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PREAMBLE

This marks the publication of the fourth volume of the *St. Augustine University of Tanzania Multidisciplinary Journal of Education* (SMJE), an esteemed publication of the School of Education. It is the first issue of the fourth volume, released in March 2025. SMJE is a peer-reviewed, open-access, international journal published on a quarterly basis. Its multidisciplinary scope encompasses a diverse range of fields related to education, including but not limited to education, geography, history, Kiswahili, languages and communication, and other allied disciplines. The journal is overseen by a distinguished Editorial Board, characterized by its global and multidisciplinary representation. Consistent with previous issues, this edition aims to educate, engage, and inspire its readership. It features an array of scholarly articles, short stories, and poems, all carefully curated to enrich and stimulate intellectual discourse. The editorial team is confident that readers will find this issue both thought-provoking and academically enriching.

EDITORIAL FOREWORD

It is with great enthusiasm that we present this issue of the *St. Augustine University of Tanzania Multidisciplinary Journal of Education (SMJE)*, a publication dedicated to advancing scholarly discourse in education and its related disciplines. This issue features a collection of meticulously researched papers that engage with diverse and critical topics, reflecting the journal's commitment to academic excellence and interdisciplinary inquiry.

The first paper, *Aesthetic Significance of the Proverb in the Oral Poetry of the Mbeere Community of Kenya as Pathways for Detachment, Intertextuality Echoes, and Allusions* by Moses Kariuki Kiura, offers an in-depth analysis of the role of proverbs in Mbeere oral poetry. Employing a socio-stylistic and ethnopoetic approach, the study explores how proverbs enhance the aesthetic and cultural dimensions of oral traditions, demonstrating their broader literary and communicative functions.

Mramba Peter T. analyzes *Tonal Patterns in Underived Verbs and Monosyllabic Nouns of the Kirombo Language* (a Bantu language spoken in Tanzania's Rombo District). His paper's primary objective is to investigate the manifestation of Basic High Tone (BHT) in these grammatical categories and identify the phonological rules governing their tonal behaviour. This study bridges empirical fieldwork with theoretical phonology, revealing how Kirombo's tonal grammar organizes itself through rule-governed interactions between prefixes, roots, and morphological operations.

Another critical contribution comes from Innocent S. Msumanje, whose paper *Challenges Faced by Heads of Secondary Schools on Implementing Inclusive Education (IE) in Regular Schools in Moshi District, Tanzania* investigates the barriers to inclusive education implementation. The study highlights significant challenges, including inadequate teacher training, resource constraints, and policy implementation gaps, while recommending strategic interventions to foster inclusive educational practices.

Linguistic inquiries feature prominently in this issue. *The Impact of Compensatory Vowel Lengthening in Phonological Processes Among Standard Kiswahili Words* by Joseph Hokororo Ismail examines phonological constraints in Kiswahili, offering a generative phonology perspective on vowel shortening mechanisms. Similarly, *Consonantal Adaptation of Kiswahili Loanwords in Echijita* by Baraka Kasinge Mwikwabe provides a compelling analysis of phonological modifications in loanword adaptation, shedding light on language contact phenomena and phonetic assimilation strategies.

Pedagogical challenges and curriculum implementation also take centre stage. *Assessing Obstacles Encountered by Teachers in Using CBC Pedagogical Principles in Government Secondary Schools: A Case of Dodoma City Council in Tanzania* by Charles F. Ndebele and Daniel O.

Onyango critically examines the challenges hindering the enactment of competency-based curriculum (CBC). Their findings underscore the need for comprehensive teacher training, infrastructure improvements, and policy alignment to ensure effective CBC adoption in secondary schools.

Furthering linguistic exploration, *The Comparative Study of Syllable Structure of Ordinary and Onomatopoeic Words in Four Selected Bantu Languages in Tanzania* by Joseph Hokororo Ismail, Baraka Kasinge Mwikwabe, and Achileus Novath delves into phonological structures, offering insights into the similarities and differences between ordinary and onomatopoeic words in Bantu languages. This study contributes to a deeper understanding of syllabic structures in African linguistics.

Finally, the intersection of artificial intelligence and education is explored in *Contribution of Artificial Intelligence on Teaching and Learning Process in Science Subjects in Bunda Town Council: A Case of Selected Public Ordinary Secondary Schools* by Kanwera Japhet, Kashirira Elias Kashirira, Charles Robert, and Edgar Fidel Nderego. Their research examines the transformative potential of AI in education, advocating for strategic integration of AI tools to enhance teaching methodologies and learning outcomes.

This issue of *SMJE* reaffirms our commitment to fostering rigorous academic discussions that contribute to the advancement of knowledge across multiple disciplines. The Editorial Board extends its gratitude to the authors, reviewers, and contributors for their invaluable efforts in producing high-quality research. We trust that readers will find these scholarly articles both enriching and thought-provoking.

Editorial Board
St. Augustine University of Tanzania Multidisciplinary Journal of Education (SMJE)

LIST OF ARTICLES AND AUTHORS IN THE CURRENT ISSUE OF SMJE

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Aesthetic Significance of the Proverb in the Oral Poetry of the Mbeere Community of Kenya as Pathways for Detachment, Intertextuality Echoes, and Allusions

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ABSTRACT

This paper presents a critical analysis of the role of proverbs in the oral poetry of the Mbeere community of Kenya. The qualitative discourse argues that proverbs are uniquely used to enhance production, performance, and consumption; in other words, to contribute to success and literary significance of the poetry by informing the fundamentals of its aesthetics. First, in creating literary detachment, and secondly, in introducing and embedding intertextuality of the cultural aesthetics of the community. For illustrations, the paper uses two songs by Newton Kariuki, an acclaimed oral artist and popular singer from this community. The songs are purposively sampled from a list in preceding studies. The discourse is contextualised by introducing the Mbeere community and the sampled songs in summary and describing the concepts of detachment, as well as intertextuality echoes and allusions. A critical content analysis of the songs is done mainly using socio-stylistic and ethnopoetic biases and finding out that intertextuality involves creatively convening several culturally acknowledged texts by explicit reference to one or more of them in a section of a text during its performance; it is expected that pre-existing cultural texts are usually known to the standard audience or, implicitly, in the form of faint echoes of cultural aesthetics in texts, themes, motifs, traditions, or events. Hence, the paper concludes that the proverbs in Newton Kariuki's songs resonate, first with the existing Mbeere texts through their echoes and allusions, then with those of other African communities, as the artist subtly engages the audiences in (re)negotiating, (re)generating, and propagating Mbeere culture within the contemporary world. Finally, the study recommends areas for related studies as well as useful methodological options for studying this kind of cultural aesthetics.

Keywords: Proverb, Pathways, Intertextuality, Detachment, Culture, Aesthetics

1.0 Introduction

The paper joins the critical discourse on African literature that took a new kind of determination as presided over by African scholars at the beginning of the second half of the 20th century. The discourse was a radical departure from (even protest against) the erroneous and unfair Western presentation of conception of African literary tradition and an affirmation of its existence and its unique cultural aesthetic that render it central to the lives of the African people.

The main problem is that whereas proverbs have been acknowledged as key among oral texts that serve as behavioural and moral conductors in African cultures, they have rarely been viewed as part of the creative and literary act that is largely to be credited for success in the use of detachment, as well as intertextuality echoes and allusions of the cultural aesthetics in African oral poetry in general and of the Mbeere community in particular. Another problem addressed by the

paper is that whereas studies reveal that this artist draws heavily from the African oral tradition and that he has addressed major thematic concerns, there remains a lacuna in academic inquiry into the matter of his consistent employment of significant oral forms such as proverbs within the framework of intertextuality in cultural aesthetics in most, if not all, of his poetry.

That is partly why one contribution that this paper aims to make is to unearth the creative way in which entertainment and collective wisdom from the African cultural aesthetics have been woven and centred in the popular song by contemporary artists as exemplified from the Mbeere community by Newton Kariuki. The paper notes that most of his songs, as illustrated with the two selected songs, are built using proverbs and are hinged on elements of Mbeere (African) cultural aesthetics of entertainment and didactics, and what Kahari (1986) calls moralizations, through the creative use of intertextuality echoes and allusions.

