



Multi-pronged complexities associated with translating mathematics texts intended for use in the Foundation Phase of schooling in South Africa

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ABSTRACT

This paper reports on challenges and experiences learned from translating Foundation Phase Mathematics texts from English into isiZulu. The need to translate school texts from English into the various indigenous African languages has been fostered by revisions made to the Language in Education Policy (1997), which mandate using learners' home languages for all teaching and learning in the Foundation Phase since 2013. Due to the lack of resources written in the indigenous African languages, currently most of the material is created by translating texts from English into these languages. Data for this desktop study was elicited from WhatsApp conversations among members of a group that was created to ensure constant communication and consultation during the project. Qualitative data was collected and was analysed using Venuti's (1995) theory of translator's invisibility and Reiss and Vermeer's (2013) Skopos theory. The findings show that translators must have the disciplinary knowledge required to produce texts that take into account the needs and the realities of the contexts in which they will be used. For this reason, the importance of promoting discipline-focused translation training is suggested to equip translators with the skills and knowledge that will help improve translation processes and improve the quality of the texts that are produced. Developing translation-focused quality assurance prescripts is also recommended to help ensure that good quality texts are produced.

Keywords: Mathematics, Foundation Phase, Translation, Translators, Translator Training.

INTRODUCTION

In 1994, a new constitution was promulgated in South Africa, which acknowledged the multilingual nature of the South African society by recognising at least 9 of the indigenous languages spoken in the country as official languages in addition to Afrikaans and English, which were the recognised official languages. The constitutional recognition of these indigenous African languages had huge implications for education in the country: Apartheid era language policies were scrapped, and new language policies that sought to promote multilingualism in teaching and learning were adopted. These were the Language in Education Policy (LiEP) of 1997, which was formulated in terms of the National Education Act (Act 27 of 1996) and the Norms and Standards for Language Policy, which was formulated in terms of the South African Schools Act (Act 84 of 1996).

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Despite the constitutional call for multilingualism and the language policy revisions, multilingualism could not be easily enacted due to the marginalisation that these indigenous African languages had suffered in South Africa during the apartheid era.¹ The lack of material written in the indigenous languages caused the need to translate almost all learning material from English if the multilingual goal was ever to be achieved. The process of translating material from English into indigenous African languages has also been challenging.² These range from a lack of proper training among some identified translators, low levels of proficiency in either or both languages being translated and a lack of equivalent terminology in the indigenous languages for most of the vocabulary used in the English texts.³

The nine indigenous African languages that were elevated into official status in 1994 are Sepedi, Sesotho, Setswana, Xitsonga, Tshivenda, isiNdebele, isiXhosa, SiSwati and isiZulu. Before this constitutional milestone, these languages had been at the periphery of linguistic developments in the country, with English and Afrikaans recognised as the only official languages.⁴ Colonialism and apartheid had a significant bearing on the reduced linguistic and cultural capital of these indigenous languages.⁵ Except for being taught as subjects to their respective speakers, they were not used for any other educational purpose or public discourse. Their diminished use greatly affected their development. Except for school textbooks, publishing companies hardly publish material written in these languages.⁶ Lack of interest in publishing material in these languages has affected their visibility and development, even beyond the apartheid era. Their marginalised state continued, and all teaching and learning continued to take place in English, except when these languages were taught as subjects in some schools.

Initially, the new Language in Education Policy (LiEP), although aimed at recognising indigenous languages, seemed to work against their promotion somehow in terms of the pass requirements it set for the foundation phase, which allowed learners to progress based on passing one language.⁷ This created an opportunity for the further marginalisation of the indigenous languages since most schools, especially former Whites-only schools, adhered to the use of English as both a language of learning and teaching (LoLT) and as a subject to meet pass requirements. This meant that black learners who migrated to these schools after 1994 were denied an opportunity to learn their indigenous languages.⁸ This resulted in the further marginalisation of these languages. There were several outcries against the persistent marginalisation of indigenous languages.⁹ These outcries eventually resulted in the Department of Basic Education revising the LiEP and calling for the use of learners' home languages for all teaching and learning in the Foundation Phase, with English introduced only as a subject. This policy revision has thus sparked a need to provide teaching and learning materials in the various indigenous African languages. Given the marginalised background of these languages, the call has been largely responded to by translating material written in English into the different indigenous languages. Translating from English into these various languages has not been an easy fit for various reasons.

Subsequently, this paper discusses challenges experienced while translating mathematics texts for use in the Foundation Phase from English into isiZulu. The objective of this paper is to identify the

¹ Matefu L Mabela and Thabo Ditsele, "Exploring Intellectualisation of South African Indigenous Languages for Academic Purposes," *Literatur-Journal of Literary Criticism, Comparative Linguistics and Literary Studies* 45, no. 1 (2024): 1980.

