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AI and African Languages in Education

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AI in South African Basic Education Rapid Response Initiative

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Executive Summary

As part of broader efforts to improve educational quality and equity, the South African Department of Basic Education (DBE) recently adopted Mother Tongue-based Bilingual Education (MTbBE) as a core pedagogical philosophy, which seeks to affirm learners' home languages as resources rather than barriers to learning. This paper examines how AI intersects with the goals of MTbBE and the preservation of African languages, seeking to identify areas where AI can accelerate progress for African languages in education, and where, without deliberate intervention, it risks deepening existing inequalities.

Context: AI and African Languages

A central challenge in relation to AI is that nearly all of South Africa's indigenous languages are classified as "low resource" in computational terms. In other words, they lack the large digitised corpora, annotated datasets, and standardised orthographies required for reliable AI performance. Morphological complexity and code-switching practices compound this challenge. While some public institutions and collaborative efforts have made progress in developing these foundational resources, critical gaps remain in relation to curriculum-aligned, educationally relevant corpora, which would form the basis for any educational AI application. In this context, the current evidence base for meaningful AI integration in African-language educational settings is close to zero.

Key Opportunities

Through a literature review of AI integration in language learning, particularly in similarly resource-constrained settings, as well as a series of expert interviews with South African academics and researchers, the following areas were identified as potential avenues for further exploration:

- **Materials development:** AI offers the potential to leapfrog the time and cost of creating high-quality resources in African languages, which is one of the major challenges hindering the implementation of MTbBE at scale. Importantly, expert human oversight is essential at every stage to ensure linguistically and culturally accurate outputs.
- **Personalised and adaptive learning**: International evidence shows that well-designed AI-driven adaptive platforms can lead to significant learning gains, even in resource-constrained settings. However, pedagogical design is key in order to ensure that AI tutors prompt deep cognitive engagement, rather than simply supplying answers to learners.
- **Reading assessment**: Automatic Speech Recognition (ASR) tools have shown strong results assessing oral reading fluency in English in Ghana and, after finetuning, in isiXhosa. This offers a potentially scalable support tool for large multilingual classrooms where individual assessment is impractical.
- **Teacher support:** AI can potentially help teachers to prepare lessons, generate bilingual content to support MTbBE, and automate routine pedagogical tasks, thereby freeing teachers for higher-order work. This potential depends, however, on teachers receiving the required pedagogical, digital, and administrative professional development.

Key Risks

This research suggests that without targeted investment, AI could exacerbate rather than reduce inequality: Schools that are most in need of multilingual support are also the least equipped to benefit from AI. In addition, AI outputs risk being "multilingual but monocultural", in that they may be translated into African languages but carry dominant cultural biases. In relation to the quality of training data, South African copyright restrictions currently limit the use of high-quality existing materials to train models, which would meaningfully improve the quality of African language outputs. Finally, data sovereignty is an additional concern, and ethical governance frameworks are needed to ensure that communities retain ownership of their linguistic data and benefit from its use.

Success Conditions

In order to harness the potential of AI to support African languages, the following deliberate investments are important:

1. **Foundational data infrastructure:** This entails expanding educationally relevant corpora through crowdsourcing and expert curation, as well as exploring greater flexibility around copyright laws in educational contexts
2. **Pedagogically sound design:** This means building tools purposefully around sound translanguaging pedagogy, in a way that promotes deep learning
3. **Digital infrastructure for marginalised schools:** This includes rolling out low-tech models (e.g., shared devices; single-device classrooms) that have been proven to work in similar contexts, as well as investing in digital infrastructure and connectivity for low resource classrooms.
4. **Teacher professional development:** This means equipping teachers with the competencies to work with AI as a collaborative resource
5. **A comprehensive AI-in-Education policy framework:** This should provide ethical guidance, data protection standards, and explicit provisions for cultural and linguistic diversity.

This early-stage research suggests that AI presents an opportunity to meaningfully advance the goals of MTbBE and protect learners' constitutional language rights, provided the technical, pedagogical, infrastructural, and governance conditions are met. In the absence of these investments, current trends of linguistic and technological marginalisation will likely accelerate.

