

**A case study of multimodal and authoritative meaning making in grade 5
isiZulu, English, and Natural Sciences lessons in a quintile 1 primary
school.**

Mfundo Jabulani Msimango

Supervisor: Carolyn McKinney

University of Cape Town

Faculty of Humanities

School of Education

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Declaration

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Abstract

This is a case study of multimodal and authoritative meaning making in grade 5 isiZulu, English, and Natural Sciences lessons in a quintile 1 primary school in KwaZulu-Natal, uMzinyathi Municipality in Nqutu. This study investigated the nature of classroom discourse in each of the subject areas and the opportunities learners have for participation in multimodal classroom discourse. This study is grounded in the socio-cultural approach, language and literacy as a social practice, and multimodality. Furthermore, this study adopted case study, and linguistic ethnography as a methodology. There are three major findings. First multimodality is not inherently pedagogically transformative, its success is determined by how multimodality is used, and integrated with the educator's pedagogy. Second, the presence and the use of multimodality and translanguaging does not compensate for monolingual assessments. That is, even though the isiZulu, English, and natural sciences educators were translanguaging and employing multiple modes of communication in the classroom, the written discourse was strictly monolingual in isiZulu/English. For example, learners were expected to write isiZulu class activities in monolingual isiZulu, and to write English and natural class activities in monolingual English, following bilingual oral classroom talk. Last, there is a similar communicative pattern across isiZulu, English, and natural sciences lessons. That is, the educators' pedagogical discourse was authoritative and interactional to a limited extent even in the isiZulu lessons where most learners are believed to be speaking isiZulu as their home language. In connection to this, knowledge and multimodal artefacts are presented as fixed, and learners are not given an opportunity to engage them fully nor to question, even in the isiZulu lessons where the language of instruction correlates with most learner's home language.

Key words: Bi/multilingualism, socio-cultural approach, Language and literacy as a social practice, translanguaging, authoritative and interactional/non-interactional pedagogy, and monoglossic ideologies.

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Chapter 1: Introduction

Rationale and research aim

The right of all children to receive education in the official language or languages of their choice is guaranteed by the Republic of South Africa's Constitution (1996), and the 1997 Language in Education Policy (LIEP) emphasizes the cognitive benefits of bilingual education and the objective of multilingualism (Bua-lit collective, 2018). However, the majority of South African learners have an African language as the language of learning and teaching (LOLT) from grade one to three, and then from grade four, the LOLT changes to English only. This language switch is referred to as the early exit bilingual model (Banda, 2010). This switch happens even though English is the language of the minority group and is spoken by less than 10 % of the South African population (Howie et al, 2008). Therefore, the South African Curriculum and Assessment Policy Statements (CAPS) as it is currently implemented contradicts the lived linguistic realities (or linguistic repertoires) of many bi/multilingual South Africans. This shift has been met with multiple critics. Bua-lit collective (2018) critique the rhetoric of learning to read in grades 1-3 and reading to learn from grade 4 onwards. Bua-lit collective (2018) conclude that children are not learning to read successfully in foundation phase. This study aims to address the social injustices perpetuated by the schooling system, where non-English speaking families are marginalized and mandated to take an assimilationist approach and change the way they are using language (Garcia and Otheguy, 2017).

First, this research will investigate the disjuncture of language in education policy and classroom language practices (learners' and educators' linguistic repertoires). Second, this study aims to investigate the importance of the visual mode of communication in isiZulu, English, and Natural Sciences lessons. Third, Kress (1996) posits communication is fundamentally multimodal. Hence, this study will examine how multimodality is used in the classroom. In short, this research will look at how both the verbal and visual modes of communication are used in Grade 5 isiZulu, English, and Natural Sciences lessons. In South African schooling, classroom assessments value the written mode, and classroom discourse values the oral mode of communication over the visual mode of communication (Kapp 2004). There's mounting evidence that the integration of semiotic modes of communication play a vital role in the process of meaning making (Adami et al, 2014; Kress and Leeuwen, 1996). Therefore, this study will also explore how semiotic modes of communication other than language, specifically the visual mode which is most overlooked in the schooling context, are incorporated in isiZulu, English and Natural sciences lessons. Most importantly, Kress and Leeuwen (1996), drawing from Barthes (1977) assert that in previous decades it was conceived

that the visual mode of communication is always related to and dependent on the verbal mode of communication because it was seen as polysemous and that verbal text was needed to make complete sense of a visual mode. However, Kress and Leeuwen (1996) point to the fact that both the visual and verbal mode of communication are fundamental in the process of meaning construction, and each mode communicates by means of its specific forms and affordances, independently.

Considering the above, if children who speak indigenous languages were also evaluated coherently with other ways of signifying (including the linguistic mode of communication) in the schooling context, then the schooling system could have, to some extent, enhanced the appalling quality of education provided to bi/multilingual learners throughout the globe (Garcia and Otheguy, 2017). Even though language is crucial to educational disparity, it is by no means a panacea for socio-economic inequity on its own. However, just and inclusive language in education policies can help to address and improve the poor quality of education that poor children, particularly black children, have access to. As a result, this study will also concentrate on the literacy practices that emerge during lessons in the three separate subjects: isiZulu, English First Additional Language (FAL), and Natural Sciences. I will be concerned with the nature of classroom discourse in each of the subject areas. I will also explore whether learners are given opportunities for participation and the extent of learner participation in multimodal classroom discourse. For two reasons, this research is focused on grade 5. For starters, having learned English as an additional language from Grade 1 and experienced English LOLT from Grade 4, learners in grade 5 should have some experience learning in English FAL. Second, students in grade 5 will have had prior experience with reading comprehension.

Research topic

A case study of multimodal and authoritative meaning making in grade 5 isiZulu, English, and Natural Sciences lessons in a quintile 1 primary school in KwaZulu-Natal, Nqutu.

Research questions

What is the nature of classroom discourse in grade 5 isiZulu, English, and Natural Sciences lessons?

What opportunities do learners have for participation in multimodal classroom discourse?

Chapter 2: Conceptual Framework and Literature review

This chapter will provide an overview of the theoretical concepts informing this study, drawing on the socio-cultural view of language and literacy. The chapter discusses language and literacy as a social practice, bilingualism and translanguaging, multimodality, typical features of classroom talk in Africa (choral teaching and safe talk) and the concept of communalized pedagogy. I also review research on classroom discourse in multilingual contexts where English is used as medium of instruction, especially in science lessons.

Language and Literacy as a social practice

Scholars in New Literacy Studies (NLS) such as Brian Street, James Gee, Shirley Brice-Heath, David Barton, and Mary Hamilton, who are advocates of socio-cultural theory build their work on Street's ideological approach to literacy. Street (2002) drew a distinction between autonomous and ideological models of literacy, describing the autonomous model's conceptualisation of literacy as discrete, neutral, stand-alone technical skills that can be taught and assessed universally across contexts. One of the major consequences of viewing literacy in this way, is that literacy can be imposed on societies that are viewed as 'illiterate', especially if their literacy/ies is/are not congruent with essayist discourse, or the kind of discourse most valued in schooling. In connection to this, Heath's (2004) study claims that middle class communities' ways of speaking, reading, and writing (their 'ways with words') are the ones that are valued in schooling.

The New Literacy Studies scholars view literacy as "sets of social practices that are inextricably linked to cultural and power structures in society and recognise the variety of cultural practices associated with reading and writing in different contexts" (Street, 1993:7; Barton and Hamilton, 1998). This ideological view sees literacy as developed through practices and these practices differ depending on the purpose of literacy e.g., reading a clothing label requires different skills and practice from reading a description of a process in a Natural Sciences textbook. Furthermore, literacy events are rooted in social practice such as making a grocery list. Ideological models are relevant to this study because the literacy demands that learners are expected to meet will differ in their different subject areas (also known as disciplinary literacy demands) and require learners to be involved in specific literacy events. This study researched the range of literacy practices found in Grade 5 Natural Sciences, IsiZulu and English classes. In addition, Marsh (1996)

draws a distinction between literacy practices and literacy events and asserts that the “[c]oncept of literacy practices is pitched at a higher level of abstraction and refers to both behaviour and the social and cultural conceptualizations that give meaning to the uses of reading and/or writing” (Marsh, 1996:16). Furthermore, “Literacy practices incorporate not only literacy events as empirical occasions to which literacy is integral, but also folk models of those events and the ideological preconceptions that underpin them” (Marsh, 1996: 2; Heath, 1982; Street 2006). In connection to this, Brandt and Clinton (2002: p337) argue that “literacy as a social practice exaggerates the power of local contexts to define the meaning and forms that literacy takes and by undertheorizing the potentials of the technology of literacy, methodological bias and conceptual impasses are created”. Thus, they suggest more attention be paid to the material dimensions of literacy. In this study, I will use the concepts of literacy events and practices to identify literacy demands that isiZulu speaking learners must meet in grade 5 English, isiZulu, and Natural Sciences lessons in order to gain a thorough understanding of Grade 5 language and literacy practices. In addition, this study will also focus on the material dimension of these practices, the actual multimodal artifacts utilized in isiZulu, English, and natural sciences lessons.

What counts as Bilingual education?

Banda (2010) provides a clear overview on how the concept of bilingualism is conceptualized in the South African schooling context and how the lack of the implementation of a proper bilingual model impedes learners’ academic participation and success in the classroom. Banda (2010) argues that both the National and the previous Western Cape Education Department language policy are adopted from the western context and they both orchestrate for bilingual education to some extent. The WCED provincial language education policy and curricular documents stipulated that only one language is expected to be used as the medium of instruction, the rest are to be taught as additional optional subjects (WCED, 2007). Thus, this perpetuates the notion of one-size fit all approach which isn’t culturally sensitive, nor does it acknowledge the linguistic realities found in an African context. Citing Makoni (1998, 161), Banda (2010) argues that with regards to Africans learning English, additive bilingualism perpetuates the dominance of English over African languages. Banda (2010) further explains that there are two forms of bilingual schools which are parallel and dual medium schools. With regards to parallel classrooms Banda (2010) explains that learners are grouped according to their assumed home language in separate or parallel classes. In addition, these learners also share spaces such as playgrounds. However, this model is implemented on a small scale, specifically, for Afrikaans/English speakers who are the minority of the South African population.

With regards to the dual version of additive bilingual education, Banda (2010) argues that the language of teaching and learning is composed of two languages and learners are taught in those two languages in one class. Even beyond that, Banda (2010) argues that the model of additive bilingualism reinforces the notion of monoglossia, which treats languages as separate and as discrete entities. In Banda's view, this model is not suitable for a highly multilingual context like South Africa. In response to monolingual conceptions of bilingualism, Garcia and Li Wei (2014) proposed a model of dynamic bilingualism because it accounts for the lived linguistic realities of many bi/multilinguals, including many South Africans. Garcia (2014) challenges the notions of both additive and subtractive bilingualism:

Dynamic bilingual practices do not result in either the balanced wheels of two bicycles (as in the concept of additive bilingualism) or in a unicycle (as in the concept of subtractive bilingualism). Dynamic bilingualism is like an all-terrain vehicle (ATV) with individuals using their entire linguistic repertoire to adapt to both the ridges and craters of communication in uneven (and unequal) interactive terrains (see García, 2009a; García and Kleifgen, 2010), and to the confines of language use as controlled by societal forces, especially in schools (Garcia, 2014, 16).

Garcia (2014) argues that dynamic bilingualism is crucial for it enables multilingual speakers to have efficient and fluent communication and it also serves as a foundation for languaging, especially in a highly multilingual context like South Africa. Garcia's (2014) notion of dynamic bilingualism is appropriate for South Africa because it allows bilinguals to use different languages in a hybrid way. Garcia (2014) explains that dynamic bilingualism consists of blending various linguistic resources (our linguistic repertoires are filled with a wide range of language varieties and dialects). Thus, this defies the notion that linguistic resources are independent.

South Africa is a highly multilingual country with 11 official languages. "The majority of learners learn via the medium of an African language in the Foundation Phase, they usually learn via the medium of English in the Intermediate Phase" (Department of Basic Education, 2010:21). This is even though English is the home language of only about 8% of the South African population (Maluleke, 2020). The 1997 South African language in education policy drawn from the 1996 South African constitution aims to promote multilingualism and to develop and respect all 11 official languages (DoE, preamble1). However, De Klerk's (2002) research indicates that there is a lack of implementation of this policy and that one of the driving factors behind this failure is the lack of political will on the part of the ruling party (ANC) to implement it. This policy also does not practically enforce bi/multilingualism as it was never accompanied

by an implementation plan (Heugh, 2013). In connection to this, McKinney (2016) explored the hegemonic English practices in South African schools and how these practices position African languages and their speakers in the classroom.

Moreover, McKinney (2016) explored language ideologies in and the relationship between the South African language in education policy and practice and argued that monoglossic language ideologies position English as a superior language. This monoglossic view of languages has led to the new “unofficial” language policy through the backdoor and places English in the center of teaching and learning while suppressing learners’ home languages, specifically African languages (McKinney, 2016). In short, the new unofficial language policy introduced through the back door of the Curriculum and Assessment Policy Statement (CAPS) expects all learners to be proficient in English by the end of Grade 3. This is what McKinney (2016) refers to as Anglonormativity. Following Chick (1996), McKinney (2016) argues that the hegemony of English in a highly multilingual context leads to educators having to perform “safe talk” which in its nature only equips learners with the ability to appropriately reproduce verbal science registers like “matter is anything that occupies the space” (McKinney, 2016: 55). However, this practice doesn’t allow them to comprehend and interact with these scientific concepts in a meaningful way.

Linguistic repertoire

The concept of ‘linguistic repertoire’ as currently used builds on Gumperz’s (1972) idea of verbal repertoire. However, the original concept of linguistic repertoire by Gumperz leaves a number of unresolved aspects. Authors extend the concept of linguistic repertoire by exploring the historical, ideological and biographical dimensions of the concept (Busch 2012). Thus, this study will not focus on Gumperz’s idea of speech community but use the concept of “linguistic repertoire”. According to Blommaert and Backus (2013), linguistic repertoire is made up of a variety of diverse communicative tools with varying degrees of functional specialization. None of these tools, however, is perfect, and none of them is useless. “Repertoires are individual, biographically organized complexes of resources, and they follow the rhythms of actual human lives, that is they develop at different rates, explosively in some phases of life and gradually in some others” (Blommaert and Backus 2013: 13). In addition, Blommaert and Backus’s (2013) use of linguistic repertoire contrasts with Gumperz’s who focused on the repertoires of ‘speech communities.’ Blommaert and Backus (2013) are tying the concept of linguistic repertoire to the individual. Moreover, Busch (2012, 2015) asserts that the social standards and norms of language choice

are attained simultaneously with grammatical rules and once these crucial aspects are internalized, they become a part of our linguistic repertoire. As a result, the goal of this study is to figure out how multilingual learners utilize their linguistic repertoire in isiZulu, English, and Natural Sciences lessons.

Busch (2012, quoting, Li Wei 2011:1222) introduces the concept of “translanguaging space”, which she conceptualizes as a space for translanguaging and a space that emerges from translanguaging. Various cultures, values and practices do not coexist separately in this area, but a new culture emerges (Busch 2012, quoting Bhabha 1994). Moreover, Busch (2012: 505-506, quoting Li Wei 2011:1223) asserts that “translanguaging makes a social space for the multilingual user by grouping various dimensions of their personal history, experience and environment, their attitude, belief and ideology, their cognitive and physical capacity”. Authors like Otsuji and Pennycook (2010), Blommaert, (2008 and 2010) presented the concepts of metrolingualism, focusing on mobile resources and polyglot repertoire, respectively. Such approaches signal a shift from structure and system to approaches that consider linguistic practices as dynamic and innovative (Busch, 2012). In understanding the concept of linguistic repertoire, Busch points out that the lens of multimodality, a theory concerned with various modes that people use to construct meaning, communicate with each other and to express themselves (Kress 2001), is also crucial.

Busch (2017: p351) posits that “self-perception and perception by others are not experienced as congruent, when people experience inclusion or exclusion because of a language or a particular way of speaking, or when their own capacity of interacting by words is associated with the experience of power or powerlessness”. Blommaert (2010) asserts that we have ideological codes that help us differentiate between ‘good’ or ‘bad’ language use and we use these codes to evaluate language use, prompting us to create hierarchies based on these evaluations. Both the earlier concept of community repertoire and the later post-structuralist individual linguistic repertoire are not sufficient in accounting for the diversity of resources deployed in communication. Pennycook (2018) argues further that translingual, trans-modal and transtextual semiotic practices are significant in understanding the concept of linguistic repertoires.

Translanguaging and trans-semiotizing

Translanguaging is believed to be helpful in making the teaching and learning process relevant to learners who have multiple linguistic resources (Garcia and Wei, 2017). Makalela (2015) supports this claim, arguing that when multiple languages are utilized to access the same content, learners gain a better

comprehension of the subject. Consequently, translanguaging can allow learners to process and digest content more meaningfully than working monolingually (Makelela, 2015: 2). Translanguaging is defined as:

An approach to the use of language, bilingualism and the education of bilinguals that considers the language practices of bilinguals not as two autonomous language systems as has been traditionally the case, but as one linguistic repertoire with features that have been societally constructed as belonging to two separate languages (García and Wei 2014: 2, in Guzula et al, 2016: 214).

Velasco et al (2014) assert that bi/multilingual learners (and emergent bilinguals) will use all their linguistic resources to grasp comprehension and develop metacognitive skills and critical thinking. And translanguaging allows for that. Most importantly, translanguaging or languaging in a fluid or flexible manner is often proven to be beneficial for African bi/multilingual learners in the classroom, even though it is conceptualized to be deficient by school officials and principals (Krause and Prinsloo, 2016). Probyn (2006) showed Science educators in some rural Eastern Cape schools using translanguaging to decipher textbook content provided in English only while enabling Bi/multilingual learners to access the curriculum. However, the monoglossic driven language in education policy positions bi/multilingual learners on the periphery. Moreover, in a case study of a grade 4 English language teacher in a township school in Cape Town, South Africa, and her journey to equipping learners with new target language resources, Dowling and Krause (2019) assert that the educator employed translanguaging skills to encourage her learners' participation in class, help them tackle exam questions and to help them understand the subject content which is printed in standardized English only. Educators in Krause's research achieve meaning making by adopting and agglutinating English words to isiXhosa words in a manner such that they abide to the morphology and syntax of isiXhosa (Dowling and Krause, 2019). This provides a digestible and familiar word structure that learners are able to decode (Dowling and Krause, 2019). Translanguaging with resources of isiXhosa and English is part of the teacher's improvised communication skills to help his/her learners with the subject content. However, it is not valued nor enshrined in the school's language policy (Dowling and Krause, 2019).

Canagarajah et al (2011) asserts that multilingual learners bring with them a wealth of knowledge from their homes that is very important to themselves and the wider society. Thus, employing translanguaging practices in the classroom can help teachers to learn a lot from their learners if they are not imposing their

views on how more than one language can/should be used. Secondly, this will help teachers not to generalize or adopt a one size-fit-all approach or pedagogy, as learning from learners will enable educators to understand different ways to translanguage with their diverse learners (Canagarajah et al, 2011). In short, translanguageers come from various and different cultures, and teachers (even though they may be multilingual) should not claim to know the developmental trajectories for all multilingual learners (Canagarajah et al, 2011).

Beyond translanguageing practices, this study will also look at how the monolingual “standard” English/isiZulu used in textbooks correlates (or not) with learners’ local English/isiZulu dialect and how the similarities/differences advance or impede learners’ participation in class. Pennycook (2003) proposed Kachru’s concept of world Englishes, that is Englishes vary across global contexts. A Kenyan English which is positively indexical in Kenya won’t necessarily be positively indexical in Nigeria. Blommaert (2005) asserts that language practices, or the localised form of English is valued in a particular context, i.e., Black South African English might be highly valued and acceptable in a South African township school. Blommaert asserts that different varieties are not necessarily successful at different scale levels. That is, what counts as good English in a township school won’t necessarily be valued or be indexically positive in an urban school.

The term 'translanguageing' has gained popularity in the field of bilingual education, and it is now being used to characterize bilinguals' 'language-for-learning' (Guzula et al., 2016). Cen Williams (1994) developed the term “translanguageing”, based on his study of bilingual teaching in Wales in the 1980s (Lewis et al., 2012). Originally, the term "translanguageing" was used to describe a pedagogy in which materials were read in one language and answers written in another (Baker, 2001). Since then, several additional researchers, including Blackledge and Creese (2010), Canagarajah et al (2011), Creese and Blackledge (2010), Li (2011), and Baker (2012) have enlarged translanguageing to a theory of language. In addition, according to Rampton (2011), translanguageing is primarily concerned with an individual's ability to generate meaning using the broad range of linguistic resources at their disposal. Li Wei (2011) argues that translanguageing offers a social space for multilingual users by merging various components of their life such as personal histories, experience, surroundings, ideas, and ideologies into one. García (2009); García and Li (2014); and Canagarajah et al (2011: 401) posit that translanguageing can be viewed as the ability of multilingual speakers to move seamlessly between the languages that make up their linguistic repertoires, producing a

"unitary integrated system". In fact, translanguaging, assumes that languages do not exist in isolation from one another or as discrete, bounded entities (McKinney, 2017); this is supported by Makoni and Pennycook's (2006) concept of "disinventing languages" and Li Wei and Martin's (2009) claim that languages are not separate codes, but rather infiltrate one another. Thus, translanguaging challenges traditional bilingual education programs which orchestrates for languages to be taught in silos or one at a time. Williams (cited by Garcia and Li Wei (2014, p91) posits that there are two types of translanguaging: natural and official translanguaging which can be connected to spontaneous and pedagogical translanguaging. Spontaneous translanguaging occurs both within and outside the classroom, and is unplanned and unconscious, whereas pedagogical translanguaging occurs in the classroom, and is utilized by the teacher and students to mediate meaning involving more than two languages (Garcia, 2009; Probyn, 2019).

The idea of translanguaging theory and practices rejecting the concept of separate, named languages has however been criticized (Jaspers and Madsen, 2016). The criticism is that translanguaging cannot disprove language hierarchy or named languages, while its goal is to learn named languages. In connection to this, Jaspers and Madsen (2019) argue that linguistic fixity and fluidity must be viewed as mutually presupposing, that this creates difficulties in everyday life and academia, and that sociolinguists should pay close attention to how both types of linguistic practice open up or close down avenues for social transformation. In a nutshell, Jaspers and Madsen contend that when it comes to language use, both fixity and fluidity are required. According to my study, during class engagement, both learners and educators were required to communicate monolingually at times and bi/multilingually at other times. As a result, both fixity and fluidity are critical, especially in bi/multilingual settings when people speak different languages to varying degrees.

Turner and Lin (2020), and Garcia and Wei (2014) posit that translanguaging is fundamentally multimodal. In relation to this, Kusters et al (2017) argue that most multimodality studies concentrate on individuals who use a single named spoken language as part of larger embodied human action. As a result, the research ignores multilingual communication while focusing on multimodal communication. With regards to translanguaging research, the opposite has occurred: scholars have focused on multilingual communication without considering multimodality, simultaneity, and hierarchies within the simultaneous combining of semiotic resources (Kusters et al, 2017). In addition, several authors such as Blackledge and Creese;

Kusters; and Pennycook argue for the concept of semiotic repertoire which they conceptualize as the totality of communicative resources available to interlocutors (also see Tapio, 2013; Vermeer Bergen, Leeson, and Crasborn, 2007). For this reason, my research aims to explore communication from a broader perspective. That is, it aims to explore visual, gestural, embodied modes as well as the linguistic mode of communication.

Multimodality is present in all human interactions and linguistic repertoires. In short, language is always and inevitably produced across many modalities of communication and through 'contextual' phenomena such as the usage of the surrounding physical spaces, whether spoken, signed, or written (Goodwin, 2000; Scollon and LeVine, 2000). Several scholars (Goodwin, 2000, Jewitt, 2009, Mondada, 2016, Norris, 2004) expand the notion of semiotic repertoires (the use of the totality of semiotic modes in communication) by arguing that different 'modes' collaborate or form a 'semiotic field,' although some modes are primary (foregrounded) in some situations, while others are subordinate (backgrounded). Moreover, Lin has proposed applied linguistics terminology that strives for a non-linguistically biased view of communication in her work on science learning in Content and Language Integrated (CLIL) classrooms. Lin proposed the word 'trans-semiotizing' (Lin 2015) to describe how multilinguals use many components of their semiotic repertoire, such as verbal registers, gesture, facial expression, and body movement, to communicate. In addition, transemiotizing provides for an equal analysis of the various modes involved, rather than prioritizing the language mode. Lin (2019) describes the co-construal of content meaning in a multilingual Science classroom as 'whole-body sense-making,' based on Thibault's (2011) work on first order languaging dynamics. Ballenger (1997) Lin (2019), McKinney and Tyler (2018) also discuss the concept of whole-body sense making. In connection to this concept, Tyler (2021) asserts that whole-body sense making is a shared experience. That is, the signs of meaning making used in communication should be at least familiar to both interlocutors (and the signs should be positively indexical to both interlocutors). It is directed by the interlocutors' interests and affect. It also allows interlocutors to generate meaning by utilizing a variety of modes and registers (using trans-semiotics such as gestures, body movement, and eye gaze) (Lin, 2015).

Semiotics, Social Semiotics, and Multimodality

Kress et al (1996) assert that semiotic modes of communication are composed of the linguistic and the visual mode of communication, amongst others, including the aural, spatial, embodiment, gesture, and facial expression. The linguistic mode of communication is made up of the written and the oral mode of

communication. The visual mode of communication is composed of images, gestures and other semiotic codes like colour (Kress, 1996). Kress and van Leeuwen (1996) take issue with Barthes' argument that visual modes of communication are always dependent on verbal modes for interpretation. The visual mode of communication was seen as polysemous (open to multiple interpretations) and that text was required to make a full sense of the visual mode (Kress and Van Leeuwen, 1996). Kress and van Leeuwen (1996) argue that both the visual and verbal modes are fundamental in the process of meaning construction. However, the linguistic and the visual mode of communication are independently capable of conveying meaning. In addition to this, Stein (2008) introduced the concept of semiotic chains and argued that semiotic chains are a type of sign-making in which the meaning is conveyed through a collection of disparate but related texts. Through semiotic chains, Stein (2008) argues that the meaning making process is ongoing and continuous rather than confined to one moment in time. Here Stein supports Brandt and Clinton's (2002) critique of the overemphasis on the local/immediate moment in the concept of literacy events discussed above.

In studying multimodal pedagogies, Stein (2008) scrutinized the relationship between multimodality, social semiotics and teaching of multimodal literacy in a multilingual context. Stein (2008) explored the chains of semiosis of multilingual children in connection to a prompt by their educator and concluded that children continuously reshape their knowledge when using semiotic chains. For example, these multilingual children made dolls from waste materials and later constructed and told a story using the dolls. Moreover, each mode is differently socially valued, and different potential for meaning making may mean a different potential for subjectivity development. (Kress et al 1996). Individuals use a range of modes to communicate, affecting subjectivity formation. In addition to this, the linguistic mode has its own peculiarities which are profound and complex. One of those peculiarities is the fact that language practice or usage in the 21st century is not static nor homogenous and this is heavily influenced by the concept of superdiversity. Many people in South Africa speak more than one language and in often times they mix or translanguange in order to convey meaning to other bilingual speakers. Unfortunately, this has not yet been fully accounted for in South Africa's "bilingual education" system. Kress et al (1998) conceptualize learning as a dynamic process of sign making which is informed by social semiotics. According to Van Leeuwen (2004) semiotic resources are:

the actions, materials and artifacts we use for communicative purposes, whether produced physiologically – for example, with our vocal apparatus, the muscles we use to make facial expressions and gestures – or technologically – for example, with pen and ink, or computer hardware and software – together with the ways in which these resources can be organised. Semiotic resources

have a meaning potential, based on their past uses, and a set of affordances based on their possible uses, and these will be actualized in concrete social contexts where their use is subject to some form of semiotic regime (Van Leeuwen 2004:285).

