AN ANALYSIS OF CODE SWITCHING AS A LEARNING AND TEACHING STRATEGY IN SELECTED MULTILINGUAL SCHOOLS OF LIMPOPO PROVINCE

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DECLARATION

I, Khensani Khutso Senyatsi, declare that the dissertation hereby submitted to the University of Limpopo for the degree of Masters of Arts has not previously been submitted by me for a degree at this or any other university, that this is my own work in design and execution, and that all materials contained therein have been accordingly acknowledged.

Signed:_____

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DEDICATION

This dissertation is dedicated to my mother Makgabo, my grandmother Ramadimetsa, my two little bothers Mamodiane and Mankoana and my lovely little sister Mahlatse. You are all the fire behind this beautiful work. You burned with me the midnight lamp; you believed in me in every way, and you never stopped encouraging me . Your prayers and faith in me made me stronger. My uncles and cousins, my aunt and family and not forgetting Meladi a Ngwato.

ABSTRACT

This study explored the use of code switching as a learning and teaching strategy among grade 11 mathematics literacy learners at selected high schools in Limpopo Province. This study, in exploring this use, discovered language problems faced by these learners in the mathematics literacy classroom. Language seemed to be the major barrier in the understanding of concepts in mathematics literacy; and the material being delivered to them. The study found out that the use of code switching, from English to mother tongue, in explaining some of the concepts greatly helped the learners understand their scope of work. The study recommends the use of code switching during mathematics literacy lessons to better facilitate the process of learning and teaching and to improve language performance of the learners.

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND AND STATEMENT OF THE PROBLEM

Language is a very important tool in the development of any human being and also a crucial one in learning and teaching. Throughout history, many scholars have reflected on the importance of language. For instance, Carrasquillo and Rodriguez (1996:29) state that language is an integral part of life and an integral part of the social system and societal groups. On the other hand, Crystal (1997) observes that “the discovery that language can be a barrier to communication is quickly made by all who travel, study, govern or sell”. In this regard language also plays an important role in education. Language can serve as a medium of instruction or be taught as a subject in its own right. Difficulties arise where learners and sometimes even educators lack adequate proficiency in the medium of instruction. Stepanek (1989:1) indicates that “a lack of proficiency in the language of instruction has a harmful affect on a student`s ability to deal with content-area texts, word problems and lectures”. This implies that well developed language of instruction skills from a learner is equally important in the success of his or her academic performance as his understanding in the subjects’ field. Manganye (2007:6) states that the student’s ability to participate in content subjects such as mathematics and science is dependent on their language ability in the four skills: speaking, listening, reading and writing.

Code switching as a strategy in this research will refer to a means of learning and teaching to ensure both the teacher and learner achieve their objectives, which are to learn with an understanding and ensure a good pass rate of the learners. Gal (1998) points out that “code switching is a conversational strategy used to establish, cross or destroy group boundaries”.

Code switching requires more than one way for switching from one language to the other, for example, code switching in English and Northern Sotho:

(1) a.I have applied *ko* university of Limpopo *aketsebe* if they will take me.

(I have applied to the University of Limpopo and I do not know if I'll be admitted).

b. I took a taxi *maabane* to town.

(I took a taxi to town yesterday).

Both these sentences might offend language purists as they do not stick to one language. The users of such language tend to think that speaking in this manner makes interlocutors to communicate effectively. This is one of the questions that the research will have to pose: does code switching assist the learners to grasp with ease the subject-matter being offered by the educator or not?

Some sociolinguists such as Gal (1978) describe the relationships between code switching behaviours and class, ethnicity and other social positions, as a result code switching relates to, and sometimes includes social-group membership in bilingual and multilingual communities. In addition, scholars in interactional linguistics and conversation analysis have studied code switching as a means of structuring talk in interaction. Auer (1998) suggests that code switching does not simply reflect social situations, but also create social situations, for example, a Swati young man can ask for a number from a Pedi young woman in a way that makes her feel included socially:

(2) a. *Bona*, can I have your numbers?
(Look here, can I have your numbers?).
b. Hello *mosadi*.
(Hello woman).

The Markedness Model, developed by Myers-Scotton (1998), is one of the more complete theories of code switching motivations. It posits that language users are rational, and choose a language that clearly marks their rights and obligations, relative

to other speakers, in the conversation and its setting. When there is no clear, unmarked language choice, speakers practise code switching to explore possible language choices.

The Communication Accommodation Theory (CAT), developed by Giles (2006), professor of communication, at the University of California, Santa Barbara, seeks to explain the cognitive reasons for code switching and other changes in speech, as a person seeks either to emphasise or minimize the social differences between him- or herself and the other person(s) in conversation. Giles (1996) posits that when speakers seek approval in a social situation they are likely to mix their speech with that of the other person speaking. This can include, but is not limited to, the language of choice, accent, dialect, and para-linguistic features used in the conversation. In contrast to convergence, speakers might also engage in divergent speech, with which an individual person emphasises the social distance between him- or herself and other speakers by using speech with linguistic features characteristic of his or her own group.

Code switching works hand in hand with multi-competence and has general effect for teaching practice. An implication is that if an atmosphere is created in which the first language competence of an individual is recognised and valued, then this might potentially have an important affective and motivational impact on their approach to learning a second language or learning in a second language (Cook, 1992). Multi-competence is common in Limpopo Province due to differences in mother tongue. Thus, one finds that a person can switch from one language to another with ease.

Attitudes of people towards their mother tongue that lead to them speaking it with other languages contribute to code switching which can, in turn, cause language shift. In this case, one finds that speakers would prefer to use a language that is deemed to be prestigious together with a less prestigious vernacular.

Often the youth use words such as:

(3) a. *It's like (*it`s like *ke kwa phefo but I don`t to want wear a jersey*).

(It`s like I feel cold but I don`t want to wear a jersey).

b. *Maybe (*Maybe *o nagana gore a ke mokwe).*

*(*Maybe he thinks I can`t hear him).

They do so especially when conversing among themselves so that they appear to be knowledgeable in English, and they tend to judge a level of "interestingness" or "intelligence" in the amount of English one speaks. For this study though, the question is whether the use of code switching leads to better comprehension of the subject matter or not.

Languages also evolve with the world`s dynamic and technological advancements, therefore new terms are formed. Terms such as "**surfing the net"** often do not have equivalents in African languages. Thus, people code switch for their convenience, for example,

(4).Keya go *facebooker computer lab.*

(I am going to be on facebook at the computer lab).

English seems to be a problem among non-native speakers of English, especially among learners in rural schools where multilingualism exists. They speak English only during English periods and converse in their mother tongues during break and at home. They are taught contents in English though they seem to have insufficient English speaking and writing skills and this in many instances leads to misunderstanding.

1.2 AIM

The aim of this study is to examine the effectiveness of the use of code switching in a classroom environment from English to Northern Sotho and vice-versa. In order to achieve this aim, the study will attempt to answer the following questions:

- What are the advantages and disadvantages of code switching in a learning environment?

- Do learners prefer code switching during lessons?
- Why do teachers code switch whereas the current language policy advocates the use of English medium of instruction?
- Does English, as a medium of instruction, become a barrier in the learning and teaching of mathematics and mathematics literacy?
- Is learner code switching equal to inadequacy?

1.3 OBJECTIVES OF THE STUDY

The objectives of the study are:

- To ascertain whether teaching and learning in two or more languages can improve the learners' performance.
- To determine the effects code-switching has on affected languages on the vocabulary development of the learner.
- Are the teachers proficient enough in English to teach mathematics and mathematics literacy?
- To determine the advantages and disadvantages of code switching in a learning environment.
- To find out the reasons why teachers code switch in class in spite of the policy that requires English as a medium of instruction.

1.4 RESEARCH QUESTIONS

To ascertain whether teaching and learning in two or more languages can improve the learners' performance in a grade eleven mathematical literacy classroom, the researcher asked the following questions:

- What are the advantages and disadvantages of code switching in a learning environment?
- Do learners prefer code switching during lessons?

- Does English as a medium of instruction become a barrier in the learning and teaching of mathematics and mathematics literacy?
- Is learner code switching equal to inadequacy?

1.5 SIGNIFICANCE OF THE STUDY

The research will be useful to the teachers and learners in multilingual classes as to how they can best use more than one language and benefit. Upon completion of this study, it is hoped that mathematics and mathematics literacy teachers will be able to code switch to meet the classroom demand and target success.

1.6 DEFINITION OF TERMS

The following terms are defined as used in the study: English Language Teaching, Language acquisition, first language, second language, and second language acquisition.

1.6.1 ELT- English Language Teaching.

1.6.2 Language Acquisition- the learning of a language.

1.6.3Second Language- the language spoken by an individual after the mother tongue.

1.6.4 Second language Acquisition – the learning of a new or second language other than mother tongue.

1.7 OVERVIEW OF THE STUDY

Chapter one contains introduction and background to the study as well as the aim and objectives of the study.

Chapter two provides literature review related to code switching as a learning and teaching strategy. The literature review is divided into the following themes: Introduction, language use per situation, the nature of code switching and functions of code switching in the classroom.

Chapter three discusses the research methodology in a detailed format which consists of population and sampling, data collection procedure and instruments.

Chapter four is data analysis and interpretation of results.

Chapter five consists of summary, conclusions and recommendations drawn from the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

The purpose of the present study is to analyse code switching as a learning and teaching strategy in selected multilingual schools of Limpopo Province. Code switching is researched in education at primary level in various countries. Literature was reviewed under the following themes: language use per situation, the nature of code switching and functions of code switching in the classroom. In this review, code switching is related to both multilingual and bilingual studies.

2.2 LANGUAGE USE PER SITUATION

According to (Trudgill, 2000:105), speakers code switch to manipulate, influence or define the situation as they wish and to convey nuances of a meaning and personal intention. People who speak more than one language or who have command over more than one variety of any language are equally aware that in some contexts one variety will serve their needs better than the other (Meyerhoff, 2006:115). This may lead them to change the variety they use depending on the situation where they are. For example, during funerals in most South African rural communities, the services are conducted entirely in the language of the community, but should it happen that the person being buried is educated or considered rich you find a lot of code switching between English and the indigenous language. This happens especially when the guests appear to be in the same class as the deceased. Again, there is what is called **kgoro** in Northern Sotho in the chief`s kraal. **Kgoro** is an official gathering of the community and the chief to discuss community problems and give important announcements. Here, the language used is totally the indigenous language of the village, any use of English or code switching comes across as “stuck-up” or denoting “self-importance”.

Language is undoubtedly the principal key in the delivery of quality education. Benson (2004: 2) states that many developing countries are characterised by individual as well as societal multilingualism, yet continue to allow a single foreign language to dominate

the education sector. Mother tongue-based bilingual programme use the learner's first language, known as the L1, to teach reading and writing skills along with academic content, while the second or foreign language, known as the L2, should be taught systematically so that learners can gradually transfer skills from the familiar language to the unfamiliar one. Bilingual models and practices vary as do their results, but what they have in common is their use of the mother tongue at least in the early years so that students can acquire and develop literacy skills in addition to understanding and participating in the classroom (Benson, 2004:2). Skutnabb-Kangas (2000) states that instruction through a language that learners do not speak has been called "submersion" because it is analogous to holding learners under water without teaching them how to swim. The question is which is more successful when it comes to the classroom, monolingual, bilingual or multilingual education?

Benson (2004: 3) comes in defence of mother tongue education as opposed to submersion learning as it has the following advantages:

- Use of a familiar language to teach beginning literacy facilitates an understanding of sound-symbol or meaning-symbol correspondence. Learning to read is most efficient when students know the language and can employ psycholinguistic guessing strategies; likewise, students can communicate through writing as soon as they understand the rules of the orthographic (or other written) system of their language. In contrast, submersion programme may succeed in teaching students to decode words in the L2, but it can take years before they discover meaning in what they are "reading."
- Since content area instruction is provided in the L1, the learning of new concepts is not postponed until children become competent in the L2. Unlike submersion teaching, which is often characterised by lecture and rote response, bilingual instruction allows teachers and students to interact naturally and negotiate meanings together, creating participatory learning environments that are conducive to cognitive as well as linguistic development.

- Explicit teaching of the L2 beginning with oral skills allows students to learn the new language through communication rather than memorisation. In submersion schooling, teachers are often forced to translate or code-switch to convey meaning, making concept learning inefficient and even impeding language learning, while a bilingual programme allows for systematic teaching of the L2.
- Transfer of linguistic and cognitive skills is facilitated in a bilingual programme. Once students have basic literacy skills in the L1 and communicative skills in the L2, they can begin reading and writing in the L2, efficiently transferring the literacy skills they have acquired in the familiar language. The academic principles behind this positive transfer of skills come from Cummins' (1991, 1999) *Interdependence Theory* and the concept of *Common Underlying Proficiency*, whereby the knowledge of language, literacy and concepts learned in the L1 can be accessed and used in the second language once oral L2 skills are developed, and no re-learning is required. Consistent with these principles, it is possible for children schooled only in the L2 to transfer their knowledge and skills to the L1, but the process is highly inefficient as well as being unnecessarily difficult.
- Student learning can be accurately assessed in bilingual classrooms. When students can express themselves, teachers can diagnose what has been learned, what remains to be taught and which students need further assistance. In submersion schooling cognitive learning and language learning are confounded, making it difficult for teachers to determine whether students have difficulty understanding the concept itself, the language of instruction, or the language of the test.
- The affective domain, involving confidence, self-esteem and identity, is strengthened by use of the L1, increasing motivation and initiative as well as creativity. L1 classrooms allow children to be themselves and develop their personalities as well as their intellects, unlike submersion classrooms where they are forced to sit silently or repeat mechanically, leading to frustration and ultimately repetition, failure and dropout.

- Students become bilingual and biliterate. Bilingual programmes encourage learners to understand, speak, read and write in more than one language. In contrast, submersion programmes attempt to promote skills in a new language by eliminating them from a known language, which may actually limit learner competence in both.

Based on the following points, it is clear that Benson (2004) prefers bilingual education, especially when learners are competent in the first language because she believes that mother tongue-based bilingual schooling can be properly implemented.

In trying multilingual effectiveness in the education system, the Department of Education in South Africa formulated the *Language in Education Policy* in terms of Section 3(4) (m), of the *National Education Policy Act*, 1996 (Act 27 of 1996). This policy is conceived as an integral and necessary aspect of the new government`s strategy of building a non-racial nation in South Africa. It is meant to facilitate communication across the barriers of colour, language and religion while at the same time creating an environment in which respect for languages other than one`s own would be encouraged. The policy aims to support the teaching and learning of all other languages required by learners or used by communities in South Africa, including languages used for religious purposes, languages which are important for international trade and communication and South African Sign Language, to cover disadvantages resulting from different kinds of mismatches between home languages and languages of learning and teaching. The policy further aims to develop programmes for the redress of previously disadvantaged languages. Afrikaans was the language of dominance during the segregation era whereas English enjoyed high prestige, especially with the Model C schools (Mati, 2004:4).

The new *Language in Education Policy* in South Africa seeks to address the dominance of English and uplift the status and development of African languages. During the apartheid period, mother tongue schooling for Africans was employed from the passage of the “Bantu Education Act of 1953 to the end of the apartheid era to support the social and educational goals of Verwoedian-style apartheid” (Thompson, 1985). In protecting

the right of individuals, the *Language in Education Policy* stipulates that where a school uses the language of learning and teaching chosen by the learner, and where there is a place available in the relevant grade, the school must admit the learner. As cited in Mati (2004:4) South African schools and their learners can now choose their language(s) of learning and teaching. The policy environment is favourable and very supportive to multilingual education and bilingual education practice including code switching. Learners are now able to add new language(s) to their repertoires as the policy advocates for an additive and not subtractive approach to language education.

2.3 THE NATURE OF CODE SWITCHING

Code switching as a phenomenon goes hand in hand with multilingualism, bilingualism and multi competence. Numan and Carter (2001:275) define code switching as a phenomenon of switching from one language to another in the same discourse. Usually the languages that are switched are the mother tongue and a foreign language. Coulmas (2005:111) affirms that both bilingual speakers and speech community differ as to the extent they practise code switching in the everyday life.

Code switching can take on several forms which include alteration of sentences, phrases from both languages and switching in a long narrative Kasperczyk (2005:1). Kasperczyk further identifies types of code switching as intersentential or intrasentential code switching. In intersentential code switching the language switch is done at sentence boundaries and is practised mostly by fluent bilingual speakers, whereas in intrasentential code switching the shift is done in the middle of a sentence with no interruptions, hesitations or pauses indicating a shift and the speaker is usually unaware of the switch.

