

# Implementing Mother Tongue Based Bilingual Education through Translanguaging in Multilingual Classrooms: A Systematic Review

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**Abstract.** Mother-tongue based bilingual education (MTBBe) and translanguaging have received increased attention in recent years. MTBBe has been widely recognized as an asset in early grades to improving learning outcomes and linguistic equity in multilingual contexts. However, its implementation often faces challenges related to teacher preparedness, complex linguistic realities of classrooms, and public attitude. Translanguaging, which leverages learners' full linguistic repertoire, has also emerged as a promising pedagogical strategy to enhance MTBBe since it promotes fluid language use in multilingual context. However, a concern is that research on MTBBe implementation and translanguaging approaches has not addressed the complex issues of multilingual classrooms. This systematic literature review draws on empirical studies on pilot projects on MTBBe and translanguaging in South Africa (SA). Using a PRISMA guideline for systematic literature review, this study reveals the current state of MTBBe implementation in pilot schools across the country and highlights the benefits of translanguaging in the implementation of MTBBe in multilingual classrooms. A data search of MTBBe and translanguaging between 2015 and 2025 was conducted to address this area of interest. This systematic literature review synthesizes the state of implementation of MTBBe in pilot schools and in multilingual classrooms using translanguaging, to inform the educational stakeholders about the implications of the implementation of MTBBe using translanguaging approaches and contribute to the growing body of knowledge in multilingual context by offering insights from educators and the public on the implementation of MTBBe.

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## 1. Introduction

Mother-tongue based bilingual education (MTBBE) can have significant positive influence on learners' language skills, literacy and academic achievement especially in early education (Alexander, 2009; Alexander & Bloch, 2004; Cummins, 2001; Bloch et al., 2010; Heugh, 2011). MTBBE entails that a learners' mother tongue is used concurrently with English as the medium of instruction. Similarly, translanguaging which looks at flexible language practices and what speakers do with languages in their repertoires, has gained popularity in the global south as an asset-based perspective that views bilingualism and multilingualism as a cognitive and cultural asset rather than a hindrance to learning (Creese & Blackledge, 2010; Makalela, 2016; Maseko & Mkhize 2021).

There is an anticipation that the implementation of MTBBE and utilization of translanguaging in schools has potential for improving learners' academic success and elevating the status of African languages (Charamba, 2022; Tshuma & Le Cordeur 2017; Mini & Botha, 2020; Makalela, 2015; Olawale et al., 2024; Wildsmith- Cromarty, 2018). However, despite the potential benefits of MTBBE and translanguaging, their implementation has been degraded due to factors such as language policies, educator training, societal attitudes, and the availability of educational resources. Although research on the implementation of MTBBE using translanguaging is still in early stages, and increasingly gaining popularity, studies have shown that the dawn of the new democracy in South Africa (SA) has also increased the interest of MTBBE in schools, to include previously marginalized African languages in the mainstream through using translanguaging strategies.

To understand this phenomenon, this systematic literature review draws on empirical studies on MTBBE and translanguaging, since this study aims to present the current state of the implementation of MTBBE and how translanguaging has supported this implementation; it further highlights whether the implementation is applicable in multilingual classrooms. Using PRISMA guidelines for systematic reviews to identify gaps in existing literature (Page et al., 2020) this study answers the following research questions:

1. What are the challenges associated with implementing MTBBE using translanguaging in multilingual classrooms?
2. What is the current state of the Language in Education Policy (LIEP) interpretation and MTBBE implementation?
3. What are educators' and public views on the implementation of MTBBE using translanguaging?
4. What are the results from the pilot project of MTBBE implementation across the country?

Through critically examining these questions, this review seeks to provide valuable insights for educators, policymakers, and researchers interested in

improving the implementation of MTBEE through translanguaging approaches. The following sections will outline the reviews' methodology, present key findings from the literature, and discuss the implications of these findings for educational practice and policy.