Echoes and allusions reinforce entertainment, didacticism, moralizations etc. as key cultural aesthetics, and that the two texts form part of intertextuality intersections that reflect other texts as well as other products of the oral tradition. While use of proverbs in oral poetry renders itself to a wide variety of study approaches, this paper sets out to explore how proverbs create what Jacob Mapara (2018) calls a relay effect by serving as pathways or signposts. In relation to the two texts of this paper, it is these pathways and signposts which introduce intertextuality echoes and allusions into the literary texts. As pathways, the proverbs function as entry points, platforms or spaces where, among others, Kariuki creatively introduces echoes and allusions from the Mbeere cultural aesthetics.

2.0 Community and Texts in Context - The Mbeere Community of Kenya

The study will benefit from a brief introduction of the cultural community whose aesthetics are under investigation as well as a guiding summary of key aspects of the texts sampled for analysis. Appreciation of certain information about the Mbeere community of Kenya will no doubt facilitate a better understanding of the community, her oral poetry, artists, as well as aspects of her cultural aesthetics. Such appreciation will not only stabilise the cognitive foundation but it will also guide audience in the understanding of the analysis, deepen and fertilise their interaction with this discourse. Del Hymes (1996), a key proponent of ethnopoetics, advises on the importance of broader knowledge of cultures for better discourses. He refers to the ethnopoetic search for substantial general knowledge of culture as comprehensive ethnography and efforts in precise investigation as topic-oriented ethnography, adding that hypothesis-oriented research depends on the existence of comprehensive ethnography.

The main present home of the Mbeere community is Mbeere South and Mbeere North districts of Embu County of Kenya. How the community came to settle here is a matter contained in ongoing debates on Bantu migration that has several views and which has not been settled with finality to this day. For instance, Ward (1968) observes that the different Bantu-speaking peoples

advanced southwards through Africa, and that according to some scholars Bantu speakers of East Africa came from somewhere near the Great Lakes, while according to others, these people came from further west, near Cameroon, and took hundreds of years to reach their present locations. Scholars such as Whiteley (1972), Wrigley (1973), Hartwigs (1971), and Curtin (1978) are more drawn to this Niger-Congo hypothesis that trace the Bantu migration from West Africa, through Central Africa to East Africa with dispersions to southern Africa. This paper agrees with the observation by Morton (1972) that a disagreement with existing literature persists to date with regard to this migration and settlement and it is hoped that further studies will unearth more evidences to settle the matter.

The complex nature of migration notwithstanding, the Mbeere people settled and have existed in their present home for centuries undergoing evolution and development to adapt to and to conquer their environment. The community belongs to the Eastern Bantu group because the said present geographical location in Embu County is east of the Rift Valley. Scholars including Abdulaziz (1971) correctly note that communities constituting the Eastern Bantus are linguistically very closely related with comparable structural organization and that they have a large core of common basic vocabulary. A look at the table below shows how the name 'man' male or female occurs in close structure across the Eastern Bantu groups including the Mbeere community. These are the communities that predominantly occupy the region from the Indian Ocean coastline of Kenya to the region around Mt Kenya. Beyond language, these communities share and cross-pollinate various aspects of their cultures while presenting uniqueness as a result of several factors including individual experience variations.

Table 1

Linguistic similarities in some Eastern Bantu communities

Community	Singular	Plural
Meru	Muntu	Antu
Kikuyu	Mundu	Andu
Kamba	Mundu	Anduu
Mbeere	Mundu	Andu
Embu	Mundu	Andu
Taita	Mundu	Wandu
Giriama	Mutu	Atu
Swahili	Mtu	Watu

Source: Kiura research 2023

After settlement, the Mbeere community continued developing sociocultural, political and economic structures and institutions around which their existence has been revolving and through which they have continued to address their interaction with their environment, including major experiences like colonization, struggle for political independence, neo-colonial marginalisation, minority community subjugation, internal conflicts, and natural phenomena. Cultural aesthetics evolved in the process as the community addressed agriculture; crop and livestock keeping in the semi-arid settlement as well as hunting and gathering. As Kiura (2017) notes, Mbeere community has a highly developed oral tradition with a deep and broad body of cultural aesthetics that constitutes cultural rituals as well as various genres of oral art: prose, poetry, drama, and even the short forms. Primary orality continues to play a key role in the education of the people and the increase in the levels of numeracy, literacy and other contemporary technologies has not killed the vibrant heritage of oral tradition. The community stands out for its unique cultural ritual called 'Makindi', which according to the scholar is the single most all-inclusive cultural ritual in which the community regularly engages in collective (re)negotiation and (re)generation of its culture addressing matters and issues from all sectors of society. A study of the rich literary production of the community would, therefore, be rewarding to any serious efforts towards a better understanding of people.

3.0 The Two Sampled Songs

Our focus on songs as texts is guided by the findings from an ethnopoetic study of the Meru oral texts, that oral narrative is a cultural performance (Ndege 2012). This, in other words, is to say that the realisation of oral literature texts is not a mere verbalization of what is in the mind of an individual who can speak. Rather, it is a guided purposed process of cultural performance. Performance, as the study has revealed, functions under a non-referential aspect of narrativity referred to as iconicity (Duranti, 1997; Mannheim, 2001; Nuckolls, 1992). In other words, verbal communication that is classified as competent is associated with truths that can be unravelled by linking them to other observed, heard, or imagined similarities.

A brief highlight of the selected songs will help create a preview of key aspects of their forms and contents which bear significance to enhanced appreciation of the analysis of the role of proverbs in the cultural performance as introduced. These texts are significantly representative of several texts or oral poetry of the community in general with regard to form and content, but particularly in the use of proverbs as pathways of intertextuality echoes and allusions. The first song 'Why Vilify Me?' is given an interesting title which is itself a common cultural text coined in the form of a saying which questions unfriendly responses and reactions by person(s) to statement(s) or act(s) which in the informed view of the speaker/actor are not only justified but they are also well intended for the greater good of the society. Indeed, Liyong (1990) subtly posits that East or West, artists cry best because they have a heightened consciousness, they feel heat or

cold before everybody else, and that the true artist needs not be told of his duties to himself and the society… does not wait till after a tragedy in order to regret. The artist creates a first person persona who identifies and voices in unusual boldness the cause of the various serious problems that Mbeere community is facing. The persona highlights deliberate division of the community along clan lines by senior politicians who he names in metaphor as the main cause of the said community problems. The persona further sensitizes the audience that the output of that selfish political initiative is evident in a new wave of widespread disunity, suspicion, animosity and enmity whose outcomes in the short and long term are counterproductive and destructive to the wellbeing of the individual member of the community as well as to that of the Mbeere community as a whole. Therefore, based on the known standards of collective community judgment on such wisdom, why should the persona be vilified instead of being praised and his counsel heeded?

The second song is also uniquely titled 'Little Knowledge' and it extends the artists satiric approach to addressing human follies and wickedness. A persona in the first person is created to highlight another emerging set of ill-informed trend of individualism and deliberate erosion of the social fabric which has helped the Mbeere community for generations to navigate existence successfully to its present state of development. The persona isolates cases of disunity and hatred even among close relatives such as in-laws and proceeds to warn of the inevitable dire consequences to individuals and sadly to the entire community should his counsel fail to be heeded to. The common saying that 'little knowledge is dangerous' is used not only as the title but as the overriding explanation for the unfortunate resolve by some people to plant and nurture the vice of disunity among members of the community against all known principles of the collectively generated conscience of the Mbeere people and other Africans by extrapolation.

In the process of presenting and interrogating those crucial matters, proverbs are strategically employed through unique creativity to create intertextuality which helps the artist in drawing echoes and allusion from the Mbeere collective wisdom. From this clearly demanding process emerges such cohesive texts of significant aesthetics as exemplified by the study sample. Based on the aforesaid, this paper explains and illustrates how proverbs constitute intertextuality pathways showing the echoes and allusions from the Mbeere cultural aesthetics.