In addition, Blom and Gumperz (1972:409) talk of is situational and metaphorical code switching. Situational code switching occurs when alternations between language variety redefine a situation, being a change in governing norm, whereas metaphorical code switching occurs when alternations enrich a situation which allows for the allusion to more than one social relationship within the situation. Meyer-Scotton`s (1993),

Markedness Model is considered an important element for analysing the speakers habits of code switching as it accounts for the speakers` socio-psychological motivations when code switching, Rose (2006:9).

When there is no clear, unmarked language choice, speakers practise code switching to explore possible language choices. The Markedness model emphasises that the speaker is a creative actor, and that linguistic choices are accomplishing more than just the conveying of referential meaning (Myers-Scotton, 1993:75). Myers-Scotton (1998:19) also states that within the Markedness Model, the choices are intentional because they are made to achieve specific social goals. Speakers make those choices with the expectation that the addressee will recognise a choice with a particular intention (Rose, 2006:18). The goal of the speaker is to optimise any chances of gaining some form of reward from the interaction (Myers-Scotton, 1998:19). This means that the speaker`s choice of one language over the other is based on what he or she will benefit in that particular situation. For example, in a classroom during an English period, the teacher is trying to read while the learners make noise, the command to halt the noise is likely to be as follows:

1. (a) “Quiet, *lea rasa*, can`t you hear *gore* you are making a lot of noise?”

(Quiet, you are making noise, can`t you hear that you are making a lot of

noise?”)

In this example, the teacher`s choice of English can suggest that she wants to get the message across, but add Sepedi words to make it clear that she does not like what the learners are doing, as a form of emphasis. This will be a strategy chosen to benefit her the most and the switch to mother tongue represents the anger in this sentence as it is likely that the learners converse in their mother tongue in the content.

According to Myers-Scotton (1998: 18), there is more than one way of speaking in almost every speech community. The different styles, languages and dialects are typically associated with different social groups or contexts (Rose, 2006: 16). The use of a particular code is viewed in terms of the marked versus the unmarked opposition in

reference to the extent of its use matches community expectation for the interaction type (Rose, 2006:16). The above example explores code switching as a marked choice. According to Kieswetter (1995: 25), code switching as the unmarked choice may function as a linguistic variety, or as a badge of identity. The unmarked choice is considered normal and expected for the situation because it carries no extra social meaning; the speaker is therefore sending a meta-message (Rose, 2006:17). Rose further mentions that when a speaker makes a marked choice, the message makes more than just the semantic content of the words; it also conveys an intention to question or change aspects of the interaction. According to the Markedness Model regarding linguistic code available for any interaction, the speakers will choose their codes based on the persona and or on the relationships which they wish to have in place (Rose, 2006:17).

2.4 FUNCTIONS OF CODE SWITCHING IN THE CLASSROOM

Code switching is inevitable in a classroom where the teacher and the student share the same language. Sert (2005:3) in his research mentions that in English Language Teaching (ELT), classroom code switching comes in for use either in the teachers` or the learners` discourse, but highlights, that it is not favoured by many educators, so one should have at least an understanding of the functions of switching between native language and the foreign language and the underlying reasons. Sert (2005) further puts the phenomenon of code switching in context by introducing functions of code switching in various aspects. Firstly, its function in bilingual community setting will briefly be explained by giving a sample authentic conversation which will help the reader deduce ideas about its possible applications in educational contexts. Secondly, the functionality of code switching in teachers` classroom discourse will be introduced with its aspects as: topic switch, affective functions and repetitive functions. Thirdly, the learners` code switching with introduction of some basic functional perspective such as equivalence, floor holding, reiteration and conflict control. In considering functions of code switching from teachers' and learners' perspective, Sert suggests that code switching can be used for self-expression and is a way of modifying language for the sake of personal intentions; furthermore, code switching may be used in order to build intimate

interpersonal relationships among members of a bilingual community. In this case it may be claimed that it is a way of creating linguistic solidarity especially between individuals who share the same ethno-cultural identity. This is a conversation between two strangers who have a language in common, the Sepedi words are in italics with the English sentences in brackets:

(2) a. **Thuto**: My sister *le yena ke Lebo, o tsene* Wits.

(My sister`s name is also Lebo, she studied at Wits).

b. **Lebo**: Oh, *ke a bona, lenna* I studied *ko* Wits.

(Oh, I see, I also studied at Wits).

Teacher code switching is regarded by Sert (2005:2) as automatic and unconscious behaviour in some cases, meaning that the teacher is not always aware of the functions and outcomes of the code switching process. Either conscious or not, code switching necessarily serves the same basic functions which may be beneficial in language learning environment. These functions are listed by Mattson and Burenhult (1996:61) as topic switch, affective functions and repetitive functions. Topic switch is where the teacher changes his or her language according to the topic that is under discussion. Sert (2005:2) reveals that “this is mostly observed in grammar instruction, that the teacher shifts his language to the mother tongue of his students in dealing with particular grammar points, which are taught at the moment”. Cole (1998) indicates that “a teacher can exploit students’ previous L1 learning experience to increase their understanding of L2”. Therefore, the students` attention is directed to the new knowledge by making use of code switching and accordingly making use of native tongue, thus forming a bridge specifically to transfer the new content.

In addition, code switching is used by the teacher in order to build solidarity and intimate relations with the students (Sert, 2005: 3), thereby forming a supportive language environment in the classroom.

Repetitive function of code switching in a classroom setting is when the teacher uses code switching in order to transfer the necessary knowledge for the students to be clear (Sert, 2005:3). Following the instruction in target language, the teacher code switches to native language in order to clarify meaning and in this put more importance on the foreign language content for efficient comprehension. However, the tendency to repeat instruction in a native language may lead to some undesired student behaviours. A learner who is good in a foreign language translation may lose interest in listening to the former instruction which will have negative consequences: as the student is exposed to foreign language discourse (Sert, 2005:3).

Students may also not always be aware of the reasons for code switching as well as its functions and outcomes. Eldridge (1996:305-307) lists these functions as: equivalence, floor holding, reiteration and conflict control. Equivalence in student code switching is when students make use of the native equivalence of a certain lexical item in the target language and therefore code switching his and her native tongue. From her study, Rose (2006) identified ten uses of code switching in the classroom as both marked (six) and unmarked (four) choices.

The central theoretical framework used by Myers-Scotton (1993) to measure marked and unmarked code choice is the “rights and obligation” (RO) set. The RO set is the theoretical construct of “right and obligation” upon which speakers can base expectations in a given interactional setting in their community (Myers-Scotton, 1998: 23). The RO set accounts for codes of behaviours and norms that are established and then maintained in social communities (Rose, 2006:19). The unmarked RO set accounts for a given interaction type (Myers-Scotton, 1994:24). One can predict that there are factors in most communities which are evident as the same in the establishment of the unmarked RO set in many interaction settings (Rose, 2006:19). These include factors such as age, sex, occupation, socio-economic status and ethnic groups which are all the main social identity features of participants (Myers-Scotton, 1998: 24).

The marked code choices as explained by Rose (2006) are: a. code switching for clarification, b. code switching for expansion, c. code switching to reprimand, d. humour,

e. social and identity functions and f. code switching for confirmation. All these types of marked code choices may be explained as follows:

a. Code switching for clarification

Rose (2006) found that learners practise code switching in order to translate a single word and this was often found to function for meaning clarification. This type of code switching therefore was found to constitute a way in which learners are able to clarify any misunderstanding.

b. Code switching for expansion

Code switching for expansion is often used in a longer explanation where many code switches occur. This involves longer phrases whereby the teacher or learners further explain meaning, or when they translate certain concepts being taught in the lesson.

c. Code switching to reprimand

The use of the marked code choice is seen as functional when wanting to display some form of emotion like anger or affection, therefore using the unmarked code choice to reprimand the learners, the teacher seems to reinforce the fact that she wants to be taken seriously and that she is feeling tense.

d. Humour

The teachers and the students use code switching as a way to get a positive and humorous response during formal context of teaching not in an informal conversation, whereby neither the teacher nor the student is intending to be social.

e. Social and identity functions

Code switching is often seen as functional when participants of a conversation are being social. A teacher will often code switch while having a social conversation with her students. It can be considered as a marked switch because the relationship and the socialising are relaxed, the teacher and the learners are still not in the same so-called “in group”, due to differences in age, first language (L1) and culture.

f. Code switching for confirmation

This type of code switching is often used by teachers to confirm whether the learners understand the lesson.

Myers-Scotton (1993:114) states that sequential code switching occurs when the unmarked rights and obligations set changes. This often occurs when speakers` composition changes, for example when the focus of the conversation is altered (Rose, 2006:50).The Markedness Model predicts that speaker will choose either to accept or to re-negotiate the new unmarked rights and obligation set (Myers-Scotton, 1993:115). Kieswetter (1995:114) states that the unmarked code choice occurs when the overall speech pattern carries the social meaning, rather than the individual switches.

While the unmarked code switching is still explored in the same headings as: code switching for clarification, code switching for expansion, code switching to reprimand, humour, social and identity functions and code switching for confirmation.

a. Code switching to reprimand

This occurs by changing from one code choice to another as the situation changes, for example:

(3) Teacher: Good morning, *ke kgopela dibuka tsa mošomo wa gae wa maabane.*

*(*I am asking for yesterday`s homework books*).*

Learners: How about we submit after class?

Teacher: *Re swanela ke go dira diphošollo gona bjale*.

(We must do corrections now).

b. Social

This is when the conversation changes from work related matters to the learner asking the teacher a random question, then the teacher decides on returning to work related matters and changes the code.

c. Confirmation

Code switching for confirmation in this manner can function as a way of confirming with the learner what has just been said, usually by asking a question.

d. Exploratory

Rose (2006:27- 28) states that a speaker can use the exploratory code switching when an unmarked code choice is not clear and it usually occurs when the speakers themselves are unsure of the expected or optimal communicative intention.

This research will attempt to explore the existence of code switching functions at different levels within a classroom learning environment as pointed out by Sert (2005) and Rose (2006), and furthermore seek to evaluate feelings of students on the teacher code switching and teachers` feelings on students code switching more especially where teachers are not native speakers of students` native language.

2.5 CODE SWITCHING IN MULTILINGUAL CLASSROOMS

Cook (2001) claims that Second Language Aquisition research does not provide any reason for avoiding first language (L1) in the classroom. Otherwise, the systematical use of it can be:

a. a way into the meaning of the second language;

b. a short cut in explaining tasks;

c. a way of explaining grammar;

d. a way of demonstrating the classroom is a real L2 situation, not a fake monolingual situation.

Zabrodskaja (2007:5) states that the main goal of using code switching is to enable the teacher to conduct the course in the target language even if the L2 proficiency of students is low. Cook (2002:333) believes that the application of code switching in classes which do not share the same native language may create problems, as some of the students (though few in number) will somehow be neglected, and it is suggested that the students should share the same native language.

Eldridge (1996:309) indicates that the learners will have no guarantee that their audience will share knowledge of their mother tongue. Based on this, the teachers` competence of the mother tongue of students also plays a vital role, if positive contributions of code switching are expected. This perspective concerns the interaction of students with native speakers of the language as mutual intelligibility may not be possible if the learner switches to his language during communication (Sert, 2005:4). However, no threat is made when it comes to learning in a multilingual classroom, as quoted in Mati (2004: 7&8).

The Department of Education (1997) reveals that learners are actively encouraged to code switch, mainly, it seems, to facilitate learning:

- For the outcome *Learners show critical awareness of language usage,* one of the assessment criteria requires that, '[A]wareness of power relations between different languages and between varieties of the same language is demonstrated by suitable responses' ,Department of Education (1997:30).
- For the outcome L*earners understand, know and apply language structures and conventions in context,* one of the assessment criteria requires that, '[C]ommon

features and patterns of different languages are identified, explained and applied' 1997:36).

- For the outcome *Learners use language for learning,* one of the assessment criteria requires that, '[T]he ability to transfer terminology and concepts from one language to another is demonstrated' (1997:38).

This research will seek to evaluate the feelings of the students on teacher code switching and teachers on students code switching and whether it is a contribution to achieving good or bad results in class.

2.6 CODE SWITCHING IN THE MEDIA

Modern life gives us the opportunity to work, study, play as well as live in different places and with people of diverse cultures. Scholars such as Grimes (2000) studied code switching as an agent of language shift, while information from Malungani's thesis (2003) in which she researched code switching in the media at Munghana Lonene FM influenced the researcher`s decision to research code switching from a lack of vocabulary perspective. Malungani (2003) interviewed respondents in three categories: people with tertiary qualifications, people with secondary education as well as those with little or no education. Among others, Malungani (2003) wanted to find out about the reasons for listening to and not listening to Mughana Lonene FM from respondents and how the respondents felt about code switching in the station during broadcasting. In her findings, 80 % of tertiary qualifications holders responded by saying that they hardly tune into the station and some of their reasons included the stations` use of English words during broadcasting as if there are no Xitsonga words (Malungani, 2003:82). On the other hand, youths with secondary education from Model C schools admire the *Afternoon drive show* and showed that by responding in English that "language is dynamic, the advantage of mixing of languages, the stations` listenership will increase as code switching allows more understanding".

The groups with little or no education were found to rely on radio for information and were most likely to not understand English fully or even a bit. The respondents were

aware of code switching during programming and were not impressed. They discourage it and clearly share the opinion that all official languages are equal and as such deserve the same value. Malungani (2003:57) reveals that 71, 1% of the respondents said broadcasters are neglecting the future of their languages. Respondents who do not know English are concerned about their misunderstanding of some of the words mixed with Xitsonga during broadcasting. From Malungani`s (2003) work this research will further look at the views of learners being taught in mixed languages (code switching) and whether the teacher prefers code switching or not, and for what reasons.

2.7 CODE SWITCHING IN A MATHEMATICS CLASSROOM AT PRIMARY SCHOOL LEVEL

Kasule and Mapolelo (2005) researched code switching from a mathematics teacher point of view in their *The teachers` strategies of teaching primary school mathematics in a second language: A case of Botswana* study which was conducted on primary school mathematics teachers. Mathematics is a human activity that involves observing, representing and investigating patterns and quantitative relationships in physical and social phenomena and between mathematics objects themselves. Mathematics uses its own specialised language that involves symbols and notations for describing numerical, geometric and graphical relations (Van der Horst and McDonald,1997: 53). This study will focus on grade eleven mathematical literacy classes.

Learners often have their own views when it comes to the language of instruction in the classroom, especially when the teacher speaks a native language as a mother tongue. Akindele and Letsoala (2001), Nyathi Ramahobo and Orr (1993) have portrayed the perception that code switching is a form of compensatory strategy for some linguistic deficiency in the teacher. In the present research learners will be given an opportunity to state their point of view about teacher code switching from the questionnaire data collection tool. Gellert (2008: 1) affirms that language plays a double role in the learning of mathematics at school. Firstly, school mathematics as a subject is developed mostly by means of spoken language. Secondly, students are introduced, although often completely, to the linguistic features of the language in which mathematics is taught.

Gellert (2008: 2) states that the command of a specific kind of language proficiency is a pre-condition for becoming a prosperous student in the mathematics classroom, since mathematics is a subject that requires logic and reasoning. Therefore, a specific language competence between teacher and learner in the classroom is essential for maximum success in learning and teaching. Cummins (2000: 70) developed a process for the underlying mental process for the students` linguistic demand in mathematics classroom and termed it Cognitive Academic Language Proficiency (CALP).

CALP was developed in the frame of bilingual education; the base of it is language proficiency to being educated and being mathematically educated is part of it. Cummins (2000:70) mentions that oral classroom discussions do not involve reading and writing directly, but they do reflect the degree of students` access to and command of literate or academic register of language. This is why CALP can be defined as expertise in understanding and using literacy related aspects of language. Gellert (2000:1) notes that in mathematics education, a subject-specific occurrence of CALP can be observed, thus mathematics-specific CALP is recurring on the particular vocabulary made of school mathematical concepts and the respective symbolism, linguistic symbolism as well as linguistic devices that aim at rendering a text coherent. Cummins (1981: 24) posits that the child requires between five and seven years to acquire sufficient CALP to perform well on academic tasks. Children can be enriched by knowing more than one language as long as they are ‘additive’ rather than ‘subtractive’ bilinguals (Mati, 2004: 2). Mati explains the concept ‘additive bilingualism’ as when a child learns a second language in addition to the first and ‘subtractive bilingualism’ as when a child gradually loses one language while acquiring a second one. Children who come to school speaking more than one language, or who learn a second language in school, will benefit academically as long as both languages are nurtured and developed to the fullest extent (Mati, 2004:3).