## 2. Methodology

This section presents a systematic review process used in this study. A systematic literature review is important when a researcher wants to identify a gap that exists in the literature and present new insights on related matters. Systematic literature reviews follow a clearly defined plan (Bowman et al., 2016). We have systematically searched and analyzed a sample of 50 articles, in an attempt to answer how will the implementation of MTBEE be carried out using pedagogical translanguaging in multilingual classrooms. In our literature search we included studies from the last ten years in Scopus and Sabinet that shared commonalities in mother-tongue, translanguaging and multilingual classrooms. Articles that focused on monolingual approaches were excluded from the literature search, and articles on MTBEE and translanguaging that were not conducted in SA and did not have empirical evidence, were also excluded from this criterion because they were not relevant for the researchers to answer their research question

In this study we used a PRISMA guideline to collect data. The procedure included a systematic data search, abstract and full-text screening. We used the University of Johannesburg's and Northwest university's library databases to search for articles. The systematic search included all the empirical studies conducted on MTBEE and translanguaging over the past ten years, since we wanted to check whether any of the studies on MTBEE and translanguaging have focused on the complex issues of the multilingual classroom. As a point of departure, we searched for literature on MTBEE and translanguaging, but very limited results were obtained. We then searched for the terms independently when we searched for MTBEE studies in SA on Scopus over the period of ten years. It was only when we searched on SABINET that enabled us to get better results on MTBEE studies in SA over ten years.

Consecutively, when we typed 'translanguaging' and we got a large corpus of results since there has been an increase in translanguaging studies over the past ten years, to limit them, we added 'translanguaging studies in SA between the period of 2015-2025', and then we got 101 studies on Scopus; similarly on SABINET, when we searched for 'translanguaging studies in SA' within a range of ten years we obtained 279 results. Articles were full text screened, and after duplicate removal, screening of the abstract, and application of the inclusion and exclusion criteria, a total of 50 studies were taken as primary studies to answer the research questions. Those studies were empirical studies on MTBEE and translanguaging in SA; and these were synthesized following PRISMA.

**Table 1: Data coding and quality criteria table**

Aspect	Details
<b>Data Collection Framework</b>	-PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines followed.
<b>Databases Searched</b>	- University of Johannesburg Library Database- North-West University Library Database- Scopus- SABINET
<b>Search Terms Used</b>	- Mother Tongue-Based Bilingual Education (MTBBE), Translanguaging in SA
<b>Time Frame for Inclusion</b>	-Studies published between 2015-2025
<b>Search Strategy</b>	- Initial combined search for MTBBE and translanguaging yielded limited results -Separate searches were conducted for MTBBE and translanguaging- Additional filters applied for South African context - Greater results obtained from SABINET for MTBBE in SA - Large corpus found for translanguaging; narrowed by geographic and temporal scope
<b>Screening Process</b>	- Removal of duplicates - Abstract screening - Full-text screening - Application of inclusion/exclusion criteria
<b>Inclusion Criteria</b>	- Empirical studies- Focus on MTBBE and/or translanguaging - Conducted in the South African context- Published within the last 10 years
<b>Exclusion Criteria</b>	- Non-empirical papers - Studies outside South Africa - Publications before 2015 - Studies not addressing multilingual classroom challenges
<b>Number of Studies Included</b>	-50 empirical studies
<b>Coding Techniques Employed</b>	- <b>Descriptive Coding:</b> Used to summarize key features of each study (author, year, location, focus, methodology) - <b>Thematic Coding:</b> Applied to identify recurring themes related to MTBBE and translanguaging practices in multilingual classrooms - <b>Analytic Coding:</b> Focused on patterns, gaps, and challenges addressed in each study in relation to the research questions
<b>Data Synthesis Method</b>	- Narrative synthesis based on thematic groupings - PRISMA framework used for systematic reporting and transparency

**Table 2. Databases and search results**

Database	Search results
Scopus	101
Sabinet	279
Total	380

### 3. Findings from literature on MTBBE and Translanguaging implementation

This section is structured according to the themes that emerged from the research questions.

#### 3.1 Challenges of MTBBE implementation in SA

Despite the efforts, there are significant challenges in implementing bilingual teaching strategies, which include limited resources, lack of professional development for educators, and varying levels of proficiency in both languages among teachers and students. Babane and Maluleke (2020) note that SA, like any country around the globe, is multilingual, meaning that many languages exist within its societies and resulting in people speaking more than two languages.