Introduction

The rapid rise and proliferation of Artificial Intelligence (AI) technologies in education comes at a moment in which the South African basic education sector is increasingly focusing on the role of language — particularly, indigenous African languages — in the teaching and learning process. Motivated by a growing body of local and international research in this area, the Department of Basic Education (DBE) has adopted Mother Tongue based Bilingual Education (MTbBE) as a philosophy and pedagogical strategy, which seeks to "affirm learners' home languages as cognitive and epistemic resources, rather than barriers to success" (Makalela, 2025).

In this context, this research paper seeks to explore how advancements in AI relate to the use and vitality of African languages in education. It aims to address the following research questions:

Primary question: *What opportunities and risks does AI present for the development, use and resourcing of African languages in South African schools, including the goals of Mother Tongue-based Bilingual Education (MTbBE)?*

Sub-question: *How might AI support or undermine the development, use and resourcing of African languages in South African schools, including the goals of MTBBE?*

Given the pace of advancements in AI technologies in the past five years, the body of evidence on AI integration in education is relatively small, but growing fast. Unfortunately, while there are multiple systemic reviews mapping the global field of AI in language education, these studies tend to be concentrated in high income contexts and to focus on "high resource" languages, like English, which lend themselves more easily to AI integration (Huang et al., 2023; Liang et al., 2021; Zhu & Wang, 2025; Semerikov et al., 2021). The evidence base for meaningful AI integration in low resource educational settings, with "low resource" languages like South Africa's indigenous African languages, is almost zero (Saal et al., 2025).

There are, however, green shoots of potential in key areas, such as materials development, assessment, and personalised and adaptive learning. These cases indicate that, with deliberate investment and careful design, AI has the potential to support the development and use of African languages in education, and to strengthen multilingualism as a resource in South African classrooms. In the absence of this investment in expertise and resources, however, AI stands to exacerbate existing inequalities, further entrenching linguistic and epistemological marginalisation for millions of learners.

Research Design

As a 'rapid review', the research process for this paper involved reviewing and synthesising research articles and policy frameworks dealing with the intersection between AI and indigenous languages, AI and language education more broadly, and the implementation of MTbBE in South Africa. This literature review process was complemented by a series of expert interviews with South African academics and researchers, to add depth and contextually relevant insights to the paper. During the literature review process, there was a focus on countries with similarities to South Africa, especially in relation to resource constraints, multilingualism, and the marginalisation of indigenous languages in education. Given the relative lack of robust evidence on these types of interventions in under-resourced, indigenous language settings, an effort was also made to draw insights from

language learning experiences more generally, with the unique constraints and realities of the South African education context in mind. This paper does not intend to make causal claims or to advocate for the integration of AI in language education, but seeks to understand the global and local landscape, and to identify key areas of opportunity and risk in relation to the vitality of African languages in education.

Technical Context: African Languages and AI

One of the most important factors influencing the meaningful integration of AI in South African basic education is the classification of nearly all indigenous African languages as "low resource" in computational terms (Mussandi and Wichert, 2024). This means that many of them lack the digitised corpora, benchmarks, annotated datasets, and standardised orthographies that a robust AI model would require — in other words, they are *data scarce*. The datasets that are publicly available are also often relatively narrow in domain (e.g., primarily religious or political texts) which means that AI models trained on them may perform unreliably on educational content. Importantly, while the 'low resource' label could accurately be applied to all South African languages, there is wide variation *among* these languages, with languages such as isiZulu, isiXhosa, and Sepedi being relatively "high-resource" in relation to more minority languages like Tshivenda, Xitsonga, and Siswati (J. Gallet, personal communication, 15 June 2026). In the case of this latter group, the lack of high-quality corpora is particularly dire and what little high-quality language learning resources do exist tend to be developed by publishing houses under copyright, such as grammars, textbooks, and dictionaries (M. James, personal communication, 11 June 2026).

In addition to data scarcity, certain linguistic features of African languages — for example, morphological complexity and tonality[1] — make them more difficult for AI models to master (Arivazhagan et al., 2019). Added to all of this is the complexity introduced by code-switching (the common practice of switching between languages within a single sentence or lesson), which forms a central part of the MTbBE translanguaging approach (Probyn, 2024). While there have been efforts to improve the performance of Large Language Models (LLMs) on code-switched text, these are still very early-stage, and it will require significant investment before AI models perform reliably in code-switching settings (Olaleye et al., 2025).

