

Article

The Constraints of Monolingual Language Policy and Heteroglossic Practices as a Vehicle for Linguistic Justice

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Abstract: This paper draws on conceptualisations of language as heteroglossic practices to examine how the experienced bilingual science teacher navigates between the monoglossic ideology that is embodied in the official Namibian Language in Education Policy (LiEP) within a linguistically constrained Namibian bilingual context. This paper aims to support recent research that challenges monolingual and monoglossic language practices, which tend to ignore the linguistic resources that children bring to the classroom. Data were collected from a classroom including video and audio recordings of lessons, field notes and photographs. The data were analysed through socio-cultural discourse and fine-grained multimodal analytical methods. The data findings illustrate the moment where the science teacher was constrained by English monolingual policy to mediate learners' access to science learning, and harnessed all linguistic resources that the learners bring to the classroom. Subsidiary to that, there were moments where the teacher worked flexibly across languages, discourses and modes to interrupt the monoglossic ideology that is embodied in the official Namibian Language in Education Policy (LiEP). The use of rich heteroglossic practices is a clear testimony to enhanced science meaning-making regardless of learners' 'limited proficiency in English. The findings highlight the need to support learners from linguistically diverse backgrounds through a deliberate inclusive language policy that harnesses the heteroglossic nature of communicative practices and prepares teachers for a multilingual reality.

Keywords: heteroglossic; meaning making; monolingual; multilingualism; bilingual



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1. Introduction

Namibia is typically a multilingual and multicultural nation comprising approximately thirty languages spoken, but the most widely spoken languages are Oshiwambo (49%), Khoekhoegowab (11%), Afrikaans (10%), Otjiherero (9%) and Kavango (9%). Oshiwambo is a language cluster that includes eight languages, namely Oshindonga, Oshikwanyama, Oshikwambi, Oshimbaanhu, Oshigandjera, Oshikolonkadi, Oshikwaludhi, and Oshiunda. Although the Namibian Constitution recognises all Namibian indigenous languages, it appears that almost all of these languages are still marginalised by monolingual education language policy and practices that still view languages as differentiated and capable of being placed in boxes (Makalela 2015). Ironically, despite the small percentage of Namibians who are English first-language speakers, English was chosen as the sole official language of the country, used in all of its formal domains. Prior to Namibian independence, only 0.8% of the Namibian population were English native speakers and merely 4% of people used English as a second language (Frydman 2011). Ideally, the impetus to choose English as the sole official language over other local Namibian languages was informed chiefly by the country's sociopolitical situation and the linguistic diversity at a time of the drafting of the constitution and during the formulation of the Language Policy (Frydman 2011). The choice of a Namibian local language was seen to cause ethnic conflicts and divisions, thus preventing social cohesion among Namibian ethnicities and polity groups (Frydman 2011; Brock-Utne and Holmarsdottir 2004). To date, the status of English as the sole official

language does not reflect the diversity of the Namibian population, which is primarily multilingual (Buschfeld and Kautzsch 2014).

The Namibian education system is found to be deeply rooted in a monolingual ideology that enforces a unitary language policy aimed at homogenising a linguistically diverse population. For instance, the Namibian post-apartheid Language in Education Policy (LiEP) prescribed, “named languages as unitary, stable objects, clearly differentiated from one another” (McKinney and Tyler 2019, p. 5). Following Namibian independence in 1990, the Namibian Ministry of Basic Education, Sport and Culture (MBESC 2003) adopted a language policy that specifies how language should be used and implemented in schools. For instance, the Language Policy for schools in Namibia (MBESC 2003, pp. 1–4) stipulates:

“The use of mother tongue or a predominant local language as medium of instruction in Grades 1–3 throughout formal education and English should be a compulsory subject starting in 1 Grade up to Grade 12. The wish by a school, school board and parents to offer English as medium of instruction from Grade 1 must receive ministerial approval with well-grounded, convincing motivation. Grade 4 will be a transitional year when the change to English as medium of instruction must take place in which mother tongue should be taught as a subject. National examinations from Grades 4–12 will be taken through the medium of English only, except for the mother tongue that is taken as a subject” ... “English will therefore be used in its official capacity as a medium of instruction and assessment throughout the education system in public schools as from Grade 4 onwards”. (MBESC 2003, pp. 3–4)

As is evident from the extract above, the Namibian LiEP draws sharp distinctions between the named languages. This policy emphasises the use of one named official standardised language as the sole medium of instruction (MOI), officially labelled such as ‘English or mother tongue instruction’ (Shohamy 2006, p. 77). This binary narrative of the ‘mother tongue instruction’ versus the ‘English medium of instruction’ within the LiEP continues to uphold the notion of the ‘single standard language’, and in doing so ignores the multiple varieties of linguistic resources and semiotic modes that are not being recognised in classroom discourse, learning materials, or in assessment (McKinney and Tyler 2019). Again, The LiEP continues its promotion of a monolingual language ideology, by stating that “only English should be used as medium of instruction from Grade 4 onwards, and examinations from Grades 4–12 will be taken solely in the medium of English” (MBESC 2003, p. 4).