4.0 Findings and Analysis

Having introduced the study and contextualised it, the following section presents the key concepts, the related findings, and extracts from the sampled songs as well as their analysis in order to unearth the proverbs and the roles that they play in the songs**.**

Intertextuality

It appears that most studies on intertextuality have for long focused on the relations of written texts with little attention going to oral performances and related literary texts in the contexts of African cultural aesthetics. This is yet another gap worthy of note, and this paper is an attempt to address it in the process of interrogating the use of proverbs. It is arguable that the practice of employing intertextuality in creative art is as old as the use of many other aspects of form, although the term itself is evident in literary discourses much later. From the point of view of recorded reference, for instance, it is noted that among the earliest recorded uses of the term intertextuality is one by Kristeva (1986), who posited that a particular present or new literary text depends on prior sources and persuasions to realize form and content.

To back up this contention, Kristeva gives examples from classical written literature including a genealogical scrutiny of Spenser's *Faerie Queen* which, according to her, might reveal the text as having various forms of conversational relations with Homer's *The Iliad* (Linde, 2009: 2). Contemporary texts, just like the classical works, engage with earlier texts through various means such as response, continuation, homage, critique, parody or even pastiche. The underlying contention here is the view that no literary text is exclusively and independently constructed form, or addresses what has never appeared anywhere before. No work can claim absolute originality. Instead, each work of literature is portmanteaux of other text(s) and each text is in constant identifiable dialogue with other text(s). Indeed, Okpewho (1985) correctly states that every poet endeavours to borrow ideas not only from the common human experience but also from the environment that he is familiar with. Thus, the contention that absolute originality of a literary artist is not possible.

With limited claim to absolute originality in his songs, the artist is not to be viewed as any less significant in the aesthetic realm of the community, because a critical assessment of his role in the success of the dynamics of intertextuality reveals roles akin to midwifery. It requires great aesthetic ability to produce texts which effectively engage and communicate with other texts from various points in time and space (intertextuality), a process which is necessary for sustenance, stability and planned development going to the future.

Based on the foregoing contentions, a study of a specific literary text is incomplete until it has explored the echoes and allusions that link the production and consumption of the said texts to horizontal and vertical spatial-temporal threads that map out the attendant aesthetic links and interfaces. This paper presents such endeavour by identifying how the artist draws from and links to past and present Mbeere collective cultural aesthetics and to the future collectively projected, anticipated, and mapped out. It is arguable that relevance and acceptability of art in the society can be determined by its fidelity to collective conscience as expressed in the cultural aesthetics of the specific community. This paper, therefore, asserts that the overt acceptability of the artist and his production are outcomes of conscious evaluation mainly by members of the informed audiences

such as those of the Mbeere community. In this evaluation process they are guided by provisions encapsulated in various aspects of their cultural aesthetics to award scores and check requirements contained in a repertoire of intangible, invisible cultural heritage checklist.

Both the artist and the audience seem to be aware of the fact that collective culture constitutes the equivalent of modern day written constitutions for which it is commonly stated that any secondary law that is inconsistent with the constitution is null and void. Therefore, any song that is inconsistent with provisions in the cultural aesthetics risks concomitant rejection, a fact which affirms the desire by artists to embrace intertextuality. This paper makes these observations in analysing the selected texts.

Creativity for Effective Realisation of Intertextuality in Songs

There are several strategies for effective realisation of intertextuality in oral poetry. A good example of such strategies is use of literary detachment. Detachment is a creative strategy which turns the initiative of a lead oral artist into a collective cultural discourse. It hinges the ensuing performance on the strong, trusted, pillars of existing culture and cultural aesthetics. By so doing, detachment allows pathways of intertextuality to open within songs in two main ways. First, the artist conceives, creates, and deploys a strategic persona and/or narrator of the content for each new text or oral performance. The uniqueness of such persona, especially if developed as a first person narrator will be highlighted in the analysis of the selected texts. The appearance of this persona allows the artist as a member of society to step into aesthetic safety away from the tricky spaces of the interacting texts where only people with certain unique characteristics, capacities and abilities (including omniscience and omnipresence) such as the persona can handle the matters being addressed effectively. One important function of such a persona is to win the requisite trust from members of the community in the form and content of the texts he voices. In addition, as an important but neutral invisible member of the community the audiences find it easy to identify with him as well as with many of his experiences and proclamations, particularly where such proclamations rhyme with their cultural aesthetics.

In the second way in which detachment allows pathways of intertextuality to open within songs, the artist identifies appropriate forms and relevant contents and their structures. He then surrenders them to the persona to manage their realisation by foregrounding them in the performance of the text, so that they appear to the audience not as originating from an individual, including Kariuki himself or the persona. Oral poetry texts constitute large-size community public screens on which cultural signals in their many complex forms are received, decoded, and displayed in clearer and easily discernible formats of the forms and contents from the repertoire of collective wisdom of the community. In other words, detachment is important for successful intertextuality because the process of producing or performing a song is essentially a process of producing an echo, a second sound (voice) from the guiding original voice of the community as

contained in the various existing, known and accessible texts as well as applicable elements of cultural aesthetics.

A scrutiny of aspects of form and content in the selected songs reveal consistent effort and deliberate choice by the artist to prevent audience from misunderstanding him to be creating and propagating his own voice or fronting his own private world and worldview through his songs. In this regard, he is seen actively making reference to others, other spaces and other texts while guiding the sight and audition of his audiences to this effort. In addition, he wishes the audience to view these others locations as either the most culturally credible authoritative sources of his forms and contents or as the culturally valid basis upon which his texts are founded. This posturing achieves the desired effect of reminding the audience of Kariuki's texts that by participating in the performances, they are essentially participating in enacting their own culture in its past and present, and in projecting it into the future. In other words, the audiences are reminded that in the present songs they are experiencing echoes of their own proclamations as earlier voices convene and dialogue within the present texts – intertextuality.

Intertextuality Echoes

The term 'echo' ordinarily resides within the domain of sounds and sound waves. The Merriam Webster online dictionary defines the verb form of the term as the repetition of a sound caused by reflection of sound waves. As a noun, the dictionary defines echo as the sound resulting due to such reflection. According to Lido, an online learners' site, Sound is a mechanical wave which results from the back and forth vibrations of the particles of the air medium through which the sound wave is moving. These vibrations in the air are caused by the vibration of the objects, which then generates the sound. These principles of physics give us the picture of the process of intertextuality echoes. Reality and human experience cause the community to vibrate producing the first sound waves in response. These waves are the earlier texts and the existing wisdom collectively generated in the context of specific culture. Contemporary reality and human experiences (the world of the performer and the audience) constitute the surface upon which the original sound lands and texts performed represent the echoes that emerge as new responses.

A genuine echo must bear footprints of the original sound as well as marks of the rebound surface. Like a biological offspring, a song derives validity from the matching of its DNA identity marks with those of the parents and earlier relatives. These are equivalent to the intertextuality echoes which the society uses to (echo-) locate a literary text. The presence of an identifiable intertextuality echo is evidence of the creativity of the performer(s). It can be tempting to downgrade the creative genius of artists and audiences when we consider the artistic complexity displayed by the text produced/performed. Kristeva (1986) seems to fall into this disbelief trap in the argument that an intertextuality echo may be either a cognizant or unconscious act and is faint enough that often it is impossible to determine whether its manifestation in a text was willfully or unconsciously inserted by the author. If an echo is literary, a literary text, or part of such text, it

most likely stems from a text that the author has sufficiently interacted with at some point in the past (Beetham 2008). Commenting on the same issue of intertextuality echoes with a focus on biblical studies, Hays states that echoes, or even some of their waves, may not always be loudly and clearly audible to all. To perceive all parts of an intertextuality echo sufficiently for appropriate interpretation always requires the audience/critic to have adequate 'informedness' on the precipitating fundamental with respect to the original sound as well as the echo produced. These fundamentals may include the various aspects of the language(s) used as well as aspects of the various contexts involved.