Building the Foundation: Current Initiatives and Gaps

Given these constraints, there have been concerted efforts — primarily led by African researchers and institutions — to address some of the key technical and resourcing gaps. This work has included corpus and benchmark development, AI model development and finetuning, as well as efforts to prototype frameworks for community-driven data governance and licensing.

Regarding corpus development, the South African Centre for Digital Language Resources (SADiLaR) and the National Centre for Human Language Technology (NCHLT) have produced foundational text and speech corpora for eleven official South African languages, which represent a 'baseline' of data

[1] "Morphological complexity" refers primarily to the *agglutinative* nature of indigenous South African languages, whereby meaning is carried through many prefixes and suffixes attached to a single root word. This is in contrast to English, which relies more on word order and separate words to carry the same information. "Tonality" refers to the fact that African languages are *tonal*, meaning that the pitch of a particular syllable can carry meaning in a way that does not matter for non-tonal languages (like English).

on which further educational AI tools could be built (Marivate et al., 2023; Adelani et al., 2022). There have also been notable pan-African initiatives, such as Masakhane and the AI4D programme, which have developed benchmarks and datasets for African languages through crowdsourcing and collaboration (Orife et al., 2020; Siminyu et al., 2021). This foundational work has evolved into model development and finetuning efforts (Khoboko et al., 2025), as well as efforts to develop ethical, community-centred frameworks for data governance (Rajab et al., 2025).

These initiatives have made a meaningful contribution towards enhancing the tools available to support the use of African languages. Where critical gaps remain are largely in the foundational infrastructure for educational content, like curriculum-aligned corpora, children's language data, and graded reading material in African languages. It is this area that requires the most direct investment of time and resources, and there are already innovative approaches to crowdsourcing linguistic data that could be scaled for education-specific materials. Once some of this foundational infrastructure is in place, it becomes much easier to leverage AI to generate more educational content in under-resourced languages – albeit with the rigorous involvement of experts in African language education (Midigo, 2025).

Materials and Content Development

AI-assisted materials development is one of the major areas of potential in this landscape, especially given that the lack of high-quality, relevant content in African languages is one of the most pressing barriers to successful implementation of MTbBE (Ngwenya and Ngubane, 2026). According to Professor Leketi Makalela, AI presents a unique opportunity to “leapfrog” some of the time and costs involved in resource development, thereby enabling quicker and more widespread implementation of MTbBE throughout the education system (L. Makalela, personal communication, 8 June 2026). There have been various initiatives exploring how best to do this for learners of English in a school setting (Pack and Maloney, 2023; Tafazoli, 2024), as well as with a broad variety of African languages in a more generalised community setting (Ajuzieogu, 2022). Pack and Maloney (2023) demonstrate how LLMs can be used to generate high-quality discussion questions, modify material for language learners of different proficiency levels, and generate other text such as models of writing, handouts with explanations and/or practice exercises, transcripts for listening assessments, and rubrics for evaluation. Importantly, they also provide detailed guidance for teachers on the types of prompts and feedback that lead to high-quality outputs.

In an African context, Ajuzieogu’s (2022) multimodal framework combines text, speech, and visual content generation, and is validated by native speakers for both linguistic and cultural accuracy. This pilot did not take place in an educational context, but it does highlight the potential for creating rich, multimedia learning materials in African languages at a fraction of the traditional cost and time.

An important enabling factor for these initiatives, however, is investment in corpora expansion, to strengthen both the quality and relevance of the materials generated. The AI4D programme and Esethu Framework mentioned earlier provide useful models for crowd-sourcing data and curation of both written and oral language from native speakers. The AI4D programme created over nine open-source African language datasets through a three-part approach: crowd-sourced data challenges, funded research fellowships, and competitive Machine Learning challenges (Siminyu et al., 2021). A similar kind of initiative could be piloted to crowd-source curriculum-aligned text and

speech data in South African languages, serving to build both the foundational data and the networks of linguistic and cultural experts that would be required to generate high-quality resources.