The monolingual ideology that underpins Namibian official LiEP, has come under scrutiny from scholars who view it as instrumental in silencing the voices of learners in the classroom, and thereby constraining their voices from being heard (see Blommaert 2005) while promoting ‘epistemic injustice’ (see Fricker 2007) in which learners are positioned as monolingual beings, often labelled as deficient “English monolinguals” (Fricker 2007; McKinney and Tyler 2019). This very same positioning is also evident in the case of neighbouring South Africa, and is reflected in the “curricula, textbooks and assessments that are available in English only, and through official education department communications to schools that ask teachers to refrain from ‘code-21 switching’ in classrooms” (McKinney and Tyler 2019, p. 6). Thus, Namibia has an official monolingual language policy that continues to promote the notion of the ‘single standard language’ at the same time ignoring the multiple varieties of linguistic resources as well as the varieties of modes during the classroom discourse and also in materials development (McKinney and Tyler 2019). Therefore, the Namibian education system can be said to be failing to meet the needs and demands of learners who are not learning through their mother tongue in early grades and beyond.

The concern regarding the under-performance of bilingual learners in math and science subjects is very alarming in Namibia, as elsewhere in post-colonial African contexts. Specifically, the specifications on the role of the language varieties for learning is not being recognised in the school language policies nor in the teachers’ education training programs (Probyn 2015). Given the multilingual character of Namibian society, a sensitive, sustainable

approach to the linguistic situation in Namibian schooling is the highest priority for this study. This study investigates, through Bakhtin's heteroglossic perspective, multilingual language practices and language deployment within a Namibian grade 4 science bilingual classroom and their impacts on learners' conceptual understanding and meaning-making of science. The main goal of this study is to contribute to the paradigm shift from the current debates on what single named language, or which language, should be used as a medium of instruction in post-colonial contexts and to move towards heteroglossic practices which consider the multiple linguistic resources that the learners brought to the classroom as valuable resources for science teaching and learning. This study hopes to contribute to a better understanding of the linguistic challenges for emergent bilingual learners who are learning science in an unfamiliar language and how this problem might be mitigated by moving towards flexible innovative pedagogies that would enable them to access science learning.

2. Conceptual Framework: Heteroglossia and Translanguaging

While monoglossic ideologies position languages as separate codes, a heteroglossic view of language emphasises the plurality and diversity of languages, both within individuals and within communities. The idea that people draw from multiple linguistic features, voices and registers for meaning-making was developed from Bakhtin's concept of 'heteroglossia'. Bakhtin's theory focuses on the cultural dimensions of languages and discourses that are formed by multiple voices. His notions of 'heteroglossia' and 'multivoicedness' have more recently been associated with linguistic diversity (Busch 2011). Heteroglossia is a concept used to explain the coexistence of multiple discourses within a single linguistic code. According to the heteroglossic perspective, languages do not coexist peacefully, but in a constant state of competition. To address this dilemma and the tensions, and to unify the "verbal-ideological world", heteroglossia serves as a remedy to challenge the 'authoritarian word' and bring it back to dialogue (Bakhtin 1981, p. 270). Bakhtin defines heteroglossia in terms of the socio-ideological nature of language(s) and the variety of registers present in any social context or situation:

"At any given moment of its evolution, language is stratified not only into linguistic dialects in the strict sense of the word... but also—and for us this is the essential point—into languages that are socio-ideological: Languages of social groups, 'professional' and 'generic' languages, languages of generations, and so forth". (Bakhtin 1981, pp. 271–72)

For Bakhtin, the hybrid text, or utterances ("double-voicedness") challenge the tension that exists among the use of varieties of languages and/or registers. Bakhtin's (1981, p. 345) view that "every utterance is half-ours and half- someone else's" describes language as heterogeneous. The dynamic of heteroglossia addresses the many-voicedness of language within the discourse and a variety of ways of speaking in a social environment (Cohen et al. 2007). This includes the use of multiple registers, voices, and named languages or codes, and deals with the possibility of conflict between the various registers and voices (Bailey 2007). For instance, this tension and conflict can be found between the "national" languages and the "unofficial" language resources that can be from the different languages or within the same language. In the education context, and using Bakhtin's heteroglossia concept, McKinney (2017) argues that the heterogeneity of the use of language is not confined to the use of named languages, for example, a language officially labelled, such as English or Afrikaans, or mixing resources from different codes, but embraces a variety of voices, or registers, that can be used in and out of school, can be urban/rural hybrids, as well as spoken and written languages. This means that the use of heteroglossic practices deals with the movement across different languages, and across different registers or voices in one named language. This movement is referred to in sociolinguistics as code switching, defined as "the juxtaposition of elements from two or more languages or dialects" (McCormick 2001, p. 447), or the alternating use of two or more than one linguistic code in the same utterances (Lin 2007).