In the biblical echoes, for example, the audience would need to be well equipped with the languages, texts and classical studies of the Ancient Near East to be able to 'hear' the echoes. Otherwise, they would just pass as just some other sounds without registering any significance. The point Hay is advancing is that the more the audience 'informedness', the louder and clearer the echoes. This explains the earlier counsel that only a sufficiently informed critic can productively set out to analyse the aesthetics of highly ethnic and culture based oral poetry. With regard to this study, therefore, interrogating the significance of proverbs in the creative dynamics of the very critical intertextuality from a point of adequate insider 'informedness' on Mbeere culture will, no doubt, unearth credible information and contribute to knowledge.

Intertextuality Allusions

Records on existence of use of allusions appear earlier than those of intertextuality as highlighted earlier. Mapara (2018) indicates that allusion to earlier works were in fact at one time seen as a mark of creative ingenuity as is the case of the *Aenid* by Virgil which is an allusion of Homer's the *Odyssey* and the *Iliad*. He continues to explain that some biblical texts also allude to other Ancient Near Eastern documents such as the Flood Story (Genesis 6:9-9:17) and the Gilgamesh Epic (Sanders 1964). Israelite prophets also subverted and transformed messages of the Ancient Near East in their prophecies (Hays, 2008). We agree with Mapara's submission based on the classical examples given that it is apparent that an allusion comprises of one or additional words from an earlier literary or other text whose appearance in a new work evokes the audience's remembrance of another text or texts.

It may also appear that each distinctive reference is to an individual source. In an allusion one can undoubtedly witness resemblances connecting the source text and the new manuscript (if s/he has prior knowledge of the other text). The artist/author of the new text may not hide the fact that s/he is relying on a particular prior one, although s/he may not be obligated to clarify every other source each time an allusion is used. It is interesting to see how proverbs are used in this link or disclosure of the earlier text.

Allusions are creatively designed for a complex application to various aspects of form/style; including plot, characterization, performers, actions, and even format, content;

including themes, motifs, lessons, messages, as well as aspects of contexts like scenes, spaces and times pervading a new text. Application of allusion to multiple aspects of a text generates aesthetic energy drawn from each linkage and all this is synergized creatively to give immense balanced textual power as the new text crystallises at completion. When the artist/performer deliberately makes a creative effort to bring in elements of prior text or texts with the intention of linking the present to the prior, the new text becomes more appealing, with higher guarantee that issues raised are better understood when the two texts are juxtaposed.

In that regard, Nikol (2000) gives an example of how allusion is realized in Shakespeare's *The Merchant of Venice*, arguing that this play is heavily dependent on texts like Marlowe's *Jew of Malta* (p. 20). The dependence on prior texts may be because the author uses allusions to increase his text's worth in the eyes of the reader (Beetham 2008) or to ride on the success of a previous work. Mapara (2018) adds that allusions may also be used by writers to prove that they are part of a long global literary tradition. The two reasons may be applicable to the two songs discussed here. For example, line 1 of stanza 2 in the first song situates the genesis of the mischief under scrutiny at an old famous regional urban administrative centre, namely Ciakago, where the office of the infamous controversial Senior (colonial) Chief Rumbia.was located and where questionable anti-cultural leadership was hatched and nurtured:

Wa vau Ciakago kwa Rumbia kinya kiagia nthuthu

Translated as:

Just there at Rumbia's in Siakago when the gourd was bored by weevils

This association not only domiciles the folly of the few who midwifed corruption and who continue preaching disunity, but it also brings to mind the tribulations associated with the administrative injustices by the colonial chief.

The 4th line of stanza 3 broadens the catchment of the allusion by situating the maturity of the man-made suffering of the Mbeere people in the hands of selfish political and government leaders. It states that after the problem of corruption and injustice was introduced during the colonial reign at Ciakago, it reached its peak during the more oppressive reign of the first most senior political leader of the Mbeere region in independent Kenya (allusion of the hawk that landed) whose home is/was at Rianjeru in Gachoka.

Na mavitia macio timakwa ni ma nderi yagwire

Gacoka Rianjeru Maria maro na niyo iramuria

Translated as:

And those mistakes are not mine, but of the hawk that landed

In Gachoka, at Rianjeru's pretty ponds which is finishing them.

These fictional leaders of the fictional political worlds of the community in the 1940s and 1960s, that have appeared in a song in the 21st century exemplify socio-political intertextuality allusion. The sagacity of the art here is such that the text as a cultural performance realizes detachment, producing an intertextuality echo of the history of the community through the intertextuality allusion to the socio-political history of their culture.

Role of Proverbs in Detachment and Intertextuality

As we analyse the selected texts, it is important to remember that each oral performance of a literary text enjoys some degree of autonomy or independence or even detachment from the other such performances. It can, therefore, be argued that there are as many oral poetry texts as there are performances because no single performance can claim absolute representation of another. Another important fact of oral literature performance is that the texts performed have communal ownership because they arise out of the activities of all people involved in the particular performance. These unwritten cultural laws find some exception where texts are frozen or immortalized through technology and storage devices which give rise to more autonomous texts which hardly change and which can be regarded as private copyright material. These are the kinds of texts which allow us to say, for example, that they are songs by Newton Kariuki.

In spite of their status as private texts, their value resides in their counterpart in the communally owned oral performances where they, indeed, originated from and where they constantly come alive. That is why even in their written or digital formats, they exhibit adequate characteristics of the oral versions of the time they emerged into the cultural arena. Detachment of the lead artist, poet or performer is one of the qualities observable in these texts and proverbs, and related short statements of condensed cultural knowledge appear to greatly and strategically facilitate this detachment.

Newton Kariuki (AKA Karish) deliberately strives to achieve detachment in his texts largely because as a product of the community and as one of its highly celebrated cultural ambassadors, he subscribes to the cultural laws governing oral poetry. As such, he endeavours to drive the production processes to texts which are readily identifying with the people and which every member of the community perceives a genuine shareholding status. Delinking the person of Kariuki from the text and foregrounding the form and content of the community through intertextuality boosts the cultural identity of the texts and thus their validity and general acceptability.

The two songs are full of Mbeere proverbs in their word-by-word structure and wise sayings which, in their realisation, are echoes of or allusions to a specific proverb or a set of related proverbs from the culture. In fact, the title of each song, i.e. the very opening of each text, is a

cultural saying and a proverb. *Ninumirwa ki*? Why vilify me? Loosely translated to 'why curse me?' In Mbeere language and culture, the word that stands for the English equivalent of 'insult' is the same word that stands for the English word 'curse' because the two as distinguished in English belong together in the extreme negative zone in Mbeere and need not be differentiated. The saying is uttered by a competent credible bearer of critical (like lifesaving) message of truth to the people as a rhetorical question bearing multiple implications in the context where the message is facing the risk of dismissal by uninformed or ill willed characters who, if not immediately and clearly exposed by juxtaposition against existing cultural norms (texts), could mislead others to the detriment of the community.

The proverb is not uttered by Kariuki, but by any other member of the community who shares the position of the persona created to represent the community (not Kariuki) in delivering saving information. Since all right minded people agree with the persona, it follows that each of us is the speaker in their own right, effectively removing the lead artist from the statement. It is clear, therefore, that the proverb not only sets the tone of subsequent engagement but also links the text with the mainstream authority of the community, a kind of general assembly of all stakeholders to engage the errant few directly without Kariuki as a creative capitalist appearing anywhere except as a Mbeere stakeholder by right. It appears, therefore, that the proverb is creatively selected due to its capacity to facilitate both detachment of the artist as well as to create pathways along which the present text draws from existing cultural reservoirs by echo and allusion. This is a major aesthetic task realised through the proverb; a task which other literary forms might not have achieved with such dexterity.

The detachment achieved at the title is to be sustained throughout the performance of the text for similar aesthetic justification. We note the presence of an apt Mbeere proverb directly used, echoed, or alluded to at the beginning of each stanza of the two songs. Line 1 of the first text opens as follows:

Ikivuna imamagai ii wa ta ino iraciara

This is an unmistakable cultural echo. The proverb used in word-by-word lifting of its cultural structure. It translates to say that when an animal such as a cow (Mbeere people have been livestock keepers ever since) is about to experience a miscarriage or give a still birth, it lies or postures just like one about to calf down normally.