Drawing from this theory, Kress et al argue that the interests/intentions of the sign maker (his/her selection of the modes) play a vital role in conveying the most apt, plausible, and coherent meaning in a particular context (Kress, 1997). Therefore, in relation to learning, Kress et al argue that learners' signs are never a repetition of the teachers' sign. In fact, learning has a potential to be creative, innovative, and transformative, and so is the learner's selection of signs. To supplement this notion, Kress et al argues that the students' signs can be the transformations of the resources that were available to them. However, the question that surfaces from Kress's argument is what happens when learners are reproducing signs? Does this automatically enact creativity and innovation from the learners, or does it depend on how those signs are reproduced and used in the classroom? Ker's (2015) ethnographic research project that was concerned with describing the writing practices of teachers and students in a grade 4 and 5 Mozambique primary classroom (focusing on 6 students over 40 lessons) where Portuguese is a language of teaching and learning (LOLT), discovered that writing is a broad term that encompasses a variety of practices such as rote copying, drawing, doodling, and pseudo-writing. These writing practices take place in a linguistic and semiotically diverse environment. In addition to this, one of Ker's (2015) main findings in grade four and five Mozambican primary school is that children's writing practice is not necessarily about meaning making due to their limited proficiency in the LOLT of Portuguese.

In relation to multimodality in the classroom setting, Newfield (2011) argues that the central issue in teacher's pedagogy or in teaching and learning (especially in under resourced schools such as quintile 1 schools) is rooted in the forms of representation, which children simultaneously utilize to construct meaning. Newfield (2011) argues that a socially just pedagogy should enable all learners to draw on their local forms of knowledge and semiotic practices, and on their individual strengths in writing, oral and performance activities, in order to explore and share aspects of their experiences. I will draw from Newfield's (2011) work that demonstrates how multimodal pedagogy can help promote classroom participation. The definition of participation, as envisaged by Newfield, includes not only the cognitive, social and emotional aspects of participation, but also Freire's concepts of agency and voice. Indeed, Newfield's goal is to emphasize the meaning-making practices of children who are typically marginalized

in mainstream schools, especially African-language speakers. Newfield (2011) demonstrated how a Grade 7 student's performance skills helped her to be recognized as a skilful storyteller, while her writing of the same story resulted in a great loss of meaning and participation.

In a second example, Newfield (2011) presents the Olifantsvlei Fresh Stories Project, in which children created dolls representing characters from their neighbourhood in collaboration with members of their community and out of the available materials. Newfield concludes that the synergy between home and school enabled the children to participate in the creation of characters and stories by drawing on their own life worlds. The multimodal approach of using the dolls enabled rich stories to be written, in contrast with the Grade 7 student's written story. Newfield (2011) then presents a skilful teacher who decided to apply multimodal pedagogies to the teaching of English poetry, a subject that the students saw as useless in their lives. The teacher made the students discover the creativity of poetry and asked them to respond to poems through different modes. Then he shifted from English poetry to local praise poems and invited the students to perform them. In short, these three examples show how multimodality has the potential to stimulate classroom participation and to value local semiotic resources, thereby repositioning students as valuable meaning-makers during the teaching and learning process. Moreover, the concept of multi-literacies challenges and surpasses the dominant traditional monolingual and monocultural language approach to literacy education (New London Group, 2000). The New London Group assert that this approach seeks to extend the notion of literacy by emphasizing the importance of negotiating multiplicity in terms of cultural/linguistic diversity and the variety of text forms associated with emerging technologies and media. According to the New London Group (2000), changing conditions of work, citizenship and private life bring new languages and discourses that students need to understand.

Davis and Reed (2003) suggest that learners with minimal proficiency in the language of instruction (English) are likely to be disadvantaged in terms of understanding both the evaluation requirements and input by teachers on their work. Thus, Davis and Reed suggest that educators should employ various modes of communication to mediate scientific concepts to multilingual learners. Davis and Reed conclude that "it is easier for teachers to devise tasks in which learners express their understanding in modes other than the written (for example, mime or dance, posters, or three-dimensional models) than it is to devise ways of responding to learners' Designs that do not rely on the language of instruction" (Davis and Reed, 2003: 112). They suggest that limited feedback can be provided via body language (applause, smiles, frowns) or

by symbols such as ticks and crosses, or through conventional numerical marks. My study will also look at how educators employ various modes of communication to mediate scientific concepts to multilingual learners through different discourses.

Socio-Cultural Approach: Classroom talk, and Dialogic/Authoritative and interactional/non-interactional discourse

Hicks (1995) asserts that discourse implies a dialectic of both linguistic form and communicative practices. Mikhail Bakhtin developed a theory that is based on dialogical utterances as opposed to grammatical sentences. Structuralist scholars argue that words can have semantic content, which is often referred to as their dictionary meaning, and sentences can have grammatical form. However, Bakhtin debunked this idea positing that “Meaning is socially situated” (Hicks, 1995: 5). Moreover, following a socio-cultural approach, discourse plays an integral role, the mediational role, in children’s learning (Hicks, 1995). And this notion is explicitly unpacked by Vygotsky in his Socio-cognitive theory which asserts that language serves as a symbolic mediator of children’s thinking and learning. However, if this is to happen, the community-based discourses should be valued/integrated in the lesson (i.e discourses experienced at home and brought into the classroom and later become learners’ means for their participation in class) (Hicks 1995). However, if learner's cultural habitus and linguistic resources are not brought into the classroom or are not valued in the classroom, McKinney et al (2015) argue that learners will be labelled as deficient or even incompetent in relation to the language and literacy demands found in the classroom. Thus, there should be a correlation and consistency between the learners’ lived experiences/cultural habitus and the discourses found in the formal classroom setting. In addition, Hicks (1995) argues that classroom discourses are intrinsically social constructs that mediate, indeed partly, the teaching and learning that takes place in classrooms; children appropriate discourses that situationally determine what counts as knowing within disciplines through meaningful classroom engagement. This helps pupils learn academic concepts with ease and if there is a mismatch between community-based discourses and academic discourses, learners will encounter difficulties in grasping scientific concepts.

Furthermore, Gee (2008) asserts that academic discourse plays a vital role in learning and shows how it involves much more than just vocabulary. He posits that academic language is carefully shaped to address particular demands within a scientific field. Gee (2008) argues that academic discourse includes abstract and complex subjects, nominalizations, passive main verbs and complex embedding. Hicks (1995) argues

that children in various communities are encultured into different discourses which are in line with the language practices, values and ways of acting and believing characteristic of their communities. Furthermore, Scollon and Scollon argue that essayist discourse is hegemonic in schooling, despite the fact that not all discourses closely match with essayist literacy (Hicks, 1995). In addition, there is a tendency in education to regard Western essayist discourse as the only important one (Gough, 2000), which neglects other secondary discourses of African languages (Paxton, 2009). In connection to this, Khadka (2015) posits that it is wrong to assume that there is a homogenous way/pattern of writing or speaking across the world, as it is not an automatic outcome of maturation. Khadka (2015) conceptualises essayist literacy to be one way, or style, of “speaking” among many. Here “speaking” refers to both oral and written uses of language. A good example of varying discourses is found in Heath’s ethnographic study that was conducted in three different communities (Hicks, 1995). Given the status of South African remote areas, specifically Nqutu which has a high unemployment rate, little or no access to printed text and a high level of illiteracy, it is unlikely that children in Nqutu would develop essayist literacy at home which is vital for successful learning in school.

Mortimer and Scott (2003) developed the communicative paradigm to describe how teachers and students communicate in science lessons. Their communicative approach is essential to understanding how the instructor collaborates with students to generate ideas in the classroom. This framework focuses on whether or not the teacher engages with the students and whether or not the teacher considers the students' ideas as the lesson progresses as well as the teacher’s orientation to knowledge (Mortimer and Scott, 2003). This framework is comprised of four interactional patterns, dialogic–authoritative and interactive–non-interactive. The dialogic–authoritative dimension describes how the teacher works with students in the classroom to develop their ideas and understanding. Does the teacher listen to what the student has to say from the student's perspective, or only listen to what the student has to say from the perspective of school science (Mortimer and Scott, 2003). In dialogic communication, multiple points of view are considered, multiple voices are heard, and ideas are explored. In authoritative communication, a single uncontested view of school science is communicated. A key characteristic of the distinction between dialogic and authoritative approaches is that a series of words can be dialogic or authoritative in nature, regardless of whether they are said individually or in groups (Mortimer and Scott, 2003). In the interactive–non-interactive dimension, talk can be interactive in the sense that it allows other people (learners) to participate,

or non-interactive in the sense that it does not allow other people to participate, such as in a lecture (Mortimer and Scott, 2003).

Mortimer and Scott (2003) introduced four categories of the communicative approach:

Interactive/authoritative, Interactive/dialogic, non-interactive/authoritative, and non-interactive/dialogic.

My study analyses the interactive/authoritative communicative approach, and the interactive/dialogic communicative approach. Mortimer and Scott (2010) assert that in the Interactive/authoritative communicative approach, the educator's main goal is to get to the conclusion or produce a desired response from learners. The interventions of the teacher in this approach are based on instructional questions for which s/he has only one answer in mind (Ibid). If the pupils are unable to provide the required response, their ideas are dismissed (Ibid). The students' responses are confined to single, brief assertions in answer to the teacher's inquiries (Ibid). Last, Mortimer and Scott (2013) assert that the interactive/dialogic approach differs from authoritative interactions in that the teacher listens to and considers the students' points of view, even if they are diametrically opposed to the scientific viewpoint.

One of the major constraints on classroom talk in Southern African contexts is colonial language in education policies. Bunyi (2005) asserts that English language in education hegemony has remained a legacy of colonialism in Kenya. Similar to South Africa, the current medium of instruction in Kenya is that the indigenous language of the neighborhood is to be used from years 1 to 3. Then, at the start of fourth grade, there is a transition to English. This policy is effective for the children of a small, dominant elite group who are well placed to acquire English-language skills early in their lives at home and in the community; however, it poses significant challenges for the majority of Kenyan children and their teachers.

The following discussions explore different findings of research on classroom discourse in South African science classrooms, notable researchers include but are not limited to Probyn, Nomlomo, and Brock-Utne. Probyn (2006) conducted a study in rural Eastern Cape schools and explored how Grade 8 science teachers use the language resources of the classroom, specifically, learners' home language, isiXhosa, and English. Probyn explored whether teachers' bilingual practices increase the opportunities for learners to learn science. Probyn (2015) asserts that one of the teachers enabled his learners to access scientific knowledge through pedagogical translanguaging, which she defines as a systematic and purposeful use of the learners' linguistic resources, specifically their isiXhosa home languages. In addition, Probyn (2015) asserts that in township-rural schools and classrooms, the oral language is usually the learners' home language, while the

language of reading, writing and assessment is English. Furthermore, Nomlomo (2007) contrasted science teaching and learning in English and isiXhosa in the Intermediate Phase in two primary schools in the Western Cape. Nomlomo (2007) examined the consequences of using learners' home language (isiXhosa) and second language (English) as LOLT and concluded that "isiXhosa as a medium of instruction resulted in learners' better academic achievement in science than English" (Nomlomo, 2007: 279).

Nomlomo (2010) observed oral discourse and controlled turn-taking as dominant communicative strategy in the classrooms in her study. Moreover, Nomlomo (2010) argues that when it comes to science education, turn-taking should consider the various science skills that students will need to achieve scientific literacy. To improve the development of scientific literacy, interaction should go beyond a simple exchange of words and turns to a deeper and critical examination of what is taught and how it is taught. However, Nomlomo (2010) argues that controlled/authoritative turn-taking approaches are hegemonic in South African classrooms in isiXhosa and English LOLT classrooms, and that they can be associated with power relations and certain socio-cultural factors in a number of ways (see also Msimanga, 2021). First, in terms of power dynamics, teachers have an authoritarian (autocratic) relationship with their students, as they dictate turns and select students to respond to their questions without allowing students to express their opinions. In addition, Nomlomo (2010, citing Martin, Sexton, Wagner and Gerlovich 1994:49) argues that in these situations, learners "learn to obey, be quiet, to become indifferent and apathetic". According to Brock-Utne (2006), the teacher is the only active participant in this type of engagement, while the students are passive consumers of knowledge. Thus, fears and anxiety may arise as a result of the power gap between teachers and students, which can have a negative impact on student participation in the teaching-learning process (Nomlomo, 2010).

Safe talk and chorus teaching through a communalized pedagogy

Safe talk is frequently depicted through cued choral responses from learners after elicitation questions and rising intonation from the teacher, according to McKinney (2017 paraphrasing Chick 1996). Safe talk, according to McKinney, is frequent in post-colonial education, particularly in contexts where there is a disjuncture between the language of instruction and the linguistic resources brought to school by bi/multilingual children. Moreover, McKinney (2017, quoting chick 1996) asserts that "safe talk" performs a face-saving function in enabling students to participate without providing incorrect responses. Safe talk can be linked to what Lefstein and Snell (2011) label as Initiation Response and Feedback/Evaluation

(IRF/E) strategy. IRF/E includes a form of interaction, but this is authoritative and controlled by the teacher, and answers are often predetermined. This study will investigate the concepts of safe talk, chorus teaching, and communalized pedagogy in relation to the educators' authoritative and interactional or non-interactional pedagogic approach.

Safe talk can also be connected to Stoffelsman et al's (2020) concept of Chorus teaching. Stoffelsman et al (2020) studied two forms of chorusing in grade 3 classrooms in South African township schools: Choral reading and choral answering. Choral answering is restricted to yes/no and known-answer questions, yielding brief responses from the whole class. Feedback from teachers is scarce. No positive feedback, such as a compliment, is given to students. My study discovered that Chorus teaching is prevalent in all 3 subjects (isiZulu, English, and natural sciences) even in isiZulu which is taught in learners' home language. Hoadley's (2008) research into literacy practices in primary schools in the Western Cape captures Chick's concept of safe talk and Stoffelsman's Chorus teaching. Reading aloud as a class (choral reading) was discovered to be a prevalent literacy practice by Hoadley (2008: 194), who characterized it as a heavily "communalized pedagogy". Hoadley (2008) discovered that sound-centered readers were favored, with the emphasis on decoding single words rather than extended reading for meaning. Interestingly, the author connects practices to the teacher's own circumstance. Many of the teachers come from communities with strong oral cultures and are not used to reading. A further stumbling block was noted as a shortage of reading materials and libraries. According to the limited data available, students in low-income schools could often decode text but had little grasp of what they had decoded (Hoadley, 2008), (MacDonald, 1990, Flanagan, 1995).

In conclusion, this chapter discussed language and literacy as a social practice, bilingualism and translanguaging, multimodality, typical features of classroom talk (safe-talk, choral teaching, and communalized pedagogy) and the concept of authoritative and interactional (non-interactional) pedagogy. I have also included a review of classroom discourse in multilingual contexts where English is used as medium of instruction, especially in science lessons. In a nutshell, there are very few classroom-based studies which look at modes other than language in the classroom and which compare classroom discourse and learner participation across the subjects of isiZulu, English and Science. This is something my research aims to add to the literature

Chapter 3: Methodology

This chapter outlines the methodology I applied to conduct this study. I present an overview of the research design, data collection methods and difficulties encountered, data analysis, as well as the study participants. Thereafter, I explain the study's ethical considerations. The proposed research adopts a qualitative case study using linguistic ethnographic methods, sociocultural discourse analysis, and multimodal discourse analysis. This study collected data through ethnographic data collection tools such as: field notes, classroom observations, photography, and videography. In addition, I interviewed ten grade five learners. Learners were interviewed in groups of five. I also interviewed three grade three teachers who teach IsiZulu, English, and Natural Sciences. Moreover, I audio recorded my conversation with both learners and teachers during the interviews and most of the data was translated from isiZulu to English. I also adopted the 'go along' strategy coined by Copland et al (2015) to describe informal conversations with participants, to connect with both learners and teachers in informal conversations during break time, and during their spare time. I then analysed and interpreted the collected data by employing this study's theoretical framework and examined it using sociocultural discourse analysis, and multimodal analysis which I will expand on below.

Research Design

Case Study

The design of this qualitative study took form of a case study. Merriam-Webster's dictionary, (2009, cited by Simpson and Genovese, 2016) defines a case study as an "intensive analysis of an individual unit (as a person or community) stressing developmental factors in relation to environment". In short, case studies focus on an "individual unit," what Robert Stake (2008, pp. 119–120) termed a "functioning specific" or "bounded system." This study focused on a single case: specifically, one primary school located in the rural part of KwaZulu-Natal. That is, according to Flyvberg (2011: 301), this means that a case study allows for details, richness, completeness and variance. Through this study I explored the school in different dimensions. I looked at the language and literacy practices in grade five lessons for learning isiZulu, English First Additional Language (FAL), and Natural Sciences over a series of 14+ lessons. I also examined how different multimodal learning materials are used during these lessons. This is a case study of meaning-making (involving language and literacy practices and multimodal communication) in Grade 5 isiZulu, English FAL, and Natural Sciences lessons.

Linguistic Ethnography

Linguistic ethnography is an interpretive approach that examines the local and immediate behaviour of actors from their point of view and considers how these experiences are rooted in broader social contexts and structures (Creese, 2015). Moreover, Rampton (2005) asserts that:

Linguistic ethnography generally holds that language and social life are mutually shaping, and that close analysis of situated language use can provide fundamental and distinctive insights into the mechanisms and dynamics of social and cultural production in everyday activity (Rampton, 2005:2)

There are three facets of ethnography, (a) ethnography as a method (b) ethnographic methodology (c) and theorizing (Lillis 2008) incorporated in this study. Ethnography as method and ethnography as methodology are used to understand interviews with participants and how students engage with and are expected to engage with reading and writing tasks (Lillis 2008). This study will also employ ethnographic data collection tools; interviews, observations and taking fieldnotes and ethnographic theorizing will be the most prominent tools in this study.

Data collection

Data collection included observations of 14 lessons of IsiZulu, English, and Natural Sciences, video and audio recordings of all lessons, photographs of learners' and teachers' learning and teaching materials, fieldnotes, and audio recordings of the learners' interviews and 3 teachers' interviews. Following is a summary of data collection strategies:

- Four semi-structured interviews with each participant (10 learners in two groups of five, and three educators individually- I conducted 4 interviews in total) as follows:
 - ✓ During the learners' interviews, discussions were based on their learning experiences during the isiZulu, English, and Natural Sciences lessons. I asked them questions pertaining to their experiences with the LOLT in the English, and Natural Sciences lesson as well as their experiences with the isiZulu lessons which most of them speak of as home language.
 - ✓ With regards to the three educator interviews, questions and discussions were mainly premised on understanding the educators' positions in relation to teaching highly

multilingual learners, and the educators' experiences with multimodality in the classroom.

- ✓ I audio recorded all interviews.
- ✓ I inscribed my thoughts, and learners' and teachers' responses during the interviews.
- Observations and Field-notes:
 - ✓ I inscribed my observations of practices, feelings, and thoughts in all 14 lessons.
- Photographs, videography, and audio-recordings:
 - ✓ I took photographs of teachers' and learners' teaching and learning materials. This includes teachers' lesson plans, chalkboard writing, teachers' textbooks, learners' workbooks, learners' assessments (tests sheet and tests question papers), and many other multimodal artifacts that were used in the teaching and learning phase or produced by learners as part of their assignments.
 - ✓ I video recorded all 14 lessons using a camera.
 - ✓ I audio recorded all 14 lessons using an audio-recorder.
 - ✓ I audio-recorded all interviews.

Below is a table summary of classroom observation data collected. Due to constraints of space, classroom observations are the main focus of data analysis in the study.

Table 3.1: Data Collection Summary

Date	Learning Area	Lesson Topic	Duration	Ethnographic Data Collection Tools
09 April 2021	IsiZulu Home language (HL)	Parts of speech: Isiphawulo /isichasiso (adjectives)	60 min	Fieldnotes, photographs, audio, and video recording
04 May 2021	IsiZulu Home Language (HL)	Map reading in isiZulu	60 min	Fieldnotes, photographs, audio, and video recording
06 April 2021	IsiZulu Home Language (HL)	Part of speech: Isandiso (adverbs).	60 min	Fieldnotes, photographs, audio recordings, and video recordings
13 April 2021	IsiZulu Home Language (HL)	Umbhikisho wase-Alex	60 Min	Fieldnotes, photographs, audio recordings, and video recordings
15 April 2021	IsiZulu Home Language (HL)	IsiZulu test	60 Min	Fieldnotes, photographs, audio recordings, and video recordings
9 May 2021	IsiZulu Home language (HL)	Writing an essay: How to write a narrative essay.	60 min	Fieldnotes, photographs, audio recordings, and video recordings
09 April 2021	English First Additional Language (FAL)	English term 1 exam: Anansi and Turtle	60 Min	Fieldnotes, photographs, audio recordings, and video recordings
15 April 2021	English First Additional Language (FAL)	English class test: Writing a letter to Joshua	60 Min	Fieldnotes, photographs, audio, and video recording
04 May 2021	English First Additional Language (FAL)	The tug of war. Listening comprehension	60 min	Fieldnotes, photographs, audio, and video recording
9 April 2021	Natural Sciences	Muscles and skeleton structures.	60 min	Fieldnotes, photographs, audio recordings, and video recordings

21 April 2021	Natural Sciences	Structures	60 min	Fieldnotes, photographs, audio recordings, and video recordings
04 May 2021	Natural Sciences	Exam	60 min	Fieldnotes, photographs, audio recordings, and video recordings
06 May 2021	Natural Sciences	Metals vs Non-metals	60 min	Fieldnotes, photographs, audio recordings, and video recordings
10 May 2021	Interviews	I interviewed 10 grade 5 learners. Learners were interviewed in two groups of five. I also interviewed three grade 5 teachers of IsiZulu, English, or Natural Sciences.	90 min	Fieldnotes, and audio recordings

Table 3.2 Creating transcripts

. , ?	Rising intonation is marked by (?) A comma (,) indicates a brief pause and (.) indicating longer pause.
//	Indicates overlapping speech and/or interruptions.
Underlining	Shows word stressed/emphasised.
(...inaudible)	gap in data as not possible to hear.
[*xxx]	* and square brackets indicate an interpretation of the classroom practices by the researcher.
<i>Italic words in brackets:</i>	Translation into English
L:	Indicates the learner.
T:	Indicates the teacher
T and L	Indicates the teacher and learners
" "	Indicates that the teacher/learner read from the textbook/handout

Data analysis

I categorized the photographs and videos into datasets corresponding to each lesson to analyse the data. I then transcribed every video, and corresponded gestures and images with text. While doing this, I screenshotted every gesture used to explain a concept and corresponded it with the learners' and teachers' discourses. I started by going over each transcript and identifying any instances where a specific literacy event, literacy practice, or semiotic resource was utilised. I then identified specific literacy and communication practices, such as Menzi reading aloud in front of the classroom and writing test assessments. I utilized the transcription to see which literacy practices and semiotic resources the teachers and children were using, as well as which reflected multimodal communication instances. Given the nature of my research questions, which are concerned with meaning-making, literacy practices and multimodal communication, I have chosen to combine two different analytical methodologies within linguistic ethnography (a) Sociocultural discourse analysis, and (b) Multimodal discourse analysis, both of which focus on

analysing meaning in classroom discourses and texts. In addition, I was not able to include analysis of the interview data due to the space constraints of a minor dissertation.

(a) Sociocultural discourse analysis

Sociocultural discourse analysis is a way of studying how people use spoken language to think collectively (Mercer, 2004, p. 138). This methodology is appropriate for my research, which focuses on meaning mediation through discourses. An examination of classroom discourse may reveal how they promote or hinder the mediation of common meaning. Quantitative or qualitative methodologies, or a combination of both, can be used in sociocultural discourse analysis. I have drawn on Mortimer and Scott's descriptive categories in their communicative approach (authoritative – dialogic and interaction- non-interactive) in my socio-cultural analysis.

(b) Multimodal Ethnography and Multimodal discourse analysis

Multimodal ethnography (Dicks, Soyinka and Coffey 2006) emphasizes the multimodal aspect of both the research topic and the tools employed to collect and present the data. In this study, I observed and analysed teachers' and students' writing, speaking, reading, gesturing, and interacting with a variety of multimodal artifacts, as well as moments where gesture was used in teacher explanations of concepts.

Ethical consideration

The ethical concerns for my research thesis have been guided by the School of Education, UCT, and the Code of Ethics for Research Concerning Human Subjects, University of Cape Town (2010). Since this research study was performed with human participants, ethical clearance was sought from the School of Education, University of Cape Town. These codes follow the principles of voluntary participation, the right of participants to withdraw from the research at any time, and informed consent from all participants as well as guardians, in the case of minors. In addition, access to the research site was granted by both the school principal, and the KwaZulu-Natal Department of Education. The research was also performed with sensitivity to the recognizability of the location and participants and without endangering the participants in

any way. All details were regarded as confidential and thus all references to people's names, participants' identities and locations were changed to preserve their privacy and to ensure confidentiality. All participants and/or their parents/guardians were asked for consent for participation in the study. An example of the information letter and consent form is attached in appendix 8.

Data collection challenges

Due to Covid 19 pandemic restrictions, accessing the school site was difficult; I was only permitted to visit a school for two days in a week. In addition, I had a difficult time obtaining an approval letter from the KwaZulu-Natal Department of Education's Head Office. As a result, I had to travel to Pietermaritzburg to obtain the approval letter in person. The collection of classroom data in the form of video and audio recordings is fraught with difficulties. First, the unavoidable background noise that exists within and around classrooms (Gibbons, 2006) can make the video recording inaudible at times. Thus, I had to use an additional microphone, and audio recorder which was placed in front of the classroom. This enabled me to gain high quality audio recordings of participants' speech. In addition, the use of an integrated microphone with the video recorder also made audibility difficult because only the loudest speech in the classroom was captured audibly. Learner to learner interaction was difficult to capture. The presence of a video recorder in a situation such as a classroom often causes people to become self-conscious and respond in an artificial manner. I attempted to reduce this by outlining the study and assuring confidentiality from the start as well as recording several lessons so that participants got accustomed to the recording and my presence. Last, the video recorder was placed in the back of the classroom with the goal of minimizing its intrusiveness. This also allowed me to film writing on the blackboard and get a wide-angle perspective of the classroom to catch as much action as possible.

Data Storage

All data was stored electronically on my google drive account, and manually on my 8-terabyte hard drive. No third party had access to this data.

The site

This data was collected at a quintile 1 primary school located in Nqutu, a town in the KwaZulu-Natal province of South Africa's uMzinyathi district municipality. Nqutu has a population of about 165 307 people, according to Census South Africa (2011). Furthermore, 44,4 percent of the overall population is unemployed, with an alarming youth unemployment rate of 53,3 percent (Municipalities South Africa, 2016). Municipalities South Africa (2016) estimates that at least 15.5 percent of the population has no formal schooling, only 27 percent has finished matriculation, and just 3,8 percent has attended higher education.

Conclusion

In this chapter, I have provided an overview of the general case study and the research design grounded in linguistic ethnography. I discussed the data collection methods used at the research site. The investigation and data collection processes were thoroughly discussed. I also described how I analysed the data and addressed various ethical concerns, such as keeping the collected data safe and secure. In the next chapter I will present and analyse isiZulu, English, and natural sciences data.

Chapter 4: Presentation and analysis of natural sciences data

This data was collected in Nqutu, a town in KwaZulu Natal where isiZulu is spoken by an overwhelming majority of the population (90%), with Sesotho spoken by 7%. However, in this school, the language policy stipulates that English should be used as medium of instruction across curriculum and the language of communication during school hours and break time (See Appendix 1 an image of the schools' language policy). The school language policy emphasizes learners' English competency (and numerous measures to promote learners' proficiency in English, such as holding debates in English) from bullet points 2-4 (See Appendix 1 for an image of the school's language policy). The schools' language policy also mentions improving students' fluency and phonic awareness which is stipulated in the school language policy as "Hold regular dialogues and debates to enhance the aspects of fluency and confidence among the learners as first-class customers and teachers as key holders".

