

**AN INVESTIGATION INTO THE PREVALENCE AND USE OF CODE SWITCHING
PRACTICES IN GRADE 8 MATHEMATICS CLASSROOMS IN THE OHANGWENA
REGION OF NAMIBIA: A CASE STUDY.**

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By

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DECLARATION OF ORIGINALITY

I, **Julia N. Shilamba (Student number: 09S6497)** declare that this thesis *An investigation into the prevalence and use of code switching practices in Grade 8 mathematics classrooms in the Ohangwena region of Namibia: A case study* is my own work written in my own words. Where I have drawn on the words or ideas of others, these have been acknowledged using the reference practices according to the Rhodes University Education Department Guide to Referencing.

Julia N. Shilamba

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ABSTRACT

This research report focuses on an investigation of the prevalence and nature of code switching practices in grade 8 mathematics classrooms in the Ohangwena region of Namibia. The existence of code switching in these classrooms was established by administering a survey to all grade 8 teachers in the region, while the nature of these practices was explored by interviewing and observing selected teachers using a case study research methodology.

The data from the survey was analysed quantitatively using descriptive statistics, while the qualitative data from the case study which comprised of audio and video transcripts was analysed within the framework of Probyn's (2006) code switching categories. These categories looked at code switching in terms of: explaining concepts; clarifying statements or questions; emphasising points; making connections with learners' own contexts and experiences; maintaining the learners' attention with question tags; classroom management and maintaining discipline; and affective purposes.

The study found that code switching is widespread in most of the grade 8 mathematics classrooms in the Ohangwena region. It also revealed that the teachers' code switching practices aligned well with most of Probyn's framework. The criterion of maintaining learner's attention with question tags was however not found in this study. The results of the study showed that teachers code switch because the majority of the learners' language proficiency is not good. Code switching is mostly used as a strategy to support and promote learners understanding in mathematics. The study recommends that it is high time that code switching is acknowledged as a legitimate practice and recognised as an important and meaningful teaching strategy to assist learners who are learning mathematics in their second language. Code switching needs to be de-stigmatised and teachers should be supported in using this practice effectively and efficiently.

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DEDICATION

This thesis is dedicated to my beloved mom Matilde Shiviya, dad Werner Shilamba, brothers and sisters for being my source of inspiration.

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CHAPTER ONE

INTRODUCTION

1.1. INTRODUCTION

This study was carried out in order to investigate the prevalence and practice of code switching in grade 8 mathematics classroom in the Ohangwena region of Namibia. In this chapter I present the introduction to my study by looking at the following aspects: the background of the study, the context of the research, goals, methodology, findings, and significance of the research. It concludes by giving a brief overview of the study.

1.2. BACKGROUND OF THE STUDY

My own experience as a mathematics teacher inspired me to undertake this study. As a teacher teaching in the rural part of Namibia where learners have little exposure to the English language, and many of them do not have good language proficiency in English, I am constantly faced with a dilemma when it comes to my own teaching practice, and what the official language policy says about the language of instruction. I teach learners in English as the policy demands, but I occasionally switch to the learners' mother tongue when the need arises. This has been the reality of my lessons ever since I started teaching.

Being a grade 5 teacher, where the official policy allows for mother tongue to be used for support purposes, I became used to code switching and I have never regarded it as a bad practice. I saw code switching rather as a supportive strategy used in order to assist my learners to understand the content of the lesson and thus perform better.

1.3. RATIONALE

The rationale behind this study is to bring to the fore the practice of code switching that is prevalent in many schools in Namibia. In Namibian schools where a common home language is shared by learners and teachers, it is very common for code switching to occur in the classroom. Many teachers however regard this practice as illegitimate and shy away from talking about it.

The feeling is that code switching is stigmatized and so they do not reveal freely that they make use of this practice in their classroom. I feel that it is important to engage critically with this practice in order for teachers to share ideas on why they use it and how they use it. This will help to de-stigmatize the practice and provide guidelines on how to use it effectively thereby enhancing the teaching and learning process.

1.4. CONTEXT OF THE RESEARCH

Namibia is a multicultural and multilingual country with the majority of the population speaking one or more of the seven African languages. A small minority speaks English and other foreign languages. After independence in 1990, English was chosen as the official language and the language of instruction in all school. Although it is only the home language of less than 0,8% (Namibia. Ministry of Education and Culture [MEC], 1993) of the population, English was chosen because of social, economic and political reasons (Probyn, 2006).

The National Curriculum for 2010, as well as the Language policy of Namibia (Namibia. Ministry Basic Education, Sports and culture [MBESC], 2003) stipulates that learners should learn in their mother tongue during the first 3 years of schooling. In grade 4, the shift is made from mother tongue instruction to English as a medium of instruction. In grades 5-7 the medium of instruction is English with a little mother tongue support, while in grades 8-12, the medium of instruction is entirely in English. The rationale of the policy is that by the end of their seven years of schooling learners will be sufficiently linguistically proficient to be able to handle the demands of the various school subjects' contents in English (Namibia. Ministry of Education [MOE], 2009). However, this is not always the case. There is a widespread perception that learners come to the secondary school phase (grade 8) with poor proficiency in English.

Looking at the results of the national standardised tests carried out in grades 5-7 in English, Mathematics and Science, the Namibian learners are performing poorly, particularly in English and Mathematics (Sasman, 2011). This is one of the reasons that by the time they enter grade 8 learners are not adequately equipped to handle the subject content in English as intended. It is asserted that an inadequate command of English is one of the major factors contributing to the poor performance in mathematics in the grades 10 and 12 national examinations (Wolfaardt, 2005). The examiner reports regularly comment on this issue (Wolfaardt, 2005). This, in my

view is a clear indication that language plays a major role as one of the barriers to the teaching and learning of mathematics in Namibia.

Mathematics teachers are faced with the interesting challenge of teaching both language and mathematics content (Setati, 1998). Bose and Choudhury (2010) express the view that language plays a vital role in thinking, learning and teaching. The role of mathematics teachers in Namibia is thus a complex one as they are expected to devise innovative teaching activities and make use of effective teaching strategies in a context that demands high quality content teaching, and at the same time be sensitive to multilingual dynamics. In multilingual schools and classrooms in Namibia where learners and teachers share a common mother tongue, it is likely that communication will occur in both English and mother tongue – a practice known as code switching.

According to (Setati, 1998, p. 34) code switching is the use of more than one language in a single speech in a multilingual context (Setati, 1998, p. 35). Planas and Setati (2009) refer to the use of two languages in mathematics as language alternation.

According to Brice and Roseberry-McKibbin (2001) language alternation can be divided into two linguistic categories of code mixing (alternation across sentences) and code switching (alternation within sentences). I explain this more fully in chapter two.

Studies in multilingual and bilingual schools (Uys, 2010) revealed that code switching is a common practice, particularly in a situation where the language of instruction is a second or a third language of the learners and the teachers. In instances where teachers and learners share a common mother tongue, code switching is an inevitable practice in the classroom. In my experience, code switching is a very common practice in Namibian schools. In Namibia most learners speak very little English outside school. They mostly use their mother tongue when at home, in the school playground and in the classroom when communicating amongst one other.

According to researchers, code switching is used in classrooms for different purposes. Probyn (2006) noted that the teachers code switch from English to the learners' home language for a wide range of purposes, such as:

- a) To explain concepts;
- b) To clarify statements or questions;
- c) To emphasise points;
- d) To make connections with learners' own context and experience;
- e) To maintain the learners' attention with question tags;
- f) Classroom management and maintaining discipline;
- g) Affective purposes.

Setati (2006) further suggests that code switching occurs when there is the need to focus or regain pupils' attention, or to clarify, enhance or reinforce lesson material. Uys' (2010, p. 53) research finding revealed that "code switching occurred in the observed classrooms for a reason - not only for social reasons but for academic reasons and for classroom management". Uys (2010) also found that although code switching is often stigmatised, it is widespread, even in classrooms which officially only have one language as the medium of instruction.

Despite the extensive use of code switching and its great value in the teaching of mathematics, code switching receives a lot of criticism. In Namibia it is not officially supported by education policy. Thus, those teachers who practise it often do so uneasily. Probyn (2006, p. 394) states that "it appears that many teachers still regard code switching as illicit, as a sign of failure rather than a legitimate classroom strategy." For these reasons, teachers are less likely to use the learners' home language when they are observed or are interacting with department officials and peers.

Language plays a major role in education and in the mathematics classroom in particular, therefore the practice of code switching is worthy of investigation in order to contribute to the understanding of this phenomenon. It is through gaining insight into this practice that appropriate language policies can be drafted and meaningful support provided to teachers. Very little research into code switching practices has been conducted in Namibia and my study aims to contribute to the urgent conversation that needs to happen about this subject in my country.

In this study I investigate the incidence and nature of code switching practices in grade 8 mathematics classrooms in the Ohangwena region in Namibia. Firstly, I survey the prevalence of code switching practices in all the grade 8 mathematics classes in the region in order to find

evidence on how widespread this phenomenon is. Secondly, I perform a case study on two grade 8 mathematics classrooms chosen from the surveyed group. The case study focuses on the nature of the code switching practices in these classrooms. This is done through classroom observations and interviews with teachers.

1.5. GOALS OF THE STUDY

The aim of the study was to investigate the prevalence and nature of code switching practices in grade 8 mathematics classrooms in the Ohangwena Region of Namibia. In order to do this I need to answer the following research questions:

1. What is the prevalence of code switching practices in all grade 8 mathematics classes in the Ohangwena Region of Namibia?
2. What is the nature of these code switching practices in selected grade 8 mathematics classrooms in this region?

1.6. METHODOLOGY

Orientation and design

This study is located in the interpretive paradigm. Interpretivism acknowledges and explores the cultural and historical interpretations of the social world (O’Leary, 2004, p. 10). This research is descriptive in nature. According to Nkpa (1997, p. 6) descriptive studies make no attempt to manipulate variables. Their concern is to describe and interpret existing relationships, attitudes, practices, processes and trends. I employed both a qualitative and quantitative approach. In this study a quantitative approach was used to analyse the survey data, and a qualitative approach was employed to analyse the lesson observations and interviews.

Methods

This study consisted of two phases:

Phase 1 consisted of a survey in which I sought to reveal the prevalence of code switching in all grade 8 classes in the Ohangwena region. There are 106 secondary schools in this region and I

sent out questionnaires to be completed by all the grade 8 mathematics teachers in these secondary schools.

Phase 2 of the study consisted of a case study which investigated in depth the code switching practices in two selected grade 8 mathematics classrooms.

For Phase 2, I adopted a case study methodology where my unit of analysis was the nature of the code switching practices of two grade 8 mathematics teachers. Nkpa (1997, p. 6) states that “a case study investigates in detail an individual case or aggregation of individual cases treated as units”.

1.7. FINDINGS

The detailed findings of this study are presented fully in chapter four. In broad outline, the findings from the survey and observation revealed that teachers code switch mainly for performance reasons. During the survey and in the interviews, teachers did not acknowledge that they code switch for classroom management and maintaining discipline. My observations however revealed the opposite. The open ended questions in the survey and interview reveal that poor language proficiency in English amongst learners is another reason why teachers code switch.

The survey results showed that teachers code switch between 1 and 5 minutes or between 5 and 10 minutes in a 40 minute lesson. It could be argued that this is not excessive, but many teachers disagreed with this and thought that any code switching promotes laziness in learning English and a dependence from the learners’ perspective that concepts would always be translated into mother tongue.

The study showed that the two participating teachers are fully aware of the language policy and what is expected of them at this grade. These teachers, however, choose to code switch because they believe that the practice benefits the learners.

1.8. SIGNIFICANCE

I would like to highlight three particular reasons why this study is significant. Firstly, this study opens up an issue that is stigmatized and rarely spoken about. Secondly, this study allowed the

participants to critically reflect on their own practice with regard to language. Thirdly, the study revealed that code switching practices in mathematics is prevalent in the Ohangwena region of Namibia.

1.9. OVERVIEW OF THE STUDY

This thesis is composed of five chapters:

Chapter one provides a brief introduction to the thesis.

Chapter two discusses the literature that has informed my research. It consists of an analysis of the issues pertaining to code switching in education such as the definition of code switching, the Namibia language policy, code switching in Namibia, the role of language in teaching and learning, the medium of instruction.

Chapter three deals with the research process and the research methodology I employed. It gives a detailed description of the research context, the tools used for data collection, how these tools were used and why they were used.

Chapter four deals with the data analysis and discussion of findings.

Chapter five concludes with some recommendations, a description of the limitations of the study, personal reflections about the research and suggests possible avenues for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1. INTRODUCTION

The intention of this chapter is to provide a review of the literature on code switching practices. Firstly I look at the various definitions of code switching described by different researchers. From this information, I compile a general definition on which I base my research project. I give a brief summary of the Namibia language policy with regard to what it stipulates on the medium of instruction (language of instruction) at each stage in the basic education cycle. I also look at what the literature says on the language, and teaching and learning of mathematics, code switching prevalence in bilingual/multilingual classrooms, as well as the function/purpose/role of code switching in mathematics classrooms.

2.2. DEFINITION OF CODE SWITCHING

a) Code switching

According to Setati (1998) code switching is the use of more than one language in a single speech - it can involve a word, a phrase or a sentence, or it can also involve several sentences (p. 34). Code switching cannot occur between monolinguals; it will only occur in a multilingual context (Setati, 1998, p. 35). Planas and Setati (2009) referred to the use of two languages in mathematics as language alternation. Brice and Roseberry-McKibbin, 2001 define code switching as a language alteration or language exchange between two languages (p. 10).

According to Brice and Roseberry-McKibbin (2001) language alternation can be divided into two linguistic categories of code mixing (alternation across sentences) and code switching (alternation within sentences). Another form of language alternation is borrowing. In this instance, terminology is 'borrowed' from another language and used for a specific purpose. However, borrowing is of less interest in the context of this particular study. Bose and Choudhury (2010) present these categories as; "code-mixes, code-switches and hybrid languages" respectively (p. 94). Code switching is the practice of switching between two or more languages in a conversation or an utterance, while code mixing happens when switching between

the languages occurs for only “one or a few words”. Bose and Choudhury (2010) also state that code switching is often accompanied by code mixing.

Like many researchers Kasperczyk (2005) defines code switching as “the alternation between two codes (languages and/or dialects), between people who share those particular codes”. A number of social and linguistic factors determine the way in which code switching manifests itself. It is commonly manifested in multicultural and immigrant populations (Kasperczyk, 2005). Kasperczyk (2005) notes that “code switching can take on several forms including alteration of sentences, phrases from both languages, and switching in a long narrative”. (p. 1)

Although code switching may refer to different styles of speech within the same language, as in the case of monolinguals using formal and informal speech, it is most often used within the field of bilingualism and multilingualism to refer to the alternate use of two or more languages in a discourse (Huerta-Macias & Quintero, 1992, p.70).

Sociolinguistic research has characterizes code switching as follows: (Reigencia, 2000, p. 208):

1. Speakers who code switch between languages are indeed bilingual, perhaps with varying degree of proficiency in the two languages,
2. These bilinguals interact with each other , and
3. When they do interact with one another, their communicative needs may be met by either of the two languages alone, but are often more appropriately and comfortably met when the two languages are used alternately.
4. Code switching represents a third or additional code available to bilinguals in certain social circumstances.

Ayeomoni (2006) defines the concepts code, code switching and code mixing separately; code is taken as “a verbal component that can be as small as a morpheme or as comprehensive and complex as the entire system of language”. The other two concepts were defined with reference to the other literatures.

Montes- Alcalá (2000, p. 201) defines code switching as the alternating use of two languages in the discourse of bilingual individual. Montes- Alcalá (2000) suggests that “code switching is a natural phenomenon commonly attested in bilingual communities in which two (or more)

languages are in contact” (p. 201). It consists of the alternating use of two languages within the discourse, at the word, clause, or sentence level (Montes-Alcalá, 2000, p. 218). The code switches are divided in their corpus into *intersentential* and *intasentential* categories. However, many researchers accepted that intrasentential code switching is more complex and elaborated than intersentential switching. Redouane (2005) agrees with Monter-Alcalá by acknowledging that with the two types of code switching recognized by many researchers intrasentential code switching is used for switches within sentences, and intersentential code switching for switches between sentences.

(i) Intrasentential code switching

Speakers of certain bilingual communities systematically produce utterances in which they switch from one language to another (called code switching), possibly several times, in the course of an utterance (Joshi, 1982). Production and comprehension of utterances with intrasentential code switching is part of the linguistic competences of the speakers and hearers of these communities (Joshi, 1982, p. 145). Joshi (1982) describes some characteristics of intrasentential code switching as:

1. The situation which we are concerned with involves participants who are about equally fluent in both languages.
2. Participants have fairly consistent judgments about the acceptability of code switching.
3. Mixed utterances are spoken without hesitation, pauses, repetitions, corrections, etc., suggesting that intasentential code switching is not some random interference of one system with the other. Rather, the switches seem to be due to systematic interactions between the two systems.
4. The two language systems seem to be simultaneously active.
5. Intrasentential code switching is sharply distinguished from other interferences such as borrowing, learner use of foreign words, filling lexical gaps, etc. all of which could be exhibited by monolingual speakers.
6. Despite the extensive use of intrasentential switching, speakers and hearers usually agree on which language the mixed sentence is “coming from”. We call this language the matrix language and the other language the embedded language. (p. 146)

Joshi (1982) further states that “these interesting characteristics of the mixed sentences suggest that the two languages systems are systematically interacting with each other in the production (and recognition) of the mixed sentences” (p. 146).

Montes-Alcalá (2000), notes that “switching within a sentence requires the bilingual individual to be proficient enough in both languages to create a smooth blend without violating the grammatical rules of either language” (p. 219).

(ii) Intersentential code switching

Redouane (2005) explains intersentential code switching as switches which occur between sentences. Similarly Kasperczyk (2005) defines intersentential code switching as the language switch which is done at sentence boundaries. This is seen most often between fluent bilingual speakers (Kasperczyk, 2005). Karsperczyk (2005) also notes that intersentential code switching “is known as mechanical switching. It occurs unconsciously, and fills in unknown or unavailable terms in one language. This type of code switching is also known as code mixing”.

b) Code mixing

Karsperczyk 2005 states that “code mixing occurs when a speaker is momentarily unable to remember a term, but is able to recall it in a different language”. While, Ho (2007, p. 1) defines code mixing as “the change of one language to another within the same utterance or in the same oral/written text”. Ho (2007) further explains that “code mixing refers to any mixture of linguistic elements of two or more language systems in the same utterance at various levels: phonological, lexical, grammatical and orthographical” (p. 2).

Brice and Roseberry-McKibbin (2001) define code mixing as an alternation across sentences, while. Redouane (2005) refers to code mixing as the process of mixing of elements from two languages in one utterance, and code switching as the product of this mix (p. 1921). Bose and Choudhury (2010) assert that code mixing happens when switching between the languages occurs for only “one or a few words”.

c) Borrowing

Another form of language alternation is borrowing. In this instance, terminology is ‘borrowed’ from another language and used for a specific purpose (Brice & Roseberry-McKibbin, 2001). Borrowing is used by both bilingual and monolingual speakers. In this language strategy a term is borrowed from one language and “becomes part of the other language and is assimilated in the second language” Brice and Roseberry-McKibbin (2001, p. 13). Brice and Roseberry-McKibbin (2001) state that borrowing sometimes fills in lexical gaps of the second language, such words or phrase may be used to name something or describe an event that may never have existed in that language.

d) Language hybrid

Bose and Choudhury (2010) say that “hybrid sentences occur when the speaker takes liberties by mixing the grammar of one language with the other”. Bose and Choudhury (2010) give the example that “when the primary language is not very explicitly distinguished from the secondary language, with the whole sentence being code mixed in a complicated manner, and the resultant structure of the grammar represents a sort of hybrid structure”.

e) Code switching definition referred in this research

As can be seen from the above, there are numerous descriptions and definitions of code switching, code-alteration, language switching, language mixing, language alternation, and code-changing –many referring to similar linguistic behaviours. As Huerta-Macias & Quintero (1992) point out that given that these terms have not been standardized in the literature, and with the intention of holistically describing the use of two languages in the classroom, the term code switching is used globally to describe any kind of language alternation. (p. 70)

For the purpose of this research project the term code switching refers to the use of more than one language in a single speech - it can involve a word, a phrase or a sentence, or it can also involve several sentences (Setati, 1998, p. 34). The code switching considered here can either be within sentences or between sentences (Redouane, 2005).

2.3. NAMIBIA CONTEXT

a) Language policy

Both the National Curriculum for 2010 and the Language policy of Namibia (Namibia. MBESC, 2003) stipulate that learners should learn in their mother tongue during the first 3 years of schooling. In grade 4, the shift is made from mother tongue instruction to English as a medium of instruction. In grades 5-7 the medium of instruction is English with a little mother tongue support, while in grades 8-12, the medium of instruction is entirely in English.

The Ministry of Education formulated a language policy guided by the following fundamental understanding (Namibia. MoE, 1993);

- All national languages are equal regardless of the number of speakers or the level of development of a particular language. All language policies must be sensitive to this principle
- All language policies must be sensitive to this policy
- All languages policies must regard language as a medium of cultural transmission
- For pedagogical reasons it is ideal for children to study through their own languages during the early years of schooling when basic skills of reading, writing, and concept formation are developed
- Proficiency in the official language at the end of the 7- year primary cycle should be sufficient to enable all children to be effective participants in society or to continue their education
- Language policy should promote national unity. (p. 65)

b) Code switching in Namibia

Ariffin and Husin (2011, p. 242) echo that there is conflict between the language policy and the actual use of English and home language in the classroom.

Looking at the results of the national standardised tests carried out in grades 5-7 in English, Mathematics and Science, the Namibian learners are performed poorly, particularly in English and Mathematics (Sasman, 2011). This poor performance can be attributed to the fact that the language ability of the learners is not good enough to cope with the requirement of learning

subject content. This fact has been reported by the national examiners, and is a clear indication of the importance of language in the teaching and learning of mathematics in Namibia.

Wolfaardt (2005) points out that there is a gap between the language policy and its implementation. This varies from region to region and school to school. The language policy is often criticized because it does not give clear guidance on its implementation and that allows for misinterpretations and manipulation. Some of the schools offer English from grade 1 as education planners and parents assume this will aid the rapid acquisition of English. This tendency is higher in urban areas schools where they are multi-ethnic.

Wolfaardt's (2005) findings reveal that not all teachers have sufficient proficiency in the English language, more especially those teaching in the lower grades. The other problem is the availability of qualified teachers and resources especially in rural schools. Language proficiency appears to directly affect the examination results.

Looking at the grade 10 results presented in Wolfaardt's (2005) study, learners performed very well in their mother tongue subjects. But the performance worsened in subjects where the medium of instruction was English. Thus language appears to be a stumbling block for learners when answering question papers. This is confirmed by comments in the grade 10 examiners reports for 1999 (Wolfaardt, 2005).

Wolfaardt's (2005) research with teachers and advisory teachers' reveals that teachers often use their mother tongue in class instead of English. Teachers themselves indicated that they favour a dual medium approach.

Given that code switching is such a common practice in Namibian schools Wolfaardt (2005) suggests that a more formalised bilingual education programme is recommended.

2.4. ROLE OF LANGUAGE IN TEACHING AND LEARNING

2.4.1. General

It is widely accepted that language plays an important role in the thinking and learning of mathematics (Bose & Choudhury, 2010, p. 83). The language of instruction is a hindrance when students attempt to negotiate the mathematical meaning of the word problems, and the required mathematical operations (Bose & Choudhury, 2010, p. 83). Therefore, language proficiency

becomes essential in comprehending the mathematical tasks required (Bose & Choudhury, 2010, p. 83).

2.4.2. Medium of instruction

2.4.2.1. Teaching mathematics in a second language

Teaching and learning of mathematics in the context where a second language (English in the case of Namibian schools) is used as the medium of instruction poses a challenge to both the teaching and learning process. This is even more serious when the learners have little or no access to the second language elsewhere than at school. As Ariffin and Husin (2011, p. 222) note, when content subjects (mathematics) is taught in the learners second language, learners are faced with the double task of learning the subject content and the language of instruction at the same time.

Bose and Choudhury, 2010 confirm that learning mathematics in a language other than the learners' language of comfort requires the learners to learn both mathematics and the language of the mathematical terminology which results in poor quality learning. (p. 94)

Kocakulah, et al., (2005) echo the sentiment that students who study content subjects like Mathematics and Science in a foreign language have difficulty connecting new and old information meaningfully. They cannot store much in their long term memory and lose information easily. This is as a result of a lack of conceptual understanding (Kilpatrick, 2001) in the first place especially in the case of mathematics.