The expression test on the questionnaire is designed in Sepedi and English so that the researcher will be able to recognise language proficiencies of learners in both languages through what they write, and therefore determine if they affect mathematics literacy performance.

2.8 LANGUAGE PROFICIENCY AND LEARNING MATHEMATICS

Language is certainly a vital resource teachers use to communicate important concepts such as mathematics in the schooling environment, but it is not straight forward when they are working within a bi/multilingual classroom (Muke, 2005:1).

Learners need to talk to learn, and such talking to learn is a function of fluency and ease in the language of communication as much as the need for the learners to understand the teachers when they teach/speak (Adler, 1996). This means that common language fluency is essential between the learners and the teacher for learning and teaching effectiveness. Arthur (1994) carried out a study in Botswana schools which revealed that the absence of appropriate use of learners` main language in teaching and a delivery of instruction through English only, subtracted opportunity for exploratory talk and thus for meaning making (Muke, 2005:5). In this research the exploration barriers caused by language barriers will be discussed as an opinion with the teachers and learners.

Neville-Barton and Barton (2003) undertook a study on the relationship between English language and mathematics learning for non-speakers of English. The aim was to explore the extent of any difficulties in learning mathematics attributable to low proficiency in English language and also to discover particular language features that might cause problems. Their analysis focused on the nature of the learners` language difficulties and the strategies the students thought would help their learning. In my research focus is on testing language proficiencies in Sepedi and English so as to evaluate if code switching will be of help when it comes to communication in the mathematics classroom.

Mathematics teachers face different kinds of challenges in their bi/multilingual classrooms from English language teachers. They face the major demand to continuously teach both mathematics and English at the same time. Mathematics is a language on its own as Gorgorio and Planas (2001) state that language and communication are essential elements of teaching and learning mathematics. Mathematics is not “language free” and due to its particular vocabulary, syntax and

discourse it can cause problems for students learning it in a second language (Barton & Barton-Neville, 2003).

Barwell and Clarkson (2004:15) point out a number of issues pertaining to the processes of teaching and learning mathematics. These include:

- Understanding the language to make sense of the mathematics;
- Use of everyday language and mathematics learning;
- Using own language to express mathematical thinking;
- Language of the textbook.

As students worked at mathematical problems it appeared that their understanding of the problem statement required interpretation at least at two levels. At one level the students appeared to make sense of the language in which the mathematics problem was coded. This involved making sense of the grammar and usage of words. And at another level they appeared to make sense of the mathematics involved.

2.9 CONCLUSION

In conclusion, the above literature review is based on studies of code switching as a communication strategy, more especially in a classroom environment. Most focused on how it is implemented, whether it is a choice or it just happens among any bilinguals. Most scholars weigh the use of code switching as an agent that facilitates emphasis when teaching. Code switching is not directly researched as an agent that interrupts the learning and right usage of English second language and mother tongue, as a person does not communicate strictly in one language. This review`s main focus is on language use and proficiency and the effect it has on learning as well as the attitude towards code switching.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter provides an overview of the research methodology used in this study. The aim of the research was to analyse the use of code switching in a learning and teaching strategy in selected multilingual schools in Limpopo Province (South Africa) focusing on grade eleven mathematical literacy classrooms.

3.2 RESEARCH DESIGN

The study took an exploratory nature. The researcher has shown how and why code switching has an effect on learning and teaching in the research results. The study utilised both qualitative and quantitative methods. The qualitative method was necessary as the researcher attempted to answer questions such as where, why and how code switching is used in schools, while the quantitative method was necessary as the major data collection tool was questionnaire. The qualitative research method is a multimethod approach involving an interpretative, naturalistic approach to its subject matter (Creswell, 1998:8). Qualitative procedures provide means of accessing unquantitative facts about the actual people researchers observe and talk to people represented by their personal traces, as a result qualitative techniques allow researchers to share in the understanding and perceptions of others and to explore how people learn about and make sense of themselves and others (Creswell, 1998:7). The researcher opted for mixed methods as it is more common for qualitative methods to be seen as a precursor to quantitative work. There is much to be gained by capitalizing on existing quantitative data (either in the form of records or survey responses) to furnish a sample frame for qualitative work (Barbour, 2008:156).

3.3 POPULATION AND SAMPLING

The population in this research was Grade 11 learners from selected high schools in the Limpopo Province. The schools are Hwiti High School (Mankweng), Ramathope High

School (Nobody) and Potlake High School (Atok, Ga-Sekhukhune). The participating learners were from the Grade 11 mathematics literacy classrooms.

The learners were between the ages of seventeen and twenty four, both male and female. Some of them were repeating Grade 11 once or twice and others were doing it for the first time. Each class had one mathematics literacy teacher and a teacher for each subject including the class teacher. Data were collected among enrolled learners of Grade 11 mathematics literacy classrooms which were less than forty per school. Two of the schools (Potlake and Ramathope High Schools) are in rural areas and Hwiti High School is located in a semi urban area. Convenience sampling was used in collecting data. The learners were selected for participation based on the fact of being from a Grade 11 mathematics literacy class, and not on any form of academic achievement of some sort. The selection was purely voluntary. According to Tustin et al. (2010: 346) convenience sampling is used in the exploratory phase of a research project, and sample members are chosen on the basis of being readily available and accessible. From each classroom ten learners consisting of five boys and five girls took part in the research.

3.4 DATA COLLECTION PROCEDURE AND INSTRUMENTS

The participants in this research were grade eleven mathematical literacy learners from Ramathope High School, Hwiti High School and Potlake High School (all in Limpopo Province). Each classroom had less than forty learners all doing mathematics literacy and only ten learners were used in the research. The learners were informed of the research a day before they were to participate. It was fully explained to them even on the day of data collection that participation was purely voluntary and that it was intended for academic purposes. The introduction of the researcher varied per school, at Hwiti and Potlake High Schools English was used, while Sepedi was used at Ramathope High School.

The primary data collection tool was a questionnaire, which consisted of both close-ended and open-ended questions. Crouch and Housden (1996:137-138) identify the following main purposes of questionnaire design in the data collection process:

a. To collect relevant data

b. To make data comparable

c. To minimise biases

d. To motivate respondents to participate in the survey.

The instructions were given in English by the teachers in all the schools and then the researcher used Sepedi for clarity. Each school arranged a specific classroom or a laboratory that learners could use to fill in the questionnaire without distractions or interruptions. This process took up to 45 minutes to finish per session in each school. It was clearly explained by both the teacher and the researcher that filling in the questionnaire did not in any way boost marks or end of year results nor would it affect their passing or failing and that the information supplied would not be revealed to the teachers.

Each question in the questionnaire had a specific purpose, and the summary thereof can be indicated as follows:

3.4.1 Expression question of which the purpose is to test if learners are equipped enough to express themselves in English and Sepedi.

3.4.2 Language preference test: This test is taken to find out the learners' language preferences as well as the prejudice and prestige associated with speaking the desired language as predicted per situation.

3.4.3. Attitude towards teacher code switching: Learners here are tested on the way they attach prestige to teachers as per language of instruction and how it is used when required.

3.4.4. Language use in different situation: Here it was to find out if certain situations compel the use of a certain language.

3.4.5. Mathematical symbol test in Sepedi: The learners are tested language skills in Sepedi using mathematical symbols. Their success might show the extent to which code switching can be an effective tool in the classroom.

3.4.6. Mathematical terms in Sepedi: This test was designed to test knowledge of learners` ability to use Sepedi in identifying mathematics symbols.

3.4.7. Translation test: This test was designed to test competence in linguistic knowledge between Sepedi and English and to see which ones' learners' understood best.

3.4.8. Questionnaire and teacher interview: The general purpose of the questionnaire was to collect primary data that included all the mentioned tests so the research could be fair and balanced. Informal teacher interviews took place during the introduction so as to get a general view of the language use and competence of learners and how they struggle and also to see if teachers code switch in the classroom while teaching.

3.5 DATA ANALYSIS

The process of qualitative data analysis takes many forms, but it is fundamentally a non mathematical analytical procedure that involves examining the meaning of people's words and actions (Maykut and Morehouse,2003:121). Qualitative researchers believe that the researcher's ability to interpret and make sense of what he or she sees is critical for understanding any social phenomenon, in this sense, the researcher is an instrument in much the same way that a sociogram,rating scale or intelligent test is an instrument (Leedy and Ormrod,2005:133).

The data collected will be analysed both thematically and descriptively. The thematic method is relevant as it will be used to determine attitudes, preferences as well as language problems pertaining to mathematical literacy. There are two major principles in thematic analysis, which are similarity and contrast principles, which Spradley (1979) defined as follows:

a. The similarity principle states that the meaning of a symbol can be discovered by finding out how it is similar to other symbols. The similarity principle guides the thematic process by facilitating the analysis and search commonality in the data.

b. The contrast principle states that the meaning of a symbol can be discovered by finding out how it is different from other symbols.

The descriptive method of data analysis is relevant because it provides a very useful initial examination of the data, even if the ultimate concern of the researcher is inferential in nature (that is, involving population estimation or hypothesis-testing) (Tustin, 2010:522).

Tustin (2010: 522) points out that the purpose of data analysis is to:

- Provide preliminary insights into the nature of the responses obtained, as reflected in the distribution of the values for each variable of interest.
- Help to detect errors in the coding and the data capturing processes.
- Provide a means of presenting the data in a transparent manner with tables and graphs.
- Provide summary measures of ‘typical’ or ‘average’ responses as well as the extent of variation in responses for a given variable.
- Provide an early opportunity for evaluating whether the distributional assumptions of subsequent statistical tests are likely to be satisfactory.

In analysing the data, the research will prove what other scholars posit on classroom code switching.

3.6 ETHICAL CONSIDERATION

Ethics are important in research in research rules, procedures and regulations are followed. McDaniel and Gates (2001:66) maintain that a high standard of ethics and professionalism goes hand in hand. Tustin et al. (2010:46) provide an overview of

general ethical obligations researchers have towards participants (respondents) in research. These include:

- Participants should not be harmed.
- Participants should not be deceived.
- Participants should be willing and informed.
- Data should be held in confidence.

The participants in this research were willing, informed and the data they provided is confidential. It was clearly stated that the filling in of questionnaires had no effect in their examinations or promotion to the next grade, and that the data and everything said is not going to be shared with their teachers.

3.7 LIMITATIONS OF THE STUDY

There are two limitations of the study. Firstly, the sampling method used was convenience sampling. Convenience sampling limited data collection in this study as respondents participated voluntary. Secondly, the study focused only on ten learners per Grade 11 mathematics literacy per school than covering the whole classroom.

3.8 CONCLUSION

The conclusion gathered from the research methodology of this study is that the questionnaire was a major tool for data collection, while observation on general language use of the learners supported in the conclusion in this study. The major objective of this chapter was to explain the research methodology of the study. Question 1(a), 1 (b), 3, 8(a)(b)(c) and 9(a)(b)(c) were analysed thematically while question 2 a b,4,5,6 and 7 were analysed descriptively.

CHAPTER FOUR

DATA ANALYSIS

4.1 INTRODUCTION

The aim of this chapter is to analyse data and interpret data collected under the topic "An Analysis of Code Switching as a Learning and Teaching Strategy in Selected Multilingual Schools in the Limpopo Province". A total of thirty learners from three high schools in Limpopo took part in this study. From the thirty, fifteen were boys and fifteen were girls from Grade 11 mathematics literacy classrooms. The data is analysed thematically and descriptively. The table 1.1 below indicates the number of respondents by age per grade and per school. According to the National Education Policy Act, 1996 (ACT NO. 27 OF 1996) Admission Policy for Ordinary Public Schools the normal school starting age in South Africa is seven years, a learner should be seven years on or before June of the first grade to be enrolled in a public school. Some schools have learners who are classified over age by the National Education Admission Policy for Ordinary Public Schools, reasons may include that other learners maybe have repeated grades or started school late, as indicated in table 1.1 and table 1.2.

Table 1.1

Age Category	Age per school		
	Ramathope	Hwiti	Potlake
17 years	5	1	1
18 years	2	0	1
19 years	1	6	3
20 years	1	2	3
21 years	1	1	1
22 years	0	0	1
TOTAL	10	10	10

Table 1.2 Illustrates age distributions by gender per school.

Table 1.2

Age per Gender						
Schools	Ramathope		Hwiti		Potlake	
Age Category	Boys	Girls	Boys	Girls	Boys	Girls
17 years	1	4	0	1	1	0
18 years	1	1	0	0	0	1
19 years	0	1	3	3	1	2
20 years	1	0	1	1	2	1
21 years	1	0	1	0	0	1
22 years	0	0	0	0	1	0
TOTAL	4	6	5	5	5	5

4.2 THEMATIC INTERPRETATIONS OF RESULTS

4.2.1 Grammatical competence analysis

a.Tense

Tense is defined as any various forms of a verb or verb phrase that show the time when an event occurs and English have only two such forms- the present tense and the past tense-and all other English tenses are verb phrases, for example: *Joe* plays *football*.(verb, present tense) Jack played football.(verb, past tense) Henry will play football tomorrow(verb phrase, future tense),Holt School Dictionary of American English(836,1981)

The problem was detected with most of the learners because they use past tense in expressing the current form; therefore they are not able to differentiate between past tense and present tense which are the basics in all the tenses.

Excerpt 1

For example, *"I am Kedibone I like to play soccer And when I have growth up I need to be the police. In my future dream to be the police I needed to help the people of south African. I need to arest people those who are doing many crime."* Here the learner does not place punctuation marks correctly, and the use of the capital letter in the middle of the sentence (that is) is also incorrect. The learners do not know the difference between past tense and present tense, especially in the use of verbs. They do not use capital letters in the names of the countries and they also do not know the difference between plurals and singular forms of verbs and nouns. For example, excerpt 2 below, indicates how the learners struggle with verb agreement.

Excerpt 2

"I want to gowing to school every day".

Firstly, the spelling of "gowing*" is incorrect and it should be written as* "going". Secondly, "going" cannot be used before "*I want to"* as going is past tense, therefore the correct sentence should be *" I want to go to school everyday*".

The learners should further be taught different tenses and agreement of verbs.

b. Spelling

Spelling is very important in every language since some words are pronounced the same; a spelling error may produce an interpretation far from the intended interpretation of the author. For example, *waist* and *waste.* To be able to differentiate between these two words the writer must get the spelling correct. Although *waist* and *waste* are pronounced the same, they, however denote different meanings. *Waist* refers to a human body part below the ribs and above the hips. *Waste* refers to those things that are regarded to be no longer useful then discarded.

Below is a list of words the respondents could not spell correctly, they are written in italics:

Excerpt 3

For example: "*Talketive"* instead of **Talkative**

"*Spear time"* instead of **Spare time**

"*Accountend*" instead of **Accountant**

"*Pantual"* instead of **Punctual**

"*Lawer*" instead of **Lawyer**

Tiša instead of **Tiiša**

This suggests that the learners struggle with spelling, especially in English because they write words by how the words sound. Therefore, a dictation and spelling BEE games will be of great importance in helping the learners improve their spelling.

c. Punctuation

Under punctuation, the use of commas, full stop and parenthesis is going to be evaluated as used in this research by the respondents.

i. Comma

Dakin (239,1947) states that the subject, a. predicate and object in their simplest forms, or even with simple enlargements, are not separated from each other by any point. For example, “The rolling mountains of the deep obey thy strong command”.

When two words are joined by a conjunction (and, but, or, nor, for, yet, so) they are not separated by a comma: for example, *ramped and roared, the lions, with horrid laughing jaws.* No capital letter shall follow a comma unless it is a noun.

Excerpt 4

“*Ke dula Sefateng.Ke duma gore geke gola kebe le bokamoso,bjo bo botse”.*

The use of a comma in the excerpt above is incorrect as “bokamoso” is a predicate/object and “bjo” is an article. The correct use is as follows “Ke dula Sefateng.Ke duma gore geke gola kebe le bokamoso bjo bo botse”.

Excerpt 5

“I`m Maria I’m coming from nchichane, And I like school”.

