



COLLEGE OF EDUCATION

Masters of English in English Education

**CODE-SWITCHING IN PRACTICE: ITS EFFECTS ON CLASSROOM
INTERACTION IN ENGLISH AND MATHEMATICS SUBJECTS IN
SELECTED SECONDARY SCHOOLS FROM MUHANGA DISTRICT**

**A research submitted to the School of Education, College of Education, University of
Rwanda, in partial fulfilment of the Requirements for the Awards of Masters of
Education in English Education.**

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DECLARATION

I declare that this dissertation is the result of my own work and has not been submitted for any other degree at the University of Rwanda or any other institution.

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DEDICATION

I dedicate this dissertation to:

My beloved wife **Devothe HAGENIMANA**

My cherished children **Elliot, Bernice, and Briella**

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The extensive duration dedicated to the research and composition of this dissertation constituted a challenging and occasionally frustrating journey. The successful completion of this endeavour would have been impossible without the invaluable support from various individuals, to whom I owe a profound debt of gratitude, both individually and collectively. Above all, I dedicate my work to the Almighty God for providing guidance throughout this transformative journey that I am concluding.

Secondly, it is with immense gratitude that I acknowledge the invaluable support of my Supervisor **Assoc. Prof. Epimaque Niyibizi** and Co-supervisor **Dr. Anthony Kamanzi**. They have been exemplary mentors for me and without their guidance and persistent assistance this dissertation could not have been accomplished.

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ABSTRACT

In multilingual communities, a large number of them in Africa, the use of code-switching and its impact on classroom interactions differ greatly depending on the area's linguistic environment, educational policies, and cultural views on multilingualism. In Rwanda, where English proficiency is limited and the English language being the medium of instruction, code-switching (henceforth CS) seems to be a persisting practice in classroom interactions and it has impacts on teaching and learning English and Mathematics subjects. This study aimed to investigate the effects of code-switching on classroom interaction, focusing on English and Mathematics subjects, specifically in selected secondary schools in Muhanga District, in Rwanda.

The study investigates the use of code-switching in English and Mathematics subjects within multilingual societies, focusing on the challenges posed by language proficiency gaps. It aims to determine how prevalent code-switching is, its impact on classroom interaction, the reasons behind its use, and the perspectives of teachers and learners. Using a mixed methods approach, with a qualitative emphasis, data were collected from 82 students through questionnaires, interviews with 4 English and 4 Mathematics teachers, and 8 participant observations. The data were coded and their analysis were conducted using SPSS version 20, employing statistical tools such as frequency counts, percentages, means, and standard deviations.

The key findings revealed that CS is a prevalent practice used to bridge linguistic gaps, aid comprehension, and foster effective communication, particularly in Mathematics due to its conceptual nature and diverse linguistic backgrounds of students and teachers. They also revealed that its overuse can affect language proficiency and the loss of cultural identity. Therefore, the study recommends that it should be used strategically. The findings of this study influence language policy implementation and instructional strategies in Rwanda's educational system. It recommends moderate use of code-switching to enhance understanding and classroom interaction, while encouraging teachers and students to use the language of instruction for self-improvement.

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LIST OF ABBREVIATIONS AND ACRONYMS

CM: Code Mixing

COP: Community of Practice

CS: Code-Switching

Math: Mathematics

MINEDUC: Ministry of Education

MoI: Medium of Instruction

MT: Mother Tongue

SBMs: School Based Mentors

SPSS: Statistical Package for Social Sciences

UNESCO: United Nations Educational, Scientific and Cultural Organisation

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CHAPTER ONE: GENERAL INTRODUCTION

1.1. Introduction

In multilingual societies, like many countries in Africa, the use of code-switching is common in education system and it is a barrier for effective classroom interaction. In Rwanda, the usage of English for daily communication is extremely low, and many people who should be using the language have questionable proficiency (Sibomana, 2014). Numerous studies have demonstrated that it is uncommon to have an English classroom where the teaching and learning processes are conducted solely in English. Code-switching, code-mixing, and the use of other mother tongues by the teachers and students are all common practices in English language classrooms (Nita et al., 2015).

Due to the fact that the majority of people in Rwanda speak and understand Kinyarwanda as their mother tongue, code-switching and code-mixing are frequently employed by teachers and learners in classroom interactions. There are a good number of reasons why people switch codes. By code-switching, speakers are able to convey several meanings and intentions while defining, influencing, or manipulating situations to fit their own needs (Sert 2005, cited in Modupeola, 2013).

According to the latter, code-switching develops close connections between those who share the similar language. And it serves as a technique for fostering linguistic unity, particularly between people who have similar ethno-cultural identities. Additionally, it may be used on purpose to cut someone off from a conversation in particular circumstances. It is regarded as an expression of unity with a group. However, there are other factors that may come into play, such as a speaker's inability to express themselves in one language, therefore changes to the other in order to compensate the deficiency in one language.

It is in this regard that this research aims to investigate the effects of code-Switching on Classroom interaction, the reasons behind code-switching in English and Mathematics subjects, and the teachers' and learners' perspectives on code-switching. In this chapter, the study explains the background of the study, the statement of the problem, the research objectives, and the research questions. This chapter also highlighted the theoretical and conceptual framework that guided the research

1.2. Background of the study

English is a common language of instruction in educational systems around the World. According to Tabaro and Twahirwa, (2018), while teaching and learning any subject, be it science or language in multilingual communities, it is common to observe various language usage patterns such as code-switching and code-mixing. Teachers can help students communicate more effectively and improve their comprehension by using code-switching strategies. It also makes the process of classroom instruction easier for teachers because they are not required to invest as much time clarifying concepts to students or simplifying explanations in basic terms to resolve potential confusion (Modupeola 2013).

In some African bilingual and multilingual communities where learners speak more than one native language, teachers switch and mix codes to help learners understand better the lesson. For example, Nita et al. (2015) claim that despite the fact that there are 11 official languages in South Africa, only English is utilised as a language of instruction and other indigenous languages are only occasionally or rarely employed in conversation or instruction. According to Nita et al. (2015), studies have demonstrated that it is uncommon to have an English classroom where the teaching and learning processes are conducted entirely in a single language. There is code-switching and code-mixing of English and other mother tongues that are spoken by the teachers and the learners even in English language schools.

However, various studies revealed that one of the main reasons for utilising English as a language of instruction in the African context is that teachers lack the necessary language skills and competency to teach the language, regardless of their academic backgrounds (Dearden 2014 as cited in Karvonen, 2017). Additionally, due to learners' challenges when learning a foreign language and their lack of fluency and competence in the language of instruction, both teachers and learners in African classrooms face notable communication and learning problems daily (UNESCO, 2010,28 as cited Karvonen, 2017).

The government of Rwanda decreed in 2008 that all educational levels, from primary to University, would exclusively be taught in English (Tabaro & Twahirwa, 2018) . But because the majority of Rwandans speak Kinyarwanda as the first language, it has been noticed that in classrooms and in conversing outside, teachers and learners frequently switch from English to Kinyarwanda. This is because, prior to 2008, teachers and learners were accustomed to communicating in either Kinyarwanda or French as the medium of teaching (Tabaro & Twahirwa, 2018).

1.3. Statement of the problem

In multilingual societies, like Rwanda, where English language is not a mother tongue, the use of it as a language of instruction in educational systems has led to the widespread phenomenon of code-switching and code-mixing. While teachers use code-switching as a strategy to enhance communication and understanding among learners, it has been observed that excessive use of code-switching and code-mixing causes serious challenges in classroom interaction (Sibomana, 2014).

At that juncture, studies from Sibomana, (2014), Tabaro & Twahirwa, (2018) revealed that teachers, even the academically qualified, often do not possess the necessary language skills and competence to effectively teach in English. This situation is particularly evident, as the government has replaced long-standing languages like Kinyarwanda and French with English as the sole language of teaching. As a result, both teachers and learners encounter daily communication and learning difficulties (Tabaro & Twahirwa, 2018).

In addition, Rwandan government has established different policies in order to empower teachers with the necessary competences to enable them teach and help learners interact comfortably in the language of instruction (Tabaro & Twahirwa, 2018). Teachers were trained enough to use English in teaching, School Based Mentors (SBMs) were put in schools to support teachers improve language proficiency, and other initiatives like Community of Practice (COP) were introduced all in support of teachers to improve the language (Tabaro & Twahirwa, 2018). Although it is expected that teachers and learners fully interact in English, the official language of instruction set by the Rwandan government, the issue of code-switching still arises in various classrooms.

The problem with code-switching is that it has two sides: while it can improve comprehension and inclusivity, it might also disrupt complete mastery of the English language, limit exposure to English mathematical terminology, and potentially disrupt the instructional flow. In English classes, frequent code-switching may hinder students from fully immersing in the language, impacting their proficiency and confidence. In Mathematics, using native languages might obscure the understanding of specific terms and concepts in English, which could negatively affect students' performance in Mathematics subjects especially in mathematical problems.

Therefore, this study aimed to explore how CS influences student comprehension, participation, language acquisition, and academic performance, providing insights that can

inform more effective teaching methodologies and language policy in secondary schools in Rwanda.

The main gap in existing research on code-switching (CS) across different educational contexts is a lack of understanding of the detailed effects of code-switching practices specifically within the subjects of English and Mathematics in secondary schools. Although some studies such as Tabaro, 2013; Wibowo et al., 2017; Girsang, 2015; Luke (2015); Action Aid et al. (2012); (Suganda et al., 2018) have largely explored code-switching in language teaching and language use or in sociolinguistic contexts, there is a limited research that comprehensively investigated its influence on both subjects and the perceptions of teachers and learners. Furthermore, in Rwanda, there is a need to investigate deeply how code-switching is impeding the CBC implementation for competences development. Therefore, this study aims to bridge this gap by investigating the practice of code-switching in English and Mathematics subjects and its effects on classroom interaction in selected secondary schools in Muhanga District, in the Southern Province of Rwanda.

This research aims to investigate the persistent issue of code-switching in English and Mathematics subjects, examining its effects on language proficiency among teachers and learners and its impact on classroom interaction. It also explores the perceptions of teachers and learners regarding code-switching. The goal is to address the challenges that hinder educational development, language performance, and the implementation of language policy.

1.4. Research Objectives

1.4.1. General Objective

The main purpose of this research is to explore the effects of code-switching on classroom interaction and learning outcomes in English and Mathematics in selected Secondary Schools from Muhanga District.

1.4.2. Specific Objectives

This study seeks to address the following specific objectives:

1. To examine the prevalence of code-switching in classroom interaction in English and Mathematics subjects in selected Secondary Schools.
2. To investigate the reasons behind code-switching in English and Mathematics lessons in selected Secondary Schools.

3. To assess the teachers' and learners' perceptions of code-switching in English and Mathematics subjects in selected Secondary Schools.

1.5. Research Questions

This study will address the following research questions:

1. To what extent is CS prevalent in English and Mathematics subjects in selected Secondary Schools?
2. What are the reasons behind CS in English and Mathematics lessons in selected Secondary Schools?
3. How do teachers' and learners' perceive CS in English and Mathematics subjects in selected Secondary Schools?

1.6. Significance of the Study

This study aims to enhance the researcher's expertise and skills for conducting future research in related fields, ultimately leading to the attainment of a Master's degree in English Education. The primary objective of this study is deepen understanding and focus on the use of code-switching for interaction in mathematics and English subjects. From an academic and scientific interest, this work contributes to the existing literature, providing valuable insights for upcoming scholars interested in topics related to code-switching in classroom practice, learning theories, and policy implementation.

1.7 Scope of the Study

1.7.1 Concept scope

Like in all academic research, this study was limited in terms of its content, geographical coverage, and time.

1.7.2 Content scope

This study focused on Code-Switching in practice: its effects on classroom interaction in English and Mathematics subjects in selected Secondary Schools from Muhanga District .

1.7.3 Geographical scope

The research considered only teachers and students of four selected day Secondary Schools located in urban and rural areas of Muhanga District.

1.7.4 Time scope

The time scope for this research is limited from March 2023 – January 2024 and was divided in different activities starting from identification of relevant topic for research to data presentation, analysis, and discussions and finally the general conclusion and recommendations.

1.8 Limitations of the Study

In this research, several challenges and limitations were faced, including: although the goal was to collect data from schools across the entire country, logistical issues such as distance, time, and financial constraints prevented the research from being conducted in all schools nationwide. The findings might be specific to Muhanga District and may not be applicable to other districts in Rwanda. Additionally, the study may have a limited sample size or range of grades, which could make it difficult to generalise the findings to the broader population within Muhanga District.

1.9 Organization of the Study

In order to ensure the successful completion of this research and attain its goals, it was divided into the following five chapters. Chapter one describes the general introduction of the study, background of the study, the statement of the problem, research objectives that guided the research, research questions addressed in this study, significance of the study, scope of the study, limitations of the study, and the organisation of the study. Chapter two describes the review of related literature in relation to code-switching and the theoretical framework that guided this study as well as conceptual framework of the study, critical review and identification of the gap. Chapter three details the research methodology employed in this study, including the research design, methods, and instruments used for data collection and analysis. It also covers the sample size and sampling techniques, along with considerations of validity, reliability, and ethical issues. Chapter four is about the interpretation of data in relation to code-switching practices in classroom interaction. Finally, Chapter five gives a general summary of the study, and presents various recommendations to different educational decision makers as well as suggestions for further research.

CHAPTER TWO: LITERATURE REVIEW

2.1. Theory in relation to code-switching

Code-switching is the act of switching between two or more languages or linguistic forms during a single conversation or discourse (Shartiely, 2016). It is in this context that this research is backed by the following theories:

2.1.1. Interactionism Theory

Kwame (2018) characterises interactionism theory as a theoretical perspective that acknowledges the importance of experience, the environment, and natural learning capacities in the process of language acquisition. According to interactionism researchers, the environment cannot operate as a passive agent in language development. Piper (1998 cited in Kwame, 2018), states that social interaction and environment are the key determining elements in initial language learning. Additionally, she views parents as playing a critical role in the process by which their interactions with kids influence the learning process in which the kids are active participants.

According to Luke (2015), an instrument used in communication is a language. It has an impact on people's life in various disciplines. When people wish to communicate their ideas and thoughts, they use a language. As a result, language develops into an indispensable tool for human beings.

This idea holds that for learning to occur, there must be interaction and communication between teachers and learners as well as between learners themselves, hence interaction is crucial.

But, as per Vygotsky, "language serves as the primary instruments that facilitates cognitive processes, enhances logical thinking, and underpins cultural activities such as reading and writing" (Vygotsky 1978, p.100).

He also emphasizes the significance of adult interaction in language learning:" The process of learning a language can serve as a paradigm for the overall of how learning and growth are related". Language develops initially as a way of interaction between the child and those around him, but it isn't until it transforms into internal speech that it begins to organize the child's cognition or develop into an internal mental function (Vygotsky, 1978, p.100).

2.1.2. Conceptual framework

CS as the alternation between two or more languages or linguistic varieties within a single discourse has been in use in various educational settings. This study investigates the practice of code-switching in the context of classroom interactions in English and Mathematics subjects. The framework seeks to explore the prevalence, effects, reasons, and perceptions around code-switching within the classroom environment.

The present study aimed to examine the mentioned variables and their interplay in the context of English and Mathematics subjects. Specifically, the study focused on the prevalence, effects, motivations, and attitudes surrounding code-switching. Code-Switching is taken into account as experimental variable whereas dependent variable is the classroom interaction. This framework shows however that experimental variable is Code-Switching however influences the variable quantity that is classroom interaction especially in English and mathematics subjects.

According to Owu-Ewie and Eshun, (2015), since language is a means of disseminating education, the concepts of language and education cannot be separated. As Poplack in Romaine (1995), tag switching, inter-sentential switching, and intra sentential switching are the three basic types of code switching that are still in use. Hence, Code-Switching in practice: its effects on classroom interaction in English and mathematics subjects. The following is the visual representation of the conceptual framework:

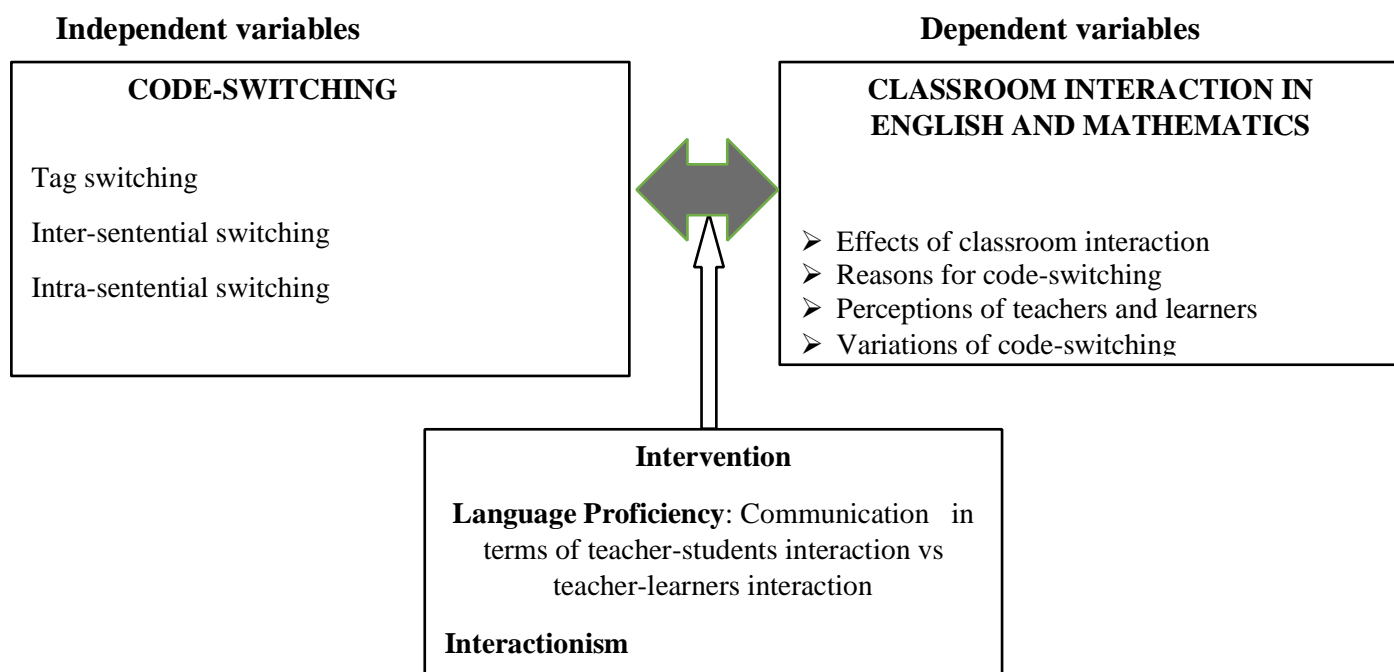


FIGURE 2. 1: VISUAL REPRESENTATION OF CONCEPTUAL FRAMEWORK

2.2. Introduction to Code-switching

According to Thesis and Cakrawarti (2011), in certain circumstances, people favour using various codes. They might favour a specific code or type because it makes it simpler for them to discuss a specific subject, wherever they are speaking. For instance, when talking about work or home, people can opt for a language associated with those topics rather than the one they use to communicate with one another on a regular basis at home. A code is a system used to communicate one another.