The multilingual nature of SA raises a concern in a call for implementation of MTBBE in schools, as to how will the schools determine the language policy that will ensure that they do not discriminate against and violate learners' rights to access education through their mother-tongue from Grade 4 upwards. A significant concern is that instruction in the mother tongue might lessen the focus on multilingualism. Malindi et al. (2023) note that in multilingual societies it would be difficult to implement the MTBBE, because in instances where many languages exist it becomes difficult to choose the language of teaching and learning (LoLT).

The implementation of MTBBE presents possible challenges for multilingual education, since in multilingual settings many languages co-exist, making it difficult to identify a learners' mother tongue, because learners use languages in their repertoires flexibly. Makalela (2016) notes that in multilingual environments learners cannot identify their mother-tongue, and the concern is whether the implementation of MTBBE is a threat or resource to multilingual learners.

Malindi et al. (2023) note that although MTBBE aims to improve educational outcomes by teaching learners in their indigenous language alongside a second language, typically English, its implementation in a linguistically diverse environment faces several challenges that could endanger the primary goal of multilingual education. The other challenges with the implementation of MTBBE is that it is based on bilingual education, which frequently concentrates on two primary languages, and this focus can result in the sidelining of other native languages, decreasing their usage and presence in educational environments (Malindi et al. 2023). This raises a concern of whether MTBBE is a threat or a resource in a multilingual classroom.

Implementing a bilingual policy, such as MTBBE, is challenging since it might not fully meet the needs of a multilingual society, where more than two languages exist. Malindi et al. (2023) note that the LoLT in SA is a 'nightmare' for schools, which is because schools are highly diverse, meaning that schools have learners who come from different linguistic backgrounds, and they must ensure that in implementing MTBBE all learners' linguistic needs are catered for. Similarly, Gambushe (2024) notes that giving precedence to native languages, other

languages, especially those not identified as mother tongues and spoken by the minority, may be overlooked. Tshuma and Le Cordeur (2017) argue that inadequate proficiency in the LoLT negatively impacted teachers' ability to effectively teach mathematics. This indicates that MTBME implementation requires scrutiny, especially in a multilingual context, because if it is not executed with care, it might be a threat to multilingual environments.

Ngcobo and Barnes (2021) note that the implementation of MTBME differs; some areas have made significant progress, whereas others lag due to administrative and logistical challenges. Similarly, Angermeyer (2023) argues that the challenge is that policy application can be inconsistent, leading to unequal opportunities for speakers of less dominant languages, and differences in MTBME's implementation across different regions could result in inconsistent educational outcomes and pose a threat to multilingual education.

Yunhua and Budiman (2024) claim that the implementation of MTBME raises concern regarding the capability of African languages to manage technical subjects, the availability of qualified teaching staff, and the creation of suitable educational materials. Kretzer & Oluoch-Suleh (2022) add that implementing MTBME encounters practical challenges, such as the need for teaching materials and trained teachers proficient in various native languages. All these issues raised here indicate that there are prevailing challenges that hamper the implementation of MTBME in pilot schools so far, and the government needs to address these challenges before issuing the rollout of the MTBME.

### **3.2 The LIEP interpretation and implementation of MTBME in schools**

As the world is becoming linguistically diverse, education systems are faced with challenges of providing equitable and effective instruction for linguistically diverse learners. In SA, the Language in Education Policy (LIEP) clearly states that learners should be taught in their mother tongue (Chitapi, 2018). This suggests that the underlying principle of LIEP is maintenance of home languages while providing access to effective acquisition of additional languages (Stroud, 2020), and so far, the implementation of LIEP in SA has been misinterpreted. The LIEP supports multilingualism in educational institutions, allowing students to learn at least one native language.

Stoop (2017) asserts that SA language policies are more inclusive of multiple languages, and face challenges in implementing effective mother-tongue education. The execution of this policy has been difficult, as many schools have chosen English as the medium of instruction because of parental preferences and perceived advantages (Mulaudzi, 2024). The Curriculum and Assessment Policy's (CAPS) interpretation of the LIEP entails that the first three years of schooling should be in the learners' mother-tongue and then there should be a transition to English from Grade 4 onwards to receive the curriculum (Chitapi, 2018). This denotes that learners are only taught in their mother tongue in the Foundation Phase (FP) and then switch to English as a LoLT from Grade 4.