The excerpt above indicates yet another wrong use of a comma by writing a capital letter after a comma even when the word is not a noun, and not using a comma between the name and the pronoun.

Excerpt 4 and 5 shows how most of the learners use commas in a haphazard manner. There should have been no comma on the underlined words and Nchichane should be written in a capital letter as it is the name of a place.

ii. Period (Full stop)

The full stop or period is put at the end of a sentence, whether simple complex, or compound.

The respondents were able to use a full stop correctly at the end of each sentence, but the problem was that the following sentences were started with small letters. Thirty percent of the respondents did so. For example,

Excerpt 6

"*I am a person who likes to share somethings with other people.and in my future I want to be a teacher so that I can help other children".*

The underlined words are an example of the use of a period by almost 50 percent of the learners; however, they are able to understand where a period or full stop is used.

iii. Parenthesis

The parenthesis is represented by ( ). It is used to enclose an exploratory phrase or sentence. For example, "A vast number of fascines (bundles of wood)".

The learners used parentheses where they did not have an equivalent or when they explained something as indicated on excerpt 7 below.

Excerpt 7

"I want to study HR management (Human resources)".

This shows that the learners are able to use parenthesis as indicated in excerpt 7.

4.2.1.4 Verbs

Dakin (1945:45) indicates that a verb is the pivot of the sentence, the hub from which all constructions radiate like spokes in a wheel, while the simplest explanation is that a verb is a doing word. In Sepedi verbs are usually grouped according to their syllables, for example, monosyllabic verbs*: Ja (eat); fa (give*), Disyllabic: *bona (see); swara (hold)* and polysyllabic verbs: *sepela (walk); kitima (run).*The verb agrees with its nominative in number and person: *The kite flies; The kites fly.* In this case, the researcher looked at the learners` ability to follow these two simple rules in the application of verbs.

For example,

Excerpt 8

"I am not prefer mathematics literacy in English". And, "I want to gowing to school every day".

4.2.1.5 Zero Equivalence

Zero equivalence is the case where there is no direct translation equivalent for a lemma (Mehlape, 2007:29). The learners` examples on zero equivalence are quoted below:

Entertainment journalist, sensitive, traffic police, social worker.

Excerpt 9

"*Ke lesogana la goba (sensitive), ke tiša ka thata go fihlela ke hwetša se ke senyakago. Ke dula Atokia gae mo ke tšwago gona ke Burgersfort. Ka morago ga mengwaga e me hlano ka nyaka go te pona ke le* ***entertainment journalist".***

The use of code switching was also assessed whether it is by choice or by lack of knowledge of the equivalent word in Sepedi, for example *" Ke lesogana la goba (sensitive)",* the learner wrote *"sensitive"* in brackets as an indication that he does not know what sensitive means in Sepedi. The use of the word" *entertainment journalist*" indicates the lack of knowledge of the correct equivalent in Sepedi for "*entertainment*

journalist". One of the research questions was that *"is learner code switching equal to inadequacy in the target language?"* In question two, the target language is Sepedi, so the conclusion on this one is that learners code switch certain lexical items from English when expressing themselves in Sepedi because they do not know the correct equivalent.

Question number one (a) and (b) was **"Tell us about yourself (include where you are from, your future dreams and goals)".** The researcher expected the respondents to start with their names, then the area or village where they live, what they want to become including their desired areas of study.

The objective of this question was to see if learners are able to express themselves in English. Through this, their ability to use relevant verbs in the right tense was also assessed. From the excerpts above the learners do try to express themselves in English, although their English is not well constructed. Out of the thirty respondents, only two boys did not fill in this section. This could be because they did not know how to start or how to express themselves. It could also be that they did not fully understand the instructions given to them on the questionnaire. These two respondents used a pencil to write and rubbed it off. So, it means the two did not understand the instruction and believed that it was the same question with question number two which was in Sepedi.

Question number one (b) was the Sepedi version of question number one (a). The expectation was the same, though on this one the researcher was focused on how good the learners were in expressing themselves in Sepedi (which was their mother tongue or second language (for a few others) and the language spoken around the areas where the schools are built). ***"Hlaloša ka wena ka boripana (Akaretša mo o tšwagogona le seo oratago goba sona)".*** Analysis on spelling, punctuation and tense was based on these two questions.

Questions 8 and 9 in the questionnaire were a translation from Sepedi into English and English into Sepedi respectively. The idea was to assess the learners` competence in comprehending and reading through instructions. Some of them got fifty percent

regarding the answer and this showed that they did not fully understand what the question required. Out of the thirty respondents, only four did not write this question. Seven wrote on both equation and translation, and nineteen wrote the correct translation on both languages.

4.3. DESCRIPTIVE ANALYSIS

4.3.1 Representation of the respondents by age

The charts presented in this section show one way frequency distribution. Figure 1 below represents the age of total respondents` age.

Figure 1 : Percentage distribution of the respondents by age

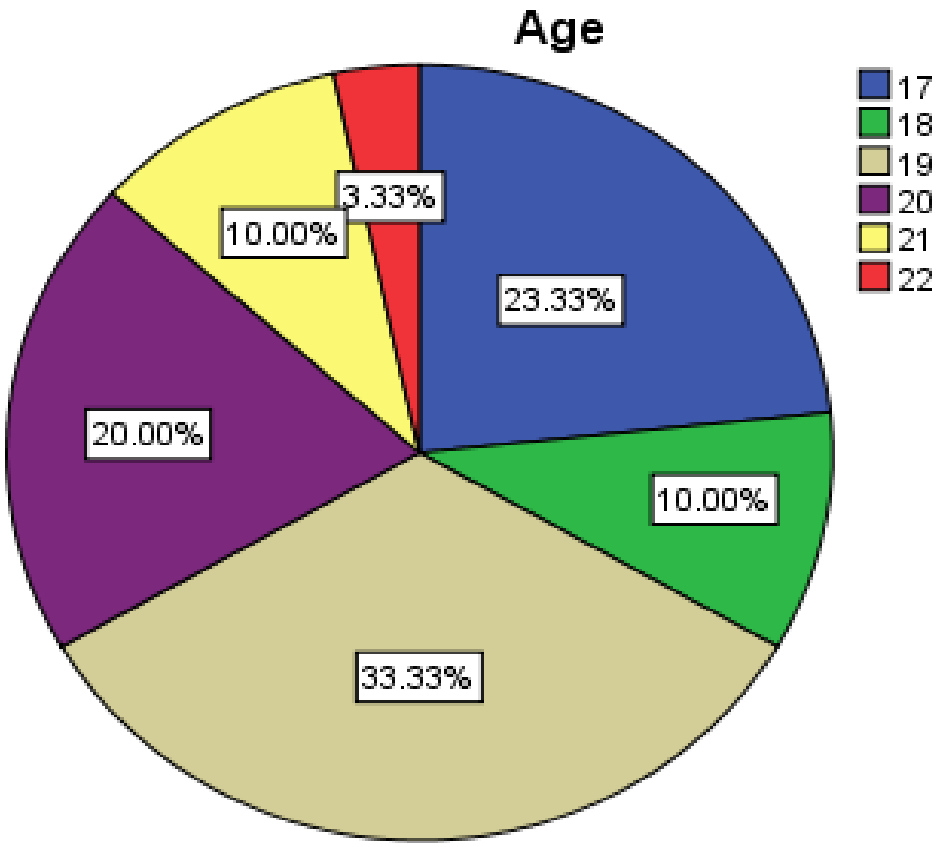
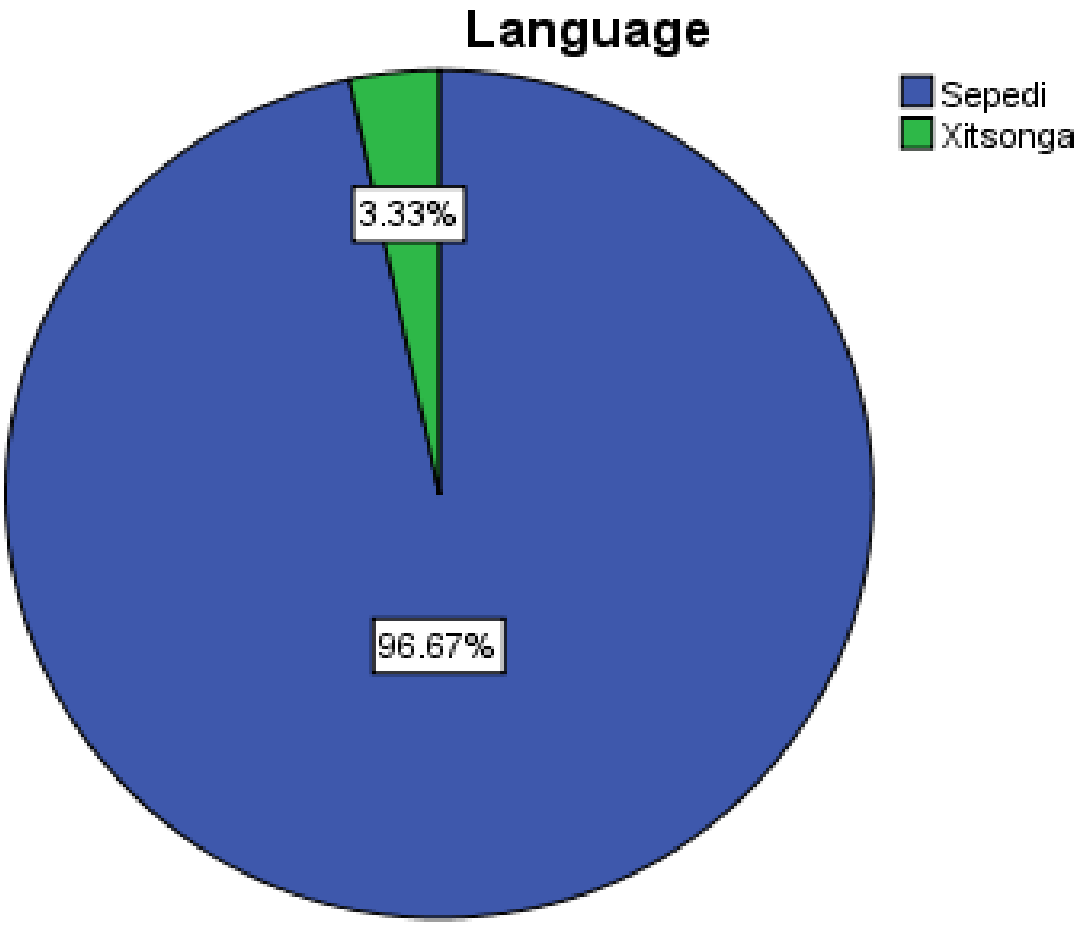


Figure 1 above shows that 33.3 percent of the respondents are nineteen years old, 10 percent of them are eighteen years old, and 3.3 percent are twenty two years old, 23. 3 percent are seventeen years old, 20 percent are twenty years old, and another 10 percent are twenty one years old. These respondents are all in Grade 11 mathematics literacy classrooms in all the three schools. The standard age for grade 11 is 17 years old as the school starting age is 7 years old as stipulated in the National Education Policy Act, 1996 (ACT NO. 27 OF 1996) Admission Policy for Ordinary Public Schools.

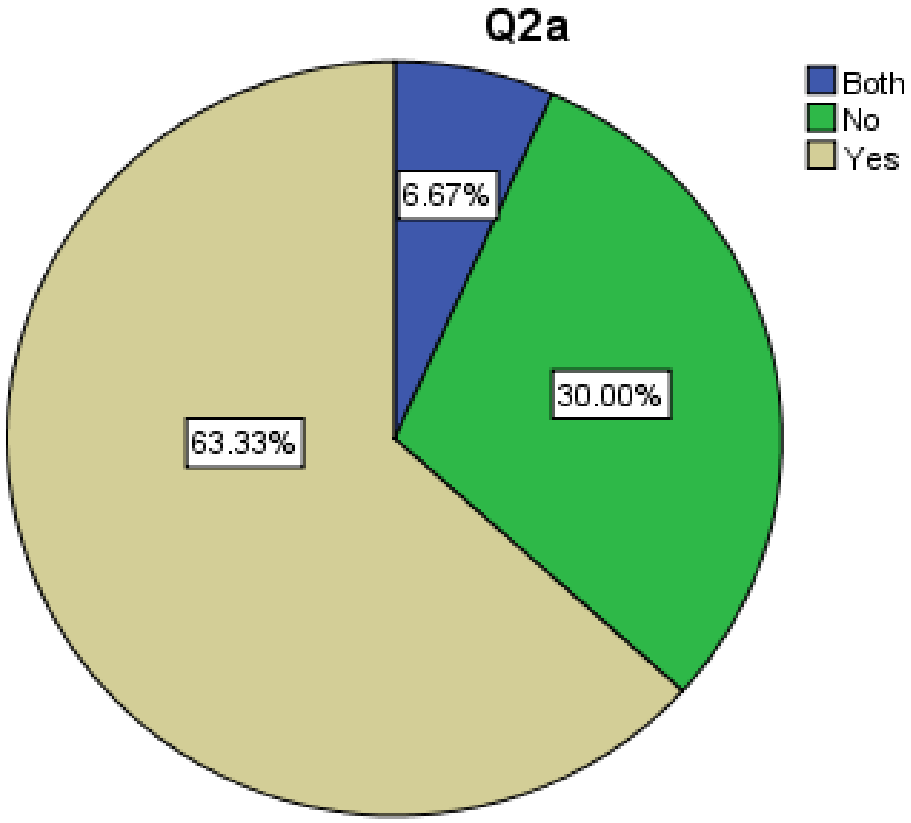
4.3.2 Language

Figure 2 Home Language



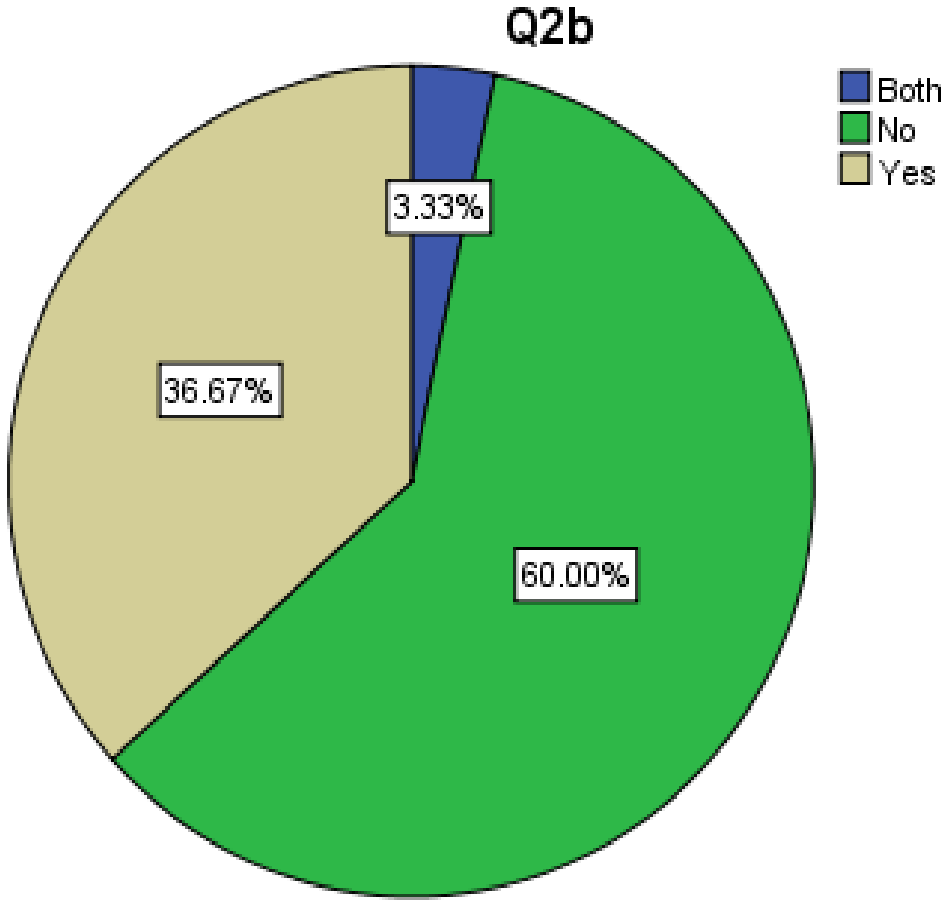
As a representation of the learners` home language, figure 2 below indicates that 96.7 percent of the respondents speak Sepedi as their mother tongue, while only 3.3 percent uses Xitsonga as their mother tongue.