Wibowo et al. (2017) define the term “code” as the process of conveying anything verbally using a particular dialect, style, register, or language variation. Word selection is a code or variant of language. Due to the diversity of languages, some people must carefully select the code or interaction method to be applied in certain situation.

In his research, Asrifan, (2021) states that a code is a language, a variation of languages, a symbol, and a means for communicating with others; it can occasionally be spoken and written.

According to Moro (2008), Vogt (1954) first used the term “CS” in his critique of Weinreich’s influential book *Language in contact* (1953). Code-switching, however, didn’t start getting serious attention as a separate subject of study until the 1970s.

Hattory et al., (2020) code-switching is defined as the use of different languages in the same words, phrases, sentences, or even paragraphs. Code-switching, according to Duran (1994 cited in Hattory et al., 2020), is a type of language, particularly bilingual, that is likely to be connected to actual experiences and likely to occur around the same time in the lives of bilingual individuals as they develop their language skills, particularly when they are aware of such behaviour and intentionally decide whether or not to use it.

Furthermore, other researchers suggest more definitions of CS. It is in this perspective that Nunan and Carter (2001) and Myers-Scotton (1993) as cited in Promnath and Tayjasanant (2016), confirm that the typical qualities of CS can be used to characterise it. Therefore, CS refers to the switching between two (or more) languages in a same discourse or the use of different languages in parallel contexts.

Code-switching is a type of language that is utilised at the sentence level in conversations that involve two or more languages (Asrifan, 2021). However, Naha et al., (2018) describe code-

switching is the alternating use of two or more languages in teaching and learning to facilitate easy knowledge acquisition by students.

According to Seymen Bilgin (2016), code-switching is the interaction of two languages, and it has social and psychological effects in addition to providing linguistic purposes. These psychological consequences manifest as teachers' mental processes in the context of teaching English as a second language. Maluleke (2019), explains that code-switching is a technique used in communication in which a speaker smoothly changes from one language to another without impairing the flow of thought.

Poplack (1980 cited in Maluleke, 2019), proposes three types of code-switching, which she labels as tag switching, inter-sentential switching, and intra-sentential switching. However, Maluleke (2019), argues that it is significant to notice that Mathematics teachers are unwilling to expand their mathematical language and apply current teaching strategies. According to Maluleke (2019), South African students do extremely poorly in maths classes. One of the main causes is a deficiency of math vocabulary, which students are supposed to utilise to answer difficult mathematical problems.

Modupeola (2013), underlines the significance of code-switching as a technique for improving the teaching and learning of the English language, particularly at the foundations level where it is a skill being introduced to the students. Additionally, it enables efficient idea transmission from the sender to the receivers. Early exposure to code-switching provides students with an advantage in effective learning, facilitating their journey towards achieving proficiency in English.

However, code-switching has a negative impact on English language teaching and learning. It is clear that the teacher's inability to explain themselves in one language led them to move to another to make up for the shortcomings. However, this has the potential to send the wrong message to the students.

Cook (2002) cited in Modupeola (2013) is of the opinion that code changing in classes when students use different native languages can pose challenges, as it may result in some learners feeling isolated in the educational experience. This sense of exclusion can potentially rise to psychological concerns and hinder the overall objective of effective learning.

2.3. Types of code-switching in learning and teaching context

In the sentence-level analysis, Mangila (2019) classified the teachers' code-switching patterns as to their structural types: Inter-sentential code-switching, which takes place at clause or sentence boundaries where each clause or sentence is in a different; Intra-sentential code-switching, code-switching during a sentence, where the change takes place in the middle of the sentence without any pauses, hesitations, or breaks that would indicate a change; Code flipping that takes place within a word itself, similar to a morpheme border; and Extra-sentential code-switching(tag) is the process of adding a tag in one language to an otherwise multilingual utterance.

In Romaine's (1995) exploration of code-switching, Poplack identifies three primary categories. The first category is tag switching, a simple act of incorporating tags from one language into a discourse primarily conducted in another language, such as the inclusion of phrases like "you know", "I mean", or "right?".

The second category is inter-sentential switching, a practice typically employed by individuals proficient in both languages, as it demands a considerable level of syntactic complexity and adherence to the standards of both languages.

The third category is intra-sentential switching, referring to the act of switching within a phrase or clause, incorporating elements from both languages, as outlined by Poplack in Romaine (1995).

However, different researchers try to identify other types of CS. It is in this view that Hoffman (1991 as cited in Wibowo et al., 2017) demonstrates various types of code-switching by highlighting the specific points or situations in which language transitions occur and can be recognised:

One of the types of CS is inter-sentential code-switching. The researcher claims that there is inter-sentential code-switching across phrase or sentence boundaries if each clause or sentence is in a different language, as in the case of bilingual Spanish-English speaker saying: "Tenias Zapatos Blancos, un poco, they were off-white, you know". In this case, the guy starts off speaking in Spanish before switching to English at the very end of the exchange.

Another type of CS is emblematic code-switching, in which code-switching, tags, exclamation, and specific predetermined phrases from one language are put into an utterance

that would otherwise be in another, as in the phrase “ It’s a nice day, hana?” in Panjabi and English. (Hai, is that right?). In Panjabi, the term “ hana” serves as a tag.

The last type is establishing continuity with the previous speaker. In this form of code-switching, the transition between languages occurs to seamlessly carry on the conversation initiated by the previous speaker. This can be observed, for instance, when one Indonesian speaker communicates in English, and the next speaker follows suit. Considering the following exchange: **Speaker 1**: “What traffic! We will get old in the road”. **Speaker 2**: “Yup, you are absolutely right. Setiap hari maceeet”. In these instances of code-switching, language shifts occur within the structure of clauses or sentence boundaries, through insertions with tags, exclamations, specific phrases, and the switch itself serves to extend the discourse of the prior speaker (Hoffman (1991:112) as cited in Wibowo et al., (2017).

2.4. Code-Mixing in teaching and learning context

According to Thesis and Cakrawarti (2011), code mixing is the blending of two languages or codes, typically without changing the subject. One piece of a sentence that is pronounced in language A and the rest that is spoken in language B frequently mixes codes. In addition, Nababan (1993:32 cited in Thesis and Cakrawarti, 2011) said that code-mixing is found mainly in informal interactions. In formal situations, since the speaker of language lacks an exact idiom, the speaker is more likely to mix together words or expressions from other languages.

According to Maschler in Grin, Seminar paper (2006, 21 pages cited in Wibowo et al., 2017), Code-mixing, often known as ”mix code”, is described as “Using two languages in a manner that gives rise to a new code, where components from both languages are integrated into a distinct and definable structural pattern”.

According to Nababan (1994:32 as cited in Girsang, 2015), when speakers use different languages or types of languages in a speech act without a circumstance or context that calls for such language mixing, this is known as “code-mixing”. Holmes (1982:32 as cited in Girsang, 2015) outlined the use of two languages in speech as “code-mixing”. When one language is mixed with another, it is referred to as code mixing. Language mixing can take the form of words, phrases, clauses, and sentences.

2.5. Types of code-mixing in classroom setting

Different researchers identified different types of code-mixing. According to Suwito (1983:76 as cited in Wibowo et al., 2017), in code mixing, there are two categories:

The first category is inner code mixing, which occurs when pieces from an original with all of its variations are inserted.

The second category is outer code mixing, which happens when pieces from a different language are inserted.

It indicates that the speaker's original language or a language from his or her background has been introduced into the speaker's first language, in this example, the national language.

Muysken (2000:1 cited in Wibowo et al., 2017) divided code-mixing into three main types:

The first type is insertion (word phrase) which is using a strategy that diverges from the idea of insertion of new constraint to the structural characteristics of some base or matrix structures. The act of code-mixing is viewed as something borrowed in this context. As an illustration, *nanti siang jadi meeting di mana?*

The second type is alternation. The limitation on mixing is seen in approaches diverging from alternation in terms of the competence or equivalence of the language concerned at the switch point. An example is “*ngeprint berapa lempar sih, butuhnya*” in English-Indonesian.

The third type is congruent lexicalization (dialect). The study of style shifting and dialect/standard variation is based on the idea of congruent lexicalization rather than the actual use of bilingualism. For example, “*hey, how are you? I'm Sam. Senang bertemu anda. Nice to meet you.*”

2.6. Reasons for CS and CM in education context

Some researchers identified various possible reasons for switching from one language to another. According to Girsang (2015), there are four causes for code switching: the first is a lack of proficiency in one language or understanding of that language on a particular subject. The inclusion of specific individuals from a variety of talks is the second justification for code-switching. It is well known that those people are illiterate in the language of switching. Additionally, the third justification for code-switching is used as a stylistic device to mark a change in conversational tone at a certain moment or to signal the introduction of a subject

that is more or less formal than what has been discussed thus far. The fourth justification is an effort to impress someone else with one's virtuosity, or at least in one prestige language.

Besides those reasons, Hoffman (1991 as cited in Girsang, 2015) highlights seven reasons for code-switching from one language to another one. These reasons are as follows:

a) Discussing about a particular topic

At times, people find it more comfortable and liberating to discuss about a particular topic in a language other than their native one. This is exemplified in Singapore, where Tamil is the language of a significant ethnic group, and English is employed for conversations related to trade and economic matters. Additionally, Mandarin serves as the international "Chinese" language, Malay as the regional language, and English as the overarching language in the region (Hoffman, 1991 as cited in Girsang, 2015).

b) When referencing and quoting

A person employs an alternative code when referencing a renowned proverb, statement, or saying. The only words altered are those attributed to the speaker being quoted. This substitution creates a sequence of quotations. In Indonesia, these well-known figures primarily originate from English-speaking countries. Myers-Scotton then uses the example of blending Swahili and English. It says, "Lakini niko Sure ukienda?" However, I'm certain if you go?. They clarify that Swahili is the language of the matrix. It has the English language integrated, SURE (Hoffman, 1991 as cited in Girsang, 2015).

c) Being emphatic about something (express solidarity)

As is customary, when someone speaking in a language other than his native language wishes to express something emphatically, he or she will naturally transfer from the second language to the original language. As an alternative, he can return to speaking in his mother tongue since he finds it easier to express himself clearly in that language than in his first (Hoffman, 1991 as cited in Girsang, 2015)

d) The use of interjections, which are sentences fillers or connectors inserted into a sentence.

Interjections refer to words or expressions added to a sentence to convey surprise, strong emotions, or attract attention. Examples of interjections include "Darn", "Hey", and "Look". Despite lacking grammatical significance, speakers commonly use them, especially in spoken

language rather than written communication. Bilingual or multilingual individuals may unintentionally incorporate interjections or sentence connectors by switching or blending their languages (Hoffman,1991 as cited in Girsang, 2015)

e) Repetition as a means for clarification

In examples where an individual is bilingual or multilingual, they may employ both languages and codes they are skilled in to communicate the same message. This repetition, where the message is restated in one code after being conveyed in another, serves to enhance emphasis, highlight key points, and provide clarity to the listener (Hoffman,1991 as cited in Girsang, 2015). An example is found in this English-Hindi father who calls his young son as they pass through a train cabin, “Keep straight. Sidha jao” (keep straight).

f) The intention to make the speech content clearer for the interlocutor

Bilingual or multilingual individuals often engage in code-switching and code-mixing when interacting with others who share the same language abilities. Essentially, this involves ensuring that the content of the message is easily understood by the listener. It involves conveying an almost identical message in one language and then replicating it in another (Hoffman,1991 as cited in Girsang, 2015).

g) The expression of group identity

It is possible to express group identity by code-switching and code-mixing. Academics communicate in discipline groups in a manner that is clearly distinct from other groups. In other words, those from a given community communicate differently from those of a different one (Hoffman,1991 as cited in Girsang, 2015).

According to Ahmad 2009, teachers use code-switching when checking understanding, explaining difficult words or explaining new words. The research also asserted that code-switching helped learners to enjoy learning due to ability to understand teachers’ input.

2.7 Multilingualism vs Language of Instruction: Call for CS and CM

The language of instruction, according to UNESCO, is “a language used for teaching and learning in an educational program”. This differs from “language as subject”, in which students study the organisation and use of a language in both oral and written communication. (*Tools for Planning and Monitoring Programmes of Multilingual Education in Asia*, n.d.)

According to Wisbey (2017), the majority of educational systems neglect the fact that individuals speak multiple languages and utilise them in everyday life despite the fact that we live in a multilingual society. Around 7,097 living languages are currently known to exist, and the majority of children grow up in environments where more than one language is spoken.

However, research indicates that about 40 per cent of children do not have access to an education in a language they can understand, which has a severe impact on their learning (UNESCO, 2016). A number of countries still prioritise national or official languages (second language), which are not the languages people speak at home, as a language of instruction (Kosonen, 2017). The Sustainable Development Goals take language of instruction into account when discussing equitable education. The percentage of primary school children whose first or home language is the language of instruction is covered by thematic indicator 4.5.2. (UNESCO-UIS, 2018).

2.8 Code switching in Mathematics subject: What scholars recommend

Researchers revealed that it has long been believed that linguistic capability affects mathematics achievement (Aiken, 1972 as cited in Editor (2016), and more recently, Morgan (1999) and Schleppegrell (2007) cited in Editor (2016), highlighted how understanding and using mathematical language is an essential component of learning mathematics.

According to Editor (2016), as it has all the qualities of every other spoken language, mathematics is believed to be a language unto itself (Wakefield, 2000 cited in Editor , 2016). However, in contrary to the majority of the languages peoples are familiar with, we do not only read it from left to right; we also read it from right to left, top to bottom, bottom to top, or a combination of all four ways (Adams, 2003 cited in Editor, 2016). It is composed of words and symbols as well as numbers and has a precise and sophisticated structure. Some students find that the use of symbols instantly disturbs them since it takes additional cognitive processing to convert those symbols into words so that the mathematical sentence can be read and into meaning so that the mathematical sentence can be resolved.

However, other scholars argue that even if mathematics deals with subjects that are beyond the scope of native languages, reading comprehension skills are still necessary in order to comprehend the material. One should be able to read and write in a language that contains the mathematical symbolic language in addition to being familiar with its symbols, operations, equations, and other elements. Most of the time, understanding and solving a mathematical

problem may call for a certain level of reading proficiency. Correctly answering a maths problem can be hampered by complex mathematical language (Kan & Bulut, 2015).

2.9 Code switching while teaching English

Action Aid et al. (2012) describe the medium of communication used to transmit knowledge as language of instruction. This is distinct from language teaching itself, where grammar, vocabulary, and the written and spoken forms of language constitute a specific curriculum for the acquisition of second language. This opens up access to other value systems and ways of understanding the world, encourages intercultural understanding, and aids in the reduction of xenophobia. Speakers of minority and majority languages are both affected by this.

2.10 Code switching while using English as a Medium of Instruction

Suganda et al. (2018) define the medium of instruction as the language that the teacher uses in teaching. The language used as a medium of instruction has a significant impact on the teaching and learning environment. Researchers have found via numerous studies that a language of instruction is a tool that helps students learn content (Kyeyune, 2010 cited in Suganda et al., 2018). The language that is used for learning and teaching is essential for students' knowledge and understanding, skill development, and capacity to effectively apply their new knowledge in assignments and exams. If the students don't understand the language being used as a medium of instruction well enough, they will struggle to advance academically (Brock-Utne, B., & Alidou, 2011 as cited in Suganda et al., 2018)

According to Karvonen, (2017), In a society that is gradually becoming more globalised, English language performs a variety of functions and is one of the most geographically widespread languages in use. Politics, the economics, technology, science, media, and communication are just a few of the areas where it is widely used. More information is accessible via its mastery than through the mastery of any other language (Crystal, 2003 cited in Karvonen, 2017). Others are doubtful about English language learning from an early age despite the value of it and its use as a medium of education instead of the mother tongue.