Like the title proverb, and as an expansion, extension, and sustenance of intertextuality pathways created by the title proverb, it is also an immediate follow-up strategy for sustaining detachment. Majority of Mbeere audience will not see Kariuki in the proverb, they know it is a cultural aesthetic tool that they most likely have experienced being deployed in a variety of previous contexts. When the artist successfully leaves the scene, the audience (co-performers) are re-directed to their culture as the point of reference. The proverb, therefore, brings to fore the pain of the livestock keepers at losing a calf under circumstances of false hope due to mistaken

interpretation of birth postures. The risk of false hope due to misleading signals today becomes clearer when the audience realizes the allusion to avoidable disappointment and losses from the past of their crude animal husbandry culture. This allusion goes also to the inevitable desperate wish that had there been more accurate information about the impending abortion, they would have done something to reverse the situation and to get live births. This allusion works to make clear the present predicament of the possibility of being duped to expect positive results while in the real sense loss is guaranteed unless the community listens to the wisdom in the present text.

It is evident here that the creativity with which one produces a text then successfully uses proverbs to not only absent his person from subsequent life of the text, but also to effectively pass the responsibility of using the song to entertain and educate to the community itself, a passing of the baton which is as awesome as it is baffling. Subsequent lines of the stanza explain the gist of the matter so introduced by the topic line of the stanza which is a proverb.

Stanza 3 opens with another proverb creatively riding on a poetic inversion technique in the same line with a spatial temporal intertextuality guide. This consistent use of proverb to sustain detachment while using intertextuality links to further buttress detachment is evidence of aesthetic maturity on the part of the artist. Without belabouring the point, the rest of the song follows this trend to the end. The private person of Kariuki never emerges to claim any part of the text. The text successfully presents the case for the persona who is being vilified for preaching love, brotherhood, and unity of all members of the community, irrespective of clan or family background, as the only solution to the challenges the people are facing. Those attempting to vilify the persona are presented as preaching divisive politics, nepotism, favouritism and discrimination against other members of the community based on narrow affiliations. This is what the persona is warning them as impending abortion even as the posture looks like that of promise. The text succeeds in addressing the question of a dangerous anti cultural trend being driven by a small selfish and cunning clique of politicians who will do anything to destroy anyone preaching unity as the persona is doing. The performing audience will find it easy to judge based on the detachment, echoes and allusions introduced using the several proverbs employed.

The second song has a proverb at the title too. *Kaugi kanini*, which simply translates as ‘little knowledge’. The English equivalent proverb is ‘Little knowledge is dangerous’. The persona satirises a character who is presented leading a clique of politicians with little knowledge, who pretend to be ‘men of the people’ while behind scenes they are actively plotting against others who are actively, with sufficient knowledge and adherence to culture, engaged in campaigns to unite members of the community for socio-political and economic emancipation.

One thing that facilitates detachment and intertextuality in this song is the significance of the main thematic concern. Embrace brotherhood and unity as a community for emancipation and development or continue with the new path of division and enmity and perish as a community. The purview of the content is beyond an individual in the community, let alone a single lead artist.

Constant introduction of proverbs in every stanza is in itself an act of allusion to cultural aesthetics because the Mbeere community culturally employs proverbs at strategic points along the process of important presentations. Persistent use of proverbs in the song is an act of redirecting the audience to the aesthetic fact that it is the culture that is speaking. When the audience is so directed, they locate both the source of the echo and the point of allusion for interpretation and appreciation of the didacticism and moralizations in the texts.

The third and fourth lines of the second stanza carry an allusion and a proverb in a unique structure appropriate for detachment and intertextuality echoes and allusions, all poetically compressed at one point.

The first part of line 3 goes as follows:

Mumbeere augire ii … Mumbeere said that …

Mumbeere is translated to say 'a member of the Mbeere community'. It is a generic representation of the community, its culture and norms. When used by the persona here, it ascribes the preceding as well as the succeeding sections of the text to the Mbeere community and not to the persona or any individual.

Detachment is achieved and preparation for echoes and allusions made. A proverb is then introduced to guide the audience to the content of the cultural statement alluded to. The proverb states that while something that at one place is considered bad is getting destroyed, a similar thing is being protected dearly elsewhere for being considered precious. That is the proverb to guide the audience in locating the essence of the text based on the echo produced. The persona is saying that whereas the camp of those with adequate knowledge is destroying retrogressive politics of hate and disunity, it is ironical that the camp of those with little knowledge is passionately embracing and protecting division, hate, and discrimination. What echoes emanate from the culture about unity and love against hatred and divisions? Echoes and allusions of love appear from the repertoire of culture to help the audience vote with the camp of adequate knowledge and against that of little dangerous knowledge.

The choice of satire as the dominant form in the two texts reinforces intertextuality and helps in facilitating aesthetic success of the texts a great deal. The folly of the camp of little knowledge is exposed to ridicule through humour, and the lashes applied appear well justified as the audiences participate in the discourse and search for political solutions. Proverbs continue to the end of this text too with paths of intertextuality opening and echoes and allusions manifesting as the text crystalizes.

5.0 Conclusion and Recommendations

The paper set out to analyse two songs selected from the oral poetry of the Mbeere community of Kenya in order to illustrate how proverbs are creatively significant as pathways of detachment, intertextuality echoes, and allusions of the cultural aesthetics of the community. The motivating gaps in scholarship were highlighted and efforts made to explain our understanding of the key terms including detachment, intertextuality, echoes, and allusions as well as their aesthetic significance as pillars of cultural aesthetics and literary discourses. A brief introduction of Mbeere community, their culture and oral poetry tradition was given and a summary of the selected texts presented to enhance reader capacity to interact with the texts and the related analysis. Finally, the paper analysed how specific proverbs have been creatively used in the two songs to facilitate detachment, introduce, contextualise and sustain intertextuality echoes and allusions. This use, which is common practice, should be understood as part of the people's heritage in the cultural aesthetics of the community.

Admittedly, this paper could not carry out an exhaustive analysis of the proverbs. It is recommended that the analysis continues and the discourses on the various aspects of cultural aesthetics of our invaluable intangible heritage should be a priority of literary scholars.

Furthermore, with the awareness that appropriate appreciation of the aesthetic significance of such songs calls for familiarization with Mbeere oral traditions, this paper calls upon all serious scholars of Mbeere literature to rethink the manner they have been analysing literary production from the community. It is recommended that such scholars and students should endeavour to gain sufficient understanding of artists and their cultural contexts through reading and interacting widely, since the echoes and allusions involved can best be detected only by those who study and experience extensively such literatures and cultures as well as related theories.

It is from broader and deeper literary appreciation through such efforts that we shall understand ourselves and our worlds better and be able to cross-pollinate our lives for improved quality of life.

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Uchunguzi wa Tabia za Toni katika Vitenzi Visoukomo Sahili na Nomino za silabi moja za Kirombo

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IKISIRI

Makala haya yanahusu uchanganuzi wa tabia za toni katika Vitenzi visoukomo sahili na Nomino za silabi moja za Kirombo. Lengo kuu la makala haya ni kuchunguza tabia za ujitokezaji wa toni katika vitenzi visoukomo sahili na nomino za silabi moja za Kirombo na kanuni zinazotawala utokeaji huo. Aidha, malengo mahususi: kubainisha silabi inayohusishwa na Tonijuu Msingi (kuanzia sasa TJM) na mbili, kujadili tabia za utokeaji wa toni katika vitenzi visoukomo sahili na nomino za silabi moja za Kirombo na kanuni zinazotawala hutokeaji huo. Data ya Makala haya imetokana na utafiti mpana uliofanywa juu ya toni katika lugha ya Kirombo wilayani Rombo (2024) ambao uliongozwa na Nadharia ya Fonolojia Vipandesauti Huru kwa kutumia Mkabala wa Tonijuu Msingi kama ulivyoasisiwa na Goldsmith (1976) na kuboreshwa na wanazuoni mbalimbali katika taaluma ya tonolojia. Aidha, mbinu za ukusanyaji data zilizotumika ni pamoja na mahojiano na ushuhudiaji. Katika mahojiano vitenzi visoukomo sahili na nomino za silabi moja ziliandaliwa kwa Kiswahili na watoataarifa walihitajika kuvitamka kwa Kirombo huku mtafiti akirekodi na kualamisha toni katika vitenzi na nomino hizo. Aidha, katika mbinu ya ushuhudiaji mtafiti alishuhudia kwa kushiriki. Matokeo ya utafiti yanaonesha kuwa, kuna ruwaza mbalimbali za kitoni zinazoleteleza utokeaji wa kanuni za kitoni katika nomino na vitenzi visoukomo sahili vya silabi moja. Ruwaza ya ujitokezaji wa toni katika vitenzi visoukomo sahili na nomino za silabi moja, TJM hupachikwa katika Kiambishi Awali (KA) cha vitenzi visoukomo sahili na nomino za silabi moja ya shina. Aidha, kanuni ya Mbiruko Nyuma wa TJM, imetekelezwa baada ya utekelezwaji wa kanuni ya jumla ya Upachikaji wa TJM, katika uibuzi wa ruwaza ya ujitokezaji wa toni katika umbo la nje kutoka umbo la ndani. Aidha, tabia za ujitokezaji wa toni katika vitenzi visoukomo sahili na nomino za silabi moja za Kirombo huanza na toni J katika KA ikifuatiwa na toni C katika silabi ya kwanza ya shina.