² Given Jacqe Hlongwani, "An Analysis of the Challenges with Respect to Attaining Equivalence in Translation of Literature Pertaining to Sexually Transmitted Diseases from English into Xitsonga," 2012.

³ Choice D. Mpanza and Celimpilo P Dladla, "Issues to Ponder on as We Navigate the Translation of Academic Texts from English into IsiZulu," *African Perspectives Of Research In Teaching And Learning Yupedumezu: University of Limpopo*, 2024, 84–97.

⁴ Baba P. Tshotsho, "Mother Tongue Debate and Language Policy in South Africa" *International Journal of Humanities and Social Sciences*. Vol.3 (13), (2013).

⁵ Mlamli Diko, "The Retainment of South African Indigenous Languages: A Systemic Literature Review," *International Journal of Research in Business and Social Science* 12, no. 5 (2023): 306–14.

⁶ Gilbert Motsathebe, "Book Publishing in Indigenous Languages in South Africa: Challenges and Opportunities," *Indilinga African Journal of Indigenous Knowledge Systems* 10, no. 1 (2011): 115–27; Viv Edwards and Jacob Marriote Ngwaru, "Multilingual Education in South Africa: The Role of Publishers," *Journal of Multilingual and Multicultural Development* 32, no. 5 (2011): 435–50.

⁷ Department of Education, "Language in Education Policy" (Pretoria: Government Printers, 1997).

⁸ Corene De Wet and Charl Wolhuter, "A Translational Study of Some South African Educational Issues," *South African Journal of Education* 29, no. 3 (2009): 359–76.

⁹ Kathy Waddington, "Language Policy: Disadvantaging Learners," *Indicator South Africa* 16, no. 3 (1999): 60–63; T V Manyike and E M Lemmer, "Research in Language Education in South Africa: Problems & Prospects," *Mediterranean Journal of Social Sciences* 5, no. 8 (2014): 251–58.

stringent challenges that impede the translation process. The questions we seek to address are the following:

- 1) What are the major factors that affect the translation of teaching and learning material from English into the indigenous African languages?
- 2) What must be done to mitigate the factors that negatively impact the translation process?

LITERATURE REVIEW

The Role of Translation in Promoting Access to Information

The role and importance of translation in helping to facilitate interlingual communication¹⁰ and the development of scientific knowledge have been well documented.¹¹ These factors make the practice of translation quite complex.¹² The role of translation in the development of scientific knowledge places a burden on the translator to ensure that the information transmitted from one language to another is not compromised. This is even more important in the case of translating scholarly texts. It requires high levels of translator competence. Translator competence entails factors such as ‘target-language knowledge, text-type knowledge, source language knowledge, subject area (real world) knowledge, contrastive knowledge and ‘communicative competence’ (covering grammar, sociolinguistics and discourse).’¹³

This implies that a translator must ensure that texts that are produced in the target language are of a quality that is on par with that of the source language. This is of critical importance in the context of the study we are reporting on in South Africa because the materials under study are meant for use for educational purposes. The information which learners receive in their home languages in the Foundation Phase must be the same as that received by their counterparts who learn the same content in English. A study that was conducted in the Eastern Cape among teachers who taught in the Foundation Phase, more specifically Grade 1 learnt that teachers found the translated content foreign to their learners.¹⁴ They identified linguistic, terminological and contextual challenges in the texts which made teaching even more difficult, despite the content being made available in isiXhosa. As an intervention to counter the contextual challenges faced by learners in the Foundation phase, it is suggested that curriculum developers consider Afrocentric concepts instead of the current concepts that are drawn from outside of the African continent.¹⁵ This consideration may serve as an intervention in terminological issues that have been identified in most studies to date, which report challenges like a lack of terminology and vocabulary to help transmit knowledge of the mathematics content in the learners’ home languages and a lack of resources in the indigenous languages.¹⁶ This then points to the need for more translation projects to help develop both the much-needed terminology and the resources to help make translating into the indigenous languages easier and effective. The critical role that translation plays in helping to provide information in the indigenous languages and thus encourage using these languages for scholarship places translators in a very precarious role where they need to have the relevant translation skills as well as a deep understanding of factors that inform the translation process.

Philosophical Dimensions of Translation

The pursuit of truth lies at the heart of philosophical inquiry. In translation studies, this pursuit intersects with philosophical thought, as evidenced by the work of Pym initially and subsequently by Leal and

¹⁰ Anne-Marie Beukes, “Translation in South Africa: The Politics of Transmission,” *Southern African Linguistics and Applied Language Studies* 24, no. 1 (2006): 1–6.

¹¹ Hadeel M Al-Smadi, “Challenges in Translating Scientific Texts: Problems and Reasons,” *Journal of Language Teaching and Research* 13, no. 3 (2022): 550–60; Krisztina Károly, “Translating Academic Texts,” *The Cambridge Handbook of Translation*, 2022, 340–62..