Karvonen (2017), demonstrates that the main difficulties in using English as a language of instruction are caused by both the teachers and students' inadequate language skills and the resulting communication gaps. There are also issues with the availability of support for both the teachers and the students.

2.11 Code switching in promoting classroom interaction

According to Hanum (2009), teaching is an interactive act, and communication between the teacher and the students occurs continually as a response act.

Tickoo (2009 cited in Hanum, 2009) expressed that an effective class period can be summarised by considering classroom involvement and activities in the following ways: the teacher interacts with the entire class, engages with the class collectively, with pairs of students, or individual students; students interact with each other in pairs, groups, individually, or as a whole class; and students make attempts at tasks independently, in groups, and so forth, utilising resources or seeking assistance.

Gebhard (1998) as cited in Hanum (2009), specifies five considerations to consider when fostering interactive classroom interaction: reduce the teacher's central role, recognise the individuality of each student, create opportunities for meaningful self-expression, encourage students to engage in mutual meaning negotiation with both peers and the teacher, and empower students with choices regarding what, to whom, and how they communicate.

2.12 Code-switching for effective teacher-learner interaction

According to Action Aid et al.(2012) up until recently, two explanatory paradigms-nativist and behaviourist dominated knowledge of language learning. Following Skinner (1957 cited in Action Aid et al. 2012), the behaviourists maintained that infants continue to create and learn language traits that are favourably reinforced by the child's caretakers and other members of the child's social milieu, such as sounds, vocabulary, pragmatics, etc. The rapidity of early language acquisition and the stability of learned meaning, which neither can be explained by a behaviourist perspective, are points of controversy for this view. In stark contrast, nativists, following Chomsky (1965,1975 cited in Action Aid et al. 2012) suggested that kids already understand how language works. As a result, while exposure to language awakens their innate ability to acquire it, their language acquisition is internalised. The quantity of child's exposure to language has an impact on their acquisition, according to scientific studies cited by supporters of this viewpoint (Hart&Risley,1995 cited in Action Aid et al. 2012).

2.13 Critical Review and Research Gap Identification

2.13.1 Critical review

Code-switching in classroom interaction in English and Mathematics subjects is an existing practice that has both positive and negative effects. It is often used to enhance comprehension, accommodate language diversity, and promote inclusivity. However, its impact on language development and overall teaching effectiveness remains a subject of debate. Understanding the motivations behind code-switching and the perceptions of teachers and learners is essential for educators to make informed decisions about its use in the classroom. This critical review aims to investigate the existing literature on the use of code-switching in classroom interaction.

According to Wisbey (2017) the significance of the dialogue between instructors and students by examining “We learn to read but we are born to talk”, according to SDG4. Consequently, code-switching fosters in the learner a sense of being a critical thinker and a decision maker who uses his or her own languages and experiences as a resource to access other opportunities, as well as a confident sharer and active participant who uses language effectively with others and engages confidently and proactively in discussions, and finally as creative, collaborative participant who uses his or her unique skills alongside and together with others.

According to Action Aid et al. (2012), the language that is used to teach the fundamentals of the educational system, whether in or outside of the classroom, is referred to as the language of instruction. Concluded that while some nations choose to teach only one language, usually the official or majority language, others have opted to use educational strategies that prioritize teaching national or local languages are frequently at a significant disadvantage in the educational system, similar to the disadvantage of learning in a foreign official language.

(Tabaro & Twahirwa, 2018) declared that a language of instruction is assumed to be a fruitful tool to learn any content; and in case of Rwanda, English should be the only medium of teaching. According to Simasiku et al., (2015), code switch, some of which might be improving academic performance. As result, teaching and learning could benefit from using code switching to assist students master topics.

2.13.2 Research gap identification

While there has been substantial research on code-switching (CS) in various educational contexts, there remains a gap in understanding the nuanced effects of code-switching practices specifically in the subjects of English and Mathematics within secondary schools. Although some studies have largely explored code-switching in language teaching and language use or in sociolinguistic contexts, there is a limited research that comprehensively investigates its influence on both subjects and the perceptions of teachers and learners. Furthermore, the reasons for employing code-switching in the context of English and Mathematics lessons have not been extensively explored. Therefore, this study aims to bridge this gap by investigating the practice of code-switching in English and Mathematics subjects and its effects on classroom interaction in Muhanga District.

According to Tabaro and Twahirwa (2018), they claim that because learners had access to their native language both inside and outside of the classroom, using their first language would prevent them from learning the target language, which is why exposure did not always succeed in promoting competence. This study focuses on how code-switching affects classroom engagement in English and Mathematics in Muhanga District selected Secondary Schools.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

In this section, the researcher provides a detailed explanation of the chosen research design, the rationale behind its selection, the target population, the instruments utilised for data collection, the determination of sample size and the methods employed for sampling, the procedures for collecting data, the assessment of the instruments' reliability and validity, and finally, the approach to data analysis. In this chapter, the researcher describes the methods used to address the questions raised under the theme code-switching in practice: its effects on classroom interaction in English and Mathematics subjects.

3.2 Research design

This study used a mixed research design which combines quantitative and qualitative methods where qualitative is dominant. Both methods helped the researcher to gather and analyze accurate data to help explain the traits of the target population, which consists of the teachers and students of S3 in the four selected Secondary day Schools from Muhanga District. With this process, the study topic is given more attention. By using a look-up questionnaire for teachers and students, an interview guide to meet the results from English and Mathematics teachers in each of participating school, as well as an observation guide that aids the researcher in gathering additional data, the study has incorporated both quantitative and qualitative information from each primary and secondary source of data.

3.3. Target population

In this research, the target population consisted of all Seniors Three (S3) students from the four selected day schools of Muhanga District. But why S3 students?

Senior Three (S3) students reach a significant educational milestone, preparing for national exams that transition them to higher levels of education where language use becomes more sophisticated. Thus, selecting this final grade for research on code-switching provides a thorough understanding of how code-switching converges and impacts language use at this crucial educational and developmental phase.

According to a statistical report from 2023, the target population's size was predicted to be 467 students studying in S3 of the participating schools, and 8 English and Mathematics teachers from the four selected schools in Muhanga District.

3.3.1. Sample size

In order to have an adequate formula for sample size, which was chosen based on Yaro Yamani's method for estimating sample size, the sample size was determined using data from 467 students of S3 from the four selected schools of Muhanga District.

$$n = \frac{N}{1+N(e)^2}$$

Where,

n: sample size

N: population size

e: Margin of error

N=467 students

n=?

e=10%

$$n = \frac{467}{1+467(0.1)^2} = 82.3 \approx 82 \text{ Respondents}$$

The study involved 82.3≈82 respondents / students from four selected day schools of Muhanga District.

Consequently, a minimum sample size of 82 respondents for both English and mathematics students was taken into consideration, and researcher kept with all 8 respondents for the teachers of mathematics and English who completely filled out the questionnaires and took part in the interview. Therefore, it was believed that the sample size accurately represented the entire population.

3.3.2. Sampling Techniques

The systematic sampling method was used to select the sample for this study, in this approach, the initial unit is randomly selected, and subsequent units are automatically chosen at regular intervals based on the sampling interval (Yaro Yamani, 2016). In this research the first respondent was chosen randomly and then next respondents were selected with the interval of two in selecting students who participated in this research in each S3 class of the four selected schools.

Purposive sampling, also known as judgmental, selective, or subjective sampling, represents a non-probability sampling technique that was used to select participants in four schools selected. For this research purposive sampling was used where all English and Mathematics teachers were selected purposively.

3.3.2.1. Inclusion criteria:

Inclusion criteria for this study included: above 18 years old for all teachers and above 15 years old for students of S3 in the four selected schools, all participants able to collaborate with researcher, and all consented participants to participate in this research.

3.3.2.2. Exclusion criteria

Exclusion criteria excluded: respondents with cognitive distortion, respondents who refused to provide consent.

3.3.3. Demographic data of respondents

Demographic data refer to gender, age, and level of education and experience of respondents. They are very important in research as they help the researchers get reliable and reasonable data valuable for the research. The following is the table describing the demographic data of respondents:

TABLE 3. 1: DEMOGRAPHIC DATA OF RESPONDENTS

| No | Identif ication | Gender | | Ages (Years) | | | Schools' location | | Level of Education | | | Teaching Experience(year s) | | Teaching Qualificati on | |
|----|--------------------|-----------|----------------|--------------|-----------|----------|----------------------|-----------|-----------------------|----------|-------------|-----------------------------------|----------|-------------------------------|----------|
| | | M | F | >18 | 18-25 | <25 | villag e | Urba n | A 1 | A 0 | Master s | 1-4 | <5 | ED | NE D |
| 1 | Student s | 31 | 5 1 | 71 | 11 | 0 | 41 | 41 | N o | N o | No | No | No | No | No |
| 2 | Teache rs | 6 | 2 | 0 | 0 | 8 | 4 | 4 | 3 | 5 | 0 | 1 | 7 | 8 | 0 |
| 3 | Tot | 37 | 5 3 | 71 | 11 | 8 | 45 | 45 | 3 | 5 | 0 | 1 | 7 | 8 | 0 |

3.4 Data Collection Methods

As Robinson (1990 as cited in Nimusabe & Castle, 2013) state that, as a result, there are numerous instruments, strategies, and methodologies used in research. This is due to the fact that “the selection of a strategy is influenced by the specific inquiry posed by the researcher and the type of result deemed significant”.

The data were gathered from both primary and secondary sources. Primary sources was students and teachers involved in four selected schools of Muhanga District while secondary data include the data related to code-switching and classroom interaction in English and mathematics subjects which was obtained from various textbooks, reports, and journals.

3.4.1 Data Collection Instruments

The researcher used classroom observations in addition to an interview guide administered to teachers and a self-administered questionnaire for students from chosen schools in Muhanga District to collect primary data. The questionnaires and observation guide were created in accordance with the study objectives. The researcher chose these data collection tools because they may be quickly and accurately used to gather data that satisfy research objectives.

3.4.2 Administration of Data Collection Instruments

The survey forms were distributed to the participants in their workplace, accompanied by an introductory letter explaining the scholarly intent of the research and assuring the confidential handling of the data shared with the researcher. The questionnaires were designed in English with some translations in Kinyarwanda.

The instruments for data collection were questionnaires distributed to teachers and learners of S3, and the researcher used classroom observation using an observation guide to investigate how learners were interacting with the teachers in classroom using English language and how CS was used. The researcher was also observing how learners were interacting themselves in their classroom activities. The researcher also held a focused group interviews with school English and Mathematics teachers as well students.

3.4.3 Reliability and Validity

To ensure the reliability and validity of the tools, a preliminary investigation was conducted before distributing the research instruments. Initial adjustments were made to eliminate any

potential ambiguity. On the other hand, validity concerns to the degree of accuracy in propositions, inferences, or conclusions. Every researcher strives for research outcomes that are both valid and reliable, where the measurements are consistent but may be inaccurate or, conversely, are a valid estimate but lack consistency. In the worst scenarios, the measurements may lack both validity and consistency, while in optimal cases, they exhibit both traits. In practice, selecting appropriate questions and measures is challenging due to several options that are available. This study primarily evaluates two critical criteria for comparison: whether the researcher measures what is intended (validity) and whether the same measurement process produces consistent results (reliability).

Therefore, to ensure the validity of the study, the data collection tools were carefully designed to include a sufficient quantity of devices. Each item or question on the scale was specifically designed to be relevant to the research objectives and to encompass a comprehensive range of issues under measurement. These instruments underwent discussion and consultation with colleagues and the supervisors before being pre-tested with a practical sample, involving 82 student respondents and 8 teacher respondents.

This study focuses on types and categories of data to collect precise the kind of data in terms of primary data which one are nominal, ordinal and ratio. The reliability of measurements depends on their credibility, and any arbitrary factor that that introduces variability from one instance or situation to another constitutes a source of measurement error.

Description of descriptive statistics

Through the utilization of both descriptive and inferential statistics, this research has explored the relationship between Code-switching and classroom interaction. The researcher deemed this approach suitable, as it enables the measurement of the connection between two variables, specifically the dependent and independent variables.

$1.0 < \mu < 1.7$: very low mean (the fact not appears)

$1.8 < \mu < 2.5$: low mean (the fact appear less)

$2.6 < \mu < 3.3$: neutrality

$3.4 < \mu < 4.1$: high mean (the fact appear more)

$4.2 < \mu < 5.0$: very high mean (strong evidence of existence of the fact)

$\sigma < 0.5$: homogeneity of respondents

$\sigma > 0.5$: heterogeneity of respondent

Scales of questionnaire

| Scale | Significance | Weighed Mean | Interpretation |
|-------|-------------------|--------------|-----------------|
| 4 | Strongly agree | 3.25 – 4 | Very high level |
| 3 | Agree | 2.5 – 3.24 | High level |
| 2 | Disagree | 1.75 – 2.49 | Low level |
| 1 | Strongly Disagree | 1.00 – 1.74 | Very low level |

Source (Sounder, Philip & Adrian, 2003)

3.5 Data Analysis Procedure

After collecting the data, it underwent editing, coding, and entry into the Statistical Package for Social Scientists (SPSS) computer program for analysis. Various quantitative and qualitative statistical procedures and methods were employed during the analysis. Quantitative data were examined using descriptive statistical tools, utilising key statistical measures to summarise and categorise the research findings into tables, percentages, frequencies, and analysis tables.

3.6 Ethical Consideration

In order to ensure ethical standards, the researcher in this study consistently references the sources from which evidence was gathered. Participation was entirely voluntary, with no collection of personally identifiable information from respondents. The privacy and confidentiality of survey participants were rigorously maintained. The researcher transparently communicated the study purpose, methods, associated risks, and the expectations placed on participants.

CHAPTER FOUR: DATA PRESENTATION AND INTERPRETATION OF THE FINDINGS

4.0 Introduction

The purpose of this chapter is to present, and interpret the data collected from the field under the theme code-switching in practice: its effects on classroom interaction in English and Mathematics subjects.

In addition, the questionnaires were administered to the English and Mathematics teachers and to their students as well, interviews were also held to both English and Mathematics teachers as well as students, and observation guides were used to examine how code-switching is used in practice in classroom interaction in English and Mathematics subjects and every teacher was observed two times in period of 40 minutes. Data were gathered from the four selected schools with 82 students involved in this research and 4 English teachers and 4 Mathematics teachers from 4 schools of Muhanga, 2 schools located in rural areas of the District and 2 schools located in urban area of Muhanga District. The data collected through questionnaires were presented by using tables and figures/charts showing frequencies and percentages whereas open-ended questions and interviews were analyzed thematically. This chapter analyses and interprets results in order to meet the research questions in line with research objectives and the researchers used the results to draw conclusions and recommendations.

4.1 Presentation of findings and interpretations

4.1.1 Finding one: Code-switching practice in English vs Mathematics subjects

The use of code-switching in English and Mathematics is observed as a common practice in both rural and urban schools in Muhanga District though at different pace. The following results reveal how learners and teachers noticed the use of CS in classroom interaction.

4.1.1.1 Learners' viewpoints on practice of CS

Respondents describe their viewpoints on the practice of many languages in single instruction in English and Mathematics in order to make learners understand the learning content.

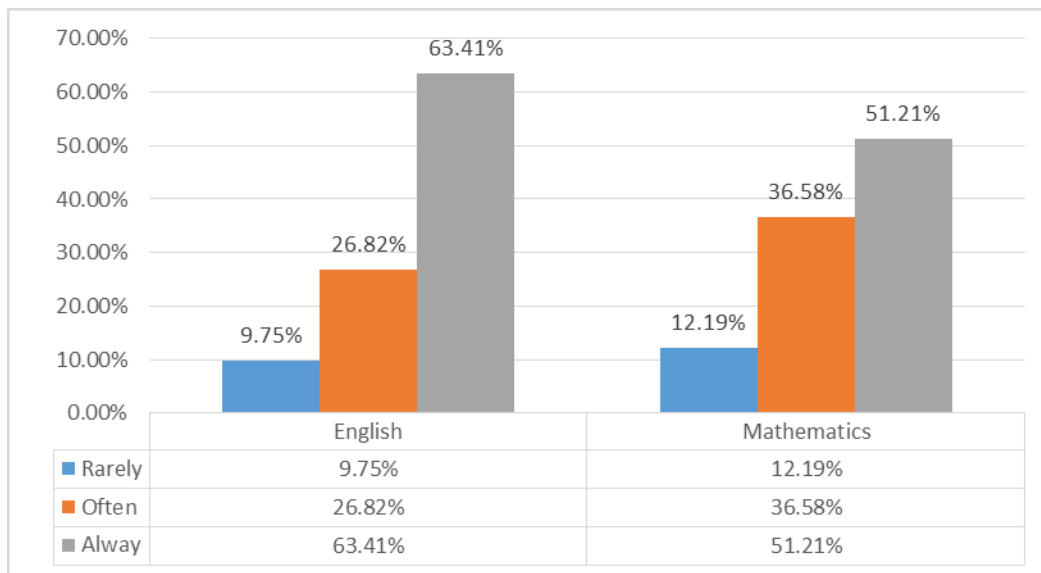


FIGURE 4. 1: LEARNERS’ VIEWS ON PRACTICE OF CS

The results presented in figure 4.1 depict the viewpoints of English students regarding the practice of CS in classroom interactions, specifically within the context of English subjects. The percentages indicates the frequency with which respondents noticed teachers using CS during English classroom interactions where a minority of respondents, 9.75%, reported rarely noticing teachers using CS in English subject. In addition, 26.82% of English students indicated that they often observed teachers using CS in English subjects. Furthermore, the majority of respondents, that is 63.41%, reported always noticing English teachers using CS in English subjects for classroom interaction. This indicates a consistent and prevalent use of CS by English teachers.