This switch denotes that from Grade 4 learners are not receiving instruction in their mother tongue, instead the LoLT is their second language, and that is constitutionally unacceptable, since the constitution, which is the supreme law of the country, clearly states that every child has a right to receive education in their home language (Stoop, 2017). The home language refers to learners' mother tongue, the language they acquired from birth before learning an additional language (Malindi et al., 2023). The implementation of MTBME is designed to close the achievement gap that learners experience when shifting to English instruction from the mother-tongue instruction that is used in the FP (Delprato, 2021). However, over the past ten years the government has made propositions to revisit the LIEP and rollout the implementation of MTBME.

The introduction of MTBME in SA represents a significant move to enhance literacy and educational results for African learners, because MTBME prioritizes using learners' native languages as the main medium of instruction while also incorporating additional languages such as English (Gambushe, 2024; Malindi et al., 2023; Siegrühn & Grant, 2022). MTBME focuses on bilingual education by using the mother tongue alongside one additional language, generally English or Afrikaans (Ngcobo & Barnes, 2021). The implementation of MTBME is encouraged by research that posits that learners achieve better learning outcomes if they are instructed in their first language (Mouboua et al., 2024).

The government implementation of MTBME strategy includes gradual introduction from the current year in 2025 in mathematics and natural science and technology from Grade 4. This gradual implementation of MTBME is not surprising because of drastically poor performance in the afore-mentioned subjects. The anticipation is that MTBME implementation in these subjects will lead to improved learner performance, since MTBME acknowledges the significance of a child's existing knowledge and experiences, highlighting the use of home languages as educational resources. Yunhua and Budiman (2024) argue that it is crucial to ensure that while students are instructed in their mother tongue, they also continue to acquire additional languages effectively. The proposed rollout entails that learners will be taught scientific subject in indigenous languages for them to better understand.

### **3.3 The implementation of MTBME using translanguaging**

The implementation of MTBME from Grade 4 upwards means that learners should be taught content subjects using their mother-tongue, which means that the LoLT should be learners' mother-tongue, and for African learners, this means that they should be taught content subjects using African languages; and translanguaging seems to be the only practice that favors this attempt. Babane and Maluleke, (2020) state that the current linguistic practice in SA schools is that African languages should be used alongside English as a LoLT. This belief is supported by the initial proponents of translanguaging, who noted that translanguaging practices allow learners to alternate between the language of input and output to rescue minority languages from perishing (Williams, 2000). The implementation of MTBME in SA using translanguaging will entail that learners are encouraged to use their mother tongue to facilitate understanding.

MTBBE and translanguaging approaches have emerged in recent decades in SA to support language development, cognition, and academic achievement for bi-/multilingual learners. Moreover, translanguaging refers to dynamic linguistic practices that allow learners to alternate between the language of input and output for meaning-making purposes across different languages (Williams, 2020). Mbirimi-Hungwe (2023) asserts that translanguaging is a pedagogical strategy to promote multilingualism. Translanguaging promotes richer classroom interactions, encouraging participation and collaboration among students (Charamba, 2022).

Furthermore, Wildsmith-Cromarty's (2018) study found that using translanguaging strategies, specifically incorporating isiZulu and English, significantly enhanced the learning experience of third-year BA students at the University. This implies that translanguaging is a suitable strategy for bilingual settings, and its impact in multilingual settings, and when used as a strategy for MTBBE, remains under investigated. Malindi et al., (2023) note that the benefits of MTBBE are that if learners learn in their mother tongue it supports their cognitive development and facilitates understanding of complex ideas, thus allowing learners to more easily transition to other languages; thus, facilitating bilingualism. In addition, translanguaging has the potential to bridge linguistic and cultural gaps, fostering a more inclusive and effective educational environment (Wildsmith-Cromarty, 2018).

### **3.4 Public attitude towards implementation of MTBBE using translanguaging in schools.**

The area of concern regarding the implementation of MTBBE is the attitude of educators and the public at large. The successful rollout of language policies depends on the backing of parents and the community; and currently there seem to be opposing views regarding the MTBBE implementation in schools. There is a constant preference for English as the primary language of instruction, motivated by the belief that fluency in English is crucial for enhanced economic prospects, and this preference often results in the sidelining of indigenous languages in the classroom (Ngcobo & Barnes, 2021).