What is apparent from the schools' language policy is that it is monoglossically driven in a sense that it enforces a single language of teaching and learning despite the prevalence of multilingualism in the classroom. Second, it is driven by Anglomormativity. That is, it recognizes English as the only legitimate language. The school's language policy creates an impression that the ideal learner in this school is a monolingual English speaker. Third, nothing is said about African languages, specifically, learners' home languages, despite there being at least three African languages (isiZulu, Sotho, and Tsonga) spoken by the grade 5 learners. While acknowledging that this is driven by monoglossic ideology and Anglonormativity, it's also possible that this school's language policy isn't comprehensive nor meets the criteria for being a valid school language policy because schools do not get support from the provincial education department and knowledgeable officials in developing language policy. Similarly, McKinney's (2017) research showed school principal's language ideologies as Anglonormative. Specifically, African languages were often stigmatized and excluded in the schools' language policies. McKinney (2017) concludes that children from English middle/upper class families are the ideal learners for the South African schooling system. Speakers of other languages are marginalized and labeled as problematic in the US and South African schooling system. This is fueled by a

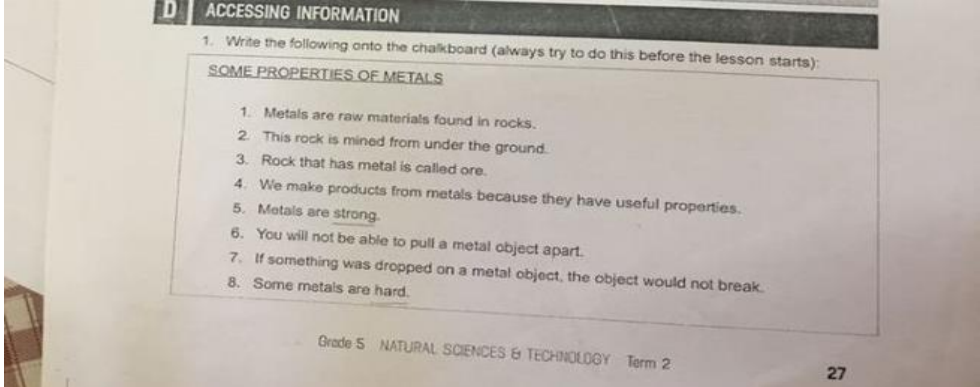
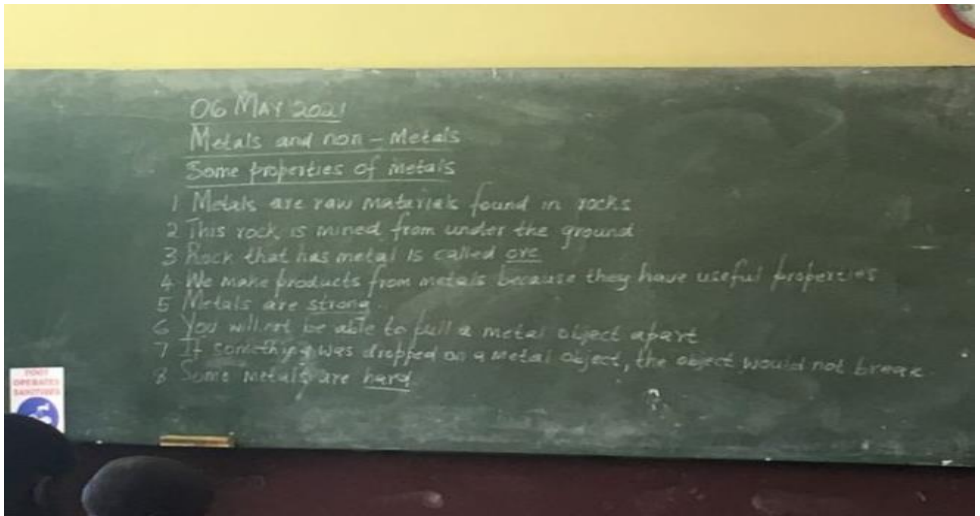
monoglossic view of languages and the imposition of the standardized language (English) as LOLT.

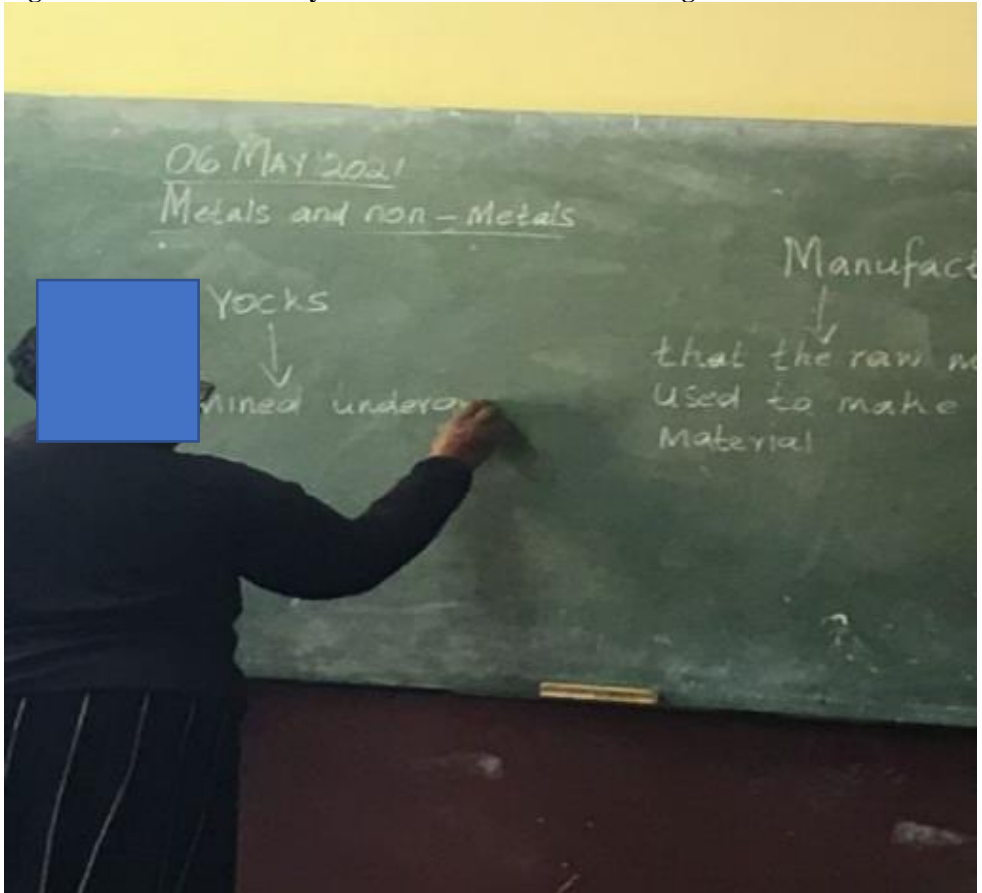
During my time in this school, I observed a fifth-grade class with only 25 students. This is because half of the students were at home due to rotational timetabling. During the Covid-19 pandemic, the school had to follow government orders to restrict the number of students in classrooms by half in order to curb the pandemic from spreading. Students sat one at a desk, facing the front of the classroom, the chalkboard and the educator. There was never a point in any of the lessons where the educator instructed the students to work in groups. Furthermore, each student received their own workbook and textbook. They did, however, have to share some of the instructional materials such as the time when the natural sciences teacher distributed a few handouts containing photographs of various properties of a metal. During this process, a learner was required to examine a handout before passing it to the next learner. All classes lasted for 45 minutes each. As the data presentation and analysis will show, all teachers in the isiZulu, English, and Natural Sciences classes translanguaged, and all lessons were delivered multimodally. Lastly, all teachers used an authoritative pedagogy (Mortimer and Scott, 2003) in lessons, even when isiZulu was used as the language of teaching and learning. In this chapter I begin by presenting 2 transcripts from a natural sciences lesson which include both text and images. The lesson was concerned with distinguishing metals from non-metals. I then analyse the language and literacy demands of activities in each extract. I then present two English and two isiZulu lesson extracts and analyse them.

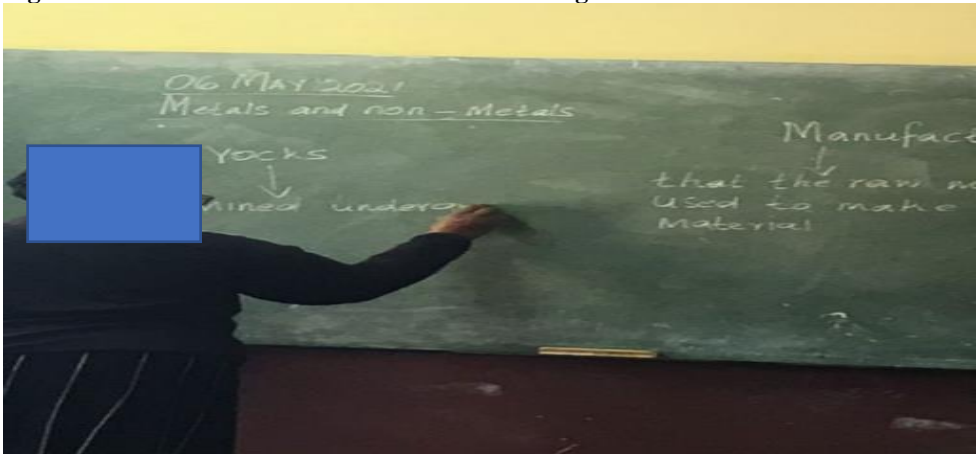
Meaning making in Natural Science lessons



The first lesson for analysis is a Natural Science lesson on distinguishing metals from non-metal objects. The first of the two extracts (4.1) depicts the beginning of the session, when the teacher wrote notes on the chalkboard and explained the properties of metals. Later, the educator taught these properties using a variety of tactile and multimodal artifacts. The learners' class activity is the second extract (4.2). Learners were supposed to complete a "properties of a metal table" class activity. They were given 4 tangible artifacts and they had to identify the characteristics of a


metal in those objects (scarf, nail, chalk, fork). Despite this being the learner's activity, the educator was dominant throughout the activity.


Turn no.	Original Text	English translation	Images + Description of an action
1	T: Where are we getting these rocks?		<p>Metals notes on the chalkboard vs Notes on the teacher’s lesson plan</p> <p>Figure 4.1.1: Notes on the educator’s lesson plan.</p>  <p>Figure 4.1.2: The teacher wrote these notes on the chalkboard at the start of the class.</p> 


			<p>Figure 4.1.3: Notes made by the teacher while she is teaching</p>  <p>While speaking to the learners, the teacher wrote on the chalkboard. She jotted down the date, the lesson topic of "Metals and Non - metals", and two scientific concepts: "rocks" and "Manufacturing". She does this while explaining how rocks are mined underground and then processed into raw materials.</p>
2	Ls: Underground.		Learners respond chorally.

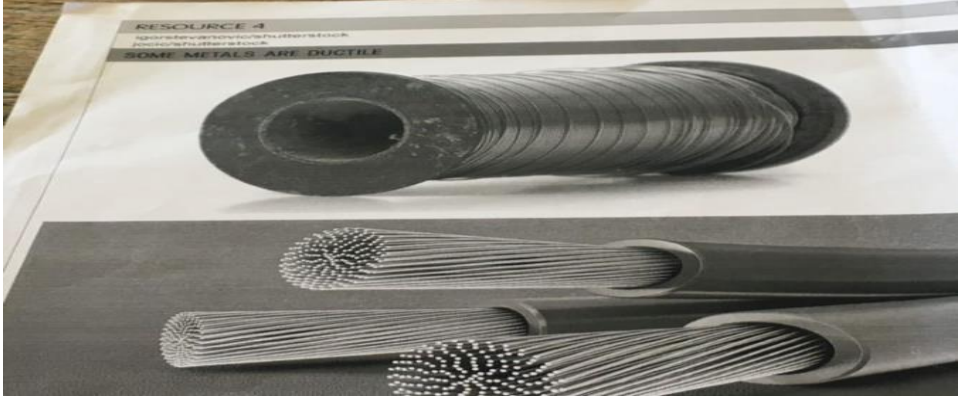

3	<p>T: Yes, underground. they are mined underground angithi? The rock that has materials is called ore. Lelotshe lelo eline raw material. Anikaze nifunde ngo copa? O steel? O iron? Or gold and silver? Anikaze nifunde ngawo?</p>	<p><i>(T: yes, underground. They are mined underground, right? A rock that has materials is called ORE. That rock that has ORE. Haven't you studied about copper or steel? Iron? Or gold and silver? Haven't you guys studied this?)</i></p>	<p>Figure 4.1.4: The Natural sciences educator writing on the chalkboard.</p>  <p>The educator first wrote the lesson topic Metals and Non-metals. Right after, she underlines metals and non-metals. She does this to emphasise and encourage learners to pay attention to these key concepts. Apparently, these are two important concepts that learners should pay attention to. While she verbally explains to learners that rocks are extracted underground, the educator writes the words “rocks” and “manufactured” on the chalkboard. She then uses annotation, specifically arrows, to expand these two concepts. Under the concept “rocks” the educator expands it by annotating that they are mined underground. The image attached herein captures these moments.</p>
4	<p>Ls: Yes.</p>		<p>Learners respond chorally.</p>
5	<p>T: Mhhhh? I gold and silver Niyalazi igolide? Noma asike sithatheni ini? Ake sithathe iwashi legolide. Noma icic legolide, niyalazi angithi?</p>	<p><i>(What? Gold and silver? Or what should we use? Or let's say a gold watch or a gold earring, you guys know it right?)</i></p>	<p>Mhhh is a question-asking sound. It's similar to saying uh?</p>
6	<p>Ls: Yes.</p>		<p>Learners respond chorally.</p>

<p>7</p> <p>T: So kukuse kuthathwephi?Kuye tshe okusuke lithathwe ezimayini siyezwana yini? Kusuke kuyitshe okubizwa ngokuthini? Igolide. Khona lizothathwa linxanxathwe beselizothathwa lishintshwe lize i khande imali (raising a coin). Lama <u>raw materials</u> esikhuluma ngawo ama <u>metals</u>. Siyezwana yini bangani bami?Sizofunda ngawo lama <u>metals</u> okuyi <u>gold and silver I steel I iron ne</u> copa. Njengamanje nje sisathaza nje ama <u>raw materials</u>. we make.... (*reading from the lesson plan). Bathi metals are strong. Today sizokhuluma ngani bangani? About the properties of metals. Sibona ngani ukuthi I metal lena? Niyezwa yini? We are going to talk about properties of metals. Angithi? Uyibona ngani ukuthi I metal? Metals are strong. I metal injani? I strong. ok. Uma I strong it means that you cannot pull it. Ngamanye amazwi awukwazi ukuyithi? Awukwazi ukuyithi uyihlukanise I metal. Injani? Athi ngikukhombise ukuthi ama metals a strong. Uyasazi Isando mngani wami?</p>	<p>(So, where did they get it? In the mines, right? It's a rock called what? A gold will be processed and refined into money. So, these materials we are referring to are called metals. Is that clear, my friends? We will learn about these metals which are gold, silver, steel, Iron, and copper. For now, let's look at the raw materials only. We make... (reading from a lesson plan). They say that metals are strong. What are we looking at today, my friends? We will look at the properties of metals. How do we see if it's a metal? Do you all understand? Can you see that this is a metal? Metals are strong. How are metals? They are strong, ok. If it strong, then that means that you cannot pull it. In other words, you can't do this (trying to break a 10-cent coin with her bare hands). Lemme show you how strong metals are. Do you know a hammer my friend?)</p>	<p>Figure 4.1.5: The Natural Sciences educator introduces a 10-cent coin</p>  <p>Figure 4.1.6: A 50-cent coin and a nail used by the educator placed on top of a front desk</p>  <p>In this turn, 7, the educator raises a fifty-cent coin with her right hand in an attempt to demonstrate what metals are, to demonstrate that metals are shiny, strong, and cannot be torn apart with bare hands. She tries to break apart a coin with her bare hands to demonstrate to students those metals are so strong that bare hands cannot break them. The image below depicts a teacher holding a coin that she brought to class</p>
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8	Ls: Yes.		Learners respond chorally.
9	T: Uyasazi? Ok. Ake sibuke nanka amathuluzi. Uyawabona lama thuluzi engiwaphethe.	<i>(Do you know it? OK Let's look at these tools. Do you see these tools in these paper that I'm holding?)</i>	<p>A picture below contains an arsenal of metal tools that learners had to refer to, in order for them to understand what counts or doesn't count as metals</p> <p>Figure 4.1.7: A handout with images of metal tools</p>  <p>The educator then instructs students to examine various metal tools. She gives student one handout containing these tools. After a few seconds, students examined the handout and passed it on to other students in the classroom. This image was taken from the Natural Sciences grade 5 resource pack.</p>
10	Ls: Yes.		Learners respond chorally.
11	T: Lama thuluzi ami enziwe ngama metals. Uma nje ubona isaha ulihlukanisa kanje lingahlukana?	<i>(These tools are made with metals. Looking at a saw, would you be able to break it apart with your hands?)</i>	In this turn, the educator refers learners to the handout with the images of metal tools. Unfortunately, there was only one handout available and all learners in the classroom had to share it.

12	Ls: No.		Learners respond chorally.
13	T: Angeke lize likwazi ukwehluk ana. Listrong angithi? Another ... about metals is that they are hard. Aqinile. (*she writes hard on board). Asthathe igold nje. Iqinile angithi? Noma ungathatha ini ushaye ange ke iqhephuke. Angithi? Metals are?	<i>(It can't be torn apart. It's strong, right? Another... about metals is that they are hard. Let's take gold for instance, it is strong right? Even if you hit it with anything, it won't break, right?)</i>	Angithi: translates to: Right?
14	Ls: Strong.		Learners respond chorally.
15	T: Strong. The second one? *Pointing at what learners are expected to read "strong". Second one. Metals are?	<i>(They are strong. What's the second one? Metals are?)</i>	
16	Ls: Hard.		Learners respond chorally.
17	T: Hard. Asiqhubekeni. The third one, metals are shiny. Anjani?	<i>(Hard. Let's continue. The third one is that metals are shiny. are what?)</i>	
18	Ls: Shiny.		Learners respond chorally.
19	T: Ayacwebezela. ... Uyayibona I nail?	<i>(They are shiny... Can you see a nail?)</i>	<p>Figure 4.1.8: A nail that the educator was using in class</p>  <p>The educator then advised the students to examine the nail. She stressed that a nail</p>

			is a metal with the property of shining as one of its characteristics. There was no opportunity for a student to touch the nail or coin. She held out a nail in front of the students and explained that because it is shiny, it qualifies as a metal.
20	Ls: Yes.		Learners respond chorally.
21	T: Uma sike sanetha sigcina sinjani?	<i>(What would happen if this nail was exposed to the rain?)</i>	
22	T: Siya roosa angthi? Asike sithathe imali ihlale phandle, ihlal e isikhathi eside angithi? Igcine in jani? isi roosile. Isi dull. angithi?	<i>(Isn't rust inevitable? Take this coin money and leave it outside for an extended period. What is going to happen with it?)</i>	
23	Ls: Yes.		Learners respond chorally.
24	T: Ake sisebenzise u dull, ay u roosa. Iyagqwala ngesiz ulu angithi koda ungakwazi ukuth i uyithathe uyenze ibe shiny again. Asike sibuke nansi I resour ce yethu ezosikhombisa into eshiney.	<i>(Instead of rust, let us use the word dull. In isiZulu, a coin "iyaqwala" (becomes dull), but it can always be made shiny again. Let us keep an eye on this resource, which will show us what shiny things are.)</i>	<p>Figure 4.1.9: A handout illustrating what constitutes shiny metals.</p>  <p>Right after explaining to students that metals are shiny and that they can be reshined if they become dull, the educator then distributes 1 page containing images of shiny metal objects to students. However, the images on this handout were presented in black and white. Learners then looked at the handout for a few seconds before passing it on to the next learner. This handout rotated around the classroom until all learners saw the image of what counts as shiny metals. These handouts were a photocopy of the Natural Sciences grade 5 resource pack.</p>

25	T: Uyabuka uyadlulisa without making noise.	<i>(Take a quick look and then pass on without making noise.)</i>	Again, the educator in this turn asks learners to look at the metal images that are on a handout. Unfortunately, there was only 1 handout and not all learners had access to it while she explains what counts as ductile metals.
26	T: Ok. The metals are ductile. U ductile usho ukuthini? It means that metals can be made to thin wires without breaking it. Njengalena I ductile. I metal lena. Kuthathwe I copa kwa khandwa ini? Ama thin wires. Niyabona?	<i>(Ok. The Metals are ductile. What does the word ductile mean? It means that metals can be made to thin wires without breaking. Like these ones. This is a metal. They used Copper to make what? The thin wires, can you, see?)</i>	<p>Figure 4.1.10: An illustration of ductile metals</p>  <p>The educator introduces the image attached herein while explaining to students that, metals are ductile. She then hands out a single page with images to students while explaining to them that metals can be formed into thin wires, inferring that, metals are ductile.</p>
27	Ls: Yes.		Learners respond chorally.
28	T: Ngamanye amazwi u ductile means that metal can be made into thin wires without breaking. (*she writes this on the board). Ok bangani bami we are talking about the properties of metal. Sibona ngani ukuthi I metal? Metal is strong, metal is hard, metal is shiny, and metal is ductile. Let's go to point number 5. Metals are malleable. What does the word malleable mean? It means that metals can be hammered. Uyezwa yini?	<i>(In other words, ductile means that metals can be made into thin wires without breaking. Ok, my friends, we are talking about the properties of a metal. How do we tell if it's a metal? Metal is strong, hard, shiny, and ductile. Ok, let's move to point number 5. Metals are malleable. What's the meaning of the word malleable? It means that metals can be hammered. Do you understand?)</i>	<p>Figure 4.1.11: Metals are malleable</p> 

			In this turn, the educator introduces the new concept to the students. That is, metals are malleable. She defines malleable metals as those that can be hammered into various shapes. She then distributes a handout with images of metals in various shapes while explaining the term malleable to learners.
29	Ls: Yes.		Learners respond chorally.
30	<p>T: Akesithatheni igolide. Noma akesithatheni imoto. Ngithe mina u malleable uchaza ukuthini? Malleable means that metals can be hammered into shapes without breaking. [*the educator reads from the textbook] Ake sibukeni nansi imoto. Yenziwa ama shapes, shapes shapes. Asike sibukeni nansi imoto, imoto ikhandwa nge steel ke bang nani. I metal okuthiwa yini? I steel bangani bami. Umalleable uchaza ukuthi metals can be hammered into shapes. Niyezwa yini bangani bami? Ngaphandle kokuthi a brea k-he.Njengoba sibona imoto nje bangani bami. Imoto yenziwe I Steel. Niyezwa yini?</p>	<p><i>(Let's imagine gold. Or let's just take a car for instance. So, I said malleable means? Malleable means that metals can be hammered into shapes without breaking. Let's look at this car for instance. It is made into shapes, shapes, shapes. Let's look at this car, it is made from steel, my friends. It's a metal called what? steel, my friends. Malleable means that metals can be hammered into shapes. Do you understand, friends? When they are hammered into shapes they don't even break, as you can see the car bangani. A car is made from steel, do you all understand?)</i></p>	
31	Ls: Yes.		Learners respond chorally.
32	<p>T: The last one, metals can melt at high temperatures. Angithi bangani bami?</p>	<p><i>(The last one. Metals can melt at high temperatures. Isn't, my friends?)</i></p>	
33	Ls: Yes.		Learners respond chorally.

34

T: Kuchazanike lokho? Nayi I fork webangani. Ayiphumanga inj ena angithi? I shiny niyaybona? Kwaphuma kuyitshe, yaba I raw material ngoba sekuy fork.

(What does this mean? Here is a fork, my friends. It wasn't like this, right? It is shiny, can you see that? It was first a rock, then it was processed into a raw material, now it's a fork.)


Figure 4.1.12: The educator showing learners that metals are ductile



In this turn, the instructor uses a fork to demonstrate how metals are shiny and difficult to tear apart.

Figure 4.1.13: A fork used by the educator in the classroom



<p>35</p>	<p>T: Ngathi ngisho ungathatha isandousithi uyithi angeke uze usinqamule. Angithi? Angithi?</p>	<p><i>(Even if you use a hammer, you can't break it apart. Right? Right?)</i></p>	<p>Figure 4.1.14: The educator gesturing that fork (metals) cannot be torn apart, even when using a hammer</p>  <p>The educator is now explaining to students that metals are strong. In doing so, she illustrates how metals are so strong that not even a hammer can break them apart. While explaining this, she also uses gesture and imagination/analogy to show students how to beat a metal with a hammer. While she moves her arm up and down as if she's hitting real metal with a real hammer, she expects students to use their imaginations and her gesture to figure out how to hit a metal with a hammer. In this turn, the educator's main point is that metals are strong.</p>
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Analysis of Metals and Non-metals topic

After learners had finished copying notes from the chalkboard into their notebooks, the Natural Sciences educator introduced four concepts concerning the properties of a metal. Metals, she asserts, are strong, hard, ductile, and shiny. She referred to these four ideas as metal's properties. While explaining each of these properties, the educator uses a black and white photocopied handout with an image related to that property to accompany each explanation. In addition, she employs tangible materials (such as a 50-cent coin, scarf, nail, fork), analogy, and gestures to assist students in understanding what counts and does not count as metal. Evidently, in this lesson, there are numerous modes of communication at play. In fact, according to Adami et al, (2014); Kress and Leeuwen (1996), the integration of semiotic modes of communication is critical in the process of meaning making. Kress et al (2010) further argue that learning is fundamentally multimodal. That is, learning is realized through the connection of visual, spatial, actional and linguistic modes of communication.

Chalkboard writing practice with oral explanation and whole class questions and answers.

The educator begins the lesson by writing up chalkboard notes from a lesson plan provided by the KZN provincial department of education. She jots down a total of 19 points on the board (an image of the teacher's chalkboard notes, and the lesson plan notes are attached as figure 4.1.1 of extract 4.1 above). Moreover, while the teacher writes notes onto the chalkboard (see figure 4.1.2 of extract 4.1), students copy these notes into their exercise books. Ker's (2015) research in the multilingual context of Mozambique showed most teachers utilizing this literacy practice of chalkboard notes and student note taking as a starting point of their lessons. As the lesson progresses (Extract 4.1 above), the written and the visual mode of communication (chalkboard writing) was resemiotised to the verbal mode (speech) combined with use of spatial mode, gestures and images. Ker (2015) refers to this process of resemiotisation as a semiotic chain (writing notes on the chalkboard → learners copying them into notebook → teacher explaining these notes using all semiotic modes and resources, including linguistic resources, at their disposal). Ker (2015) also observes that this process is both reductive and expansive, and that it can foster creativity. E.g., this process can be reductive in a sense that the educator selectively decided what information to exclude from her notes on the chalkboard. The educator omitted information like page numbers. This is evident in an image attached as figure 4.1.1 and 4.1.2. Moreover, this process can also be expansive in a sense that the educator carefully decides to deviate from the original lesson plan notes and add more information to them such as underlining words and adding more concepts (Here, the educator underlined the word "ore" on the chalkboard. This word was not underlined in the original notes on the lesson plan). Furthermore, the

educator's chalkboard writing is multimodal. Annotations by the educator highlight key scientific concepts. This can be seen in the image attached as figure 4.1.3 of extract 4.1, where the educator highlighted the words “metals-nonmetals” and used the arrow symbol to expand the words "rock" and "manufactured."

The educator employs the chalkboard as a vehicle in an attempt to mediate scientific concepts (rocks, ore, mined underground, and manufactured) in the Natural Sciences lesson in extract 4.1. In turn 1, the educator tries to explain that metals are a finished product of raw materials. She then uses the chalkboard to explain how raw materials are converted into finished products or different types of metals. She refers to the lesson plan attached as figure 4.1.1 to explain these concepts. Turn 1 of extract 4.1 also includes the chalkboard writing image attached as figure 4.1.2. Furthermore, in turns 1–5, the educator explains that raw materials are dug from underground and contain ore. And that they are transformed into valuable metals such as steel. The educator constantly translanguaged when mediating scientific concepts orally during this lesson, showing that this is a normative language practice. Evidently in turn 5 the educator was explaining to learners that gold is also extracted from soil, and during this process she used her translanguaging skills as a communication tool. In this literacy practice of chalkboard writing, the written linguistic mode of communication (writing) is foregrounded and other modes of communication like gesture and verbal linguistic mode of communication were backgrounded. In these activities, there are also gaps, contradictions, and a lack of continuity between the written and oral discourses in the classroom. While the oral discourse in the classroom is translingual (using isiZulu and English), the written discourse on the chalkboard, on the other hand, is entirely in monolingual English. Another distinguishing element of these activities is the presence of multimodality in both the chalkboard writing and the translingual practices (gestures) that followed the chalkboard writing. Below is an example of lack of continuity between the learners' and the teachers' translingual practices and the classroom writing practices such as the classroom activity presented in extract 4.2:

26. T: Ok. The metals are ductile. U ductile usho ukuthini? It means that metals can be made to thin wires without breaking it. Njengalena I ductile. I metal lena. Kuthathwe I copa kwakhandwa ini? Ama thin wires. Niyabona? (Ok. *The Metals are ductile. What does the word ductile mean? It means that metals can be made to thin wires without breaking. Like these ones. This is a metal. They used Copper to make what? The thin wires, can you, see?*)

27. Ls: Yes.

In this instance, the educator was explaining to learners that metals are ductile. In doing so, the educator translanguaged in isiZulu and English. Learners then responded with a one word answer "yes". Thus, this shows that the classroom languaging practices are translingual. However, there is a lack of continuity

between the teachers' languaging practices which are translingual versus the learners' written classroom activity presented in figure 4.2 which is strictly monolingual in English only.