On the other side Mathematics learners have different slight views on the practice of CS in Mathematics subjects where 12.19% noticed a rare use of CS in Mathematics subjects, 36.58% of respondents confirm that they often notice Mathematics teachers using CS in Mathematics subjects, and 51.21% of respondents confirmed that they always notice their teachers mix languages in Mathematics subjects . It is evident that the majority of respondents affirm CS as the alternating use of two or more languages in the teaching and learning for easy acquisition of knowledge by learners in both English and Mathematics subjects.

In conclusion, the data suggests that CS is a common practice in both English and Mathematics subjects, impacting students’ views and potentially influencing learning experiences. Understanding the implications of this linguistic practice is crucial for educators

in creating an effective and supportive learning environment for students with different linguistic background. As Suganda et al. (2018), described the lack of medium of instruction competence has impact on the teaching and learning environment, therefore teachers use code-switching in order to overcome this challenge and help learners enjoy learning (Ahmad 2009).

4.1.1.2 Teachers' viewpoints of CS

The following results show how English and Mathematics teachers view their frequency in relation to the use of CS in classroom interaction in both English and Mathematics subjects.

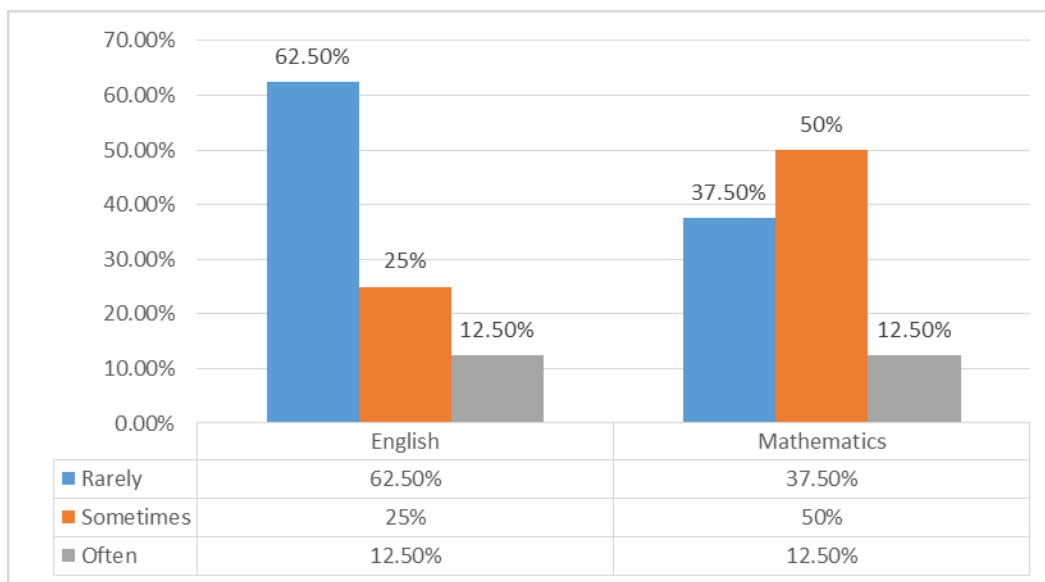


FIGURE 4. 2: TEACHERS' VIEWS OF CS

The findings of the figure 4.2 reveal that while both English and Mathematics teachers use CS in classroom interaction to some extent, there are some notable differences in the frequency and approach between the two subjects.

The results indicate that the majority of English teachers, specifically 62.5% use CS rarely. At this point, English teachers are confident in using the language of instruction. However, 25% of English teachers use CS sometimes, indicating the level of willingness to switch between languages for specific purposes. A smaller number of English teachers, 12.5%, use CS more often in classroom interaction.

On the other hand, Mathematics teachers demonstrate a different trend in their use of CS. A lower percentage, 37.5%, rarely engages in CS, indicating a relatively more consistent use of the language of instruction.

However, a significant 50% of Mathematics teachers demonstrated that they switch languages sometimes during their classroom interactions. This indicates the need to make difficult mathematical concepts more understandable or to accommodate students from a variety of linguistic backgrounds. Moreover, 12.5% of Mathematics teachers use CS very often, highlighting a number of Mathematics teachers who regularly use CS as a strategy in their teaching methods.

However, the variations in the use of CS between English and Mathematics teachers might be attributed to the nature of the subjects. English, being a language focused subject, may have a higher expectation for monolingual instruction to reinforce language skills. In contrast, Mathematics, a subject with a universal language of symbols and equations, allows for a more liberal use of CS, especially when bridging conceptual gaps or accommodating diverse linguistic backgrounds. According to Editor (2016), mathematics is viewed to be a language in itself which call for a reduced use of CS as compared to English subject. In this study it was found that both Mathematics and English teachers switch in different times during the teaching.

4.1.2 Finding two: Beliefs behind CS practice in classroom interaction in English and Mathematics subjects.

When asked whether code-switching is a common practice in teaching English and Mathematics subjects, as the following extracts illustrate, both the English and Mathematics students gave a good number of varied views:

I don't think so but it can be used depending on the level of students, and specific topics. (EXTRACT 1)

Yes I think it is a common practice in both English and Mathematics subjects because the level of English in learners is very low, we use code switching to make them understand. (EXTRACT 2)

Yes it is a common practice in all subjects but the level of using it depends on the level of learners, background as well as the level of teachers' background in using language of instruction. (EXTRACT 3)

No, it is only applicable to those who have difficulties in language of instruction. (EXTRACT 4)

Yes, CS is a common practice in classroom interaction because English is not our mother tongue thus for helping learners, teachers are required to use it to support learners. (EXTRACT 5)

Yes it a common practice. (EXTRACT 6)

No, because it depends on the level of students' understanding. If they understand better in English it is good to use only English, if they do not understand you can code-switch. (EXTRACT 7)

I always use CS to help my learners understand what I teach because If I try only English, at the end of the lesson I find they didn't understand anything. (EXTRACT 8)

As shown in these extracts, it is clear that code-switching is a common practice in classroom interaction in both English and Mathematics subjects because the level of English as a medium of instruction is low therefore they need intervention of CS so that they can interact effectively. It is evident that code-switching as a common practice in both English and Mathematics subjects is used as a tool for making easy interaction between teachers and learners, and between learners and teachers and between learners themselves. However, code-switching is widespread in certain bilingual societies and does not seem to hinder or interfere with comprehension (Beatty-Martínez et al., 2018).

4.1.3 Finding three: Code-switching in different classroom activities

The findings from the interview indicate that CS is used by both English and Mathematics teachers in various classroom activities although with differing frequencies and contexts. Both English and Mathematics teachers commonly use CS during the introduction of the new lessons. This suggests that teachers find it beneficial to switch between languages when initially presenting unfamiliar concepts or topics to students. Furthermore, CS is observed during exercises and activities performed by students, indicating its prevalence in interactive learning settings.

However, in English classes, CS is notably prominent during group discussions where active participation from all learners is encouraged. This indicates that switching between languages might facilitate better engagement and participation among students, fostering a more inclusive classroom environment. Additionally, English teachers frequently utilize CS when teaching vocabulary and explaining new texts or words. This is an indication that using a

mixture of languages aids in comprehension and the explanation of complex linguistic concepts to students who might have varying levels of proficiency in English.

On the other hand, Mathematics teachers reported that CS is more prevalent in word problems as compared to mathematical operations due to lack of language proficiency. This implies that when dealing with problem-solving tasks that involve language comprehension alongside mathematical concepts, CS is employed to aid in better understanding and contextualization. Moreover, CS is utilized during the explanation of new lessons and experiments in mathematics in order to help in understanding of core lesson. Similar to English context, switching between languages might assist in clarifying abstract or complex mathematical ideas to students.

Overall, the findings suggest that CS is not only prevalent but also strategically used by both English and Mathematics teachers in various educational contexts in order to help learners understand. It appears to serve multiple purposes, including enhancing comprehension, facilitating engagement, and aiding in the explanation of complex concepts across different subjects. The strategic use of CS seems to be a pedagogical tool employed by teachers to support diverse learners in their understanding and participation within the classroom.

During classroom observation, CS was observed in some classroom activities as the following table summarises:

TABLE 4. 1: CS OBSERVED IN CLASSROOM ACTIVITIES

| Activities | Language used | Remarks |
|------------------------------------|-------------------------------------|--|
| Introduction of the lesson | Primarily English+ Mother tongue | Teachers tried to introduce in English but suddenly switched to mother tongue for complex terms and examples |
| Learners answering the questions | Predominantly English+ some MT | Learners answer questions in MoI but use MT while discussing among themselves |
| Learners discussing in group works | MT is predominant+ some MoI | Use of CS is predominant because most learners are stuck with MoI |

| | | |
|---|-------------------|---|
| Learners presentation | MoI mixed with CS | Learners use MoI with some CS where they lack proper words to use |
| Learners discussing out of classroom in peers | Mainly MT | Learners interact mainly in Kinyarwanda which is likely to influence classroom interactions |
| Teachers giving instructions | MoI | Use of MoI is observed with some occasional CS for clarification |
| Learners doing exercises | MoI +MT | There is a mixture of MoI and MT |
| Explaining new concepts | MoI | The teachers consistently use MoI but CS appeared for unfamiliar content |
| Debating | MoI | Arguments are presented in MoI but when it comes to strong emotions CS is noticed. |

According to table 4.1, the observation was based on the significant role of code-switching in facilitating classroom interaction. As observed, teachers and learners used code-switching to enhance their understanding to each other, clarify doubts, and encourage participation. However, as it had positive and negative effects on interactions, it was clear that code-switching played an important in accommodating language diversity within the classroom and promoting effective communication.

In addition, during classroom observation, it has been observed that during classroom interaction some words are more repeated than others depending on what the teachers want to emphasize as the following table summarises code-switching distribution in English classroom.

TABLE 4. 2: OBSERVED MOST SWITCHED WORDS DURING CLASSROOM OBSERVATIONS

| English mostly switched words | Frequency |
|---|------------------|
| Predicate/indagihe | 8 times |
| Describe/sobanura | 5 times |
| Metaphor/imvugo ngereranyo | 3 times |
| Plot of the story/umugambi w'ingenzi w'inkuru | 2 times |
| Characters/abagize inkuru | 2 times |
| Mathematics mostly switched words | Frequency |
| Times/ubwikube | 10 times |
| Variable/ibintu bihinduka | 7 times |
| Simplify/koroshya | 4 times |
| Scores/amonota | 2 times |
| Compute/kubara | 2 times |

The table 4.2 indicates words most switched, they are all key words that can help learners to understand tasks given by the teachers. As observed the languages most commonly switched to while teaching English and Mathematics subjects are Kinyarwanda which is the mother tongue and sometimes some French. This linguistic mixture originates from Rwanda's historical background, where both French and Kinyarwanda have been used as languages of instruction at different stages of education (Tabaro, 2013).

4.1.4 Finding four: Effects of CS on classroom interaction in English and Mathematics subjects.

The following table reveals the opinions among students regarding the effects of CS, with different perceptions of its effects on understanding, communication, and learning.

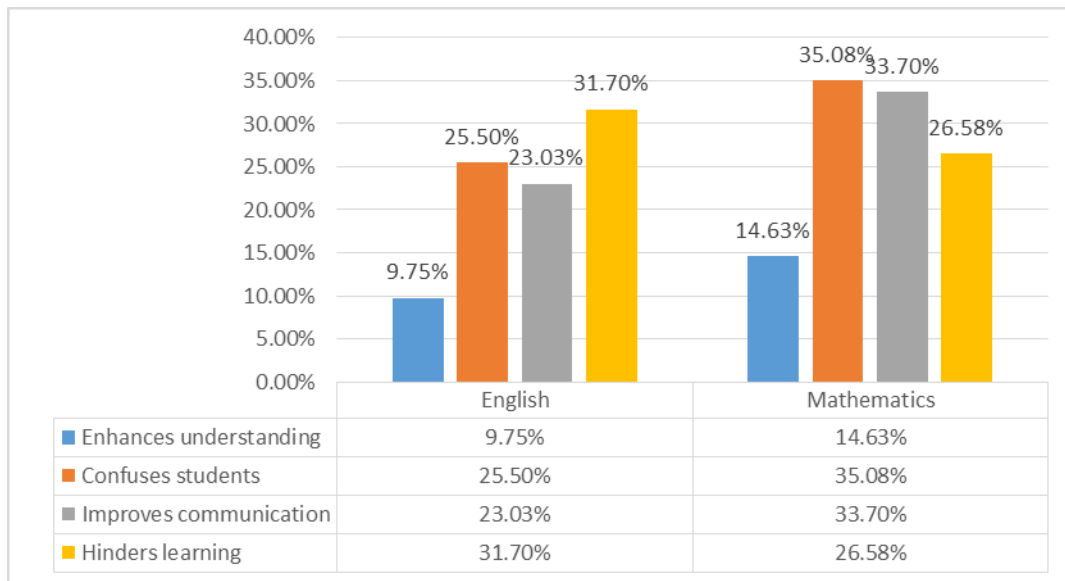


FIGURE 4. 3: VIEWS OF ENGLISH AND MATH STUDENTS ON EFFECTS OF CS

As the figure 4.3 indicates 9.75% of English students believe that CS enhances understanding. This suggests that for a minority of students, incorporating different languages in classroom interactions may contribute positively to comprehension, by offering alternative explanations and clarifications, a significant number of English students, 25.5%, find the use of multiple languages in the classroom to be a source of confusion, possibly hindering their ability to follow the lesson. About 23.03% of English students think that CS improves communication.

This suggests that a number of students perceive the use of diverse languages in classroom interaction as a means to enhance communication, possibly by providing diverse perspectives or facilitating better expression.

However, the highest percentage of English students, that is 31.7%, believes that CS hinders learning. It suggests that a considerable number of English students feel that CS has negative impacts on their learning experience, possibly by introducing unnecessary complexity or distractions.

Unlike English students, the findings on table 8 indicate that a slightly larger percentage of Math students, 14.63%, than English students believe that CS enhances understanding. This could suggest that, in the context of mathematics, some students find the use of multiple languages beneficial for comprehension. In addition, a higher percentage, 35.08%, suggested that CS confuse students. They view CS as a source of confusion, potentially impeding their ability to grasp mathematical concepts. Similar to English students, an important number of Math students, 33.7%, think that CS improves communication for better classroom interaction, and a sizable percentage of Math students, 26.58%, view CS as hindering learning. Therefore teachers should be mindful of how and when they incorporate CS in the classroom interaction.

In addition, students who participated in this research demonstrated their understanding of the effects of code-switching on classroom interaction in English and Mathematics subjects. Those effects range from positive to negative effects as summarised in the following extracts from the students' responses:

4.1.4.1 Positive effects of code-switching on classroom interaction

The findings regarding the positive impact of CS on classroom interaction, as perceived by students, are significant and shed light on its various advantages. One of impact of CS on language usage is that it enables students to improve their experiences with English language usage and other languages, by transitioning between languages students can express themselves more comfortably and effectively.

In addition, the respondents perceive that CS positively impacts their comprehension of academic concepts, leading to greater success in learning. Using familiar language elements aids in grasping complex ideas more easily. Furthermore, the use of CS contributes to students' sense of accomplishment. They feel more confident and capable when they can express themselves and understand concepts in multiple languages.

Moreover, the students demonstrated their understanding of the positive impact of CS on their learning improvement in the following extracts from the students' respondents:

When we mix languages in my classroom, I communicate well with my teacher and I get explanations and understand well the content.

(EXTRACT 9)

When we are working in groups, we discuss mainly in mother tongue in order to help everyone to contribute to conversation and we can express our feeling and abilities with confidence and we understand better the lessons.

(EXTRACT 10)

We cannot understand mathematics especially solving problems when the teachers do not explain in mother tongue.

(EXTRACT 11)

Overall, these extracts highlight the diverse benefits of CS in educational settings. It goes beyond language proficiency and contributes significantly to students' academic success, confidence, and effective communication, impacting various subjects and group dynamics within the classroom. As Girsang, (2015) asserted CS is not only used due to lack of language proficiency but also to impress someone else thus increasing the confidence.

4.1.4.2 Negative effects of code-switching on classroom interaction

The results highlight the negative impact of CS in classroom interaction in English and mathematics subjects in the views of students.

The students who participated in the research demonstrated that excessive use of CS can become a habit for students, potentially leading to a lack of proficiency and comprehension in both languages. This habit might hinder their ability to understand subject content, ultimately affecting their academic performance and leading to failure.

In addition, CS might discourage students from using English consistently as the primary medium of instruction. This could hinder their language development and fluency in English, which is crucial for academic success. Thus, teachers must ensure that code-switching is used effectively to support student learning without compromising language proficiency or academic performance. Balancing the use of both languages will help students develop the skills needed for academic success and fluency in English, preparing them for future educational and career opportunities.

Students might not put in the necessary effort to enhance their English language skills if they heavily rely on CS. This dependency can hinder their progress in mastering English, impacting overall educational advancement.

Furthermore, in examinations where CS is not permitted, students reliant on this practice might struggle to perform well, affecting their grades and overall academic performance. Moreover, proficient students might not benefit from CS as it can lower their motivation to develop and improve their English language skills further.