Figure 3 : Language preferred when taught mathematics literacy (English) Question 2a



Question 2a required learners to indicate a language that they preferred to be taught mathematics literacy with in class between Sepedi, English or both languages. Figure 3 indicates that 63 percent of the learners preferred English, 6.6 percent did not prefer English while 30 percent preferred both languages. The reasons for not preferring English include lack of understanding of the language and not being able to read it. Therefore, the learners did not understand what the questions wanted, and they forgot what they were taught immediately the teacher left the classroom. Those who preferred English said that it was because the final examination paper was written in English and that they understood the subject`s terminology better in English than in Sepedi. Those who preferred both languages argued that in cases where they did not understand English words, the teacher could always clarify them in Sepedi.

Figure 4: Language preferred when taught mathematics literacy (Sepedi) Question 2b



Question two B required the learners to indicate whether they preferred being taught mathematics literacy in Sepedi. Figure four indicates that 36.6 percent of the learners said they would prefer being taught mathematics literacy in Sepedi, while 60 percent did not prefer being taught the subject in Sepedi and 3.33 percent preferred both English and Sepedi as the languages to be taught mathematics literacy. Those who preferred Sepedi over English said it was because Sepedi was their mother tongue and they understood the teacher when he/she explained the subject matter. Those who did not prefer Sepedi said it was because mathematics was taught in English at the tertiary level, while those who preferred both languages said it was because Sepedi could be used for clarity and further understanding.

Figure 5: Language learners used with friends

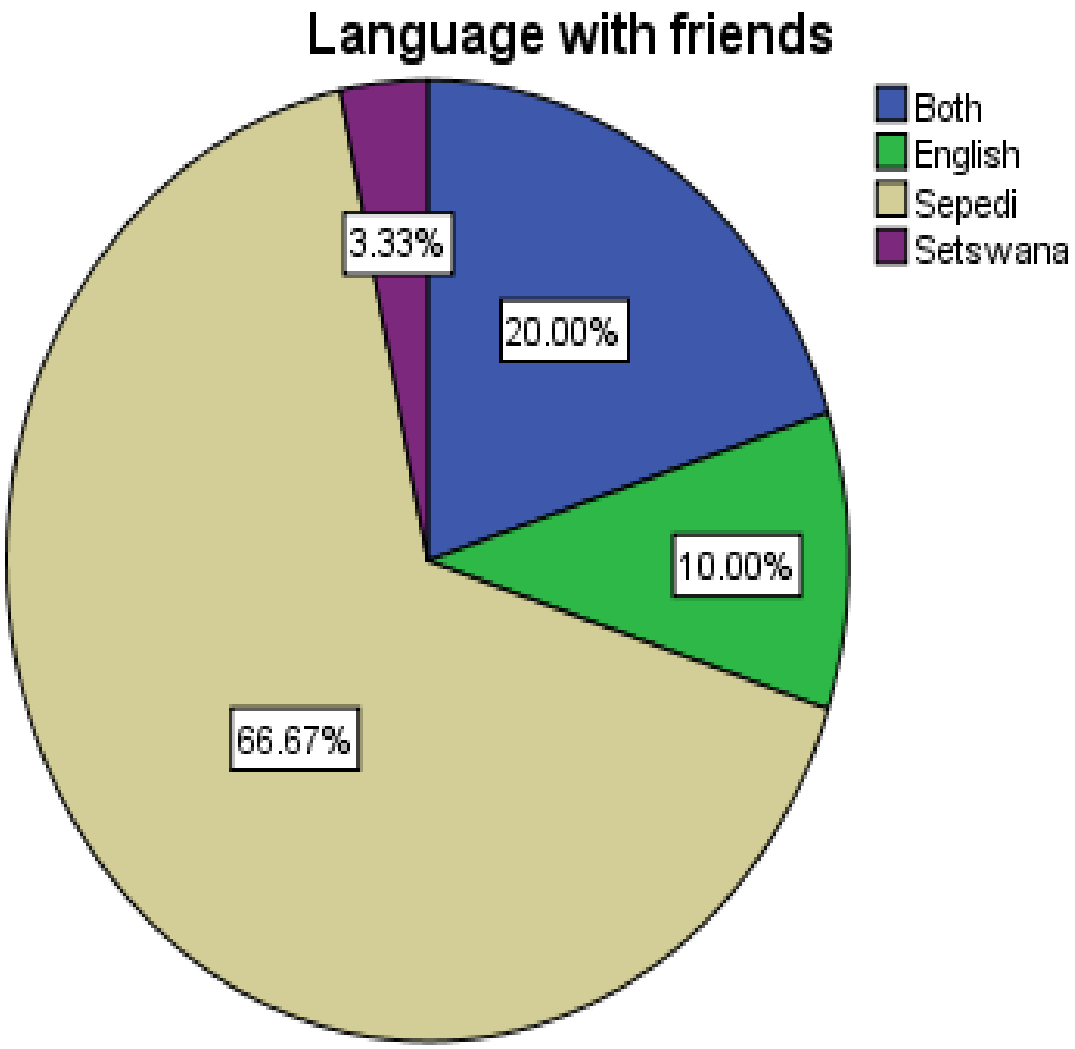


Figure 5 indicates that 3.33 percent of the learners used Setswana because that was the language they grew up speaking, 20 percent used both English and Sepedi when speaking to their friends because it was interesting to include English words, and because sometimes they forgot the equivalence in both languages,10 percent used English when speaking to their friends because some have white friends and because some of their friends do not know English enough to hold a conversation for a long time, 66.67 percent of the respondents preferred Sepedi because all the friends spoke this language.

Figure 6 : Language learners use with teachers

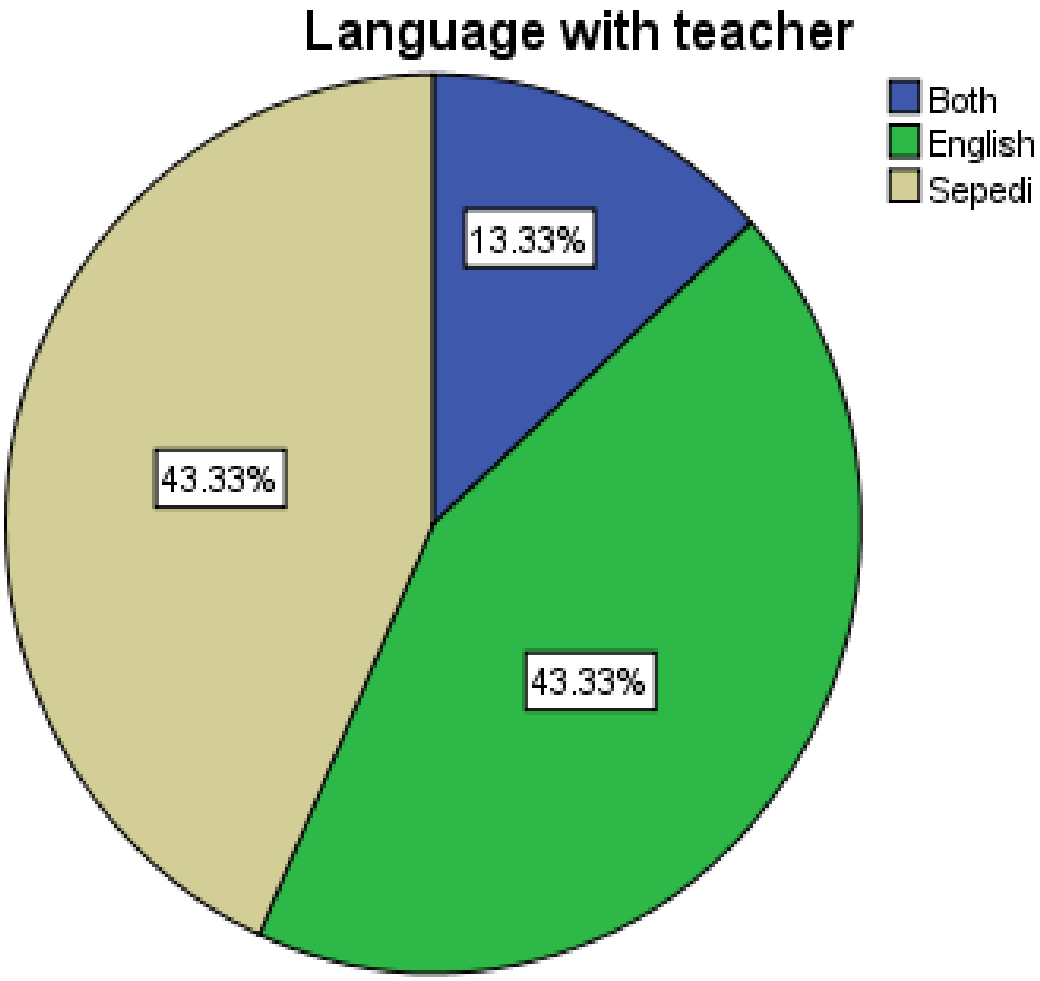
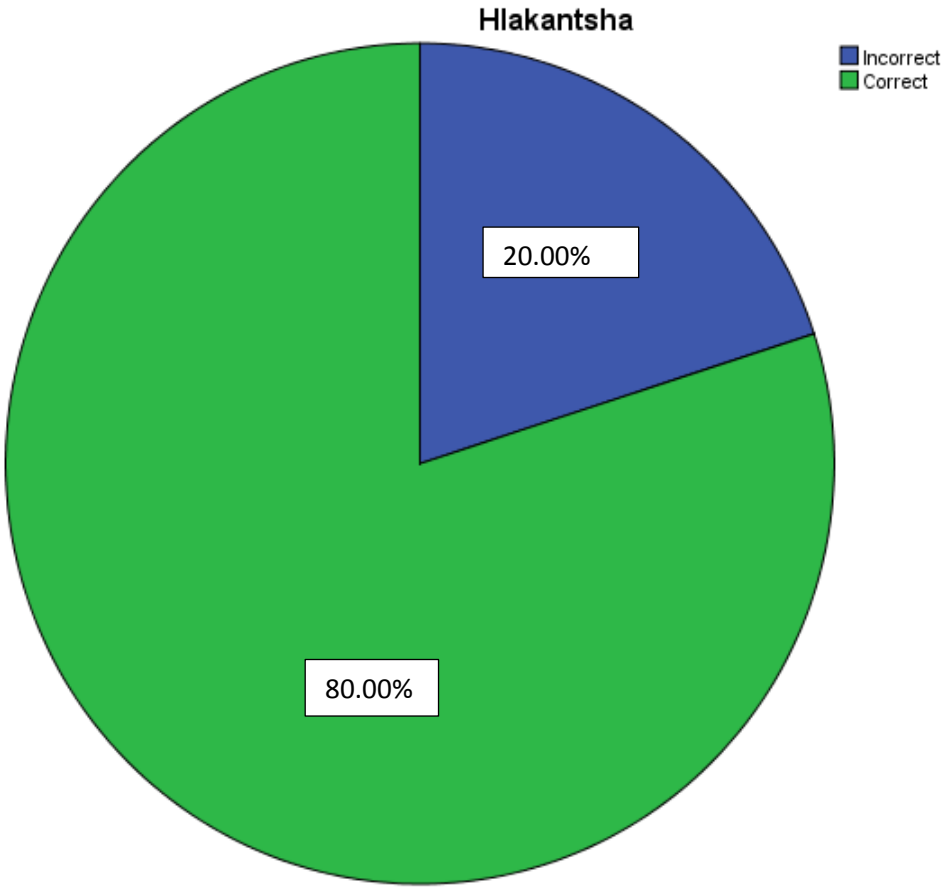


Figure 6 above is indicates of the language learners used when speaking to their teachers; 13.33 percent of the learners said they used both languages because they added Sepedi words when they forgot the English ones, and they used Sepedi to ask questions when English is the medium of instruction; 43.33 percent used Sepedi because it was the only language they were proficient in, whereas 43.33 percent used English when speaking to their teachers because they wanted to practise the language, and because tertiary institutions used English as a medium of instruction.