Kocakulah, et al. (2005) articulate that "if students are not competent in the language, they may come up with misconceptions and misunderstandings". Hence, teaching content subjects such as mathematics and science through a foreign language may lead to misconception in understanding concepts central to these subjects (Kocakulah, et al., 2005).

Communication in English can be a barrier for many second language learners because English serves both as a content subject and also as the means of instruction in classrooms (Brice & Roseberry-McKibbin, 2001).

Setati and Adler argue that learning and teaching mathematics in a bilingual/multilingual classroom where the LOLT (language of learning and teaching) is not the learners' main

language is complicated. Learning mathematics has elements that are similar to learning a language since mathematics, with its conceptual and abstracted forms, has a specific register and set of discourses. This signifies that mathematics is a language on its own and hence learners in this classroom are faced with the double task of coping with the new language of mathematics as well as the new language in which mathematics is taught (English) (Setati & Adler, 2000, p. 248). At the same time that they are attempting to acquire communicative competence in mathematical language where learning to articulate the meaning of certain concepts involves the development of a language that can best describe the concepts involved, they need to acquire proficiency in English. This is especially pertinent to mathematics because mathematical talk is known for involving both specialized terms and different meanings attached to everyday words i.e. a specific register.

We can also understand mathematical language, particularly as it is used in the school context, as comprising both informal and formal components; where informal language is the kind that learners use in everyday life to express their mathematical understanding, while, formal mathematical language refers to the standard use of terminology (mathematics register) which is usually developed within formal settings like schools (Setati & Adler, 2000, p. 248).

In most mathematics classrooms both forms of language are used and these can be either in written or spoken form (Setati & Adler, 2000, p. 248). Here, in the whole class setting, the teacher is able to listen to and work with learners' informal or incomplete mathematical language knowledge and steer them towards appropriate or more formal mathematical discourses.

In this way, the teacher enables access to English, mathematical English, and ways of talking about mathematics in school. The teacher understands their role as including the modeling of mathematical talk for learners who are struggling simultaneously with concepts and their appropriate naming in English, the language of learning and teaching (Setati & Adler, 2000, p. 248).

Therefore, it is very important for the teacher not only to master the content knowledge; they also need to have the ability to use English, which is also their second language, to deliver the content. At the same time learners also face challenges when the second language is used as the medium of instruction (Ariffin & Husin, 2011, p. 222).

2.4.2.2. Native language (first language) role in learning content subject and second language

Current literature supports the notion that the native or home language is the best medium for working with children and adds to the children's ability to communicate in the second language (e.g., English) (Brice & Roseberry-McKibbin, 2001, p. 10).

The primary language provides a bridge between the first language and the second language (Molepo, 2008). It also satisfies the demand of the new environment in the school (Molepo, 2008). Through their own languages, learners can express themselves because what they think is processed through language (Molepo, 2008, p. 64). If they communicate in the language they know, they feel free and become creative to say what they think and feel (Molepo, 2008, p. 64).

Burkett, Clegg, Landon, Reilly and Verster (2001) suggests that for learners who have the least exposure to English in their daily lives and have a widest gap to make up as they learn in the medium of English at school. These learners would have the most to gain if their first language or languages were maintained and developed as the language of learning and teaching, alongside English.

Burkett, et al. (2001) conclude that how teachers and learners use language goes to the heart of learning. If we choose not to let learners learn through their mother-tongue as much as they can and if we do not take the fact that teaching and learning through a second language can be difficult and needs to be done with care, we make learning very hard. We create problems not only for the learner, but also for the education system as a whole.

2.4.2.3. Bilingual and multilingual code switching

Reyes' (2004) study results reveals that children during peer interaction use the language with which they are both comfortable and are competent in (p. 93). The results also indicate that those speakers with the greatest degree of bilingual communicative competence are the ones who most frequently use code switching as a strategy to meet their conversational goals and to communicate with their peers (Reyes, 2004, p. 93). This shows that there is a positive relationship between bilingual code switching and language proficiency and this challenge the view that code switching is a sign of communicative incompetence (Reyes, 2004, p. 93).

Moving between languages and discourses in moments of practice is a significant challenge for mathematics education research and practice (Setati & Adler, 2000, p. 244). In particular, oral proficiency in English in the absence of mother tongue instruction was negatively related to achievement in mathematics (Setati & Adler, 2000, p. 245). Setati and Adler (2000) present arguments for harnessing learners' main language(s) as a resource in the teaching and learning of mathematics in multilingual classrooms. At the same time they do briefly point to the political difficulties teachers face in multilingual contexts when one language is inescapably dominant (Setati & Adler, 2000, p. 245). Therefore, it is significant to look at the specific challenges of teaching and learning mathematics in multilingual classrooms.

2.4.3. Additive and subtractive bilingualism

Bilingualism can be perceived as a subtractive or an additive language process. In the subtractive aspect, as fluency and vocabulary grow in one language, fluency and vocabulary decrease in the other, replacing the original language as the “primary” language. In the additive bilingualism process “the emphasis is on the replacement of one language for another” (Brice, Roseberry-McKibbin, Hughes, McHatten, Ratiff & Shaunessy, 2006, p. 9).

Brice, et al. (2006, p. 9) indicate that with certain individuals, code switching can also serve as an indicator of subtractive development of language when students select words and phrases because of the inadequacy of their language abilities. When a student does not have the grasp of a second language firmly enough to communicate, they must reach for their primary language to fill in the gaps (Brice, et al., 2006, p. 9).

With additive bilingualism, students have a solid base in their primary language (home language) and the second language adds to their linguistic repertoire. In the communication process, speakers have a range of language choices and select the language that most closely conceptualizes the meaning, the humor, or the social purpose that is needed. Code switching then becomes a social, cultural, and linguistic tool that allows them to integrate their experiences of two languages and two cultures into a cohesive whole (Riegelhaupt, 2000).

2.4.4. Vygotsky's theory of learning

Schutz (2004) in his discussion on thought and language and intellectual development elucidates that to Vygotsky, a clear understanding of the interrelations between thought and language is necessary for the understanding of intellectual development. Language is not merely an expression of the knowledge the child has acquired (Schutz, 2004). There is a fundamental correspondence between thought and speech in terms of one providing resource to the other; language becoming essential in forming thought and determining personality features (Schutz, 2004).

Language play a major role in the internalization i.e. “process by which the social becomes the psychological” (Hodson & Hodson, 1998). Hodson and Hodson (1998, p. 36) explain that “as a tool, language creates the possibility of thought, organizes the thinking processes, and both reflects and shapes the human society in which it is used”. Vygotsky recognized the way in which children come to use language for problem-solving, and signified the fact that “the more complex the task is, the greater is the importance of speech” (Hodson & Hodson, 1998, p. 36).

Drawing from the Vygotsky theory of learning, learning takes place in a social context through language and learners need to internalize knowledge in a related context using language (Kocakulah, et al., 2005).

2.4.5. Zone of proximal development (ZPD)

One essential tenet of Vygotsky's theory is the notion of the existence of what he called the "zone of proximal development"(Schutz, 2004). The zone of proximal development is the difference between the child's capacity to solve problems on his own, and his capacity to solve them with assistance (Schutz, 2004). In other words, the actual developmental level refers to all the functions and activities that a child can perform independently without the help of anyone else (Schutz, 2004). On the other hand, the zone of proximal development includes all the functions and activities that a child or a learner can perform only with the assistance of someone else. The person in this scaffolding process, providing non-intrusive intervention, could be an adult (parent, teacher, caretaker, language instructor) or another peer who has already mastered that particular function (Schutz, 2004).

2.4.6. Mediation

Language use, organization, and structure are the primary means of mediation. Practically speaking, developmental processes take place through participation in cultural, linguistic, and historically formed settings such as family life and peer group interaction, and in institutional contexts like schooling, organized sports activities, and work places, to name only a few (Lantolf & Throne, 2006, p. 197). In these contexts children or learners are often controlled by or use objects in their environment in order to think. For instance, at a slightly later age, children learning mathematics may find it difficult or impossible to carry out simple addition mentally and must rely on objects for external support (e.g., blocks). In addition that implicit and explicit mediation can be provided by parents, siblings, peers, coaches, teachers, etc. (Lantolf & Throne, 2006, p. 197). Such mediation involving varying levels of assistance, direction, is described as scaffolding.

Lantolf and Throne (2006, p. 201) state that language is the most pervasive and powerful cultural artifact that humans possess to mediate their connection to the world, to each other, and to themselves. Language imbues humans with the capacity to free themselves from the circumstances of their immediate environment and enables us to talk and think about entities and events that are displaced in both time and space, including those events and entities that do not yet exist in the real world (e.g., the building planned by the architect) (Lantolf & Throne, 2006, p. 202).

Lantolf & Throne (2006, p. 202) summarize that “Vygotsky’s proposal was that while biological factors formed the basis of human thinking, in and of themselves, they were insufficient to account for our ability to voluntarily and intentionally regulate our mental activity”. We achieve this ability as a result of the internalization of culturally constructed mediating artifacts including, above all, language (Lantolf & Throne, 2006, p. 202).

2.4.7. Summary

In the context of code switching, Probyn (2006) advises that teachers need help to work effectively within their current linguistic and material constraints. For example, developing whole class questioning skills so that teachers are able to ask more challenging questions to promote higher order thinking skills; and developing chalkboard skills so that this often

underutilized resource can be used interactively to record the lesson and serve as record and reference point (Probyn, 2006, p. 408).

Probyn (2006), adds that all teachers need to understand the role of language in learning (including the importance of talking after practical work to tease out and consolidate conceptual understanding), how to develop learners' proficiency in the language of learning and teaching; how to use the learners' home language as a resource to develop conceptual understanding and bridge to learning additional languages; and the importance of reading and writing in developing the academic language skills needed for learning so that they are able to plan for lessons that meet the need for both cognitive challenge and language support (p. 408).

When it comes to language learning, the authenticity of the environment and the affinity between its participants are essential elements to make the learner feel part of this environment. These elements are rarely predominant in conventional classrooms (Schutz, 2004).

Riegelhaupt (2000) warns that equal access and equal educational opportunity do not mean merely providing students with the same materials, teachers, and facilities. Rather, it requires that students be given an educational experience that is socially, linguistically, and academically meaningful (Riegelhaupt, 2000, p. 205).

Riegelhaupt (2000) therefore concludes that language use in multilingual classrooms must be pedagogically and linguistically sound, culturally relevant, and socially responsive. It must involve well trained teachers who understand the sociocultural reality of their students and know how to appropriately interact within the greater community while using linguistic strategies which support bilingualism and cognitive development. Language use in the classroom must not only mirror the community's language use but must also provide an effective model and learning environment for bilingual students (Riegelhaupt, 2000, p. 213).

2.5. ROLE/PURPOSE/FUNCTION OF CODE SWITCHING IN MATHEMATICS CLASSROOMS

a) General.

Code switching as explained above, is used for various purposes (Probyn, 2006) and (Setati , 1998).

Bose and Choudhur (2001) note that code switching occurs on account of a need felt by learners to make sense of the given instruction and also of the involved mathematics. Generally there is a shift to local language as soon as there are some concept difficulties. Examples of more such occurrences are:

- Repetition in terms of translation: when a direct translation is made, repeating the original statement.
- Mathematical terms and operations: when English is only used for mathematics terms and operations while the rest of the sentence is in the first language. Verbs and predicates are commonly in English.
- Explanation: when problems or concepts are explained in the vernacular
- Enforcement of authority, discipline in the classroom: teacher switches from vernacular to English and vice versa to manage the classroom.
- Achievements in problem tasks: while having informal discussion with the teacher learners switch from home language to English when they feel confident of their answers and eager to declare their achievement to the class.
- Code switching from formal to informal language: Instead of switching between two languages, the switch is made within one language either the first or second language from formal to informal language. This is aimed to build social connection of the problem situation with students. As well as to encouraging the students to open up and take part in the discussion (Bose & Choudhur, 2001, p. 97).

In Uys' (2010) research on the function of code switching the following is suggested:

Function 1. Code switching for academic reasons

- Explaining and clarifying subject matter
- Building up learners, understanding of subject matter
- Assisting learners in interpreting subject matter
- Confirming that learners' participation
- Supporting classroom communication
- Supporting exploratory talk

Function 2. Code switching for social reasons

- Maintaining social relationships in the classroom

- Humour
- Reasons of solidarity
- Showing defiance
- Increasing social distance

Function 3. Code switching for classroom management purposes

- Classroom discipline, e.g. reprimanding learners
- Dealing with late comers and disruptions
- Gaining and keeping learners' attention
- Giving general instructions to the learners

Function 4. Code switching for establishing identity

- Demonstrating possession of knowledge of a language
- Marking identity.

Uys (2010) uses these functions to discuss the role of teachers who use code switching and their interactions with their learners and examines the teachers' motivations for employing code switching (p. 1). During this study Uys (2010) observes that code switching has become common practice in classrooms, especially where the medium of instruction involves the use of English. As code switching is not in line with the official language policies of these schools, this raises the question as to why it occurs (Uys, 2010, p. 2).

Uys' (2010, p. 52) research findings conclude that teachers use code switching mainly for academic purposes (such as explaining and clarifying subject content) but also for social purposes (maintaining their social relationships with their learners and being humorous) as well as for classroom management purposes (such as reprimanding learners). The teacher never used code switching solely for establishing their identity (Uys, 2010, p. 52). Code switching was used to decrease the social distance between the teacher and the learners, or in one instance to demonstrate affection (Uys, 2010, p. 52).

Code switching has great potential for helping the bilingual teacher to achieve context-specific teaching and learning goals like clarifying difficult concepts and reinforcing students' bilingual lexicon (Li, 2008, p. 75). In his study the use of Cantonese (the students' first language) has the potential to:

- a) Help clarify difficult concepts;
- b) Help introduce or consolidate students' bilingual lexicon; or
- c) Help build rapport by reducing social distance. (Li, 2008, p. 84)

Huerta-Macias and Quintero (1992) research points that code switching, in both oral and written form, allowed for effective communication between the parents, the children and the instructor in a way that was natural and comfortable for all involved (Huerta-Macias & Quintero, 1992, p. 69). Huerta-Macias and Quintero (1992) research finding also reveals that the instructor used code switching to elaborate, to emphasize, to specify an addressee and to clarify for effective communication. More specifically Huerta-Macias and Quintero (1992) suggest reason for code switching as follows:

- Elaboration: elaboration occurred when additional information/details on a topic were added in the alternate language.
- Emphasis: emphasis occurred when the teacher stressed or underscored a point in the alternate language, Spanish. This switch was also accompanied by a change in voice intonation which exhibited a high pitch level (p. 77).
- Addressee specification: addressee specification occurred when the teacher switched languages as she addressed, or directed her speech, to a different listener. In these cases she switched to Spanish as she turned, made eye-contact and addressed the parents after speaking to the children (p. 77).
- Clarification: clarification occurred when the teacher switched to Spanish as she repeated or paraphrased something she had just said in English. (p. 78)

Code switching can serve to enhance communication in the teaching/learning process and help to maintain and develop the languages of a bilingual learner. This maintenance and development takes place through the use of both languages in meaningful activities which involve listening, speaking, reading and writing. That is, while one language will in all probability be used to a lesser extent than the other one in any given situation, its use can, nonetheless, serve as a stimulus for more extensive use and thus further development in the classroom (Huerta-Macias & Quintero, 1992, p. 86).

Brice, et al. (2006) suggests the following reasons for code switching.

- The first is simply because the speaker does not have the facility in the primary language to express himself effectively or is translating for someone else with limited English proficiency (p. 14). However, this type of code switching may be considered a strength

when it is used as a sociolinguistic tool to aid the understanding of another person who is not facile in both languages(Brice, et al , 2006, p. 15) .

- The second purpose for code switching is that the individual may want to establish him- or herself as a member of a particular group (Brice, et al., 2006, p. 15). Code switching is typically situation motivated. A change in the social situation can motivate a change in code, such as the arrival of a new speaker, or the focus of the topic may facilitate a change to the other language (Brice, et al., 2006, p. 15). Similarly, code switching can be used to exclude other members of a group who are not as familiar with the language.
- Finally, code switching can be used as a sociolinguistic tool (Brice, et al., 2006, p. 16). Code switching is used for clarification, emphasis, to separate facts from feelings, and to achieve a certain dramatic effect. (Brice, et al, 2006, p. 16)

It is also important to view the classroom language in its wider social context. The more we know about how language is used in the surrounding communities, the more we will be able to understand the functions of code switching in the classroom (Riegelhaupt, 2000, p. 207).

Reigelhaupt (2000) categorizes the functions of code switching as follows:

1. Code switching to increase the comprehension, and
2. Code switching to mark a change in context.

For in the first category Reigelhaupt (2000) notes that:

- Bilinguals use the language that people they speak to know the best. When bilinguals of the same language interact with each other, code switching is often the appropriate and preferred code.
- Code switching also occurs when one speaker uses one language consistently, while the second persists in using another language. (Often students are beginning to acquire English, but not yet able to use it productively. (p. 209)

While for the second category:

- Code switching is an important discourse strategy in both monolingual and bilingual communities and classrooms.
- It often marks a change in context, formality, or mood. (In monolingual situations, it involves a change in register, dialect or modality rather than change in language. Monolingual also utilize switches in body posture, movements, and eye gaze to make a transition from one context to another. Bilinguals use all of these strategies, but also have the option of changing language.)
- A code switch may indicate that a new person has entered the room.

- It may also mark a change in attitude.
- Code switches can be used to make reprimands or praise stand out from the rest of the lesson.
- Children also use code switching to make an utterance stand out. (p. 210)

Rielhaupt (2000) states that the teacher creates a scaffold by using both languages alternately to convey increasingly specific and complex information, while connecting the new information to the information already presented. (p. 211)

b) Legitimate practice that needs to be harnessed

Pollard (2002) found that students who were able to code switch freely within the classroom were faced with fewer language barriers when discussing subject matter. Thus, they were better able to relay the information that they had learned to teachers or peers because of the language freedom code switching provides (Pollard, 2002, p. 11).

Pollard's (2002) study affirms that code switching is a valuable strategy for students to convey their knowledge of subject matter. In schools, where it is a principal goal to give students the best education possible, students should be allowed to use those strategies that will help them learn best (Pollard, 2002, p. 17)

Molepo (2008) argues that code switching and code mixing provide learners with the opportunity to function and perform better in their home language. Learners also feel motivated and encouraged by the educators when they use more than one language in the classroom. Learners' language errors are less as they switch to their own languages when they cannot find the relevant concepts (Molepo, 2008, p. 63).

Code switching is a practice that enables learners to harness their main language as a learning resource. As a mechanism for learning and access, code switching has almost become a taken for granted 'good thing'. It makes immediate sense that learners whose main language is not the language of learning and teaching should draw on their main language(s) in the learning process. However, it is often that which makes most sense that is most elusive to critical interrogation (Setati & Adler, 2000, p. 243).

c) Code switching in bilingual and multilingual classrooms

Code switching and code mixing are two linguistic phenomenon claimed to be the most prevalent and common mode of interaction among bilingual speakers (Redounce, 2005, p. 1921). These are well known traits in the speech pattern of an average bilingual in any human society the world over (Ayeomoni, 2006, p. 90). And they are very common phenomena in societies where two or more languages are used (Ho, 2007, p. 1).

Similarly, the classrooms in multilingual and bilingual societies or communities follow suit. This means that code switching and code mixing will certainly occur in one way or another and for different reasons in these classrooms. This could be either between learners, and or between teacher and learners. However, this does not rule out the fact that it may not happen in a school where a strict rule on the use of the medium of instruction is enforced.

Uys' (2010) studies in multilingual and bilingual schools reveal that code switching is a common practice, particularly in a situation where the language of instruction is a second or a third language of the learners and the teachers. Uys further states that in instances where teachers and learners share a common mother tongue, code switching is an inevitable practice in the classroom.

Simmlary, Setati and Adler (2000) allude that code switching in a school classroom usually refers to bilingual or multilingual settings, and at its most general, entails switching by the teachers and/or learners between the language of learning and teaching and the learners' main language.

Ariffin and Husin's (2011, p. 221) paper attempts to highlight the frequency of this communicative behaviour, and both the instructors' and students' attitudes towards it. The findings reveal that instructors frequently code switched and code mixed between the two languages in the classroom. The analysis shows that the occurrence of these phenomena was related to the instructors', as well as the students' own linguistic competence, and the purpose of facilitating effective teaching and learning (Ariffin & Husin, 2011, p. 221).

Reyes (2003) remarks that as children get older they "seem to learn to code switch for more sophisticated purposes". One explanation could be that they become more sensitive to their

peers' linguistic abilities, consequently becoming better at code switching to accommodate their linguistic demands (Reyes, 2003). That is, they become more aware of the level of bilingual fluency that their friends and adults possess, and at the same time this helps them to be better communicators by taking advantage of their bilingual skills (Reyes, 2004, p. 93).

Malope's (2008) study reveals that bilingual instruction is practiced indirectly, i.e., through code switching and code mixing. However, the respondents favour English as the medium of instruction, some of whom said they were comfortable using English only as a medium of instruction (Molepo, 2008, p. 63). On the other hand, some respondents in public schools are concerned that learners do not cope if they stick to English; thus, they code switch and code mix English with the African languages (Molepo, 2008, p. 63).

Molepo (2008) observed that code switching and code mixing play a major role when teaching black African learners. However, he noted some parents are against bilingual instruction. They prefer their learners to be taught through the medium of English only. (Molepo, 2008, p. 62)

2.6. CRITIQUE OF CODE SWITCHING

Despite the widespread use of code switching and its obvious value in the teaching of mathematics, code switching has received a lot of criticism. In Namibia it is not officially supported by education policy. Because of its ability to demonstrate inclusion and exclusion from groups, code switching can be perceived as a negative social trait by members excluded from the group (i.e., monolingual speakers) (Brice, et al., 2006, p. 8). Teachers' reactions to code switching are typically quite negative, even when they themselves employ it (Brice, et al., 2006, p. 9).

Bilingualism can be viewed as a subtractive or additive language process. With additive bilingualism, students have a solid base in their primary language and the second language adds to their linguistic repertoire (Brice, et al., 2006, p. 10). According to Burkett, et al. (2001) an additive bilingual context is where two or more languages are used as the medium of teaching and learning, and a subtractive bilingual context is where the second language supersedes the first for educational purposes. Code switching then becomes a social, cultural, and linguistic tool that allows them to integrate their experiences of two languages and two cultures into a cohesive whole (Brice. et al, 2006, p. 9).

Code switching does not occur only as a result of children not being able to handle content subjects in English. It affects teachers and their methods, orientations and resources. Among speakers of African languages, mother tongue policy has a bad image. It is associated with inferior education (Brice, et al., 2006, p. 34). Monolinguals may see it as an insult to their rule-governed language. It is generally believed that people who switch codes know neither language well enough to converse in either one (Brice, et al., 2006, p. 35). For this reason some bilinguals will avoid switching codes with those who have very strict norms concerning language use, such as teachers, reserving it for those who also switch codes (Brice, et al., 2006, p. 35).

Those who believe code switching to be harmful claim that students will not be able to communicate effectively in either language (Pollard, 2002, p. 30).

Unfortunately, code switching has often been socially stigmatized by monolinguals and bilinguals alike, and been given derogatory labels such as “Tex-Mex” or “Spanglish.” The use of code switching is often attributed to illiteracy, lack of formal education, or lack of proficiency in one or both languages (Montes-Alcalá, 2000, p. 218).

Montes-Alcalá’s (2000) findings reveal that bilingual individuals are equally capable of code switching in speech and in writing and research participant teachers have a generally positive attitude towards code switching. Montes-Alcalá (2000) finds that the participating teachers in his research believe that oral code switching reflects their identity, and that written code switching allows them to relate better to the author of a text. However, Montes-Alcalá (2000) argues that attitudes towards code switching are not a determining factor in the types of code switching that bilingual individuals produce. Neither are they a determining factor of whether individuals are going to code switch or not.

Studies done by Ayeomoni (2006) show that code switching and code mixing often correlate positively with the educational attainment of individuals and both phenomena have their merits and demerits in the speech repertoire of their users.

Li (2008) however warns about the widely shared assumption against classroom code switching which asserts that teachers’ use of mixed code is responsible for their students’ declining language standards. This assumption is supported by little or no convincing empirical evidence. Li (2008) reminds us that mixing code is especially common among highly bilingual speakers of

English who are fluent in both languages. There is thus strong evidence that mixing code is perfectly compatible with high proficiency development in English (Li, 2008, p. 84).