Some parents and teachers prioritize English due to its perceived socio-economic advantages. Such a preference can detract from promoting native languages in education. Studies reveal that the parents feel that the implementation of MTBBE in schools will disadvantage their learners and exclude them from the mainstream economy, since English is the language of power and job access, unlike African languages (Quan et al., 2024). Parents feel that the implementation of MTBBE in schools will exclude their children from the globalized world where English competencies are regarded as vital for access.

Quan et al., (2024) further claim that the government needs to ensure that the implementation of MTBBE does not become like the apartheid laws of language, the Bantu Education Act of 1953 (BEA), that intentionally excluded African people from the mainstream economy through excluding African languages from the economy. Malindi et al. (2023) in their study on the implementation of MTBBE in

teaching mathematics, found that although mother-tongue instruction is beneficial, educators held a different perspective, as the educators in this study were not keen to implement MTBME and had negative attitudes towards it. The participants in this study believed that the implementation of MTBME is a strategy to isolate SA learners from internalization education (Malindi et al., 2023). Arguably this entails that the implementation of MTBME depends on the attitude of educators, and for it to be successfully implemented educators' beliefs should be changed to 'buy into' the implementation of MTBME through professional development.

#### **4. Results of MTBME implementation pilot projects across the country**

The Eastern Cape is one of the first provinces to carry out the implementation of MTBME since 2012. However there have been challenges in implementing MTBME in this province. Major challenges have included insufficient resources in indigenous languages, and lack of support for educators to implement MTBME, which hinders the ability to deliver quality education in indigenous languages (Becerra-Lubies et al., 2021). In Limpopo, Gempeso and Mendez (2021) maintained that securing sufficient resources, successful execution, and a balanced strategy for language teaching will be pivotal for the successful implementation of MTBME. Limpopo province is multilingual, unlike the Eastern Cape that has two dominant languages, English and isiXhosa, and implementing MTBME might pose practical difficulties within diverse linguistic groups, especially in areas with several main languages, like that of Limpopo.

The issue of MTBME implementation in Limpopo needs to be addressed properly before the actual rollout of the policy. The lack of resources in Mpumalanga schools poses challenges for implementation of MTBME. Delprato (2021) argues that many schools in Mpumalanga lack these essential resources, making the program's successful execution difficult since effective MTBME requires significant investment in teacher training, development of educational materials, and infrastructure support. Tshuma and Le Cordeur (2017) call for policies that support multilingual education to provide resources for effective implementation.

On the other hand, in KwaZulu-Natal (KZN), the implementation of MTBME has not been saturated in schools, even in institutions of higher learning attempts have been made to elevate the status of African languages (Mthombeni, 2021). Indeed, Ngubane and Ntombela (2024) note that the strategy of MTBME is gradually being introduced in South Africa, including in the Free State, with the goal to enhance educational outcomes by utilizing students' native languages as the medium for some subjects. In the Free State, many educators are mainly trained in English and may lack the essential skills to teach in African languages, such as Sesotho and isiXhosa.

This entails that there is a need for ongoing professional development and language training programs for educators to prepare them to teach content subjects using indigenous languages. Tshuma's (2021) study found that there is a need for better training of educators in multilingual education strategies, including integrating language and content instruction. Vadivel et al. (2021) argue

that professional development and language training is crucial but can be difficult to execute consistently. Malindi et al. (2023) notes that in the Northwest, the pilot project of MTBEE included subjects such as science, and mathematics to be taught in SeTswana, IsiXhosa and SeSotho from Grades R to 7, since these are dominant languages in the Northwest. Lastly, in the Western cape, the implementation of MTBEE is confronting significant challenges such as resource limitations, teacher training, policy support, and community attitudes that could hinder its implementation (Mouboua et al., 2024).

The pilot project result indicates the commonalities between different provinces that there is lack of resources to support the implementation of MTBEE, and educators are not sufficiently trained to teach content subjects in indigenous languages. These findings from empirical studies indicate that there is a gap in the execution of resources to support the implementation and preparedness of educators. Although challenges have been highlighted by the pilot project on MTBEE implementation, it is important to note that the implementation of MTBEE is currently ongoing and is supported by the LIEP.