Below is an example of a disjuncture between the educators' and learners' translingual practices and chalkboard writing (extract 4.1- turn 3):

3. T: yes, underground. they are mined underground angithi? The rock that has materials is called ore. Lelotshe lelo eline raw material. Anikaze nifunde ngo copa? O steel? O iron? Or gold and silver? Anikaze nifunde ngawo? (*Yes, underground. They are mined underground, right? A rock that has materials is called ORE. That rock that has ORE. Haven't you studied about copper or steel? Iron? Or gold and silver? Haven't you guys studied about this?*)

In the example above, turn 3 of extract 4.1, the educator translanguages using isiZulu and English to teach learners that metals are extracted underground as raw materials and they are then processed into metals. However, while she translanguages, she also writes on the chalkboard in English only. An image of this is attached as figure 4.1.4 of extract 4.1. Yet again, in this case, there is a disjuncture between the oral discourse (translingual oral discourse) and the written discourse (monolingual English chalkboard writing).

Translanguaging and using images to explain the properties of a metal in a Natural Sciences lesson

Right after learners had finished copying notes in their exercise books from the chalkboard, the educator then teaches the day's scientific concepts, extraction and properties of metals: metals are extracted from rock and ore, metals are hard, strong, shiny, ductile, and malleable. She illustrates these fundamental concepts with images of metal properties as she mediates them, while translanguaging and employing gestures and other modes of communication. She distributes images of various properties of metals to students. The educator only had a single copy of images for what counts as malleable metals. While she explains in detail that metals are malleable, she distributes a single image of a car which was presented in black and white, despite the 25 learners in the classroom. Unfortunately, not all students had an opportunity to view this image while she explained the concept of malleable. In this instance, it is vivid that the use of multimodality wasn't enough to help learners fully understand the word "malleable", as many learners did not have the opportunity of looking at the image of a malleable object while listening to the educator's explanation. In relation to the lack of teaching and learning materials in a science classroom, Omorogbe et al (2014) posit that most of Nigeria's and Africa's schools lack the necessary teaching and learning resources to aid students' learning of fundamental science concepts. Omorogbe et al (2014) argue, citing Ogunmade (2006), that in such contexts, most students learn little science, and this is typically through rote learning strategies. This problem is exacerbated by a lack of adequate resources (Omorogbe et al, 2014). In

addition to this, the educator then uses strictly controlled turn taking, and an authoritative, interactional communicative approach (Mortimer and Scott, 2003) to help students "understand" that metals are hard, shiny, and strong. While acknowledging that the educator produced multimodal images to help learners understand the properties of a metal, it is equally important to also note that the knowledge was presented as fixed and that learners were not given an opportunity to engage critically with the pictures provided by the educator. This makes the interaction authoritative rather than dialogical. For instance, the educator provided a photograph that was not shiny (the picture was presented in black and white) to help learners understand what "shiny" is. This might have created confusion for learners. In relation to this, the educator adopted an authoritative yet interactional pedagogic strategy which restricted learners' opportunities to meaningfully engage with scientific concepts. This is evidenced in turn 13-25 in extract 4.1:

13. T: Angeke lize likwazi ukwehlukana. Listrong angithi? Another ... about metals is that they are hard. Aqinile. (*she writes "hard" on board). Asthathe igold nje. Iqinile angithi? Noma ungathatha ini ushaye angeke iqhephuke. Angithi? Metals are? (*It can't be torn apart. It's strong, right? Another... about metals is that they are strong*)
14. Ls: strong
15. T: Strong. The second one? (Pointing at what learners are expected to read "strong"). Second one. Metals are? (*They are strong. What's the second one? Metals are?*)
16. Ls: Hard (*Hard*)
17. Hard. asiqhubekeni. The third one, metals are shiny. Anjani? (*Hard. Let's continue. The third one is that metals are shiny. are what?*)
18. Ls: Shiny (*Shiny*)
19. T: Ayacwebezela. ... uyayibona I nail? (*They are shiny... Can you see a nail?*)
20. Ls: Yes.
21. T: uma sike sanetha sigcina sinjani? (*What would happen if this nail was exposed to the rain?*)
22. T: Siya roosa angithi? Asike sithathe imali ihlale phandle, ihlale isikhathi eside angithi? Igcine injani? isi roosile. Isi dull. angithi? (*Isn't rust inevitable? Take this coin money and leave it outside for an extended period. What is going to happen with it?*)
23. Ls: yes.
24. T: Ake sisebenzise udull, ay u roosa. Iyagqwala ngesizulu angithi koda ungakwazi ukuthi uyithathe uyenze ibe shiny again. Asike sibuke nansi I resource yethu ezosikhombisa into e shiney. (Instead of rust, let us use the word dull. In isiZulu, a coin "iyaqwala" (*becomes dull*), but it can always be made shiny again. Let us keep an eye on this resource, which will show us what shiny things are)
25. T: uyabuka uyadlulisa without making noise. (*Take a quick look and then pass on without making any noise*)

Furthermore, the educator is found translanguaging throughout this lesson. One of the examples is evidenced in turn 24. In this translanguaging example (and) many others, isiZulu is used dominantly. In Myers-Scotton et al's (2002) theory of code-switching, isiZulu would be labelled as the matrix language. Dowling and Krause (2019) assert that in multilingual contexts like South Africa, educators employ translanguaging skills to provoke learner's participation in class, teach them how to tackle exam questions and help them understand the subject content which (in many instances) is printed in monolingual English

only. The educator achieves meaning making by adopting and agglutinating English words to isiZulu words in a manner that they abide to the morphology and syntax of isiZulu, thus, providing a digestible and familiar word structure that learners are able to decode. This is evidenced in turn 32-34:

32. T: The last one, metals can melt at high temperatures. Angithi bangani bami? (*The last one. Metal can melt at high temperatures. Isn't it, my friends?*)

33. Ls: Yes (*Yes*)

34. T: Kuchazanike lokho? Nayi ifork webangani. Ayiphumanga injena angithi? I shiny niyaybona? Kwaphuma kuyitshe, yaba I raw material ngoba sekuy fork. (*What does this mean? Here is a fork, my friends. It wasn't like this, right? It is shiny, can you see that? It was first a rock, then it was processed into a raw material, now it's a fork.*)

35. T: Ngathi ngisho ungathatha isando usithi uyithi angeke uze usinqamule. Angithi? Angithi? (*Even if you use a hammer, you can't break it apart. Isn't? Isn't?*)

The educator attempted to explain to students in the preceding excerpt that metals are so strong that not even a hammer can break them apart, and that only a high heat temperature can do it.

Interestingly, in this example (turn 32-34) is how English words are merged into isiZulu morphological structure and how they are used. In short, in this example, the educator uses English for technical concepts such as 'high temperature', 'fork', and 'melt' while isiZulu is used for non-technical concepts. In addition, she used gestures to demonstrate how a person can hit metal with a hammer (an image of the teacher gesturing this is attached as figure 4.1.14 of extract 4.1). In this case, the educator was successful in portraying a picture of how to hit a metal with a hammer. The educator translanguages in isiZulu and English while discussing this. In addition, the educator used a fork with a plastic handle to demonstrate to students that a metal can only be ripped apart by applying intense heat. The educator had a harder time teaching metal heat treatment process to the students in this case. Learners were not given any illustrations or a more detailed definition of what constitutes a metal heat treatment process. Instead, learners were asked to picture the metal heat treatment which on its own is not enough to learn science. Gestures were used successfully, while on the other hand the use of imagination wasn't enough to help learners understand the concept of metal heat treatment. Evidently, multimodality can successfully enhance explanations or be insufficient, depending on the moment and how it is used.

In addition, translanguaging is part of the teacher's improvisation of communication skills to help her learners with the subject content that is written in monolingual English. It is not valued nor supported in the school's language policy attached as Appendix 1. In fact, the school language policy is monoglossic, supporting English only. The excerpt below shows the nature of classroom

talk. The educator naturally translanguages in isiZulu and English in turn 29. In relation to this, Makalela argues that when multiple languages are used to access the same content, learners develop a deeper understanding of the subject matter, and that translanguaging can then allow learners to process and digest the content meaningfully (Makalela, 2015: 2). In the following example, the educator translanguaged to help learners understand that metals are malleable (and makes an example of a car which is one of the handouts pictures that she passed to learners):

'29. T: Akesithatheni igolide. Noma akeshathatheni imoto. Ngithe mina u malleable uchaza ukuthini? "Malleable means that metals can be hammered into shapes without breaking" (*she wrote "Malleable means that metals can be hammered into shapes without breaking" on the chalkboard). Ake sibukeni nansi imoto. Yenziwa ama shapes, shapes shapes. Asike sibukeni nansi imoto, imoto ikhandwa nge steel ke bangnani. I metal okuthiwa yini? I steel bangani bami. u Malleable uchaza ukuthi metals can be hammered into shapes. Niyezwa yini bangani bami? Ngaphandle kokuthi a breake. Njengoba sibone imoto nje bangani bami. Imoto yenziwe I steel. Niyezwa yini?" (*Let's imagine gold. Or let's just take a car for instance. So, I said malleable means? Malleable means that metals can be hammered into shapes without breaking. Let's look at this car for instance. It is made into shapes, shapes, shapes. Let's look at this car, it is made from steel, my friends. It's a metal called what? A steel, my friends. Malleable means that metals can be hammered into shapes. Do you understand, friends? When they are hammered into shapes they don't even break, as you can see the car friends. A car is made from steel, do you all understand?*)

Throughout the lesson, although translanguaging, the educator employed a tightly controlled turn-taking pedagogic strategy as well as an authoritative communicative approach in whole class interactions. In addition to this, knowledge was presented as uncontested facts (fixed). Thus, learners had limited opportunities to participate in the construction of knowledge during the lesson. Consequently, learners only had a limited opportunity to interact with scientific concepts/technical concepts of natural sciences. In addition, they didn't have any learner-to-learner discussions either. In contrast, monolingual tests require learners to demonstrate in-depth mastery of key scientific topics despite the fact that learners were not given enough opportunity to engage with these scientific concepts during the oral discourse in the lesson. For example, the English written assessment provided as extract 4.3.7 and 4.3.8, learners were required to answer the "why" questions which typically requires expansive responses. However, the common verbal discourse in this classroom was choral responses from the learners. Stoffelsman et al (2020) argues that choral teaching is characterized by yes/no answers, closed-ended questions, short/one-word responses, and that the teachers' feedback is limited.

Similarly, in this lesson the educator constantly relied on confirmatory and close-ended questions which restricted learners' participation in the classroom. As evidenced in extract 4.1, in comparison to learners, the educator dominated the lesson, as demonstrated by the lengthy turns as well as the

quantity of turns she had. In total the educator had 22/35 turns. While learners only had 12/35 turns. Of a total of 593 words, the educator spoke an overwhelming majority of 575 words, while learners only spoke 15 words. This chorus teaching can also be linked to what Hoadley (2008 in Hoadley, 2012) labels as 'communalized pedagogy' which is discussed in chapter 2. The educators' pedagogic strategy was also authoritative and interactional (Mortimer and Scott, 2003). Similarly, Nomlomo (2010) discovered that a grade 4 science educator in Western Cape primary school employed authoritative turn taking pedagogic strategy to mediate scientific concepts even when using a familiar LOLT of isiXhosa.

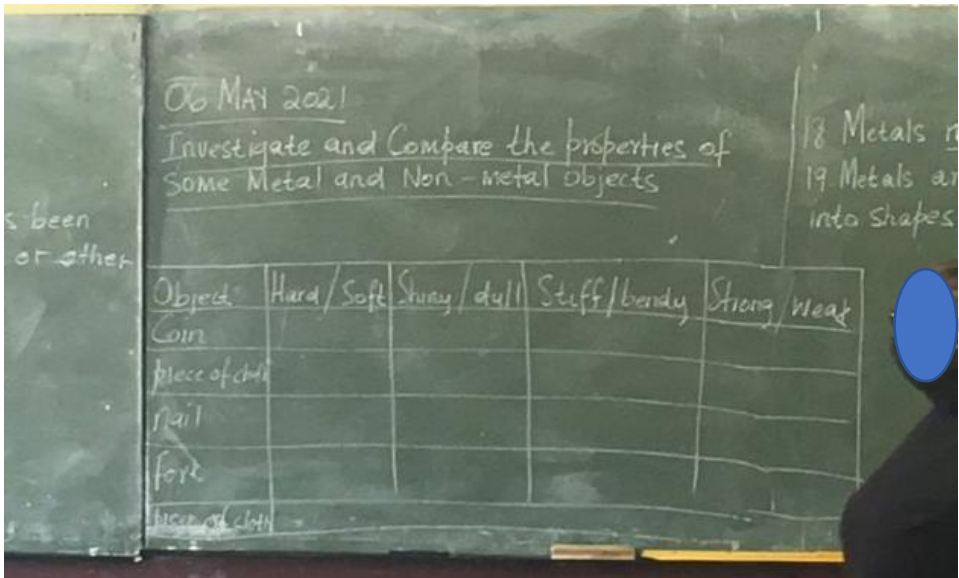
The educator dominated 97% of the classroom talk, while learners had a minimal participation of only 3%. In most of these turns, learners provided one-word answers like "yes". This is evidenced in turn 8, 10, 20 and 23 of extract 4.1. In other turns, learners were prompted to reiterate a scientific word, rather than deeply engaging with it in a meaningful manner. This is evident in turn 14 of extract 4.1 where learners repeat the word "strong"; in turn 16 they repeat the word "hard"; and in turn 18 they repeat the word "shiny". These confirmatory questions were used in two ways. First, to check if learners were on the same page with the educator/if they understood the scientific concept taught at that time. Second, they were used to persuade or convince learners to accept the content taught to them (the rhetoric of science), hence the educator used confirmatory questions like "niyezwa bangani (*friends, do you understand?*)". This points to the fact that the educator utilized an authoritative and interactional communicative strategy to mediate science. Moreover, this can be linked to what Chick (1996) referred to as 'safe talk'.

I will go on to show that this teacher's authoritative interactional patterns, fixed approach to knowledge, chorus teaching, and communalized pedagogy identified in the classroom talk of the Natural Sciences lesson in extract 4.1 is also common in isiZulu and English lessons as well.

Extract 4.2: A multimodal and bi/multilingual classroom activity

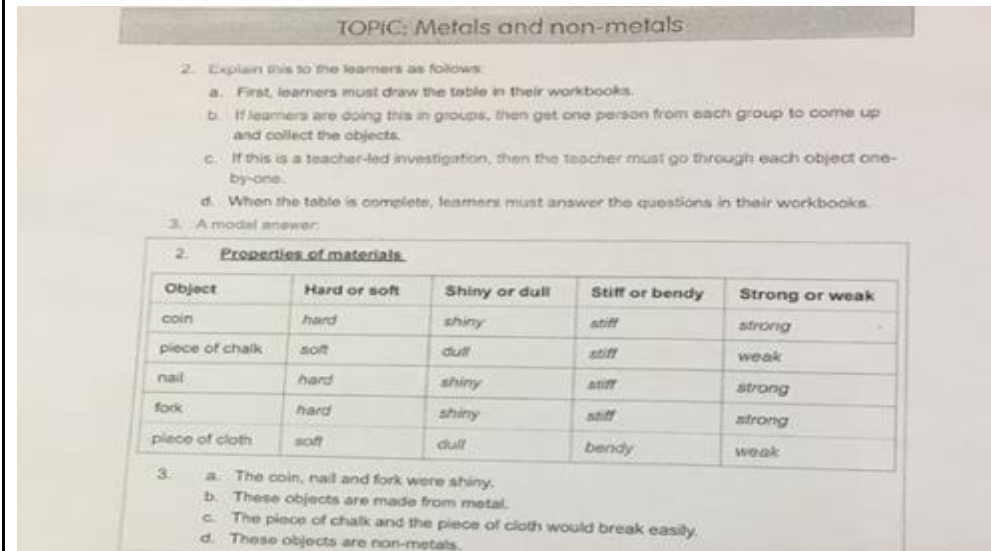
In the extract below, the educator and learners used the chalkboard (which included drawings and text/words), exercise books, lesson plan (which included the memorandum of this class activity), material objects nail, scarf, fork, and chalk to learn about the properties of metals. This classroom activity commences with the educator drawing a table on the chalkboard. This table included (on the vertical line) the names of the different objects (nail, piece of cloth (scarf), fork, coin, and piece of chalk). On the horizontal line, this table represented different properties of a metal (Hard/soft, shiny/dull, stiff/bendy, strong/weak). The educator held up a coin for all to see and learners had to tell if it had any properties of a metal. She used the coin as an example on how to complete the table, and learners had to complete the rest of the activity on their own.

06 May 2021: Metals and non-metals class activity (completing a table)


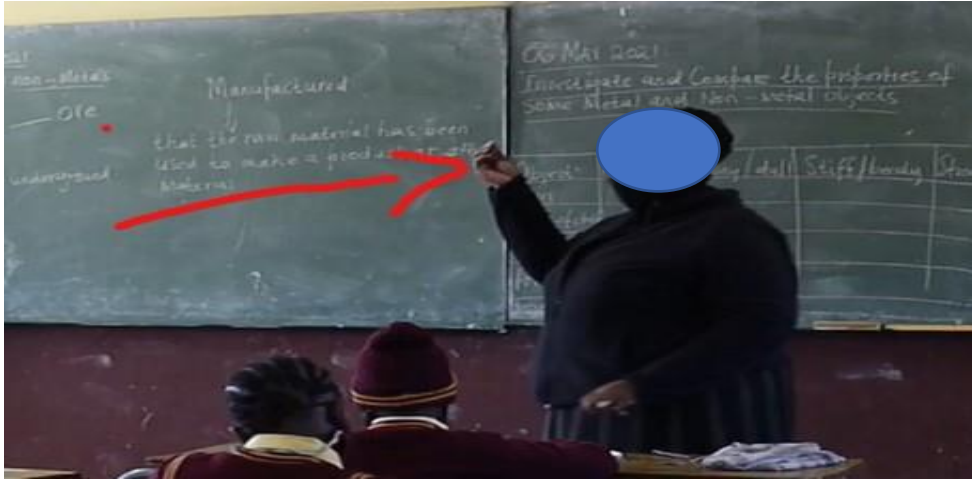
Turn no	Original Text	English translation	Images + Description of an action
1	T: (*writes the classwork questions on the chalkboard).		<p>Figure 4.2.1: Classwork activity</p>  <p>After teaching, the educator instructed students to complete a classroom activity. She then wiped a section of the chalkboard, and wrote and underlined a date, and the topic of a class</p>


activity. Following that, she drew a table onto the chalkboard from her lesson plan. While she was drawing, she instructed students to copy the table on the chalkboard.

4.2.2: Classwork memorandum



This is the lesson plan that the teacher had been using throughout the class activity session/phase. Out of all the information available in this lesson plan, the educator opted to only copy the table onto the chalkboard in class. According to the natural sciences educator, the department of education inspectors expect her to use this lesson plan exactly as written, i.e. a scripted lesson. (Go along discussion).

			<p>Figure 4.2.3: 5 objects used by the educator (chalk, scarf, coin, fork, and nail)</p> 
2	<p>T: Ayi nina bangani bami ni slowu.</p>	<p><i>(My friends, you are all slow.)</i></p>	
3	<p>T: Ok bangani asiqaleni. Let us look at this object nansi I coin. (*coin is the first item <u>listed</u> in the table <u>on the chalkboard</u>). Is the coin hard or soft? You are going to write it down. Bhala phansi I answer yakho. Is the coin hard or soft, write it down. Uyabhala. If you think that the coin is hard you</p>	<p><i>(Ok, my friends. Let's start. Let us look at this object. Here is a coin. Is the coin hard or soft? You are going to write down your answer. Is the coin hard or soft? Write down your answer. If you think that a coin is hard, then you're going to choose hard. If it is soft, then you're going to choose soft.)</i></p>	<p>Figure 4.2.4: A 50-cent coin</p> 

	<p>are going to choose hard. If soft you are going to choose soft.</p>		<p>In this turn, the educator raises a 50-cent coin, which is the first item on the activities table. While doing so, she asks if it is hard or soft, shiny or dull, stiff or bendy, strong or weak. She then explicitly instructs students not to respond in chorus nor raise their hands. She directs them to enter their answers into their workbooks.</p>
<p>4</p>	<p>T: Lo chalk is it shiny or dull? Ngabe iyacwebezela noma Igqwalile? Uyakhetha okukodwa. Is it stiff or bendy? Is it strong or weak? Iwona ama properties ama metals ke lawo. Nail, is it hard or soft? Nayi I nail? I nail bangani?.Is it shiny or dull? Is it hard or soft? Is it stiffy or bendy? Ngabe siyakhona yini ukugoba lesi sipikili sami ? Is it strong or weak? Nay imfologo lana uyayibona?</p>	<p><i>(This chalk, is it shiny or dull? Is it shiny or dull? You need to choose one answer. Is it stiff or bendy? Is it strong or weak? These are properties of a metal. Nail, my friends. Is it shiny or dull? Is it hard or soft? Is it stiffy or bendy? Can you bend this nail? Is it strong or weak? Here is the fork also.)</i></p>	<p>Figure 4.2.5: Chalk</p>  <p>Using the table, the educator assists students in identifying the properties of chalk and nail in this turn. In the images above, the educator raises a nail and a chalk to assist students in determining whether chalk and a nail has metal properties or not. The educator instructs students not to respond chorally, but rather to record their responses in their workbooks. She then instructs them to follow the same pattern in completing the rest of the table.</p>

Extract 4.2.1: Learners written responses to the properties of a metal table

Figure 4.2.1.1: Learner 1

06 May 2021
Investigate and Compare the properties of some metal and Non-metal objects

Object	Hard/soft	Shiny/dull	Stiff/bendy	Strong/weak
coin	hard	shiny	stiff	strong
piece of cloth	soft	dull	bendy	weak
nail	hard	shiny	stiff	strong
fork	hard	shiny	stiff	strong
piece of cloth	soft	dull	bendy	weak

Figure 4.2.1.2: Learner 2

06 May 2021
Investigate and compare the properties of some Metal and non-Metals objects.

object	hard/soft	Shiny/dull	stiff/bendy	strong/weak
coin	Hard	dull	bendy	strong
Piece of cloth	soft	dull	stiff	weak
nail	Hard	shiny	bendy	Strong
fork	Hard	shiny	bendy	strong
Piece of cloth	soft	dull	stiff	weak

The above picture is available as figure 4.2.1.1 of extract 2.1. This picture is a photo of a learner's workbook. In this activity, the educator had given direct instructions that learners should copy the table from the chalkboard. However, this learner decided to be creative. Instead of drawing horizontal and vertical lines like the educator did, this learner decided to draw vertical lines only and use the blue margins of an exercise book as her horizontal lines. Whereas the second learner provided as in this extract decided to draw both vertical and horizontal lines.

Language and Literacy practices: Identifying properties of metal and non-metal objects in a classroom activity.

The educator translanguages while she's explaining and demonstrating to learners how to complete the class activity. Furthermore, she uses a coin to help learners determine if it has the properties of a metal or not, while using a table drawn on the chalkboard. This is evident in turn 3 of extract 4.2:

"3. T: Ok bangani asiqaleni. Let us look at this object nansi I-coin. (*coin is the first item in the table). Is the coin hard or soft? You are going to write it down. Bhala phansi I answer yakho. Is the coin hard or soft, write it down. Uyabhala. If you think that the coin is hard you are going to choose hard. If soft you are going to choose soft." *(Ok, my friends. Let's start. Let us look at this object. Here is a coin. Is the coin hard or soft? You are going to write down your answer. Is the coin hard or soft? Write down your answer. If you think that a coin is hard, then you're going to choose hard. If it is soft, then you're going to choose soft.)*

In this example, the educator naturally/unconsciously translanguages using isiZulu and English:

"Ok bangani asiqaleni. Let us look at this object nansi I coin (ok friends, let's start this lesson. let's all look at this object). While she translanguages, she then raises the coin up so that all learners can see it. The image is attached as figure 4.2.2 of extract 4.2. In this instance, translanguaging is concurrently used with a multimodal artifact to mediate a scientific concept. What is also noticeable is that a classroom activity that was supposed to be completed individually is mediated collectively with learners by the educator. Similar to figure 4.1, this act of completing an individual activity, as a classroom task can also be linked to the concept of communalized pedagogy (Hoadley, 2012). In addition, the educator used an authoritative and interactional pedagogic approach. She holds authority and dominance in this assessment, and learners have minimal opportunity to individually engage with the assessment. In two senses, this may be problematic. One, it would be difficult to track individual students' academic progress and advancement in the natural sciences subject matter. Two, there is a gap between how learners are socialized in assessment activities in this subject and in their later matric/school leaving examinations which are written individually, without any external support. In summary, assessments in this Grade 5 Science class are conducted by both learners and educators at the same time, with the educator acting as the dominant and authoritative figure.

Right after telling learners that a coin is a metal because it has properties of a metal, she then introduces a non-metal object, chalk. The educator then follows the same routine of identifying the properties of a metal object as she did with the coin. She also uses a multimodal artifact with translanguaging to distinguish what counts/doesn't count as a metal. This is evident in turn 4 of extract 4.2:

4. T: Lo chalk is it shiny or dull? Ngabe iyacwebezela noma igqwalile? Uyakhetha okukodwa. Is it stiff or bendy? Is it strong or week? Iwona ama properties ama metals ke lawo. Nail, is it hard or soft? Nayi I nail? I nail bangani. Is it shiny or dull? Is it hard of soft? Is it stiffy or bendy? Ngabe siyakhona yini ukugoba lesi sipikili sami? Is it strong or weak? Nay imfologo lana uyayibona?

In this part of the lesson the educator is using chalk to help learners understand what counts or doesn't count as a metal and to know the properties of both metallic and non-metallic objects. The educator in turn 4 uses translanguaging to ask if chalk has properties of a metal or a non-metal, extract 4.2:

"4. T: Lo chalk is it shiny or dull?"

After making these two examples of a coin and chalk, the educator introduced 3 other objects: a nail, fork, and a scarf (piece of cloth). These objects are presented as figure 4.2.3 of extract 4.2. Despite the fact that the educator used multimodality and translanguages both in isiZulu and in English, the learner's written assessment is strictly completed in monolingual English. Thus, this translanguaging practice vs monolingual assessment captures the dilemma of the teacher trying to make the content accessible by using a bilingual oral strategy but not then mediating the monolingual written English that the learners are required to produce in the written assessments. In short, there is a mismatch between the translingual oral discourse and the monolingual written discourse in this lesson. This disjuncture or lack of continuity is also prevalent in figure 4.1.

Confusion created by inappropriate material objects

Figure 4.2.1.1 of extract 4.2.1 above shows two completed learners' tables. To start with, there is a lot of confusion in learner 2's answers. Specifically, stiff/bendy is difficult as all the metal examples here are stiff (yet ductile implies bendy). This speaks to the fact that the use of multimodal artefacts isn't always sufficient to help learners understand scientific concepts nor complete English monolingual assessments. On the other hand, multimodality proved to enhance meaning-making in turn 35 of the first extract, where the educator used a gesture to show how one could hammer metal. In this instance, the educator used gesture successfully. In short, the way objects are integrated and utilised in the classroom determines the success of an explanation.

What is also noticeable in this lesson is the authoritative nature of knowledge presented to learners. Knowledge is presented as fixed, and it is not open for discussion or critique. For example, in figure 4.2 the educator placed an emphasis on a conception that metals are shiny. Yet the example materials she used portray dull metals. Metal might become dull, though it can be made to shine.

The 50-cent coin used by the educator is dull, yet she placed an emphasis on the fact that metals are shiny. The educator's attempts to oversimplify the science (encouraged by the lesson plan she is working from) ended up misleading learners, leading to possible misconceptions or confusion. In the case of a 50-cent coin that she used, it wasn't shiny (copper plated) but is still metal. A silver coin, nickel plated, would be much better as a shiny example. In addition, the fork used by the educator had a plastic handle and metal tines. And it might have created confusion for learners because plastic doesn't count as metal. In addition, the educator didn't note this difference, that the fork she used contained both plastic and metal. In this case, there was a gap/contradiction between the meaning provided by the educator and the multimodal artefacts provided. Thus, learners missed an opportunity to fully understand the concept of what counts as properties of metal.