¹² Anna Bernacka, “The Importance of Translation Studies for Development Education,” *Policy and Practice: A Development Education Review* 14 (2012); Károly, “Translating Academic Texts.”

¹³ Mashudu Mashige, Madoda Cekiso, and Thenjiwe Meyiwa, “Foundation Phase Teachers’ Experiences with Instruction in the Mother Tongue in the Eastern Cape,” *South African Journal of Childhood Education* 9, no. 1 (2019): 1–10.

¹⁴ Mashige, Cekiso, and Meyiwa, “Foundation Phase Teachers’ Experiences with Instruction in the Mother Tongue in the Eastern Cape.”

¹⁵ Emmanuel S Akinmolayan et al., “Towards Decolonisation of Primary School Education in South Africa,” *South African Journal of Childhood Education* 14, no. 1 (2024): 1440.

¹⁶ Mashige, Cekiso, and Meyiwa, “Foundation Phase Teachers’ Experiences with Instruction in the Mother Tongue in the Eastern Cape.”

Wilson.¹⁷ Leal and Wilson, building upon Pym's foundations, articulate a multifaceted relationship between philosophy and translation, and identify four key linkages.¹⁸ Firstly, translation serves as a metaphorical tool within philosophical discourse. Secondly, philosophical discourse shapes our understanding and articulation of translation processes. Thirdly, the translation of philosophical texts constitutes a critical domain shared by both disciplines. Crucially, they introduce a fourth dimension: the inherent philosophical nature of translation itself, asserting that 'translation is philosophy and philosophy is translation; the implications of (un)translatability shape the very notion of philosophy.'

This study extends this exploration by examining the lived experiences of translators operating outside the traditional Western canon. As Leal and Wilson advocate for research that transcends the Global North, this paper from the Global South delves into the raw, unmediated conversations of isiZulu translators engaged in the transfer of mathematical concepts from English to isiZulu. By analysing these real-time cognitive processes, this study aims to uncover the 'truths' inherent in translation, particularly in the context of epistemic knowledge transfer to African learners. This process, inevitably, encounters challenges related to cultural translation, as Western concepts are mediated through an isiZulu linguistic and cultural lens. While this research currently draws upon established Western theoretical frameworks, it anticipates and encourages the development of contextually relevant theories and models emerging from Global South perspectives and contributes to a more globally inclusive understanding of translation.

THEORETICAL FRAMEWORK

Skopos and Translator Visibility

The theoretical framework guiding this study incorporates key concepts from Skopos Theory and discourse on translator visibility.¹⁹ Skopos Theory posits that a translated text should fulfil the intended purpose for which it was created in the source language. This requires that translators adhere to the specific brief and employ strategies tailored to the target audience and the communicative function of the text. Consequently, a single source text may yield diverse translations depending on the intended purpose and audience.

This raises critical questions regarding the role and the visibility of the translator.²⁰ Venuti explores the dynamic tension between domestication and foreignisation, highlighting the translator's agency in shaping the reception of the text. Decisions about cultural adaptation, linguistic choices, and the degree to which the intent of the target text aligns with the source author inevitably impact the translator's visibility. This study investigates how these theoretical complexities manifest in the practical context of translating mathematics texts for use in the Foundation phase from English into isiZulu. Specifically, it examines the strategies employed by translators to navigate the demands of Skopos Theory while negotiating their own visibility and agency in the translation process. By analysing the translators' decision-making processes, this paper seeks to shed light on the intricate interplay between theoretical frameworks and the practical realities of translation.

METHODOLOGY

This study adopted a qualitative research approach and utilised data elicited from WhatsApp conversations among a group of translators involved in a project to translate Mathematics texts from English into isiZulu. WhatsApp, as a platform for real-time communication and consultation employed by translators for the duration of the project, provided valuable insights into the thought processes, challenges, decision-making and collegiality that occurred during the translation process. Mwanda explored the use of WhatsApp as a research tool and states that the convenience and accessibility of the platform make it a popular tool for qualitative researchers in ethnography, pre-tasks, and discussion

¹⁷ Anthony Pym, "Philosophy and Translation," *A Companion to Translation Studies*, 2007, 24–44; Alice Leal and Philip Wilson, "A Tale of Two Disciplines? Philosophy in/on Translation," *Perspectives* 31, no. 1 (January 2, 2023): 1–15, <https://doi.org/10.1080/0907676X.2023.2148984>.

¹⁸ Leal and Wilson, "A Tale of Two Disciplines? Philosophy in/on Translation."

¹⁹ Katharina Reiss, Christiane Nord, and Hans J Vermeer, *Towards a General Theory of Translational Action: Skopos Theory Explained* (Routledge, 2014).