Human Supervision

This expert supervision is important at every step in the materials development process, given the vast gap that currently exists between AI model outputs and classroom-ready tools in African languages. Human involvement is also especially important to safeguard against the potential for what has been called "multilingual but monocultural" AI outputs, which may perpetuate dominant cultural norms despite being superficially translated into indigenous languages (Rettberg, 2022; UNESCO, 2023). Taken together, these early initiatives suggest that AI can best be leveraged as a collaborative tool with human co-authors and editors in the materials development process, building on a high-quality corpus of linguistically and culturally rich data.

Teaching and Learning

Integrating AI into actual teaching and learning practices is one of the most complex aspects of this question, and the one that requires the most careful design, given its proximity to learners. While opportunities exist for exploration in the realms of personalised and adaptive learning, reading assessment, and AI tutoring, there is still very little evidence on how this would look in a multilingual, African-language setting. As such, it is important to continue piloting and learning from small-scale experiments and to proceed with caution, particularly with learner-facing interventions.

Personalised and Adaptive Learning

There has been promising evidence, in both high-income and low/middle income settings, that AI can improve learning outcomes through personalisation and adaptive tutoring (Huang et al., 2023; Cuevas-Ruiz et al., 2025; Mohebbi, 2025; De Simone et al., 2025; Muralidharan et al., 2019). This can take the form of personalised adaptive learning platforms that target specific learning areas like reading or mathematics, as well as narrower tools like Automated Writing Evaluation (AWE), which aim to strengthen learners' writing skills through personalised feedback.

In relation to literacy, a Spanish study conducted over five years provides strong evidence of the positive impact of an AI-driven Computer-Assisted Learning (CAL) programme on learners' literacy outcomes (Cuevas-Ruiz et al., 2025). It found that each additional session on the programme improved reading progress by 2.4% of a standard deviation (roughly equivalent to one month of learning). Similarly in India, a randomised controlled trial of a personalised adaptive learning platform found that learners who used the platform scored 37% of a standard deviation higher in mathematics and 23% of a standard deviation higher in Hindi over 4.5 months (Muralidharan et al., 2019). Importantly, while learners across the board showed improvements, the relative learning gains were largest for those learners who were weakest initially, because they were not receiving targeted support at their level in a normal classroom setting. A more recent African study took place in Nigeria, where high school learners interacted in pairs with an AI tutor, for several short sessions a week (De Simone et al., 2025). The learners were provided with a comprehensive learning guide with prompts that were designed to position the LLM as a tutor, focusing on facilitating learning rather than simply providing direct answers. This intervention resulted in an improvement of 23.8% of a standard deviation in English skills, equivalent to 1.5 – 2 years of usual schooling. Taken together, these studies

demonstrate that the personalisation and adaptive components of such programmes play a key role in teaching learners at their specific level, thereby improving outcomes.

In addition, Mohebbi's (2025) systematic review of AI tools in language education finds that these tools can significantly improve specific language learning outcomes (including speaking, writing, and grammar skills) by "promoting engagement, providing immediate feedback, and facilitating personalised learning experiences". He also finds that the successful integration of these tools into classrooms promotes autonomy and self-regulated learning, suggesting that AI integration could have broader benefits beyond narrow educational attainment. Mohebbi cautions, however, that skilled teachers are needed to scaffold and mediate this interaction with the technology, in order for the full benefits to be realised by all learners. Similarly, Muralidharan et al. (2019) highlight the role played by instructors (in this case, not formal teachers) in providing the structure, motivation, and accountability required to keep learners on task and engaged in learning.

Importantly, while these examples paint a promising picture for personalised and adaptive learning in the realm of language education, none of them addresses the additional complexity of teaching in 'low-resource' languages. However, the study in Nigeria does take place in an under-resourced public school setting and provides an infrastructure model that could be replicated in a South African context, with modest investments. As such, these studies could provide a useful framework for developing pilots of these approaches in the South African context — particularly with languages that are relatively 'high resource', like isiZulu and isiXhosa.