The responses demonstrate this. Between the assessment requirements and the responses produced by learners, there is a pretextual gap (Maryns and Blommaert, 2002). When filling out the table, learner 1 (Fig 4.2.1.1) and 2 (Fig 4.2.1.2) displayed a lack of understanding of the technical concepts. Learner 2 categorized a coin, a nail, and a fork as bendy, for example, and a piece of cloth as stiff. Learner 2 was undecided on whether to identify a coin as dull or shiny. Instead, he penned both shiny and dull as his responses. Finally, learners continue to demonstrate a lack of grasp of the metal's properties. Despite the fact that in this lesson and assessment, the educator used multimodality and translingual practices. Therefore, employing multimodality and translanguaging approaches does not guarantee a lesson's success. However, how they are used makes a difference. Unfortunately, in this lesson, the educator used an authoritative and minimally interactional pedagogy which limited learners' opportunities to engage with and fully comprehend the scientific concepts.

Conclusion

In conclusion, Guzula, McKinney and Tyler (2016) drew a distinction between translanguaging as an adaptive space versus translanguaging as an established space. In an established space, translanguaging is specifically valued and designed to enhance learning. In relation to this teacher, it seems translanguaging practices are adaptive and limited to her oral interaction. The natural sciences lessons were highly multimodal and translingual, with the teachers' discourse following strictly authoritative and minimally interactional patterns. In addition, the natural sciences educator's pedagogy was authoritative and mostly interactional in all natural sciences lessons. However, the

nature of learners' interaction was mostly limited to choral response and safe talk. These pedagogic and communicative patterns are also common through all the language lessons observed, English and isiZulu. In the following chapter I will analyse extracts from the English and isiZulu lessons. The following are extracts from English lessons titled Anansi and Turtle, and Tug of war.

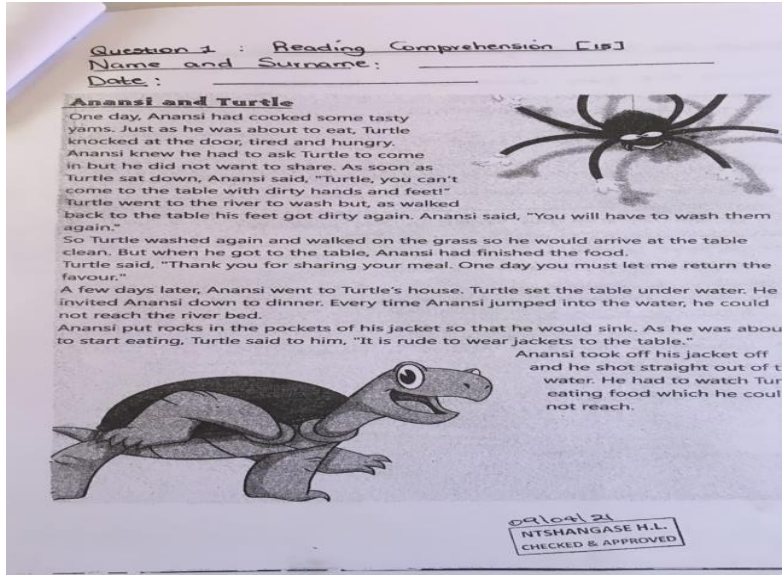
Chapter 5: Presentation and analysis of languages subjects (English and isiZulu)

The following chapter is the presentation and analysis of English First Additional Language (FAL), and IsiZulu home language (HL) lessons. English (FAL) has two lessons titled: Anansi and Turtle, and Tug of War. While isiZulu lessons are titled: Map reading in isiZulu, and a Riot in Alex. What is common in these lessons is the educators' authoritative pedagogy despite the change in LOLT. Learners are barely given an opportunity to engage critically and meaningfully with the learning materials, and knowledge is presented as fixed. In addition, what is also interesting in these lessons is the fact that despite the official change in LOLT, the educators in both isiZulu (HL), and English (FAL) use translanguaging. In short, oral discourses are bilingual in isiZulu and English in both subjects.


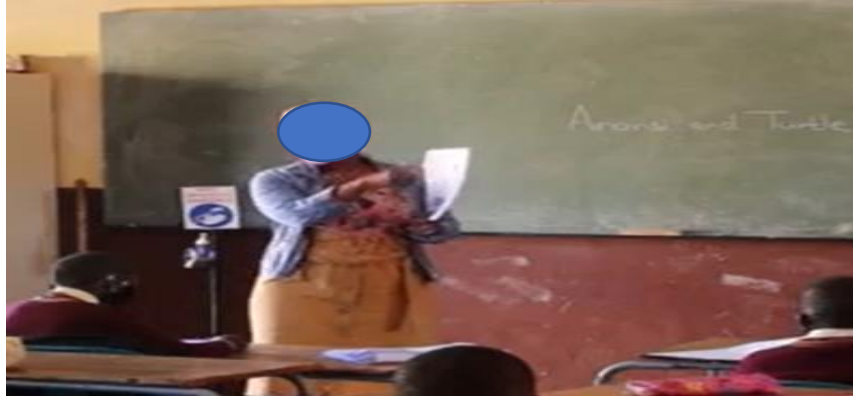
Extract 5.1: 09 April 2021: Anansi and Turtle-reading practice


Data presentation

In this phase of the lesson, the educator starts by reading a comprehension passage provided in the exam paper, attached in extract 5.1 as figure 5.1.1. While reading an extract in English she continuously probes and asks confirmatory questions to check if the grade 5 learners are following or if they comprehend the story. In pursuit of comprehension, the educator also uses analogy and contextualizes the story. The educator then draws from multiple modes in order to mediate the Anansi and Turtle story's content/meaning/ to learners. Similarly, to the natural sciences lessons, the English educator also uses an authoritative and interactional pedagogic strategy. This extract includes images of the test question paper and the learners' written responses.

Turn no.	Original Text	English translation	Images + Description of an action
First phase of the lesson: Turtle visiting Anansi			
1	<p>T: "One day Anansi cooked some tasty yams. Just as he was about to eat" (*while reading from the paper, the educator swiftly moves around rows) "Turtle knocked at the door tired and hungry". Ok? Kushukuthi uAnansi waseylungiselele ukuthi uzodla laphana, esedekile itafula lakhe wabeka ukudla kwakhe okumnandi and there come ubani? U turtle wenzenjani uyanokha emnyango (*while she's explaining in isiZulu that Turtle knocked on the door, the educator went to the door of the classroom and knocked).</p>	<p><i>(One day Anansi cooked some tasty yams. Just as he was about to eat Turtle knocked on the door, tired and hungry. Ok? This means Anansi had set up a table and prepared a mouth-watering meal for himself, and who came? So, what did Turtle do? She knocked on the door, right?)</i></p>	<p>Figure 5.1.1 Comprehension text read by the educator from the exam question</p> 


This is the second page of the exam paper. It is presented multimodally (Pictures + written text (some of the words are written in bold to highlight their importance.


			<p>Even the layout/presentation (format) of the story means something). However, an image used in this test paper seems to be that of a tortoise (land-based animal) while the story refers to a turtle (sea living animal).</p> <p>Figure 5.1.2: The following picture displays the teacher knocking on the classroom door while she was trying to demonstrate to learners how Turtle knocked on Anansi's door.</p> 
2	<p>T: So, who is Anansi here between the two? (*The educator points at the pictures of both characters in the exam question paper).</p>		<p>Figure 5.1.3: The English educator asking learners to point and identify Anansi from a comprehension passage which is accompanied by two main characters' images. This picture below depicts the educator pointing to Anansi from the exam question</p> 

3	Ls: A spider		
4	T: and who is Turtle?		
5	Ls: The tortoise (*both responses were provided chorally by learners). However, one of the learners raised her exam paper and pointed to the picture of the tortoise (*providing a response to the teacher's question by pointing to the character).		<p>(*both responses were provided chorally by learners). However, one of the learners raised her exam paper and pointed to Turtle (*providing a response to the teachers question by pointing to the character)</p> <p>Figure 5.1.4: The picture below depicts a learner pointing to a character while he says the character's' name altogether with the rest of the learners in the classroom (chorally).</p> 

Second phase of the lesson: Anansi visiting Turtle

6	T: "A few days later, Anansi went to Turtle's house. Turtle set the table under water". So where did turtle set the table?		
7	Class: Under water.	<i>(Underwater)</i>	
8	T: "He invited Anansi down to dinner". Ok! Wase eyamumema ke wathi ayike nami hhaii cela ufike ke zizobe zibondwe zayeka lapha ngaphansi kwamanzi. Ok? Everytime mhhhh, oh!	<i>(He invited Anansi down to dinner. Ok! He then invited him, he then said, well you should also visit me there'll</i>	

		<i>be a plenty of food underwater. Ok?)</i>	
9	T: “Everytime Anansi jumped into the water he could not reach the riverbed”. Ngasonke iskhathi u Anansi uma ethi uyangena emanzini wayengakhoni uufika lapho okukhona khona u Turtle. So, what was the reason? (*T starts writing on the chalkboard).	<i>(“Every time Anansi Jumped into the water; he could not reach the riverbed”. Every time Anansi Jumped into the water he couldn’t reach where Turtle was sitting. So, what was the reason?)</i>	<p>Figure 5.1.5: The educator writing on a chalkboard. Drawing a distinction between Sink and Float words.</p>  <p>In this image, the educator drew a distinction between sinking and floating by writing it on the chalkboard. In this chalkboard writing, the educator used annotations and underlined “Float” and “Sink” which were the important concepts in the phase of this lesson.</p>
10	T: Angithi uAnansi uyi, uyini u Anansi konje?	<i>(Anansi is a? A what?)</i>	
11	Ls: Uyi spider.	<i>(A spider)</i>	
12	T: Anansi the spider angithi?	<i>(Anansi the spider, right?)</i>	
13	T: So, what happens to Anansi when he come in the water? Wenzenjani? He just floats angithi? Why float? What is the reason? So, into into e floatayo into esuke	<i>(So, what happened to Anansi when he came in the water? What happened to him? He just floats, right? Why float? What is the</i>	

	<p>imoover around in a liquid angithi? So yena ulokhe uya floater ulokhe ehamba phezulu emanzini njengani? Njengani? Like a paper, angithi?</p>	<p><i>reason? So, something that floats is something that moves around the liquid, right? So, he keeps on floating like a paper, right?)</i></p>	<p>Figure 5.1.6: The educator demonstrating that Anansi floats</p>  <p>In this image the educator is demonstrating to students that Anansi floats because he is a spider, while Turtle can sink because he is heavy. As a result, Anansi was unable to reach the riverbed where Turtle had set up a food table.</p>
14	Ls: Yes.		
15	<p>T: Ya if you can put a paper on water ayizukushona pansi ayizuku sinker but izo floater izihomba phezulu because ilula there's no volume ephpheni. There's no weight, angithi?</p>	<p><i>(Yes, if you can put a paper on water, it will not sink but it will float. It won't reach the ground because it's light. There is no volume in paper. There is no weight, right?)</i></p>	
16	<p>T: So, the opposite of float ubani? The opposite of float ubani? U sink angithi? So uma inga float izokwenzjani?</p>	<p><i>(So, what's the opposite (Antonym) of float? It's sink, right? So, if you don't float what do you do?)</i></p>	
17	Ls: sink		
18	T: It will sink, angithi?	<p><i>(It will sink, right?)</i></p>	
19	T: So ubani u floateyo between u Anansi and the Turtle?	<p><i>(So, who floats between Anansi and Turtle?)</i></p>	

20	Ls: Anansi		
21	T: It's Anansi angithi? So, who set the table under the water?	(It's Anansi, right? So, who set the table under the water?)	
22	Ls: U turtle		

Phase three of the lesson: Learners written assessments

Figure 5.1.7: Learner 1

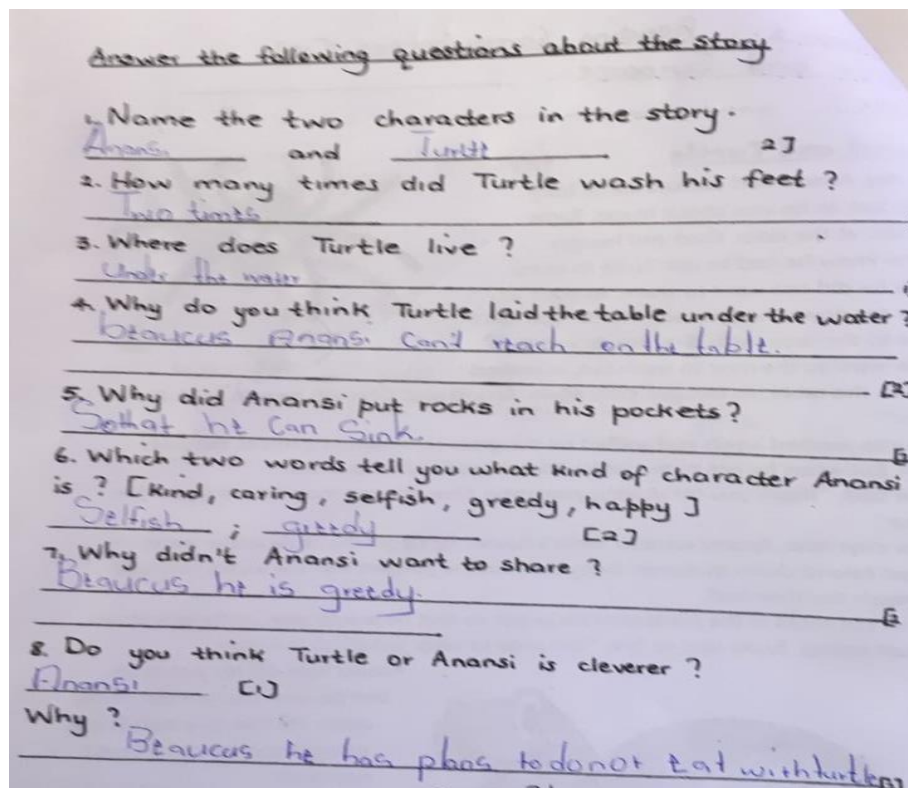
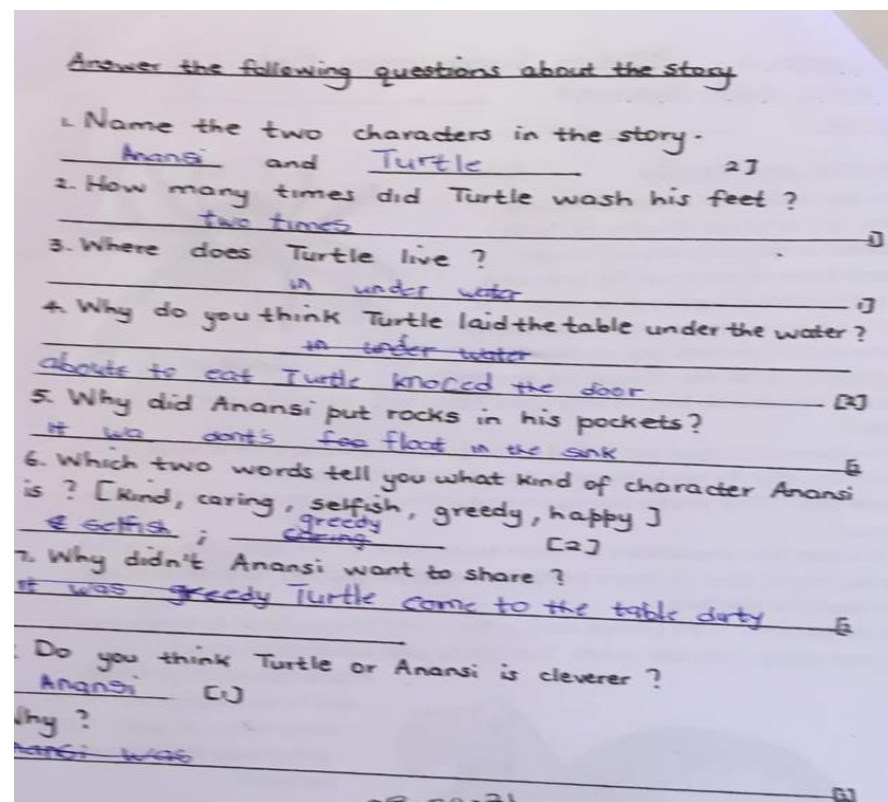


Figure 5.1.8: Learner 2



Literacy event: *Teacher mediation of English FAL reading comprehension test (Class test)*

The main literacy practice in this comprehension phase is that of the English teacher preparing learners to answer reading comprehension questions which are attached as an image presented as figure 5.1.1 of extract 5.1 in order to check learners' comprehension of the "Anansi and Turtle" story. In turn 1 of extract 5.1, the educator reads the first part of the story and quickly poses a confirmatory question to check if learners are grasping the gist of the story. In many instances the educator is seen translanguaging (naturally) when checking learners' progress through confirmatory questions. This is evidenced in turn 1 of the extract 5.1:

1. T: "One day Anansi cooked some tasty yams. Just as he was about to eat" (*while reading from the paper, the educator swiftly moves around rows) "Turtle knocked at the door tired and hungry".Ok? Kushukuthi uAnansi wasey lungiselele ukuthi uzodla laphana, esedekile itafula lakhe wabeka ukudla kwakhe okumnandi and there come ubani? U turtle wenzenjani uyanokha emnyango (*while she's explaining in isiZulu that Turtle knocked on the door, the educator went to the door of the classroom? and knocked). (*One day Anansi cooked some tasty yams. Just as he was about to eat Turtle knocked on the door, tired and hungry. Ok? This means Anansi had set up a table and prepared a mouth-watering meal for himself, and who came? So, what did Turtle do? She knocked on the door, right?*)

In this literacy event, the educator is reading a comprehension passage to learners, while they also read through their own copy which was included on the front page of their test question papers. While the educator reads aloud, she synchronously draws from various modes of communication to mediate the meaning of the story. At this time, learners weren't writing. What is also noticeable in this practice is the use of multiple modes of communication which are also common in the natural sciences lessons. This includes the images of the characters which were printed alongside text on the learner's question papers, teacher gestures, and the classroom physical resources such as the classroom door. Interesting to note is that similarly to the natural sciences individual class activity of completing a table (properties of a metal) discussed in extract 4.2, a literacy practice of taking tests and testing learners' reading comprehension is again conducted as a collaborative activity, rather than individually. The teacher strictly controls the interaction through authoritative discourse using closed ended/confirmatory questions. Even though there's minimal participation from learners, they still have an opportunity to engage with the content of the comprehension passage.

The educator uses multimodal and translingual practices, and chalkboard writing to draw a distinction between "sink" and "float"

Another important feature in this extract is the teachers'/learner's language practices. The educator uses translanguaging as a norm, while learners provide six of their eight responses in English. In this lesson, isiZulu and English are the only languages used by both the educator and learners. The instances

of translanguaging in English and isiZulu are evident in turn 1, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 20, 21, 22, 23. In addition to this, translanguaging occurs in two forms. First, the educator adopts a morphological structure of isiZulu and adds English on to it while at other times, vice versa. This is evidenced in turn 13 of extract 5.1 described above:

13. T: "So, what happens to Anansi when he comes in the water? Wenzenjani [what happens/what happens to him]? He just floats angithi [right]? Why float? What is the reason? So, into **efloatayo** into esuke I **moova** [*So, something, something that floats something that moves*] around in a liquid angithi [right]?
So yena ulokhe uya floata ulokhe ehamba phezulu emanzini njengani? Njengani? Like a paper, angithi? [so, he always he floats always goes to the top of the water. Like what? Like what? Like a paper, right?] "

In these turns, the educator is trying to help learners understand that Anansi floats and cannot reach the riverbed to join Turtle at the dinner table. In doing so, she also tries to explain the meaning of the words “sink” and “float” to learners. Similarly, to the natural sciences lessons, the English educator is found translanguaging. In short, translanguaging in this instance took form in the following way: the educator foregrounded isiZulu morphological structure and added English words to it. This is evident in turn 13 of extract 5.1. She uses isiZulu metalinguistic system, and the English words that she uses maintains an isiZulu morphological structure e.g., ‘e-float-ayo’ and ‘uya float-a’. She accomplishes that by reconstructing English words to fit within the isiZulu morphological structure. She does this by adding isiZulu vowels, both as prefixes and suffixes to English words. For example: ‘e-float-ayo’ (Floating) and ‘uya float-a’ (S/he is floating).

The second form of translanguaging found in this English lesson is evidenced in turn 15 which is slightly different from the first one. In this instance, the educator uses both isiZulu and English grammatical systems in one sentence. In this educator’s translingual practice, as was the case in the Natural science lesson analysed, all the scientific concepts are named using English word stems (Sink, float, weigh, volume). Slightly different to the previous translanguaging practice, this translanguaging practice took form in the following way: meshing isiZulu (semi-structured/complete sentence) + English (semi-structured/complete) sentence to form 1 complete sentence. In short, L1 semi complete sentence + L2 semi complete sentence = 1 complete sentence. To produce a single sentence, the educator uses a half isiZulu sentence and combines it with a semi complete English sentence. This is evident in turn 15 of extract 5.1:

15. T: "Ya if you can put a paper on water ayizukushona pansi ayizuku sinka but izo floata izihomba phezulu because ilula there is no volume ephepheni. There's no weight, angithi?" (*it is not going to sink down it is not going to sink but it is going to float it will go to the surface/top because it is light, there is no volume in paper. There is no weight right?*)

What is also noticeable in turn 13 and 14 of extract 5.1, is the use of multimodality and chalkboard writing. In this part of the lesson, the educator uses gestures to help learners understand what floating is, and how Anansi floated and could not reach the riverbed to join Turtle at the dinner table. An image of the teacher portraying this gesture is attached in figure 5.1.6. In pursuit of mediating “float” and “sink” the educator, in turn 15 uses a paper analogy (how paper floats) to help learners understand what floating is, and how Anansi floats. However, this analogy creates ambiguity. She argues that if you put paper in water, it can float because it does not have weight. She manages, to create a picture of a floating object with a hand and arm gesture) in figure 5.1.6. However, she does not mention the fact that if you put paper in water, it might absorb water, gain more weight, and then sink. The educators’ example is therefore ambiguous because she uses an example of a material (paper) that can sink or float in different circumstances, to explain the word “sink”. Therefore, the multimodal examples used by the educator and in the text to assist learners with their English test created ambiguity from the learners’ end. Another example is an image used in this test paper which should depict a turtle but is ambiguous as to features of a tortoise or a turtle. Thus, this might have confused learners. This is similar to an ambiguity created by a multimodal artifact in a natural sciences lesson presented as figure 4.2 where the educator was trying to explain to learners that metals are shiny while she was using a dull 50 cent coin. In short, the manner in which multimodal and translingual practices are structured and used in this classroom are sometimes successful and not successful in enabling learners to understand the scientific concepts. In addition, the presentation of an ambiguous image presented in figure 5.1.1 was presented as fixed knowledge. The educator did not critically engage with the image, nor did she give learners an opportunity to criticize the image.

Similarly, as in the natural sciences lesson, the English educator uses a tangible multimodal artifact to mediate meaning. In the picture provided as figure 5.1.2, the educator demonstrated how Turtle knocked at Anansi's door. The educator does this by going to the classroom door and pretending to knock while saying: "*U turtle wenzenjani uyanokha emnyango (while she's explaining in isiZulu that Turtle knocked on the door, the educator went to the classroom door and knocked)*". In this instance, the educator effectively used multimodality by knocking on a door to demonstrate to learners how Turtle knocked on Anansi's door. Lastly, while the educator is reading aloud the comprehension story from the learner's question paper, she writes key words on the chalkboard. This is evident in turn 15 to 20 of extract 5.1, which is accompanied by the picture of the chalkboard writing attached as figure 5.1.5. In this chalkboard image, the educator was explaining to learners that Anansi cannot sink to reach the riverbed.

Subsequently, the educator then taught learners about the meaning of words "sink" and its antonym word "float". She drew a distinction between these two words to help learners understand that Anansi floats because he is a spider and that he cannot reach the dinner table, which is on the riverbed, while Turtle can sink. She does this multimodally, in turn 9 (writing on the chalkboard). Similar to the natural sciences lesson, I conclude that the utilization of graphics in the EFAL test paper (turn 1), the teacher's and learners' gestures, imaginary/analogy, and spatial/tangible artifacts were helpful. However, they were unsuccessful in assisting learners to complete an English monolingual test. This is also evidenced in the learners' written responses to the test questions presented as figure 5.1.7 and 5.1.8 of extract 5.1. In short, the translingual and multimodal practices in the lesson cannot make up for monolingual assessments.

The last phase of this English lesson is concerned with the learners' written responses which were based on a comprehension passage that the educator read for them. Phase 3 of this lesson is represented through learner 1 and 2 images, labeled as figure 5.1.7 and 5.1.8. The assessment comprised of eight questions which are in monolingual English. These questions contained some difficult concepts like "character" which is found in question 1 and it also contains contracted forms of the words 'did not' (didn't) which is found in question 7. Noticeable in learners' responses (learners 1 and 2) is that learner 1 has provided monolingual English answers to every question - many of which are correct. Learner 2 provided some correct monolingual English answers but struggled with answering 4, 5 and the why question in question 8. Learner 1 showed partial understanding in question 4. The question asked why Turtle set the table under water and this learner answered that it is because Anansi cannot reach the table. On the other hand, learner 2 wrote "in under water" and erased it afterwards. In connection to this, the utilization of graphics in the EFAL test paper, teacher's and learners' gestures, imaginary/analogy, and spatial resources were unsuccessful in preparing learners to complete an English monolingual test, as learners were still expected to write in monolingual English.

Extract 5.2: Tug of war

The second EFAL lesson for analysis focuses on listening comprehension. In this lesson the educator read a story to learners from the teacher's guide, while they were listening and looking at the pictures in their textbooks that corresponded with the story. Throughout this lesson, the educator employs various communicative and pedagogic strategies to help learners understand the gist of the story. This includes the use of pictures, translanguaging, gestures, authoritative and interactional approach, and using the classroom's spatial/tangible resources like the chalkboard.