Once again, continuous reliance on CS throughout schooling may result in students completing their education with limited proficiency in English, affecting their prospects beyond school. Therefore, learners need to understand that over reliance on code-switching is a hindrance to their language development and reduce it gradually by enhancing their proficiency through language consistency practice, active engagement, and supportive learning environment for achieving long term language development.

Finally, CS might interfere with the effective learning of other languages and hinder the development of rich vocabulary, affecting overall language acquisition and communication skills.

Overall, these findings emphasize the various negative consequences of excessive CS on students' academic progress, language development, and overall learning experience in the classroom. Balancing language use in educational settings is crucial to facilitate effective learning without hindering language development. As Suganda et al. (2018) suggested one cannot advance academically without mastering the language of instruction and the findings show that excessive use of CS has a negative impact on language development.

4.1.5 Finding five: Teachers' opinions about CS on learning outcomes

The views expressed by English and Mathematics teachers in regard of how CS affects classroom interaction; show that CS affects positively and negatively classroom interaction and impact the learning environment as analyzed in the following teachers' viewpoints.

English teachers frequently advocate for controlled and strategic CS as a tool to engage students positively. They acknowledge that CS can attract learners' attention effectively, making content more reasonable and familiar. By incorporating multiple languages strategically, educators believe they can aid students in comprehending complex concepts, connecting lessons to real life situations, and fostering a deeper understanding of subject matter. Furthermore, they argue that CS enhances social interaction among students, promotes critical thinking through collaborative communication, and prevents boredom, thereby making lessons more enjoyable and improving overall comprehension. Teachers also

point that CS may lead to increased academic success, as students can better grasp and retain the material presented.

On the other hand, Mathematics teachers may express concerns about the potential negative impact of CS on classroom dynamics. Some may view excessive or uncontrolled CS as a distraction, hindering the learning process and distracting attention away from the core subject matter. They might argue that an over reliance on CS might impede students’ development of proficiency in a particular language or hinder their ability to understand mathematical concepts when presented in a different language.

However, both English and Mathematics teachers can agree that the strategic use of CS, when implemented purposely, can yield several benefits. It is not only facilitates engagement and comprehension but also cultivates critical thinking, collaborative skills, and a connection between academic content and real life scenarios. When employed thoughtfully, CS can create an enriched learning environment that caters to diverse linguistic backgrounds, contributing positively to students’ overall academic success.

Furthermore, the impact of Code-switching on classroom interaction appears to have varying perceptions among English and Math teachers based on the data provided on figure 4.4. CS, as a practice of alternating two or more languages or linguistic varieties during communication, seems to have different implications on both subjects.

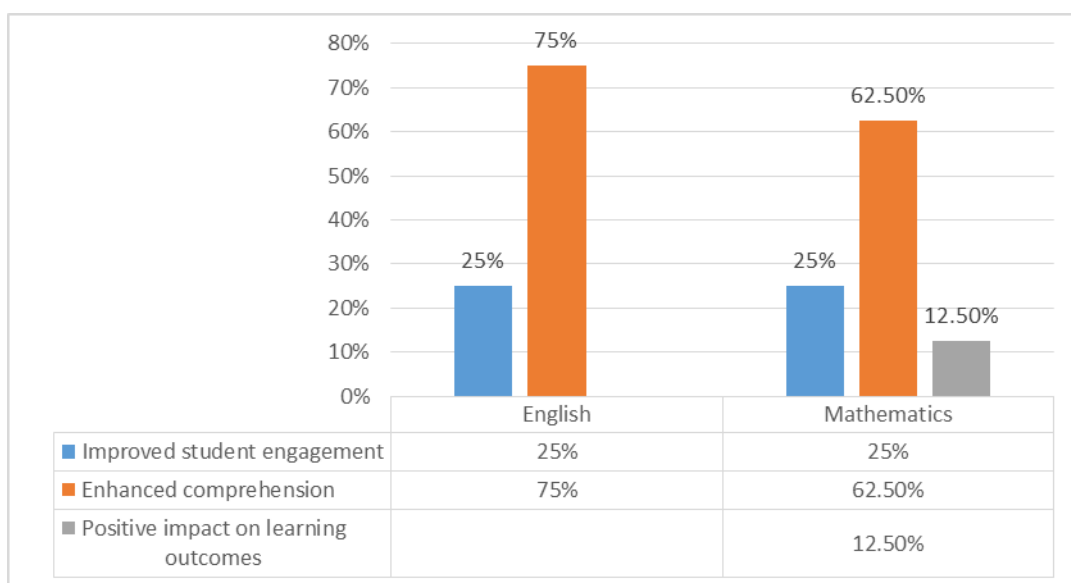


FIGURE 4. 4: TEACHERS’ OPINIONS ABOUT CS ON LEARNING OUTCOMES

The findings of figure 4.4 indicate that 25% of English teachers confirm that CS enhances student engagement. This suggests that a minority of English teachers view CS as a tool that actively engages students in the learning process. It might imply that for a quarter of these teachers, switching between languages prompts more active participation or interest from students. In addition, 75% of English teachers believe that CS enhances comprehension. This belief suggests that incorporating different languages or linguistic varieties may be useful to students for a better understanding of the content taught. Surprisingly, none of the English teacher reported a positive impact of CS on learning outcomes. This stands out as a notable observation. Despite acknowledging benefits of CS in engagement and comprehension, English teachers don't attribute CS to improved learning outcomes, suggesting a perceived disconnect between these factors.

In addition, findings of table 4.4 indicate that both English and Math teachers seem to acknowledge some level of increased engagement through CS, where 25% of Math teachers view CS as improving student engagement, though it's not universally agreed upon. On the other hand, 62.5% of Math teachers support the idea that CS aids in understanding mathematical concepts. Unlike the English teachers, a small proportion of Math teachers do attribute CS to improved learning outcomes, indicating a partial connection between CS and overall learning success in the math classes.

The findings on this table highlights the complex and varying perspectives among teachers regarding the effects of CS on classroom interaction, with potential benefits in comprehension but uncertainty regarding its impact on student engagement and long term learning outcomes in both English and Math subjects. Karvonen (2017) demonstrate that the main difficulties in using English as a language of instruction are caused by both teachers and students' inadequate language skills and this result in communication gaps.

4.1.6 Finding six: Reasons behind the use of CS in English and Math subjects

Code-switching, the practice of alternating between two or more languages or varieties within a conversation or a discourse has become a notable aspect of classroom interaction, particularly in subjects like English and Mathematics subjects. The respondents have underscored the importance of acknowledging and understanding the diverse perspectives of both English and Mathematics teachers as well as students on the reasons behind use CS in English and Math subjects.

4.1.6.1 Cases prompting English and Mathematics teachers to use CS

Teachers use CS strategically in the classroom to address the diverse needs of students and create a conducive and effective learning environment. This linguistic flexibility serves as a pedagogical tool for clarifying concepts, encouraging student participation, and enhancing comprehension of complex ideas, ultimately contributing to a more enriching educational experience for all.

The following table analyses the findings of the views of English and Maths teachers on the situations that prompt them to use CS in classroom interaction despite the government policy of using solely English as a language of instruction.

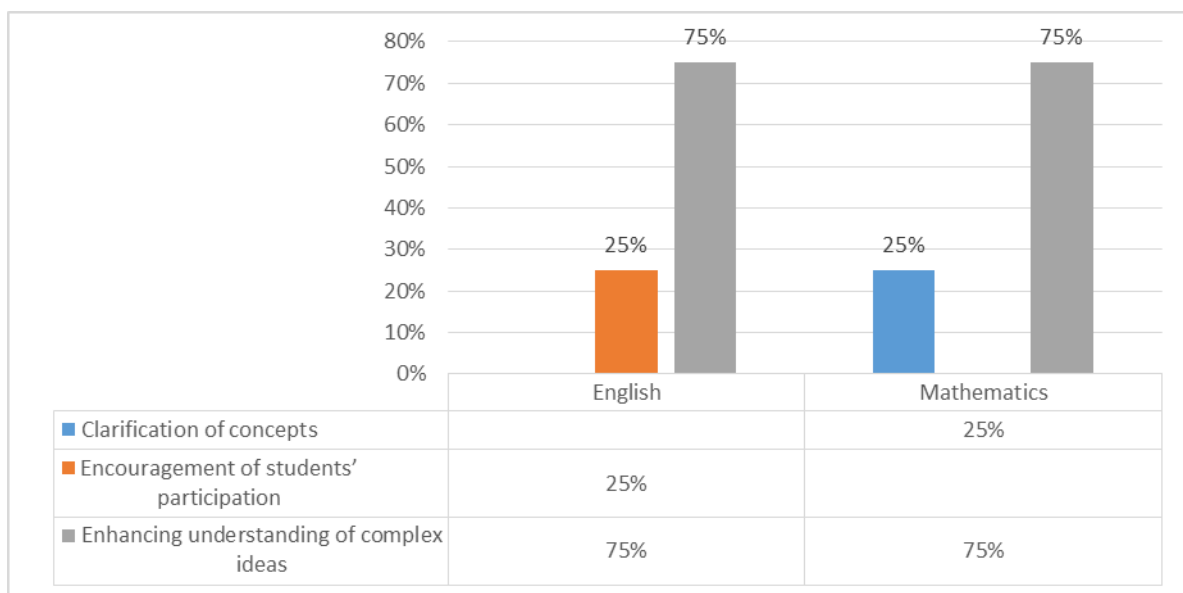


FIGURE 4. 5: CASES PROMPTING ENGLISH AND MATH TEACHERS TO USE CS

The findings on the figure 4.5 revealed the reasons for using CS in classroom interaction for English and Mathematics teachers. The results revealed that none of English teacher claim to use CS for clarification of concepts. This indicates that English teachers may rely on other strategies to explain concepts or feel that CS is not helpful for clarification of concepts. On the other side 25% of Math teachers claim to use CS for clarification of concepts. This indicates that a minority of Math teachers find CS beneficial in making mathematical concepts more clearly to students.

In addition, the results of figure 4.5 indicate that 25% of English teachers claim to use CS to encourage students' participation in learning as they consider the importance of CS as an effective tool to encourage students to engage actively in the learning process. Contrary, none

of the Math teachers confirm the use of CS for encouraging students' participation, this may indicate that Math teachers may not perceive CS as an essential tool for fostering students' involvement in Mathematics classroom participation since Math is considered as a language in itself, thus it is self-explanatory.

Furthermore, the findings indicate that 75% of English teachers confirm using CS for enhancing understanding of complex ideas. This suggests a strong consensus among English teachers that CS is a valuable tool for conveying complex concepts effectively. On the other side, 75% of Math teachers also confirm using CS for enhancing understanding of complex ideas. Similar to English teachers, Math teachers also recognize the role of CS in breaking down complex mathematical concepts for better student comprehension as Editor (2016) believed linguistic ability affects mathematics achievement.

4.1.6.2 Students opinions about the use of CS

The following table indicates the extent to which English and Mathematics students agree with Gebhard (1998) on the factors to consider incorporating elements that promotes interactive classroom interactions, such as reducing the dominant role of the teacher, recognising the individuality of each student, offering opportunities for students to express themselves meaningfully, facilitating collaborative meaning-making between students and the teacher, allowing students the autonomy to choose what to express, to whom, and in what manner (Hanum 2009). Due to the lack of competence in the English language, these factors cannot be implemented without there being intervention of CS. The table below indicates how respondents agree with those factors.

TABLE 4. 3:FACTORS WHICH CAN CAUSE USE OF CODE-SWITCHING IN CLASSROOM INTERACTION

| | N | Mean | Std. Deviation | Interpretation |
|---|----|------|----------------|----------------|
| Reduce the central position of the teacher | 82 | 3.62 | 1.506 | High mean |
| Appreciate the uniqueness of individuals | 82 | 4.00 | .756 | High mean |

| | | | | |
|---|-----------|--------------|--------------|-----------------------|
| Provide chances for students to express themselves in meaningful ways. | 82 | 4.75 | .463 | Very High mean |
| Give opportunities for students to negotiate meaning with each other and the teacher | 82 | 4.62 | .518 | Very High mean |
| Give students choices as to what they want to say | 82 | 4.25 | .886 | Very high mean |
| Because of inability to use proper language | 82 | 3.88 | 1.246 | High mean |
| Overall mean | | 4.186 | | High mean |

The table 4.3 provided results on the views of English and Mathematics students on the factors contributing to the use of CS in classroom interactions, particularly in the context of English language teaching and learning. The mean values indicate the average level of agreement or acceptance among respondents for each factor, while the terms "heterogeneity of response" and "homogeneity of response" refer to the variation or consistency in how respondents perceive each factor.

The factor reducing the central position of the teacher received a mean of 3.62 with heterogeneity of response. This factor suggests that CS is viewed to diminish the authoritative role of the teacher in the classroom. The mean value of 3.62 indicates a moderate level of agreement among respondents. The variability in responses (heterogeneity) suggests that opinions on this factor are diverse.

The factor appreciating the uniqueness of individuals scored a mean of 4.00 with heterogeneity of response. This factor highlights the role of CS in acknowledging the diverse linguistic backgrounds and identities of students. The mean value of 4.00 indicates a high level of agreement with diversity of responses.

The factor students expressing themselves in meaningful ways scored a mean of 4.75 with homogeneity of responses. The high mean value of 4.75 indicates strong agreement that CS provides chances for students to express themselves in meaningful ways. The homogeneity of response suggests a general consensus among respondents on this factor.

The factor students negotiating meaning scored a mean of 4.62 with heterogeneity of response. This factor relates to CS as facilitating student interactions for effective meaning negotiation. The relatively high mean value of 4.62 shows agreement, but with differing views of respondents.

The factor of student autonomy scored a mean of 4.25 with heterogeneity of response. This factor pertains to students having the choice to express themselves in their preferred language. The mean value of 4.25 suggests general agreement, but the heterogeneity indicates varying opinions on its importance.

The factor of inability to use proper language scored the mean of 3.88 with heterogeneity of response. This factor suggests that CS might occur due to students' inability to use the target language proficiently. The mean value of 3.88 indicates moderate agreement, and the heterogeneity of response signifies differing perspectives.

4.1.6.3 Teachers' opinions about their use of CS in the classroom

The results from interviews with English and Mathematics teachers regarding CS in the classroom revealed different opinions on the reasons behind its use despite government policy favouring English as the sole medium of instruction.

The findings reveal that both English and Mathematics teachers expressed that CS aids in helping learners understand the essence or origin of the content being taught. It facilitates a deeper comprehension of the subject matter.

In addition, CS is utilized by teachers to explain complex or challenging terms in both English and Mathematics lessons. It supports learners in grasping detailed concepts more comprehensively. Teachers also use CS as a tool to assist learners who encounter difficulties with the English language. By incorporating the students' native language, they facilitate better understanding and learning.

However, in English classes, CS is employed to enhance learners' language skills, encompassing speaking, writing, listening, and comprehension. It serves as a means to reinforce and develop proficiency in these language domains. CS helps learners in retaining knowledge when revising individually. Explanations given in a mixed language format tend to stick in the learners' memory, aiding recall during revision.

Furthermore, in Mathematics lessons CS is utilised to clarify key terms, enabling students to comprehend new concepts through the language they are most comfortable with or have

mastery over. Learners who struggle to express themselves freely in English are encouraged to use CS to ask questions, especially when certain aspects of the lesson are unclear.

In sum, the teachers highlighted various pedagogical reasons for employing CS in both English and Mathematics lessons. These reasons include aiding comprehension, supporting language learning, promoting inclusivity, and enhancing overall understanding and retention of subject matter, aligning with their goals of effective and inclusive teaching practices.

However, both English and Mathematics teachers demonstrated different views on the importance of using code-switching in teaching English and Mathematics subjects. Some confirm that code-switching is better in teaching English and Mathematics subjects because it helps learners' understanding and better classroom interaction. As Girsang (2015) highlighted CS is important as it aid students' comprehension of subject content.

TABLE 4. 4: TEACHERS' OPINIONS ABOUT THEIR USE OF CS IN THE CLASSROOM

| TEACHERS' OPINIONS/STATEMENTS | N | Mean | Std. Deviation | Interpretation |
|--|----------|-------------|-----------------------|------------------------|
| Students understand better when I use code-switching or mix languages in class | 8 | 4.62 | .518 | Very high level |
| Students always use code-switching and mix languages in their classroom interaction | 8 | 4.25 | .463 | Very high level |
| Students are confident in using English in everywhere in the school compound | 8 | 2.75 | 1.035 | High level |
| Code-switching is better in teaching mathematics or any other science | 8 | 3.75 | 1.165 | Very high level |

| | | | | |
|--|----------|--------------|--------------|------------------------|
| Code-switching helps students to pass national examinations | 8 | 1.38 | .518 | Very low level |
| It is effective to use code-switching in group discussions for all students to participate actively | 8 | 3.00 | 1.414 | High level |
| Code-switching helps better to describe mathematical problems | 8 | 3.00 | 1.414 | High level |
| Complex mathematical equation cannot be understood without using code-switching | 8 | 3.75 | 1.165 | Very high level |
| Overall mean | | 3.312 | | |

The table 4.4 presents the responses from teachers regarding the importance and effectiveness of using CS in English and Mathematics subjects.

Let's now interpret those opinions/statements:

1) Students understand better when ...

This statement received a high mean score, indicating strong agreement among the respondents. Teachers believe that incorporating CS and mixing languages enhances student understanding in the classroom. The homogeneity of responses suggests a consistent positive perception among the participants.