²⁰ Lawrence Venuti, "The Translator's Invisibility." (Londres/Nueva York: Routledge, 1995).

groups.²¹ Conversations examined in this study took place among 7 translators. The group met for the first time during a workshop for all project participants from different language groups. They began working in their language groups and communicated through WhatsApp, but never met in person. In addition to ad hoc communication through WhatsApp chats, the group met weekly through Google Hangouts, where translation challenges and terminology issues were discussed. Given the nature of the translation task as a group project, data from discussions among translators was readily available and accessible. Permission to use the data was sought from and granted by the project manager. For confidentiality reasons, the names of the translators who participated in the discussions are not revealed in the study. It is important to note that translators participated in the conversation voluntarily at any moment and, therefore, the data does not include all translators' inputs at each turn. In the data selected for analysis in this paper, only 3 translators participated in matters of interest to this study, and they are represented as 'I' to denote the initiator of the discussion, T1 – T3 denote translators who participated in the initiated conversation and 'PM' indicates the project manager.

PRESENTATION OF FINDINGS

The data used in this study were sourced from WhatsApp conversations among the translators and the project manager. Thematically, it was analysed to identify recurring patterns and themes related to linguistic, cultural, and conceptual considerations in translation. The analysis of the WhatsApp conversations revealed several key themes that illuminate the challenges of translating pedagogical texts into isiZulu. Samples from relevant transcripts from the WhatsApp conversations are

a. Orthographic Standardisation

Sample A

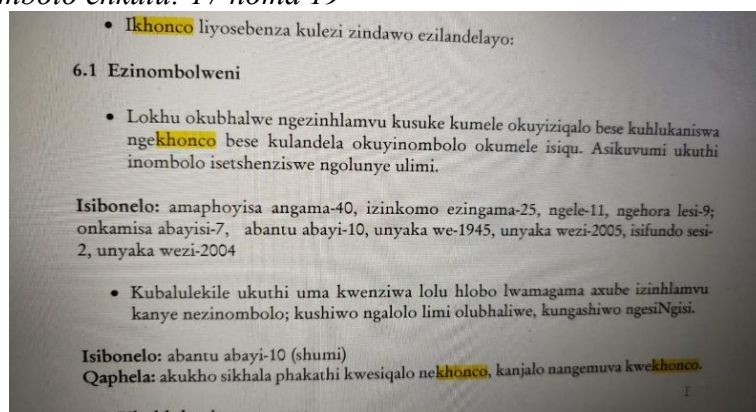
I: Good evening. I'm not sure if we discussed numbers. Are we writing them as if they would be read in isiZulu (okungama-57 kuya kuma-89) or in English (okungu-57 kuya ku-89)? Thanks.

T1: Also, if we go for Eng, would it be okungu-57 or okuyi-57? Caps have both.

T2: I wrote them in isiZulu esingama-25

T1: okungama-57 kuya kuma-89

I: Compare which is bigger: 17 or 19" Direct translation doesn't sound okay. Qhathanisa inombolo enkulu: 17 noma 19



T2:

PM: We all agree that moving forward we will follow the numbering conventions [P1] has outlined above? 🙌

I: I agree 🙌

The above extract presents a transcript of a conversation between some of the translators to address the issue of number prefixes and which to use during the translation process for purposes of

²¹ Ziyanda Mwanda, "Text, Voice-Notes, and Emojis: Exploring the Use of WhatsApp as a Responsive Research Method for Qualitative Studies," *Critical Studies in Teaching and Learning* 10, no. 1 (2022): 78–92.

consistency. The discussions surrounding the representation of numbers, e.g. *okungama-57* vs *okuyi-57*, and the use of prefixes highlight the tension between the need for orthographic standardisation and the acceptance of natural language variation from speakers. It is important to note that these translators are not all professional translators, therefore a teacher or subject expert, as a translator in this project, draws translation knowledge from their native language knowledge, which may not be standardised language. In the above extract, I refers to a document from the Curriculum and Assessment Policy Statements (CAPS), which has inconsistencies in the expression of numbering, which is an error that the translation team thought should be avoided in the project. The Pan South African Language Board (PanSALB) recommends that the orthography edited by Maphumulo be followed, and this information was communicated to the translation team.²² However, the issue of how numbers are written in the CAPS document continued to be questioned. It is worth noting that this is not a linguistic document but a curriculum document, and hence there are doubts about following its suggested numbering formats. The project manager joined the conversation and informed the team to follow the PanSALB guidelines, which are also outlined as one of the options in the CAPS document.

In a multilingual country, with English as the most dominant language for teaching and learning, transliterations cannot be avoided. Bearing that in mind, consistency is very important in translation for the credibility of the work and maintaining harmony in the text.

A translation is judged and accepted by the target readers based on its fluency and absence of linguistic and stylistic errors.²³ If a text is not fluent and is filled with inconsistencies, inquisitive readers, who are often not informed that the text is a translation, may begin questioning the credibility of the text. One of the basic strategies for limiting linguistic errors in translation is familiarising oneself with the language through speaking, reading and writing in the language. A study conducted on reading isiZulu among fluent isiZulu speakers found that out of 33 participants (mostly professional, postgraduate), only 2 participants read isiZulu frequently, and they happened to be journalists for isiZulu newspapers, while others read regularly (twice a week).²⁴ This study did not specifically investigate the reading patterns of the translators involved in the project; however, the data revealed a lack of linguistic knowledge, a problem which can be bridged by frequent reading of isiZulu texts.