Moreover, Bakhtin's (1981) notion of heteroglossia challenges the dominance of one language in the context of multilingualism. Bakhtin was skeptical of the Saussurean structuralist separation of language into a *langue* that is concerned with a system of rules and the specification of each individual utterance, and *parole*, referring to language in use. He posits that language should be envisioned in the messiness of social interaction. Bakhtin used the analogy of centrifugal and centripetal forces to illustrate how language functions, equating monologic language with the former in referring to any language that functions as a sole unified language, and the latter, as resonating with heteroglossia, when language pulls in different directions. In other words, there are multiple ways of speaking in a social context. Bakhtin argues that social and linguistic communities are the avenues that are obstructed by these centripetal and centrifugal forces. Centripetal forces try to unite and establish one common language, seeing the speaker attempting to put all the language varieties into one single form or utterance. Monologic language functions according to the centripetal forces, where the emphasis is on one official and standardised language to be spoken by everyone. This suggests the "ways in which different resources are not equally valued or distributed, i.e., the stratification of linguistic resources as well as value in indexicality" (McKinney et al. 2015, p. 110). On the other hand, centripetal forces are the product of social and linguistic diversity and serve as the unifier of two or more languages to establish common understanding between speaker(s) and listener(s). These are the social languages that we speak: heteroglossia in Bakhtin's terms. In other words, centripetal forces pull towards a unified standardised variety while centrifugal forces pull towards diversity and variation; however, both forces are at work in social language.

2.1. Monolingualism and Heteroglossic Practices in Multilingual Classrooms

Critiquing the positioning of children from non-dominant groups as well as bilingual non-English native speakers as linguistically deficient, empirical studies call for the radical shift from the monolingual paradigm to that of heteroglossic practices (see Jørgensen 2005; García 2009; Canagarajah 2011, 2015; Wei 2011; McKinney 2017; McKinney and Tyler 2019) which is commonly referred to as the 'multilingual turn' (May 2013). Heteroglossia language policies enable teachers and learners to leverage and draw from their linguistic repertoires at their disposal as opposed to sticking to one language code (McKinney and Tyler 2019). Thus, the heteroglossic approach is particularly relevant to post-colonial Africa, where in the past native/indigenous languages were marginalised and oppressed, in favour of the European language of the minority (see García 2009). Despite the body of contemporary studies that advocate for recognition of the heteroglossic nature of language, the Namibian LiEP, assessment methods as well as teaching materials and textbooks are purely monolingual, treating languages as bounded entities. This phenomenon of the monoglossic approach can have a profound effect on deterring learners from active classroom participation and eventually denying them access to quality education (McKinney et al. 2015).

2.2. Translanguaging

The critique of a monolingual language policy for schooling, that entails the relegation of native languages in favour of one language policy, along with the negative effect it has on learners' perception of themselves as "knowers" due to being silenced, has given rise to recent studies that push for innovative multilingual approaches to learning (see Blackledge and Creese 2010). These innovations are being pushed so as to question the strict separation of languages in classrooms where learners and teachers are bilingual, instead calling for the practice of 'translanguaging' and to include other semiotic modes, e.g., (García and Wei 2014; Canagarajah 2015; Tyler 2016; Wei and Lin 2019). A common orientation within this innovative body of research is to embrace and use multiple languages and modes productively, and not as barriers to learning, and to challenge the deficit perspectives that regards bi/multilingual learners as less capable of learning the subject-specific content. For this reason, the concept of translanguaging has become more prominent in the field of

applied linguistics. The translanguaging concept has been taken up and extended further by many scholars to explain the use of language, not as discrete skills or a system defined by boundaries or codes, but as dynamic and fluid linguistic repertoires (see [Canagarajah 2011](#); [García and Wei 2014](#); [Blackledge and Creese 2017](#); [Wei and Lin 2019](#)).