**Table 3 Empirical studies on MTBEE and translanguaging in SA**

List of studies between 2015-2025	Focus	Context	Findings	Source
Leketi Makalela (2015) Translanguaging as a vehicle for epistemic access: cases for reading comprehension and multilingual interactions	Implementation of translanguaging in the classroom- whether it allows for epistemic access.	Primary school- Grade 6 classroom	Using translanguaging strategies significantly enhanced students' cognitive and social benefits. Alternating multiple languages within the same lesson helped students' better access and understand complex academic content.	Sabinet
Mgijima Vukile Desmond, and Leketi Makalela (2016) The effects of translanguaging on the bi-literate inferencing strategies of fourth grade learners.	Focuses on evaluation of the efficacy of using learners home language and additional language in reading and development of bilinguals.	Rural Eastern Cape schools.	Translanguaging techniques significantly improved learners' ability to draw inferences during reading.	Sabinet
Chrizell Stoop (2017) Children's rights to mother-tongue	Focused on MTBEE implementation	SA across different provinces and in Germany	The study emphasized that mother-tongue	Scopus

education in a multilingual world: A comparative analysis between South Africa and Germany	between SA and Germany		education is crucial for cognitive, social, and communal development. It helps children perform better academically and maintain their cultural identity	
Lindiwe Tshuma (2021)  Book Review The Language Issue in the Teaching of Mathematics in South Africa	Focused on the Implementation of MTBME in the Intermediate Phase	Western Cape	Students often struggle with mathematics due to language barriers, not a lack of mathematical ability, and alternating between languages helps bridge the gap between students' home languages and the language of instruction.	Sabinet
Ndimande-Hlongwa, Nobuhle, and Hloniphani Ndebele (2017)  Embracing African languages as indispensable resources through the promotion of multilingualism.	Emphasized equality among all 11 official languages of South Africa.	was conducted at the University of KwaZulu-Natal in South Africa.	Embracing African languages in higher education enhances cultural understanding	Sabinet
Nchindila (2017)  Investigating benefits of mother tongue instruction in multilingual Africa: the role of Content and Language Integrated Learning	Focused on mother tongue instruction and the role of CLIL.	Conducted at North-West University, specifically at the Mafikeng Campus in South Africa	Mother tongue instruction significantly enhances students' comprehension and academic performance. Mother tongue instruction, supported by CLIL, can foster better understanding and academic success in multilingual educational settings	Sabinet
Rosemary Wildsmith-Cromarty, (2018)	Translanguaging and knowledge base	was conducted at North-West	Importance to develop a strong knowledge base in	Sabinet

Building a knowledge base for language teaching through translanguaging		University in South Africa	both the target language and the language of instruction for deeper comprehension and engagement.	
Michael Le Michael and Lindiwe Tshuma (2019)  Intermediate phase mathematics teachers' proficiency in the language of learning and teaching: the Eastern Cape Province	Focused on IP educators' proficiency in the LoLT of Mathematics.	took place in the Eastern Cape Province of South Africa.	Intermediate Phase Mathematics teachers faced significant challenges related to their proficiency in the language of learning and teaching (LoLT).	Sabinet
Buyiswa M. Mini and Christoffel R. Botha (2020)  Eastern Cape's Language-in-Education policy implementation initiative for bilingual education: A historical and onion metaphor conceptualization.	The study provided a detailed historical account of language policy and planning (LPP) events in the Eastern Cape	Conducted in the Eastern Cape	Major stakeholders, including educators, policymakers, and community members, had varied perceptions and views on the implementation of MTBME program, and their perceptions influenced the success and challenges of the initiative.	Scopus
Edwin Darrell de Klerk, June Monica Palmer, and Papashane (2021)  Promoting multilingualism: Foundation Phase teachers' experiences in teaching isiXhosa to native speakers of Afrikaans	The study focused on the teaching of IsiXhosa to native Afrikaans speakers.	took place in the Northern Cape region of South Africa.	Lack of Training and Resources: Teachers often lack adequate training and resources to teach isiXhosa effectively	Sabinet
Surette van Staden (2021)  Beyond language policy intention to implementation – Evidence of multilingualism in	Focused on policy implementation	It took place in primary school classrooms across South Africa	Significant gap between policy intentions and classroom realities, with many schools unable to fully integrate multilingual	Sabinet