Sample B

I: Good afternoon, team. I have been writing “class” as *igumbi lokufundela* instead of *ikilasi*. If we agree with *ikilasi*, may the editor please change it accordingly?

T1: 🙄 *iklasi*

T2: *kl* is pronounced as a hard *k*

T3: I used *ikilasi* since it is written language; in spoken language, though, the ‘i’ between *k* and *l* is skipped.

T3: Yes, you’d have to write *ikilasi* but say *klasi*

T2: *k’lasi*

I: 😡 *Ayi guys, those in positions of revising written language pls revise such terminology...it’s taking us backwards and unreadable*

In the conversation shown in the above extract, one translator asked a question relating to using indigenisation or transliteration to translate the word “classroom”. The debate over *iklasi/ikilasi* (class) further reveals the complexities of representing spoken language in written form, particularly in educational materials designed for young learners. The need to maintain consistency while acknowledging the natural evolution of language is a recurring challenge. The data reveal a move from native words to transliterations, which are pregnant with misalignment in terms of writing. This direction

²² Maphumulo Abednigo Mandlenkosi, *Ukuvamisa Imithetho Yokubhala Nobhalomagama LwesiZulu Lonyaka Wezi-2021* (Pietermaritzburg: UKZN Press, 2021).

²³ Venuti, “The Translator’s Invisibility.”

²⁴ Sandra Bhatasara, “Women, Land and Poverty in Zimbabwe: Deconstructing the Impacts of the Fast Track Land Reform Program,” *Journal of Sustainable Development in Africa* 13, no. 1 (2011): 316–30.

to transliteration is born from colloquial language use by speakers. Then it becomes important to record this information in language resources. The word *ikilasi* is recorded in the isiZulu monolingual dictionary.²⁵ However, translators because of issues of consistency and to ensure that the translation is not foreign to the target readers. To this end, I calls for a revision of terminology. This paper does not view the choice between *igumbi lokufundela* and *ikilasi* as a terminological challenge; instead, it is a matter of preference which should be addressed in a translation brief and agreed upon by the translation team.

b. Conceptual Equivalence

Sample C

I: Counters izinto zokubala angithi [things for counting, right]?

T1: Just wondering, can't we use one word, especially coz the word izinto [things] tends to also have a negative connotation yento [of a thing] that doesn't have much value. How about izinsizakubala (items that help you count)?

T2: (Transcribed audio) Izinsizakubala [counting tool] could include calculators uyabona [you see], and I think in this context when they say counters they mean ama-abhakhasi, ama-tintips and things like that izinto zokubala [things for counting], counters, anything that they use to count. I-calculator yona iyinsizakubala [is a counting tool] coz it does all sorts of mathematical problems.

T1: Indeed, these things all build up to the calculator uma sebedadala. In other words, lokhu are kind of 'calculators' for kids. But ok

I: Understood

The above extract illustrates one of the conceptual challenges that emerged during the translation process in the project. The translation of mathematical terms, such as *counters*, demonstrates the difficulty of achieving conceptual equivalence across languages. The translators' debate over *izinto zokubala* and *izinsizakubala* reveals different interpretations of the concept and the challenges of finding culturally appropriate and conceptually accurate translations. Indeed, *counters* are things that are used to help count, but English uses a single term to refer to these rather than a phrase in the case of isiZulu, which is what I sought to confirm. The suggestion of a single word with an explanation proposed by T1 aligns with Vermeer's skopos theory of translation.²⁶ It indicates knowledge of translation studies and professionalism in practice. The argument made by T2, which is that the word is already used to refer to a calculator, although intended to refute T1's suggestion, supports it if one were to interpret 'counters' without boxing it to have a single meaning instead of accommodating all possible usages that will not interfere with the original concept.

Translation reveals that different languages vary in terms of concepts, connotations, meaning, and even words that may or may not be available or partially available in the target language. Venuti claims that "meaning is a plural and contingent relation, not an unchanging unified essence, and therefore a translation cannot be judged according to maths-based concepts of semantic equivalence or one-to-one correspondence."²⁷ This is one of the reasons that achieving semantic equivalence may prove challenging among non-trained translators. There is often the temptation to require an availability of a word for another word in both languages which is a façade if you consider Venuti's assertion that "producing the illusion of transparency, a fluent translation masquerades as true semantic equivalence when it in fact inscribes the foreign text with a partial interpretation, partial to English-language values, reducing if not simply excluding the very difference that translation is called on to convey."²⁸

Conceptual interpretations and misinterpretations may be bridged through the unboxing of meaning and being open to the fact that semantic equivalence may be an illusion. Translators tend to box information to mean one thing and one thing only. For instance, a car in isiZulu is referred to as *imoto*, but also when

²⁵ Mbatha Mpumelelo O, *Isichazamazwi SesiZulu*. (Pretoria: Heritage Publishers, 2014).