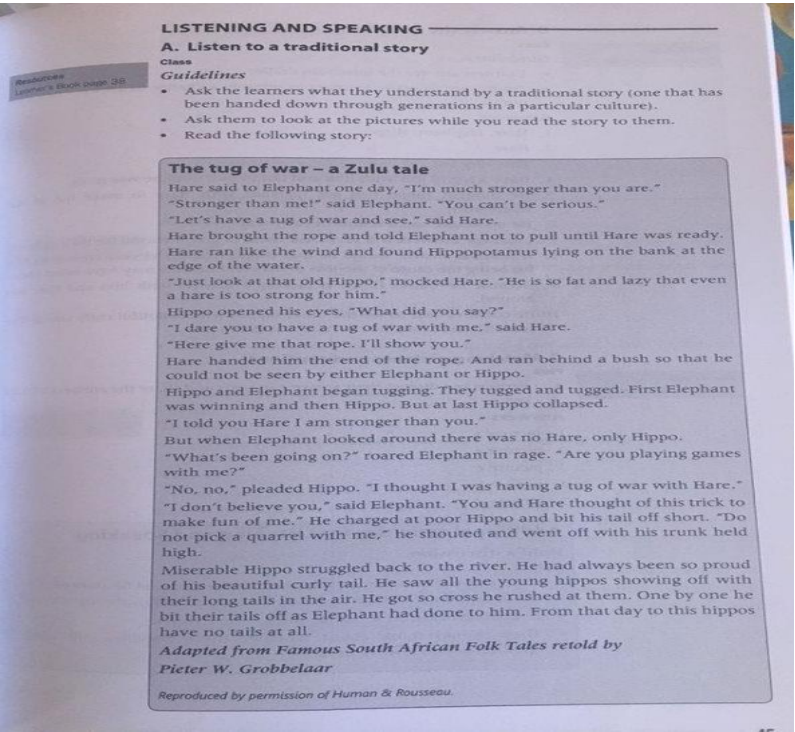
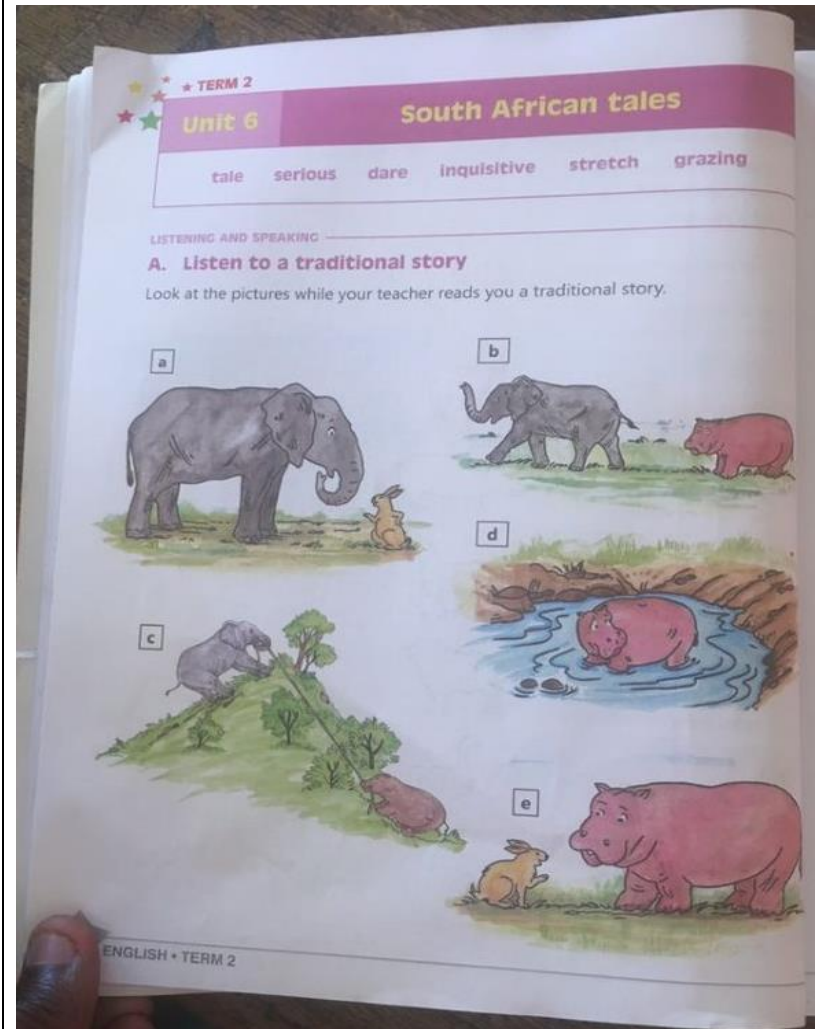

Turn no.	Original Text	English translation	Images + Description of an action
1	T: Koda ke urabbit unikezwe elinye igama laphana uHare (*pronouncing this with two syllables as Ha- re, instead of /he:/).	<i>(Rabbit is given another name, Hare.)</i>	<p>Figure 5.2.1: The tug of war extract read from teacher's book</p>  <p>LISTENING AND SPEAKING</p> <p>A. Listen to a traditional story</p> <p>Class</p> <p>Guidelines</p> <ul style="list-style-type: none"> • Ask the learners what they understand by a traditional story (one that has been handed down through generations in a particular culture). • Ask them to look at the pictures while you read the story to them. • Read the following story: <p>The tug of war – a Zulu tale</p> <p>Hare said to Elephant one day, "I'm much stronger than you are." "Stronger than me!" said Elephant. "You can't be serious." "Let's have a tug of war and see," said Hare. Hare brought the rope and told Elephant not to pull until Hare was ready. Hare ran like the wind and found Hippopotamus lying on the bank at the edge of the water. "Just look at that old Hippo," mocked Hare. "He is so fat and lazy that even a hare is too strong for him." Hippo opened his eyes. "What did you say?" "I dare you to have a tug of war with me," said Hare. "Here give me that rope. I'll show you." Hare handed him the end of the rope. And ran behind a bush so that he could not be seen by either Elephant or Hippo. Hippo and Elephant began tugging. They tugged and tugged. First Elephant was winning and then Hippo. But at last Hippo collapsed. "I told you Hare I am stronger than you." But when Elephant looked around there was no Hare, only Hippo. "What's been going on?" roared Elephant in rage. "Are you playing games with me?" "No, no," pleaded Hippo. "I thought I was having a tug of war with Hare." "I don't believe you," said Elephant. "You and Hare thought of this trick to make fun of me." He charged at poor Hippo and bit his tail off short. "Do not pick a quarrel with me," he shouted and went off with his trunk held high. Miserable Hippo struggled back to the river. He had always been so proud of his beautiful curly tail. He saw all the young hippos showing off with their long tails in the air. He got so cross he rushed at them. One by one he bit their tails off as Elephant had done to him. From that day to this hippos have no tails at all. <i>Adapted from Famous South African Folk Tales retold by Pieter W. Grobbelaar</i> Reproduced by permission of Human & Rousseau.</p>

Figure 5.2.2: A multimodal (image) story provided to learners



2

Ls: Mumbling and struggling to pronounce the word 'hare', the educator then goes to the chalkboard and writes "hare".

3	T: Hare (*pronouncing it as ha-re). Ok, “the tug of war”. Ok this is the title of the story (*she then writes it on the board), this is the title of the story).	<i>(Hare. Ok, the tug of war. This is the title of the story.)</i>	<p>Figure 5.2.3: The educator writing "Hare" on the chalkboard</p> 
4	T: Ok, so what is the meaning of it? The tug of war? What is the meaning of tug?	<i>(T: Ok, so what is the meaning of it? The tug of war? What is the meaning of tug?)</i>	
5	Ls: Tug?		
6	T: tug.		
7	Ls: ukuthinta.	<i>(It's to touch)</i>	


8	T: No, I'm not saying touch (*uses facial expression and she leans forward to disapprove of a learner's response).		
9	T: I'm saying tug.		
10	Ls: Tag.		
11	L: Ukulwela into	<i>(It's fighting for something)</i>	
12	T: Yaaaa is to pull, benzani? Bayadonsisana angithi? (*She then uses gestures to show how tugging looks like, as if she's pulling something with force).	<i>(Yaa. It is to pull. What are they doing? They are tugging, right?)</i>	<p>Figure 5.2.4: Tug gesture: pulling.</p> 



Figure 5.2.5





Figure 5.2.6



13	T: Nomunye uyadoansa usa lena nomunye uyadonsa usa lena. So uma bethi Tug of war kuthiwani ke laphana? Impi yani? Yomdonsiswano angithi?	<i>(They are both pulling in different directions, right? So, when they say tug of war, what are they saying? it's a tug of war, right?)</i>	
14	T: Asike sizwe ke ukuthi kuhambisana kanjanike nalokhu esikbona laphayana ke. (*she starts reading). "Hare said to the elephant one day, I'm much stronger than you". I rabbit yathini ke ku elaphant? Yathi mina ngi-?	<i>(Let's see how it correlates with the story. "Hare said to the elephant one day I'm much stronger than you". What did the rabbit say to elephant? It said I'm -?)</i>	
15	Ls: Qinile	<i>(Strong)</i>	
16	T: Qinile kunawe angithi?	<i>(Stronger than you right?)</i>	
17	Ls: Yes.		
18	T: Uyaybona isho njalo lapho, can you see that picture?	<i>(Do you see the rabbit saying that in a picture?)</i>	
19	Ls: Yes.		
20	T: Ok. That is picture?		
21	Ls: One		
22	T: A, angithi? Ok, Stronger than me, said elephant. You can't be serious. (*changes her tone).	<i>(Right? Ok stronger than me, said elephant. You can't be serious.)</i>	
23	T: Uthi usho ukuthi wena ungamelana nami? Ayi ayi ayi awuthi unamanga angeke nje ukuthi ngabe uqinisile ngalokho. "Let's have a tug of war and see, said Hare". Uthi ke ake sibe nomdonsiswano we, sibe nomdonsiswano	<i>(Are you telling me that you can come toe to toe with me? Tell me you're joking. "Let's have a tug of war and see, said Hare". Hare says let's have a tug of war</i>	

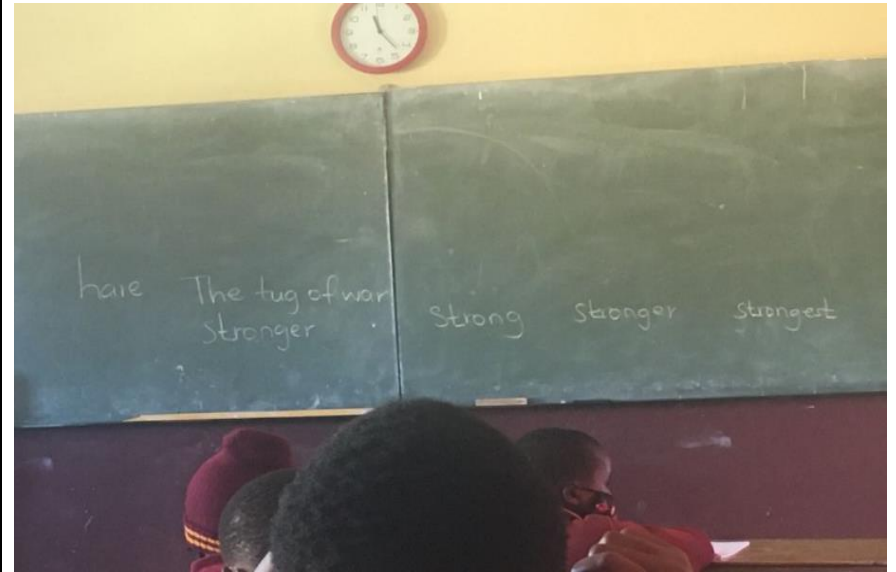
	<p>sibone ukuthi ubani ozowina noma ubani esizobona ukuthi is stronger than who, angithi? So, lana kuya comparishwa lana so that is why kusetshenziswa u stronger, angithi? Angithi grade 5, this is a comparative. (*She then goes to the board and writes the comparative adjective for strong).</p>	<p><i>so that we can see who is stronger between me and you. Right? So, here they are comparing. That is why they are using the word, stronger. Right? Right grade 5? This is comparative?)</i></p>	<p>Figure 5.2.7: Comparative adjective for "stronger"</p> 
<p>24</p>	<p>T: So, which animal do we think is the strongest between the 3?</p>		<p>Figure 5.2.8: Ignoring individual learner's hand and accepting choral responses.</p> 
<p>25</p>	<p>Ls: Pig.</p>		
<p>26</p>	<p>T: There's no pig laphana.</p>	<p><i>(There is no pig there)</i></p>	

27	Ls: Elephant.		
28	T: an elephant, there's no pig laphana, there's a hippo. (*one learner raises his hand up, but the educator ignores him and accepts a simultaneous choral response from all learners in turn 27). (*other learners laugh).	<i>(An elephant, there is no pig here, there is a hippo.)</i>	
29	T: Ahhh ehhh, asise ukumhleka kushuthi yena ubona angathi ingulube. Ngicabanga ukuthi wena ubuka lana,	<i>(No, no. let's not laugh at him. He thinks it's a pig. I think you're looking here.)</i>	
30	L: Ngibuka umbala.	<i>(I'm seeing color)</i>	
31	T: koda ayi Ipig iyabonakala ngomlomo (gesturing the round shape of a hippo). Umlomo ay... uyawukhumbula angithi umlomo we pig unjani?	<i>(But no. You can see a pig by its mouth. Do you remember what I said about a pig's mouth?)</i>	<p><u>Figure 5.2.9: The educator using gestures to differentiate the hippo's face from the pig's face.</u></p> 
32	Ls: Yes.		
33	T: So usuyabonake ukuthi akuyona I pig?	<i>(So, so can you see now that it is not a pig?)</i>	
34	Ls: Yes.		

<p>35</p>	<p>T: Good. “Hare brought the rope and told elephant not to pull until Hare was ready”. So, u Hare wathathake intambo wathi mi elaphant. Angithi ngithe asenze ini, ngithe asenze I tug of war? Awubambe ke nansi intambo. Ubambe ekuqaleni kwayo ngizokutshela ukuthi donsa ke mngani wami uyezwa? Ohh ok, I forgot to tell you, this is a Zulu tale. Kushukuthi inganekwane yani lena?</p>	<p>(Good. Hare brought a rope and told elephant not to pull until Hare was ready. So, Hare took a rope and gave it elephant. I said we should do a tug of war, right? Hold from this one end, I will tell you when to pull, is that clear? Oh! I forgot to tell you that this is a Zulu tale. It means it's a what tale?)</p>	<p>Figure 5.2.10: Gesturally demonstrating how Hare took (grasped) a rope.</p> 
<p>36</p>	<p>T and Ls: yesiZulu.</p>	<p>(Zulu)</p>	
<p>37</p>	<p>T: Ngamanye amazwi, thina as we are reading it in English ithathwe kuphi khona?is translated from?</p>	<p>(As we are reading it in English it was translated from?)</p>	
<p>38</p>	<p>Ls: Zulu.</p>		
<p>39</p>	<p>T: Home language angithi? From our home langauage angithi? Angithi niyabazi ogo go bathini ekhaya? Kwasukasukela, angithi?</p>	<p>(Home language, right? From our home language, right? You know how grandmothers say</p>	

		<i>when they are introducing a tale, kwasukasukela, right?)</i>	
40	Ls: Yes.		
41	T: Kwakukhona, kwakukhona unogwaja nengulube, ohh! Xa! Sengithi nengulube ngempela. Uyayizwa into enjalo? So ithathelwe khonake? Ok.	<i>(There was once a rabbit and a pig. Ohh! No. Not a pig. Do you understand that? So, it is taken from it, ok?)</i>	
42	T: “Hare ran like a wind and found hippopotamus lying on the back on the edge of the water”, wagijimake u Hare eyaphi ke? eya emfuleni wathola u Hippo elele laphana osibeni lomfula, uthini je uma efika kuyena? Just look at that old..., I mean just look at that old Hippo, mocked Hare. Uthinike, Uthi awbuke nje leli.. Endala le. Esho embhuqa. Uthi ke, (*continues to read) he's so fat and lazy that even Hare is too strong for him. Uthi awumbuke nje u lazy, mkhulu, uyisdudla futhi uyavilapha ngisho u Hare lona oyimina u strong kunaye.Usesho okwesingaki ukuthi u strong? Uqale wathi u strong kubani?	<i>(Hare ran like a wind and found hippopotamus lying on the back on the edge of the water. Hare ran to the river and found hippo laying on the edge of the river, wha did he say to him? Just look at that old... I mean look at that old hippo, mocked Hare. What did he say? He says he's so fat and lazy that even Hare is too strong for him. He says he's too string for him. He first said he was stronger than who?)</i>	
43	T: Elephant. then usesho kubani manje?	<i>(Elephant. Now he says he's stronger than who?)</i>	
44	T and Ls: KuHippo.	<i>(Hippo)</i>	

Figure 5.2.11: Classroom chalkboard writing



Literacy events: Reading and listening lesson.

In this literacy event the educator reads a story which was written in monolingual English, titled “The tug of war – a Zulu tale” from the teacher’s guide attached as figure 5.2.1 of extract 5.2. Learners are listening, and they rely on the image version of the story which is provided as five images in the English FAL textbook, attached as figure 5.2.2 of extract 5.2. While reading the story, the educator first reads a sentence in English and then translates or makes use of isiZulu dominant translanguaging to explain the sentence written in monolingual English. She does this from the first paragraph to the last. In addition, the educator poses verbal questions to check if learners understand the content or if they understand particular English words and concepts, such as ‘tug’, and learners verbally and chorally responded to those questions. Similar to the natural sciences lessons presented as figures 4.1 and 4.2, this also connects to Stoffelsman et al’s (2020) description of chorus teaching as well as to the concept of communalized pedagogy (Hoadley, 2012). The pattern of the educator's verbal questioning and learners’ choral responses is evidenced in turn 14-17 of extract 5.2:

14 T: Asike sizwe ke ukuthi kuhambisana kanjanike nalokhu esikbona laphayana ke. (*she starts reading). “Hare said to the elephant one day, I'm much stronger than you”. I rabbit yathini ke ku elaphant? Yathi mina ngi-? (*Let's see how it corrolates with the story. “Hare said to the elephant one day I'm much stronger than you”. What did the rabbit say to elephant? It said I'm -?*)

15 Ls: qinile (*strong*)

16 T: Qinile kunawe angithi? (*Stronger than you right?*)

17 Ls: Yes

The instructor translanguaged to help learners comprehend that Hare confronted Elephant to persuade her to have a tug of war with him in lines 14-17 of extract 5.2. In this scenario, the educator is describing Hare's techniques to persuading Elephant. For example, Hare tells the elephant that he is stronger than her. During this phase of the lesson, the educator translanguaged in both

isiZulu and English by informing students that the term "strong" in isiZulu means "uqinile". The students were then required to repeat the same word as the educator. As a result, this also emphasizes the educator's authoritative and interactive pedagogic approach, which reinforces the educator's authority in the lesson while learners have a low level of involvement (passive role). That is, instead of critically interacting with the knowledge imparted to them, they simply repeat what the educator says. This can also be linked to Chicks' (1996) concept of safe talk. Subsequently, the educators' dominance reflects her authoritative and interactional approach to classroom talk.

Similar to the natural sciences extract 4.2 which utilized images, in this lesson as well the educator also draws learners' attention to the images in their textbook. This is evidenced in figure 5.2.2 of extract 5.2, where the educator asks learners to look at the picture and confirm with her that they correlate with what she is saying T: Uyaybona isho njalo lapho, (*can you see that picture?*). While going from paragraph to paragraph, the educator employed various reading and teaching strategies in order to help learners understand the content that is presented in English only. Pictures in figures 5.2.4 and 5.2.10 of extract 5.2 are depictions of an educator using gestures while reading and explaining the tug of war story to learners. In figures 4.2.4, 5.2.5, and 5.2.6 the educator gestures how a person pulls when fighting in a tug of war. In figure 5.2.9 the educator uses her hands and face to gesture that the difference between a hippo and a pig is the face formation and structure, and in figure 5.2.10 the educator gestures how Hare grabbed the rope and gave it to Elephant and Hippo. In this case, the educator successfully used gestures to draw a distinction between a hippo and a pig. In addition to this, similarly to the natural sciences lesson presented as figure 4.2, the educator also uses an authoritative and interactional communicative approach and tightly controlled turn taking (initiation and response) in an attempt to help learners not only understand the story, but to also participate in this reading practice actively by providing one-word responses. This is evidenced in turn 5, 10, 15, 17, 19, and 20 of extract 5.2. Closed ended/confirmatory questions which are authoritative in nature are evidenced in turns 5, 10, 15, 17, 19, and 20 of extract 5.2. In connection to this, such communicative approach can also be linked to Hoadley's (2012) communalized pedagogy where learners are

not given opportunities to individually interact with the technical concepts of the subject. Instead, learners are prompted to give group choral responses. According to Nomlomo (2010) and Mortimer and Scott (2003), strictly managed turns decrease students' participation in the classroom and limit their possibility to connect and critically engage with scientific concepts. Throughout this extract, most of the learners' turns were one-word answers.

Language practices: Translanguaging

Similarly, to the natural sciences lesson, in this lesson, isiZulu and English were the only languages used, despite the fact that there are students who speak Sotho and Tsonga in the classroom. Throughout this literacy event, we can see that translanguaging is the educator's normal languaging practice. While she translanguages, she attempts to mediate concepts. In turn 4, 5, 6, 7, 8, 9, 10, and 11, of extract 5.2 the educator translanguages to help learners understand the meaning of the word "tug". She first breaks down and simplifies the title of the story (tug of war). She then asks learners the meaning of "tug". When learners confuse it with the word 'touch,' she quickly corrects them until they got it right in isiZulu. Below is an example that is quoted from extract 5.2.

4. T: Ok, so what is the meaning of it? The tug of war? What is the meaning of tug?

5. Ls: Tug?

6. T: Tug.

7. Ls: ukuthinta. (*TO touch*)

8. T: No, I'm not saying touch (*uses facial expression and she leans forward to disapproves a learner's response).

9. T: I'm saying tug.

10. Ls: Tag.

11. L: Ukulwela into. (To fight for something)

12. T: Yaaaa is to pull, benzani? Bayadonsisana angithi? (*Yes. It's to pull. What are they doing? They are tugging right?*) (*She then uses gestures to show what tugging looks like, as if she is pulling something with force).

Multimodality

The learning materials foregrounded pictures rather than verbal text. In figure 5.2.2 an image of the learners' textbook material is attached (the pictures of the characters of the story interactions e.g., figure 5.2.2, shows Hare speaking to Elephant). In addition to this, the educator's teaching material was also presented multimodally as figure 5.2.1 (This is also common in the natural sciences lesson presented as extract 4.2). However, in this case the text was foregrounded, and other modes of communication were backgrounded. In figure 5.2.1 the teachers' teaching material/Tug of war Zulu tale is attached. In turn 8 to 18 the educator teaches learners the term "tug". In doing so, she uses gestures (she pretends to pull something); a picture of this act (gesture + words) is provided in figure 5.2.4. In addition to this, this act/gesture is coupled with words (which were foregrounded in this multimodal instance). Figure 5.2.4 correlates with the verbal discourse in turn 12. She said "12. T: Yaaaa is to pull, benzani? Bayadonsisana angithi?" While she was demonstrating tugging through gestures. In this instance, the educator managed to demonstrate how to "tug" through hand gestures. In addition, the educator then used the tug of war picture story that was presented to learners to connect it with the text version that she had access to. This is evident in turn 29, 30, and 22 of the second extract which connects with the learner's multimodal story presented in figure 5.2.2:

29. T: Ahhh ehhe, asise ukumhleka kushuthi yena ubona angathi ingulube. Ngicabanga ukuthi wena ubuka lana, (*No, no. let's not laugh at him. He thinks it's a pig. I think you're looking here.*)

30. Ls: Ngibuka umbala//. (*I'm seeing color*)

31T: koda ayi Ipig iyabonakala ngomlomo (gesturing the round shape of a hippo). Umlomo ay... uyawukhumbula angithi umlomo we pig unjani? (*But no. You can see a pig by its mouth. Do you remember what I said about a pig's mouth?*)

The image of a hippopotamus in the learners' textbook which was provided by the educator is, however, ambiguous and misleading children. The hippopotamus in the textbook is painted pink (whereas hippos are grey in color). Subsequently, one of the ramifications of this is that learners misidentified a hippo as a pig (normally, pigs are painted pink in most learners' story books). However, the educator addressed this by explaining to learners that it is a hippo drawing attention to its facial features.

As a result, multimodality caused misunderstanding on the learner's part in this case. In addition, despite the fact that learners had shown interest in challenging the image presented to them "that a hippo is not pink in color". The educator tries to clarify for learners that a pig's face is different from the Hippo's. However, she doesn't create a learning space where learners can critically engage with the fact that a hippo was presented in pink which is a color that is normally used to represent pigs. Therefore, a multimodal artifact (knowledge) was presented as fixed in this lesson. In conclusion, we see that incorporating multimodality into a lesson does not guarantee its success. The success of the lesson is determined by how multimodality is used and integrated with the educators' pedagogy.


Chalkboard writing

Similar to the natural sciences lesson presented as extract 4.1, the educator started by telling learners the title of the lesson and writing it on the chalkboard (see figure 5.2.11 of extract 5.2). The chalkboard was also used to write key words, such as character names. While the educator was reading the tale, she came across the word "stronger". This word was used to emphasize that Elephant is stronger than Hare. The educator then went to the chalkboard and drew a relationship and a distinction between strong, stronger, and strongest drawing attention to comparative adjectives (similar to the English lesson presented as extract 5.1 where the educator used a chalkboard to draw a distinction between words "float" and "sink"): "Angithi grade 5, this is a comparative". She does this while explaining to learners that Elephant was stronger than Hare. This chalkboard writing incident is evident in extract 5.2, figure 5.2.7.

In summary, the English lessons presented in extract 5.1 and 5.2 were highly multimodal and translingual, while the teachers' classroom discourse was strictly authoritative and interactional with some non-interactional moments. These communicative patterns are also common throughout all the isiZulu lessons observed. The following are extracts from IsiZulu lessons titled "Map reading in isiZulu", and a reading comprehension titled "umbhikisho wase Alex".

Extract 5.3: 04 May 2021. Map reading in isiZulu.

This lesson is about reading a map and giving directions to an imaginary destination based on an activity in the isiZulu learners' textbook. The educator and learners constantly used various strategies to achieve the map reading and to give directions. In addition to this, both the educator and learners relied on an image of the map and a story that accompanies the map which were provided in the learner's textbook to execute this task. Modes included gestures and talk. Throughout this lesson, learners took turns going in front of the classroom and gave (narrated) directions to other learners. In common with the Natural Sciences and English teachers, the educator used an authoritative and interactional (non-interactional at times) pedagogy.

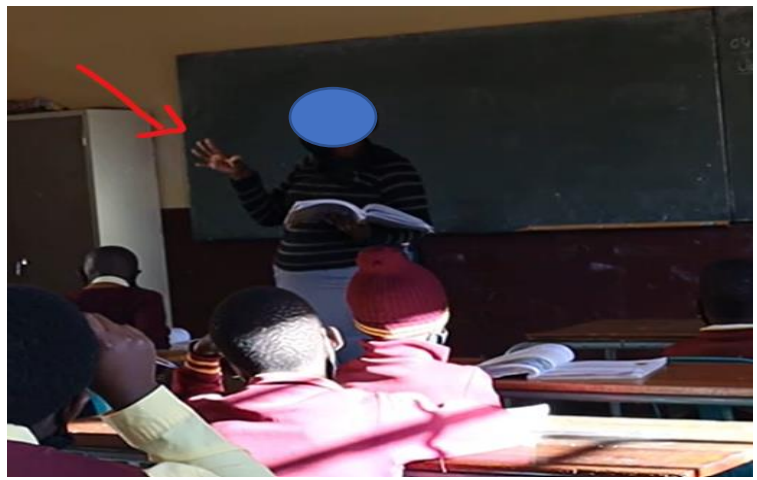
Turn no.	Original Text	English translation	Images + Description of an action
Phase 1: 3 principles of reading, interpreting, and giving out directions			
1	T: Angithi ngaphambi koukuthi sibhale umyalelo. Khona okuthathu okumele sikuqikelele. Ikuphi lokho? Okukuqaka kumele ibesenkathini enjani?	<i>(Before we write directions, we should follow 3 principles, right? First, we must ensure that we use what tense?)</i>	<p>Figure 5.3.1: The educator gesturing that there are 3 principles to be followed when one is giving directions</p> 

2	Ls: Yamanje.	(Present tense)
3	T: Okunye okubili ke. Angeek ngikukhumbize. Phakamisa isandla Yini enye? Thatha amanzi, afake ebhodweni. Faka Izipuni ezinhlanu... Yini Leyo ngathi indlela enjani?	(What else? There are two more principles that we should follow. For instance, if I say, put water in a pot, put five spoons of sugar. I said we should follow which verb mood?)