Li (2008) also warns that not anything goes concerning the code switching practice. Code switching is not always necessarily pedagogically conducive to effective learning and teaching; it all depends on how it is used for what particular teaching and learning goals. This means that a line needs to be drawn between pedagogically sound and productive code switching practice, as opposed to code switching practices that are pedagogically unsound and counterproductive (p. 85). Li (2008) further states that it is high time that methodologically sound empirical research be conducted to firstly collect naturally occurring data involving classroom code switching, with a view to identify good or model code switching practices through some objective evaluative criteria. Such findings, when made available, will go some way towards making code switching a legitimate teaching resource in the classroom.

Code switching nevertheless remains a difficult practice for all the teachers, both practically and ideologically. On the one hand as teachers they needed to switch languages in order to reformulate a question or instruction, or to re-explain a concept, and they need to encourage their learners to use their main language in order to facilitate communication and understanding (Setati & Adler, 2000, p. 255). At the same time, it is also their responsibility to induct their learners into mathematical English and hence it is important to use English in the mathematics classroom as much as possible. (Setati & Adler, 2000, p. 255)

Setati and Adler's (2000) study informs that the primary teachers experienced this dilemma more acutely than secondary teachers, and the dilemma was most acute for the rural primary mathematics teachers where the school is the only place learners hear English being spoken. The view of teachers was that even if learners did not always understand what was being said in English, they needed to hear English being spoken, and the teacher was thus compelled to use English as much as possible (Setati & Adler, 2000, p. 256).

The dilemma of code switching and of building mathematical English communicative competence takes on added significance in the context of curriculum reform in South Africa and elsewhere (Setati & Adler, 2000).

Ariffin and Husin (2011) assert that “there are mixed attitudes towards code switching/code mixing” (p. 221). While both instructors and students in their study agreed that code switching/code mixing can promote better understanding, students with better English proficiency felt that such communicative behaviour can be off-putting as it does not help in improving their linguistic competence in English (Ariffin & Husin, 2011, p. 221). Ariffin and Husin’s (2011) paper, thus raises some legitimate concerns about the conflict between the policy and its actual implementation, which in turn has implications for language development, teacher education and policy assessment. Some of these concerns are that instructors need to master the content knowledge and in addition to that they should know how to use English which is their second language (Ariffin & Husin, 2011, p. 221). On the other hand students are faced with the challenge using the second language as a medium of instruction (Ariffin & Husin, 2011, p. 222). Thus, although English was prescribed as the medium of instruction, in practice, it has been observed that this policy is not fully adhered to (Ariffin & Husin, 2011, p. 222). Besides, a mixed code of both English and the instructor and students mother tongue is used in content classrooms (Ariffin & Husin, 2011, p. 222).

There is also an indication that often both instructors and students are not linguistically equipped to support the local language policy. The lack of English language competence both on the part of teachers and learners is said to lead to the use of code switching or code mixing. Ariffin and Husin (2011, p. 241) argue that code switching due to a lack of English language (medium of instruction) competency “certainly has a significant implication on their English Language development skills”. By this Ariffin and Husin (2011) mean that the language of teaching can affect the process of learning and acquiring knowledge. Thus, Ariffin and Husin, (2011, p. 242) acknowledge an important need for the teachers to pay more attention to the language used in delivering the content of their lessons to benefit learning.

Code switching, rather than reflecting the traditional view of a disadvantaged and semiliterate background, provides an intellectual advantage to many students. Culturally different students who are trying to integrate two cultural systems may have greater cognitive and social flexibility. Students use code switching as a manifestation of a strong integration of two or more cultures. In order to code switch for multiple purposes, students must possess a high level of understanding of the two cultures, as well as a deep understanding of the underlying structures and nuanced

purposes of two language systems. In order to accomplish these tasks, there are numerous cognitive abilities required of students. (Brice, et al., 2006, p. 19)

When bilingual students can alternate between their two languages with ease and can maintain grammaticality of both languages, then this appears to be evidence of advanced language and higher order thinking skills. Code switching thus appears to be evidence of intelligent behaviour that requires significant manipulation of language, grammatical structure, nuances, and subtleties (Brice, et al., 2006, p. 21).

Brice, et al. (2006) enlighten that “code switching is not a sign of inferior language development. Code switching should be perceived as providing a linguistic advantage rather than an obstruction to communication. Through code switching, speakers can convey attitudes, share membership within a cultural group, and exclude others from that insider status” (p. 22).

Brice, et al., (2006) rationalize that

If teachers were to recognize the expressive power of code switching and understand the sophisticated linguistic knowledge required to effectively combine two languages for a social purpose, their prejudiced beliefs about the practice, the students, and students’ possible need for gifted programming may improve. (p.22)

Therefore, Brice, et al., (2006) advise that “students should not be kept out of the gifted identification process or programming because of their use of sophisticated linguistic abilities that teachers may not understand nor approve of. On the contrary, if there are differences in the use of code switching among students of different abilities, such information should be used as positive strength in the identification process” (p. 22).

Reyes (2004) enlightens that code switching should be understood as a useful tool for cognitive development and a skill children use to achieve communicative goals. It is a complex skill children develop as part of communicative competence. Therefore, educators, teachers, and parents should not consider code switching as sign of cognitive confusion, but instead an indicator of children’s bilingual competence (Reyes, 2004, p. 94).

2.7. CONCLUSION

It is clear that proficiency in the language of teaching and learning is a pre requisite, and of significant importance in the classroom, since language plays a central role in the teaching and learning process. For this reason language issues in the classroom remain a critical issue that draws attention from researchers in the field of education and more specifically the language in education and language policies. Learning in the second language creates challenges to learners and their teachers, and it is acknowledged that it is this language that acts as a barrier to learning and affects the learners' performance. Hence, it is very important that teachers who find themselves in bilingual or multilingual classroom where the learners' second language is utilized find strategies that enable them to handle their learners' linguistic challenges.

A common strategy used by teachers as well as their learner to meet their communication need as several researches revealed is code switching which is an inevitable practice in a bilingual and multilingual context. Code switching is said to serve a variety of purposes in the classroom and most of the functions are academic in that they contribute to the cognitive development of the learner or aid in the subject content acquisition. While there is debate about whether this practice is good or bad practice, if well understood code switching can be considered an effective strategy to both aid in the teaching of content subjects such as mathematics in particular and the acquisition of a second language.

CHAPTER THREE

METHODOLOGY

3.1. INTRODUCTION

Methodology refers to the methods, techniques and procedures that are employed in the process of implementing a research design or plan. The methodology also considers principles and assumptions that underlie a study. This chapter describes the methodology process of the research project I undertook. I used the following framework:

- Research goal and research question;
- The interpretive paradigm a chosen paradigm where this study is located;
- A mixed-method approach of enquiry;
- A case study of the methodology underlying the research study;
- The research plan and research journey - done in two phases;
- The participants and site selected for this study;
- A summary of the research design and tools used;
- Validity and ethical issues adhered to; and
- Limitations and challenges encountered during the journey and how I overcame them.

3.2. RESEARCH GOAL

My study aimed to investigate the prevalence and nature of code switching practices in grade 8 mathematics classrooms in the Ohangwena Region of Namibia. In order to achieve this, I needed to answer the following research questions:

1. What is the prevalence of code switching practices in all grade 8 mathematics classes in the Ohangwena Region of Namibia?
2. What is the nature of these code switching practices in selected grade 8 mathematics classrooms in this region?

3.3. THE CHOSEN PARADIGM

3.3.1. Research paradigm

This study is located in the interpretive paradigm. Interpretivism acknowledges and explores the cultural and historical interpretations of the social world (O’Leary, 2004, p. 10). The interpretive approach examines how people make sense of their lives, how they define their situation, and how their sense of self develops in interaction with others (Jackson, 1995, p. 9). This paradigm is most suited to this study because it seeks to gain deeper insight into the nature of code switching of teachers in grade 8 mathematics classrooms. This not only involves exploring how teachers teach using code switching in their teaching, but also how they feel about this practice.

This research is descriptive in nature. According to Nkpa (1997, p. 6) descriptive studies make no attempt to manipulate variables. Their concern is to describe and interpret existing relationships, attitudes, practices, processes and trends. As stated above, this study explores both practices and experiences which involves interpreting complex relationships and processes.

Descriptive research is about what and how many of what; in polls and in descriptive survey research an emphasis is placed on estimating the extent to which a sample may be taken to represent the population from which the sample is taken (Jackson, 1995, p. 26).

3.3.2. Mixed method approach

A mixed method approach was employed consisting of both qualitative and quantitative methods. In this study a quantitative approach was used to analyse the data collected through a survey. The survey collected the information on the prevalence of code switching practice, with the aim to see how widespread it is. The survey questionnaire basically collected data for answering the first research question. This data is presented in graphs that were incorporated in the research report.

A qualitative approach was employed to analyse lesson observations and interviews. The observation and interview transcripts revealed qualitative information. The transcripts of the observations and interviews were coded and categorised into themes according to the nature of code switching framework adopted from (Probyn, 2006, p. 7). The teachers were interviewed to

gain insight into their code switching practices. This data was analysed in a descriptive manner and in conjunction with the observation data within the same framework.

3.4. RESEARCH METHODOLOGY

The methodology follows a two pronged approach:

Firstly, a survey on the prevalence of code switching practices in grade 8 classrooms was administered to all grade 8 mathematics teachers in the Ohangwena region. Secondly, a case study on the nature of code switching of two grade 8 mathematics classrooms teachers was done with two teachers selected from the group that was surveyed. The unit of analysis was the nature of code switching practices of two grade 8 mathematics teachers.

Nkpa (1997, p. 6) states that “case study investigates in detail an individual case or aggregation of individual cases treated as units”.

3.5. RESEARCH DESIGN

3.5.1. Phase 1

In phase 1 of the research a survey was carried out on the prevalence of code switching in all grade 8 classes in Ohangwena region. There are 106 secondary schools in this region. Survey questionnaires were sent to all the secondary school to be completed by the grade 8 mathematics teachers. At first only 55 survey questionnaires were returned. Reminders were sent out and finally, a total of 84 surveys were completed and returned.

3.5.2. Phase 2

Phase 2 of the study consists of a case study which investigates in detail the code switching practices in two grade 8 Mathematics classrooms. The focus was on the nature of their code switching practices. Phase 2 consisted of classroom observations and teacher interviews.

Upon receipt of the survey and tabulating the statistical data I conveniently selected two teachers from the surveyed population. These teachers were then observed presenting lessons in their grade 8 mathematics classrooms. Although the observation was done several times, only two lessons for each teacher were videotaped and transcribed for the purpose of this study.

After observing and transcribing the videos, the two teachers were interviewed. This was done in order to obtain more information about their feelings and views on their teaching and the nature of their code switching practice in order to complement the data collected through observation. This process added to the validity of my research.

3.6 DATA COLLECTING METHODS

3.6.1 Surveys questionnaire

In order to obtain evidence on how widespread the code switching practice is in the Ohangwena region, a survey was used. With the help of the regional office, survey questionnaire were sent to all 106 secondary schools in the Ohangwena region. This is a written form of questioning (survey questionnaire) which is tightly structured, consisting mostly of closed ended questions. However, it also consisted of two questions at the end that required a more open-ended response (Thomas, 2011, p. 164). The questionnaire asked broad questions relating to the frequency of using mother tongue, the timing of using mother tongue and the teachers' personal views on the value of code switching. Figure 1 below shows the survey questionnaire that I compiled and used.

SURVEY QUESTIONNAIRE: On the research titled: **An investigation in the prevalence and use of code switching practice in grade 8 mathematics classrooms in the Ohangwena region of Namibia: A case study.**

This questionnaire aims to answer the first research question i.e. **what is the prevalence of code switching in grade 8 mathematics classrooms in the Ohangwena region.**

Definition of the term **code switching**: According to (Setati, 1998, p.34) code switching is the use of more than one language in a single speech – it can involve a word, a phrase or a sentence, or it can also involve several sentences.

To be completed by grade 8 mathematics teachers.

Indicate your answer by **ticking** your correct choice in the appropriate block.

1. Your home language:

Oshiwambo	☐
Other languages	☐

2. Which language is mostly use by:

- a) Learners out in the playground (outside the classroom)

Oshiwambo	☐
English	☐

- b) Learners communicating with each other in the classroom

Oshiwambo	☐
English	☐

- c) Teachers outside the classroom

Oshiwambo	
English	

d) Teacher inside the classroom

Oshiwambo	
English	

3. When do you practice code switching in your grade 8 mathematics classrooms?

I code switch (use some Oshiwambo alongside English) when	Strongly agree	Agree	Disagree	Strongly disagree
1. When explaining concepts				
2. When clarifying statements or questions				
3. When emphasizing points				
4. To connect with learners "own context"				
5. To maintain the learners attention with questions				
6. For classroom management and discipline				
7. For affective purposes (to connect with learners so they feel liked and appreciated)				

4. On average indicate how much time you spend using the learners' mother tongue (Oshiwambo) in the lesson.

Time in the lesson	0 – 5 Min	5 – 10 min	10 – 15 min	15 – 20 min	20 - 25 min	25 – 30 min	30 – 35 min	>35 min
Tick								

5. Do you think using mother tongue alongside English (code switching practice) can help to improve the learners' performance in mathematics?

Yes	No

Motivate your answer:

.....

.....

6. What do you think about code switching practice in mathematics classrooms? Give your personal feelings and opinion.

.....

.....

.....

Figure 1: Survey questionnaire

3.6.2 Observation

In order to investigate the practice of code switching in grade 8 mathematics classrooms, I observed this practice in two grade 8 classrooms. Classes were observed several times but only two lessons for each class were transcribed for the purpose of this research. For coding the data recorded or collected during the observations, I used an observation schedule similar to the one Probyn (2006) used in her research. The observations were used with the aim of answering the second question of this research project which was: what is the nature of these code switching practices in selected grade 8 mathematics classrooms in this region?

Observation is the systematic process of recording the behavioural patterns of participants, objects and occurrences without necessarily questioning or communicating with them (Maree, 2010, p. 83-4). In this case it is the two teachers' behavior patterns in terms of the nature of their code switching practice that was the focus. The observations enabled me to monitor and understand the nature of code switching of the participating teachers (Maree, 2010, p. 84).

Figure 2 below is the observation schedule that I used to record the frequency of code switching or the use of mother tongue as it occurred in the course of the observed lessons. In this schedule the nature of each kind of code switching is indicated in the figure in the first column. The next two columns illustrate the frequency of code switching. The ticks were then counted to find the number of times each type of code switching occurred.

Purpose for code switching	Frequency occurrence ticks	Frequency total
a) Explain the concept		
b) Clarify statements or questions		
c) Emphasize points		
d) Make connections with learners' own context		
e) Maintain the learners' attention with question		
f) Classroom management and discipline		
g) For affective purposes		

(Probyn, 2006)

Figure 2: Observation schedule

3.6.3. Interviews – semi-structured

After the lesson observations and transcribing the videos, the two participating teachers were interviewed. A semi-structured interview was employed. Thomas (2011, p. 163) states that semi-structured interviews provide room for further questions for clarity. In this kind of interview the interviewer has the freedom to follow up on points as required.

During the interview I referred specifically to the videos and used them for stimulated recall. By engaging in depth with the teachers, insights are obtained that complemented the information collected through the survey. The interview was audio recorded and transcribed.

For the semi-structured interview I had some pre-determined questions as a semi-structured interview schedule “defines the line of inquiry” (Maree, 2010, p. 87). Figure 3 shows the questions that I based my enquiry on during the interviews. The order in which the questions appear in the schedule was not necessarily the one followed during the actual interview.

Moreover, some questions emerged during the interview as I probed for more clarity in order to get more complete information.

Interview questions

Aim to get insight into teacher's beliefs and feelings about code switching practices and reflection of the lessons observed.

1. To what extent do you practice code switching instruction in your classroom? (ask this question in conjunction with the survey and the video)
2. Why do you code switch?
3. When do you code switch?
4. How often do you code switch?
5. How do learners respond when you teach in Oshiwambo?
6. How do learners respond when you teach in the medium of English only? -English and Oshiwambo?
7. In your opinion what are the advantages and/or disadvantages of code switching?
8. Have you ever attended/participated in a workshop on code switching instruction?
9. What do you think about code switching in general? ...do you think it is good thing? ...do you think it is a bad thing?
10. Parents?
11. Ministry?
12. Are you aware of the language policy? ...what do you think about the policy?
13. If you had to write the policy, what would you say?

Figure 3: Interview schedule

3.7. SAMPLE AND SITE

For Phase 1 all grade 8 mathematics teachers from 106 secondary schools in Ohangwena region were selected, although only 84 participated.

For Phase 2 of my research project, I selected two teachers to participate in the survey. These teachers were from two different schools located within a 10km radius from my work place. They were conveniently selected in order to facilitate easy and affordable access (Cohen, Manion & Morrison, 2010). They volunteered to participate after I approached all the grade 8 teachers in

my vicinity to inform them about my project. The two volunteers were asked to complete the survey again so that I could use their responses in the interviews.

However, case studies samples are not representative, so my findings are not generalisable but an in-depth study may reveal relationships that merit investigation on a wider scale (Nkpa, 1997, p. 7).

3.8. SUMMARY OF THE DESIGN AND TOOLS

Phase	Tools	Purposes	Data
1	Questionnaire -survey	Obtain evidence of the prevalence of code switching practice in grade 8 mathematics classrooms.	Quantitative data that illustrates the prevalence of code switching practices.
2 part 1	Observation and analysis of the video	To obtain data on the nature of code switching practice.	Quantitative and qualitative data obtained from observation schedule
3 part 2	Interview and transcripts	To obtain insight on code switching practice and on teachers feelings and ideas on this practice	Interview transcriptions. Qualitative data.

Figure 4: Summary of the design and tools

3.9. ANALYSIS

The data generated in this research study were analysed quantitatively and qualitatively. Descriptive statistics were used to analyse the data generated by the survey. The quantitative data collected in the survey were presented in bar graphs and described statistically.

During the observations I used the observation schedule to record the frequency of the occurrence of code switching. This data were also analysed quantitatively. The data collected

through the observation (from video transcripts) were coded and categorised into themes according to the framework used by Probyn (2006). The seven themes as they appear in the observation schedule are: code switching (a) for explaining the concept, (b) to clarify statements or questions, (c) to emphasise points, (d) to make connections with learners own context, (e) to maintain the learners' attention with questions, (f) for classroom management and discipline and (g) for affective purposes.

These themes were used in the analysis/coding of the interviews and the simulated recall discussions. In addition the following themes emerged from the interviews: the extent of code switching, the reasons for code switching, awareness of the language policy, and personal opinion on the language policy. These were incorporated in the analysis.

Anderson (2000,) states that “analysing qualitative data is a systematic process that organizes the data into manageable units, combines and synthesizes ideas, develops constructs, theme, patterns or theories and illuminates the important discoveries of your research” (p. 131).

Anderson (2000, p. 131) also notes that “qualitative analysis relies heavily on a process known as *triangulation*; the use of multiple data sources, data collection methods and theories to validate research findings”. Thus, different methods were used in the data collection process and a mixed method approach for the analysis.

3.10. ETHICAL CONSIDERATIONS

O’Leary (2004) stresses that “research should be conducted in a manner that balances the biases and subjectivities of the researcher, and protects the dignity and welfare of the researched” (p. 43). As a researcher one is accountable to act ethically. Thus, throughout the research process I received informed consent from all participants; did no harm through the research process; and protected the confidentiality of the researched (O’Leary, 2004, p. 55).

For the survey, a letter of permission was acquired from the Director of the Regional Office. In addition, a covering letter was sent with each questionnaire to all the secondary schools in the region. The letter indicated the aim of the research, conveyed to respondents its importance, assured them of confidentiality, and encouraged them to respond (Cohen, et al., 2010, p. 339). In addition, all questionnaires were completed anonymously.

The two teachers who volunteered for the case study were given the questionnaires to complete for a second time and this was not anonymous. This was discussed beforehand with the teachers and they agreed to the condition as I needed to use their responses in the questionnaires in the interview process.

The two teachers observed and interviewed participated of their own free will. A letter of permission was sent and upon their agreement, a meeting was held with each teacher to talk about the research process. I assured them of their right to withdraw at any time if they felt uncomfortable continuing with the research process. The teachers were also informed that the raw data collected would only be accessible to us and my supervisor. Throughout the research report I made use of pseudonyms.

3.11 VALIDITY

Survey questionnaires and interview questions were piloted. The questionnaires were piloted with mathematics teachers in my cluster centre schools. The interview was piloted with two of my colleagues, who are also mathematics teachers. Comments given by these teachers were taken into consideration in coming up with the final survey questionnaire and interview.

Triangulation also helps minimise bias and can help detect errors or anomalies in your discoveries (Anderson, 2000, p. 131). The different methods used in this research project aimed to ensure validity.

3.12 LIMITATIONS AND CHALLENGES

Probyn (2006, p. 394) states that many teachers “still regard code switching as illicit”. Teachers thus may be less likely to use the learners’ home language when they are observed, if they feel it is not an acceptable practice. This may affect the trustworthiness of the research data.

Although the teachers may not have felt comfortable admitting that they use code switching practices in their mathematics classrooms I assured them that my research will in no way identify or compromise them. I did this with the aim of securing the trust and collegiality of the participating teachers. This process was an attempt to minimise the effect of this stigma and ensure the trustworthiness of the research data.

Another challenge I faced was the returning of the questionnaire. At first only 50% of the survey questionnaires were returned to me. Thus, I had to send reminders with some more copies of the questionnaire. It was difficult to track down the schools that did not return the questionnaire because I did not record the schools that did return the questionnaire. If I were to do this again I would consider recording the schools as they returned the questionnaire.

3.13 CONCLUSION

In this chapter I described the methodology and design of my research project. I outlined the research paradigm that underpins this study and I discussed the quantitative and qualitative approaches that framed it. I also described the tools that I used: the observation schedule, the interview schedule and the questionnaire. I then described how I selected my sample and participants. An overview of the analysis process was provided before I considered the ethical and validity issues that confronted me. The chapter ended with a brief discussion of the limitations and challenges that I encountered.

In the following chapter the findings are analysed and discussed.

CHAPTER FOUR

FINDINGS AND DISCUSSION

4.1. INTRODUCTION

In this chapter I introduce the findings of the research project and attempt to analyse them. I first present the statistical data gathered through the survey. The graphs illustrate the prevalence of the code switching practice in the Ohangwena region for all grade 8 mathematics classrooms. Secondly I describe the results of the observation and interviews. These findings are presented in themes according to Probyn's framework. Additional themes that emerged during the interview are also presented. Finally, all the findings are discussed and a consolidation is done at the end of the chapter.

4.2. PART A: SURVEY: MULTI-POINT RATING

The survey was carried out with 84 grade 8 mathematics teachers in the Ohangwena region. Responses to the survey are described in terms of bar graphs.

4.2.1 Home language

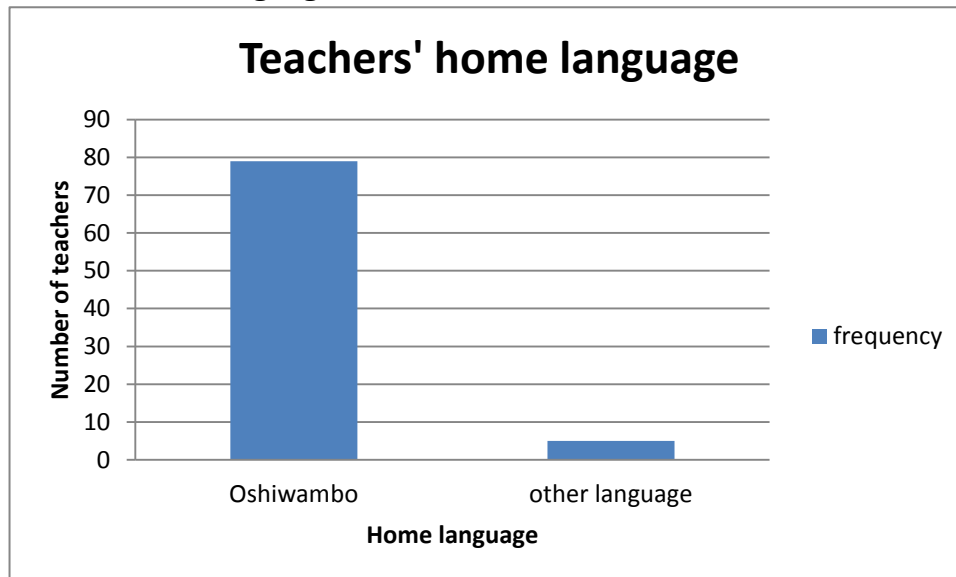


Figure 4.1 Home language

The figure 4.1 indicates that out of 84 teachers surveyed 94% are Oshiwambo home language speakers and 6% of the teachers speak languages other than their home language such as

Afrikaans English, German, Ju|'hoansi, Khoekhoegowab, Otjiherero, Rukwangali, Rumanyo, Setswan, Silozi, Thimbukushu, Portuguese and others . This suggests that most of the Ohangwena grade 8 mathematics classes are being taught by teachers who speak the same language as their learners.