²⁶ Reiss, Nord, and Vermeer, *Towards a General Theory of Translational Action: Skopos Theory Explained*.

²⁷ Venuti, "The Translator's Invisibility."

²⁸ Venuti, "The Translator's Invisibility."

waiting for a transport at the bus stop, one will still say ‘*ngiyobheka izimoto*’, literally meaning I am going to find ‘cars’, although referring to a combi or a bus. One may argue that the appropriate term should be ‘*izithuthi*’, but there is no control over how individuals should use spoken language. Mostly, native speakers use words that resonate with them, their immediate environment and the target audience. However, in written language, especially for pedagogical purposes, concepts should be conveyed using approved terminology and/or expressions.

c. Cultural Adaptation

Sample D

I: Guys, help: Number worms?

T1: Worm – *umnyundu*. Worms- *iminyundu*

I: *Iminyundu yezinombolo* 🤔 / *Izibungu zezinombolo* 😬 *Kuyalumela yazi ngesizulu* [It is uncomfortable in isiZulu] 🤔 Thanks

T2: [shares an online picture of a number worm] 🐛 🐛 🐛 🐛 It's so cute

I: Very cute we also did days of da week where caterpillar eats different fruit a day 🍎 🍌 🍌 ... 🤔 🤔 🤔 🤔 🤔

T2: 🐛 🐛

T3: *Uma kulumela ngesiZulu kanjalo nangesiNgisi uma ungabuza amangisi kodwa kukhombisa kahle indlela yokubala okusalayo* 😊 😊 😊 [If it is uncomfortable in isiZulu, it should be the same in English, but the bottom line is that it clearly demonstrates a calculation method]

Q: *Kumnandi kubo* [This is fun for them]. *Spider sums, Butterfly sums, Number worms, Caterpillar etc.* 🤔 🤔 🤔 🤔

T2: Inkinga [the problem] is that our relationship with animals is different to eyamaNgisi [that of English speakers]. *Thina noma mangithi mina angiboni lutho oluhle ezilwaneni* [As for us, or let me just refer to myself, I do not see anything beautiful in animals] so *spider sums will be into ezongiluma* [something that will bite me] 🐛 🐛 🐛

The extract in Sample D highlights the significance of cultural adaptation when translating between non-cognate languages like English and isiZulu. Due to the persistent hegemony of English in South African education, its literacies are considered the most accepted forms of educating learners, both by learners themselves and teachers.²⁹ This manifests itself in educational material that is written in English and then translated into African languages and passed down to learners as texts written in their languages.

The use of animal metaphors, such as *number worms*, highlights the need for cultural considerations in translation. The immediate reaction of I in the discussion above, following confirmation from T1 of the isiZulu equivalent of worm, is that *kuyalumela* (It feels uncomfortable to use the word as it arouses a feeling of uneasiness). IsiZulu speakers may have different cultural associations with animals than English speakers, which requires careful adaptation to ensure cultural relevance and engagement. The concern over using uncomfortable examples discussed and ridiculed by translators reveals their focus on preserving the cultural and emotional integrity of the material while retaining the pedagogical concepts presented in the material. The conversations show that the translators are not just translating words, but also pedagogical concepts with their feelings invested in the task.

Another interesting factor in Sample D is the use of emojis. Compared to other conversations among these translators, this one has more emojis, which add an element of amusement to the discussion about using an idea that is considered ‘uncomfortable’. “Emojis are graphics used to express the

²⁹ Robyn Tyler and Carolyn McKinney, “Crossing the Text Frontier: Teachers Resisting African Language Texts for Learning,” *Reading & Writing-Journal of the Literacy Association of South Africa* 15, no. 1 (2024): 501.

participants' feelings, reactions and activities such as swimming and dancing.”³⁰ Translators may intentionally or unintentionally make themselves visible in translation. In sample D, the feelings of the translators directly impacted the choice of word to use for ‘worm’. The English text did not indicate the type of worm, but the translators delved deeper into the text and considered *umnyundu* (earthworm) and *umbungu* (maggot), which are different types of worms and arouse different feelings. We may even add *amacimbi* or *mopane* worms (*Gonimbrasia belina*) here, which are worms that some people in some parts of the country enjoy as a snack. Although these concepts may be linguistically challenging for translators, they should not be upsetting to target text users; they should be fun to read and work with, arousing a happy feeling as they page through children’s maths books with number worms that have bright colours and smiles on their faces. The question that translators should enquire about first is the skopos of the text, i.e., what the purpose of using number worms is. The conversation merely focuses on the words, emotions aroused by them and a choice of the equivalent to use in the translation, not the purposes of counting through number worms.

