: The importance of cross-linguistic transfer and socio-economic status*.
- Stoffelsma, L., Wilsenach, C., & Mutema, F. (2025, October 10–12). *Perspectives on oral reading fluency, vocabulary and reading comprehension in bilingual learners from Ghana, South Africa and Zimbabwe*. 20th Annual LITASA Conference: Amazwi Ethu—Our Voices, Durban, South Africa.
- Trudell, B. (2007). Local community perspectives and language of education in sub-Saharan African communities. *International Journal of Educational Development*, 27(5), 552–563. [CrossRef]
- Trudell, B. (2023). *Early-exit language transitioning programming: The rationale, the benefits and the limitations*. UNESCO Paper commissioned for international mother language day 2023, issue.
- Tufuor, B. (2009). Historical perspectives on the role of local languages in religious practice in Ghana. *African Studies Journal*, 18(3), 45–59.
- UNESCO. (1953). The use of vernacular languages in education. In UNESCO (Ed.), *Monographs on fundamental education* (Vol. 8, p. 156). UNESCO.
- UNESCO. (2024). *International mother's language day*. Available online: <https://www.unesco.org/en/articles/international-mother-language-day-why-multilingual-education-key-intergenerational-learning?hub=6664617th> (accessed on 17 July 2024).
- Visscher-Voerman, I., & Gustafson, K. L. (2004). Paradigms in the theory and practice of education and training design. *Educational Technology, Research and Development*, 52(1), 69–89. [CrossRef]
- Vuzo, M. (2005). Using English as a medium of instruction in tanzania secondary schools: Problems and prospects. In Z. D. a. M. Q. Birgit Brock-Utne (Ed.), *Loitasa research in progress* (pp. 55–83). KAD Associates.
- Walker, S., Edwards, V. K., & Blacksell, R. (1996). Designing bilingual books for children. *Visible Language*, 30, 268–283.
- Weber, J.-J. (2014). *Flexible multilingual education: Putting children's needs first*. Multilingual Matters.
- Wilmot, E. M. (2011). Stepping outside the ordinary expectations of schooling: Effect of school language on assessment of children's knowledge of mathematics in Ghana. *African Journal of Educational Studies in Mathematics and Sciences*, 7, 61570. [CrossRef]
- Wolff, H. E. (2006). Background and history: Language politics and planning in Africa. In H. Alidou, A. Boly, B. Brock-Utne, Y. S. Diallo, K. Heugh, & H. E. Wolff (Eds.), *Optimizing learning and education in Africa—The language factor. A stock-taking research on mother-tongue and bilingual education in sub-Saharan Africa* (pp. 26–55). Association for the Development of Education in Africa (ADEA).
- Zaidi, R. (2020). Dual-language books: Enhancing engagement and language awareness. *Journal of Literacy Research*, 52(3), 269–292. [CrossRef]

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