4.2.2 Language mostly used

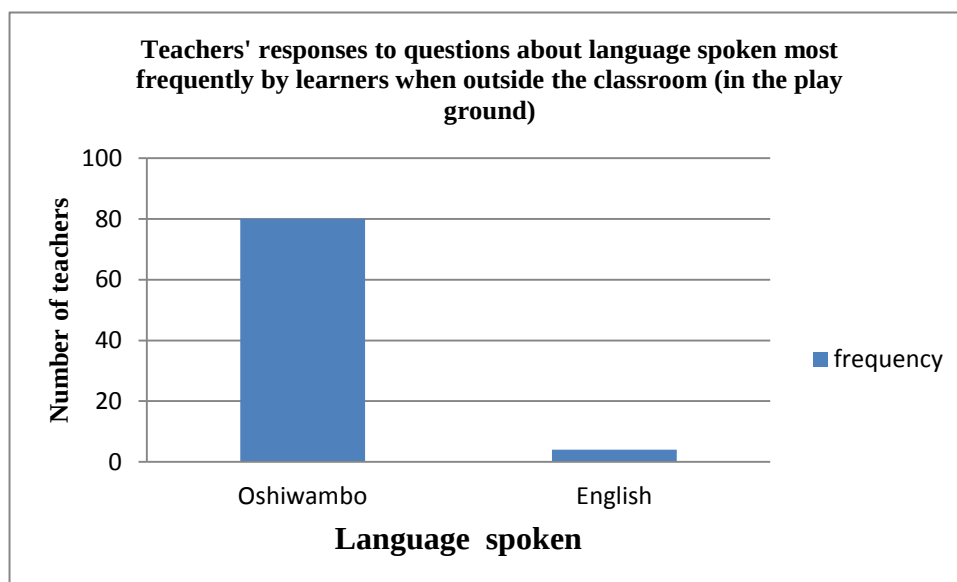


Figure 4.2 Language mostly spoken by learners outside the classroom

According to this survey, the teachers responded that for most of the schools in the Ohangwena region learners speak Oshiwambo outside the classroom. This happens when they are interacting with each other informally and when they play. The figure shows that 95% of the teachers say that learners use Oshiwambo, while only 5% say that English is used in the school play ground or outside the classroom. This could be simply because learners in these schools are from the same communities where Oshiwambo is their home language. In my experience it is rare to find a mixed cultural school in the Ohangwena region. In the schools where English is spoken outside the classroom, this occurs where the language policy explicitly states that only English should be spoken on school premises. This is prevalent mainly in some private schools and/or some secondary schools.

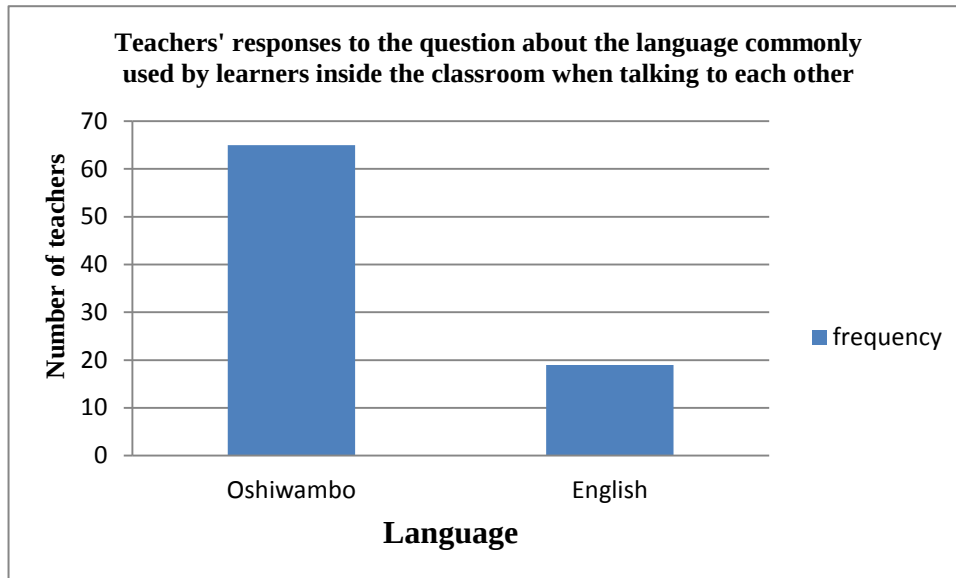


Figure 4.3 language learners mostly use inside the classroom

Figure 4.3 shows the teachers' responses that inside the classroom learners mostly speak Oshiwambo. This is probably because learners are discussing subject tasks and activities which are mostly given in the medium of instruction. The graph indicates that 77% of teachers in the Ohangwena region learners say that learners speak Oshiwambo in the classroom to communicate with each other, while 23% of the teachers say that English is used.

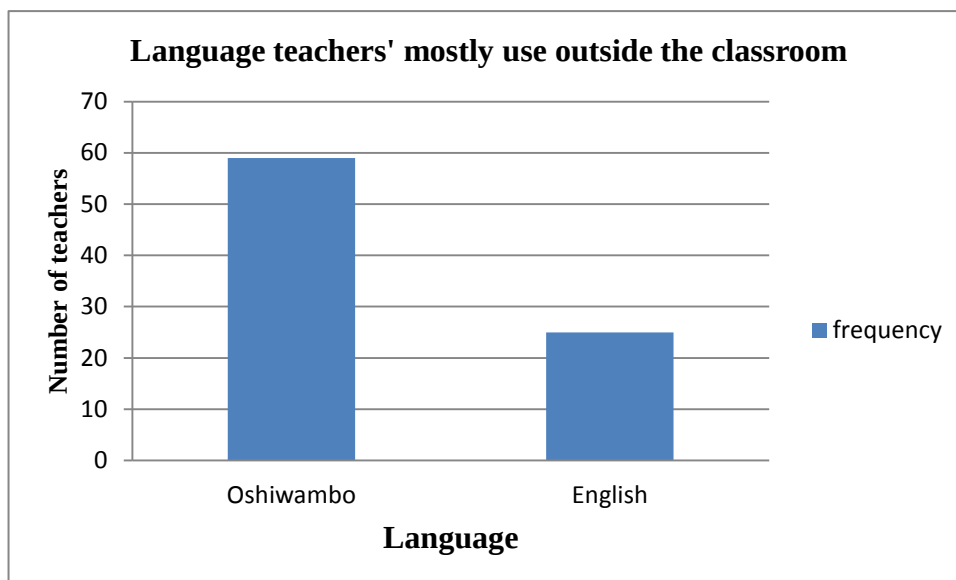


Figure 4.4 Language teachers mostly use outside the classroom

The graph shows that Oshiwambo is the most commonly spoken language used at school by teachers. This is consistent with the data for the learners. 70% of the teachers responded that the language that is commonly spoken by them at their schools is Oshiwambo. On the other hand, the other 30% of teachers responded that they mostly use English on the school premises. If the teachers generally speak Oshiwambo on the school premises, it is reasonable to assume that this is also the language that they use to communicate with their learners outside the classroom. This graph and the previous graph show that there is probably very little exposure to English outside the classroom for both the learners and teachers.

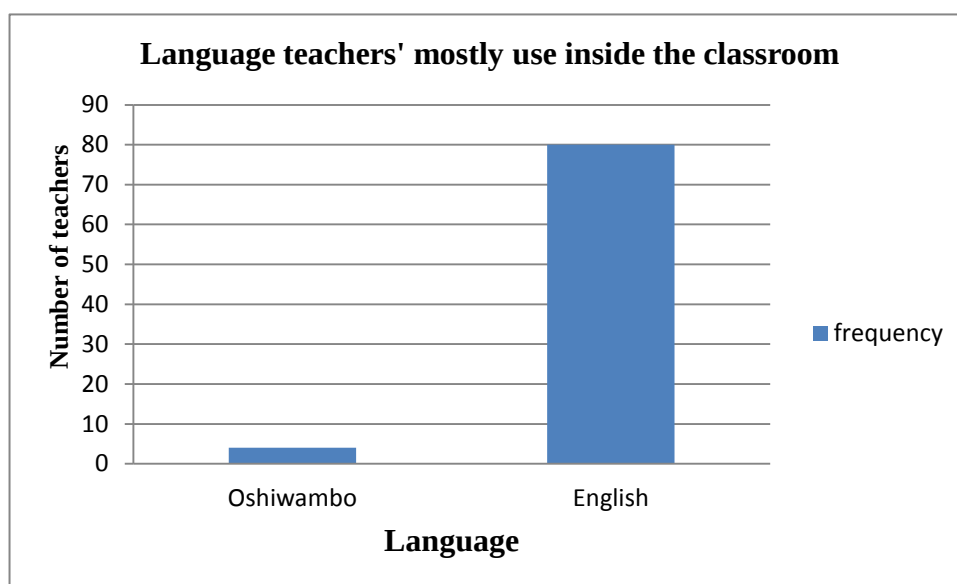


Figure 4.5 Language teachers mostly use inside the classroom

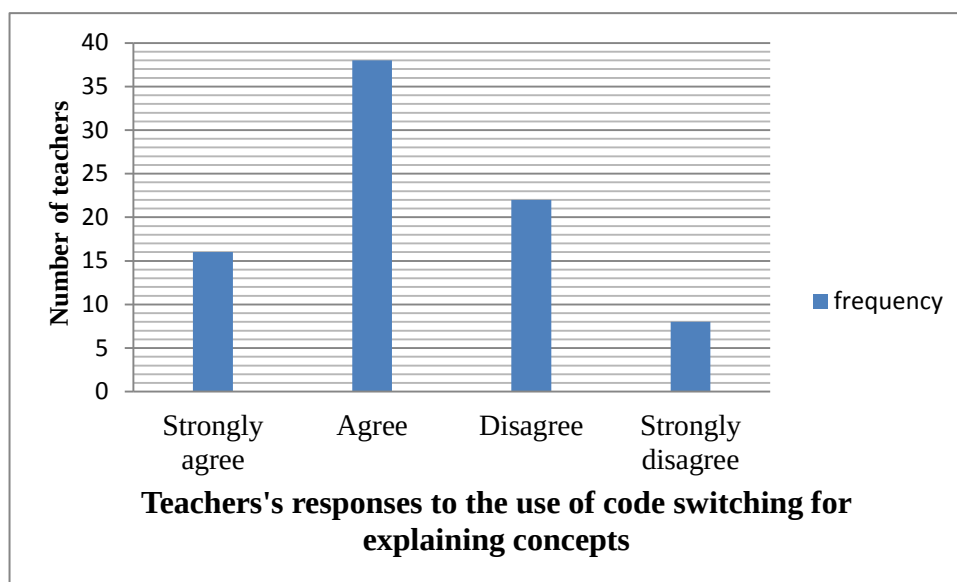
The graph in figure 4.5 shows that teachers mostly use English in their classrooms. 95% of the teachers indicated that they mostly use English inside their classrooms and only 5% teachers indicated that they mostly use Oshiwambo in their lessons. This is an interesting and perhaps unexpected result, and can be ascribed to the official language policy, which clearly states that the medium of instruction is English and the teacher is expected to teach in that language. Comparing this graph with the one in figure 4.4 suggests that most of the learners in the Ohangwena region are therefore only exposed to English in their classrooms.

4.2.3 Code switching practice

Figures 4.6 to figure 4.12 provide an overview of the code switching practices in mathematics classrooms in the Ohangwena region. Most of the teachers indicated that they use code switching in their classrooms for different reasons. Although most grade 8 mathematics teachers use code switching in their classes, there are a few teachers that indicated that they do not use code switching in their lessons. These same teachers mostly disagreed with any of the statements given below. The question that was posted was: when do you code switch?

- I code switch when I want to explain concepts;
- I code switch when I clarify statements or questions;
- I code switch when I emphasize points;
- I code-switch when I connect with the learners' own context;
- I code switch when I maintain the learners' attention with questions;
- I code switch for classroom management and discipline; and
- I code switch to connect with learners so they feel liked and appreciated.

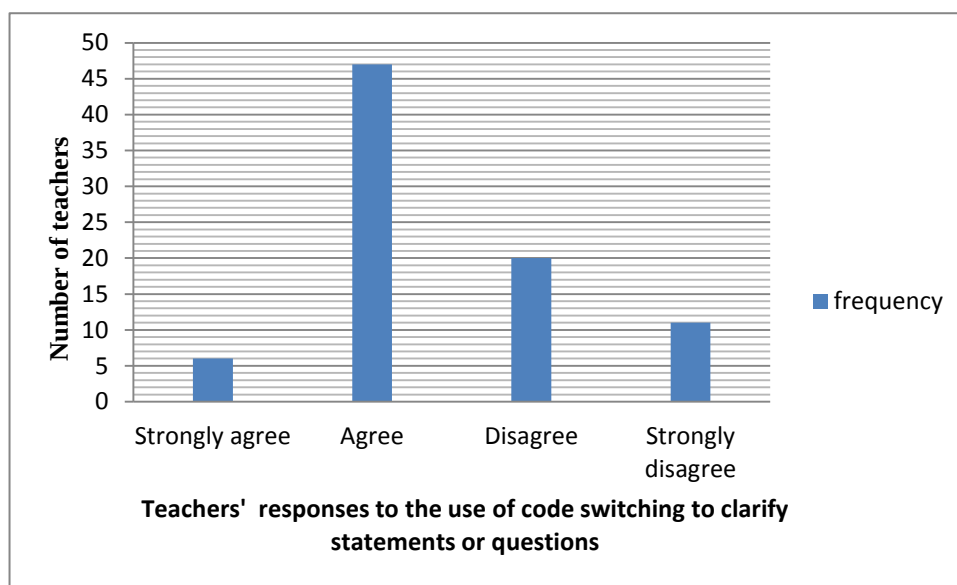
The respondents were asked to indicate if they strongly agree, agree, disagree or strongly disagree with the statement. The findings for each statement are shown below.



Posed question: I code-switch when I want to explain concepts

Figure 4.6: Code switch to explain concepts

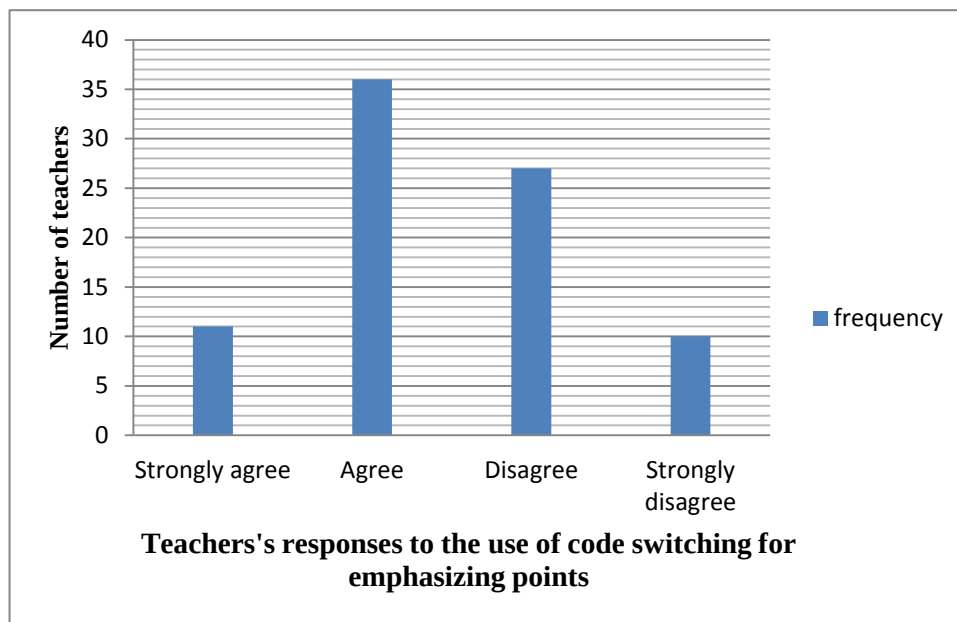
According to the graph in figure 4.6 a high number of teachers agreed that they use code switching for explaining concepts. Up to 64% teachers strongly agreed and agreed that they used code switching for explaining concepts. The other 36% disagreed and strongly disagreed that they used code switching for this purpose. Explaining concepts refers to a teacher making clear mathematical concepts and clarifying these concepts. It can also refer to describing and defining concepts. Code switching makes it easy for new concepts to be accommodated and understood in the mind of the learners.



Posed question: I code switch when I clarify statements or questions

Figure 4.7: Code switch to clarify statements or questions

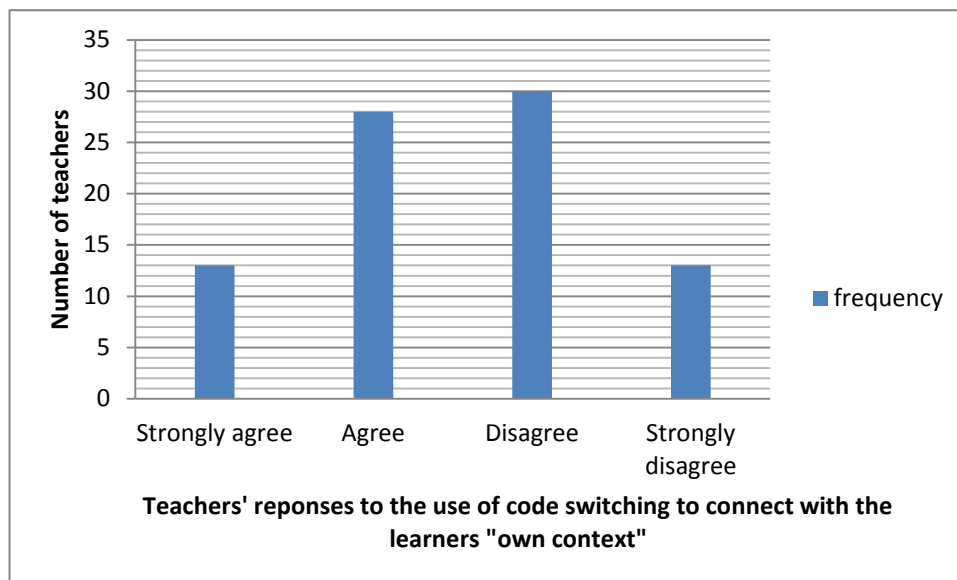
The graph in figure 4.7 shows the responses of teachers to the use of code switching to clarify statements and questions. The survey shows that most of the teachers agreed that they used code switching for this purpose. 63% of the teachers strongly agreed and agreed and 37% of the teachers strongly disagreed and disagreed about using code switching for this purpose. A teacher may make use of code switching when clarifying statements or questions when he or she thinks that the learners will understand more clearly. In some cases a teacher may code switch when asked a question by learners to give clarity or explain a statement or question in more detail. To clarify in this instance means to make clear and spell out statements. It can also refer to shedding light on a mathematical statement or providing a simpler explanation.



Posed question: I code-switch when I emphasize points

Figure 4.8: code switch to emphasize points

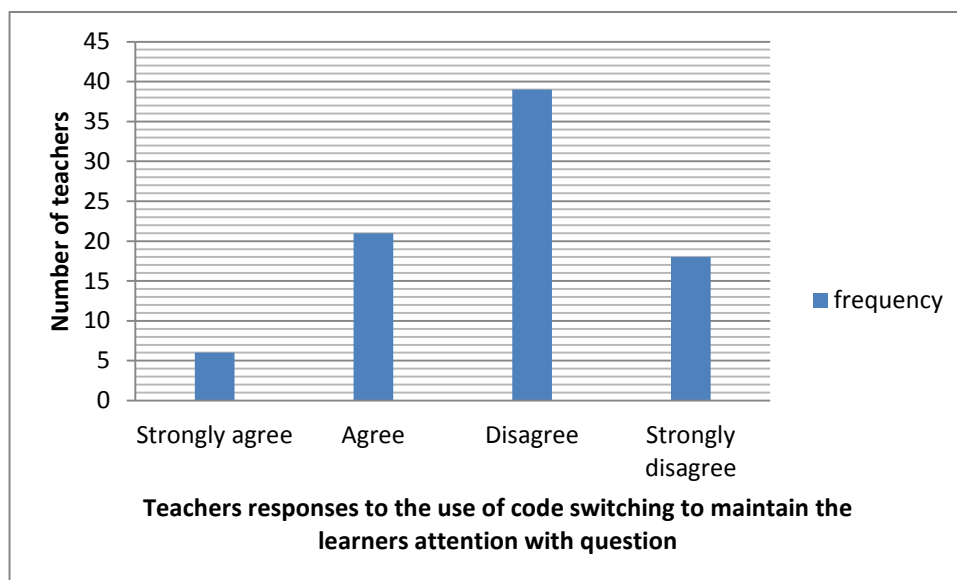
Another purpose of code switching could be to emphasize points in the lesson. In the survey 56% of teachers agreed on using code switching specifically for this purpose in their grade 8 mathematics lessons. The others, 44% of the teachers disagreed and strongly disagreed on using code switching for emphasizing points. Emphasizing points in this context refers to highlighting or stressing particular mathematical points or explanations.



Posed question: I code switch when I connect with the learners' own context

Figure 4.9: Code switch to connect with the learners "own context"

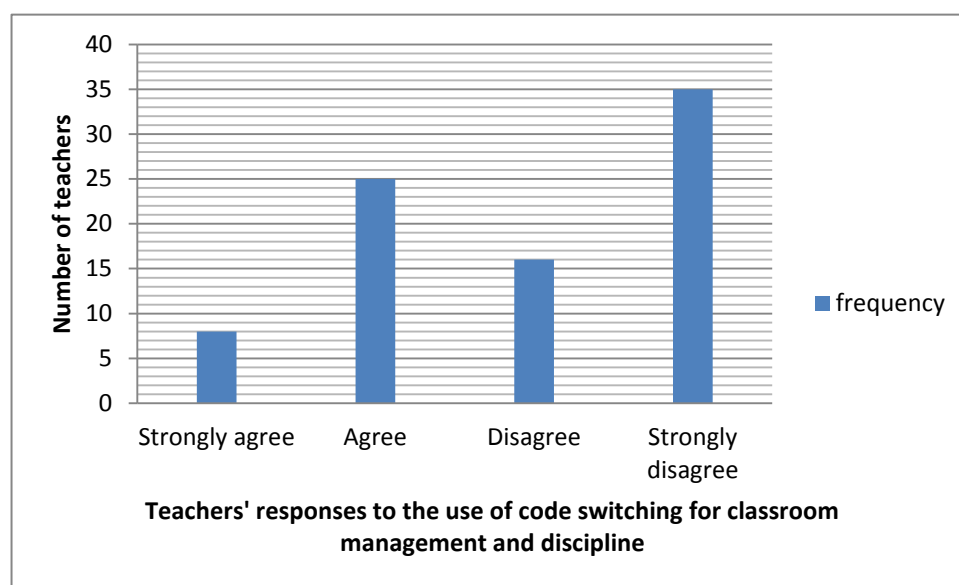
Figure 4.9 shows that 49% of the teachers strongly agreed that they used code switching to connect with the learners "own context". 51% disagreed and strongly disagreed. Code switching to connect with learners "own context" simply means making a connection to what the learners already know (their prior knowledge) or to the learners own social contexts.



Posed question: I code switch when I maintain the learners' attention with questions

Figure 4.10: Code switch to maintain the learners' attention with question

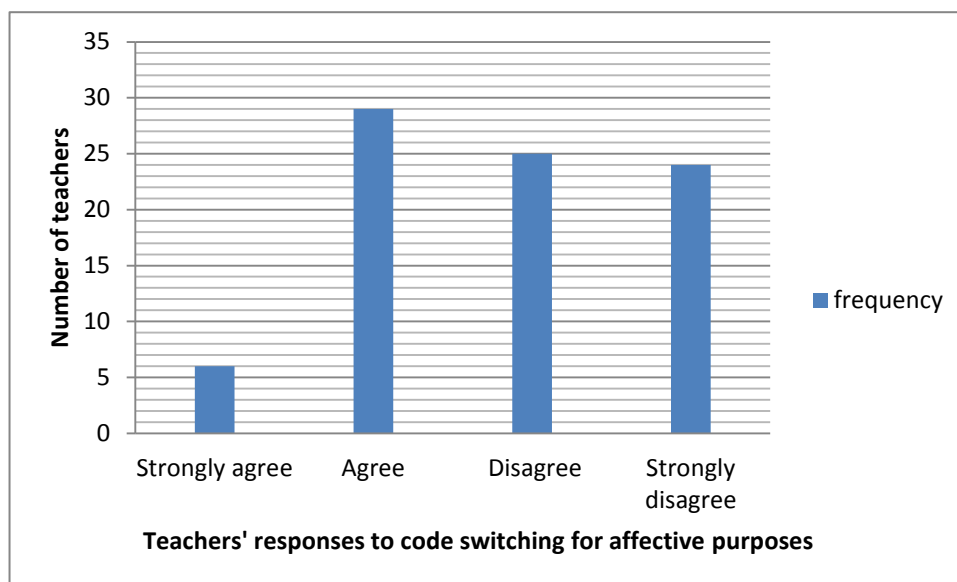
Figure 4.10 shows the responses of teachers to the question if they use code switching to maintain the learners' attention with questioning. A variety of responses were given, where most of the respondents disagreed on using code switching for this purpose. 46% disagreed and 21% strongly disagreed compared to 7% who strongly agreed and 25% agreed.