1.0 Utangulizi

Lugha za binadamu ulimwenguni zina sifa ya kuwa na vipambasauti (Massamba, 2011). Hivi ni vipengele vya uchanganuzi arudhi vinavyoweza kuandamishwa kwenye vitamkwa. Vipengele hivi ni pamoja na toni, mkazo, usilabi, kidatu, unazali, unguvunguvu, na nguvumsikiko. Makala haya yanahusika na kipengee cha toni ambacho ni kipambasauti chenye uamilifu wa kileksika na kisarufi kinachoweza kupambanua maana za maneno na kuwakilisha njeo (Odden, 2005; Massamba, 2011: 171; Batibo, 2012). Kwa mujibu wa wataalamu Heine na Nurse (2000), Nurse na Philipson (2003) na Batibo (2012), lugha nyingi za Kiafrika zina toni, ukiondoa zile za kundi la lugha za Kihamitiki kama vile Kishemu/Kihamu. Toni ni miongoni mwa sifa za kiarudhi[1] zilizowahamasisha wanaisimu kuchunguza vipengele mbalimbali vya lugha za Kibantu kwa kutumia Nadharia za taaluma ya fonolojia (Hyman, 2008). Suala la uwakilishi wa toni katika lugha lilishamiri zaidi hasa pale mwanaisimu Goldsmith (1976) alipoonesha mwanga wa uchanganuzi wa toni katika lugha mahususi kwa kutumia Nadharia ya Fonolojia Vipandesauti Huru kama

[1] Arudhi ni sifa inayohusu mabadiliko ya vipambasauti kama vile kidatu, nguvumsikiko, tempo na lahani (Massamba, 2012).

maboresho ya Nadharia ya Fonolojia Zalishi (Hayman, 2003: 4-6 na Massamba, 2011: 178).

2.0 Lugha ya Kirombo

Kirombo ni lugha ya Kibantu iliyopo miongoni mwa jamiilugha za Kichaga. Kichaga hakina lugha moja inayoweza kuunganisha jamii ya Wachaga wote. Kila eneo (tarafa) lina kijilugha chake na kila kata ndani ya tarafa ina matamshi yake (Mramba, 2015). Kwa mujibu wa MLUTA (2009), jamii ya Wachaga ina jumla ya lugha asilia sita zinazotumika kwa mawasiliano ndani na nje ya eneo kitovu (Kilimanjaro). Lugha hizo ni *Kirombo, Kimachame, Kikahe, Kihusa, Kimochi na Kisia.* Hata hivyo, kuna lahaja zinazozungumzwa ndani ya jamii ya Wachaga kama vile Kiuru, Kiwoso, Kivunjo, Kichasu, Kimarangu na Kihanjo.

Kutokana na tafiti zilizofanywa na wataalamu mbalimbali kama Raum (1964), Polomé (1971), Van Spaandock (1971), Nurse na Philipson (1977), Heine na Nurse (2003), Martinet (2005), McHugh (2006), na Nelson (2013) katika lugha za Kichaga kama vile Kiold Mochi, Kimachame, Kivunjo, Kikahe na Kisiha, wamebaini kuwa lugha hizo zina toni. Aidha, wamebaini mabadiliko ya utokeaji wa ruwaza za toni katika lugha hizo hayapo sawa jambo linalofanya baadhi ya lugha kuwa na zaidi ya 66% ya tonichini na chini ya 34% ya tonijuu katika maneno yake. Kulingana na matokeo ya tafiti hizo na ikizingatiwa kwamba Kirombo ni miongoni mwa jamii lugha za Kichaga, Kirombo pia kina toni ingawa haikuelezwa tabia yake ya utokeaji ikoje husussani kwa vitenzi visoukomo sahili na nomino za silabi moja ya shina.

Aidha, Kirombo kinadhihirisha wazi kina toni kulingana na ruwaza za maneno yake ambayo kiothografia huonekana sawa ilhali wazawa wa lugha hiyo wanapoyatumia katika mazungumzo yao huchomoza maana tofauti. Tutazame mfano (1) hapa chini:

1.	a)	ílya	‘kula’
		ilyá	‘kukataa’
	b)	íla	‘kulala’
		ilá	‘kuita’

Hivyo, katika 1(a) tunaona mambo yafuatayo: tonijuu ikijitokeza katika silabi ya kwanza ya neno maana yake huwa ‘*kula*’ na maana hubadilika na kuwa ‘*kukataa*’ toni inapojitokeza katika silabi ya pili ya neno. Hali hiyo inajitokeza katika 1(ii) kama inavyoonekana hapo juu. Pia, toni katika Kirombo hubadili kategoria ya maneno kama inavyoonekana katika mfano wa 2:

2.	a)	i-kerésa	gereza (N)
		i-kéresa	chonga kitu(T)
	b)	sháa	nje (N)
		shaá	beza /kataa (T)
	c).	i-sháa	kuja (T)
		i-shaá	ukucha mkubwa (N)
	d).	i- káa	kaa la moto
		i-kàa	kukaa/kuishi mahala fulani (T)

Katika 2 (a) tunaona mambo yafuatayo: tonijuu ikijitokeza katika silabi ya pili ya shina la neno huwa na maana ya gereza (N), wakati ikihamia silabi ya kwanza ya shina huwa na maana ya chonga kitu (T). Halikadhalika, katika (b) tonijuu ikiwa katika irabu ya kwanza ya shina huwa na maana ya nje (N) na ikihamia kwenye silabi ya pili huwa na maana ya beza/ kataa (T). Hali hiyo inajitokeza pia katika mfano wa (c), ila katika mfano wa (d) tonichini ikitokea mahala pa tonijuu pia maana na kategoria hubadilika kama inavyoonekana.

Hii inatokana na ukweli kwamba lugha nyingi za Kibantu zina toni hususani zile za kundi la Naija-Kongo ambapo Kirombo hupatikana humo (taz. Nurse na Philipson, 2003). Batibo (2012) akimnukuu Van Spaandock (1971), anasema, kiasili jamiilugha za Kichaga zina toni, ambapo katika kila silabi na kila neno huwa na toni maalumu. Kutokana na maelezo hayo tunajiuliza: je, TJM katika vitenzi visoukomo sahili na nomino za silabi moja ya shina huhusishwa na silabi ipi? Je, tabia za toni katika vitenzi visoukomo sahili na nomino za silabi moja ya shina katika Kirombo ikoje na hutawaliwa na kanuni zipi? Maswali haya na mengine mengi tuliyokuwa tukijiuliza, yamejibiwa vyema katika sehemu ya 5.0 ambapo tabia za ujitokezaji wa toni katika silabi za vitenzi visoukomo sahili na nomino za silabi moja zimechanganuliwa.