AI-assisted Reading Assessment

An area that is potentially more easily applicable, given that it is primarily teacher-facing, is the assessment of reading. There has been promising research on the efficacy of Automatic Speech Recognition (ASR) tools in assessing reading for children in Ghana (Henkel et al., 2025) and South Africa (Chevtchenko et al., 2025). In the Ghanaian context, researchers were able to use an off-the-shelf AI speech model to assess the English Oral Reading Fluency (ORF) of Ghanaian learners, with surprisingly high accuracy despite the challenging classroom context and regional accents. The South African research aimed to assess ORF in isiXhosa, based on a subset of Early Grade Reading Assessment (EGRA) items. This research resulted in the first open dataset for automated ORF in an African language. Unlike the Ghanaian experiment, the isiXhosa assessment required a great deal of finetuning of the AI models before they were able to accurately assess learners' reading scores. However, it demonstrated that there is potential for these tools to be deployed in African language contexts to assist teachers — particularly in large classes, where it is difficult to provide personalised assessment feedback to learners — provided the requisite training and finetuning have taken place, and there is adequate access to devices and connectivity.

Designing for Learning

With any learner-facing intervention, one theme that is highlighted repeatedly in findings across contexts is the importance of pedagogical design in influencing learning (OECD, 2026; Mohebbi, 2025; De Simone et al., 2025; Burns, 2026). A recent Turkish study, for example, found that high school learners who had access to AI tutors performed better than their peers in practice exercises, but when their knowledge was tested in a closed-book assessment setting, they performed similarly or, in some cases, worse than their peers (depending on the type of AI tutor they used) (OECD, 2026). This could be thought of as an example of "cognitive offloading", which the OECD defines as "the act

of using external tools or resources to reduce the mental effort required to perform a task or remember information". Cognitive offloading can mean that learners use technology to bypass the productive struggle that leads to deep learning of the subject, resulting in skills that either stagnate or weaken over time. Similarly, studies across contexts have found that AI tutors that are designed in a more Socratic manner, where learners are prompted and supported to engage deeply with content rather than simply being provided with answers, can enable deeper learning and prevent the "performance without learning" problem (OECD, 2026; Mohebbi, 2025; De Simone et al., 2025; Burns, 2026).

In the context of African languages and MTbBE, Prof Leketi Makalela also emphasises the importance of pedagogical design in any teacher or learner-facing AI tool, especially given the additional complexities of translanguaging. He draws a distinction between "organic multilingualism", which happens in everyday life and is unplanned and unstructured, and "pedagogical translanguaging", which is planned by teachers and is strongly tied to the specific subject content and lesson outcomes (L. Makalela, personal communication, 8 June 2026). Any AI tool that is deployed in a classroom setting should ideally be aligned to these pedagogical goals and designed accordingly.

Teachers, Infrastructure, and System Readiness

Given the centrality of teachers in the education process, and the reliance of AI on adequate digital and social infrastructure, it is important to consider these enabling factors in any discussion of what is possible. International examples show that AI can be a great source of support for language teachers, although there are very limited examples of this in deliberately multilingual contexts. There are also examples of a wide range of infrastructure models, each of which would require deliberate planning and investment to roll out at scale in the South African context. Without this intentional investment, the schools most in need of multilingual support could lose out on it, serving to exacerbate current inequalities.

AI Teacher Support

As a teacher support resource, AI has the potential to meaningfully lighten the load experienced regarding lesson preparation and content curation (Pokrivcakova, 2019), including in resource constrained environments (Tafazoli, 2024; Srinivasan and Murthy, 2021). For example, research conducted with Iranian English teachers finds that AI tools can help these teachers overcome a scarcity of relevant English-language materials, professional isolation, and barriers to accessing up-to-date pedagogical content (Tafazoli, 2024). It should be noted, however, that this enhanced accessibility comes with risks around accuracy and cultural bias, and that they require a level of digital competence from teachers that may not currently be widespread (Gutiérrez, 2023).

In an Indian public schooling context, Srinivasan and Murthy (2021) researched a large-scale intervention that supported 15 000 English language teachers in multilingual contexts across eight states, by developing multi-sensory, locally-tailored read-aloud lessons that were based on existing approved reading materials. In this low-resource environment, teachers typically only had access to one device for the whole classroom and used it to deliver the read-aloud lessons while the programme mapped words to localised pronunciation, displayed concept images to clarify definitions, and created graphs to show how words related to other concepts. Despite this relatively low-cost and low-tech approach, the intervention resulted in a 20% to 40% overall gain in learning outcomes.