Posed question: I code switch for classroom management and discipline

Figure 4.11: Code switch for classroom management and discipline

The graph in figure 4.11 shows that most of the teachers disagreed about using code switching for classroom management. A total of 61% responses revealed that they disagreed and or strongly disagreed with the question posted. 39% agreed and strongly agreed that they use code switching for classroom management and discipline in their mathematics classrooms.



Posed question: I code switch to connect with learners so they feel liked and appreciated

Figure 4.12: Code switch for affective purposes

Figure 4.12 indicates the teachers' responses on the use of code switching for affective purposes. Affective purposes imply a connection with the learners so that they feel liked and appreciated. 42% respondents strongly agreed and agreed, while 58% disagreed and strongly disagreed.

The finding in these 7 graphs shows clearly that the use of code switching is high in most of the mathematics classrooms in the Ohangwena region. More than 50% percent of the teachers agreed that they use code switching for the first 3 purposes outlined above. Less than 50% and under 40% agreed that they used code switching for the last 4 purposes listed.

4.2.4. Average time per lesson spent on using the learners' mother tongue (Oshiwambo)

Teachers were also asked to give the length of time on overage per 40 minute lesson they code switch between Oshiwambo and English in their grade 8 mathematics classrooms.

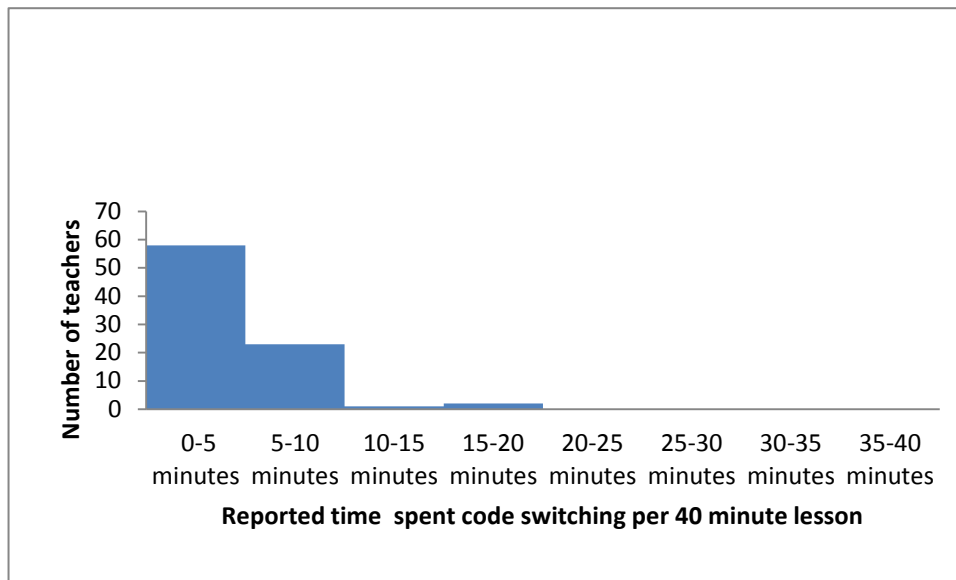
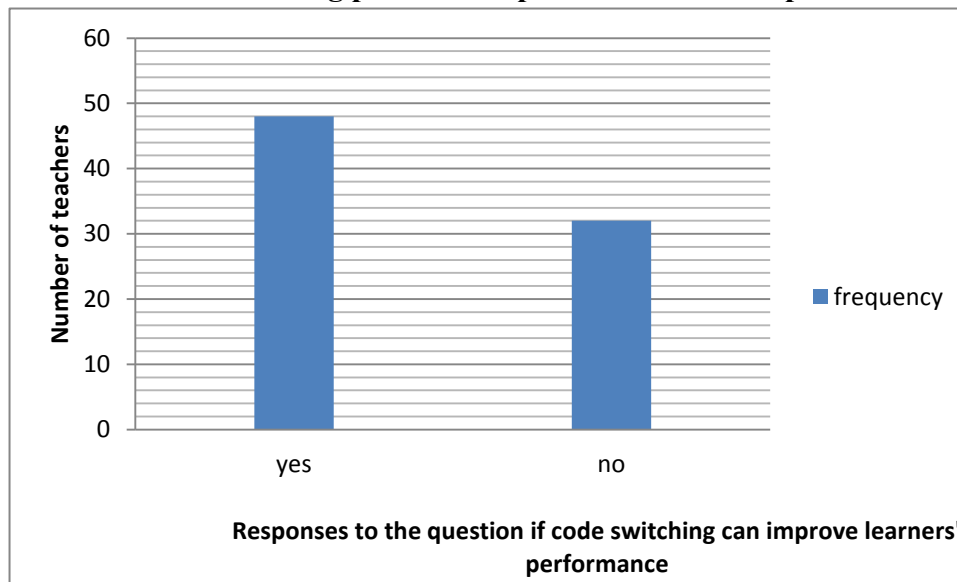


Figure 4.13: Time spent on code switching in a 40 minute lesson

Looking at figure 4.13 above, most of the teachers indicated that they spend 5 minutes code switching. 69% teachers indicated that they only use code switching in their lessons for 5 minute or less while 28% indicated to spending 5-10 minutes of the lesson time on code switching. Only 1% indicated 10-15 minutes and 2% responded that they spend between 15-20 minutes code switching.

In my observation of teacher X and Y I noticed a different pattern. Teacher X indicated on the survey that on average he uses 10-15 minutes of his lessons for Oshiwambo while teacher Y only uses 0-5 minutes on average. However, during my observations, Teacher Y used far more time code switching to Oshiwambo than Teacher X. This could be attributed to the conflict between the policy and its implementation. Teacher X might be portraying the reality in his classroom but was a bit uneasy to indicate that he spent much time using Oshiwambo because it is against the policy. Teacher Y however indicated that he does not use code switching consistently. It depends on the content he is teaching. Sometimes, there is no need to code switch as much, he said. He further suggested that it also depends on what the learners are already familiar with. When the learners are familiar with the content it is not necessary to translate into Oshiwambo.

4.2.5 Can code switching practices improve the learners' performance in mathematics?



Posed question: Can code switching improve learners' performance

Figure 4.14: Can code switching improve learners' performance in mathematics

57% of the teachers felt that the practice of code switching can help improve the learners' performance in mathematics. 43% of the group disagreed. It strikes me that many teachers, despite or notwithstanding using code switching are uncertain of its value to their learners.

Below a short summary of the main survey findings: The multi-point rating survey results:

- 95% of teachers speak Oshiwambo as their home language.
- 70% of teachers and 95% of learners mostly speak Oshiwambo outside the classroom.
- 77% of the teachers said that the children use Oshiwambo when speaking to each other in the classroom.
- Teachers indicated they code switch more for performance reasons, viz. to explain concepts and explain procedurals, and to clarify statements and to emphasize points.
- However they revealed that for the other purposes of code switching, viz. those related to classroom managements and discipline, to make connections with learners' own context, to maintain the learners' attention with question tags, and for affective purposes code switching was not as prevalent.
- The survey indicated that 69% of the respondents reported that they do code switch for 5 minutes or less in an average 40 minute lesson. While 28% indicated spending between 5-10

minutes on code switching. Only 1% indicated 10-15 minutes and 2% indicated 15-20 minutes.

- The survey revealed that 57% of the teachers felt that code switching practices can help improve the learners' performance in mathematics; while 43% of the group surveyed do not believe that code switching can help in improving the learners' performance.

4.3. PART A: SURVEY: OPEN ENDED QUESTIONS

The survey also included two open ended questions. 1) Can the use of code switching improve the learners' performance in mathematics? and, 2) What do you think about code switching practices in the mathematics classrooms? Give your personal feelings and opinions.

The results of these two questions follow below.

Those who responded yes to the first question wrote

Yes

- *Because everyone learns best when you understand things in your own language and interpret it in some other language.*
- *This helps learners to understand better, especially when it comes to the explanations.*
- *Because some concepts are too difficult to the learners, using code switching will help learners to get the meaning.*
- *Not all the learners get to understand concepts in English as they do when they are told in the mother tongue.*
- *Because some of the learners do not understand some of the words in English*
- *They better understand the problems and therefore think better.*
- *First learners have to understand the concept in their mother tongue so they learn them better.*
- *Learners sometimes fail completely to understand concepts.*
- *Sometimes learners with language problems understand better as things were explained in their language.*

- *Because concepts need more explanation in their mother tongue for them to understand.*
- *It helps learners to understand concepts and content better.*
- *Yes, because it can help learners to understand better.*
- *Because when a learner understands the concept in mother tongue, he/she understands much better.*
- *Because some learners do not understand English properly/well.*
- *Language in mathematics differs from other subjects, like principal in Math means money borrowed or invested.*

Those who responded no to the first question wrote:

No

- *They will find it difficult to understand questions in the examinations because they are used to their language.*
- *Simple because mathematics has its own language.*
- *Questions are always in English.*
- *Tests, examinations and mathematics textbooks are not in mother tongue. So mother tongues make learners not used to English.*
- *It cannot help since learners will never be asked Math's questions (activities, tests and exams) in their mother tongue. If they do not understand English; practice makes perfect.*
- *No, I don't think so, because whether you use English or Oshiwambo in the presentation it is just the same, what matters is teaching what is in the syllabus.*
- *No, because questions are always asked in English.*
- *Our learners become deprived of mathematics languages and this affects their performance during examination.*
- *It is useless to tell them in Oshiwambo, if the questions will be in English.*
- *This cannot help the learners to improve the learners' performance in mathematics because is not taught in Oshiwambo neither the exams in Oshiwambo.*

Below are some of the responses to the second open ended question. I have divided the responses into positive and negative responses. This is what they wrote:

Positive

- *It should be there to make learners understand what they are doing in their own language. This will help learners to understand.*
- *This depends on the language background of the learners. Because our rural learners' English background is poor; therefore, I am supporting code switching in the lesson presentation more especially in the explanations of concept.*
- *Many things in mathematics started from grade one. If you use code switching it will make learners get or remember what they have learned.*
- *I think it should be used to explain complicated methods and tough concepts, but not all the time.*
- *I think it is very important to use their language so that it will be easier for them to grasp the concepts.*
- *It is good, because it helps learners perform very well.*
- *It is necessary sometimes and is therefore useful when used well.*
- *Code switching makes learners understand mathematics better.*
- *It brings a common understanding meaning the code switching practice makes for clarity.*
- *It is possible but should not be used commonly as it can lead to poor understanding of questions during exams.*
- *It can help but not spending the whole period in their mother tongues as they are not learning English.*
- *It is only needed when learners do not understand and are struggling with any problem.*
- *I feel like code switching practice in mathematics classroom because sometimes learners may be troubled by some concepts so for that then maybe it will help them to understand better.*
- *It is helping learners but it should not be misused.*
- *I feel the teachers should switch in order to accommodate all the learners.*

- *Good and should be used.*

Negative`

- *It is not a good practice but we cannot avoid it but we can minimize it because of the nature of the learners we have. They have poor or shaky foundation in the official language.*
- *The switching code is not necessary because in fact it promotes the attitude of laziness among learners to be dependent on code switching.*
- *It is not a good practice because learners will get used to Oshiwambo terms and will not understand the question papers.*
- *It is only possible in situation where English is not commonly used.*
- *I personally believe that is not good because English is the medium of instruction and we have learners from different tribes; e.g. Hereroes, Angolans and Vambos, so if we speak in our mother tongues, some learners will be left out.*
- *It should not be used because it will make learners lazy and the examiners will not ask questions in another language apart from English.*
- *Is no good because it does not improve learners' communication skills and may be they will be reluctant to use English in other subjects.*
- *all schools must adopt English as a medium of instruction as from grade 1 to 12 to expose our learners to English a lot longer, compared to current of grade 5 to 12.*
- *If you teach them in Oshiwambo learners may get used to it. So I strongly believe that we teach in English at all times.*
- *Use English across the curriculum.*

Below a brief summary of the responses to the open-ended questions:

- Those teachers who believe that code switching could help improve the learners' performance in mathematics state that code switching helps learners understand concepts, explanations and problems better.

- Those teachers who feel that code switching cannot improve the learners' performance in mathematics argued that the mathematics textbooks, question papers, examinations, tests and activities are always written in English so the learners must be taught in English so that they can understand these texts, questions etc.
- The teachers believe that code switching is a good practice for the following reasons: it helps learners to understand, it helps in the explanation of concepts and methods, helps learners with poor English language background, mathematics starts in grade 1 where learners are using mother tongue so code switching helps them to remember the concepts that they have learned already and it helps to accommodate all learners with different learning ability.
- Some teachers who indicated that code switching is not a good practice are more concerned with the policy and the assessments. Reasons they indicated are that code switching promotes laziness and dependence among learners, code switching does not improve the learners' communication, it causes lack of understanding questions (e.g. in exams), English is the medium of instruction; teachers must use English across the curriculum.

4.4. PART B: OBSERVATION AND INTERVIEWS OF THE 2 SELECTED TEACHERS

After carrying out the survey, two teachers were selected from the group surveyed. These two grade 8 mathematics teachers were observed teaching mathematics in their schools and later interviewed. Below the findings of the observation and interview are presented and discussed.

4.4. 1: OBSERVATIONS

For the observation and interview analysis the following themes were used as per the Probyn (2006) framework:

1. To explain concepts. This I modified for my study to explain concepts or explaining procedures;
2. To clarify statements or questions;
3. To emphasise points;
4. To make connections with learners' own context and experience;

5. To maintain the learners' attention with question tags;
6. Classroom management and maintaining discipline;
7. Affective purposes.

During the observation a number of examples of code switching were exposed as as the lessons unfolded.

4.4.1.1. Category1: Explaining concepts or explaining procedures

Code switching for the purpose of explaining concepts or explaining procedures is intended to make a concept or procedure much clearer to the learner. The teacher may use a code switch to make learners understand concepts. A teacher can also use code switching while giving instructions or trying to explain certain mathematical procedures.

Teacher informing the learners who were just shouting answers without calculating the answers. The teacher code switches to explain the correct approach to do the problem.

O: They are not just guessing answers. *Omwaalu ihatu guess aike omanyamukulo ngaho kaya aaye kutya enyamukulo o 12 muhumu, ile atu guess aike kutyaa enyamukulo o 20 no. we calculate, like here we apply cross multiplication*

T: They are not just guessing answers. (In mathematics we do not just guess answers like that, saying the answer is 12 or just guess that it is 20, no). We calculate, like here we apply cross multiplication.

The teacher here explains a calculation procedure in English and then code switches repeating the answer to the end of the calculation.

O: N\$76.50 I divide it with N\$5.10 which is the cost per litre I get 15l, which means that *moshimaliwa mwinya ohai monomo ashike eeliter 15*".

T: N\$76.50 I divide it with N\$5.10 which is the cost per litre I get 15 litres, which means that (out of this money I will just get 15 litres).

The teacher explains the procedures on how to draw a triangle. He code switches to tell the consequences of not using the tools.

O: Do not write yet. Now *moshifo shoye oto tulamo* that it is 40 *ashike kaishi o 40 kaya*, wait. I will give you protractors then you draw these angles. *Omuuditeko?* (V3TX)

T: Do not write yet. Now, (you want to sketch in your books and show that it is 40, but then it is not exactly 40.) Wait! I will give you protractors then you draw these angles. (Do you understand?)

While illustrating on the chalkboard the teacher shows and explains what an arc is:

O: Then you put a pointer here and you make an arc, *tashiti okamufinda aka* is 4cm from this point.

T: Then you put a pointer here and you make an arc, (this means this line) is 4cm from this point.

Problem posted: You pay 10% deposit for a new bicycle; the price of a new bicycle is N\$ 680. Here the teacher explains the concept of a deposit by using a code switch.

O: How much is the deposit? *Odeposit, okuna okukala akafuta ko ingapi nee?*

T: How much is the deposit? (The) deposit, (how much is his first payment going to be?)

Demonstrating on the chalkboard while explaining the task, the teacher code switches to explain the procedure on how to measure and draw angles.

O: Apart from measuring angles we also need to know how to draw angles. To draw an angle *oto pewa oangle to pewa o figure kutya faneka o angle yo 40. Owete ko... Oushi kutya*

apa oto measuring to mono kutya o angle oifike peni... apa nee owapewa kutya o angle ai tofaneke naikale ifike peni.

T: Apart from measuring angles we also need to know how to draw angles. To draw an angle (you will be given an) angle (and the) figure (of the) angle (like) 40. (You see... you know that here [referring to the previous example] you are) measuring (the size of an) angle... (But here you are given the size of the angle but then you have to draw it).

While teaching about how to measure and how to draw angles using a protractor the teacher code switched in the following way. Here the teacher tried to explain how one has to handle the protractor when measuring the angles.

Ouwete oka protractor aka? Okena o zero ili meni up to 180 ko okena o zero ei ili kombada up to 180. Nena ngeenge oto measuring from here up to here, you put it like this.

(You see this) protractor? (It has 0 up to 180 inside and 0 up to 180 outside the scale).

Teacher explains the procedure to follow when measuring angles.

Ohotale kutya, this is very important. Ohotale kutya otomesuring to dipeni.

(You must always check), this is very important. (You must always check where you are measuring from)

The teacher continues to explain the procedure and on how to measure angles.

Ngeenge otodi oku, otolongifa o 0 ei ngeenge otodi oku otolongifa o 0 ei ili pombada. Ngeenge owa longifa o 0 yapuka nena you will get a wrong answer. Alushe ototale kutya otodi peni nozero ilipi tolongifa.

(If you are coming from here, you use this 0, if you are coming from this side you use this 0 up. If you use the wrong 0 you will get a wrong answer. (So always make sure where you are starting and which 0 you have to use.)

Question posted: 4% of 250 tins of food are damaged in the factory. Find out how many tins are damaged. The aim was to explain how tins may have got damaged in the factory.

Maybe, maybe mutsu odiidenga ngoo nande opedu. Eendooxa dandinyauka nee ngahee, iikulya omongoo ili ashike the tins are damaged nee.

Maybe, maybe (maybe they can fall down. The tins are damaged but the food is still there but) the tins are damaged.

4.4.1.2. Category 2: Clarifying statements or questions

Code switching to clarify statements or questions means any attempt by a teacher to make statements or questions clear for learners to understand. Such a statement can be an answer to a particular problem, an instruction, or a statement given in a problem to solve.

The teacher clarifies an answer to a problem by code switching.

O: Immanuel ota deposit iimaliwa ishona maan, is not even 100

T: “Immanuel (is) depositing (a little amount of money), is not even 100”

Here the teacher clarifies an instruction giving instruction on how to measure.

O: Faneka omufinda to measuring nana from 0 up to 10 cm.

T: (Draw the line) measuring (exactly) from 0 up to 10 cm.

He is clarifying an instruction by letting learners know that what they are doing is not what he said. (This also is an example of classroom management and maintaining discipline)

O: Pwiikina! I did not say take a compass.

T: (Listen!) I did not say take a compass.

Here the teacher use code switching to clarify a question already said in English and repeats it in the vernacular to make sure it is clear.

O: How far can the truck travel on one litre of fuel? *Ee, otruck mbela moliter imwe yomahooli otayeende oshinano shifike peni mbela?*

T: How far can the truck travel on one litre of fuel? (Yeah, How far can the truck travel on one litre of fuel?)

The teacher code switches to state the answer to the previous question as well as to clarify the question.

O: T: *Ngeenge nee 10km is 1 liter, ngeenge omo 100km? How many litres?*

T: T: if 10km is 1litre, how about in 100km? How many litres?

4.4.1.3. Category 3: Emphasizing points

Here the teacher may use code switching to show that a certain point is very significant, either by repeating part of a statement with a code switch or by using a certain strong word in the learners' mother tongue before or after making that point. All this is done do draw learners' attention to that specific point.

Addressing a learner who noisily unfolds a piece of paper. The teacher strongly states that it is disrupting. The whole sentence is a code switch.

O: *Tulapo mkwetu oshiima ota shi weelele osho!*

T: (Put it down, that thing is noisy!)

Before introducing the lesson, because he found learners making a noise, he code switches at the end of the statement to emphasis his point.

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O: People! May you listen to me please? As I said earlier our class is overcrowded, but it is not a room to make noise. aa aa! Omuuditeko?

T: People! May you listen to me please? As I said earlier our class is overcrowded, but is not a room to make noise. (No, no! Did you get me?)

After all learners responded ‘yes’ to his question, the teacher uses code switching to strongly emphasize a point about their behaviour. (This is also an example of connecting with learners ‘context’)

O: Ha-ha! You know *aanaskola vamwe otavati aike* ‘yes’ because majorities are saying ‘yes’. *Eshi ngoo takakala oyaayeke mekoonaakono*. Sorry sorry sorry! You find that learner *talumata opena mekonaakono*. *Uhuu yes talumata aike opena ngaha aike nga aike*, *Immanuel* waanhu aike oo*. Because she do not know what to do.

T: Ha-ha! You know (some of the learners are just saying) ‘yes’ because the majority are saying ‘yes’. (Come examination you will be alone.) Sorry sorry sorry! You find that learner biting his pen. Yes (just biting the pen like this, poor Immanuel*.) Because she does not know what to do.

Demonstrating on the chalkboard while explaining the task.

O: Apart from measuring angles we also need to know how to draw angles. To draw an angle *oto pewa oangle to pewa o figure kutya faneka o angle yo 40*. *Ouwete ko... Oushi kutya apa oto measuring to mono kutya o angle oifike peni... apa nee owapewa kutya o angle ai tofaneke naikale ifike peni*.

T: Apart from measuring angles we also need to know how to draw angles. To draw an angle (you will be given an) angle (and the) figure (of the) angle (like) 40. (You see... you know that

here [referring to the previous example] you are) measuring (the size of an) angle... (But here you are given the size of the angle but then you have to draw it).

4.4.1.4. Category 4: Connecting with learners 'context'

Using the learners' mother tongue helps the teacher to make connections between what learners already know from their own context and the new content. This is done in order to make a link between what is known and unknown, or for learners to learn from the familiar to the unfamiliar.

After all the learners responded 'yes' when the teacher asked if they all understand. The teacher said this relating to or connecting with learners 'context'. He is reminding the learners to think about exams.

O: Ha-ha! You know *aanaskola vamwe otavati aike* 'yes' because majorities are saying 'yes'. *Eshi ngoo takakala oyaayeke mekoonaakono*. Sorry sorry sorry! You find that learner *talumata opena mekonaakono*. *Uhuu yes talumata aike opena ngaha aike nga aike*, *Immanuel* waanhu aike oo*. Because she do not know what to do. (V2TY)

T: Ha-ha! You know (some of the learners are just saying) 'yes' because the majority are saying 'yes'. (Come examination you will be alone.) Sorry sorry sorry! you find that learner biting his pen. Yes (just biting the pen like this, poor Immanuel*.) Because she does not know what to do.

4.4.1.5. Category 5: Maintain the learners' attention with question tags

To maintain the learners' attention with question tags means that the teacher may use a code switch as a phrase after asking a question to check if the learners are paying attention or they understand the question.

There were no examples of code switching under this Probyn category in the sample lessons observed.

4.4.1.6. *Category 6: Classroom management and discipline*

Classroom management and discipline forms a part of all lessons. The typical lesson is often characterized with teacher instruction telling learners what to do – these often refer to issues of discipline and behaviour. The use of code switching here seems especially prominent in the lessons of the two observed teachers. Possible reasons for this may have been that the use of the home language appeared to be more effective and direct in giving behaviour type instructions.

Here the teacher is managing the class ensuring that learners are doing one thing at a time.

O: *Pwiikina!* I did not say take a compass.

T: (Listen!) I did not say take a compass.

Here the teacher code switches giving a command.

O: *Helena, go get the exercise books on my table at my office, endelela!*

T: Helena, go get the exercise books on my table at my office, (Hurry up!)

The teacher code switches to discipline learners on following the right way to write in his or her book

O: *You are done? Mhuu, omunhu otonyola apa, apa owanyolela poshike ove apa inonyola po?*

T: You are done? (You wrote here? Why did you write here and you did not write there?)