3.0 Kiunzi cha Nadharia

Utafiti wa Makala haya umeongozwa na nadharia ya Fonolojia Vipandesauti Huru. Nadharia hii imeasisiwa na Goldsmith (1976). Wazo kuu la nadharia ya Fonolojia Vipandesauti Huru (Kuanzia sasa FVH) ni kuwa, vipengee vyote vya kifonolojia, kikiwemo kipambasauti toni havina budi kuchukuliwa kuwa viko huru katika usemaji wa lugha yoyote iwayo. Vipengee hivyo vinapaswa kuchukuliwa katika upekee wake wa kujitegemea na kuwakilishwa kama vitu vilivyo huru lakini vinavyohusiana.

Katika kufanikisha hilo vipengee vyote huwakilishwa kwa kutumia rusu, yaani rusu ya vipandesauti, rusu ya kiimbotoni, rusu ya toni, na kadhalika. Rusu hizo huhusishwa kwa mistari ya uhusiano ambayo hudhibitiwa na Sharti la Ukubalifu linalodai kwamba, kila irabu ihusishwe na angalau toni moja, kila toni ihusishwe na angalau irabu moja, na mistari ya uhusiano isikingamane. Ukiukwaji wa sharti la ukubalifu huleteleza maumbo yasiyokubalika katika lugha husika. Nadharia ya FVH ina mikabala miwili ya uchanganuzi wa kipambasauti toni ambayo ni; mkabala wa uchanganuzi wa kiinitoni ambao huchombeza toni juu na mkabala wa Tonijuu Msingi kama msingi wa uchanganuzi wa toni. Katika Makala haya mkabala wa Tonijuu Msingi ndio uliotumika.

Mkabala wa Tonijuu Msingi (JM) hutumia toni juu (J) kama msingi wa uchanganuzi wa toni. Toni J huwekwa ama chini au juu ya irabu inamojitokeza. Mkabala huu ni matokeo ya kuboreshwa kwa mkabala wa Kiinitoni kama msingi wa uchanganuzi wa toni uliasisiwa na Goldsmith (1976), na kutumiwa na wataalamu wa isimu kama Massamba (1984), Ismail (2011, na 2016), na Mashauri (2012). Mkabala wa JM unazingatia uchanganuzi wa toni kwa kutumia

Tonijuu Msingi (JM) katika kupata umbo la nje linalokubalika na wasemaji wazawa wa lugha. Vipengee vyote huwakilishwa kwa kutumia rusu zinazohusishwa kwa mistari ya uhusiano ambayo hudhibitiwa na Sharti la Ukubalifu kama ilivyo kwa mkabala wa uchanganuzi wa kiiinitoni kinachochombeza toni (KT). Miongoni mwa wanaisimu wanaotumia mkabala wa JM ni pamoja na Marlo (2007), Batibo (1990), Odden (1989), Ismail (2016), Hyman na Byarushengo (1984), Mramba (2020), kwa kutaja tu wachache. Mkabala wa JM umeteuliwa kukokotoa tabia za utokeaji wa toni katika vitenzi visoukomo sahili na nomino za silabi moja za shina kwa sababu uchanganuzi wake huleta uwazi zaidi katika ujitokezaji wa umbo la nje, upunguza idadi ya rusu katika ukokotozi wa umbo la nje kutoka umbo la ndani, ukilinganisha na mkabala wa Kiinitoni katika uchanganuzi wa toni kwa kutumia kiinitoni kinachochombeza toni juu.

4.0 Mbinu za Utafiti

Mbinu za utafiti ni njia ambazo hutumiwa na mtafiti katika kukusanya na kuchakata data. Mbinu hizi humwezesha mtafiti kupata data sahihi za utafiti, kuchagua mkabala, sampuli na vifaa ambavyo atatumia katika utafiti wake (Kothari, 2010). Aidha, mbinu za utafiti ni hatua au njia za makusudi zifanywazo na mtafiti ili kukwepa kujidanganya au kuwadanganya wengine watakaosoma ripoti yake. Mbinu zilizotumika ni pamoja na mahojiano na ushuhudiaji. Katika mahojiano vitenzi visoukomo sahili na nomino za silabi moja ya shina ziliandaliwa kwa Kiswahili na watoataarifa walihitajika kuzitamka kwa Kirombo huku mtafiti akirekodi na kualamisha toni katika vitenzi na nomino hizo. Aidha, katika mbinu ya ushuhudiaji Mtafiti alitembelea vijiwe viwili vya karata, ambapo wazee hupatikana majira ya jioni baada ya shughuli zao za kutwa. Mtafiti alishuhudia kwa kushiriki. Yaani, alishiriki kucheza karata kama sehemu ya timu au kundi pinzani. Kwa kufanya hivyo, ilikuwa rahisi kupata data sahihi ya matamshi kwa sababu watoa taarifa walikuwa huru kuzungumza wao kwa wao bila kujiandaa kutamka kitenzi au nomino fulani.

Data iliyokusudiwa katika utafiti huu ni vitenzi visoukomo sahili na nomino za silabi moja ya shina za Kirombo katika kudhihirisha tabia za ujitokezaji wa toni ambazo zilipatikana baada ya mtafiti kuchambua taarifa zilizotolewa na watoataarifa kwa njia ya mahojiano na ushuhudiaji kutoka uwandani. Mbinu mwafaka za uteuzi wa maneno zilizingatiwa kama msingi wa kupata matokeo jumuifu, sahihi na kubalifu. Moja ya mbinu hizo ni kugawa maneno katika makundi mawili ya vitenzi visoukomo sahili vya silabi moja na nomino za silabi moja ya shina kwa kuzingatia uasilia wa maneno husika. Mbinu za utafiti zilihusisha mahojiano na ushuhudiaji kulingana na aina ya utafiti uliofanyika.

5.0 Ujitokezaji wa Tabia za Toni katika Vitenzi Visoukomo Sahili na Nomino za Silabi Moja za Kirombo

Katika sehemu hii tumeshughulikia ujitokezaji wa tabia za toni katika vitenzi visoukomo sahili na nomino za silabi moja za shina katika Kirombo, Kama ilivyo kwa lugha nyingine za Kibantu, vitenzi na nomino za silabi moja ya shina ni kundi dogo lenye shina la ama konsonanti moja au zaidi na ambalo halina shada la irabu (overt vowel) ambapo kwa baadhi ya lugha nyingine huweza ama kudondosha irabu mojawapo au moja kufanyiwa mchakato wa uyeyushaji (deletes or glid formation). Mara nyingi ujitokezaji wa tabia za toni katika vitenzi na nomino za silabi moja hutofautiana na makundi mengine ya vitenzi na nomino zenye shina refu kuanzia silabi mbili hadi silabi sita za shina.

5.1 Ujitokezaji wa Tabia za Toni katika Vitenzi Visoukomo Sahili vya Silabi Moja ya shina katika Kirombo.

Hapa yafaa tutanabaishe wazi kwamba, kundi la vitenzi visoukomo sahili la silabi moja ya shina lina upekee wake katika ujitokezaji wa tabia za toni kama itakavyojionesha katika uchambuzi huu. Hii inatokana na ukweli kwamba, tabia za ujitokezaji wa toni katika kundi la vitenzi vya silabi moja ya shina ni JC. Tuanze kwa kuchunguza kwa umakini data ifuatayo katika (3) hapa chini:

3.
a) í fa ‘kufa’
b) í la ‘kuita’
c) í ma ‘kumaliza’
d) í ta ‘kupita’
e) í ra ‘kuchukua’
f) í sha ‘kuja’
g) í wa ‘kuuwa’
h) í kya ‘kukucha’
i) í nwa ‘kunawiri’
j) í nya ‘kunya’
l) í lya ‘kula’