This kind of intervention could realistically be implemented in South African schools, even in African languages, given the educational materials that do currently exist. One potential challenge in this realm, however, is current copyright laws which may restrict developers from leveraging the kinds of high-quality educational resources (like dictionaries, textbooks, and grammars) that could vastly improve AI models' outputs (M. James, personal communication, 11 June 2026). Because there is a lack of high-quality open-source materials in these languages — unlike in English — this remains an untapped resource for teaching African languages at scale, and it means that those developing or training African language models must rely on more expensive and time-consuming methods of training (I. Misi, personal communication, 23 June 2026).

In the context of MTbBE, AI tools could be particularly useful for teachers who lack bilingual resources and professional development support, and often painstakingly create their own teaching and learning resources in constrained environments (Probyn, 2024). Professor Leketi Makalela (Personal communication, 8 June 2026) also highlights the potential usefulness of AI-generated bilingual content in contexts where teachers don't necessarily speak the home languages of the learners in their class. For example, a teacher could use AI to translate some of the key concepts or terms for a given lesson beforehand, to use as a resource for the lesson. Of course, all of these applications depend on the particular AI tool having a sufficient corpus of African language data to draw on, such that it produces reliably accurate outputs — especially in cases where the teacher does not speak the target language.

Beyond using AI as a tool to support existing practice, the literature suggests that some of the most successful models involve teacher-AI collaboration, whereby teachers monitor the AI's use by learners, and then use their freed-up classroom time for higher order pedagogical work (Burns, 2026). For example, AI chatbots can be leveraged to automate routine language learning activities, such as grammar correction and vocabulary drilling, and to provide instant feedback and conversational practice to learners, while teachers focus on the nuances of the language and the development of critical thinking skills (Ogbeide, Aisuegbeihien, and Solomon-Alufohai 2025; Ji, Han, and Ko, 2022). In this realm, some recent AI chatbot models are now beginning to produce high-quality outputs in the higher-resource African languages, like isiZulu and isiXhosa (M. James, personal communication, 11 June 2026). This kind of collaboration between teachers and AI, however, is not common, as most teachers and teacher training frameworks position AI as a tool rather than a collaborative resource (Ji et al., 2022). Frameworks such as the UNESCO AI Competency Framework for Teachers (2024), as well as pilots that are currently underway with South African teachers (J. Gallet, personal communication, 15 July 2026), can be helpful in identifying the knowledge and skills that teachers need in order to work with AI effectively, particularly as these tools become more widely available.

Infrastructure and Equity

Beyond these technological competencies, MTbBE requires that teachers be proficient in translanguaging pedagogies and that they have access to bilingual educational resources (Probyn, 2024). While AI tools have the potential to meaningfully support teachers in both these areas, the current digital infrastructure landscape in the country means that those schools most in need are also the least likely to benefit from these tools. This inversion presents a risk for the basic education system, in that AI tools may exacerbate the existing linguistic and socioeconomic disparities between schools. It is precisely for this reason that investments in digital infrastructure and the work of corpus

development are so urgent — particularly in relation to educationally-relevant materials, which can provide the foundation for further AI-assisted materials development (M. James, personal communication, 11 June 2026).

These foundational investments are essential for preserving the future vitality of African languages. In the absence of concerted investment, current trends will likely accelerate, resulting in teachers and learners who are increasingly linguistically and technologically excluded. Fortunately, there are examples of effective infrastructure models that could work in low-resource contexts, in which learners share or rotate devices (De Simone et al., 2025), teachers use WhatsApp chatbots as support (J. Gallet, personal communication, 15 July 2026), or teachers use a single device to support their classroom instruction (Srinivasan and Murthy, 2021).

Governance and Ethics

As with all new technologies, AI presents unique governance and ethical questions that require urgent engagement — particularly in the context of children's rights and safety, and of persistent linguistic and cultural marginalisation. Regarding learners' data protection, the Protection of Personal Information Act (POPIA) serves as a useful baseline, with UNESCO providing consistent policy guidance on AI-specific protections (UNESCO, 2019; 2021; 2023; 2025).