Figure 5.3.2: IsiZulu Map (provided in the learners' textbooks)

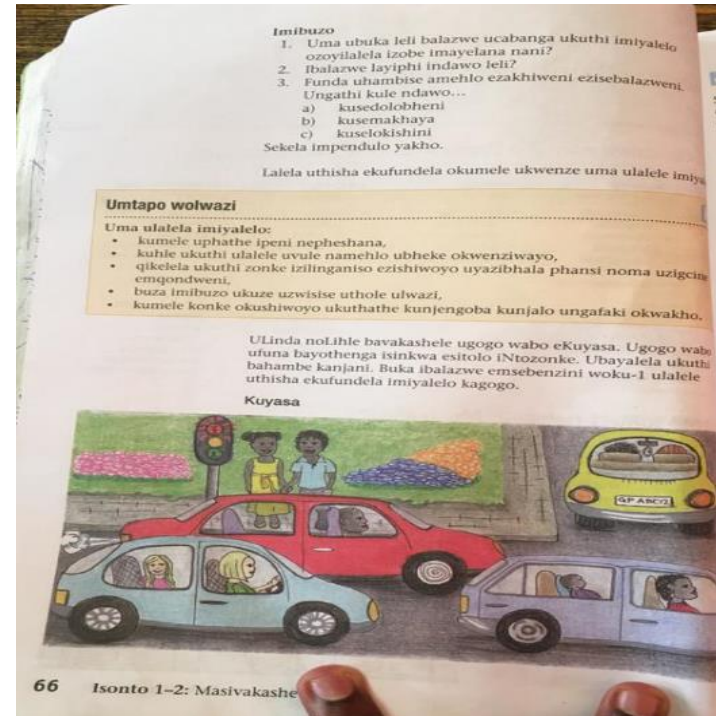


Figure 5.3.3: The educator gestures 5 spoons of sugar




4	Ls: Yokwenza.	<i>(Action mood)</i>	
5	T: Eh, eh?	<i>(What? What?)</i>	
6	T: Ngathi umyalelo wakho kumele ubesenkathini yamanje. Bese ubanendlela enjani? Uma ngithi phuma, jikela, indlela enjani leyo? ehh ehh nizoze niphendule. Indlela enjani leyo? Indlela e pho-?	<i>(I said to you, your directions should be in the present tense. And then be in an infinitive what?) If I say leave, turn, what is that?)</i>	
7	Ls: Qayo.	<i>(Mood)</i>	
8	T: ngo tendays senikhohliwe nje. Indlela ephoqayon futhi amaphuz u akho kumele alandelelane. Awusakukhumbuli lokho ufundela ukukhohlwa?	<i>(It's been only 10 days and you all have forgotten what we learnt. First, we have an infinitive mood, and your points should be what? Your points should be in a chronological order, right? Are you learning to forget?)</i>	
Second phase of the isiZulu lesson: Reading a story that is based on the map reading practice			
9	T: Ok. Lalelake. Manje ngizofunda indabae hambiselana nalela lalazwe ebekade silibuka angithi? Uzolalela kahleke ukuthi kwenzakalani. Ulihle no Linda bavakashela ugogo wabo ekuyasa. Obani abavakashela ugogo wabo ekuyasa.	<i>(Ok, listen. I will now read a story that accords with the image of this map. You need to listen to what's happening in this story. Lihle and Linda are visiting their grandmother in Kuyasa. Who visited their grandmother?)</i>	

Figure 5.3.4: A complementary story which should be read alongside the map reading activity.




10	Ls: Ulinda no Lihle	
11	T: Ulinda nobani	<i>(Linda and who?)</i>
12	Ls: Lihle.	
13	T: Bavakashele ugogo wabo kuphi?	<i>(Where are they visiting their grandmother?)</i>
14	Ls:Ekuyasa.	<i>in Kuyasa</i>
15	T: EKuyasa, siyezwana bangani bami?	<i>(In Kuyasa, Is that clear my friends?)</i>

16	T: Ugogo wabo ufunani?	<i>(What does their grandmother want?)</i>	
17	Ls: (* learners start reading collectively and chorally from the textbook) “Ayobathengela isinkwa esitolo”.	<i>(To buy bread in a tuckshop)</i>	(* learners start reading collectively and chorally from the textbook)
18	T: Yebo. Ugogo wabo ufunana beyothenga isinkwa kuphi? Esitlolo. Yini igama lesitolo?	<i>(Yes, their grandmother wants them to buy bread in a shop. What's the name of the shop?)</i>	
19	Ls: Intozonke.	<i>Intozonke (everything)</i>	
20	T: Simbonile untozonke lana angithi? Right, uyabayalela ukuthi bahambe kanjanike manje. Siyezwana?	<i>(We did see this shop in this map, right? She's telling them how to go from home to this tuckshop, is that clear?)</i>	
21	Ls: Yes.		
22	T: Uyabayalela ukuthi bahambe kanjani uma beyaphi?	<i>(She's telling them how to walk from home to?)</i>	
23	Ls: Entozonke.	<i>(Ntozonke tuckshop)</i>	
24	T: Entozonke. Alridike mina seng izokufundelake imiyalelo kagogo, ukuthi ubayalela kanjani obani (<i>(In Ntozonke. Alright then. I will read you Gogo's instructions on how she directs, who?)</i>	Alridi=alright
25	Ls: Olinda.		
26	T: Olinda nobani?	<i>(And who?)</i>	
27	Ls: NoLihle.	<i>(And Lihle)</i>	
28	T: Lalelake ukuthi ugogo uthini u myalelo kagogo. Uthi phumani. Niyamuzwa uthini?	<i>(Listen how grandma gives directions. She says leave the house. Do you understand her?)</i>	
29	Ls: Yes		
30	T: Uthini?	<i>(What is she saying?)</i>	
31	Ls: Phumani.	<i>(Leave the house)</i>	
32	T: Uthi phumani lapha endlini.	<i>(She says leave the house and take the main road called umbhuqe</i>	

	<p>uhambe emgwaqeni omkhulu um buqe. Uyawubona umbuqe?</p>	<p><i>street. Do you see umbuqe street?)</i></p>	<p>Figure 5.3.5: The educator gesturing and asking learners if they can see the main road “UMbhuqe”</p> 
<p>33</p>	<p>Ls: Yebo siyawubona</p>	<p><i>(Yes. We see it)</i></p>	
<p>34</p>	<p>T: Yes, siyawubona umbuqe sonk e nawu laphana. Bese ugooke Lapho umgwaqo o phela khona Jikelani ngansesobun xele nihambe ngomgwaqo omnca ne ulwazi. Niyawubona umgwaqo omncane ulwazi, Niyawubona? Uma nibheka nina laphana kwago go nizothi indlu yesingaki? Indlu yesingaki uma uqala ngapha esay dini lwesokudla. Ngalana kwesok udla sakho sithitha indlu le. Sithi kwagogo ilomuzi lo.Wesibili siyezwana.</p>	<p><i>(Yes. We all see Mbhuqe street. It's right there. Turn left at the end of Mbhuqe street and take Lwazi street. Do you see the small road, lwazi street? What house number is Gogo's house? When you start counting from the left-hand side? It's the second house, is that clear?)</i></p>	

35	Ls: Yebo.	<i>(Yes)</i>	
36	T: Right, Phumani lapha endlini u hambe emgwaqeni omkhulu umb uqe. Angithi usuyaphumake lana kagogo. Bese kuthiwa jikelani ngesabokun xele. Angithi usuyakhuphukake a ngithi? Uma usujikele ngesobunxele isiphi lesositoladi?	<i>(Right. Leave the house. Take the main road. You are leaving Gogo's house, right? When you turn left which street are you taking?)</i>	
37	Ls: Ulwazi.	<i>(Lwazi street)</i>	
38	T: Umgwaqo omncane ulwazi ang ithi? Siyambona ulwazi street?	<i>(Lwazi street. The small road, right?)</i>	
39	Ls: Yes.		
40	T: Yebo. Siyaphi njengoba sihamba nje?	<i>(Yes. We are moving forward, right?)</i>	
41	Ls: Siya entozonke.	<i>(We are heading to Ntozonke tuckshop)</i>	
42	T: Siyokwenzani entozonke?	<i>(Why are we going there?)</i>	
43	Ls: Siyothenga isinkwa.	<i>We are going to buy bread.</i>	
44	T: Uthi khuphukani ngomgwaqo uzola, niyambona uz ola? Nangu uzola. Eceleni kwepo si. Niyalibona iposi? Mawuhamba lana nali iposi. Ugudla lana eceleni kweposi angithi?	<i>(She says take Zola Street. Do you see Zola Street? Here it is. Next to the post office. Do you see a post office? You pass next to it, right?)</i>	
Phase 3: Tsonga speaking learner interpreting, reading, and narrating a map while he maintains the 3 grammatical principles of map reading			
45	T: Uma ulayela umuntu ukuthi akaye eposini uzothi akenzenjani. Akuze oyedwa ezosichazela. Woza uzosichazela Menzi. Uma ephuma laphana kagogo	<i>(So, if you were to direct someone to go to a post office from home, what would you say? Anyone who can explain and narrate this to us</i>	

	<p>eya laphana eposini uzohamba kanjani? Sibheke ezincwadini sonke.</p>	<p><i>in front of the classroom? Menzi, come forth and give these directions to us. How do you go from grandmother's house to the post office? Let's all look in our textbooks.)</i></p>	<p>Figure 5.3.6: Tsonga speaking learner giving directions in front of the classroom</p> 
<p>46</p>	<p>L: Uphuma endlini //uhambe//</p>	<p><i>(You must leave the house)</i></p>	
<p>47</p>	<p>T: //Eh eh asisho ukuthi u- bangani, sisebenzisa indlela ephoqayo, ugoro ukewathi uphume. U u- akekho nje. Sisebenzisa indlela ephoqayo bangani asilokhe sithi u-//</p>	<p><i>(No No No. We don't say that right friends. We use an infinitive verb mood.)</i></p>	

48	L: Phuma endlini uhambe	<i>(Leave the house you walk)</i>	
49	T: Eh eh. Hamba.	<i>(No No. Walk)</i>	
50	L: Phuma endlini, hamba ngomugwaqo.. Streeti ekugcineni kwawo ujike.	<i>(Leave the house. Take the main road)</i>	
51	T: Ehe ehe ehe ehe	<i>(No no no)</i>	
52	T: Phinda futhi. Phuma endlini hamba ngo menzi streeti)	<i>(Say it again)</i>	
53	T: Phinda futhi. Phuma endlini hamba ngo menzi streeti	<i>(Say it again)</i>	
54	T: Jikela.	<i>(Turn)</i>	
55	L: Jikela	<i>(Turn)</i>	
56			
57	T: ngasesandleni?	<i>(On which hand side?)</i>	
58	L: ngasesandleni sobunxele uhambe nge	<i>(On the left-hand side and you walk.)</i>	
59	T: eh eh. Hamba ngo?	<i>(No. No. walk.)</i>	
60	L: Hamba ngomgwaqo	<i>(Walk by)</i>	
61	T: Hamba ngoLwazi street. Ngena.	<i>(Walk by Lwazi street. Go in.)</i>	
62	T: Eh eh. Awukho umgwaqo owe qayo ngaphambi kokuthi ungene.	<i>No no no. Isn't there a street that you need to cross before going in?)</i>	

63	T: Weqa umgwaqo omkhulu iThe mbeka street	<i>(You need to cross the main road called "IThembeka street")</i>	
64	L: Yessss.		
65	L: ngena eposini.	<i>(Go in the post office)</i>	
66	T: Hamba kancane.	<i>(Walk a short distance)</i>	
67	L:Hamba kancane, ngeneposini.	<i>(Walk a short distance, go in the post office)</i>	
68	T: Yebo. Nimuzwile ukuthi uzamile?	<i>(Did you hear that he tried?)</i>	
69	L: Yes	<i>(Yes)</i>	
70	T: Akufanang. Anike nimshayeke izandla.	<i>(It wasn't that bad, he tried. Let's give him a round of applause.)</i>	

Data description: Map reading in IsiZulu

The teacher started this lesson by asking two students to distribute isiZulu textbooks to all students in the classroom. Each of the 25 students in the classroom had their own textbook. The educator next reminds students about three map reading, interpreting, and narration grammatical principles: 1) Inkathi yamanje (*present tense*). 2) Indlela ephoqayo (*Infinitive mood*). 3) Amaphuzu akho kumele alandelana (*It should be in point form*). Learners give verbal responses during this phase of the lesson and the educator approves (vocally) or rejects the responses of the students. This can be seen in turns 1-8 of extract 5.3. Throughout these eight turns, the educator emphasizes that the students have already learned about these three grammatical principles. This is demonstrated in turn 3:

"T: Okunye okubili ke. Angek ngikukhumbize. Phakamisa isandla yini enye? Thatha amanzi, afake ebhodweni. Faka izipuni ezinhlanu. Yini leyo ngathi indlela enjani? (*What else? There are two more principles that we should follow. I'm not going to remind you. For instance, if I say, put water in a pot, put five spoons of sugar. I said we should follow which verb mood?*)

Noticeable in this first phase of extract 5.3 is that similar to the Natural Science and EFAL lesson extracts analysed, the educator employed a strictly controlled turn taking pedagogic strategy which can be labelled as an authoritative and interactive communicative approach. In the following turns (6-8), there are a total number of 113 words, 2 of which are learners' responses, and 111 words are the educators' responses. Another notable feature in this classroom talk is that learners' responses are choral. This is also similar to all the natural sciences and English lessons. In addition, the educators' turns are detailed, whereas the learners' responses were one-word answers elicited by the educator in most cases. As pointed out, this can also be connected to communalized teaching (Hoadley, 2012). This is evidenced in turn 6-8 of extract 5.3 extract:

6.T: Ngathi umyalelo wakho kumele ubesenkathini yamanje. Bese ubanendlela enjani?

Uma ngithiphuma, jikela, indlela enjani leyo?ehh ehh nizoze niphendule.Indlela enjani leyo? Indlela e pho? (*I said to you, your directions should be in an infinitive what? When I say leave, turn, what verb mood is that? I will wait for you until you answer*)

7.L: qayo (*Infinitive mood*)

8.T: ngo tendays senikhohliwe nje. Indlela ephoqayon futhi amaphuzu akho kumele alandelelana. Awusakukhumbuli lokho ufundela ukukhohlwa? (*It's been only 10 days and you all have forgotten what we learnt. First, we have an infinitive*)

mood, and your points should be what? Your points should be in a chronological order, right? Are you learning to forget?)

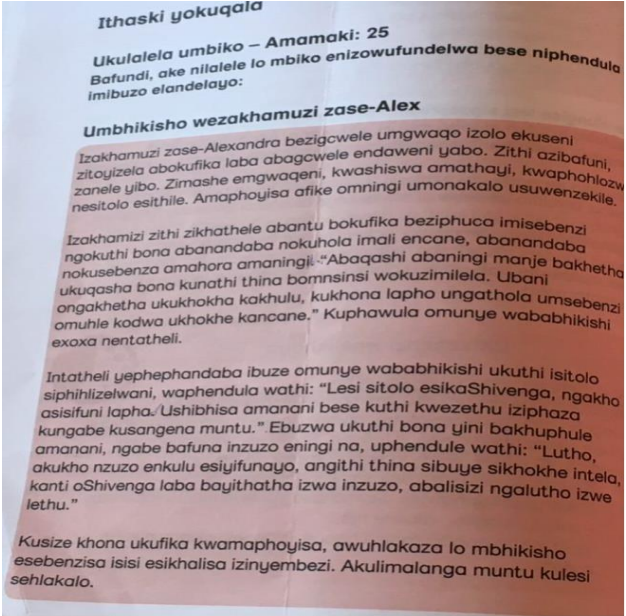
In the second phase of this lesson, the educator then reads a story that is connected to a map image provided as figure 5.3.2. This is evidenced in turns 9-44 of extract 5.3. This story introduces a grandmother who sends her grandchildren to 'Ntozonke' tuck-shop to buy bread. The educator and learners were then expected to give directions to these 2 grandchildren on how to navigate their way from their home to a local tuck-shop using a map which was provided in the textbook and attached herein as figure 5.3.2 of extract 5.3. Similar to the English (extract 5.1 and 5.2) and natural sciences (extract 4.1 and 4.2) lessons, the reading story is presented multimodally. This includes images and text. First, the educator tells learners to listen attentively while looking at the story and a map that is provided in the learners' textbook. In this scenario, multimodality (primarily images and gestures) enabled grade 5 learners to understand the extent of the region that the imaginary learners were required to travel.

The multimodal map also assisted learners in directing the two imaginary children to walk from their grandmother's place to Ntozonke tuck-shop. Thereafter, the educator reads the story aloud while she poses questions which were based on the story. These questions were concerned with identifying the characters of the story (Lihle, Linda, and Grandmother, turns 10-13), their location (Gogo's house, 14-15), their mission (buying bread, turns 16-18), and a name of the destination that they should travel to (Kwantozonke tuck shop, turns 19-24). All these aspects are evident in turns 9-44 of extract 5.3. Notably, the educator and learners occasionally uses English exclamations like "Right" (turn 36) and "yes" (turn 21) respectively even though this is an isiZulu lesson. Thus, this adds evidence to my observation that both the educator's and learners' language practices are normatively translingual and this is common to all 3 subjects. In this instance, one might expect this lesson to be monolingual isiZulu given the fact that this is an isiZulu home language lesson, conducted in a deep rural part of KZN where 90% of the population speaks isiZulu as their home language.

In this lesson the educator reads aloud the whole story, controls the turns in the classroom, including when learners should speak, elicits one-word responses from learners, and her turns are lengthy compared to learners' single word turns/responses. Lastly, the educator determines when learners are supposed to write or verbally complete an assessment. Furthermore, out of 1323 words in this lesson, learners' responses were a total of only 42 words, and the educator had 1281 words. Most of the learners' responses were one-word and yes/no answers, and they were elicited by the educator. While lack of learner participation and one-word responses is often related to unfamiliar language of instruction (LOI) (McKinney et al, 2015; Bunyi 2005, Chick, 1996), in my research there is a common authoritative communicative approach across the lessons, regardless of LOI. That is, learners mostly respond in one-word answers to closed and/or confirmatory questions which are mostly enacted by the educator.

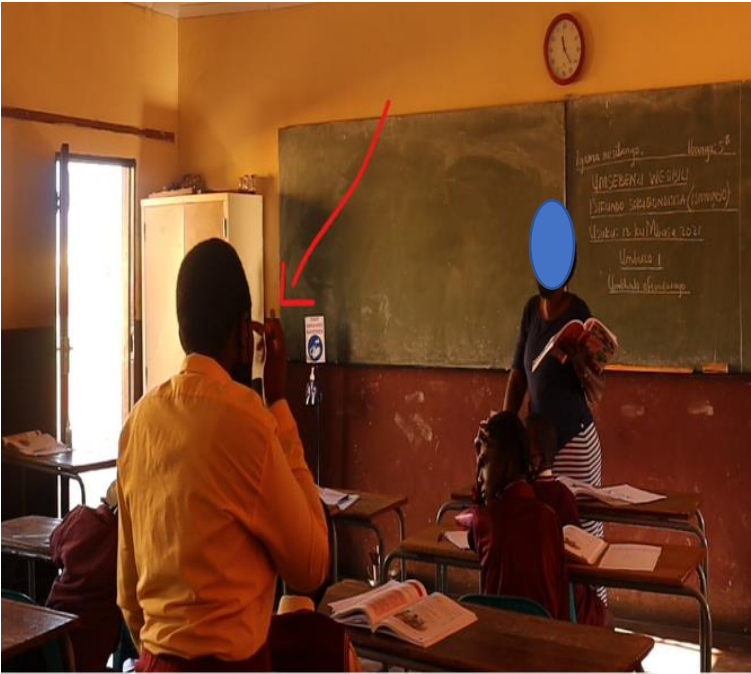
The final isiZulu HL lesson to be analysed was based on reading and understanding a story from the textbook titled "Umbhikisho wase Alex (A riot in Alex)". At the beginning of this lesson, the educator first instructed one of the learners to read aloud in front of the classroom. Thereafter, both the educator and all learners went through the extract again (the educator was reading aloud, while learners were reading in silence). Soon after that the educator started posing questions to learners based on the story that they read. The educator then gave learners an individual classroom activity to respond to the questions in the textbook that are based on "a Riot in Alexander" reading comprehension. Last, while learners were writing, the educator moved in between rows and assisted learners with their concerns.

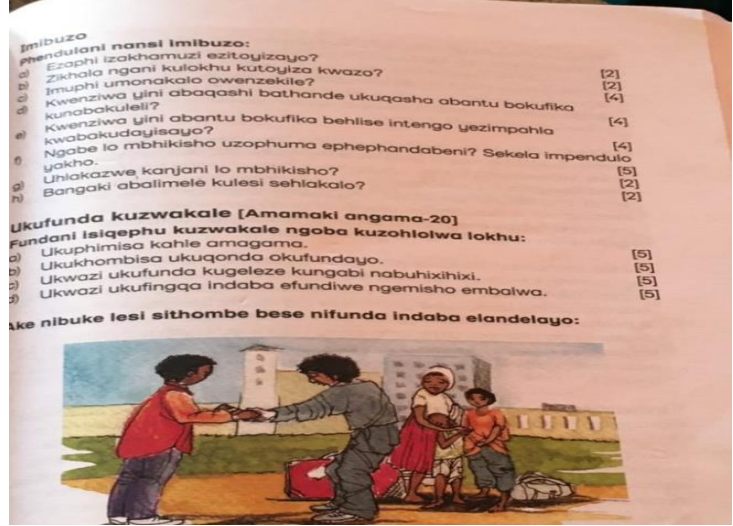
Extract 5.4: Verbal and Written responses to “Umbhikisho wase Alex comprehension”

Turn no.	Original Text	English translation	Images + Description of an action
1	T: Yes, umbhikisho wezakhamuzi zase Alex. U page 118 nina eningazi nalaba abangasaboni kahle. Right, cela sonke sibheke ezincwadini zethu silalele uMenzi ukuthi uthini.	<i>(Yes, A riot in Alexander. it's page 118 for those who don't know. let's all look at our textbooks and listen to Menzi)</i>	<p>Figure 5.4.1: Umbhikisho wase Alex comprehension</p>  <p><i>Ithaski yokuqala</i> Ukulalela umbiko – Amamaki: 25 Bafundi, ake nitalele lo mbiko enizowufundelwa bese niphendula imibuzo elandelayo:</p> <p>Umbhikisho wezakhamuzi zase-Alex</p> <p>Izakhamuzi zase-Alexandra bezigcwele umgwaqo izolo ekuseni zitoyizela abokufika laba abagcwele endaweni yabo. Zithi azibafuni, zanele yibo. Zimoshe emgwaqeni, kwashiswa amathayi, kwaphohlozw nesitolo esithile. Amaphoyisa afike omningi umonakalo usuwenzekile.</p> <p>Izakhamuzi zithi zikhathela abantu bokufika beziphuca imisebenzi ngokuthi bona abanandaba nokuhola imali encane, abanandaba nokusebenza amahora amaningi. “Abaqashi abaningi manje bakhetha ukuqasha bona kunathi thina bomnsinsi wokuzimilela. Ubani angakhetha ukukhokha kakhulu, kukhona lapho ungathola umsebenzi omuhle kodwa ukhokhe kancane.” Kuphawula omunye wababhikishi exoxa nentatheli.</p> <p>Intatheli yephephandaba ibuze omunye wababhikishi ukuthi isitolo siphihlazelwani, waphendula wathi: “Lesi sitolo esikaShivenga, ngakho asisifuni lapha. Ushibhisa amanani bese kuthi kwezethu iziphaza kungabe kusangena muntu.” Ebuzwa ukuthi bona yini bakhuphule amanani, ngabe bafuna inzuzo eningi na, uphendule wathi: “Lutho, akukho nzuzo enkulu esiyifunayo, angithi thina sibuye sikhokhe intela, kanti oShivenga laba bayithatha izwa inzuzo, abalisizi ngalutho izwe lethu.”</p> <p>Kusize khona ukufika kwamaphoyisa, awuhlakaza lo mbhikisho esebenzisa isisi esikhalisa izinyembezi. Akulimalanga muntu kulesi sehlakalo.</p>

2	M: Izakhamuzi zase Alexander bexigcwele umgwaqo izolo ekuseni zitoyizela abo, abokufika lapha abagcwele endaweni yabo.	<i>(Residents in Alexander were all over the streets yesterday morning. They were protesting against foreign nationals who have crowded their space)</i>	
3	M: Zi- Maaaaaa- He. (*He stressed the 2 nd syllable, and the educator quickly corrects him by repronouncing the word).	<i>(They protested)</i>	
4	T: <u>Zimashe</u>	<i>(They protested)</i>	
5	M: Zimashe	<i>(They protested)</i>	
6	T: Mhiii	<i>(Ohhh)</i>	
7	M: Kwa----shiswaaaa amathayi (he stresses the wrong syllable and mispronounces the word. The educator intervenes by correcting him and repronouncing the word).	<i>(They burnt tyres.)</i>	
8	T: <u>Kwashiswa amathayi.</u>	<i>(They burnt tyres)</i>	
9	M: Kwashizwa amathayi.	<i>(They burnt tyres)</i>	
10	T: Amaphoyisa afika o---mni---- ngi...	<i>(When police arrive, a lot of...)</i>	
11	M: Amaphoyisa afika o---mni---- ngi...	<i>(When police arrive, a lot of...)</i>	

12	M: Umningi.	<i>(A lot)</i>	
13	T: Umonakalo usuwenzekile.	<i>(Damage had already happened)</i>	
14	T: Ayyyy ababhalanga kahle.	<i>(No, they didn't write well)</i>	
15	M: ... Abanandaba ngokuthi bona, ngo ngo ngo	<i>(They don't mind about)</i>	
16	T: <u>Ngokusebenza</u> . Sonke sibheke izincwadi zethu.	<i>(Working. We are all looking at our textbooks, right?)</i>	
17	M: Abanandaba ngokusebenza ama hora amaningi. Abaqashi bakhetha ukuqasha bona kunathi thina bom---nsi-sns--I.	<i>(They don't mind working long hours. Employers choose to employ them over us. Whereas we are natives)</i>	
18	<u>Bomunsinsi.</u> (* the learner skips the first syllable)	<i>(Natives)</i>	
19	M: Bomnsinsi	<i>(Natives)</i>	
20	T: Wokuzimilela, yes.	<i>(Native South Africans, yes)</i>	
Second phase of the lesson			
21	T: Awuhlakaza ngani? Phakamisa isandla, ungaqageli. Ngifuna into ebhalwe la.	<i>(What did they use? Raise your hand I want an answer that is in the textbook)</i>	
22	T: Yes, basebenzisa isisi esikhala izinyembezi. Yini isisi esikhalisa izinyembezi?	<i>(Yes. They used isisizi esikhalisa ezinyembezi. What is isisizi esikhalisa izinyembezi?)</i>	
23	L: Iteargas.	<i>(Teargas)</i>	

24	T: Itear?	<i>(A tear-?)</i>	
25	Ls: Itear gas	<i>(A tear gas)</i>	
26	T: Niyayazi itear gas? Naniybona kuphi?	<i>(Do you know teargas? Where did you see it?)</i>	
27	T: Ingena kuphi Itear gas?	<i>(Where does it affect you?)</i>	
28	Ls: Emehlweni	<i>(In your eyes)</i>	<p>Figure 5.4.2: A learner gesturing that teargas goes straight to one's eyes</p> 

29	T: Uma ingena emehlweni kabuhlungu usazoqhubeka wena nokulwa?	<i>(Will you be able to see if it gets into your eyes?)</i>	
30	//L: No//.		
31	T: Angeke, angithi usuyacimeza amehlo asebuhlungu. Usuyaphelake umbhikisho angithi?	<i>(You will not. you will be closing your eyes because they will be painful at that time)</i>	
32	Ls: Yes.		
33	T: Yebo.	<i>(Yes)</i>	
34	T: Right, lalelanike bangani bamisesiyabhalake manje. Lemibuzo lena ela, uzoyiphendulela khona la kuleli phepha leli khona la ngaphambili. Awubhali imibuzo uzobhala izimpendulo kuphela. Siyezwana? Sizobhala izimpendulo kuphela. Uzoqala laphana ku A ufike ku H. Bhalake.	<i>(Yes, listen my friends, we are now writing. You don't write the question, you only need to write a response, is that clear? We will only write our responses. You answer from question A to H. Now write.)</i>	<p>Figure 5.4.2: Assessment questions</p> 

			<p>Class test questions translation</p> <p>(a) Where are the protestors from?</p> <p>(b) Why are they protesting?</p> <p>(c) What damage did they do?</p> <p>(d) Why are South African employers employing foreign internationals over South Africans?</p> <p>(e) Why do foreign internationals sell cheaper goods?</p> <p>(f) Do you think this protest will make headlines in the newspapers? Why?</p> <p>(g) How was this protest contained?</p> <p>(h) How many people got injured during this incident?</p>
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Third phase of the lesson: Learners' written assessment

Figure 5.4.3: Learner 1: Sotho speaking learner's marked script

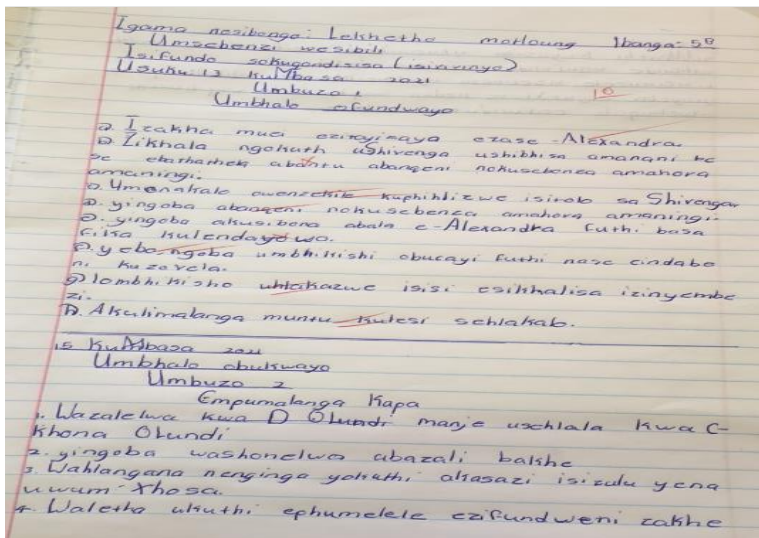
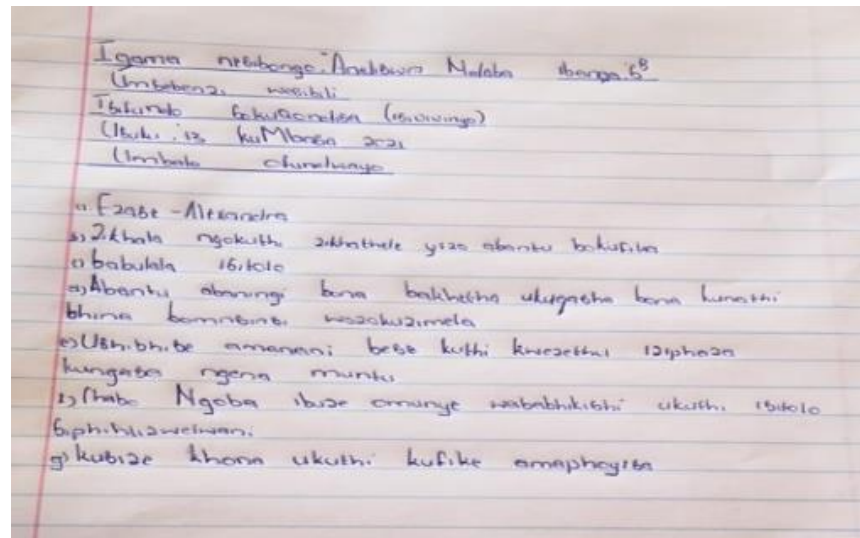


Figure 5.4.4: Learner 2



Learner 1: Translation

- (a) The protestors are from Alexander community.
- (b) They are complaining that Chivenga's prices are way too cheap. and that he's taking away people's jobs and that they don't mind working for longer hours.
- (c) The damage that the protests sustained is that Chivenga's shop was vandalized.
- (d) They don't mind working long hours
- (e) It is because they are not from here in Alexander and they are new in this place.
- (f) It's because the protest was dangerous and it will appear in the news.
- (g) This protest was ended by the use of teargas.
- (h) No one got hurt during this protest.