DISCUSSION

The analysis of WhatsApp conversations among isiZulu translators working to render mathematical texts reveals a complex tapestry of epistemological challenges that fundamentally reshape our understanding of translation. Instead of being a simple transfer of linguistic units, the process emerges as a dynamic and multifaceted endeavour shaped by competing knowledge sources and the lived experiences of the translators.

Orthographic standardisation is not a neutral, objective process, but a site of active negotiation between prescriptive rules and the lived experiences of language users. Debates surrounding number prefixes and loanword adaptation illustrate that standardisation is not a neutral, objective process. For instance, the debate over rendering numbers in English or isiZulu, the selection of the appropriate prefix, and the choice between *igumbi lokufundela* or *iklasi* or *ikilasi*, despite the existence of standardised orthography and dictionaries, underscores the translators’ lived experiences and evolving language usage and challenges the authority of codified resources. This necessitates a critical engagement with language resources to recognise their strengths and limitations and to supplement them with other forms of knowledge.

The embodied knowledge of translators of isiZulu, gained through their lived experiences as native speakers, clashes with and informs the prescriptive rules established by authoritative bodies like PanSALB. This led to comments such as “I: 🙄 *Ayi guys those in positions of revising written language pls revise such terminology...it's taking us backwards and unreadable*”. This comment acknowledges the role of authoritative bodies in language development. However, the fact that the words that are being contested are already recorded may illustrate a lack of translators’ engagement with the material that is developed by the same bodies. Translators have a duty to familiarise themselves with language development if they want to produce standardised and consistent translations. Clearly, there is an inherent tension between codified language and its dynamic and evolving usage, suggesting that translation necessitates navigating a complex interplay between formal rules, linguistic intuition, and community practice.

In the same vein, conceptual equivalence in translation is not a fixed relationship between terms but a dynamic and context-dependent relationship. The identification of terminological gaps, as discussed by the translators, underscores conceptual challenges that they face when translating. The discussion surrounding the translation of ‘counters’ reveals that finding semantic equivalents requires more than mere dictionary definitions and the removal of boxing of terms. Translators should be open to multiple interpretations, consider the specific pedagogical context, and apply theoretical frameworks in the translation, such as deciding to bring the target reader as close as possible to the author or transporting the author to the world of the reader.³¹ This demonstrates that meaning is not inherent in isolated terms but is constructed through the interaction between language, context, and the translator’s

³⁰ Mwanda, “Text, Voice-Notes, and Emojis: Exploring the Use of WhatsApp as a Responsive Research Method for Qualitative Studies.”

³¹ Venuti, “The Translator’s Invisibility,” 101.

interpretation, which requires an unboxing of meaning that may require adapting concepts to the culture of target readers.

Cultural adaptation in translation is not only a cognitive process, but it involves embodied and affective engagement of the translator with the source and target cultures. The ‘number worms’ discussion highlights how emotional responses and cultural associations of translators directly influence their translation choices. It is also important to be considerate of challenges imposed by publishers in that translators are expected to translate the content and ideas conveyed without much deviation, because learners across languages will get books with the same pictures. A typical Bible translation example to illustrate this is the varied ways in which Job 39:9. According to the BibleHub³², among the many translations it is translated as follows: “Will the **wild ox** consent to serve you?” (New International Version); “Will the **unicorn** be willing to serve you?” (King James Bible); “Will the **wild bull** be willing serve you,” (New American Standard Bible); and “Will the **rhinoceros** be willing to serve you,” (Catholic Public Domain Version). These are all translations of the same text, according to the context of the target users. In other words, if these texts were to be translated into a children’s bible with pictures, they would have different animal pictures. Unfortunately, in the translation of educational texts, South African translators do not have this freedom, which would result in a contextual translation. They have to fit their languages and culture within the English cultural framework. To this end, we consider Vermeer’s skopos theory, which demonstrates that the translation product should be founded on the intention of the text; and he provides an order that should be followed in the production of a translation:

1. A *translatum* (or TT) is determined by its *skopos*.
2. A TT is an offer of information in a target culture and TL concerning an offer of information in a source culture and SL.
3. A TT does not initiate an offer of information in a clearly reversible way.
4. A TT must be internally coherent.
5. A TT must be coherent with the ST.

The five rules above stand in hierarchical order, with the skopos rule predominating.³³

If the translators are true to the purpose of the text, which is to teach Grade 1 to 3 learners how to count using number worms, rule number 5, which states that ‘the TT must be coherent with the ST’ should be prioritised (in the correct skopos order) and translators should translate the text as ‘*iminyundu yezinombolo*’. Coherence need not be an equivalent word, but it can be a word or concept that will convey information in the target culture according to rule 2 of the skopos theory. If rule 5 of the theory is met, as agreed upon by translators in the conversation, how do they (translators) free themselves from the discomfort (‘*ukulumela*’) caused by the suggested term?