Data Sovereignty and Ownership

In relation to African language data specifically, there are ethical issues such as who 'owns' and controls the language data used to train AI models, and who profits from it (Midigo, 2025). In this context, the Esethu framework provides an innovative governance model that ensures communities retain ownership of their linguistic data, with licensing revenue reinvested into further data collection to expand the dataset (Rajab et al., 2025). The proof-of-concept for the Esethu framework is an isiXhosa speech dataset, which was created by recording native speakers of isiXhosa reading from a lifestyle magazine.

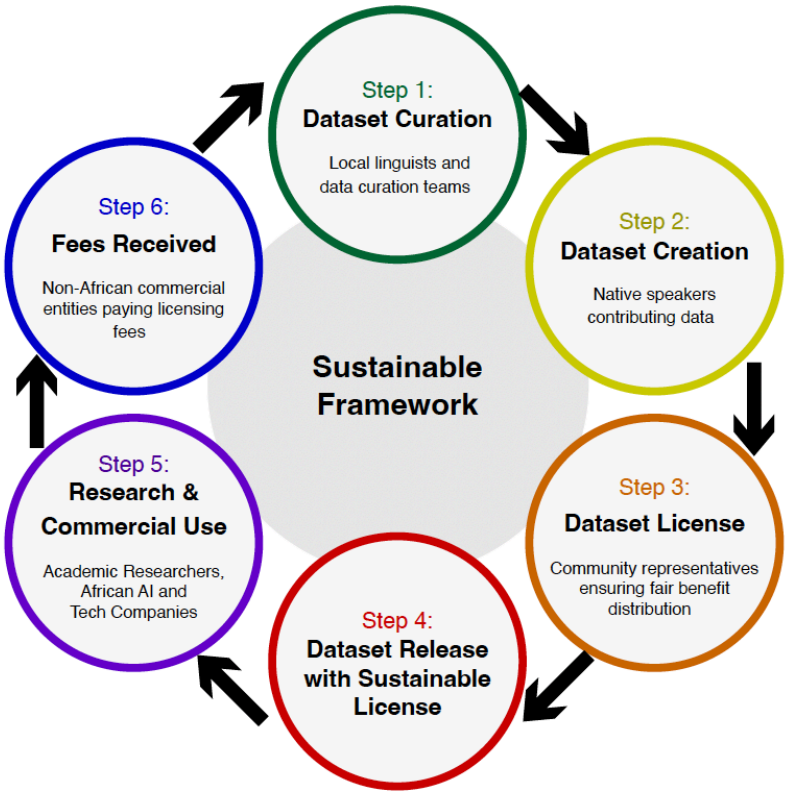


Figure 1: The Esethu Framework model

Legal Complexities and Copyright

Given the lack of clear policy guidance around AI in education, as well as South Africa's stalled copyright modernisation process, there is a significant grey area around the use of copyrighted material to train educational AI models. While some countries such as the United States operate under a relatively flexible "fair use" legal policy for copyrighted materials, South Africa's current policy is a more restrictive "fair dealing" policy, which places far more restrictions on how this material can be used — including for non-profit, educational purposes (EIFL, n.d.). The South African government has started a process to introduce more flexibility into its copyright law, particularly in relation to libraries, education, and people with disabilities, but this process has encountered multiple challenges and is currently stalled after being referred to the Constitutional Court in late 2024 (Section 27, 2025). Notably, the Court did issue a judgment in 2025 that Section 19D of the amended bill should come into effect immediately, since it gives provision for people with disabilities and there is an urgent need for more reading materials in accessible formats for these individuals. A strong case could be made that, given the lack of widely available educational resources in African languages, the matter of educational use of these materials should be seen as equally urgent. In the absence of these reforms, however, the legal terrain remains contested and high-risk for any organisation that wishes to use high-quality copyrighted materials to train AI models in African languages.

Ethics of AI in Language Education

In addition to these legal complexities, the use of AI in language education carries with it the ethical risk of perpetuating biases, such as demographic, cultural, linguistic, temporal, ideological, and political biases (Peer Mohamed, 2024). These biases can be the result of algorithms (which carry the

values of the AI developers), training data (which carries the values and biases of source material from the internet), labelling and annotation by human annotators, product design decisions, and policy decisions (such as the introduction of guardrails for AI models, which can influence their behaviour in unforeseen ways) (Ferrera, 2023). Peer Mohamed (2024) highlights the potential danger of these biases when AI is used to create curriculum content, offer personalised recommendations, or assess learners based on their cultural background, gender, or first language. For example, AI chatbots often prioritise dominant dialects of a given language and may not accurately capture regional accents or dialects. Similarly, Pradhan and Dey (2025), in their review of AI education tools for indigenous languages in India, warn that AI-driven language education risks imposing external logics and erasing indigenous epistemologies, even when it uses indigenous languages.