Here the teacher code switches to maintain order in the class.

O: *Heyi! Mwena maan!*

T: (Hey! Keep quiet man!)

Addressing a learner unfolding a paper to cover a book. Teacher orders the learner to stop what he is doing in the vernacular.

O: *Tulapo mkwetu oshiima ota shi weelele osho!*

T: (Put it down, that thing is noisy!)

While informing learners to stop making a noise, the teacher starts with a strong word in the learners' mother tongue to ensure immediate response.

O: *Ahowe, keep quiet!*

T: (No), keep quiet!

Before introducing the lesson, because he found learners making a noise, the teacher brought them to order with a code switch.

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O: People! May you listen to me please? As I said earlier our class is overcrowded, but it is not a room to make noise. aa aa! Omuuditeko?

T: People! May you listen to me please? As I said earlier our class is overcrowded, but it is not a room to make noise. (No, no! Did you get me?)

4.4.1.7. Category 7: Affective purposes

Code switching for affective purposes simply means that a teacher code switches to make the learners feel liked and appreciated. Sometimes the teacher throws in a word or two, or even a full sentence in the learners' mother tongue for the learners to feel the affection. This is done to keep a spirit of belonging in the classroom among the learners.

In this extract from the transcript the teacher used code switching to make the learner feel good

O: T: **ok, okuna mo oliter 1.**

T: T: OK, there is 1 litre

O: L; **name osho kwali ndapopya ngaho**

T: L: (But that is what I was saying)

O: T: **Naave oshokwali wapopya ngaho? I'm sorry maybe I did not get you well. Where you giving this answer?**

T: T: (That's what you said?) I'm sorry maybe I did not get you well. Where you giving this answer?

O: L: **ee**

T: L: (Yes)

O: T: **oo, I'm sorry I didn't get you well that time. Inuuda nai yee.**

T: T: alright, I'm sorry I didn't get you well that time. (Don't feel bad.)

Below a brief summary of the observations:

- In applying Probyn categories to my data I found that there was no category that captured 'explaining procedures', yet this was a frequent occurrence where code switching occurred. I thus added another element to Probyn's first category, viz 'Code switching to explain concepts'.
- In the observed lessons of the two teachers, code switching is used more when explaining and clarifying concepts and procedures. This relates to improving the performance of the learners. This is consistent with or similar to what the survey revealed.
- But contrary to the survey results, where the respondents indicated that code switching is used the least in classroom management and discipline, during the observation instances of code switching for classroom management and discipline was frequently observed.
- In the lesson observed no examples were found on code switching to maintain the

learners' attention with questions tags.

- In terms of patterns of code switching across a lesson, as opposed to individual instances, it is notable that Teacher X code switches more at the beginning of the lesson where new concepts are being introduced and uses less and less code switching as the lesson progress. This is the same with his learners.
- With respect to the official language policy, both teachers, by their practice of some code switching, were de facto challenging the policy, even though in one instance very reluctantly.

4.5. PART C: INTERVIEW

In the interview that I had with the participating teachers further themes emerged that are worth analyzing and discussing. These are:

- a) Why the teachers code switch
- b) When the teachers code switch
- c) The extent to which teachers code switch
- d) Teachers personal experiences and opinions about code switching practices in mathematics lessons
- e) Teachers' comments on learners responses to code switching
- f) Awareness of and opinions on the language policy.

4.5.1. Why the teachers code switch

Why do you code switch?

Teacher X:

Teacher X indicated that he normally uses code switching when he finds out or thinks that his learners do not understand the content he is teaching in English. He understands that there are some mathematical words which learners have never come across before. Thus the teacher thinks it is necessary to use Oshiwambo to try to make these words and concepts simpler and less abstract. The teacher states that *"I try to simplify those concepts and try to give examples in the vernacular language that will make them to understand and get a clear picture of what is going*

on in the lesson”. The teacher also indicated that he sometimes uses code switching to maintain the spirit in the classroom.

Teacher Y:

Teacher Y indicated that he mostly uses code switching when he wants to explain things to his learners, in order to make them understand better and also for him to catch his learners’ attention. He further states that *“If you say something in Oshiwambo all of them can understand at once, not like in English”*. The main reason for this is that the learners are not really very proficient in English, since they are used to speaking Oshiwambo (their vernacular) almost everywhere, at home and at school

4.5.2 When the teachers code switch

When do you code switch?

Teacher X:

Teacher X indicated that he usually uses code switching in giving instructions (about the procedures of mathematics and activities), especially when he found that the learners did not understand him. He mostly finds the need to switch to Oshiwambo when he gives an activity or task, and learners find it difficult, or when they get stuck.

Teacher Y:

Teacher Y said that he mostly uses code switching when the learners do not understand something he is teaching. He gave the example of when a learner asked him to repeat the whole calculation on the board. *“For example Joy Tangina* sometimes used while I just finished explaining some equation on the board ‘Sir, Can you please repeat everything on the chalkboard, because when you were explaining sir you were very fast’ then I realize that no let me just code switch so that this learner will get me well.”*

Instead of going through the explanation again in English the teacher switches to Oshiwambo as a strategy to help the learner understand the problem.

4.5.3 The extent to which the teachers code switch

- **How often do you code switch?**

Teacher X:

As he indicated in his research questionnaire the teacher said he probably code switches for about 10-15 minutes on average, for a 40 minutes lesson.

Teacher Y:

Teacher Y indicated that he always code switches when he notices that his learners do not understand clearly what he is teaching and in order to convince them.

Yeah it does happen that a lesson will go without code switching, but on the very real cases. Because it is like if you just teach the whole lesson without code switching at all, not all learners can be able to respond in the lesson, like if you ask a question. Or raise up their hand or even to view their concerns if they do not understand something I said when I was explaining. They will just keep quiet. Then of I ask of them “do you understand” they will just say “yes”. But if you ask them some question then you realize they do not understand.

4.5.4 Teachers’ experiences and personal opinions about teachers’ code switching practice in their mathematics lessons

- **Advantages of code switching practice in mathematics classrooms?**

Teacher X:

Teacher X said that when the two languages are used at the same time the level of understanding is quite good and performance of the learners tends to be extremely good. *“When you integrate two languages their level of understanding is quite good and their performance, because now they get the content well. And their performance is extremely well (good).”*

Teacher Y:

Teacher Y acknowledged that code switching promotes understanding. However, he points out that the advantages of this practice are fewer than the disadvantages. *“These advantages are few. Yes, a learner will understand. Learners will understand a bit yeah. But there are many disadvantages.”*

- **Disadvantages of code switching practice in mathematics classroom?**

Teacher X:

Teacher X stated that code switching can only be a disadvantage if used too often as Oshiwambo is not the language of assessment. *“So if you use too much Oshiwambo in the class of course they will be disadvantaged when it comes to their examinations. But if the learners are asking their questions in Oshiwambo in the lessons of course I have to respond to them in whatever way or language that will make them understand.”*

Teacher Y:

Teacher Y stated that code switching can be a disadvantage because the learners are expected to write their examination in English and that not all mathematics concepts can be translated into Oshiwambo. *“Disadvantages are that the exams are in English. Not all the words in mathematics can be translated in Oshiwambo.”*

- **Is code switching a good practice?**

Teacher X:

Teacher X thinks that code switching is needed for those learners who cannot grasp the content when he uses English only, but those learners do better if both languages (code switching) are used. He further states that: *“My understanding is that teaching a person in the language he/she understands well helps that person get the content well, but we have to integrate the two”.*

Teacher Y:

Teacher Y considers code switching a good practice because of the kind of learners that he has. He recognized that it helps the learners who are not very proficient in English to follow, catch up and also to get their attention. *“You know our learners are not 100% in English. Code switching helps them to follow well and catch up well. It also helps to catch the learners’ attention.”*

- **Is code switching a bad practice?**

Teacher X:

Teacher X feels that code switching is not bad, but if the teachers are not trained on how to use it in their lessons it may have some adverse side effects. For instance he is afraid that some of the

teachers may abuse the use of vernacular in their lessons and this may disadvantage the learners. *“Because if we are using too much of our vernacular language in our class it may or can disadvantage the learners to understand – I mean to answer the questions in the exam for example. Because if you just use Oshikwanyama, Oshikwanyama in your lessons and the learners are expected to have [write} their exams [in English] it’s also a disadvantage of this practice.”*

Teacher Y:

Teacher Y thinks code switching is bad because mathematics was supposed to be taught in English from grade 5-10. He indicated that he only code switches because the learners are already used to code switching or even have had the whole mathematics lesson in Oshiwambo from upper primary (that is grade 5-7). *“Especially at upper primary you find a teacher teaching mathematics but the whole lesson is in Oshiwambo. Everything, even the numbers are said in Oshiwambo.” “So you find some of us teachers code switching just because we want our learners to catch up well or get their attention.”*

- **How do learners respond when you use English only in a lesson?**

Teacher X:

Teacher X indicated that when he uses the medium of instruction [English] only in his lessons only a few learners participate. *“When I use English it is only the minority, those who can express themselves well in English, who participate. Those are the ones who also ask question if something is not clear to them, while the rest usually just to be quiet.”*

Teacher Y:

Similarly Y also indicated that most of the learners were quiet when only English was used. There is always poor participation in the lesson whenever the teacher uses English only. *“When you use English only, not all the learners will participate; only learner A, B or C will participate, the minority. The majority of learners will just be quiet.”*

- **How do learners respond during code switching instruction?**

Teacher X:

Teacher X argued that during code switching instruction learners participate well. They feel comfortable about asking questions and contribute freely by airing their views in the classroom. *“When I use Oshiwambo most of the learners put their hands up to air their views and also to ask questions.”*

Teacher Y

Teacher Y indicated that most of the learners feel free to speak or respond when Oshiwambo is also used in the class. *“Most of them will raise up their hand to respond, take part in discussions and ask questions because they know they are allowed to speak in Oshiwambo.”* He added that the learners listen carefully and pay more attention, since they understand most of what the teacher is saying.

4.5.5 Awareness of and opinions on the language policy

- **Are the parents aware of the code switching practice?**

Teacher X

The issue of code switching was not discussed with parents. Teacher X feels that the parents need to be informed of the value of code switching in aiding learning. *“We did not discuss this issue with the parents. But we realized that some of our colleagues complained that is not good to use our vernacular in lessons where the medium of instruction is supposed to be English. But I do not think it’s a problem.”* He said that the English language teachers complained about it, that it does not promote the learning of English. English teachers feel that teachers are supposed to use English across the curriculum as the policy stipulates.

Teacher Y:

Teacher Y thinks that the parents are not aware of the language policy and the code switching practice. He believes that the parents do not mind much about the way their children are taught. He also states that parents think whatever way their children are taught by teachers is right. *“Most of the parents here believe that whatever the teacher does in the classroom is right. They believe the teacher knows everything, so whatever they are teaching our kids it’s just fine, that is why they never mind”.*

The school has a language policy which encourages the use of English on the school premises by both teachers and learners but it is largely ignored. *“To tell the truth it used to be mentioned that teachers must use English. But in reality what happens is that even during morning devotions here learners are being addressed in Oshiwambo”.*

- **Is the Ministry aware of the code switching practice?**

Teacher X

Teacher X states that he is not sure if the Ministry is aware of the extent of the code switching practices. What he is sure about is that the Ministry emphasizes the implementation of the curriculum, which indicates the use of English as the medium of instruction. However, he feels that it is necessary to use code switching because it benefits learners. *“I never had a discussion where they [the Ministry] said we must use code switching. But I only use it because I think it is necessary and it can benefit the learners on one side.”* He added however that the practice can only work where the teacher and learners speak the same home language. *“So this code switching practice can only work if the teacher speaks the same language with the teacher and not with the learners of different mother tongues.”*

Teacher Y

Teacher Y thinks that the Ministry is not aware of the prevalence of code switching. This is because ever since he started working, no-one from the Ministry or outside the school had come to observe the teachers. *“I do not think they are aware because ever since I started teaching no body from outside the school came to observe me teaching”.* All he heard about is teachers being told to follow the curriculum and the syllabi as they are always told in workshops.

- **Are you aware of the language policy? ...What do you think about the policy?**

Teacher X

Teacher X claimed that he is very aware of what the language policy stipulates. He said that he is fully aware that it is against the policy to use code switching, but he thinks that it needs to be reviewed to allow for code switching, since it helps learners to perform better especially in their mathematics exams and tasks. *“The language policy is very clear it says English is a medium of*

instruction in grade 8. But I think it also needs to be reviewed so that we will be given a mandate to use Oshiwambo in the lesson. Even if we are already using it and I know it is against the policy. But there is a need for us to integrate the two languages.”

“For example learners do well when I use both Oshiwambo and English, unlike when I only use English which is the medium of instruction. And at the end of the day they perform very well in their mathematics exams and tasks.”

Teacher Y

Teacher Y felt uncomfortable here and indicated that he is not aware what the whole language policy stipulates. All he knows is what is required of him at the grade level he teaches which is grade 8-10. *“I know for sure that for my phase the medium of instruction is English and therefore I am expected to present my lessons in English. However the situation forced me to code switch.”*

He felt that the policy structure is fine and just needs to be correctly implemented. By that he means that strictly the medium of instruction (English) from grade 5-12 and no vernacular should be used. He feels that the implementation of the policy needs to be monitored. *“Because the rules or the policy are already there, put in place by the Ministry, but down here what is happening is different. Teachers are code switching and much worse there are some who use Oshiwambo for the whole lesson which was supposed to be in English.”*

Below a brief summary of the interviews

- The two teachers claimed they code switch in most cases when they find out or think that their learners cannot understand the content they are trying to teach. They also do it to attract the attention of the learners as in, for example, wanting them to pay attention.
- They argued that code switching helps learners who are not very proficient in English. They argued that code switching helps improve learners’ participation and their performance.
- The teachers are fully aware of the language policy, especially of what it stipulate in the grades they are teaching.
- The teachers are of an opinion that parents and the Ministry are not very aware of the prevalence of code switching practices in schools. This issue was never discussed with parents of

their school. They said that the Ministry had never sent anyone to observe their lessons.

- One teacher challenged the official language model with starting English as the LOI only in grade 4, and argued it will be better if all the learners start with English from grade 1 since most of the children of the people who are enforcing the policy attend schools that begin with English. The other teacher also challenged the current language model and its prohibition on code switching and argued that it should be officially allowed thereby freeing the teachers from the sense that they are breaking the rules, which he was uncomfortable with.

4.6. DISCUSSION

In this section I discuss some key features of the literature review in relation to the findings of this study. The format of the discussion will be to identify a claim or findings from the literature review and then present what my study revealed with regard to that particular claim or finding.

4.6.1 Language policy and code switching

The Namibian national curriculum for 2010 (Namibia. MBESC, 2003) as well as the language policy stipulates that learners should learn in their mother tongue during the first 3 years of schooling. In grade 4, the shift is made from mother tongue instruction to English as a medium of instruction. The revised policy, as reflected in the Discussion Document January 2003, states that “In grade 5-7 English will be the medium of instruction. **In this upper primary phase the mother tongue may only be used in a supportive role** and continues to be taught as a subject “(Namibia, MBESC, 2003, p. 4). While in grades 8-12, the medium of instruction is entirely in English. It is particularly important to note here that a strict interpretation of this policy statement suggests that permission is being granted to use the mother tongue ‘in a supportive role’ in grades 5 to 7. In effect this means that the policy recognizes code switching and grants permission for code switching.

The findings from my study with respect to this policy reveal that my participating teachers understand the language policy fairly well in the grades they teach (grade 8-10). They were however unaware of the fact that the policy allows for mother tongue in a supportive role in

grades 5-7. The one teacher was concerned about his colleagues who code switch in this grade at their school. It is because his colleagues code switch in grades 5 – 7 that he continues to do it at grade 8 level. He also indicated that as far as he knows, the language policy indicated that the medium of instruction is strictly English from grade 5-12.

4.6.2 Policy goal of English proficiency by grade 7

The Ministry of Education formulated a language policy which was guided by the following fundamental understandings (Namibia. MEC, 1993): “Proficiency in the official language English at the end of the 7 year primary cycle (grade 1 to grade 7) should be sufficient to enable all children to be effective participants in society or to continue their education”. The finding from my study with respect to this policy goal however reveals that most learners are not really proficient in English at the end of the 7 year cycle. The majority of the teachers according to my survey argue that most of the learners do not understand English at all well. Learners’ poor proficiency in English was also indicated as a reason why teachers code switch.

4.6.3 Extent of code switching

My literature review suggested that code switching is a wide spread phenomenon and is prevalent in Namibia (Wolfaardt, 2005). This is confirmed by my survey which shows that some 57% of the teachers are code switching for reasons as indicated in the findings. One teacher even said all the teachers he knows code switch in their practice.

4.6.6 Standardized nationwide tests

Looking at the results of the national standardized tests carried out in grades 5-7 in English, Mathematics and Science, the Namibian learners are underachieving, particularly in English and Mathematics (Sasman, 2011). The findings from my study with regard to language and overall performance are consistent with this claim. My study revealed that the learners indeed have a poor English background which results in poor language competence. Hence, the teachers have no option but to code switch to help the learners to perform better.

4.6.7 Reasons for code switching

The literature explores and identifies a variety of reasons why teachers code switch:

Burkett, et al. (2001) suggest that learners who have little exposure to English in their daily lives, find it difficult to learn in the medium of English at school. According to my finding this is certainly the reality in Ohangwena schools where 70% of teachers and 95% of learners mostly speak Oshiwambo outside the classroom.

4.6.8 Alternate language models

Wolfaardt (2005) said that teachers themselves indicated that they favour a dual medium approach. Burkett, et al. (2001) argue that learners in a dual medium milieu would have the most to gain, if their first language or languages were maintained and developed as the language of learning and teaching, alongside English.

One of the teachers challenged the official language model that starts English as the LOI only in grade 4, and argued it would be better if all the learners start with English as a medium of instruction as from grade 1. The other teacher also challenged the current language model and its prohibition on code switching, and argued that code switching should be officially allowed. This would free the teachers from breaking the rules, a fact which made the teachers uncomfortable.

4.6.9 Purposes of code switching

According to earlier research, code switching is used in classrooms for different purposes. Probyn (2006) notes that teachers code switch from English to the learners' home language for a wide range of purposes, such as:

- a) To explain concepts;
- b) To clarify statements or questions;
- c) To emphasize points;
- d) To make connections with learners' own context and experience;
- e) To maintain the learners' attention with question tags;
- f) Classroom management and maintaining discipline;
- g) Affective purposes.

My findings with reference to the literature review, reveals that teachers code switch particularly for performance reasons, viz. to explain concepts and explain procedurals, and to clarify statements and to emphasize points. The findings revealed that code switching was not as

prevalent in situations related to classroom managements and discipline, to make connections with learners' own context, to maintain the learners' attention with question tags, and for affective purposes.

Probyn (2006) adds that all teachers need to understand the role of language in learning... how to use the learners' home language as a resource to develop conceptual understanding and bridge to learning additional languages. In my study, those teachers who believe that code switching could help improve the learners' performance in mathematics stated that code switching helped learners to better understand concepts, explanations and problems.

Setati (2006) further suggests that code switching serves a need to focus or regain pupils' attention, or a need to clarify, enhance or reinforce lesson materials. The two teachers in this study claimed they code switch in most cases when they think that their learners cannot understand the content they are trying to teach. They also do it to draw the attention of the learners as in, for example, wanting them to pay attention.

4.6.10 Code switching is sometimes regarded as an illegitimate or bad practice

Probyn (2006, p. 394) states that "it appears that many teachers still regard code switching as illicit, as a sign of failure rather than a legitimate classroom strategy." The findings of this study confirms this when it reveals that 43% of the group surveyed does not believe that code switching can help in improve the learners' performance in mathematics. Some also indicated that code switching is seen as illegitimate because it does not adhere to the official language policy.

Teachers' reactions to code switching are typically quite negative, even when they themselves employ it (Brice, et al., 2006, p. 9). The findings of this study revealed that although some of the teachers code switch, they regard it as bad practice

Those who believe code switching to be harmful claim that students will not be able to communicate effectively in either language (Pollard, 2002, p. 30). Others were concerned with the policy and assessment. They suggested that that code switching promoted laziness and dependence among learners. Code switching does not improve the learners' communication; it

causes a lack of understanding exam questions. They say that English is the medium of instruction therefore teachers must use English across the curriculum.

4.7 CONCLUSION

The findings revealed that the practice of code switching is common in the Ohangwena region of Namibia and this finding answered my first research question. To answer my second research question, the results revealed that the nature of code switching is multi faceted. Teachers code switch for different reasons and purposes. The teachers indicated that they code switched because the learners' language proficiency in English is poor and that they wanted to promote the performance and participation of their learners. My findings align very well with those noted by Probyn (2006). The next chapter concludes the study and makes some recommendations for possible areas for further research.

CHAPTER FIVE

CONCLUSION

5.1 INTRODUCTION

In the previous chapter, the findings of the study were presented and discussed in detail and related to the literature reviewed. In this chapter I conclude this study by providing a summary of the findings and making some recommendations. I also provide a brief discussion on the limitations and constraints I encountered in this study. The chapter ends with some personal reflections and proposed avenues for further research.

5.2 SUMMARY OF FINDINGS

By far the majority of the teachers in this study, around 95%, speak Oshiwambo as their home language. This is the same language that their learners speak. The survey shows that 70% of teachers and 95% of learners mostly speak Oshiwambo outside the classroom. 77% of the teachers said that the children use Oshiwambo when speaking to each other in the classroom. This clearly shows that the Oshiwambo language is mostly used at school with little exposure to the English language. Looking at the dominance of Oshiwambo in schools, the use of code switching seems to be inevitable in such schools.

The survey indicates that teachers code switch mostly for performance reasons, viz. to explain concepts and explain procedurals, and to clarify statements and to emphasize points. Other uses of code switching relate to classroom managements and discipline, making connections with learners' own context, maintaining learners' attention with question tags, and for affective purposes.

Consistent with the findings of the survey, the observed lessons of the two teachers revealed that code switching is used mostly when explaining and clarifying concepts and procedures. This relates to improving the performance of the learners. Contrary to the survey findings however, the observations also revealed that the participating teachers made extensive use of code switching for classroom management and discipline purposes. In the lessons observed no examples were found of using code switching to maintain the learners' attention with questions tags. The survey indicated that 69% of the respondents report that they do code switch for 5

minutes or less in an average 40 minute lesson. 28% indicated spending between 5-10 minutes on code switching. Only 1% indicated 10-15 minutes and 2% indicated 15-20 minutes. The survey revealed that 57% of the teachers felt that code switching practices help to improve the learners' performance in mathematics; while 43% of the group surveyed did not believe that code switching helps in improving the learners' performance.

Those teachers who believe that code switching helps improve the learners' performance in mathematics believe that code switching is a good practice for the following reasons:

- it helps learners to understand,
- it helps in the explanation of concepts and methods,
- it helps learners with a poor English language background,
- it helps learners to remember the concepts that they have already learned and
- it helps to accommodate all learners with different learning ability.

Those teachers who feel that code switching does not improve the learners' performance in mathematics argued that the mathematics textbooks, question papers, examinations, tests and activities are always written in English, therefore the learners must be competent in English for assessment purposes. They also argue that code switching is not a good practice as it does not align with policy. Further, they say that code switching promotes laziness and dependence among learners. It does not improve the learners' communication, but causes a lack of understanding of exam questions. They argue that because English is the medium of instruction, teachers must teach in English across the curriculum.

In applying Probyn categories to the data I found that there was no category that captured 'explaining procedures', yet this was a frequent occurrence where code switching occurred in my study. I thus added another element to Probyn's first category, viz 'Code switching to explaining concepts'.

In terms of patterns of code switching across a lesson, it was notable that Teacher X code switched more at the beginning of the lesson where new concepts were being introduced. Teacher X used less and less code switching as the lesson progressed. The same applied to his learners. This indicates that code switching is useful to assist the learners' understanding until

they become familiar with the concepts and procedures. Thereafter both the teachers and learners went back to using the medium of instruction (English).

The two teachers that I observed were fully aware of the language policy, particularly as it applied to the grades they were teaching. They claimed they code switch mostly when they believe that their learners needed clarification of content and to attract the learners' attention. In their opinion code switching helps learners who are not very proficient in English. They also argued that code switching helps improve learners' participation and their performance.

The two teachers felt that parents and the Ministry are not aware of the prevalence of code switching practices in schools. The issue of code switching was never discussed with parents of their school. They also said that the Ministry had never sent anyone to observe their lessons or advise on code switching practices.

Both teachers challenged the official language policy and felt a revision was in order.