There is the possibility that ‘*ukulumela*’ could be driven by boxing, one meaning of the term under consideration. This study argues that worms vary. For example, in isiZulu *amacimbi* are edible worms (although this is no longer popular in the culture), which may lead to an argument of introducing worms in texts as being culturally appropriate for pedagogical purposes, with the ultimate purpose and mandate of this translation group in mind – to produce texts that will help learners learn to count. Venuti speaks of violence that is entangled in translation and states that translation can be a replacement for foreign concepts with culturally viable concepts that will be intelligible to the target language reader.³⁴ This violence is precisely the cause of ‘*ukulumela*’ because translators must constantly remind themselves of their role as retainers of the skopos (purpose) and the fact that the same picture will be used in other language translations. The text being translated is intended for learners who speak different languages in the country. Therefore, the translator cannot change the worm to another animal since the picture in the book will have a worm. Translators of pedagogical texts in South Africa should use their general knowledge and remember that learners are multicultural. In the case of the ‘worms’ argument, learners from the Northeast of South Africa may find the concept of mopane worms in their books

³² Job 39:9, <https://biblehub.com/job/39-9.htm>

³³ Jeremy Munday, Sara Ramos Pinto, and Jacob Blakesley, *Introducing Translation Studies: Theories and Applications* (routledge, 2022).

³⁴ Venuti, “The Translator’s Invisibility,” 8.

amusing because they are a form of snack for them. This consideration may calm the storm, but remains violent among translators who consider the concept culturally alienating or unrelated. Translators need to acknowledge that the duty of fidelity to the author rests on the translator, who must convey the concept as intended by the author into the target language.³⁵ This challenges the notion of translation as a purely rational activity, revealing that it is deeply shaped by the subjective experiences of the translator and emotional engagement with the source and target cultures.

Translators should bear in mind that “a foreign text is the site of many different semantic possibilities that are fixed only provisionally in any one translation, on the basis of varying cultural assumptions and interpretive choices, in specific social situations, in different historical periods.”³⁶ Therefore, translators as adults may perceive certain concepts differently than learners, and this may result in a translation that does not resonate with the target reader and violates rule 5 of the skopos theory. A translation is considered successful if the message intended by the author reaches the target text user, and in the case of this study, the mathematical concepts should be understood by children as learners.

The behind-the-scenes conversations among the translators of WhatsApp discussions examined in the paper provide a compelling illustration of the complex epistemological challenges inherent in translation. They highlight the dynamic interplay between competing knowledge sources, personal preferences, the importance of context and purpose, and the affective dimensions of the translation process. This necessitates a nuanced understanding of translation as a site of knowledge construction, rather than a mere linguistic exercise, which is often assumed to be possible as long as one can speak and write the language.

RECOMMENDATIONS

Translation is a specialised practice that requires both field-specific subject knowledge and formal training in translation studies. Therefore, it is recommended that educators who engage in translation-related activities receive foundational training in translation, while professional translators need to be adequately oriented and trained in the specific disciplinary domains in which they operate. In addition, translators should be encouraged to engage in ongoing, reflective discussions about translation challenges throughout the duration of a project; in this way, this collaborative engagement contributes significantly to the overall quality and success of the translation process. In the case of the project that is the subject of this paper, collaborative engagement would also help ensure consistency in the use of terminology in the textbooks that are produced. This is essential since the textbooks are going to be used by learners in various grades.

CONCLUSION

This study demonstrates that translating mathematics texts into isiZulu for Foundation Phase learners is a complex process that extends beyond linguistic transfer and reveals a dynamic interplay of cultural, epistemological, and emotional factors, inherently intertwined with philosophical inquiry. As translation, in its essence, is a pursuit of truth, this research, by analysing the lived experiences of isiZulu translators operating outside the Western canon, illuminates the philosophical dimensions of translation articulated by Leal and Wilson (2023), where translation is viewed as philosophy itself. Taking into consideration the truth about language and translation itself realised through the assessed conversations of translators, we highlighted challenges in orthographic standardisation, conceptual equivalence, and cultural adaptation. This underscores the need to move beyond simplistic notions of translation and to consider the translator’s agency, as theorised by Venuti, within the context of Skopos Theory. These findings emphasise the importance of acknowledging the lived experiences of translators, cultural sensitivities, and the evolving nature of language and advocate for ongoing dialogue and collaborative efforts to develop culturally relevant and pedagogically sound materials. Ultimately, this research contributes to a deeper understanding of translation in multilingual contexts and advocates for the

³⁵ Peter Newmark, *Approaches to Translation*. (Oxford: Pergamon Press., 1981).

³⁶ Venuti, “The Translator’s Invisibility,” 18.

development of inclusive theories that reflect the diverse linguistic and cultural realities of the Global South, thus expanding the philosophical understanding of translation beyond established Western frameworks.

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