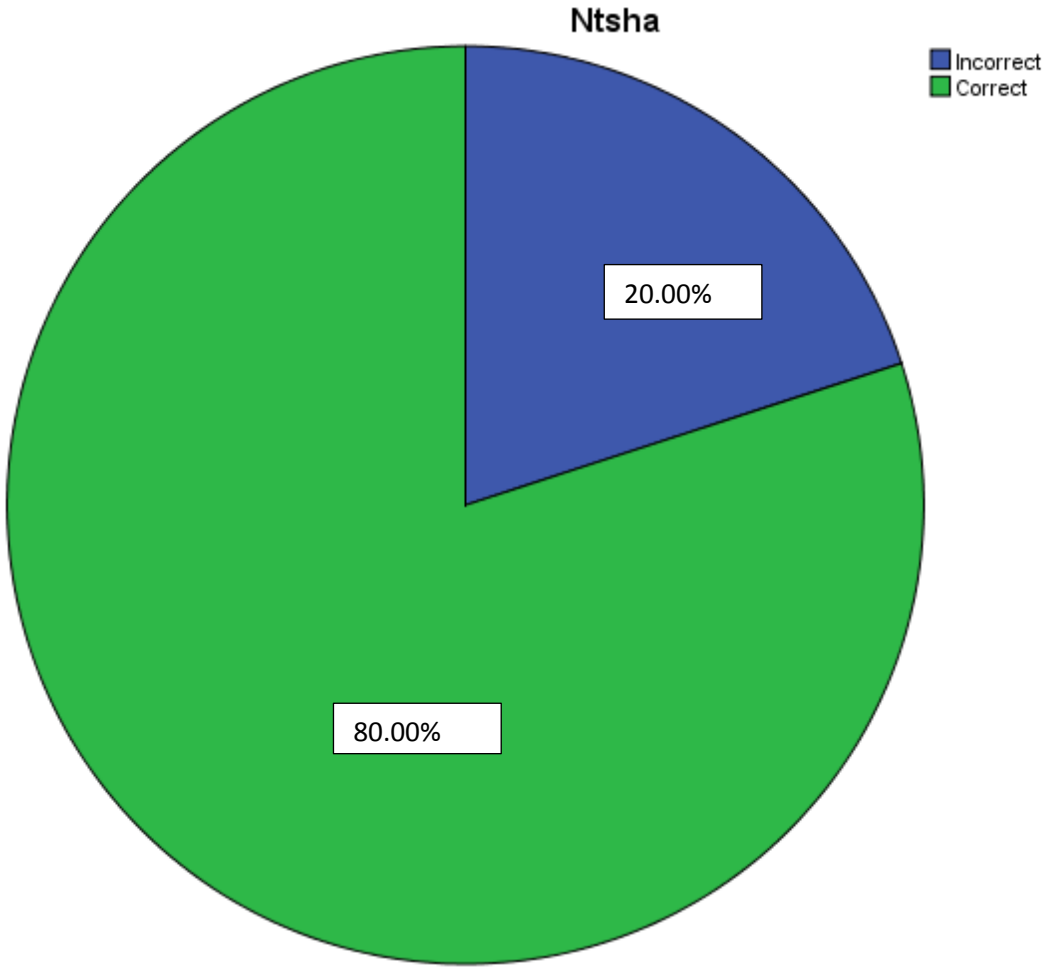
4.3.3 Mathematic symbols

Figure 7 : Hlakantšha



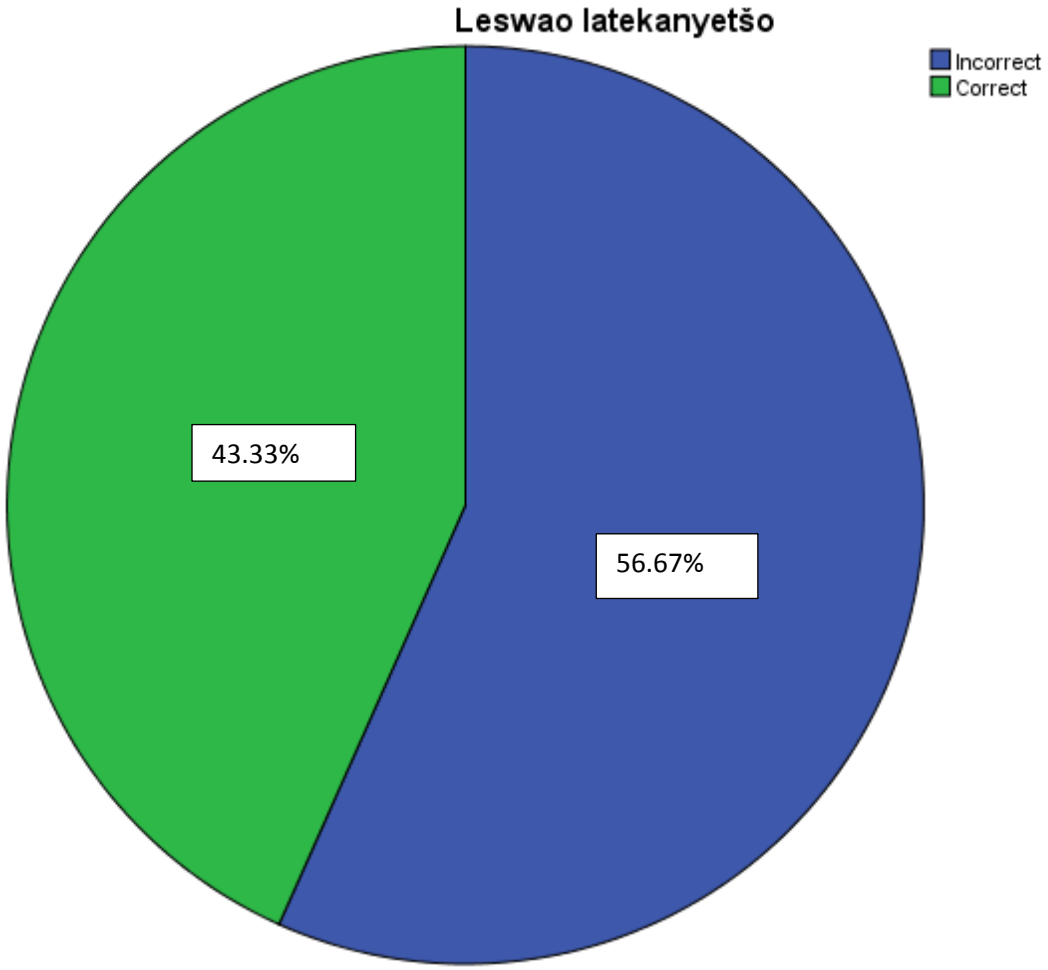
Hlakantšha is a Sepedi word for addition or add (+). This symbol is used in mathematical equations to show that the numbers are added together. In this question, learners were asked to write the word of the mathematical symbol (+) in Sepedi. The correct word is *hlakantšha* or leswao *la go hlakantšha.* Twenty percent of the respondents wrote the correct word whereas 80 percent did not get the word right as illustrated in figure seven. The incorrect words included: *plas, thekenotši* and *pious*. This was highly surprising considering that the symbol (+) is the most common of the mathematical signs.

Figure 8 : Ntšha



The English equivalent of *Ntšha* is minus (-), a symbol used in mathematics to subtract numbers. Figure eight indicates that 20 percent of the respondents knew the symbol in their mother tongue, while 80 percent did not know it in their mother tongue. This is indeed a poor performance considering that the minus sign (-) it is a common sign and is used from primary school level mathematics up to tertiary level. This proves that mathematics is deemed to be a difficult subject irrespective of the language or medium used to teach it.

Figure 9 : Leswao la tekanyetšo



Leswao la tekanyetšo is a Sepedi word for the equal sign (=). It is also a common sign in mathematical language. Forty-three percent of the respondents were able to write correctly what the equal sign was in Sepedi (which is leswao *la tekanyetšo* or tekanyetšo), whereas 56.7 percent wrote the incorrect word as indicated in figure 9. Examples of incorrect words included: *is equatso, karabo ke eng, ke bokae.* The learners` performance in this question is rather dismal as the equal sign (=) is a common and basic sign used in mathematics at all levels.

Figure 10 : Atiša

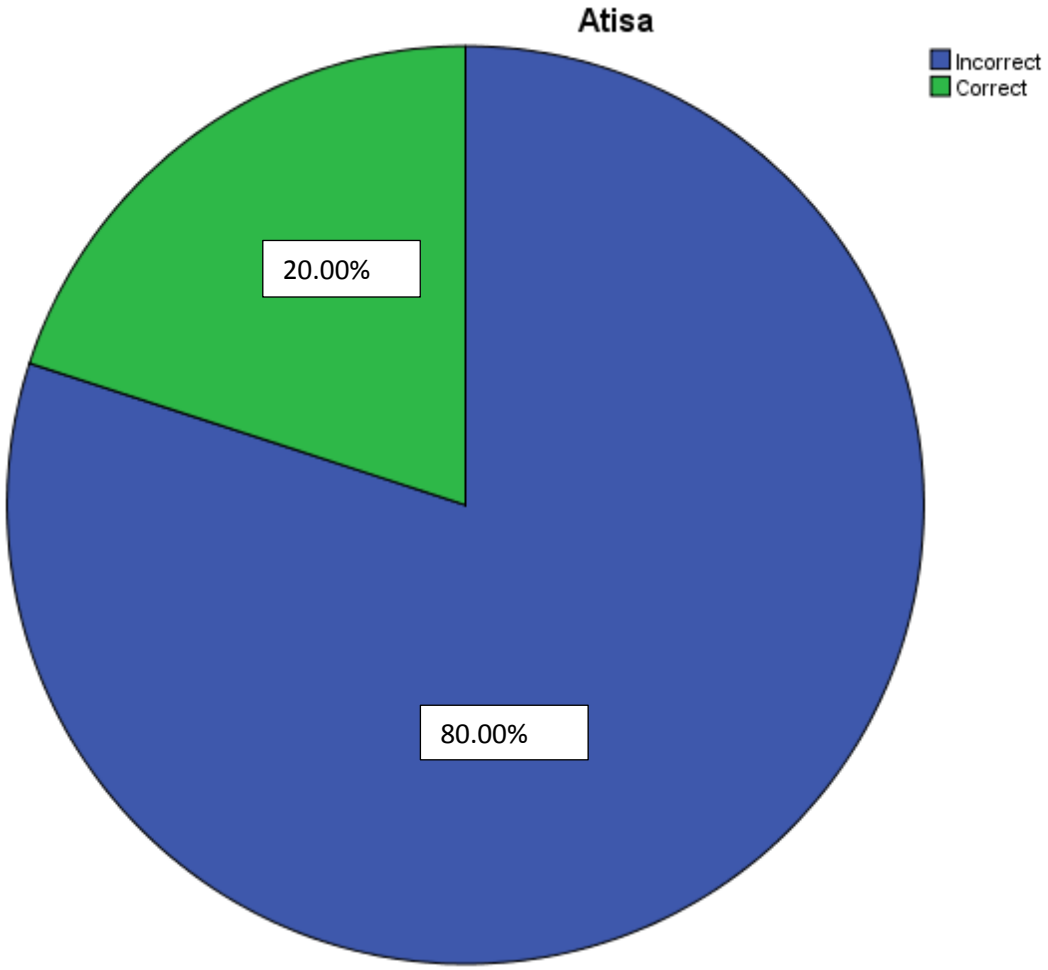
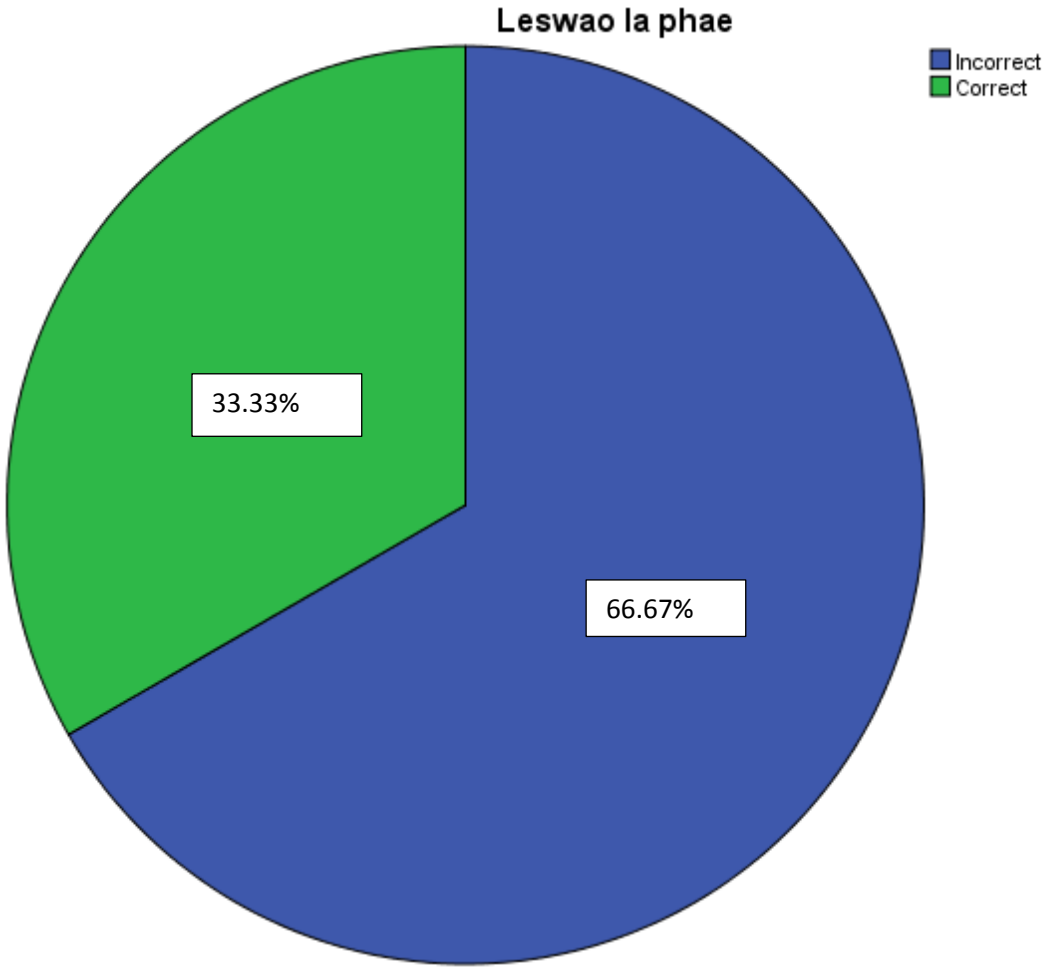


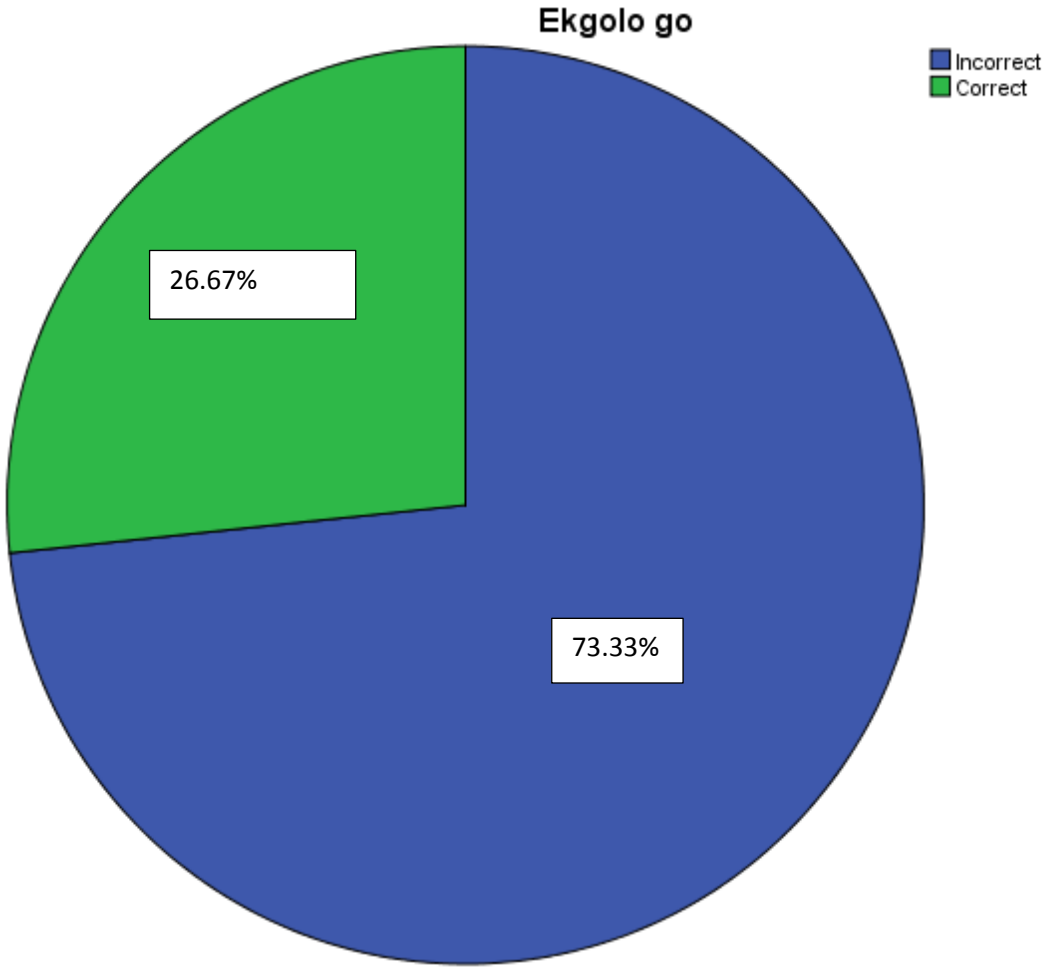
Figure 10 indicates that 20 percent of the respondents got the multiplication symbol (×) in Sepedi correct whereas 80 percent wrote the incorrect word for the symbol. *Atiša* means multiply, so the correct word is *atiša* or *leswao la go atiša*. Other learners confused the multiplication with x (a mathematical sign for a number which is not known) (x) and they wrote *x, multiplication* or *thamose.*

Figure 11: Leswao la phae



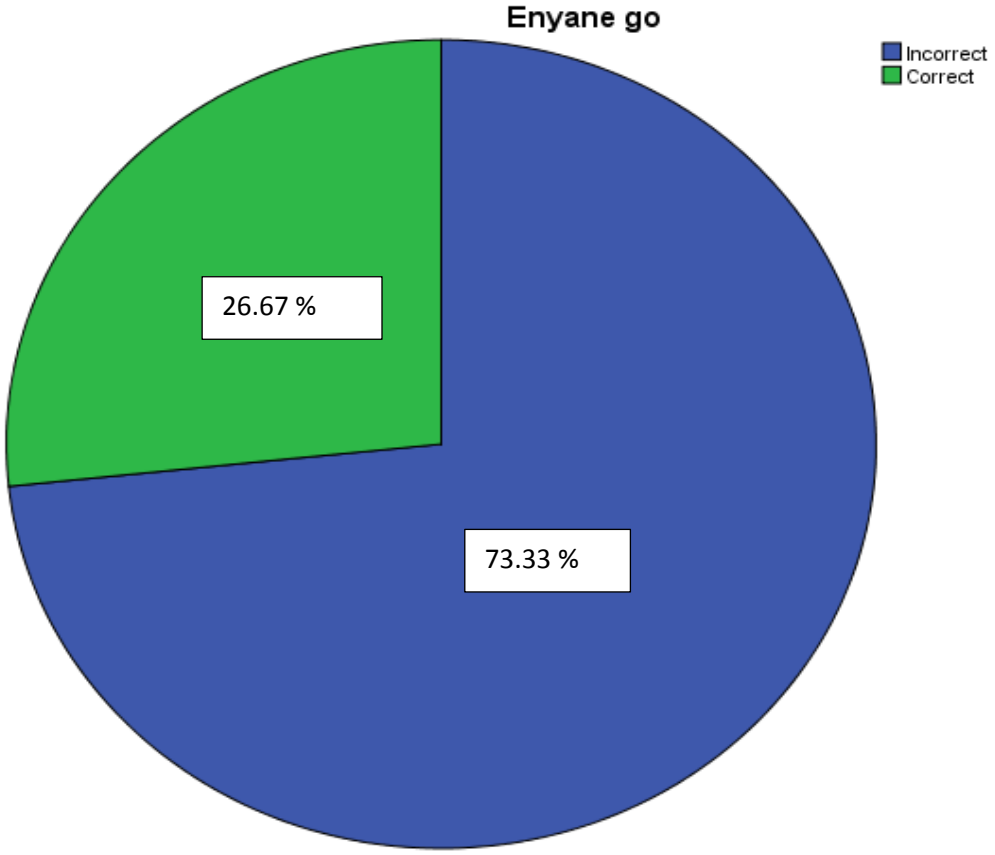
Pie sign (π) is the most complicated of all the mathematical symbols especially to mathematics literacy learners because it is not used in their type of mathematics, but is used in pure mathematics. Figure 11 indicates that 66.7 percent of the respondents did not get the Sepedi word of the symbol correct,whereas 33.3 percent of them got the word correct. The correct word is *phae* or *leswao la phae*. The incorrect words included: Pepi and *pieskate.*

Figure 12 : E kgolo go



The word *e kgolo* in English is “greater than” (>). Figure 12 indicates that 73.33 of the respondents wrote it incorrectly, whereas 26.67 got the word correctly. They confused it with less than (<)and most of them used the borrowed term *lessthane.* The incorrect responses included *e tsena* and *go lehlakore lanngele*.