5.3 RECOMMENDATIONS

The following recommendations are made:

- In the context of poor language proficiency in English across the entire spectrum of learners, code switching is a legitimate and effective means for teaching and learning. The use of code switching can be a very effective strategy to bridge mathematics content, the English language and the mother tongue.
- There is a need for teachers to read and understand the language policy.
- The learners' home language should be used properly in the early school grades (grades 1-3) as the policy stipulates because this helps in the acquisition of the second language. The policy should however allow for code switching to be used beyond grade 7 where necessary to aid in the teaching and learning process. This would legitimize code switching and teachers would not feel stigmatized and ill at ease.
- There is a need that issues of language in general, and code switching in particular should be discussed and debated openly and widely. Teachers should be consulted and brought into the discussion arena. This should also apply to parents.

- The Ministry of Education and its policy makers should recognize the value of code switching and consider its inclusion in the language policy at all levels.

5.4 LIMITATIONS AND CHALLENGES

A possible threat to my research project was the fact that teachers would feel intimidated by participating. I thus had to be very sensitive to this fear and assure my teachers that their identity would not be revealed. I had to earn their trust by ensuring a very collegial and safe space for the teachers and me to discuss and engage with this sensitive topic. I assured my teachers this research project would not identify or compromise them in any way.

The return of the questionnaire was a challenge for me. As I cast my net very widely I had to remind many teachers to respond and return the questionnaires. In my final reminder I even attached a new copy of the questionnaire in case the participant had not received the original one or had lost it. This proved to be quite costly and time consuming. I constantly had to check if questionnaires were returned to the regional and circuit office. This time delay forced me to start with the case study before I could analyse all the survey data.

For the case study I had conveniently selected two teachers, one from my own work place and one from another school because we only have one grade 8 teacher. This meant that I had to move between the two schools for my observations and interviews. As the observations were done in normal school time, this at times compromised my own teaching schedule.

A further challenge that needed attention was that at the beginning of the data collection process the learners and teachers were not comfortable with my presence and that of the video recorder, despite being informed about it beforehand. Thus, for my first visit we simply got acquainted with each other. I showed them the equipment and I even gave one teacher the audio recorder to record himself. The lesson turned out to be very natural and spontaneous. It was an interesting lesson that I transcribed for this study.

Another constraint during this study was keeping up with the agreed observation and interview times. Although time and dates were scheduled well beforehand they sometimes did not materialise because the teachers had previous commitments. I thus had to reschedule several times. The teachers were often busy with administration work, setting examinations, revising

work, giving tests and so on. However, I was patient with them and never gave up communicating with them to reschedule our observations and interviews.

5.5 PERSONAL REFLECTIONS

This study taught me a lot and helped me to develop personally, academically and professionally. It is through this study that I have learned to deal with disappointments like participants not meeting my expectations in terms of time planned. I gained a lot of insight into my field of interest, firstly through studying the literature and secondly through the research process. This was a great learning experience for me, particularly engaging in empirical research. This study has placed me on a different professional level. I look at issues and situations far more critically. This not only applies to the area of language of instruction in the classroom, but also in other aspects of my professional responsibilities.

If I had the opportunity to increase the scope of this study, I would focus on the learners' opinions and perceptions about code switching practices. The learners would be interviewed to find out how they experienced code switching in their lessons and how helpful this practice was in their understanding of the lesson content. I also think that it would be interesting to focus on how learners themselves use code switching in learning mathematics. It would be interesting to find out how they use their mother tongue to discuss, think about and understand mathematics concepts and content.

5.6 CONCLUSION

In this chapter I summarised the findings, discussed the limitation and challenges, made some recommendations and provided ideas for further research. I also reflected on my own experience of the research project.

This has been a worthwhile study. Although it is a case study and we cannot generalize from it a lot can be learned from its findings. It is through research and the research outcomes that recommendations are made. These outcomes can then be used to help improve the education system in Namibia. Code switching is a widespread practice in our schools, and it is my wish and recommendation that this practice be reconsidered by our policy makers.

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APPENDICES

VIDEO 1 VIDEO TRANSCRIPTION TEACHER Y

- 00:00-00:20 T: Class do you have your exercise books?
L: No
T: Helena, go get you exercise books on my table at my office, *endelela*.
- 00:20-00:40 T: Ok, class our topic for today concerns percentages. It is; finding the percentage of a quantity.
- 00:40-01:00 T: Can you convert 30/100 to decimal fraction?
L: Yes, the answer is 0.3
T: 0.3? Anybody with a different answer from this
L: Yes
T: So what is your answer?
L: 0.03
T: 0.03, *ahaa*, any different answer from this?
- 01:00-01:20 T: Oo, ok those of you who are saying the answer is 0.03 can you raise up your hand. I want to see, come on, raise your hand, those who are saying 0.03 is a correct answer.
- 01:20-01:40 T: Come on *ningeni ningeni, endeleleni*, oh man! You said the answer is 0.03, No, the answer is 0.3.
T: Is it 0.3 or 0.30?
L: 0.3
T: 0.3 only
L: yes
T: *ehee*
T: we use the percentage to calculate the percentage of lose on a transaction
- 01:40-02:00 T: Immanuel come here please, we are going to share because we do not have enough copies. Calculate a percentage of a quantity (distributing papers).
- 02:00-02:20 T: Check there. Calculate the percentage of a quantity
- 02:20-02:40 T: Let as look at this one the heading says calculate the percentage of a quantity. Now let's take a look to those examples,
- 02:40-03:00 it says we use percentage to do different types of calculation in the business world. For example: calculate the percentage of profit or loss on a transaction; to calculate the percentage of salary increase for the workers should get
- 03:00-03:20 ... and so on and so on... Let us take a look at example 1 are you there
L: yes
T: it says that the manager of the factory finds out that 4% of 250 the tins of food are damaged.

03:20-03:40 Maybe, maybe *mutsu odiidenga ngoo nande opedu. Eendooxa dandinyauka nee ngahee, iikulya omongoo ili ashike* they the tins are damaged *nee. Ouwete shimha ndooxa nande inaituwa ndee tai ndinyukaa?*
 L: *eee*
 T: now the company cannot sell those damaged tins.

03:40-04:00 Ok, now he finds out that 4% of the tins are damaged. Let us now find out how many tins are damaged. You know already that 4% is 4 over what?
 L: over 100

04:00-04:20 T: yeah 4 per 100 or 4 over 100 ok. Therefore it is 4 over 100 times the number of tins which is 200 and what?
 L: and 50
 T: ok let us now find out how many tins are damaged.

04:20-04:40 Before we do any calculation lets just say this 0 will cancel with the other 0 there. Then we are left with 4 over 10 times 250.
 L: (noise)
 T: Are you all following?
 L: yes

04:40-05:00 Now 4 divided by the answer will be...oo!
 L: 0.4
 T: 0.4 times 25. Then the answer will be 10

05:00-05:20 Therefore 10 tins are damaged
 T: *nena eendooxa odo danyonauka opo mboli odili 10.*
 T: *hashoo?*
 L: *eee*

05:20-05:40 T: they are just 10
 T: ok, you know you can also do this by applying everything on your calculator. You can just enter $4 \div 100 \times 250 =$ then you get your answer that is 10. Did you get the answer by this?

05:40-06:00 L: yes
 T: *hano eendooxa ike dili 10 danyonauka. Kaimba okwali ngoo nande eendooxa deeshi. Vahapu ootate veni ile vaamwanyoko ohavalongo kombay.* Where they use to fill those tins with fish,

06:00-06:20 T: not fresh fish but cooked fish. The one you use to buy from those shops, *hamo dili omo?*
 L: ee
 T: let's look at another example, maybe someone went to by a bicycle

06:20-06:40 if you went to by a bicycle may be you do not have enough money. *Otokala nee hofutuko nee wei hire nee ngahee tofutuko ngoo. Meekulu shimha wakwata ove toka futa ko ngoo, fiyo otomane kuyandja iimaliwa yovanhu.*

06:40-07:00 Now there you have to pay a 10% deposit for a new bicycle. *mutsu o* Immnuel nee Immanuel Hailaula okwalanda o bicycle nee. You pay 10% deposit for a new bicycle; the price of a new bicycle is N\$ 680.

07:00-07:20 How much is the deposit? O deposit *okuna okukala akafuta ingapi nee?* To do this we make 10 over one hundred times the price which is N\$680.

07:20-07:40 If I do not have a calculator first I will just cancel this 0 with the other 0 here. You know in mathematics when we are dividing we cancel

07:40-08:00 Canceling the numbers we mean division, it's a division. Did you get me?
L: *ee*
T: while this 0 will divide with the other 0 again. Then we remain with 1 over 1 times N\$68.

08:00-08:20 Therefore the answer here will be only N\$68. Immanuel *ota* deposit *iimaliva ishona maan*, is not even 100. *Okwa* deposit *aike* 68, *eeno ndele otaishingwa nee kongalama aako*.

08:20-08:40 L: laughter
T: *eeno keshe umwe okuna kushinga fiku olo*.
T: let's come to exercise 2 there.

08:40-09:00 T: Ms, you know this learners are already used to using a calculator if I say they should not use it then it is already a problem.
Ms: It ok, they are allowed to use a calculator in grade 8, isn't it?

09:00-09:20 Write down the numeral that indicate the correct answer. (a) 10% of 100

09:20-09:40 numbers are (i) 1/10 (ii) 1.01 (iii) 10 (iv) 90. Which one is the correct answer there?
L: (raising their hands)
T: where are the boys?

09:40-10:00 Aha ah! Yes what's the correct answer?
L: (iii) 10
T: is it
L: yes

10:00-10:20 T: ok 10 is the correct answer, so our choice is (iii)
T: it is not 1/10, 1.01 or 90. It is 10.

10:20-10:40 Did all find it?
L: yes
T: let's proceed with number 1 letter (b). it says 20% of 250.

10:40-11:00 (i) 50 (ii) 25 (iii) 0.50 (iv) 0.20. Which one is a correct one? Now I give the chance to the chance to the girls, Orga.
L: (i)

11:00-11:20 T: is that correct
L: yes
T: so yes (i), therefore 20% of 250 is

L: 50.

11:20-11:40 T: ok let's continue with number 2. *Ponumber 2 opo* it says calculate 10% of 500

11:40-12:00 Let me put it on the board for you. 10% times 500. Do not forget that 10% is 10 over 100

12:00-12:20 then you multiply that by 500. Yes my brother, the answer is...?

L: the answer is 50

T: is that correct

L: yes,

12:20-12:40 T: Ok, the correct answer is 50

T: letter (b) 5% of 800.

L: 40

T: is 40 correct

L: yes

12:40-13:00 T: 80% of 250. Ahaa Lovisa

13:00-13:20 L: is 20

T: and the last one letter (d)

13:20-13:40 12,5% of 685. Mhuu, Immanuel

13:40-14:00 L: is 5000

T: aa?

L: is 500

T: no no that is wrong. You don't know how to read numbers.

14:00-14:20 L: the answer is 85.625.

T: yes the answer is 85.625.

14:20-14:40 can we round this answer to one decimal place. Give us the answer. It will be...

L: 85.6.

14:40-15:00 T: what if we round it off to two decimal places? It will be...

L: 85.6

15:00-15:20 T: 85.6? no its wrong

L: 85.63

T: alright. Where are your exercise books? Do you have them?

L: no, *aaye*.

15:20-15:40 T: I have them

L: yes

T: ok. Go and get them quickly.

15:40-16:00 Now number 3,4 and 5 will be your exercise. 3. Says a farmer owns 258 sheep he finds that 12% sheep are sick how many animals are ill?

16:00-16:20 4. The school has 587 learners on the second day 5% of the learners where absent. Calculate how many learners where absent to the school.

16:20-16:40 calculate how many learners where ill on that day not just absent.

5. Susan score 78% of the test out of 300. calculate how many marks she got.

16:40-17:00 oh, get your books. they are here (distributing the books)

17:00-17:20 T: you were supposed to draw a line here to separate this page, where is your work. *Mhuumm aaye wani ove ne.*

17:20-17:40 L: laughter
T: now they are two. It is not correct, correction.

17:40-18:00 T: this two boys *aaye aye aye. Paife owatapa nee peni? Ei owitepa ei haave wiishanga kaya. Tala eshiu washanga nale oku? Oku owashanga ko*, what is this? *Washanga omanomola elingaho owaaahanga peni?*

L: *koshipelende* sir

T: *aiye otolundilenge ame inandishanga oonola velingaho ame noo 25 vena oo nola kehulilo. Ei* you copied it from somewhere.

T: this one is correct, *maara eshi naashi aaye. Oove nana naave.* You finish all of you except Nelson.

L: yes

T: *Nandehavo Gerson, itonyola hano? Enyamukulo olili peni? Oh, aaye paife oshilishili. Enyamukulo olili peni.*

L: *ondamana*

T: *owamana, omanyamukulo okuli peni? Paife oshili shili, Haitale* where did you get 300? Oh, *owamona aike kutya enyamulo 80, hano oholongifa ngoo nande okashina ngeenge otonyengwa okuvalula menhu ove?* No this is wrong the other ones is wrong is wrong.

L: sir

T: you are done. *Mhuu, omunhu otonyola apa, apa owanyolela* poshike ove apa inonyola po?

L: *oyeyi apa*

T: let me see, this is wrong the rest are correct correct. Ask a calculator from somebody and you work out this one.

VIDEO 2 VIDEO TRANSCRIPT TEACHER Y

00:00-00:20 T: (greetings) Takes out your Maths for life textbooks and let's do the revision.
Ls: (making noise)
T: *Heyi! Mwena maan!*

00:20-00:40 L: *ombili tate T*
Ls: (noice)
T: is too big
L1: no is not too big

00:40-01:00 T: let as do number 6, the following table shows the fuel consumption of different vehicles, the price of petrol is N\$5.60 per liter,

01:00-01:20 ...all the vehicles listed use petrol only. The vehicles are truck, bus, cars and bicycle. You can see the fuel bought in liters and the distance traveled. How far can the truck travel on one liter of fuel?

01:20-0 1:40 *Ee otruck mbela moliter imwe yomahooli otayeende oshinano shifike peni mbela?*
We start with the one that is given there, that 40liter it traveled 200km, this is the fuel and this is the distance.

01:40-02:00 *Mbela ngeenge omoliter imwe otayeende eekilometer difike peni?* What can we do there?

02:00-02:20 Ls: we add,
T: we do what?
Ls: we add
T: No, first we apply cross multiplication
Ls: yes
T: where we say 1 times 200

02:20-02:40 ... and we get 200 here, and then we get 40x there. Ok, then *okudja opo ahatuningi ngaipi?* We divide by 40, *atupola no 40*
L: on both sides
T: on both sides, then we find the value of X.

02:40-03:00 L: *twa mona* Five.
T: we get five, therefore, for 1litler it travel 5 kilometer.

03:00-03:20 T: *oo! oliter imwe otai pula eekilimeter nhano?*
Ls: *eehee*
T: okay, okay

03:20-03:40 T: can we continue, the other question is saying, what was the fuel bill for the bus?
What was the fuel bill for the bus? *Omuluuditeko ngoo epulo olo?*
Ls: yes, *aayee* (chorus)
T: *ee, otaliti ngaalii?* L1, *oliti ngaipi?*

03:40-04:00 L1:
T: First of all you must try to understand it before you give the answer. L2, *kuluudite?*

04:00-04:20 L2: *aaye*.
T: therefore you are not going to be able to do it if you do not understand it.
Ls: (some want to give the answer start away)
T: No, before the answer, *natuudeni mange kutya epulo otalitingaipi. Otaliliti ngaipi?* L12.

04:20-04:40 T: If we go back to what we did with bills, we did bills of water and bills of Electricity ne?
L: *ee* (chorus)
T: and telephone bills, *hano!*

04:40-05:00 it should be the cost per liter. Something like that. *Yee, mwauda koo?* What was the fuel bill of the bus? No, no, Ok.

05:00-05:20 *Eehee*, ok. *Okobus nee ndishi, o liter imwe omwati oina ingapi?* One liter is costing how much?
L: N\$5.10 (churos)

05:20-05:40 T: how many liter is been used by the bus there?
L: 30 liters
T: 30 liters
L: *ee*

T: It will be how many dollars used,
05:40-06:00 30 times N\$5.10, we apply a cross multiplication. And the answer is... hurrying up... *eteni enyamukulo vakwetu.*

L: 153

T: N\$153 with how many cents

L: no cents

T: *otota meke oku kutya o liter oina ingapi? Tulapo mkwetu oshiima ota shi weelele osho! Nena oliter oina eedola 5 no filinga, nena* we multiply the liter used by the bus with the cost per liter.

T: how much does the car owner paid for the car to travel 100km? *mm, ee*, how much, repeat the que *hano ou nee ena otuwa e io tafutu oimaliwa ifike peni ngeenge okwaende eekilometer difike pe fele?* You see, all those duestion was almost a compering. 45liters, you will travel how many km.

L: 450 km,

T: 450km ok, then if its, if its, aa will it stay like this?*ohatushiningeni ngaipi? Handuuya ndipule manga. Ohaikala aike haiyandje oinima koshipelende. Shaashi* if I just start giving things on the chalkboard then you do not understand it won't help. *Omuuditenge? Ngeenge ondeeta aike iinima koshipelende handimupe itashimukwafele sha kaya*, I must first listen to your views, what should we do there? *Haitii! L3 hano oushi ngoo apauli? Oto talenge aike nawa, itolesha vali.*

L3: *aiyee.*

T: you are just looking at mee. Ok, L2 what should we do there?

L2; first we have to get how many 45 in 450.

T: *haitii, osho ngoo ngahoo.* Can you read the question again? It's saying what? How much does a car paid for the car to travel 100km? *mmh? Ee? Natumoneni manga o cost per liter. Omuuditenge? Atwii mono nee ngaipi? Shaashi ngeenge otwa mono o cost per liter opo hatu mono kutya otaka futa ifike peni opo aende eekilometer 100.* How should we get this? L5.

L5. 450 divided by 45

T: and that, the answer we are going to get is?

L5: then divide that answer by 100

T: but before we go to 100, let us find how much is needed to pay in a kilometer. *Shaashi oushii kutya oku okobus oku tuyeni nee manga potuwa nee. Otuwa*, those are small cars, car *moshiEnglish uutuukala aike, hashi?* Yeah, *uutuukala ike.* Pick-ups they are having a different name. *mmmh* are you just quit like that, where are you people, L2! *Tumoneni manga kutya mokilometer imwe ohailongifa oshimaliwa shifike peni.* You know ne L5 was a bit in the right way; by saying we divide this by that. If you divide 450km with 45liters, the answer you are going to get there is km per litter. Because this means; kilometer divided by liters. So what is the answer 450 divided by 45.

L: is 10

T: the answer is 10. *Shayela kutya mokilometer ee ohalongifa eeliter dili omulongo.* Or how do you understand this? How do you understand it? *Eeliter 10 mokilometer 1. Ile, meekilometer 10 okuna mo oliter 1.* How do you understand this one let me hear from you first?

L: *mee kilometer 10 okuna mo oliter 1*

T: ok, *okuna mo oliter 1.*

L; *name osho kwali ndapopya ngaho*

T: *naave oshokwali wapopya ngaho?* I'm sorry maybe I did not get you well. Where you giving this answer?

L: ee

T: oo, I'm sorry I didn't get you well that time. *Inuuda nai yee. Ngeenge nee* 10km is 1 liter, *ngeenge omo* 100km? How many liters?

L: 12, 10, 20 (Chorus)

T: No, listen listen the right way to try how to calculate it you should not sturt dreaming and say what what no you see people who are giving answers her do you see what they are doing they are calculating. They are not just guessing answers. *Omwaalu ihatu* guess *aike omanyamukulo ngaho kaya aaye kutya enyamukulo o 12 muhumu, ile atu* guess *aike kutyaa enyamukulo o 20 no*. we calculate, like here we apply cross multiplication. Here you get 100km and here 10km/l x then you divided both side by 10 km. we get 10 the km cancels and then we are left with liters. so x is equal to 10l. *omuuditeko ngoo?*

L: *umhuu*

T: *otwamona nee kutya mbolii, mee kilometer 100 otalonifamo aike 10l. o 10l oina nee ingapi?* Now we say 10l times 5.10

L: 51

T: 51

L: yes

T: N\$ 51 is Namibian dollar, where you having this one? *Yee?*

L: *okwali ndeshinyola ndele haishi dimi po.*

T: *kwali weshinyola?*

L: ee

T: ok, I do not know if you do understand. Do you understand?

L: yes.

T: Ha-ha! You know *aanaskola vamwe otavati aike* yes because majorities are saying yes. *Eshi ngoo takakala oyaayeke mekoonaakono!* Sorry sorry sorry!!! You find that learner *talumata opena mekonaakono. Uhuu yees talumata aike opena ngaha aike nga aike, L4 waanhu aike oo*. Because she do not know what to do. I will not delet those things *ee*. I will leave them there.

T: the next question how far can a motor cycle travel with the fuel to the value of N\$76.50? *yee?* Ok what should we do there? (Repeat the question). (Pause). Listen, what can you do, if it was you alone in the examination. You know in the examination you cannot discuss. What should you do? *Mhuu? Ototameke nana to ningi ngaipi. L7 otoningi ngaipi nhowele?* What should you do?(long pouse). You see, *epulo olo ataliti, omota otayeende nana oshinano shifike peni komahooli oo akosha oshimaliwa osho shifike opo, osho wapewa osho?* L9! Any idea? L10! Any idea? *Atatatata*. Came on, say something please. Time is going. L11, (laughter)

L: (laughter)

T: listen now, listen. Mo N\$76.50 divided by N\$ 5.10, *ondahala ndimone kutya moshimaliwa mwinya omuna eeliter ngapi? Otashiimo lungapi? Oushiikutya o N\$ 5.10 o cost per liter?*

L: *eee* (chorus)

T: *mo N\$ 76.50 per liter otaimo lungapi?*

L: 15

T: there for it is 15lx, give me the answer 15 times 22.

L: 330

T: three hundred and what?

L: and thirty.

T: 330km. Therefore, *iimaliwa inyaaa*

L: (laughter)

T: *ahowe* keep quite. *Imaaliwa inyaa o N\$76.50 otweeende nayo eekilometer dili o 330*. People this is the reality. Motorcycle and motorbike is the same thing. Their fuel consumption is very low. Because most of them, *nghishi nee ngee omushishi oshiima eshi*, most of them they only have got one to two cylinder. Cylinder is not part of our lesson. They are not consuming a lot. Because if it could be, like let as take an example of that *kared corrolar* I cannot travel with this 15l in those km no its very less.

L: sir, how did you get 330?

T: yes it's a good question. Sir how did you get 330. Ok I did it like this. First of all, I tried to find out how many liters will be covered with 1liter. I start saying 25l of petrol, by getting the information from the textbook, 25l of petrol, the motorcycle traveled 250km ok. Then I check there (c) how many kilometer will be covered with 1l of petrol. *Ondeshinga nee ngaha, opondi mone kutya o liter imwe otai cover o distance ifike peni otya nee*, this 550l *andiiitopola no 25l hamonoo o22km per liter. Kutya moliter imwaaike otayeende eekilomiter dili22. Weteko?*

L: *mhuu*

T: *haimono kutya ngeenge mboli mokilometer imwe...* Are you with me?

L: yes

T: ... *ohandi* covering 22km. ok, *handi tale kutya moshimaliwa shinya o N\$76.50 ndeshitopola no cost per liter ohaimono mo eeliter ngapi?* N\$76.50 I divide it with N\$5.10 which is the cost per liter I get 15l, which means that *moshimaliwa mwinya ohai monomo ashike eeliter 15*. Are you following?

L: yes sir

T: therefore now *ame I tameke oku ngaha kutya* this is side of liter and this is the side of km, 1l is 22km, 15l is xkm *shaashi katushii kutya odifikepeni*. Then we apply cross multiplication 15l times 22km and 1l times x. are you following?

L: yes

T: is where we get 330. Did I answer your question?

L: yes

T: ok!

VIDEO 3 VIDEO TRANSCRIPT TEACHER X

T: People may you listen to me please, as I said earlier our class is overclouded but is not a room to make noise *aa aa. omuuditeko?*

L: yes sir

T: I cannot accommodate that. Let's just work together and do what is supposed to be done, ok.

L: *mhuu*

T: We are going to measure an angle.

T: *atushenii natutaleni koshipelende*, may we look on the chalk board all of us please. *Otuneni o angle ai omuweteko, ili koshipelende. Omuwete ko?* We need to measure the size of this angle. *Ouwete o line ei?*

L: *Eehee*.

T: *Okakuti aka otakekuulukile kutya* you measure from here up to there. *Ouwete oka* protractor *aka? Okena o zero ili meni* up to 180 *ko okena o zero ei ili kombada* up to 180. *Nena ngeenge oto* measuring from here up to here, you put it like this. *Okamfinda aka takakala nana kayukilila moka line omu. Paife oto longifa zero eli?* You know you are starting here so *otolong longifa zero ou wokombada ou. Tomono nee kutya* this is 0 this is 90. It will be 90 what? ...Then it will be 90... 1 2 3 4. I will be 90...?