2) Students always use CS and mixing languages in their classroom interaction

This statement scored a mean of 4.25 with heterogeneous responses. The mean score here is also high, demonstrating a strong agreement that students frequently engage in CS during their interactions in the classroom. However, the heterogeneity of responses suggests that while many respondents strongly agree, some may hold differing opinions.

3) Students confidence in using English in school compound

The statement students are confident in using English everywhere in the school compound scored of 2.75 with neutrality in responses. This score mean is moderate, indicating that while there is agreement, some respondents are neutral about this statement. This suggests that not all teachers believe that students are equally confident using English in all areas of the school premises.

4) Code switching in teaching mathematics or any other science

The statement CS is better in teaching mathematics or any other science scored a mean of 3.75 with heterogeneous responses. The mean score is above neutral, indicating agreement that CS is beneficial in teaching Mathematics and other scientific subjects. The heterogeneity of responses implies that while many agree, there are differing perspectives among the teachers.

5) Code switching and national examinations

The statement CS helps students to pass national examination scored the mean of 1.38 with heterogeneous responses. The low mean score suggests disagreement among respondents. Most teachers do not believe that CS significantly aids students in passing national examinations. The heterogeneity of responses further emphasizes the lack of consensus on this statement.

6) Code switching in group discussion

The statement it is effective to use CS in group discussions for all students to participate actively scored the mean of 3.00 with neutral with agreement tendency. The mean score is neutral, with a slight inclination towards agreement. This suggests that while some teachers find CS effective in promoting active participation in group discussions, other are not convinced.

7) Code switching and complex mathematical problems

CS helps better to describe mathematical problems scored a mean of 3.00 with neutral responses. Similarly, the mean score indicates neutrality. Some teachers believe that CS aids in explaining mathematical problems effectively, while others are undecided.

The statement complex mathematical equations cannot be understood without using CS scored the mean of 3.75 with heterogeneous responses. The mean score is relatively high, indicating agreement that complex mathematical equations require the use of CS for comprehension. However, the heterogeneity of responses suggests differing viewpoints.

In brief, the analysis of the results indicates that while there is a general agreement on the benefits of CS for enhancing understanding and teaching effectiveness, there are differing

opinions on its application in various contexts, such as examinations and group discussions. Neutrality is observed in statements related to students' confidence in using English and the effectiveness of CS in certain teaching scenarios. The teachers' responses are not entirely homogeneous, reflecting the diversity of perspectives on CS in educational settings. These findings are in agreement with Girsang, (2015) reasons for CS which includes among others understanding of a particular subject.

4.1.7 Finding seven: Learners' and teachers' perceptions on the practice of CS in English and Mathematics subjects.

The following analysis aimed at investigating the learners' and the teachers' perceptions on the practice of CS in classroom interaction in English and Mathematics. Learners and teachers demonstrate different views on the use of CS in English and Mathematics as the following analysis and interpretations illustrate.

4.1.7.1 Learners' perceptions on the utilization of CS

The following figure indicates the opinions of the students Vis a Vis the role of the teachers in encouraging students to use CS in classroom interaction.

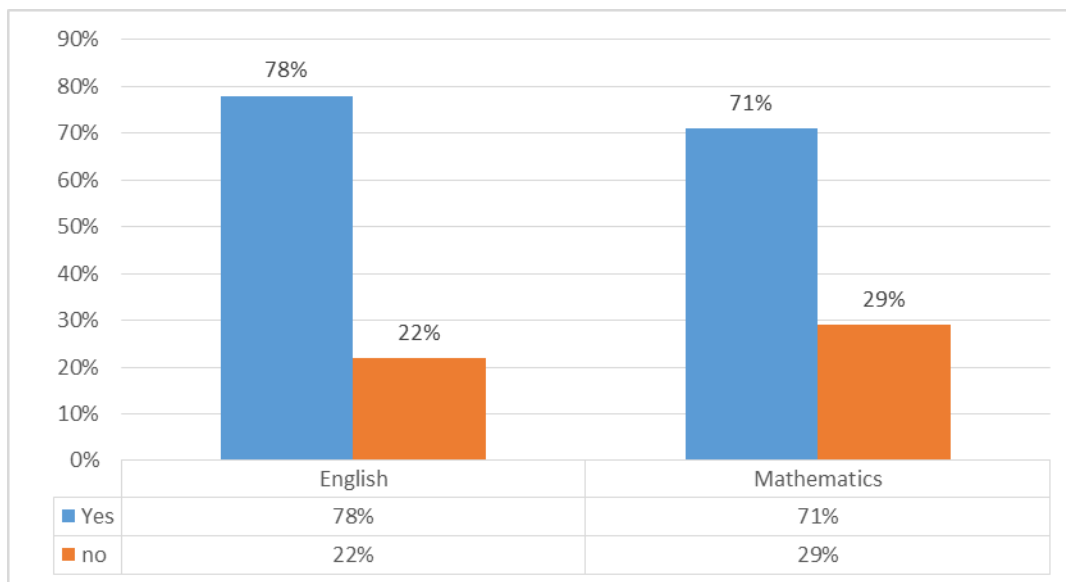


FIGURE 4. 6: LEARNERS' PERCEPTIONS ON ENCOURAGEMENT OF USING CS

The findings from the survey regarding the encouragement of CS in English and Mathematics subjects demonstrate the students' perceptions of whether their teachers promote the use of multiple languages in their classroom interaction.

In the context of English subjects, majority of English students, around 78%, believe that their teachers encourage the use of CS. This high percentage suggests that many English teachers might be supportive of incorporating CS in their classroom activities. However, about 22% of English students responded negatively, indicating that there is a minority who feels that CS is not encouraged in their English classes.

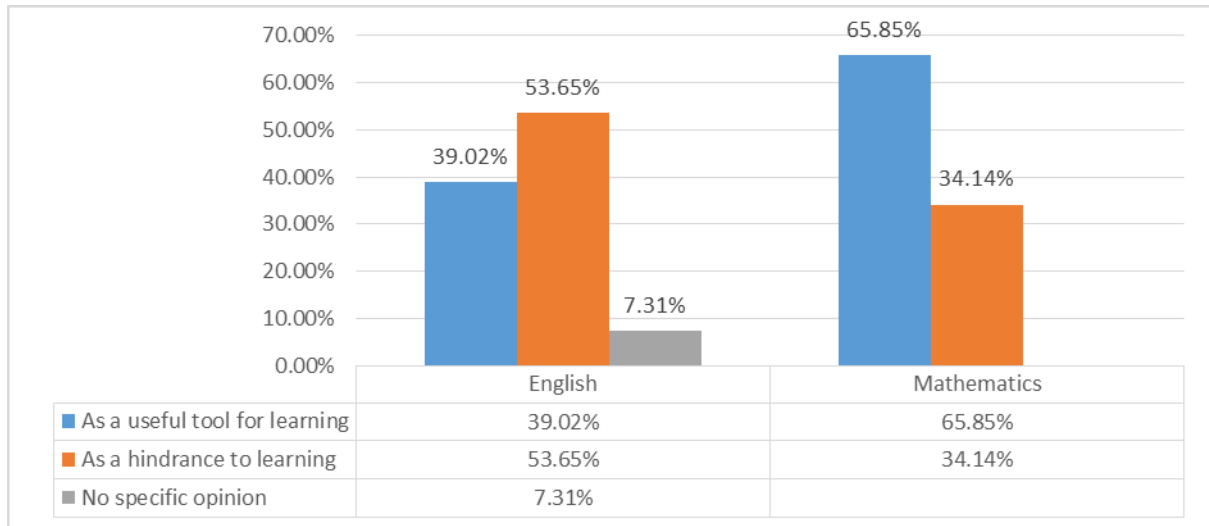
In the case of Mathematics students, the findings show a somewhat similar trend but with a slightly lower percentage. Approximately 71% of Math students believe that their Mathematics teachers encourage them to use CS within the subject. This indicates that there might be instances where Math teachers incorporate or are open to students using multiple languages to explain mathematical concepts or problem-solving strategies.

On the other hand, 29% of Math students responded negatively, indicating a higher proportion compared to the opposing opinions among English students. This suggests that a relatively larger number of Math students perceive that their teachers do not encourage the use of CS within Mathematics classes, potentially limiting opportunities for students to express mathematical in their native languages.

Overall, these findings suggest that a significant portion of both English and Mathematics students perceive some level of encouragement for CS in their respective subjects. However, there remains a notable minority who feels otherwise. Bridging this gap could involve fostering a more inclusive approach that acknowledges and supports students' linguistic diversity in both English and Mathematics classrooms, potentially enriching their learning experiences by allowing them to express themselves more comfortably and effectively.

In addition, students demonstrated their views on whether CS is a useful tool for learning or whether it is a hindrance to learning. The following figure shows students' satisfaction on the usage of CS in English and Mathematics classes, indicating whether they view CS as an aid or a barrier to learning.

FIGURE 4. 7: THE VIEWS OF STUDENTS REGARDING THE USE CS IN ENGLISH AND MATH SUBJECTS



The figure 4.7 summarises the perceptions of English and Mathematics students regarding the use of code-switching in their subjects and reveal interesting insights into their attitudes and preferences towards language use in learning environments.

The results reveal that 39.02% of English students find CS to be useful tool for learning. This means that for a majority of English students CS is seen positively, possibly indicating they believe it helps comprehension or facilitating learning in some way. In addition, a significant number of English students, around 53.65%, view CS as a hindrance to learning. This could suggest that a considerable number of English students feel that mixing languages in classroom interaction interferes with their understanding or disrupts the learning process in English classes. The results reveal that a small portion of English students, around 7.31%, does not have a specific opinion about CS. This group might not have a strong stand on whether CS helps or hinders learning in English subjects.

In contrast, 65.85% of Math students consider CS as useful tool for learning. They find CS beneficial for understanding mathematical concepts. Another considerable number of Math students, that is 34.14%, consider CS as a hindrance to learning. This percentage is lower compared to English students, indicating that a smaller number of Math students feel that CS interferes with their learning process in math classes. Moreover, the findings show that none of the Mathematics students have expressed a neutral opinion regarding CS.

These results show a notable divergence in perceptions between English and Mathematics students. Mathematics students are more disposed to perceive code-switching as useful tool

for learning, whereas a majority of English students consider it as a hindrance. The acceptance or rejection of CS seems to be contextual. Mathematics, being a subject involving abstract concepts and problem-solving, might be perceived differently from English, where language precision and fluency are more emphasized.

In addition, differences in teaching styles or cultural norms within these subjects or classrooms might influence how CS is perceived. It is possible that Mathematics teachers or the nature of mathematical problems encourage CS more than English teachers or the language structure of English learning. The perception of CS might also be influenced by individual preferences or previous experiences with multilingualism or exposure to different teaching methods. According to Editor (2016), mathematics is composed of words and symbols as well as numbers and has a precise and sophisticated structure which requires deep understanding in order to comprehend the material.

4.1.7.2 Teachers’ views on students’ reactions to CS

The following analysis regards the findings from teachers’ perceptions on the students’ reactions towards using CS in English and Mathematics classrooms. As the results indicate there is a notable difference between the perspectives of English and Math teachers.

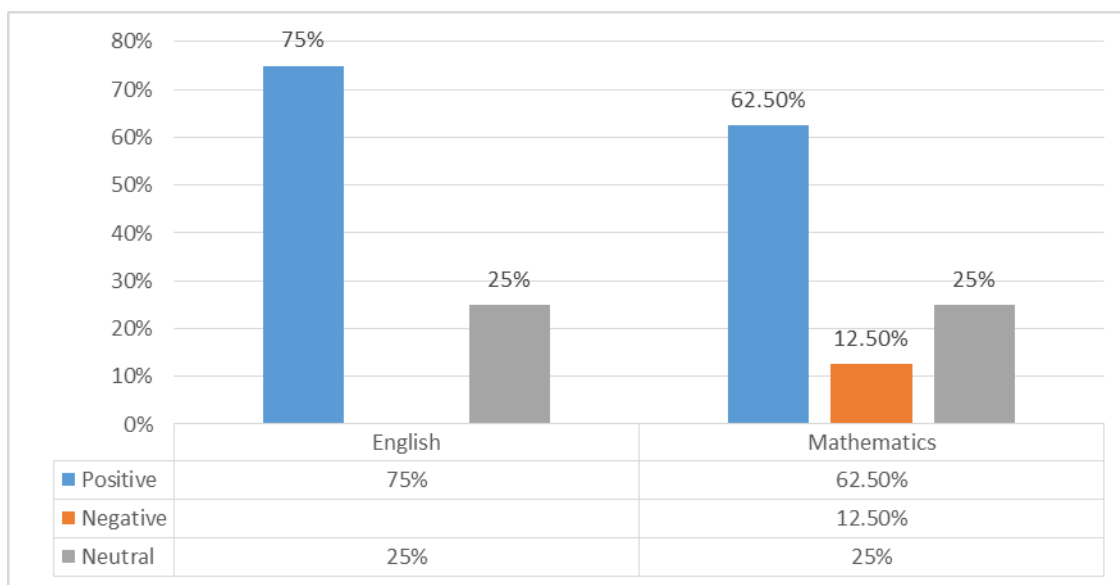


FIGURE 4. 8: TEACHERS’ PERCEPTIONS ON THE STUDENTS’ REACTIONS ON USING CS

The results of the figure 4.8 point out that 75% of English teachers perceive that students react positively to CS in English and Math classes. On the other side, the findings cite that none of the English teachers believe that students react negatively to CS usage in English and Mathematics subjects. There are also a significant number of English teachers, around 25%,

who believe that students' reactions towards CS in English and Mathematics subjects is neutral. This shows a strong inclination among English teachers that students tend to respond favorably to CS in both subjects. It is interesting that none of them perceive a negative reaction, suggesting a high degree of confidence or comfort with this approach among students, along with a substantial proportion seeing it as a neutral reaction.

However, the findings show that 62.5% of Math teachers perceive that students react positively to CS in English or Math classes, whereas 12.5% of Math teachers believe that students react negatively to CS in English and Mathematics subjects, and 25% of Math teachers see students' reaction as neutral toward using CS in English and Math classes. It is observed that Math teachers have a slightly more varied perception compared to English teachers. A majority still perceive a positive reaction, although it is slightly lower than the percentage among English teachers. There is a minority, 12.5%, who perceive a negative reaction, which is notably as none of English teachers share the same view.

Moreover, the above results remarked that both groups perceive a positive reaction, with English teachers being more in agreement in their positive perception compared to Math teachers. Math teachers have a small percentage who perceives a negative reaction, while English teachers perceive a positive or neutral reaction. These teachers' perceptions about CS are confirmed by other researchers such as Editor (2016) who viewed mathematics as a language in itself as it uses words, symbols, and numbers with sophisticated structure contrary to English language.

4.1.7.3 Students' perceptions on how CS works in English and Mathematics classes.

English and Mathematics students have proved different views on the effectiveness of using code-switching in teaching English and Mathematics subjects. Some confirm that code-switching is better in teaching English and Mathematics subjects because it helps learners' understanding and better classroom interaction.

TABLE 4. 5: PERCEPTIVE OF ENGLISH AND MATH STUDENTS ON THE EFFECTIVENESS OF CS

| Students' opinions/statements | N | Mean | Std. Deviation | Interpretation |
|-------------------------------|---|------|----------------|----------------|
|-------------------------------|---|------|----------------|----------------|

| | | | | |
|--|-----------|--------------|--------------|---------------|
| Students understand better when the teachers use code-switching or mix languages in class | 82 | 4.07 | .604 | Higher |
| Students always use code-switching and mix languages in their classroom interaction | 82 | 2.94 | 1.251 | High |
| Students are confident in using English in everywhere in the school compound | 82 | 2.62 | 1.592 | High |
| Code-switching is better in teaching mathematics or any other science | 82 | 4.51 | .835 | Higher |
| Code-switching helps students to pass national examinations | 82 | 3.76 | .854 | Higher |
| It is effective to use code-switching in group discussions for all students to participate actively | 82 | 3.78 | 1.100 | Higher |
| Code-switching helps better to describe mathematical problems | 82 | 4.24 | 1.171 | Higher |
| Complex mathematical equation cannot be understood without using code-switching | 82 | 3.98 | .702 | Higher |
| Overall mean | | 3.737 | | Higher |

The table 4.5 indicates the results on the views of learners on the effectiveness of code switching in English and Mathematics subjects. The results appear to explore how code switching is perceived and used in educational settings, and its effects on student learning and engagement.

Let's now interpret students' perceptions:

- 1) Students understand better when teachers use CS

The statement that students understand better when teachers use CS and mix languages in class was accepted with a relatively high mean score of 4.07, this suggests that students perceive CS as a helpful strategy for enhancing their understand of the subject matter. This relatively high mean score indicates a general agreement among the respondents that CS affects comprehension.

2) Students always use CS and mix languages

The statement indicating that students always CS and mix languages in their classroom interactions received a mean score of 2.94. The lower mean score suggests that while some students may engage in CS, it is not a universal practice among all students. This implies that although CS is perceived as beneficial, it might not be consistently applied by all students.

In addition, the mean score of 2.62 suggests that students might not feel very confident in using English everywhere within the school compound. This could indicate that students might prefer to use their native language or a local language in certain contexts, or they might lack confidence in their English language skills outside of the classroom.

3) CS is better in teaching mathematics or any other science

The statement that CS is better in teaching mathematics or any other science received a high mean score of 4.51. This indicates strong agreement among respondents that CS is particularly effective in teaching subjects like mathematics and science. This might be due to the complex and technical nature of these subjects, which needs use of different languages for understanding.