Learner 2: Translation

- (a) They are from Alexander.
- (b) They say they have had enough of foreign internationals.
- (c) They vandalized a shop.
- (d) Most employers prefer to hire foreign internationals than us, natives.
- (e) [this response does not make any sense.]
- (f) No. Because they asked one of the protesters on why they are vandalizing tuck shops.
- (g) Police arrival saved the day.
- (h) [no answer given]

Data description: A riot in Alexander

In this lesson, the educator first writes the topic of the lesson and the date on the chalkboard and instructs learners to copy it into their workbooks as it is and to also underline as she did. She then points to and instructs a Tsonga speaking learner, Menzi, to read aloud a comprehension passage in front of the classroom. While Menzi is reading in front of the classroom, the educator continuously corrects him on pronunciation of isiZulu words. For instance, Menzi struggles to pronounce some Zulu words and often stressed the wrong syllables. Towards the end of the lesson, the educator then instructs learners to complete a class activity in their textbook which was based on the comprehension extract. The educator then emphasized that learners should only write their responses and not rewrite the questions. Notably the educator is again dominant in classroom talk and controls all aspects of the lesson including where and when learners should read and write, despite the fact that this was supposed to be an individual learners' task. Thus, this dominance can also be linked to the educators' authoritative and interactional pedagogic approach which is a common pattern to the natural sciences and isiZulu lessons discussed above.

Reading aloud literacy practice: Menzi reading in front of the classroom

In this phase of the lesson, the educator first tells learners to open page 118 of the isiZulu textbook. However, she says the page number in Zulu ('standardized' version- "*ikhulu neshumi nesishiyagalombili*") and says she wants to see if learners will be able to open the correct page, given that they were asked in standard Zulu. Thus, this creates an impression that she expects learners to have difficulty in understanding the page number in isiZulu; she expects them to know it in English. In connection to this, the educator in this phase was investigating learners' isiZulu linguistic resources. This is evident in turn 1 of extract 5.4. Right after telling learners that "*ikhulu neshumi nesishagalombili*" in English is page 118. This supports the fact that the languaging practices in an isiZulu lesson are at times translingual, despite the fact that most learners (including the teacher) speak isiZulu as their home language. In addition to this, the educator then asks Menzi to read a comprehension extract presented in their isiZulu textbook. In turns 8 and 9 of extract 5.4, Menzi mispronounces the word 'kwashiswa amathayi', then, in turns 10/11/12, Menzi mispronounces the word 'umningi'. Thus, throughout this reading literacy practice, the educator continuously corrects Menzi on his pronunciation of isiZulu words, emphasizing decoding:

8 T: Kwashiswa amathayi. (*They burnt tyres*)

9 M: Kwashiswa amathayi (*They burnt tyres*)

10 T: Amaphoyisa afika o---mni---ngi... (*When police arrived, a lot of...*)

11 M: Amaphoyisa afika o---mni---ngi... (*When police arrived, a lot of...*)

12 T: Umningi. (*A lot*)

Throughout this reading practice, the educator (concurrently with the textbook) perpetuated a misconception that foreign nationals are taking jobs from South Africans and that South Africa is crowded by foreign nationals. What is even more shocking is that this statement was accepted as a fact in the classroom; the educator didn't take a critical stance to interrogate it, nor afford learners with an opportunity to scrutinize it. Therefore, the authoritative nature of the educators' pedagogy mandates learners to accept the textbook's content as fact, instead of critically engaging with and interrogating it. In short, knowledge was presented, as fixed. That is, learners were not given an opportunity to critically engage with the xenophobic narrative/misconception embedded in the text. In addition, what is also apparent is that the educator is text reliant. In this lesson, textbook knowledge is the ultimate authority. This ignores the role of the reader as 'text-analyst' (Luke and Freebody, 1990 in Bua-lit. 2018). This epistemological authoritativeness is also reinforced by the type of questions (closed-ended) asked in the learners' written task which will be discussed below.

Relying on English concepts to teach standardized isiZulu concepts during the verbal assessment session

In the second phase of extract 5.4, Menzi had read a comprehension excerpt, and the educator was asking learners questions based on it. While doing a verbal assessment, they come upon an unusual but standardized Zulu word "isisi esikhalisa izinyembezi" (*teargas*). The educator then asks learners what is "isisi esikhalisa izinyembezi"? Learners respond in English by saying it's *teargas*. Right after that the educator approves learners' English response by prompting the rest of the classroom to chorally repeat the word with an isiZulu prefix ("iteargas") after her. Thus, this can be labeled as what Stoffelsman et al (2020) referred to as chorus teaching. Moreover, choral answering is limited to yes/no questions, and one-word answers. This is a similar teaching pattern found in natural sciences and English lessons. In addition, the educator calls the first part of the word and learners finish it off by saying the latter part. This is evidenced in turn 23 of extract 5.4:

21.T: Yes, basebenzisa isisi esikhala izinyembezi. Yini isisi esikhalisa izinyembezi? (*Yes. They used isisisi esikhalisa ezinyembezi. What is isisisi esikhalisa izinyembezi?*)

22.L: Iteargas (*teargas*)

23.T: Itear? (*A tear-?*)

24.Ls: Itear-gas (*A tear gas*)

In figure 5.4.2, one of the students successfully utilized a hand gesture to demonstrate how *teargas* affects a person's eyesight. What is also evident in this part of the lesson is that the languaging practices in this classroom are naturally translingual in isiZulu and English both from the learners' and educators' side even

though this is an isiZulu home language lesson. Translingual practices (in isiZulu and English) are common in all isiZulu, English, and Natural Sciences lessons. An example of this is on turn 23 and 24 of extract 5.4 where the educator and learners are converting an English word to isiZulu by adding isiZulu prefix "I-" "iteargas".

Literacy practice: Learners' written assessment

In this last phase of the isiZulu lesson presented as extract 5.4, the educator gave an assessment from the textbook to learners. The educator first informs learners that they now must have written responses to the questions that they had just orally answered. In turn 30, the educator informs learners that they should write only their answers and not the questions. As mentioned above, noticeable in this assessment are the misconceptions about foreign nationals and the educator's stance to take them as a fact instead of critically engaging with and interrogating them. It was surprising to see the burning issue of "xenophobia" handled with such hostility. The assessment questions attached as figure 5.4.3 and 5.4.4: The learners isiZulu responses translate to English as follows:

(b) Why are they protesting?

(d) Why are South African employers employing foreigners?

Learners' responses which were taken from the comprehension passage that they read with the educator:

Learner 1: (b) They are complaining that Chivenga's prices are way too cheap. and that he is taking away people's jobs and that they do not mind working for longer hours (d) They do not mind working long hours

Learner 2: (b) They say they have had enough of foreign internationals. (d) Most employers prefer to hire foreign internationals than us, natives.

There are numerous misconceptions in this comprehension passage. First, there is a misconception that South African employers employ foreign internationals over South Africans and that foreign internationals take jobs from South Africans. Second, there is a misconception that foreign internationals' goods and services prices are much cheaper because they do not pay the South African tax (VAT and Company tax). Lastly, there is a misconception that foreign internationals are hired over South Africans because they do not mind working long hours, and that they provide cheap labour. Throughout this assessment, neither the educator nor learners challenged or provided a critical perspective on any of these ideas. Thus, this weighs in on the fact that in this classroom, the textbook content is taken as a fact (textbook reliant). This reflects on the nature of the textbooks' content which is seemingly authoritative. Finally, learners were not given the opportunity to

critically engage with the topic content, despite the quantity of multimodal and translingual practices in this session.

Conclusion

As demonstrated in analysis of the natural Sciences and English lessons, in the isiZulu lessons, the abundance of multilingual and multimodal practices in the lesson does not imply a successful lesson, especially if the educators' pedagogy is authoritative and learner participation is limited to short one word or yes/no responses. Subsequently, it is paramount that attention is not only paid to the multimodal and linguistic resources available in the classroom, but more attention should also be focused on how those resources are utilized in the lesson, and whether they are pedagogically transformative or not in relation to epistemology and learners' participation.

Chapter 6: Discussions and Conclusion

This is a case study of multimodal and authoritative meaning making in grade 5 isiZulu, English, and Natural Sciences lessons in a quintile 1 primary school in KwaZulu-Natal, uMzinyathi Municipality in Nqutu. This study investigated the nature of classroom discourse in each of the subject areas and the opportunities learners had for participation in multimodal classroom discourse. The study found that all three educators across the subjects (isiZulu, English, and Natural Sciences) controlled the classroom discourse. They decided on when learners should speak or participate in class. Choral responses, one-word responses, and safe talk were the most common and similar interactional patterns across all three subjects. All the educators could thus be described as using a communalized pedagogy. In relation to multimodality, classroom discourse in all three subjects was highly multimodal. The educators utilized material artefacts such as a coin, images, and gestures. Similar in all three subjects is that educators' pedagogies were authoritative and interactional (non-interactive at times). Mortimer and Scott (2010) assert that in the Interactive/authoritative communicative approach, the educator's main goal is to get to the conclusion or produce a desired response from learners. The interventions of the teacher in this approach are based on instructional questions for which s/he has only one answer in mind (Ibid). If the pupils are unable to provide the required response, their ideas are dismissed (Ibid). The students' responses are confined to single, brief assertions in answer to the teacher's inquiries (Ibid). While learners are interacting with the teacher, their opportunities for participation are severely constrained.

The school's language policy portrays the ideal learner as a monolingual English speaker. This is despite the fact that learners in the grade 5 classroom speak at least Sotho, Tsonga, or isiZulu as their home languages. However, the majority of the learners use IsiZulu as their home language in this school. In addition, English is the language of learning and teaching from grade 4, except for the isiZulu home language subject. Consequently, all the learning materials are monolingual in English (for content subjects such as Natural Sciences and for EFAL) with the exception of isiZulu as language subject. Furthermore, despite LOLT being English, learners take English as an additional language and isiZulu as home language subject. What is noticeable also, is the mismatch between the school language policy (LOLT), the language used in learning and teaching materials, and the learners' and teachers' linguistic resources. This study discovered that learners played a passive role in all subjects, regardless of whether the LOLT was their home language/

additional language. Furthermore, all educators translanguaged using resources of isiZulu and English. Most interestingly, the isiZulu educator also translanguaged in isiZulu and English, even though most learners in the classroom used isiZulu as their home language. In short, translanguaging in the lessons is a naturalised practice. Both learners and educators used their multilingual repertoires in a variety of ways, including employing monolingual English and monolingual isiZulu at times, as well as meshing isiZulu and English at other times.

This study aims to address the social injustices perpetuated by the schooling system, where non-English speaking families are marginalized and mandated to take an assimilationist approach and change the way they are using language (Garcia and Otheguy, 2017). This has resulted in educational inequalities that are often racialized. White speakers of English and Afrikaans are integrated into the cultural and economic mainstream, whereas speakers from marginalized language groups are not. This inequality is greatly depicted in the South African context where the majority of the indigenous language speakers (largely African language speakers) have to assimilate to English as the language of teaching and learning. Moreover, McKinney (2017) asserts that children from non-English speaking families are positioned as deficient in the classroom and their linguistic resources are not valued nor utilized in the classroom. This study aimed to understand how literacy practices (which are monoglossically driven) position bi/multilingual learners in the classroom and what effect this positioning has on the learner's classroom participation and academic performance. While oral classroom discourse positions learners as bilingual, written classroom activities or literacy activities, including assessments, position them as either monolingual English (in EFAL and Science) or monolingual isiZulu (in isiZulu HL).

Canagarajah et al (2011) asserts that multilingual learners bring with them a wealth of knowledge from their homes that is very important to themselves and the wider society. Thus, employing translanguaging practices in the classroom can help teachers to learn a lot from their learners if they are not imposing their views on how more than one language can/should be used. Thus, translanguaging can be effective and pedagogically transformative. However, my study discovered that translanguaging did not necessarily enable the learners' knowledge into the classroom because learners were not given an opportunity to

independently speak out their thoughts and views nor were they given an opportunity to exhibit their translanguaging skills- notably it was the teacher who was translanguaging more than learners.

Classroom discourse in every lesson observed was multimodal. This is to be expected given that all communication is multimodal (Kress et al, 1996). Educators and students used gestures, multimodal artifacts like a fork, visuals from a textbook, and tangible classroom resources like a door and a window to clarify some scientific concepts across all the lessons. Furthermore, all teachers used a combination of linguistic and visual modes of communication to mediate the subject matter. Some modes are backgrounded while others are foregrounded in classroom communication. Learning materials are presented multimodally. However, assessments demand learners to engage monomodally with written text. That is, learners are expected to write monolingually in order to meet the assessment demands. This study demonstrates that using multimodality does not guarantee that the subject's technical knowledge would be successfully mediated. How multimodality is employed in the classroom influences whether the lesson is successful. Multimodality also plays a vital role in relation to epistemology. The multimodal artifacts used in a Natural Sciences lesson determined what counts as science in those lessons. For example, the educator used a fork (which had a plastic handle) to mediate what counts as metal, and to draw a distinction between metal and non-metal items. Last, this study demonstrates that there is a mismatch between the learners' semiotic repertoires (both the linguistic and the visual mode of communication), the monolingual school language policy, the language of learning and teaching (LOLT), the verbal languaging practices of both the learners and teachers (translanguaging in isiZulu and English), and the written discourse. Another major finding in this study is the relationship between the educators' authoritative approach to knowledge and learners' minimal opportunities to participate (passive role) in the classroom. Across all subjects: IsiZulu, English, and natural sciences knowledge was presented as fixed. Thus, this emphasises that changes are needed not just in LOLT but also in the use of classroom discourse for learning and orientation to knowledge by both teachers and learners.

This study suggests that the monoglossic implementation of South African language policy needs to be revised because it contradicts the lived multilingual linguistic realities of many South African learners and continues to marginalize them in terms of academic performance, classroom participation, and knowledge

production. More emphasis should be placed on the implementation of a dynamic bilingual approach (Garcia, 2009) which enables the flexible use of learners' and teachers' linguistic repertoires in classroom discourse. In addition, more attention needs to be given to monoglossic written discourse as it contradicts translingual oral practices in the classroom. Last, the educators' and learners' translingual practices should be researched and enhanced in a sense that they become pedagogically transformative. This includes but not limited to supporting teachers and learners with bilingual materials and bilingual written activities as well as training teachers in dialogic approaches to classroom discussion.

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Appendixes

Appendix 1: The school language policy

LANGUAGE POLICY

PREAMBLE:

We, [REDACTED] School adhere to the principle of teaching the African child as never before. [REDACTED]

To this perspective, we set ourselves a goal of producing quality citizenry and to achieve this goal we dedicate ourselves to:

- To promote and use English Language as a medium of communication by learners between themselves, their educators and latter between themselves as much as possible in their day to day interaction during school days and time.
- Using English as a medium of instruction across curriculum, save the vernacular only. ~~[REDACTED]~~
- Hold regular dialogues and debates to enhance the aspects of fluency and confidence among the learners as first class customers and teachers as key holders.
- Practice and promote reading strategies to encourage learners to be self reliant, self sufficient, independent and responsible citizens of their time.
- The procedure we plan and hope to achieve, stands as follows:
 - Ensuring that learners are encouraged to develop phonic and sound awareness.
 - Ensure that learners are able to construct words and sentences.

Appendix 2: Approval letter from KwaZulu-Natal Department of Education



KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

OFFICE OF THE HEAD OF DEPARTMENT

Private Bag X9137, PIETERMARITZBURG, 3200
Anton Lembede Building, 247 Burger Street, Pietermaritzburg, 3201
Tel: 033 3921063 / 033-3921051

Email: Phindile.duma@kzndoe.gov.za
Buyi.ntuli@kzndoe.gov.za

Enquiries: Phindile Duma/Buyi Ntuli

Ref.:2/4/8/1603

Mr MJ Msimango
PO Box 164
NQUTHU
3135

Dear Mr Msimango

PERMISSION TO CONDUCT RESEARCH IN THE KZN DoE INSTITUTIONS

Your application to conduct research entitled: **"COMPARATIVE STUDY OF THE SEMIOTIC MODES OF COMMUNICATION AND THEIR ROLE IN THE MEDIATION OF SKILLS/ PRACTICES IN ISIZULU, ENGLISH AND NATURAL SCIENCES LESSON IN A QUINTLE 1 PRIMARY SCHOOL"**, in the KwaZulu-Natal Department of Education Institutions has been approved. The conditions of the approval are as follows:

1. The researcher will make all the arrangements concerning the research and interviews.
2. The researcher must ensure that Educator and learning programmes are not interrupted.
3. Interviews are not conducted during the time of writing examinations in schools.
4. Learners, Educators, Schools and Institutions are not identifiable in any way from the results of the research.
5. A copy of this letter is submitted to District Managers, Principals and Heads of Institutions where the Intended research and interviews are to be conducted.
6. The period of investigation is limited to the period from 15 March 2021 to 01 August 2023.
7. Your research and interviews will be limited to the schools you have proposed and approved by the Head of Department. Please note that Principals, Educators, Departmental Officials and Learners are under no obligation to participate or assist you in your investigation.
8. Should you wish to extend the period of your survey at the school(s), please contact Miss Phindile Duma/Mrs Buyi Ntuli at the contact numbers above.
9. Upon completion of the research, a brief summary of the findings, recommendations or a full report/dissertation/thesis must be submitted to the research office of the Department. Please address it to The Office of the HOD, Private Bag X9137, Pietermaritzburg, 3200.
10. Please note that your research and interviews will be limited to schools and institutions in KwaZulu-Natal Department of Education.

UMZINYATHI DISTRICT

Dr. EY Nzama
Head of Department: Education
Date: 19 March 2021

Appendix 3: University of Cape Town ethical clearance letter



SCHOOL OF EDUCATION

Dr. Joanne Hardman

University of Cape Town, Private Bag X3, Rondebosch, 7701
Physical address: Humanities Graduate School Building, University Ave
South, Upper Campus Tel: +27 (0) 21 650 3920 Fax: +27 (0) 21 650 3489
E-mail: Joanne.Hardman@uct.ac.za Internet: www.uct.ac.za/depts/educate

EDNREC20210208

26 February 2021

Mfundo Msimango

RE: Ethical Clearance for Masters Research project

I am pleased to inform you that ethical clearance has been granted by the School of Education Ethics Review Committee of the Faculty of Humanities for your academic project A comparative case study of the semiotic modes of communication and their role in the mediation of literacy skills/practices in grade 5 isiZulu, English and Natural Sciences lessons in a quintile 1 primary school. We wish you all the best with your research.

Regards

Appendix 4: Parents Information letter

A comparative case study of the semiotic modes of communication and their role in the mediation of literacy skills/practices in grade 5 isiZulu, English and Natural Sciences lessons in a quintile 1 primary school.

Parent information sheet

I, Mfundo Jabulani Msimango, am a registered Masters student at the University of Cape Town. One of the requirements of fulfilling this degree is to complete a research project. This study is based on understanding how learners learn using a visual, verbal, written and gestural techniques of communication that educators in grade 5 employ to mediate subject content in IsiZulu, English and Natural Sciences lessons in a quintile 1 primary school in KwaZulu-Natal. This study aims to give an overarching analysis of the usage of language/s and how learners read and write in IsiZulu, English and Natural sciences in grade 5 in quintile one primary school. Most importantly, this study aims to understand how isiZulu home language and English first additional language subjects prepare/impede learners to grapple and cope with the technical concepts found in a content subject, preferably “Natural sciences”. In addition, this research then seeks to understand how educators employ various reading strategies to simplify the learning and assessment materials that are written in English only. During the observation period, I will video-record your child, take his/her notebook and workbook photographs during the class lesson and I will also audio record your child during interviews.

For this research to be possible and complete, I request your permission to allow your child to participate in this study. I wish to inform you that any information shared among myself, teacher and learners will be kept strictly confidential. The anonymity of the school, teachers and learners is guaranteed. Your child’s participation is voluntary and you can decide to withdraw them from the research at any time.

Please fill in and sign the consent form. You are welcome to ask any questions regarding this research by telephone and email to mfundojabulanimsimango@gmail.com and on 065 987 4670.

Yours sincerely,

Mfundo Jabulani Msimango

Appendix 5: Principal information letter

A comparative case study of the semiotic modes of communication and their role in the mediation of literacy skills/practices in grade 5 isiZulu, English and Natural Sciences lessons in a quintile 1 primary school.

Principal information sheet

Dear Mr/Ms

I, Mfundo Jabulani Msimango, am a registered master's student at the University of Cape Town. One of the requirements of fulfilling this degree is to complete a research project. For this to be possible, I request your permission to carry out research at your school. This study is based on understanding how learners learn using a visual, verbal, written and gestural techniques of communication that educators in grade 5 employ to mediate subject content in IsiZulu, English and Natural Sciences lessons in a quintile 1 primary school in KwaZulu-Natal. This study aims to give an overarching analysis of the usage of language/s and how learners read and write in IsiZulu, English and Natural sciences in grade 5 in quintile one primary school. Most importantly, this study aims to understand how isiZulu home language and English first additional language subjects prepare/impede learners to grapple and cope with the technical concepts found in a content subject, preferably "Natural sciences". In addition, this research then seeks to understand how educators employ various reading strategies to simplify the learning and assessment materials that are written in English only.

For this research to be possible and complete, it requires the participation of 3 teachers and Grade 5 learners who are under your supervision. I wish to inform you that any information shared among myself, teacher and learners will be kept strictly confidential. The anonymity of the school, teachers and learners is guaranteed.

Please fill in and sign the consent form. You are welcome to ask any questions regarding this research by telephone and email to mfundojabulanimsimango@gmail.com and on 065 987 4670.

Yours sincerely,

Mfundo Jabulani Msimango

Appendix 6: Teacher information letter

A comparative case study of the semiotic modes of communication and their role in the mediation of literacy skills/practices in grade 5 isiZulu, English and Natural Sciences lessons in a quintile 1 primary school.

Teacher information sheet

Dear Mr/Ms _____

I, Mfundo Jabulani Msimango, am a registered master's student at the University of Cape Town. One of the requirements of fulfilling this degree is to complete a research project. For this to be possible, I request your permission to carry out research on how your child learn using various modes or ways of constructing meaning in 5 isiZulu, English, and Natural Sciences lessons.

This study is premised on and concerned with understanding the various ways and linguistic strategies that educators in grade 5 employ to teach learners in IsiZulu, English and Natural Sciences lessons in a quintile 1 primary school in KwaZulu-Natal. This study aims to give an overarching analysis of how learners learn in IsiZulu, English and Natural sciences in grade 5 in quintile one primary school. It aims to understand how grade five bi/multilingual pupils in the classroom grapple with different subjects task with regards to classroom participation and academic performance. Most importantly, this study aims to understand how isiZulu home language and English first additional language subjects prepare/impede learners to grapple and cope with the technical concepts found in a content subject, preferably "Natural sciences". In addition, this research then seeks to understand how educators employ various reading strategies to simplify the learning and assessment materials that are written in English only.

Data collection will be in the form of classroom observations over the period of 8 weeks. During this 8-week period, I hope to attend school and observe the class lessons on a daily basis (Monday to Friday). The observation period will start from the 15th of March 2021 to 20th of May 2021. I will observe how learners learn in the classroom during teaching and learning, through the use of video recordings, audio recording, and transcribing notes (including taking pictures of learning and teaching materials). Towards the end of the observation period, I hope to interview you (and audio record you throughout the interview), provided you give consent. This will help to pursue important details of literacy that might be missed during the observation period. I wish to collect learner's written text and worksheets.

Your participation in this research is voluntary and any information shared among you and myself will be kept strictly confidential. The anonymity of the school, teachers and learners is guaranteed. Learners' and educators' names will be replaced with false names and pseudonyms. This will help maintain privacy. You are free to withdraw your participation to the research, any time you feel like it.

Please fill in and sign the consent form to record your decision. You are welcome to ask any questions regarding this research by telephone and email to Mfundo Jabulani Msimango and on 065 987 4670.

Appendix 7: Learner consent form

Learner consent letter

A comparative case study of the semiotic modes of communication and their role in the mediation of literacy skills/practices in grade 5 isiZulu, English and Natural Sciences lessons in a quintile 1 primary school:

Name _____

Surname _____

Grade _____

I agree to	Yes	No
Being observed in the classroom		
Being video recorded in the classroom		
My notebooks and activity books to be observed		
Being interviewed		
Being Audio recorded during the interview		
My workbooks, worksheets and note-books to be photographed		

Appendix 8: Teacher consent form

Teacher consent form.

A comparative case study of the semiotic modes of communication and their role in the mediation of literacy skills/practices in grade 5 isiZulu, English and Natural Sciences lessons in a quintile 1 primary school.

Name: _____

Signature: _____

Date: _____

Data collection will be in the form of classroom observations over the period of 8 weeks. During this 8-week period, I hope to attend school and observe the class lessons on a daily basis (Monday to Friday). The observation period will start from the 15th of March 2021 to 20th of May 2021.

I agree to	YES	NO
1. Being observed in the classroom.		
2. Being video recorded in the classroom		
3. Being audiotaped working in the classroom.		
4. Assisting in the collection of classwork.		
5. Being interviewed.		
6. Audio-recording of the interview.		

I understand that my participation is voluntary, and that confidentiality will be maintained. I can withdraw at any time.

Appendix 9: Parent consent form

Parents consent forms

A comparative case study of the semiotic modes of communication and their role in the mediation of literacy skills/practices in grade 5 isiZulu, English and Natural Sciences lessons in a quintile 1 primary school.

Parent/guardian consent form.

This consent form is a form of request that you give permission for your child to be part of the research project. By giving consent, you allow your child to be involved in the following processes. Please indicate **Yes** where you give consent and **No** where you object.

I fully understand that my child can withdraw from the research project anytime.

Name _____

Surname _____

Signature _____

Date _____

I consent to	Yes	No
My child being observed in the classroom		
My child being video recorded in the classroom		
My child being audiotaped during the lessons		
My child's school material being used for research purposes		
My child being interviewed and recorded during the interviews		
My child being audio recorded whilst interviewed.		