L: 4

T: 94

T: *Ohotale kutya*, this is very important. *Ohotale kutya otomesuring to dipeni.* Ngeenge otodi oku, *otolongifa o 0 ei ngeenge otodi oku otolongifa o 0 ei ili pombada. Ngeenge owa longifa o 0 yapuka nena* you will get a wrong answer. *Alushe ototale kutya otodi peni nozero ilipi tolongifa.*

T: let me give you another example. (Drawing on the board) Measure the angle, *natango ohatu* measuring o angle oyo. *Omushe omuudite ko ngoo? Paife atu measuring atudi komufinda ulipi?*

L: *oyeu uli pedu.*

T: *komufinda ulipi?*

L: CA

T: CA *twayuka ko BC. Omuuditeko?*

L: *eee.*

T: Ook. You put your protractor like this. *Ozero yetu oili nana Moline omu aka taka kala keli mo corner omu. Paife otolongifa zero elipi?*

L: *womeni*

T: yeah, *otolongifa zero womeni.* Now the answer is what?

L: is 60

T: yes is 60. Is not 120, *aanhu vahapu... ondeshimona etitano, aanhu vahapu ngeno tavati* is 120, is not 120. *Shaashi owalongifa zero ou womeni nena ngaha* it is 60 degrees.

T: what type angle is this?

L: acute angle.

T: It is an acute angle because is between 0 and 90. And this one?

L: Obtuse angle

T: Yes, it is obtuse angle because it is between 90 and 180? This also very important when measuring angles. To know what type of angle you are measuring to avoid mistakes.

T: Apart from measuring angles we also need to know how to draw angles. To draw an angle *oto pewa o* angle to *pewa o* figure *kutya faneka o* angle *yo 40*. *Ouwete ko... Oushi kutya apa oto* measuring to *mono kutya o* angle *oifike peni... apa nee owapewa kutya o* angle *ai tofaneke naikale ifike peni*.

T: *neena nee...* You put your protractor like this is up to you whether to use this 0 (up the scale) or this 0 (down the scale). *Ngeenge otolongifa 0 ou toya aike apa ngaha, o 40 oili pee...* it's here. Then you put a dot at 40. Then you put a ruler... you draw the line. Then you mark the angle. To confirm *nee* with your protractor again if it is 40 by measuring the angle you draw.

T: measure the angle of 90 degree. 90 degree is a right angle is it?

L: yes

T: draw a line here. You take your protractor. You put it in the line like this. This is 0, this one is 90. You make your dot at 90. Remove the protractor and use your ruler to draw the line. These lines are perpendicular.

L: *katuweteko*.

T: *mwaninga ngaipi?* This is 90... *kamu wete ko ngaipi hano? Eshi muhewete osheshi handi* drawing *ile oshike muhe wete?*

T: when you are drawing the angle you put a dot here then you put your protractor then you choose which zero to use put a dot at that 0 then you go to 110... 120... 120 what?

L: 5

T: 125. You put a mark at 125. *Ou wete koo... yee? Ouna oka* dot *apa* and another dot at 0 and another dot between here. Then you connect your dots.

T: *ngeenge owa* measuring? What will you get?

L: 125

T: the angle is 125. *Aa aa*, no! people do not draw this one. I am going to give you protractors so you can draw. Now *moshifo shoye oto tulamo* that it is *40 ashike kaishi o 40 kaya*, wait. I will give you protractors then you draw these angles. *Omuuditeko?*

L: in the summary

T: yes it must be done in your summary books. You draw 40, 90 and 125 in your exercise books I mean in your summary books. In your summary books. And then class captain for 8A *toongele*

iifo yo summary yo 8A class captain for 8B toongle iifo yo summary yo 8B. Then I am going to mark you, because I must know whether you know how to draw the angles. In your summary book. Are we together?

L: yes.

T: *Uu* protractor *ava* they are not enough, so *otamu* sharing. And you must be responsible for them. *Ina muvaka mosha omo.* Just take a ruler and protractor to use and put them back.

T: (distributing mathematics sets). I will come back for the protractor, those of you I said you are responsible you must check if everything is there. I will come get it straight from you. Otherwise have a nice day.

VIDEO 4: VIDEO TRANSCRIPT TEACHER X

T: people we are going to share as normally. This time we are going to use a compass and a ruler. Constructing triangles... ok. Listen. We are going to construct triangles given three sides; the three side s is given. For instance the triangle like this, AB and C (sketched on the board). *Otamu pwiikine ngoo?* O triangle, o side *ei otweipewa nale kutya* is 10cm, this one is 7cm and this is 8cm. But now we are going to draw by using the compass.

T: First what we are going to do, we are going to draw a line AB which is 10 cm. we are going to draw one of the line, because we are going to measure exactly 10 cm, 7cm and 8cm, ok. What we are going to do you take a ruler *otokufa okatendifo nana koye. Itale okatendifo. Ndele oka tendifo oko tokufa to tende naanaa* 10cm. *wete ko* 10 cm. AB is 10 cm. next set your pair of compass to the radius of 7 cm. to set it you are going to use a ruler like this then you put the pin at 0 then you put it at 7 like this. You put the arc here and then a radius o 8 cm. *oto measuring ko karuler, pointer ei otoitula kokaruler po* 0 then you measure 8cm. then you make another arc meeting the one for 7cm. then you take your ruler then connect the points. *Tete* you must have a ruler and protractor than you can start drawing.

T: let me give you another example. Let's say this one is 4cm this one is 5 cm and this is 6cm. you draw any line you would like to start with. Any line either for 5, 6 or for 4cm. lets draw 6cm first. Then you take your compass at the radius of 4cm, *tokufa okaruler pointer eitoitula pu0 tokongo* 4cm *nokapencil. Shaashi oto ning oradius opo olaime aka kakale kena* 4cm. then you put a point here and you make an arc, *tashiti okamufinda aka* is 4cm from this point. Then you make another radius of 5 cm. *todi pu0 fiyo opulye? Pu* 5. Oradius *ei* is 5 cm. then you make an arc cutting the other arc that we made already. Now where the arcs intercept that's where the lines meet. Now you connect the points with the ruler like this. This one is a line of 5cm and this is of 4 cm.

T: I am going to give you the mathematics sets so you can draw these ones. You are only going to use you compass and a ruler. No! Not that one, the compass is this one. Make sure that

everything is there. Wait *inamufaneka manga*. No! *hako ocampass aka*. People put the pencil in the compass, don't draw yet, don't draw. Hold your pencil and compass I want to see how you put in, *iyaaa, ove tokafete nee ngaha*. Take a ruler.

L: *ame mwange kamuna oka* ruler

T: oo, *kaimba okakufwamo kuvakweni*, just wait.

T: oh, people are you listening? Are you ready?

L: Yes

T: ok did you put the pen in the compass

L: yes

T: ok. Take a ruler. Did you take a ruler?

T: ok. First what I want you to do. *Faneka omufinda to* measuring *nana* from 0 up to 10 cm. draw it in the middle of the page.

L: millimeter or centimeter

T: *yee*

L: *omeemillimeter ile ee* centimeter?

T: centimeters

T: In the middle of the page, *epandja inalitendwa pokati*. *Shaashi itodulu kofane ka...* yeah like that. Are you done?

T: *pwiikina!* I did not say take a compass. I said draw a line of 10cm. in the middle of the page. Did you draw 10cm?

L: yes

T: ok now what I want you to do... take your compass. To *tula okapoint kocacompass pu0, ko aka takai pulye?*

L: pu5

T: alright. *Omuuditekoo?* To make a radius of 5cm. people are you following?

L: yes

T: Did you make a radius of 5 cm?

L: yes

T: so then you come to a then you make an arc on top ee, like that. Are you done?

L: yes

T: did you make an arc?

L: yes

T: now make a radius of 6 cm and make the other arc starting from point B. *hano owadrawinga ngaipi. Okaarc koye nakakale ngaha* feel free. *Kala wamanguluka.*

T: *hano oikwashike oyo tofaneke.* Start over.

T: let start again. Take your ruler. Just follow what I'm doing. Draw a line of 10 cm. are you following? Did you draw?

L: No

T: Draw a line of 10 cm, measuring *ko karuler koye omufinda wo* 10 cm. are you done. *omwamana oke* drawing?

L: ee

T: ok. From there *omufinda woye oo luka* nee AB. people try to follow the instruction. are you done.

L: yes

T: take your ruler and your compass *okapointer oko otokatula pu 0* ove *toningi nee o* radius yo 5 cm. *oka pointer otokatula pu 0 okapencil tokatula pu 5. owamana?* Ok then *okapointer oko tokatula nana puA* on the line and then you make an arc. *tashiti okudja po point apa fiyo opapa opena eecm ngapi?*

L: 5

T: 5, ove otokufa okaruler koye nawa nawa then you draw a line.oushi nale kutya this is 5 cm. are you done?

L: yes.

T: ok, from there again you take your ruler and your compass. Did you take your ruler and compass

L: yes

T: *paife oto ning o radius ifike peni?*

L: 6 cm

T: *hano ove owa mana ngaipi?*

L: *ondalongifa oka* compass

T: *oshike omufinda ou weya omu? shafa ngeno o 6cm no 10 cm ifikepamwe?*

L: (noisy)

T: *itashitu kumwe?*

L: *aaye*

T: ok, *eshi oshakula unene kaimba. naikale o 7. ninga nee.*

L: (learners constructing and discussing)

T: ok. tala you make line of 7 cm, then you make your arcs of 5cm then 6 cm. You make you first arc, you draw the line then you make another arc. itale?

L: Itashifiki.

T: *otashifiki. ngeenge owadi pu 5 apa, petameko lokamufinda apa. kuwete, hambala oshafika.*

L: *aaye*

L: trying to construct and discussing

T: that is the idea of drawing the triangles if both sides is given.

T: Listen learners we are going to construct again on Monday.

T: whenever you are given three sides always draw one line then you make the arcs of the other two lines from the sides of the line drawn then you connect the lines.

L: (still constructing)

T: Grades 8 are you listening to me. Today we have an idea. On Monday I will make sure everybody is able to draw a triangle by using a compass and a ruler. Now can I have my mathematics sets will all... *iinima aishe naikalemo nawa nawa yee.*

L: *eewa.*

T: collecting the mathematics sets.

AUDIO 1 AUDIO TRANSCRIPT TEACHRE X

Aim to get insight into teacher's beliefs and feelings about code switching practice and reflection of the lessons observed.

1. To what extent do you practice code switching instruction in your classroom? (ask this question in conjunction with the survey and the video)

P: Ok. Normally I use it when giving instruction or when I found out that learners cannot understand, that is when I use code switching or the other language.

P: If my learners do not understand I use Oshiwambo in my lesson here and there. But normally I use English, but in most cases I will use both languages in order to make my learners understating. The other reason is that my learner mostly asks question in Oshiwambo so I end up answering them in Oshiwambo.

I: According to the survey statistics I have noticed that most of the teachers if not all in this region practice code switching in their lessons at certain extend. And looking the video I have noticed that you frequently used the same practice, because I have picked up some Oshiwambo word here and there in your lesson (e.g.).

2. Why do you code switch?

P: normally I use this practice when I want to make my learners understand the content well, sometimes like some of the mathematics content that learners have never come across with before. I try to simplify those concepts and try to give examples in the vernacular language that will make them to understand and get a clear picture of what is going on in the lesson and also sometimes I do code switching just to maintain the spirit in the classroom.

3. When do you code switch?

P: sometimes you give learners an activity and there they are discussing you find out that they are just stuck. So there I can use some Oshiwambo to help them out, for them to get the instruction well. But you need to be careful when you are using Oshiwambo because now every learner will want to participate and it may be disturbing. So you need to have some good strategies when you are code switching.

P: In the process of the lesson, normally I take some time. For instance, let me say I was giving an example and I code switch when I want to emphasis something to learners so that they can the example clearly.

I: So you tend to use code switching when you think your learners cannot understand what you are trying to communicate to them in the medium of instruction English.

P: Yes,

I: Just to make them understand?

P: Yes, to make them understand and to get the content well and fully.

4. How often do you code switch?

P: Probably, you know the lesson is 40 minutes I can just maybe take 10-15 minutes. That interval is the time I think I use Oshiwambo in my lesson.

5. How do learners respond when you teach in Oshiwambo?

P: very much, learners use to participate well when I use Oshiwambo in my lessons. And that's when they even try to ask question. Let's say there is something they do not understand very well. When I use Oshiwambo most of the learners put their hands up to air their views and also to ask question. They participate very well.

I: do they do it in English or their vernacular?

P: that is when I use Oshiwambo. So they do participate very well in Oshiwambo.

6. How do learners respond when you teach in the medium of English only? -English and Oshiwambo?

P: only few respond, maybe is because of the fear of speaking English or I do not really know. But if you include in Oshiwambo then everyone is free.

P: but when I use only English as only the minority, those who can express themselves well in English use to participate. Those are the one who also asks question if something is not clear to them, while the rest use just to be quiet.

I: so you mean they participate very well when you use both oshiwambo and English?

P: yes, very.

I: I would like to know, when your learners use to participate in this mixed language lesson now. For instance when they ask questions or asking question, do they do it in Oshiwambo, English, or in both oshiwambo and English?

P: when they try to formulate questions they do it in oshiwambo, even though I try also to encourage them to use English and I want them to also use English. However they do it well in oshiwambo.

I: because I can remember some of the learner they just ask the whole question in oshiwambo, although there are these few ones who are speaking English.

P: definitely.

7. In your opinion are the advantage and/or disadvantage of code switching?

P: learners express themselves well in their mother tongue. The mother tongue is the language a learner can learn concepts well. It also helps in attaining the basic competency well.

Disadvantages, yes they need to know things in English as the national standards and all the documents or policies are saying. And also that, the exams or activities are to be written in English.

P: first let me start with the advantages. The code switching is very very needed in our education system because learners express themselves very well. When you integrate two languages their level of understanding is quite good and their performance, because now they get the content well. And their performance is extremely well. When it comes to disadvantages, sometimes what we need to consider is that when you are code switching you are using two languages, but in the exam the medium of instruction is English and the questions are in English. So if you use too much oshiwambo in the class of course they will be disadvantaged when it comes to their examinations. But if the learners are asking their questions in oshiwambo in the lessons of course I have to respond to them in whatever way or language that will make them understand.

I: now, weighing the disadvantages and advantages of code switching, does it have a lot of disadvantages or advantages?

P: to me I'm in favor of it. That is why I can also say that there lots of advantages then disadvantages.

8. Have you ever attended/participated in a work-shopped on code switching instruction?

P: no, I never did. I just take it as very significant to use it.

9. What do you think about code switching in general? ...do you think its good thing? ...do you think it's a bad thing?

P: I think it is needed because there are those slow learners who cannot catch the content well when you are using English only, but when you use both languages the learners will understand and will get the content well. My understanding is that teaching a person in the language he/she understand well help that person get the content well, but we have to integrate the two.

P: well as I said early the goodness of the thing is to look at the advantages. I think it is very very significant to use this practice in our lessons because of these advantages it has. However we should not forget about the disadvantage on this practice that I mentioned early. And I think if this practice is to work very well to the advantage of the learners, I think there is a need for someone in the ministry of education to come and address on how this practice should be used.

I: do you sometimes have a feeling that it is bad?

P: it is not really bad but if we are not trained on how to use it in our lesson it might have some side effects. Because if we are using too much of our vernacular language in our class it may or can disadvantage the learners to understand – I mean to answer the questions in the exam for example. Because if you just use Oshikwanyama Oshikwanyama in your lessons and the learners are expected to have their exams it's also a disadvantage of this practice. Too much of the vernacular can be a problem yeah.

10. Parents? What are the parents' opinions about this practice? Did you have you ever encountered or had a discussion with parents on this issue? And what did they say about it?

P: we did not discuss this issue with the parents. But we realized that some of our colleagues gave out their complain that is not good to use our vernacular in lessons where the medium of instruction is supposed to be English. But I do not think it's a problem.

I: so they are saying that code switching is not a good practice.

P: yes

I: which colleagues of yours are those?

P: mostly the language teachers. Thinking that, we need to use English across the curriculum. And now some of us are using the vernacular in our lesson alongside English. And that they it will make learners not to learn English. That is why I am saying that we need t educated or inform them and make them on why we need to code switch in our lessons. It is very very important.

11. Ministry?

I: is the ministry aware of this code switching practice?

P: I did not come across of any complain by the ministry. But I think they are not aware. They just emphasize the use of English across the curriculum, the use of medium of instruction which is English only. I did never have a discussion where they said we must use code switching. But I only use it because I think it is necessary and it can benefit the learners on one side.

I: so you mean that the ministry is not aware since they did not talk about it. What if they are aware?

P: perhaps they are aware and that is why they are just encouraging medium of instruction English. And it is like if you are to work at a place where you do not know the vernacular language how are you going to do that. For example if you are employed in Caprivi you just have to use English since you do not know the home language there. So this code switching practice can only work if the teacher speaks the same language with the teacher and not with the learners of different mother tongues.

I: So it cannot work in multilingual classroom

P: Definitely not, it cannot work.

12. Are you aware of the language policy? ...what do you think about the policy?

P: the language policy is very clear it says English is a medium of instruction in grade 8. But I think it also needs to be reviewed so that we will be given a mandate to use Oshiwambo in the lesson. Even if we are already using it and I know it is against the policy. But there is a need for as to integrate the two languages.

P: for example learners do well when I use both Oshiwambo and English, unlike when I only use English which is the medium of instruction. And at the end of the day they perform very well in their mathematics exams and tasks.

13. If you had to write the policy, what would you say?

p: policy are made by people. Policy need to be reviewed or amended so that we include code switching or it needs to be recognized. I think the policy need to be amended in that way. For instance code switching need to be used in the lessons. But, not the whole lesson, only where it is necessary. If you find out that here my learners do not understand then you emphasize in Oshiwambo, not the whole lesson.

I: if you are to write the policy what would you say?

P: teaching languages maybe there is no need for code switching. But in other subjects mathematics it is very necessary to code switch.

AUDIO 2 AUDIO TRASCRIBT TEACHER Y

Interview questions

Aim to get insight into teacher's beliefs and feelings about code switching practice and reflection of the lessons observed.

1. To what extent do you practice code switching instruction in your classroom? (ask this question in conjunction with the survey and the video)

Mostly I use code switching when I want to explain to my learners or to make them understand very well and to catch their attention. If you say something Oshiwambo all of them can understand at once, not like in English. Simply because this learners are not really good in English because they are always speaking in oshiwambo their vernacular especially when they are outside the classroom most when they are at home. That is why I use code switch with them for them to get me very well.

2. Why do you code switch?

I code switch for the learners to get me very well. because this learners are not good in English.

3. When do you code switch?

I mostly use it when my learners do not understand something. For some of my learners, for example Joy Tangina* sometimes used while I just finished explaining some equation on the board “Sir can you please repeat everything on the chalkboard, because when you were explaining sir you were very fast” then I realize that no let me just code switch so that this learner will get me well.

So instead of going through again in the medium of instruction only (English), you opt to rather do it through code switching.

Yeah yeah, that way she understands me well

4. How often do you code switch?

When I notice that my learners cannot get clearly then I code switch to converse them.

Does it happen that a lesson will go without code switching?

Yeah it does happen, but on the very real cases. Because it is like if you just teach the whole lesson without code switching at all, not all learners can be able to respond in the lesson, like if you ask a question. Or raise up their hand or even to voice their concerns if they do not understand something I said when I was explaining. They will just keep quiet. Then if I ask if they “do you understand” they will just say “yes”. But if you ask them some question then you realize they do not understand.

5. How do learners respond when you teach in Oshiwambo?

You find a learner giving you an answer in Oshiwambo. But when it comes to mathematics there are words which a learner cannot say or explain in Oshiwambo.

Most of the learners feel free I speak Oshiwambo and they also feel free to speak or respond in oshiwambo. Simply because you know this learners are just from villages where they are not used to English. Therefore now, if you are using oshiwambo in the lesson they will pay attention and listen to you very seriously. Simply because they understand what you are saying very well then in English. And most of them will raise up their hand to respond, take part in discussions and ask questions because they know they are allowed to speak in Oshiwambo.

6. How do learners respond when you teach in the medium of English only? -English and Oshiwambo?

When you use English only not all the learners will participate, only learner A B or C will participate the minority. Majority of learners will just be quiet.

Do you think there is a difference in the way you code switch from grade to grade, talking about now from grade 8, 9 and 10? In terms of pace and length of time you use it in your lessons.

As I'm a grade 8 to 10 teacher I have experienced that the grade 8 participates more when I code switch. when it comes to grade 9 it's a bit different, is not like grade 8 the grade 9 are a bit better in English. When it comes to grade 10 I can almost 65% of them can understand English very well.

7. In your opinion are the advantages and/or disadvantages of code switching?

These advantages are few. Yes, a learner will understand. Learners will understand a bit yeah, but there are many disadvantages.

What are they?

Disadvantages are that the exams are in English. Not all the words in mathematics can be translated in Oshiwambo.

8. Have you ever attended/participated in a work-shopped on code switching instruction?

No, I did not attend any workshop or any presentation whereby somebody is addressing code switching instruction.

Have came across people talking about it or complaining about it somewhere somehow?

I met some teacher saying that these teachers for upper primary (grade 5, 6 and 7) are the one who brought up those learners who cannot understand English very well. They are the one who use to code switch and now the learners are used to it. You find the learners responding to the teacher in Oshiwambo (e.g. *omilongo nhatu nanhano*). Due to the reason that this is the way they were brought up, it will be difficult for us teachers for grades 8, 9 and 10 not to use code switching in our lesson. Otherwise learners will end up getting nothing in a certain lesson.

9. What do you think about code switching in general? ...do you think its good thing? ...do you think it's a bad thing?

You know our learners are not 100% in English. Code switching helps them to follow well and catch up well. It also helps to catch the learners' attention.

I think it's bad because mathematics was supposed to be in English in grades 5 to 10. I do not know when we are going to eliminate this. I think maybe we can just start teaching in English and we ignore those who do not understand.

Who are those teachers or learners?

Even learners, because they were used to Oshiwambo in other grades, so you find some of us teacher code switching just because we want our learners to catch up well or get their attention.

So you mean we have some teachers who have a problem in English?

I think so. Especially at upper primary you find a teacher teaching mathematics but the whole lesson is in Oshiwambo. everything, even the numbers are said in oshiwambo.

10. Parents?

Some of the parents are not well educated. You know some of the parents they only did up to grade 2 grades 3 there as long as they know how to read and write. Some of those parents could not even know the advantages and disadvantages of code switching. They do not even bother to ask how the teachers are teaching or how their children are learning. As the learners the most of the parents here believe that whatever the teacher does in the classroom is right. They believe the teacher knows everything, so whatever they are teaching our kids it's just fine, that is why they never mind.

I: is there a language policy at school set up by the school?

P: to tell the truth it used to be mentioned that teachers must use English. But in reality what happen is that even during morning devotions here learners are being addressed in Oshiwambo.

I: so this means the policy is there but is not strict and is not implemented?

P: yes it is not implemented

11. How about the Ministry? Is the ministry aware of this code switching practice? Or that there are even some teachers who use thoroughly their vernacular in the classroom?

P: I do not think so; I do not think they are aware, because they expect teachers to teach in the medium of instruction English. I do not think they are aware because ever since I started teaching no body from outside the school came to observe me teaching. Except my principal and HOD and the only person that I saw from outside to observe me was you for your study.

12. Are you aware of the language policy? ...what do you think about the policy?

P: I can say I'm aware of how the language should be used in the phase I am teaching but the other phase like lower primary and upper primary I have no idea exactly how it is used. I know for sure that for my phase the medium of instruction is English and therefore I am expected to present my lessons in English. However the situation forced me to code switch.

I: I will tell you how the structure looks like. (Language policy) what do you think about this?

P: I think if we could really implement this as it is suppose to, then it will really help learners as well as the teachers. If it was possible to teach learners like in grade 8 without code switching

then it will really be an effective lesson because the same learners are expected to answer question in English at the end of the day. However for this to be fully implemented I do not really know what should be done. Because the rules or the policy are already the put in place by the ministry, but down here what's happening is different. Teachers are code switching and much worse there are some who use Oshiwambo for the whole lesson which was suppose to be in English.

13. If you had to write the policy, what would you say?

P: I would say the medium of instruction should be English from grade 5 to 12. And I would not allow the use of vernacular in the lessons. So, whoever does not understand a word in English would just be referred to the dictionary or to teachers who can explain it in the different way. And that policy should be monitored.