4) CS helps students to pass national examinations

The statement suggesting that CS helps students pass national examinations received a mean score of 3.76. While not as high as the score for teaching mathematics, this still indicate a moderate level of agreement that CS positively influence exam performance. This implies that students perceive CS as a useful tool for conveying knowledge during exams.

5) CS effectiveness in group discussions

The mean score of 3.78 for the statement about using CS in group discussions suggests that students agree that CS is effective for promoting active participation in group discussions. This is due to the fact that CS helps students to express their thoughts more comfortably and effectively.

6) CS helps to describe mathematical problems

The statement about CS being helpful in describing mathematical problems received a high mean score of 4.24. This indicates that students perceive CS as a valuable tool for explaining and understanding complex mathematical concepts.

7) CS in understanding complex mathematical equation

The statement that complex mathematical equations cannot be understood without using CS received score of 3.98. This suggests that students view CS as a necessary strategy for understanding complex mathematical equations, possibly due to the technical vocabulary involved. This is in agreement with (Kan & Bulut, 2015) who believe that understanding and solving a mathematical problem call for a certain level of reading proficiency.

4.1.7.4 Teachers' satisfaction about the use code-switching

During the interview with English teachers, they shared their opinions about their satisfaction in using CS as the following excerpts illustrate.

CS is good and needed but it should be used on the level of 20% in the process of learning and teaching for helping our learners to have skills in English and working very hard to improve their level of English. (EXTRACT 12)

CS is in need of helping students to understand better and achieve success. (EXTRACT 13)

CS is a needed practice for classroom interaction in English subject for facilitating rapid understanding. (EXTRACT 14)

CS is better for teachers because it helps them to achieve the objective of the lesson. (EXTRACT 15)

These extracts have in common the idea that code-switching is a needed practice in English and Mathematics subjects for classroom interaction.

Unlike English teachers, Mathematics teachers expressed opposing views on their satisfaction on the use of code-switching in classroom interaction as the following extracts expressed:

When possible CS should be discouraged but because of the level of students' English, it is necessary to code-switch for learners' performance. (EXTRACT 16)

Yes, I am satisfied with code-switching for better success of my learners. (EXTRACT 17)

No, but it should be used depending on the level of understanding of the language of instruction of both teachers and learners. (EXTRACT 18)

Yes, because the purpose of using CS is to improve the level of success when learners have understood well the lesson. (EXTRACT 19)

Yes, because CS helps to understand the complex mathematical problems and can solve them easily. (EXTRACT 20).

From the extracts above, it is evident that Mathematics teachers are satisfied with use of code-switching but with some hesitations by explaining that it should be used in moderation depending on the level of learners and depending on the content to emphasise. This disagreement between satisfaction between English and Mathematics teachers result in mathematics which uses symbols, signs, and equation sometimes is self-explanatory as compared to English which uses only words as Editor (2016) highlight

4.2. Discussion of findings

In this chapter, the researcher explores the results of the study, aiming to provide preliminary resolutions to the research questions which were: 1) to what extent is CS prevalent in selected secondary schools in English and Mathematics subjects?, 2) What are the reasons behind CS in English and Mathematics subjects? 3) And how do teachers' and learners' perceive CS in English and Mathematics subjects? The findings presented herein are drawn from an analysis of teachers' and learners' viewpoints and attitudes toward the incorporation of CS in the domain of English and Mathematics subjects.

4.2.1. Prevalence of CS in classroom interaction in English and Mathematics subjects

The findings of the first question revealed that code-switching is a common practice in both English and Mathematics subjects, primarily driven by the need to support learners' understanding and bridge linguistic gaps between teachers and students. As Luke (2015), Owu-Ewie & Eshun, 2015 suggested language is a tool used by people to express their ideas and thoughts, therefore learners with barrier in language resort to CS to bridge language gaps with teachers.

Additionally, the findings suggest that code-switching does not seem to hinder comprehension; instead, it facilitates effective interaction between teachers and students, fostering better understanding in both English and Mathematics subjects. The findings indicate that the nuanced use of CS in English and Mathematics subjects is influenced by pedagogical approaches, subject nature, and the diverse linguistic backgrounds of learners and teachers. This research highlights CS as a valuable strategy in enhancing comprehension and fostering effective communication in classroom interaction. This finding support the idea of Naha et al., 2018 who described CS as used to facilitate easy acquisition of knowledge.

However, the findings suggest that despite the prevalence of CS in both English and Mathematics, it is more remarkable in Mathematics due to its conceptual nature and diverse students and teachers' linguistic background. While English background tend to obey strictly to monolingual instruction policy, Mathematics teachers often turn to CS to aid comprehension, especially when explaining complex mathematical concepts. As Maluleke, (2019) argued students fail in Math due to lack of sufficient math vocabulary, thus CS comes as a result to overcome such deficiency of vocabulary.

As a whole, CS is perceived as a realistic approach to enhance learning effectiveness, especially when English proficiency poses a barrier to comprehension, and different researchers have the same view that CS comes in to aid comprehension (Thesis & Cakrawarti, 2011; Naha et al., 2018), especially in Mathematics which need mathematical language to understand essential component of learning mathematics (Morgan (1999) and Schleppegrell (2007) cited in Editor, (2016).

4.2.2. The effects of CS on classroom interaction in English and Mathematics subjects

The findings also revealed that both students and teachers have varied opinions on the impact of CS in classroom interaction in English and Mathematics subjects. Some view it as beneficial for comprehension and communication, while others see it as a hindrance to learning or language development leading to confusion and dependency. However, the perception of CS varies between English and Mathematics classes. While some students find it helpful in one subject, they might view it negatively in another, indicating the contextual nature of CS. Researchers have proposed that mathematics is essentially its own language, with certain symbols that cannot be translated into other languages (Adams, 2003 cited in

Editor, 2016), in this this context, code-switching (CS) could hinder learning or cause confusion due to the complexity of mathematical language (Kan & Bulut, 2015). While code-switching can be beneficial in making connections between familiar languages and new mathematical concepts, limiting its use can promote deeper understanding, constancy, and proficiency in the language of mathematics.

Additionally, the results indicate that excessive use of code-switching (CS) leads to language proficiency problems and loss of cultural identity. Therefore, teachers advocate for the use of mother tongue to establish a basic understanding before transitioning to other languages.

Furthermore, the research highlights the necessity of strategically using CS due to its potential benefits and adverse effects on language development. This viewpoint aligns with other researchers who stress the importance of the language of instruction as a framework for understanding the world, particularly within an intercultural context (Action Aid et al. (2012).

Furthermore, the results revealed a complex approach to code-switching among English and Mathematics teachers. It is interesting to note that while English teachers seemingly don't rely on CS for concept clarification, a minority of Mathematics teachers, 25%, find it helpful in making mathematical concepts clearer. The difference could arise from the nature of the subjects; while English concepts might be clarified through other means, Mathematics teachers might utilize CS for better conceptual comprehension among students. Various researchers highlight the importance of understanding the content using languages one masters in order to advance academically (Kyeyune,2010; Brock-Utne, B.,&Alidou, 2011 cited in Suganda et al., 2018).

Once again, both learners and teachers express positive perceptions of the effects of code-switching on classroom interaction. Positive effects include improving learners' experiences with language usage, enhancing understanding of concepts, and boosting learners' self-achievement. However, there are also concerns about negative effects, such as developing a dependency on code-switching and inhibiting the development of English language skills.

In addition, the findings of this question revealed that CS is a needed practice in English and Mathematics but it can be a sign of laziness and a potential threat to language performance. Therefore the respondents suggested that it should be used in moderation, depending on factors like learners' language proficiency and the content being taught.

Finally, some interviewed teachers expressed concerns that excessive code-switching can hinder learners' development of English language skills, and it could potentially destroy cultural or linguistic identities. All in all, teachers need to understand the effects of CS on

learning so that they can use it effectively by creating a more inclusive and engaging learning environments by balancing use of CS for comprehension without hindering language development or dependency.

4.2.3. The reasons behind CS in English and Mathematics subjects

Girsang, (2015), and Ahmad, (2009) identified various reasons for CS such as lack of language proficiency, understanding of a particular subject, clarification of content. The findings of this study on the views of students on the reasons behind CS in classroom interactions reveal that there is a consensus among students that CS allows for meaningful self-expression and negotiation of meaning. This alignment signifies the perceived role of CS in enabling students to communicate more effectively and comprehend diverse perspectives. On the other hand English teachers might further explore CS as a means to enhance student participation, drawing inspiration from Mathematics teachers' strategies in explaining complex concepts.

In addition, both English and Mathematics students perceive that CS aids in understanding content better, leading to improved mastery and confidence, consequently contributing to success. CS is also seen as a tool for students to express themselves using familiar concepts and to interact more comfortably with teachers. The findings revealed also that students feel that CS helps in comprehending the medium of instruction by presenting key concepts in a language they are proficient in.

The findings fall under other researchers' views such as Hanum (2009) and Action Aid et al.(2012) who suggest that teaching should be an interactive act and everything happening in class should a responsive act where teachers interact with whole class, pair of students, or single student, and students interact in pairs, groups, individually or as a class.

Furthermore, the findings reveal that teachers use CS to install confidence in learners and expand their cognitive horizons. Once more, the findings revealed that students believe that CS assists in storing content in memory for future recall, it also aids in understanding other subjects, languages, and cultures, potentially leading to improved performance. However, some students view the use of CS as the inability to use the medium of instruction or habitual use of a native language. Some scholars are in the view that CS improve academic performance (Simasiku et al. (2015).

Moreover, the findings reveal that CS is used to encourage participation among weaker learners and assist them in engaging with the lesson. Once more, students who struggle to express themselves freely resort to CS to convey their queries or thoughts effectively. In Mathematics, CS is perceived as crucial for grasping complex concepts or units, especially in topics like statistics. There is an agreement with other researcher who underlines the significance of dialogue between teachers and students by actively sharing experiences (Wisbey 2017)

In views of teachers, CS is used in classroom interaction for various reasons as interpreted in previous chapter. Both English and Mathematics teachers claimed to use CS to ensure students grasp the key points of the content being taught, and to assist students who face difficulties with English language.

On the other side, Mathematics teachers suggested that complex and challenging terms are explained through CS to aid comprehension, CS also aids in understanding key terms and concepts in mathematics for students in their home language. The findings reveal that in English lessons CS aims to establish a shared comprehension among learners and provide additional clarifications. The findings reveal also that students hesitant to express themselves In English can use CS to ask questions or seek clarity. Again, CS helps learners retain information during individual revision sessions. My research findings are in agreement with other researchers who assert that answering a mathematics problem requires complex mathematical language (Kan & Bulut, 2015).

All in all, as the findings suggest an overall consensus among both students and teachers on the reasons behind CS, particularly regarding enhanced understanding, improved interaction, and confidence building, teachers demonstrate that its application and effectiveness in different educational context remain subject to individual perspectives. This diversity could arise from different teaching experiences, cultural factors, or personal pedagogical beliefs. These findings are in disagreement with other researchers' view who declared that the language of instruction is a fruitful tool to learn any content, and in case Rwanda should English as the only medium of instruction (Tabaro & Twahirwa, 2018).

In conclusion, while CS holds value in helping comprehension and enhancing classroom interaction, its application and perceived effectiveness vary among both students and teachers, highlighting the need for a reasonable strategy in integrating CS within educational settings.

4.2.4. The teachers' and learners' perceptions on CS in English and Mathematics subjects

The findings of the fourth question indicate the perceptions of both learners and teachers regarding the use of CS in English and Mathematics subjects, offering valuable insights into attitudes, preferences, and perceived effectiveness within classroom interactions; both students and teachers recognize CS as a valuable tool for enhancing comprehension, particularly in complex subjects like mathematics and science.

However, these findings collectively suggest the need for a balanced strategy to incorporating CS in classroom interactions, acknowledging the diverse perceptions among students and teachers. Addressing the concerns of minority who perceive CS negatively, particularly in English classes, could involve encouraging an inclusive environment that respects linguistic diversity while ensuring language precision.

Furthermore, exploring the context specific nature of CS usage in different subjects could be beneficial. Understanding why Math students view CS more favourably compared to English students might involve examining the role of language in teaching abstract concepts versus language fluency. Despite the views of teachers on code-switching as a needed practice, some researchers disregard this view as a sign of laziness among language users and leads to negative performance in language usage. The vast majority of bilinguals have negative views on code-switching and code-mixing, according to Bhatia, J.K., and Ritchie (2004). Language mixing and switching are viewed as indicators of “laziness,” “inadvertent” speech acts, instances of linguistic decadence, and a threat to their own linguistic performance (Suganda et al., 2018).

In addition, bridging the gap in perceptions regarding CS usage in English and Mathematics subjects requires diversified strategy that considers subject specific contexts, individual preferences, and the promotion of inclusive classroom environments that value linguistic diversity.

Finally, the findings reveal a generally positive attitude towards CS among students and English teachers, with Mathematics teachers expressing more reserved views, emphasizing its selective and controlled use based on students' language abilities and the complexity of content. The observed teaching practices underline the importance of fostering a supportive and inclusive learning environment. While English teachers demonstrated confidence in using English as a medium of instruction, they also recognize the need for flexibility,

utilizing CS to facilitate better interaction and comprehension, particularly when introducing new concepts. This adaptive approach indicates a commitment to promoting effective communication and understanding among students with diverse linguistic backgrounds and learning abilities.

As a conclusion to Chapter 4, the research findings regarding the utilization of code-switching in English and Mathematics subjects were examined. This chapter explore the perspectives of both learners and teachers, highlighting the prevalent practices, rationale behind employing code-switching, and its effects on classroom interaction.

CHAPTER FIVE: GENERAL CONCLUSION AND RECOMMENDATIONS

5.1 General Conclusion

The study investigated the prevalent use of code-switching in classroom settings and analysed its impact on interaction and learning outcomes in English and Mathematics in selected Secondary Schools from Muhanga District. The research aimed to explore the prevalence of code-switching in classroom interaction in English and Mathematics subjects, its effects on classroom interaction, reasons behind its utilization, and the perceptions of teachers and learners regarding CS in two subjects.

The key findings suggested that code-switching is a common practice in English and Mathematics classrooms, primarily employed to enhance comprehension and facilitate interaction among students, thus to bridge language gaps with teachers. However, it was emphasized that a balanced approach to CS is crucial, considering learners' language proficiency and the subject matter being taught. Excessive use of CS was found to potentially impede the development of English language skills among students and could threaten cultural or linguistic identities.

The conclusions of the study consist are useful for stakeholders, policy makers, and educators as they should recognise the value of CS in fostering classroom interaction while advising caution regarding its overuse. The study highlighted the importance of tailoring CS usage based on the learners' needs and the subject material. Lastly, the research suggested areas for further investigation and exploration, aiming to explore deeper into the nuanced impacts and best practices concerning CS in educational settings.

5.2 Recommendations.

After having analysed key findings of this study, the following recommendations are made in relation to the research objectives:

- Code-switching should be used in a balanced way for the sole purpose of enhancing learners' understanding and facilitate classroom interaction.
- Teachers should be encouraged to use the language of instruction and encourage learners to do so for self-improvement.

- Teachers should use all strategies that foster learners' language development by providing clear explanations, helping learners to provide feedback comfortably in language of instruction for developing successful learning experiences.
- Learners should be encouraged to express their thoughts in language of instruction in order to develop their language skills.
- Teachers training colleges should prepare teachers to develop a high level of confidence in the language of instruction to facilitate smooth teaching and learning process.
- Educational decision makers should plan to improve continuous professional development for teachers in order to develop their language skills for supporting learners.
- Policy makers should set policies that allow learners to end grade with necessary language skills that allow them to participate in instruction with confidence.
- The Government of Rwanda through its education boards should prepare learning materials with a language that uses appropriate vocabulary and expressions easier to understand.

5.3 Suggestions for further research.

The main aim of this study was to investigate the use of code-switching in classroom settings and analyse its impact on interaction dynamics among students and teachers in English and Mathematics subjects in Muhanga District. The study was carried out in four selected secondary schools of Muhanga District. The study involved 82 learners sampled among 467 learners of S3 in selected schools and 4 English and 4 Mathematics teachers. Quantitative and qualitative methods were used to collect and analyze data which were collected using questionnaires administered to learners and teachers, interviews administered to teachers and classroom observations.

However, based on methods used to collect and analyze data, some limitations of this study may be considered, they include:

- The fact that this study focused on specific District which is Muhanga and specific S3 level, the findings might not be applicable to other regions, levels or educational contexts.
- Data collection methods used focus on individual views and perceptions of both-learners and teachers which may be influenced by personal biases, experiences, and

interpretations where respondents provide answers favourable to them, and this bias might affect the accuracy of the results.

- The study did not include a control group that didn't use code-switching, therefore it is challenging to attribute changes in classroom interaction only to code-switching, and other factors could be taken into considerations.

In order to address these limitations on this research on code-switching and its effects on classroom interaction, here are some suggestions for areas of focus and improvements for future research:

- Further research could investigate effects of code-switching on classroom interaction across other Districts, schools, and different levels to ensure the findings are more representative on different learners' populations and settings.
- Further researchers should use other research methods like experimentations based on those who use code-switching as compared to those who do not use code-switching to avoid personal biases.
- Further researchers should include a control group that doesn't use code-switching in the classroom interaction to compare the effects of code-switching based on baseline.
- Further researchers should extend this study over a period of time to identify variations in the effects of code-switching on classroom interaction.
- Future research could explore the impact of teacher training and language proficiency on code-switching practices and their effects on classroom interaction.