Figure 13 : Ennyane go



In figure 13 above, 73.33 percent of the respondents did not know the correct word for the sign less than (<) in Sepedi, whereas 26.67 percent got it correct. Like in figure 12, the greatest confusion was with the greater than sign (>). The major objective of the mathematical symbols in Sepedi was to assess whether learners are able to name the symbols in their mother tongue.

4.3.4 Translation of mathematics terminology into Sepedi

Figure 14 : Formula

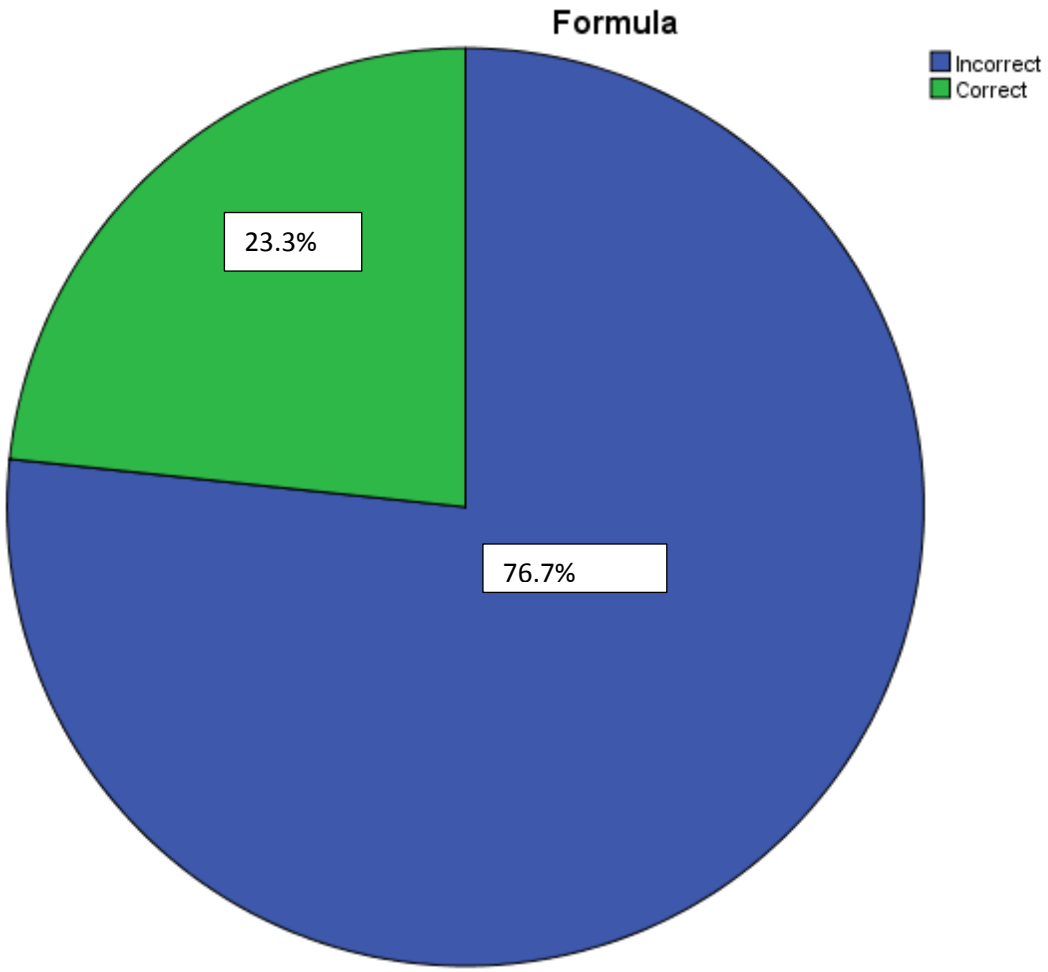
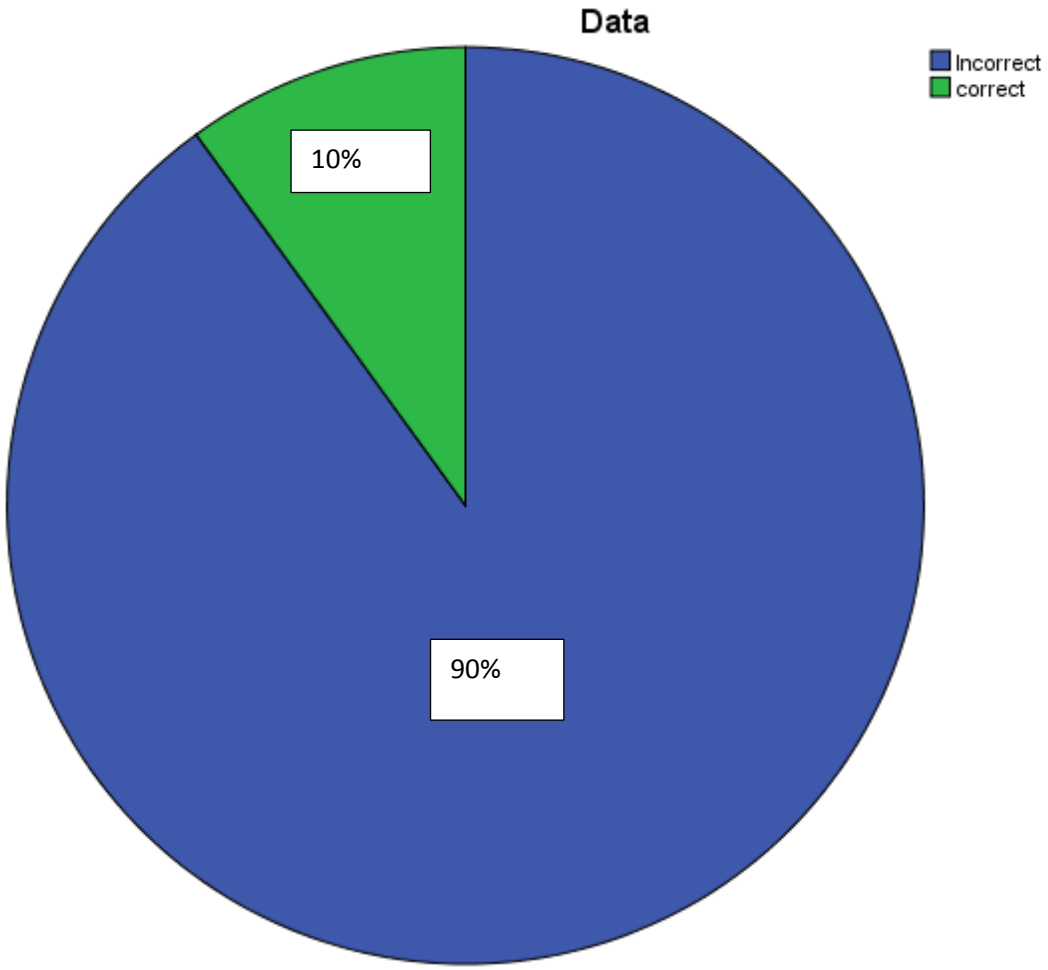


Figure 14 above indicates that 23.3 percent of the respondents got the translation correct, while 76.7 did not write the correct translation. The correct translation is *tšhupetšo / tlhahlo* in Sepedi because a formula is a unit constructed using the symbols and formation rules of a given logical language. The incorrect words included *taelo,* which means instruction and *tharollo,* which means solution.

Figure 15 : Data



The correct translation of the word data into Sepedi is *tshedimošo,*Ffigure 15 indicates that 10 percent of the respondents were able to write the correct translation, while 90 percent wrote the incorrect translation. The incorrect translation included: *nako* (time), *dipalopalo* (census) and *datara*.

Figure 16 : Digits

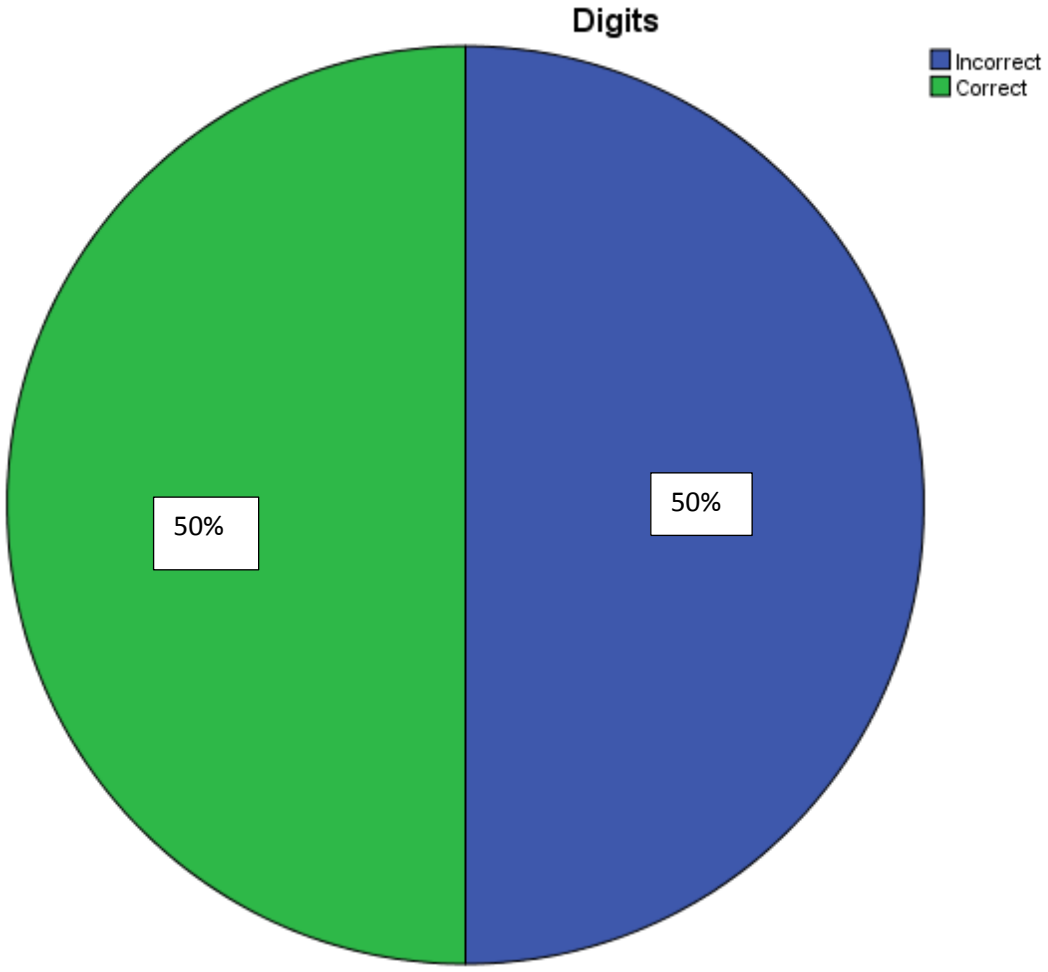


Figure 16 indicates 50 percent incorrect and 50 percent correct translation. It was expected that the respondents would get the translation correct because the word digit is an everyday word which they often use, the correct translation is "*dinomoro".* Some example of the incorrect words are *Mafelelo a felo (the end of something)* and *didigitse.*

Figure 17 : Square

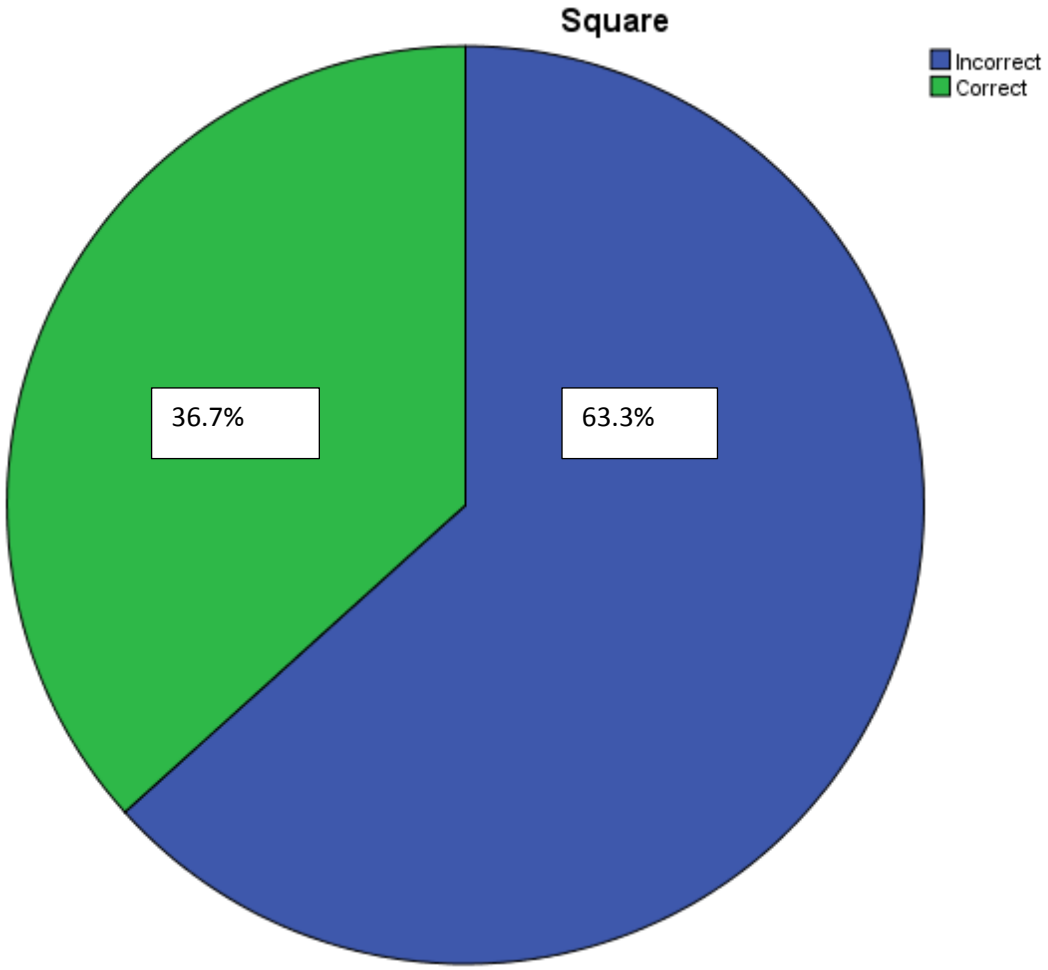


Figure 17 indicates that 36.7 percent translated the word square correctly, whereas 63.3 translated it incorrectly. The correct translation is "*khutlo nne ya go lekana"* meaning a four equal sided figure. Incorrect translations included: *sekwere* (square), *lepokisi* (box) and *four corner*s.