Furthermore, the alternative translanguaging pedagogy approach in the multilingual context for language or subject teaching and learning was developed to explain the linguistic practices that are leveraged by bilingual speakers for different purposes in the education context (see [Blackledge and Creese 2010](#); [Canagarajah 2011](#); [García 2011](#); [Probyn 2015](#); [Kleyn and García 2019](#)). Classroom translanguaging has been widely studied as new flexible pedagogical practice that can be restructured in the bilingual classrooms for inclusivity of the emergent bilingual students' language practices, while at the same time supporting them to acquire competencies in the English language. From translanguaging perspectives, "the meaning of the message is not clear without both (ALL) languages" ([Blackledge and Creese 2010](#), p. 108). [Probyn \(2015\)](#) also writes about "pedagogical translanguaging" emphasising how multiple language resources are deliberately used to mediate learning. According to Probyn, pedagogic translanguaging is especially useful to researchers to examine how classroom practices might be structured to afford learners with opportunities to learn effectively. Creating spaces for such translanguaging to support learning is therefore an act of transformative education in which the teachers "challenge the operation of coercive relations of power in the wider society" ([García 2009](#), p. 318) in order to apply more equitable education practices for all learners. In the same vein, the use of translanguaging practices in the context of multilingual education, has yielded positive results in terms of academic achievements ([Rabidge 2020](#)).

3. Methodology

This study is an exploratory, qualitative investigation of English-only policy and its consequences for mediating meaningful engagement and understanding of science content in a Grade 4 bilingual classroom. Qualitative case study methods were considered to be suitable for this study to investigate the phenomenon in depth and within its real-life context and relies on multiple sources of evidence ([Yin 2009](#), p. 18). This methodology would, I hoped, give me a detailed insight to describing phenomena of heteroglossic and translanguaging practices which occurred in English medium bilingual science classes and assessing the affordances and/or constraints for learning science. I chose to study one class bilingual Grade 4 science class and its natural science teacher. This provided me with a bounded contemporary phenomenon, which defines a case study ([Knobel and Lankshear 1999](#)).

3.1. Context of the Study

The study takes place in a bilingual township primary school (Grades 0–7) that I will refer to as 'Grace Primary School' (pseudonym) where English is used officially as a medium of instruction from Grade 4–7 while Oshiwambo is used as a medium of instruction from Grade 0–3. This school is in a 'disadvantaged' historically poor background in a predominantly Oshiwambo-speaking township community with few other speakers of different Namibian languages. The disadvantaged schools in the Namibian context refer to black schools that were severely under-funded during the colonial era. The school is situated in the Northern part of Namibia, in the Oshana Region, about 750 km away from the capital city of Windhoek, and teachers and learners in this school share a common home language of Oshiwambo. The school was selected as a subject of this study because it has been extensively reported by previous scholars (see [Hardman 2005](#); [Fleisch 2008](#)) that schools that are located in impoverished disadvantaged areas are prone to poor performance in math and science subjects. As reflected in regional standardised test scores, the school under investigation was ranked as 31 out of 35 schools in the regional schools performance report, compared to other local schools in 4 December 2014 and yet it did not improve in 2017 (Oshana Region School performances Statistics reports, 2014–2017).

3.2. *The Research Participants*

The participants for this study were the natural science teacher, Mr. Shilumba (pseudonym), and his fourth-grade learners. The pseudonyms chosen are ethnically and culturally distinctive.

3.2.1. *The Science Teacher*

Mr. Shilumba was 49 years old at the time of data collection. He holds the degree of Bachelor of Education, specialising in math and science teaching. He also has 16 years' experience teaching science at primary school level, of which eight years are at Grace Primary School. He speaks four languages, of which Oshiwambo is his native tongue. Mr. Shilumba was recommended to me by the science subject advisor, who described him as a passionate and excellent teacher in the junior primary phase.

3.2.2. *The Fourth-Grade Learners*

The Grade 4b entire bilingual class, the subject of this study, consisted of 38 emerging bilingual learners—23 girls and 15 boys—all of whom are native Oshiwambo speakers with limited proficiency in English language. All learners agreed to participate in this study. I chose to observe a Grade 4 science class because it is a critical year linguistically. In Grade 4, learners switch from Oshiwambo as the MOI to English as their MOI for the remainder of their primary schooling. In Namibia, like elsewhere in Africa, Grade 4 is a critical phase in which learners are transitioned abruptly from more concrete thinking into a more abstract thinking.

3.3. *Data Collection and Analysis*

Data were collected by the author over a consecutive period of four weeks in 2021 observing the classroom discourse five days per week. I joined the Grade 4b Natural Science class as a non-participant observer taking field notes and video- and audio-recording, and I sought to avoid interfering directly with the learners' and teachers' actions. For this study, the classroom observations were the main source of data collection. To facilitate the correct interpretation of the data collection, the author was present in the classroom during the recordings, observing learners' actions at large and taking notes of what occurred. As this study takes a multi-modal approach to meaning-making in science teaching and learning, the data collection methods required a focus to be paid on all modes used in the classroom. The data collection has addressed the ethical considerations and the permissions required to film learners in classroom situations. The teacher, the learners and their parents/guardians were all informed about the study and about participation being voluntary. Initial contact with parents was established by sending a consent form that informed them about the research project, the nature of their children's participation, how confidentiality would be ensured, and the risks and benefits of their participation. This consent form also established that participation in the project was voluntary, and that they or their children could decide to stop participating in the project at any time. Learners', whose parents authorised them to participate, were asked to sign an assent form that provided the same information that parents received in a child-friendly manner.