As Professor Makalela notes, however, many of these challenges are not unique to AI tools – particularly when it comes to indigenous African languages, with their history of marginalisation. It is not uncommon to find examples of epistemic and linguistic bias, for example, in educational materials developed by native African language speakers who carry the underlying "logic of English" into their content (L. Makalela, personal communication, 8 June 2026). What AI-driven tools can do, however, is accentuate and accelerate these biases (Ferrera, 2023). In this context, it is important to intentionally curate and guide the development and use of AI tools to mitigate against systemic bias — while acknowledging that a certain level of bias is unavoidable (Ferrera, 2023). Some mitigations strategies involve ensuring human involvement and oversight at every step of development, which could include using African language experts to curate and annotate diverse training data, having these experts guide model finetuning, employing human reviewers for evaluation and real-time moderation to correct inappropriate responses, and even retraining the models with more carefully curated data, to offset previous biases (Ferrera, 2023). Acknowledging that some bias will always be present, there are also calls for increased transparency regarding models' methodologies, data sources, and limitations so that end-users can make informed decisions, as well as for robust ethical guidelines on these issues (Peer Mohamed, 2024; Ferrera, 2023).

The Need for an AI Policy

A recent review of AI in South African education noted the need for a comprehensive 'AI in Education' policy framework that sets out teachers' AI competencies and professional development pathways, highlights the need for infrastructure investments, and provides guidance on AI usage and data protection (Saal et al., 2025). In the absence of this official guidance, there is a risk of unethical behaviour and detrimental outcomes for learners and teachers alike.

In accordance with guidelines from UNESCO, such a policy framework should include explicit guidance on how AI should interact with, and aim to preserve, cultural and linguistic diversity (UNESCO, 2023; 2025). In these efforts to preserve languages and indigenous epistemologies, there are inevitable complexities introduced by digitisation, such as the open question of whether AI tools can preserve the underlying logic and epistemology of African languages, or whether digitisation inevitably flattens them (Pradhan and Dey, 2025). As Professor Leketi Makalela warns, however, the alternative — of withdrawing from the digital realm in an effort to preserve 'pure' linguistic and cultural heritage — will simply widen the gap between English and African languages, leaving the latter "stale and stagnant" (L. Makalela, personal communication, 8 June 2026). In other words, by treating African languages as living, dynamic cultural artefacts and engaging freely with them in the digital realm, we stand the greatest chance of preserving them and benefiting from our multilingual heritage.

Conclusion

In the context of significant digital and linguistic inequalities, AI presents opportunities to make meaningful progress in the preservation and valorisation of African languages in education. These opportunities come with important conditions, however, that will need to be met in order for AI to mitigate, rather than exacerbate, systemic inequalities.

There has been meaningful progress in relation to the quality and accessibility of AI in African languages, which seems likely to improve in the coming years, and could potentially be leveraged to 'leapfrog' persistent structural gaps and challenges in the basic education sector. Some of the key success conditions for this to take place include intentional investment in foundational language data (such as educationally relevant corpora), pedagogically sound design, investments in digital infrastructure for the most marginalised schools, investments in teacher professional development, and robust policy frameworks designed to protect and empower vulnerable groups. If these investments are made, there could be a vast improvement in the accessibility of high-quality educational resources in African languages for learners and teachers across the country, serving to support the admirable goals of MTbBE and address learners' Constitutional rights.

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Appendix 2: Subject Matter Experts Interviewed

Name	Role	Date interviewed
Prof Leketi Makalela	Professor and Director of the Hub for Multilingual Education and Literacies, Wits University	8 June 2026
Dr Michael James	Research Associate, Department of Linguistics and Applied Language Studies, Rhodes University	11 June 2026
Isheanesu Misi	Chief Technology Officer, Vambo AI	23 June 2026
Jolene Gallet	Project Manager: Content and Training, Funda Wande	15 July 2026