Figure 18 : Rectangle

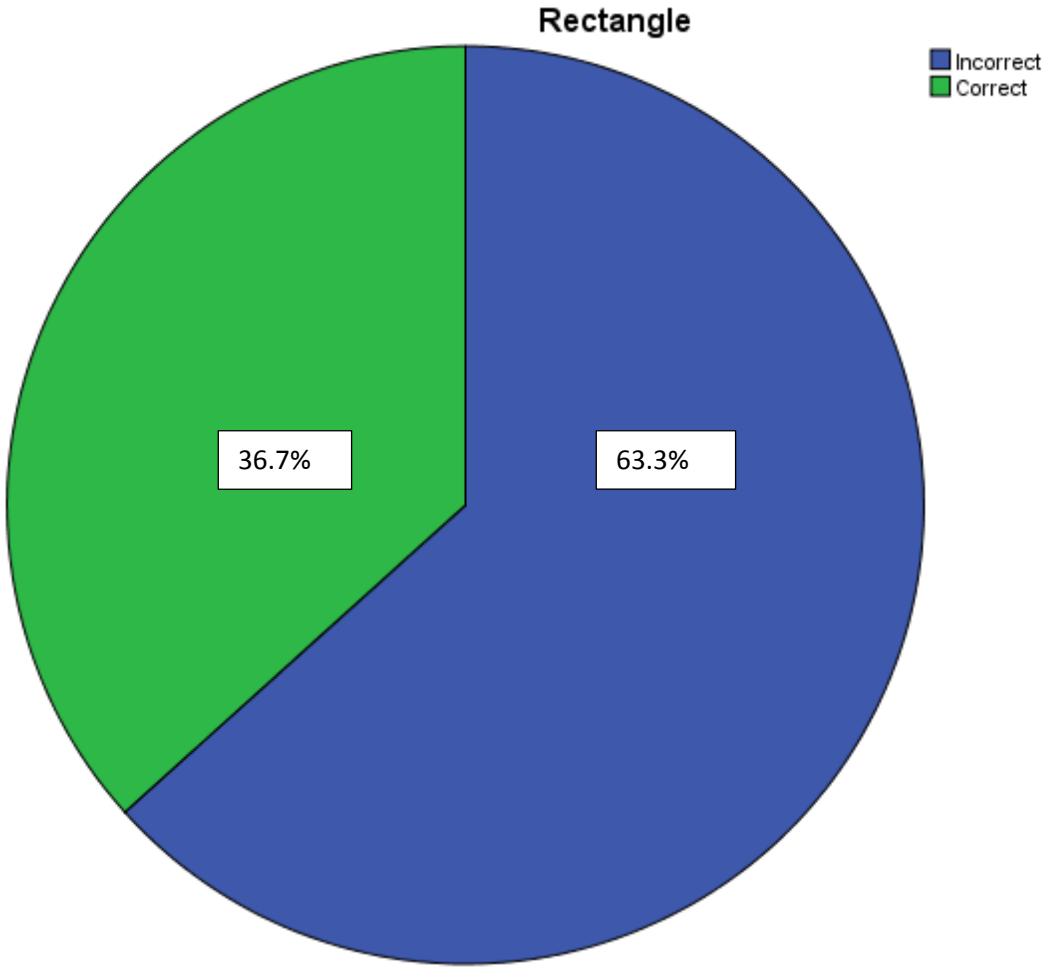
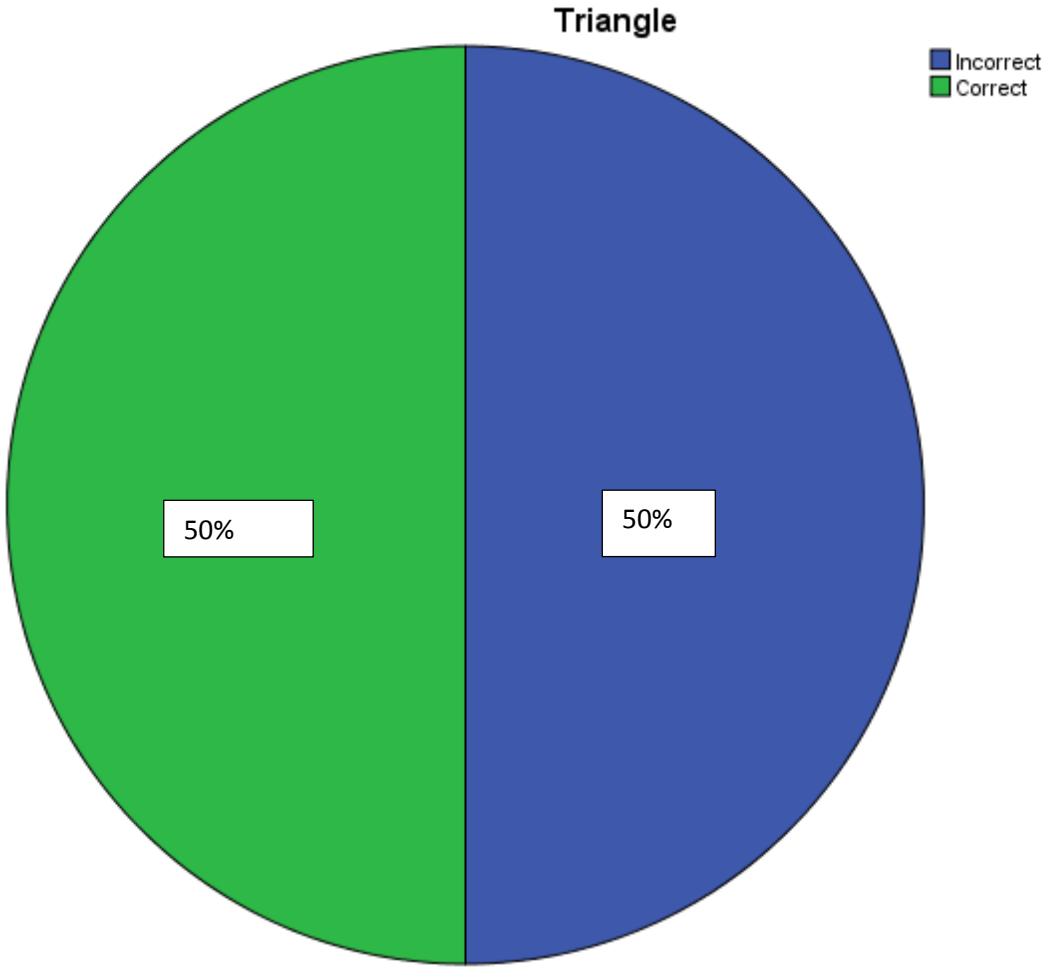


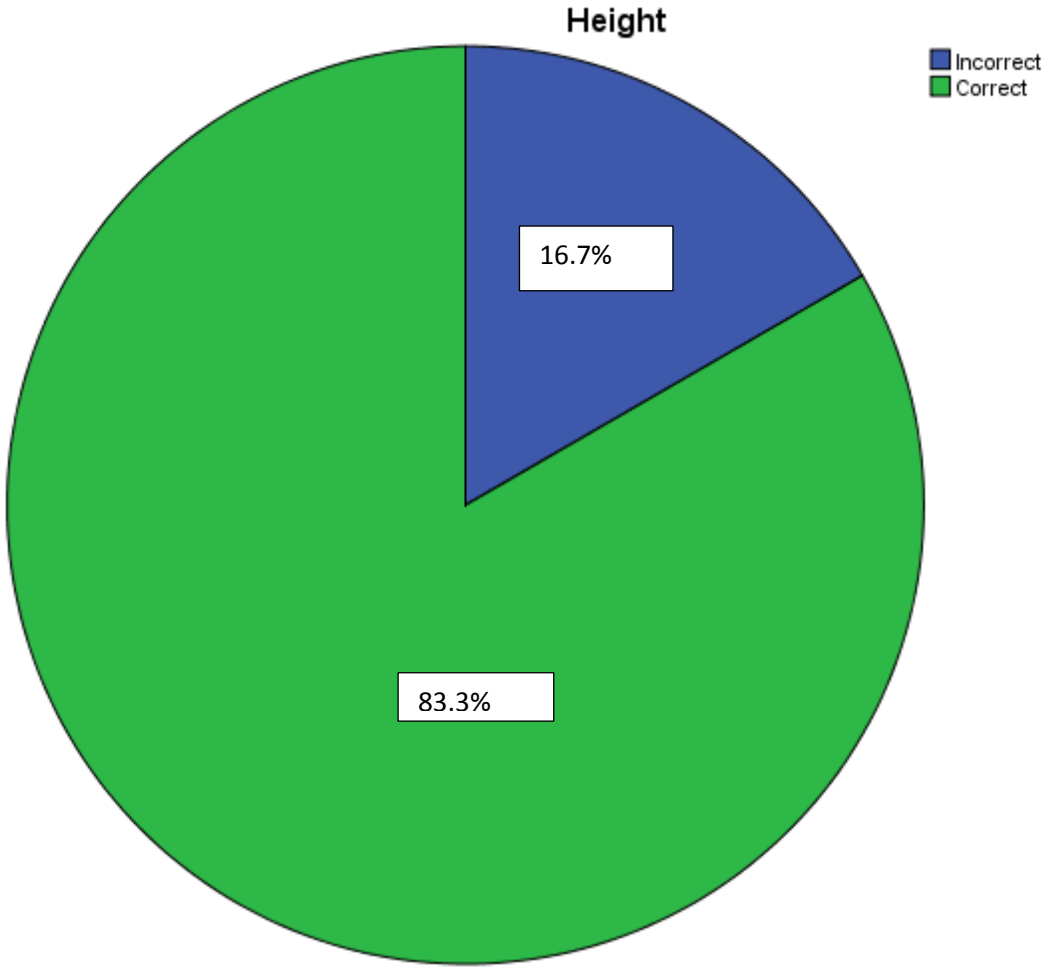
Figure 18 indicates that 36.7 percent of the respondents made a correct translation of the term rectangle, whereas 63.3 percent made an incorrect translation. The correct translation in Sepedi is *khutlo nne ya go lekana mahlakore a mabedi.* Examples of incorrect translations included: *Borotho (bread), Rectangle and Khutlo tharo (triangle).*

Figure 19 : Triangle



The Sepedi equivalent of triangle is *khutlo tharo.* Figure 19 indicates that 50 percent of the respondents made the correct translation of the word triangle and 50 percent made an incorrect translation. Examples of incorrect translation included: Triankele,Terangele and Traenkele.

Figure 20 : Height



The correct translation of the word height is *botelele* in Sepedi. Figure 20 indicates that 83.3 percent of the respondents made the correct translation, while 16.7 made an incorrect translation. Height or *botelele* is used daily as a measure of length and distance at school and out of the school environment. Few of the incorrect responses included: *Haite*, *Bogolo* (large) and *Godimo* (up).

4.4 CONCLUSION

In conclusion, the learners` responses prove that they do not understand the grammatical rules required. Their English grammar is very bad in writing because they converse in mother tongue during break, sometimes in class and at home. So the learners' use of English is limited to the English period or lesson. A further conclusion drawn from the results of the study indicates that the learners are struggling with the use of tense, finding equivalence and spelling in both Sepedi and English. Their low performance on the identification of mathematics symbols in Sepedi shows that they are not ready to be taught mathematics literacy in Sepedi. Low performance is also shown in the translation from English into Sepedi of mathematics terms. Considering the fact that the learners struggle in both English and Sepedi, it is advisable that code switching be implemented in the classroom to clarify certain issues and to explain instructions. However, learners should be taught to understand and differentiate common terms used in final examinations in English so that the code switching will not be to their disadvantage.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The aim of this study was to analyse the effectiveness of code switching in mathematics literacy classrooms on grade 11 learners.

5.2 SUMMARY OF CHAPTERS

Chapter one was the introduction of the study, serving as a direction for the rest of the study. The problem statement of the study was that language is a way of communication; therefore, a sound knowledge of language, especially English as most question papers are written in English and content subjects are also taught in English. English is a vehicle for success in education. The assumption was that difficulty in expressing oneself in English is not an advantage since English is used in institutions of higher learning. Moreover, job interviews are, for the most part, conducted in English.

Chapter two was the literature review in the following classifications: language use per situation, the nature of code switching and functions of code switching in the classroom and the review featured code switching in both multilingual and bilingual studies.

Chapter three dealt with the research methodology employed in this study. The data collection tool was the questionnaire.

Chapter four dealt with the data analysis, and two methods of data analysis were used. The thematic and descriptive analysis methods were used respectively, with the thematic analysis used for grammatical competence and instruction following tests, while descriptive analysis method used on translation and mathematics symbols to measures frequencies.

5.3 FINDINGS OF THE STUDY

A major finding of the study is that language (either English or Sepedi) serves as a barrier in the performance of the learners in mathematics literacy. The learners struggle with both English and Sepedi. Figure: 3 pg. 43 indicated that 63.3 percent of the learners prefer English as the language of instruction during mathematics literacy lessons, whereas 60 percent prefer Sepedi. This indicates that not every learner is comfortable with the use of one language during lessons. Another finding is that the learners' performance on the mathematics literacy symbol identification in Sepedi is low. This means that mathematics literacy cannot be taught entirely in Sepedi as the learners will struggle to identify and understand certain concepts.

5.4 RECOMMENDATIONS

The study recommends that more emphasis must be put on the use of punctuation marks and their special uses. In addition, language teachers should encourage the correct writing of spelling and play games such as spelling BEE and dictation to help the learners improve the spelling and pronunciation of the words in both Sepedi and English. Therefore, to improve the learners` performance in mathematics literacy, their English should be improved as well. Language teachers should emphasise grammar rules and encourage learners to read books and newspapers in both Sepedi and English. Each learner should be encouraged to have a dictionary so that they each can see how different words are spelt and how they are used in everyday communication. Code switching should be used as a vehicle for seeking understanding where it is lost during a lesson, and when learners struggle to express themselves in giving answers, teachers should in any means use code switching to clarify concepts and not teach in mother tongue. However, the learners should be taught the correct word in the relevant language so as to help when it comes to writing.

5.5 CONCLUSION

The aim of this study was to evaluate the use of two languages interchangeably for the benefit of learning and teaching. The findings of the study indicate a huge struggle in

the English language and this is definitely a barrier on its own in the performance of the learners in mathematics literacy. So, code switching should only be implemented for clarification purposes for it to be a success in the classroom. Learners should be encouraged to know equivalents, common terms and symbols in both languages, that is, English and Sepedi.

6. APPENDICES

APPENDIX 1:

RESEARCH QUESTIONNAIRE

An Analysis of Code Switching as a Learning and Teaching Strategy in Selected Multilingual Schools in Limpopo Province

Code switching is the use of two or more languages in one conversation. This can also take place in a classroom whereby the subject content is taught in English, but the class uses another language such as Sepedi. South Africa has eleven official languages so it is a known phenomenon to hold a conversation using two languages at the same time. The research aims to analyse the use of code switching as a learning and teaching strategy in selected bilingual schools of Limpopo Province. In relation to this, please answer the questions below.

a. Name and surname: _____

b. Age:_____

c. Mother tongue:_____

d. School:_____

e. Grade:_____

1. Expression test:

a.Tell us about yourself (include where you are from, your future dreams and goals):

_____

_____

_____

_____

b.Hlaloša ka wena ka boripana (Akaretša mo o tšwago gona le mo oratago go ya gona):

_____

_____

_____

_____

_____

2. Language preference:

a. Do you prefer being taught mathematics literacy in English?

Give reasons for your answer:

_____

_____

_____

_____

_____

b. Do you prefer being taught mathematics literacy in Sepedi?

Give reasons for your answer:

_____

_____

_____

_____

_____

3. How do you feel when a teacher teaches mathematics/mathematics literacy in Sepedi instead of English?

_____

_____

_____

_____

4. Mention the language you use when speaking to your friends and say why?

_____

_____

_____

_____

_____

5. Which language do you use when speaking to your teachers? Why do you use this language?

_____

_____

_____

_____

_____

6. Write the following mathematics symbols in Sepedi:

a.+ _____

b.- _____

c. =_____

d. X _____

e.π _____

f. > _____

g. <_____

7. Write the following mathematics terms in Sepedi:

a. Formula: _____

b. Data:_____

c. Digits:_____

d. Square: _____

e. Triangle: _____

f. Rectangle:_____

g. Height: _____

8. Write the following in English:

a. Atiša tharo kahlano.

_____

_____

b. Mengwaga ya tate le morwa e rašioya 8:30.Ge tate ana le mengwaga e masomenneseswai,ekaba morwa yena ona le mengwaga e makae?

_____

_____

_____

_____

C. Molemi o bjetse dimelana tse masometshelannetsa di eiye. Ketše masomenne fela tšeo dimetšego. Ke di peresente tše kae di metšego?

_____

_____

_____

9. Re write the following in Sepedi:

a. Divide fourteen apples among six kids.

_____

_____

b. It takes four people seven hours to dig holes to plant apple trees. How long, in hours and minutes, will it take five people to do the same job?

_____

_____

_____

c. Louise can bake seven pancakes in 5 minutes. Working at the same rate, how many pancakes can Louise bake in one and half hours?

_____

_____

_____

_____

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