The videos recorded lessons were analyzed drawing on conversation analysis (CA) and multimodal discourse analysis (MMDA) for classroom data to ensure a fine-grained analysis (Tang et al. 2014). MMDA is a perspective that encompasses a diverse range of approaches to analyse how participants produce meaning through the use of different semiotic modes in the course of teaching and learning (Bezemer and Kress 2016). In Set's (2021) view, the identifications of each specific mode in the transcript were useful to see the affordances of each mode for science meaning-making. On one hand, CA was used as an analytic lens to unveil how heteroglossic and translanguaging practices were used as an interactional tool to accomplish particular purposes such as performing their bilingualism and engaging in meaningful talk about the science content being taught.

4. Findings

4.1. The Constraints of English Monolingual Policy on Heteroglossic Practices

In the following examples, I illustrate the contradictions of heteroglossic, multimodal classroom discourses and monolingual language and their consequences for mediating meaningful engagement and understanding of science ideas in a Grade 4 Namibian bilingual Oshiwambo/English classroom. Data analysis focuses on the classroom discourse relating to the conceptually demanding science topic of the process of photosynthesis in the natural science classroom.

Table 1 below is from a whole class question and answer session during the review stage of a continuing lesson about the structure of plants. Learners were required to present the knowledge they have learned from the current and previous lesson presentations. Mr. Shilumba (pseudonyms) began the lesson by recapping the lesson contents of the previous day, conducting this review within the framework of ‘Triadic Dialogue’ (Lemke 1990).

Table 1. The classroom discourse representation of English as MoI inhibiting bilingual learners from learning new science content.

Turns	Actor/Action	Speech	Moves	Act
1	Mr. S	The vertebrates are animals that have a ba...?	I	Initiation CQ
2	Ss: Prolonged silence			
3	Mr. S	The vertebrates are animals that have got what?	I	Initiation CQ
4	Ss: Silent			
5	Mr. S	The vertebrates are animals that that have the backbone. All animals that have the backbone are called vertebrates	F	Provided an answer
6	Mr. S	And the invertebrate animals; are animals that do not have what?	I	Initiation CQ
7	Ss: Silent			
8	Mr. S	That do not have bones.	F	Provided an answer.
9	SS: Not paying attention; some are lying on their tables			
10	Mr. S	T: <i>Opena oinamwenyo imwe ina ekipa lokombuda; opena imwe kaina shike</i> [There are animals with backbones and there are also animals without what?]	I	Initiation CQ
11	SS: Shouting	<i>ekipa lombuda</i> [a backbone]	R	One-word answer
12	Mr. S	Okay, that do not have the backbones	F	Teacher restates
13	Mr. S	Can you mention any animals that do not have the backbones	I	Initiation CQ
14	SS: Silent; and some learners are looking away			
15	Mr. S	Animal you can remember with a backbone.	I	Initiation CQ
16	S: shouting	Goats!	R	One-word answer
17	Mr. S	Goat, yes	F	restates and evaluate
18	Mr. S: Nominating another learner	What else, yes?	I	Initiation CQ
19	S	Dog	R	One-word answer

Table 1. *Cont.*

Turns	Actor/Action	Speech	Moves	Act
20	Mr. S	Dog, yes!	F	restates and evaluate
21	Mr. S	Give me an example of animals without the backbones?	I	Initiation CQ
22	SS: Silent			
23	Mr. S	<i>Popya oinamwenyo kaina ekipa lopombuda</i> [mention any animals without the backbones?]	I	Initiation CQ
24	S: Shouting	Snake!	R	One-word answer
25	Mr. S	Does the snake have a backbone or not?	I	Ignore and Initiate
26	SS: Shouting	Yes/No!	R	One-word answer
27	Mr. S	<i>Kali nasha</i> [does it have]?	I	Initiation CQ
28	SS: Shouting	<i>Aaye; olina; kali na</i> [yes it has, no it does not have]!	R	One-word answers
29	Mr. S	When we say, hit the snake on its back; why do you hit it there?	I	Ignore and initiate
30	Ss: Prolonged silence			

Key codes used: I = Initiation; R = Response; F: Feedback; CQ = Closed question.