By addressing these suggestions in future studies, researchers can build on the foundation of this research and provide more comprehensible inputs to build more relationships between code-switching and classroom interaction.

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APPENDICES

APPENDIX A: QUESTIONNAIRE FOR STUDENTS

Dear Sir/Madam,

Dear respondent, my name is **Alexandre HABINTWALI**, a master's student of English Education at the University of Rwanda, College of Education. I am carrying out research on **CODE-SWITCHING IN PRACTICE: ITS EFFECTS ON CLASSROOM INTERACTION IN ENGLISH AND MATHEMATICS SUBJECTS IN MUHANGA DISTRICT SELECTED SECONDARY SCHOOLS**. In light of this, I respectfully ask your participation in completing this questionnaire. Rest assured that the information gathered through this survey will be handled with the highest level of confidentiality and solely used for the purpose of this research.

Thanks for taking part in this research.

SECTION A:

- i. How often do you notice teachers or students using code switching (mixing languages) in English/Mathematics subject?
 - Never
 - Rarely
 - Sometimes
 - Often
 - Always

- ii. In your view, how does CS switching impact your classroom interaction in English/ Mathematics subjects? (Choose all that apply)
 - Enhances understanding
 - Confuses students
 - Improves communication
 - Hinders learning

- No noticeable effect
- iii. Do you believe your English /Mathematics teachers encourage the use of CS in English/Mathematics subjects?
- Yes
 - No
 - Not sure
- iv. What is your perceptions on using CS in English/Mathematics subject on classroom interaction? (Tick all that apply)
- As a useful tool for learning
 - As a hindrance to learning
 - No specific opinion

SECTION B

- i. Respond to all items by ticking (✓) the correct number to describe the extent to which you agree with the following statement on the reasons to use code-switching.

On the scale from 1 to 5 rate (5= Strongly agree, 4 = Agree, 3= Not sure, 2= Disagree, 1 = Strongly Disagree)

| NO | STATEMENT | 5(Strongly agree) | 4(Agree) | 3(Not sure) | 2(Disagree) | 1(Strongly disagree) |
|----|--|-------------------|----------|-------------|-------------|----------------------|
| 1 | Reduce the central position of the teacher | | | | | |
| 2 | Appreciate the uniqueness of individuals | | | | | |
| 3 | Provide chances for students to express | | | | | |

| | | | | | | |
|---|--|--|--|--|--|--|
| | themselves in meaningful ways. | | | | | |
| 4 | Give opportunities for students to negotiate meaning with each other and the teacher | | | | | |
| 5 | Give students choices as to what they want to say | | | | | |
| 6 | Because of inability to use proper language | | | | | |

ii. Respond to all items by circling the number which best interprets your opinion as follows:

4: Strongly agree 3: Agree 2: Disagree 1: Strongly disagree

| NO | STATEMENT | 1(Strongly disagree) | 2(Disagree) | 3(Agree) | 4(Strongly agree) |
|----|---|----------------------|-------------|----------|-------------------|
| 1 | Students understand better when I use code-switching or mix languages in class | | | | |
| 2 | Students always use code-switching and mix languages in their classroom interaction | | | | |

| | | | | | |
|---|---|--|--|--|--|
| 3 | Students are confident in using English in everywhere in the school compound | | | | |
| 4 | Code-switching is better in teaching mathematics or any other science | | | | |
| 5 | Code-switching helps students to pass national examinations | | | | |
| 6 | It is effective to use code-switching in group discussions for all students to participate actively | | | | |
| 7 | Code-switching helps better to describe mathematical problems | | | | |
| 8 | Complex mathematical equation cannot be understood without using code-switching | | | | |

SECTION C:

- i. Why are your perceptions on using CS in teaching English/Mathematics subjects?
- ii. What are the effects of code-switching in classroom interaction? Give 3 aspects

Thanks for taking part in this research!

APPENDIX B: QUESTIONNAIRE FOR TEACHERS

Dear Sir/Madam,

Dear respondent, my name is **Alexandre HABINTWALI**, a master's student of English Education at the University of Rwanda, College of Education. I am carrying out research on **CODE-SWITCHING IN PRACTICE: ITS EFFECTS ON CLASSROOM INTERACTION IN ENGLISH AND MATHEMATICS SUBJECTS IN MUHANGA DISTRICT SELECTED SECONDARY SCHOOLS**. In light of this, I respectfully ask your participation in completing this questionnaire. Rest assured that the information gathered through this survey will be handled with the highest level of confidentiality and solely used for the purpose of this research.

Thanks for taking part in this research.

SECTION A

SECTION A:

i. How often do you engage in code-switching during your English/Mathematics language lessons?

- Rarely
- Sometimes
- Often
- Very often
- Not applicable

iii. Identify the situations that prompt you to use code-switching in your English/Mathematics lessons. (Tick all that apply)

- Clarification of concepts
- Encouragement of students' participation
- Addressing students' language proficiency level
- Enhancing understanding of complex ideas

iv. How do you perceive the impact of code-switching on classroom interaction during English/Mathematics lessons?

- Improved student engagement
- Enhanced comprehension
- Positive impact on learning outcomes
- Negative effect

v. Choose your perception of students' reactions to code-switching in English/Mathematics subject.

- Positive
- Negative
- Neutral
- Not observed

SECTION B

i. Respond to all items by ticking (✓) the correct number to describe how important using code-switching in English and Mathematics subjects in classroom interaction

On the scale from 1 to 5 rate (5= Strongly agree, 4 = Agree, 3= Not sure, 2= Disagree, 1 = Strongly Disagree)

| NO | STATEMENT | 5(Strongly agree) | 4(Agree) | 3(Not sure) | 2(Disagree) | 1(Strongly disagree) |
|----|--|-------------------|----------|-------------|-------------|----------------------|
| 1 | Reduce the central position of the teacher | | | | | |
| 2 | Appreciate the uniqueness of individuals | | | | | |

| | | | | | | |
|---|--|--|--|--|--|--|
| 3 | Provide chances for students to express themselves in meaningful ways. | | | | | |
| 4 | Give opportunities for students to negotiate meaning with each other and the teacher | | | | | |
| 5 | Give students choices as to what they want to say | | | | | |
| 6 | Because of inability to use proper language | | | | | |

ii. Respond to all items by circling the number which best interprets your opinion as follows:

4: Strongly agree 3: Agree 2: Disagree 1: Strongly disagree

| NO | STATEMENT | 1 | 2 | 3 | 4 |
|----|----------------------------|---|---|---|---|
| 1 | Students understand better | | | | |

| | | | | | |
|---|---|--|--|--|--|
| | when the teachers use code-switching or mix languages in class | | | | |
| 2 | Students always use code-switching and mix languages in their classroom interaction | | | | |
| 3 | Students are confident in using English in everywhere in the school compound | | | | |
| 4 | Code-switching is better in teaching mathematics or any other science | | | | |
| 5 | Code-switching helps students to pass national examinations | | | | |
| 6 | It is effective to use code-switching in group discussions for all students to participate actively | | | | |
| 7 | Code-switching helps better to describe mathematical problems | | | | |
| 8 | Complex mathematical equation cannot be understood without using code-switching | | | | |

SECTION C:

- i. According to you what are the reasons for code-switching?
- ii. What do you think are the effects of code-switching on classroom interaction?
- iii. What are your perceptions on the use of code-switching in classroom interaction in English/Mathematics subjects?

Thanks for taking part in this research!

APPENDIX C: INTERVIEW GUIDE FOR TEACHERS

Dear teachers, we are going to discuss some questions related to teaching and learning processes, especially English and Mathematics, feel free to provide as much information as you can as your information is confidential.

- i. Do you think code-switching is a common practice in classroom interaction in English and Mathematics subjects?
- ii. To what extent do code-switching is used in classroom interaction? Which languages do you think are switched to while studying English or Mathematics?
- iii. Tell me which classroom activities do teachers use most code-switching in classroom activities while teaching English or Mathematics?
- iv. What are the reasons for code-switching in English or Mathematics lessons?
- v. What are your perceptions of the need for code-switching in English or Mathematics?
- vi. Are you satisfied with using code-switching for learners' successful learning?

Thanks for taking part in this research!

APPENDIX D: CLASSROOM OBSERVATION SHEET

i. Code-switching distribution.

| Words most switched to | Frequency |
|------------------------|-----------|
| | |
| | |
| | |
| | |
| | |
| | |

ii. Language used in classroom activities.

| Activities | Language used | Remarks |
|---|---------------|---------|
| Introduction of the lesson | | |
| Learners answering the questions | | |
| Learners discussing in group works | | |
| Learners presentation | | |
| Learners discussing out of classroom in peers | | |
| Teachers giving instructions | | |
| Learners doing exercises | | |
| Explaining new concepts | | |
| Debating | | |

iii. Was the teacher confident using English throughout teaching?

- iv. How did learners hold meaningful discussions in language of instruction in their own activities?
- v. What strategies teacher use to make learners understand the new concepts?

APPENDIX E: UR ETHICAL CLEARANCE FORM



COLLEGE OF EDUCATION

RESEARCH AND INNOVATION OFFICE

Rukara, 5th June, 2023

Ref: 03/DRI-CE/088(a)/ EN/gi/2023

Mr Alexandre HABINTWALI

Master Student

Master of Education in English Education

School of Education

UR-CE

Dear Mr Habintwali,

RE: RESEARCH ETHICAL CLEARANCE FOR YOUR STUDY

Following your application for research clearance for your study entitled: **“Code-Switching in Practice: Its Effects on classroom interaction in English and Mathematics Subjects: A Case Study of Muhanga District;”**

Having reviewed your application and being satisfied with your protocol (research topic, interview schedule, and questionnaire): this study is ethically acceptable. This ethical clearance shall last for 18 months and is renewable upon your request and presentation of the progress report to the UR-CE Research Screening and Ethics Clearance Committee (RSEC-C) through the Research and Innovation Unit. Please note that you will have to apply for ethical clearance before making changes in the protocol during the implementation phase. The Research and Innovation Unit shall receive a final copy of your study report at the end of your study.

We wish you success in your study.

A handwritten signature in blue ink, appearing to read 'Eugene Ndabaga', is written over the circular stamp.



Assoc. Prof. Eugene NDABAGA

Chairperson, UR-CE RSEC-C

Director of Research and Innovation Unit

Tel.: 250788308862

Email: ndabagav@yahoo.ie

UR-College of Education

Cc:

- The Principal, CE
- Dean, School of Education
- Assoc. Prof. Epimaque Niyibizi (Supervisor)



RESEARCH AND INNOVATION UNIT

Rukara, 5th June 2023

Ref: 03/DRI-CE/088(b)/EN/gi/2023

The Mayor
Muhanga District
Southern Province

Re: Research recommendation letter for Mr Alexandre HABINTWALI

On behalf of the University of Rwanda-College of Education (UR-CE), I introduce Mr Alexandre Habintwali, a postgraduate student at the School of Education of UR-CE. He is writing his thesis entitled: “**Code-Switching in Practice: Its Effects on classroom interaction in English and Mathematics Subjects: A Case Study of Muhanga District**” to complete his Master of Education in English Education.

His research will involve English teachers, Mathematics teachers and learners of S3 in four selected day secondary schools in Muhanga District. Therefore, we kindly request your permission for him to collect data for this study in the identified secondary schools.

We very much hope to get your usual cooperation.

Yours sincerely,



Assoc. Prof. Eugene NDABAGA
Director of Research and Innovation
University of Rwanda-College of Education
E-mail: ndabagav@yahoo.ie
Mobile: +250788308862

Cc:

- Principal, UR-CE
- Postgraduate Program Coordinator, School of Education
- Assoc. Prof. Epimaque Niyibizi (Supervisor)

APPENDIX F: PERMISSION FOR DATA COLLECTION IN MUHANGA DISTRICT

REPUBLIC OF RWANDA



SOUTHERN PROVINCE
MUHANGA DISTRICT

E-mail: info@muhanga.gov.rw

Muhanga, the 21 JUN 2023
N° 2620/07.0207

Mr. HABINTWALI Alexandre
University of Rwanda, College of Education (UR – CE)
E-mail: halex5@yahoo.fr
Tel. : +250 782529158

RE: Permission for conducting a research in Muhanga District

Dear Sir,

Reference is made to your letter of June 07th, 2023 requesting the permission for conducting a research in Muhanga District entitled “Code – switching in practice: its effects on classroom interaction in english and mathematics subjects: Case study of Muhanga District in GS Buramba, GS Kabgayi A, GS Mata, & GS Mushishiro ”;

We have the pleasure to inform you that the permission is granted with the condition that the findings from the research will be submitted to Muhanga District for information and consideration. Therefore, We would like to encourage you to work closely with the Head Teachers of the above – mentioned Schools.

Thank you.


KAYITARE Jacqueline
Mayor of Muhanga District



CC:

- Director of Education Unit/Muhanga District
- Head Teacher of GS Buramba
- Head Teacher of GS Kabgayi A
- Head Teacher of GS Mata
- Head Teacher of GS Mushishiro

IMBANGUKIRAMIHIGO

DUKORE BYINSHI BYIZA KANDI VUBA

APPENDIX G: PERMISSION FOR DATA COLLECTION IN SCHOOL A

REPUBLIC OF RWANDA



SOUTHERN PROVINCE

MUHANGA DISTRICT

MUSHISHIRO SECTOR

GS MUSHISHIRO

Tel:0782470700

ACCEPTANCE LETTER

We, the undersigned **MUKANEZA Fortunee**, Head teacher of **GS MUSHISHIRO**, hereby accept that **Mr Alexandre HABINTWALI**, a postgraduate student at the University of Rwanda, College of Education, carry out his research at **GS MUSHISHIRO** on "**CODE-SWITCHING IN PRACTICE: ITS EFFECTS ON CLASSROOM INTERACTION IN ENGLISH AND MATHEMATICS SUBJECTS in Muhanga District**", to fulfill the requirements for the award of Master of Education in English Education.

I am pleased to inform you that you are permitted to collect data from the Teachers and students to complete your studies.

This acceptance letter is delivered to allow him for data collection in GS Mushishiro.

Done at Mushishiro on ...*21*../06/2023

MUKANEZA Fortunee

Headteacher at GS MUSHISHIRO

A handwritten signature in blue ink, appearing to read 'Mukaneza Fortunee', written over a circular stamp.



APPENDIX H: PERMISSION FOR DATA COLLECTION IN SCHOOL B

REPUBLIC OF RWANDA



SOUTHERN PROVINCE

MUHANGA DISTRICT

NYAMABUYE SECTOR

GS KABGAYI A

Tel:0782470700

ACCEPTANCE LETTER

We, the undersigned NSHIMIYIMANA Alphonse, Headteacher of GS KABGAYI A, hereby accept that Mr Alexandre HABINTWALI, a postgraduate student at the University of Rwanda, College of Education, carry out his research at GS KABGAYI A on "*CODE-SWITCHING IN PRACTICE: ITS EFFECTS ON CLASSROOM INTERACTION IN ENGLISH AND MATHEMATICS SUBJECTS* in Muhanga District", to fulfill the requirements for the award of Master of Education in English Education.

I am pleased to inform you that you are permitted to collect data from the Teachers and students to complete your studies.

This acceptance letter is delivered to allow him for data collection in GS KABGAYI A.

Done at Kabgayi on ..21../06/2023

NSHIMIYIMANA Alphonse

Headteacher at GS KABGAYI



APPENDIX I: PERMISSION FOR DATA COLLECTION IN SCHOOL C

REPUBLIC OF RWANDA



SOUTHERN PROVINCE

MUHANGA DISTRICT

KABACUZI SECTOR

GS BURAMBA

Tel:0782470700

ACCEPTANCE LETTER

We, the undersigned **HARERIMANA Florent**, Headteacher of **GS BURAMBA**, hereby accept that **Mr Alexandre HABINTWALI**, a postgraduate student at the University of Rwanda, College of Education, carry out his research at GS Buramba on "*CODE-SWITCHING IN PRACTICE: ITS EFFECTS ON CLASSROOM INTERACTION IN ENGLISH AND MATHEMATICS SUBJECTS in Muhanga District*", to fulfill the requirements for the award of Master of Education in English Education.

I am pleased to inform you that you are permitted to collect data from the Teachers and students to complete your studies.

This acceptance letter is delivered to allow him for data collection in GS Buramba.

Done at Buramba on ..22.../06/2023

HARERIMANA Florent

Headteacher at GS BURAMBA



APPENDIX J: PERMISSION FOR DATA COLLECTION IN SCHOOL D

REPUBLIC OF RWANDA



SOUTHERN PROVINCE

MUHANGA DISTRICT

MUHANGA SECTOR

GS MATA

Tel:0782470700

ACCEPTANCE LETTER

We, the undersigned **KALISA Pierre Canisius**, Head teacher of **GS MATA**, hereby accept that **Mr Alexandre HABINTWALI**, a postgraduate student at the University of Rwanda, College of Education, carry out his research at **GS MATA** on "**CODE-SWITCHING IN PRACTICE: ITS EFFECTS ON CLASSROOM INTERACTION IN ENGLISH AND MATHEMATICS SUBJECTS in Muhanga District**", to fulfil the requirements for the award of Master of Education in English Education.

I am pleased to inform you that you are permitted to collect data from the Teachers and students to complete your studies.

This acceptance letter is delivered to allow him for data collection in **GS MATA**.

Done at Mata on 22/06/2023

KALISA Pierre Canisius

Headteacher at **GS MATA**