South African primary school classrooms			practices due to logistical and practical constraints.	
Erasmus Charamba (2022) <i>Bridging Discourses in Science Education Through Translanguaging Amongst Sixth-Grade Students in the Free State Province</i>	Focused on the role of language on academic performance of learners in Natural sciences.	This study was conducted in the Free State	Students taught using translanguaging strategies showed better comprehension and academic performance in science.	Sabinet
Vimbai Mbirimi-Hungwe (2023) <i>Promoting multilingualism through translanguaging in South African classrooms</i>	Focused on the use of translanguaging pedagogies in multilingual classrooms.	This study was conducted at Sefako Makgatho University of Health Science, Gauteng Province	Use of multiple languages allows students to use multiple languages in the learning process.	Sabinet
Babawande Emmanuel Olawale, Winston Hendricks, and Lazola Rusi (2024) <i>Bilingual teaching in South Africa: a qualitative inquiry into the strategies used for the preparation of mathematics teachers in the foundation phase</i>	Focused on the implementation of bilingual strategies in mathematics teaching.	was conducted in the Eastern Cape province of South Africa	The study found that teacher training programs in the Eastern Cape are incorporating bilingual teaching strategies to better prepare mathematics teachers for the foundation phase	Scopus

## 5. Discussion

Over the past ten years attempts have been made to implement MTBME beyond the FP through pilot projects across different provinces in SA. The results from the pilot project form part of this systematic review. Despite the duration of these pilot projects there is still no clear evidence of whether a full implementation of MTBME is possible, especially because the world is now increasingly multilingual, and classroom dispensation has also been highly affected. The concern is whether the MTBME as proposed by LIEP is still relevant in linguistically diverse classroom. The government implementation of the MTBME strategy includes gradual introduction from the current year in 2025 in mathematics and natural science and technology from Grade 4, and as already mentioned, this gradual implementation of MTBME is not surprising because of drastically poor performance in the

mentioned subject. The anticipation is that MTBBE implementation in these subjects will lead to improved learner performance.

The idea behind this gradual rollout is that teaching in students' native language can greatly improve their understanding and retention of complex topics. By using their home language for instruction, students are expected to better grasp mathematical and scientific concepts, potentially leading to higher academic achievement (Malindi et.al, 2023). However, the effectiveness of MTBBE in diverse classrooms is still debated. The growing multilingualism in schools presents challenges to the consistent application of MTBBE. Despite the positive intentions, there are concerns about the practical aspects of implementing MTBBE, which include the need for well-trained teachers, suitable teaching materials, and the overall preparedness of the education system for such a significant change.

Additionally, the dynamic language environment in South Africa, where many students are exposed to multiple languages daily, adds complexity to the implementation process (Ramadiro, 2022). In summary, while the gradual implementation of MTBBE in mathematics and natural science and technology is a well-meaning strategy aimed at improving student performance, its success will depend on overcoming practical challenges and ensuring the policy remains relevant in a multilingual and evolving educational context.

## 6. Conclusion

In conclusion, the systematic literature review highlights the significant potential of MTBBE and translanguaging in enhancing educational outcomes and promoting linguistic equity in multilingual contexts. However, despite the promising benefits, the implementation of MTBBE faces substantial challenges, including insufficient resources, lack of teacher preparedness, and complex linguistic realities in classrooms. The findings from pilot projects across various provinces in South Africa underscore the need for better resource allocation, ongoing professional development, and supportive policies to ensure the successful execution of MTBBE.

For instance, the Eastern Cape has struggled with resource limitations, while Limpopo faces practical difficulties due to its diverse linguistic groups. Mpumalanga and the Western Cape also report significant resource and training challenges. However, some notable progress has been observed. The gradual introduction of MTBBE in the Free State and the pilot projects in the Northwest show promise, particularly when supported by the LIEP. While challenges persist, the continued efforts and support for MTBBE are crucial for its sustained implementation and effectiveness in multilingual education. By addressing these challenges, MTBBE can truly transform educational experiences and outcomes for learners in multilingual settings. This study recommends teacher training programs on MTBBE and translanguaging with the aim to support and equip educators to understand the benefits of using multiple languages in the classroom to enhance epistemic access in learners.

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