The discourse patterns in this teaching episode demonstrate the teacher-fronted talk, combined with the dominant patterns of IRF interactions. We can see the teacher’s preferences of asking questions that are not meant to probe learners’ understanding or to elaborate on their ideas (CQ). For instance, the questions in turns 1, 3, 6, 10, 15, 18 and 20 are designed to elicit a quick one-word response or correct phrases in order to cover the science topics within the given time. We can see how learners’ responses were generally limited to brief or one- or two-word answers, or chorused (equally brief), formulaic responses. For example, Mr. Shilumba asked learners the closed question (in turn 1), “the vertebrates are animals that have a...”. This question offered learners only one option where they are expected to reply with a specific word immediately without being able to justify their answers. The fact that the content is new to these learners and, possibly, their limited English language proficiency, may explain why they did not raise their hands to respond. Instead, learners remained silent for a while. Mr. Shilumba then repeated the same question (in turn 3), yet none of the learners volunteered a response. In some instances, the teacher responded to his own questions (turns 5 and 8). Though the exposition of the lessons appeared to be in the form of initiation, response and feedback (IRF) moves, in fact the teacher occupied both I and R moves. There is a clear representation of English as a MoI inhibiting learners to respond to the English questions.

It is important to note here that the use of English to formulate the elicitation in most of the turns resulted in learners’ prolonged silence. For instance, in turn 29, he asked a question; “when they say; hit the snake on its back; why do you hit there”; this question was followed by prolonged silence (turn 30); an indication of their inability to reply in English. These factors might explain why the teacher resorted to monologues, and to the learners’ inability to produce extended talk during the lessons. It is clear that the learners’ responses were far from those that would possibly communicate science meaning as occurs in turns 11, 16, 19, 24 and 26. Although the teacher poses some questions in Oshiwambo, learners still resort to one-word answers or sometimes to prolonged silence. Due to the constraints of monolingual policy, in this episode learners had little or no opportunity to initiate their own idea and they have no control over the direction of the classroom discussion or counter on the teacher’s prerogatives ‘Triadic dialogue’ (Lemke 1990). In this respect, the teacher is not creating a dialogic ethos in the classroom to enhance learners’ classroom participations (Littleton and Mercer 2013).

4.2. Resisting and Transform Monolingual Policies by Means of Heteroglossic Practices

The second episode (Table 2) exemplifies how the science teacher resisted and transformed monolingual policy by engaging in heteroglossic practices to mediate learners' access to science knowledge, hence, supporting the content learning and language development of the emerging bilingual learners. This was achieved chiefly by integrating the mediational tools such as: multiple linguistic repertoires complemented by semiotic resources (e.g., gestures, and actions, physical movement artefacts demonstrations, written discourse) as well switching between every day and science register, and oral reflections on what was learned. Data analysis focuses on the classroom discourse relating to the conceptually demanding science unit on the nervous system.

Table 2. The classroom discourse exemplify how the teacher resisted and transformed monolingual policy by engaging in heteroglossic and translanguaging practices.

Turns	Actor/Action	Speech	Translation and Images
1	Mr. S	Can you guys show me where your backbone is?	
2	Ss: Prolonged silence		
3	Mr. S: Using his hand gesture to point to his backbone	<i>Obackbone oyeyi ngaha apa,</i> That line on the back is very important, because it is there to send SMS to the brain. <i>Okaline kokombunda, okohakalongo</i> of sending messages	This is the backbone here. That line on the back it's the one that serves functions
4	Ss: Paying no attention, while the teacher is busy explaining		
5	Mr. S	<i>Omuuditeko</i>	Do you understand?
6	Ss: shouting	<i>Eee/aaye</i>	Yes/No!
7	Mr. S: demonstrating by holding a learner's hand Pulling the learner's hand backward	<i>Paife ngee onda kufa onyala yoye ndee handii tula momundilo, ngaha</i> Your hand moves away quickly before you even feel the pain	If I take your hand now like this and I put it on the fire
8	Ss: Learners looking at the teacher while doing the action, and listen attentively		
9	Mr. S	You will see that the spinal cord will send the message and to alert your brain that you are burning. <i>Ospinal cord yoye otai tumu etumwalaka didvadiwa ukufemo onyala yoye momundilo</i>	your spinal cord will send a message to remove your hand from the fire]
10	Ss: Listening very attentively and looking straight to the teacher while he is using the gesturers to show how the spinal cord works		
11	Mr. S Speaking in a very slow voice while emphasising the ideas and writing the key ideas as he speaks on the black board.	This the nervous system I'm talking about, the central nervous system consists of the brain and spinal. <i>Onervous system ohailongo nokutuma omwatumwalaka, yoo oina nee oitukulwa ngaashi ouluwi nospinal cord, spinal oyo haitumu omwatumwalaka molutu yaukifa kouluvi, omega ouluvo owo hau kwatele komesho omainyengo olutu, okufuda, okupoya, okukudilaadila nomaliudo aeshe.</i> In other words, (...), the nervous system is a system in the body which deals with the transmissions or sending the signals around the body.	The nervous system works with sending the messages around the body, and it consists of the main organs such as brain and the spinal cord. We have the spinal cord that carry messages from the body to the brain. While the brain controls everything you do, movements, speech, breathing, feelings and thought.

Mr. Shilumba tries to support his learners to understand how the function of the nervous system works, as this concept is particularly challenging to be explained in abstract terms (interview field notes data, 22 June 2018). In this instance, Mr. Shilumba's verbal explanations of the nervous system was supplemented with the representational action gestures to demonstrate how the central nervous system works (see Figure 1 below).



Figure 1. The Teacher's demonstration of how the central nervous system works.

The representational mode of the action gestures was used here for the act of modelling, to see how the central nervous system (the spinal cord and the brain) cooperates (turn 29). For instance, Mr. Shilumba first moves toward a learner, and he holds the learner's right hand and starts moving it down as an action of pretending to place the hand on the fire. Conversely, when Mr. Shilumba holds a learner's hand, it might give the learner a sense of belonging and to feel appreciated as well. Then, Mr. Shilumba pulls back a learner's hand extremely fast to demonstrate how the nerves simultaneously send the signals of pain; thereby, alerting the hand to move away from the danger. Of significance here, the teacher embedded a physical action and the body movement involving a physical action of demonstrating how the process of sending the pain signals occurs so fast before the message reaches the brain. While using the representations of this gestural action, the teacher simultaneously narrates how the whole process works using both English and Oshiwambo (turn 7). From learners' facial expressions and their body language, this demonstration appeared to impact positively on the learners' conceptual understanding. The inclusion of the action gestures in the demonstration might have facilitated learners' understandings of the scientific idea of the central nervous system. Without an inclusion of this series of movements, coupled with the example of the heat of the fire and the use of Oshiwambo in Mr. Shilumba's explanations, it would be more difficult for these learners to know exactly how the nervous system works. From Figure 1, we can see clearly how Mr. Shilumba tries to include all of the learners in his lesson presentation. As we can see from his body position, his actions are directed toward the learners and he is not trying to individualise his explanation with the child he is demonstrating with. In return, one can see from the learners' physical reaction through eye gaze (see Figure 1), which suggests that the teacher's demonstrations and explanations were successful. This is also an indication that Mr. Shilumba's clarifications of how the nervous system works has captured his learners' attention and possibly increased their understanding of the scientific ideas of the nervous system.

Mr. Shilumba modelled the bridging discourses between Oshiwambo and English language, and he also used register-switching between science and everyday vocabularies while discussing the science concepts and the terminologies that are part of the nervous system. For instance, in turn 11, he started his statement in English to highlight how the nervous system works. He then switched to an everyday register while using Oshiwambo and explains that; *“Onervous system ohailongo nokutuma omwatumwalaka, yoo oina nee oitukulwa ngaashi ouluvi nospinal cord, spinal oyo haitumu omwatumwalaka molutu yaukifa kouluvi, omega ouluvo owo hau kwatele komesho omainyengo olutu, okufuda, okupoya, okukudilaadila nomaliudo aeshe”* [The nervous system works with transmission of the messages around the body, and it consists of the main organs such as the brain and the spinal cord. We have the spinal cord that carries messages from the body to the brain and we have the brain that controls everything you do, movements, speech, breathing, feelings and thought]. Here again, Mr. Shilumba highlights the key ideas of the nervous system by uttering his words at a slow pace, adding emphasis through an appropriate intonation to ensure that all learners hear and understand what he is emphasising.

Mr. Shilumba continues by using the specific scientific registers in English when he says, “in other words, the nervous system is a system in the body which deals with the transmissions or sending the signals around the body” (turn 11). This explanation can be identified as a register for science and hence it embodied the features of the technical vocabularies as well as the use of nominalisations (i.e., transmissions). What is striking here is that learners needed to know the registers of science in English which they would eventually use to solve the problem in future, particularly in their science written assessments. There is a remarkable switching back and forth between everyday register and the science register, as well as switching between English language and Oshiwambo, whilst also using longer phrases in both languages. Learners are being exposed to how to bridge from their familiar everyday knowledge and language into their unfamiliar science knowledge and language and thereby, having a greater chance of learning how ‘to talk science’ (Lemke 1990). Gibbons calls this kind of pedagogy practice as “seamless shifting between discourses register-meshing” (Gibbons 2006, p. 131). She stresses that that this type of shifting impacts positively on learners to comprehend the new science language and terminologies.

The teacher further consolidated his scientific explanation through writing key ideas on the board, so as to make the written representations available to all learners (turn 11). Additionally, after the lesson presentations learners were given the opportunity to copy the board notes into their summary books. Here, the discourse of the written mode of science is added to the classroom repertoire. In this respect, the teacher gradually moves the classroom discourse toward a ‘more subject-specific discourse’ (Gibbons 2006). This kind of shifting might create a path for learners’ ability “to move from personal, everyday ways of making meanings toward the socially shared and more written like discourses of specific disciplines” (Gibbons 2003, p. 253). Mr. Shilumba has demonstrated the skill of ‘bridging discourse’ across modes, discourses, and languages though he was constrained by monoglossic policy that authorised one language to be used at a time. The shifting between English and Oshiwambo enabled him to support his learners to gain deeper understanding of the scientific ideas that would have been impossible, had he used English only.

4.3. Findings

This analysis demonstrated that the classroom interactions varied because of the different forms of instruction the teacher employed to support the construction of science knowledge during the science lessons. The analysis revealed both moments where learners seemed to engage in meaning-making and develop their understanding as well as those moments where meaning-making was unsuccessful.

As the analysis unfolded, it became evident that the Namibian curricular and instructional design did not necessarily address the linguistic challenges that the emergent bilingual learners encounter daily in the course of their learning. The data presented here also revealed that the classroom discourse dominated teacher’s long monologues

following the patterns of initiation–response–feedback (IRF, e.g., [Mehan 1979](#)) made up of teacher explanation and question-and-answer sequences in which the teachers maintained tight control to ensure curriculum coverage in given time. However, the discourse rules being imposed by the teacher, as indicated in the data, might not allow learners sufficient opportunities to engage in discourse that could be considered as the result of scientific thinking. It is the English MoI that proved challenging for the learners to engage in science learning, turning them into passive recipients of the science knowledge. This implies that the struggle to break away from rote learning towards conceptual understanding through exploratory talk remains elusive for emergent bilingual learners.

At other times, however, the data show that Mr. Shilumba creatively leveraged his instructional practices to support his learners in developing their understandings of the scientific process of the nervous system with its attendant concepts. This was achieved chiefly by integrating the mediational tools such as: multiple linguistic repertoires complemented by semiotic resources (e.g., gestures, and actions, physical movement artefacts demonstrations, written discourse) as well switching between every day and science register and oral reflections on what was learned. This deployment negotiated and contested a monolingual language ideology. This may have pedagogical implications for primary school science teachers in striving to diversify their instructions when mediating the scientific concepts to their emergent bilingual learners in the linguistically constrained educational settings. This is because successful science teaching requires considerations of learners' developmental levels as well as a well-planned heteroglossic practices that should be used deliberately to reinforce conceptual understandings. The data presented here resonates with the study of [Tyler \(2016\)](#), who made a similar observation of teachers shifting between the discourses and the modes to support learners accessing mathematics knowledge in the South African rural bilingual secondary school context.

The fact that the teacher comes from the same cultural and linguistic background as his learners enabled him to bridge between Oshiwambo and English language back and forth with ease. This shifting demonstrates a 'journey' between Oshiwambo and English, and between everyday language and the science discourse, as termed by [Setati et al. \(2002\)](#), and consequently, brings the notion of 'pedagogic translanguaging' ([Probyn 2015](#)) into play. The complementary use of a range of modes, registers and languages in this episode might reinforce learners' possibilities to construct the scientific meaning of the nervous system. At this stage, the switching might be an ideal time for the learners to appropriate the written science discourse, as opposed to waiting until the whole unit is being covered. Also, notable here is how meanings are made and distributed by the teacher through the 'repertoires of linguistic resources' not merely accomplished by the spoken language, but rather through the broader use of a repertoire of semiotic resources ([Canagarajah 2013](#)).

5. Conclusions

The overarching aim of this study was to develop a better understanding of the discourse strategies employed by a natural science teacher and his grade 4 learners as they engaged in various science activities within the constraints of the monolingual English-only policy. The results of this study highlighted how the English-only policy can be detrimental to science content learning in a bilingual science class. It is the English MoI that proved challenging for the learners to engage in science learning, turning them into passive recipients of the science knowledge. At other times however, the data show how the teacher creatively leveraged his instructional practices to support his learners in developing their understandings the subject matter by using heteroglossic and translanguaging practices. In general, the science teacher resisted the monoglossic language approach sanctioned by the school's language policy by integrating multiple linguistic repertoires complemented by semiotic resources as well switching between every day and science register. This practice implies that heteroglossic and translanguaging practices have a potential to address the current challenges of teaching science content through the English medium in Namibia's multilingual schools. To this end, this study suggests for a deliberate use of heteroglossic

multilingual education that harness all linguistic recourses that bilingual learners bring to school, which according to García (2009, p. 8) needs to be “adaptive, able to expand and contract, as the communicative situations shift and as the terrain changes”. Further research is required to come up with deliberate interventions in research to elicit further the efficacies of multilingual and multimodal approaches to science teaching in the multiple-grade levels and in multiple settings where English is used as the MOI.

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