Tukichunguza data (3) hapo juu kwa umakini, tunaweza kugundua masuala ya kimofolojia na kitoni kama ifuatavyo: Kimofolojia vitenzi vya silabi moja katika data (3) vina kiambishi awali {i-}, ambacho hufanya kazi ya kuwakilisha usoukomo wa vitenzi visoukomo vya Kirombo na upatanisho wa kisarufi katika hali ya umoja wa tendo. Pia, vitenzi vya silabi moja ya shina katika (3) vina idadi sawa ya silabi moja ya shina. Silabi za shina la kitenzi katika (3) zina maumbo na miundo tofauti ya utokeaji. Kwa mfano, silabi za shina la vitenzi katika 3(a – e) zina muundo wa KI, wakati silabi za shina la vitenzi katika 3(f) ina muundo wa KKI na zile zilizopo katika 3(g) ina muundo wa yI na KyI (kiyeyusho na irabu na konsonanti kiyeyusho na irabu). Yaafaa, ieleweke kuwa, katika Kirombo viyeyusho vingi vinavyounda silabi vimetokana na mchakato wa uyeyushaji, licha ya ukweli kwamba vipo viyeyusho ambavyo ni asili ya sauti za Kirombo kama ilivyo kwa lugha nyingine za Kibantu kuwa na viyeyusho kama sehemu ya idadi ya sauti za

kifonolojia katika lugha husika. Katika Kirombo mchakato wa uyeyushaji katika vitenzi visoukomo sahili vya silabi moja ya shina hutokea kama inavyoonekana katika 4 hapa chini:

4. a) /i u a/	⟶	[i wa]	‘kuuwa’
b) /í ki a/	⟶	[i kya]	‘kukucha’
d) /í nu a/	⟶	[i nwa]	‘kunawiri’
e) /í ni a/	⟶	[i nya]	‘kunya’
f) /í du a/	⟶	[i dwa]	‘kupanda’
g) /í li a/	⟶	[i lya]	‘kula’

Katika data (4) hapo juu, tunaona katika umbo la ndani irabu {-u-} hubadilika na kuwa [w] kwenye umbo la nje katika mzaingira ya kukabiliana na irabu {-a} katika mpaka wa mofimu, wakati irabu {-i- } katika umbo la ndani hubadilika na kuwa [j] kwenye umbo la nje katika mazingira ya kukabiliana na irabu {-a} katika mpaka wa mofimu.

Tutanabaishe wazi kuwa, ingawa utafiti wetu unahusu toni, hatuna budi kuchunguza mofolojia ya maumbo ya maneno lau kwa ufupi, ili kupata usuli wa mabadiliko ya maumbo ya maneno tunayoshughulikia. Tumelazimika kufanya hivi kwa lengo kuwa kuna ushabihiano wa karibu baina ya mabadiliko ya vitenzi na upachikaji wa TJM, kama tutakavyoona baadae katika data (5 dhidi ya data 4).

Sanjari na masuala ya kimofolojia, kitoni tunaweza kuona kuwa vitenzi visoukomo sahili vya silabi moja ya shina katika Kirombo vina toni J moja na toni C moja, ambapo ujitokezaji huo wa toni ndio unaofanya kundi hili la vitenzi kuwa na tabia za ujitokezaji wa toni wa JC. Yaani, kiambishi awali cha kitenzi kisoukomo sahili cha silabi moja huwa na toni J na kufuatiwa na toni C katika silabi ya shina la kitenzi. Ujitokezaji wa tabia hii ya toni katika vitenzi vya silabi moja ya shina husigana kwa kiwango kikubwa na tabia ya ujitokezaji wa toni katika vitenzi visoukomo sahili vya silabi mbili hadi sita za shina.

Pamoja na hayo, tulieleza tutatumia mkabala wa Tonijuu Msingi katika uibuzi wa tabia za toni kutoka umbo la ndani kwenda umbo la nje la vitenzi visoukomo sahili vya Kirombo. Katika kufanya hivyo tunapaswa kujua, tonijuu msingi (kuanzia sasa TJM) inahusishwa na silabi ipi katika kitenzi kisoukomo sahili cha silabi moja ya shina? Ama kwa hakika hapa hakuna jibu la mkato. Hii hutokana na ukweli kwamba, kila lugha ina taratibu zake maalumu za upachikaji wa TJM katika mashina ya vitenzi au maneno mengine.

Kabla ya kuendelea na mjadala wa kutaka kujua TJM huhusishwa na silabi ipi katika lugha ya Kirombo, yafaa tufafanue hapa lau kwa kina kwanza tunaposema TJM tuna maanisha nini ndipo tuendelee na mjadala wetu. Lugha nyingi za Kibantu katika miaka ya 500 baada ya Kristu zilionekana kuwa na toni mbili tofauti ambazo ni tonijuu (J) na tonichini (C) (Meeussen, 1980; Coupez, 1983; Marlo na Odden, 2014 na Hyman, 2017). Utofauti wa toni hizo umetokana na kuwa

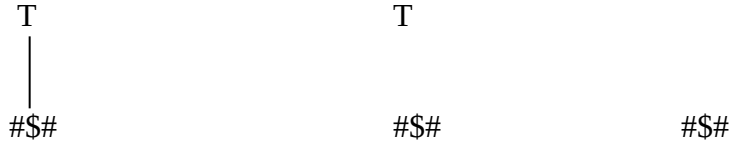
na viwango tofauti kimsikiko. Yaani, Tonijuu (kuanzia sasa J) ni toni ambayo silabi inayohusishwa nayo inapotamkwa huwa ina msikiko unaoelekea juu, wakati tonichini (kuanzia sasa C) ni toni ambayo silabi inayohusishwa nayo inapotamkwa msikiko unaelekea chini (Massamba 2011: 171, Möller, 2014:12). Toni J hualamishwa kwa alama [´] na toni C hutumia alama [`].

Hata hivyo, wapo wataalamu wanaoona kuwa awali lugha za Kibantu zilikuwa na toni J moja na toni kapa (ø) (toni J Vs ø) (Stevick, 1969 na Nash, 1992). Wataalamu hawa hudai kuwa toni kapa kimsikiko ni hafifu sana na hivyo kuona kuwa haipo. Madai ya kundi hili kwa hakika hayasigani na madai ya kundi la kwanza kwa sababu wote wanatambua kuwa awali lugha za Kibantu zilikuwa na viwango viwili tofauti vya toni na ambavyo vilitofautishwa kulingana na msikiko kiutamkaji.

Kwa kuwa imekwisha elezwa kwamba toni J na toni C ndizo toni pekee zilizokuwepo awali katika lugha nyingi za Kibantu kabla ya utokeaji wa mabadiliko ya Kiisimu katika lugha hizo, na ambazo zikiungana matokeo yake ni uzalishaji wa ama toni TP au toni TS, basi toni J na toni C, zote uchukuliwa kuwa ni Toni Msingi katika lugha za Kibantu. Kwa kuwa toni J imebainika kuwa na mvumo wa juu kimsikiko kuliko toni C, na kwa kuwa baadhi ya wataalamu wanaiona toni C kama toni kapa (ø) na ambayo mara nyingi haialamishwi inapotokea na toni J katika neno moja, basi tunachukulia kifonolojia toni J ndiyo msingi wa toni zote katika lugha.

Kutokana na maelezo ya kinadharia yaliyotolewa hapo juu, uchanganuzi wa uibuzi wa toni katika umbo la nje kutoka umbo la ndani katika Kirombo utatumia toni J kama toni msingi (TJM). Kwa mujibu wa Moller (2014), Toni Msingi huweza kujidhihirisha kwa namna tofauti kwenye maneno mbalimbali. Kwa kawaida maneno hubeba sauti na toni msingi inayohusishwa na silabi maalumu. Pia, neno linaweza kusitiri toni msingi bila kuhihusisha na silabi. Ikitokea hivyo, neno husika litakuwa na toni inayoelea. Aidha, lugha inaweza kuwa na maneno yasiyo na toni msingi na hivyo kufanya maneno hayo kuitwa maneno yasiyo na toni. Ni mara chache sana kukuta lugha yenye kusitiri aina zote za maneno yenye aina hizo za toni msingi zilizotajwa (Snider, 1999:6). Tuchunguze kiolezo kifuatacho katika 2a;

2a) **Neno lenye toni na silabi** b)**Neno lenye toni inayoelea** c)**Neno lisilo na toni**



Alama (T) imetumika kama toni, alama ($) imetumika kama silabi na alama (#) imetumika kuonesha mwanzo na mwisho wa neno. Ukichunguza violezo vilivyopo katika 2a hapo juu utabaini kwamba, kiolezo cha 2(a)kina toni msingi iliyohusishwa na silabi maalumu kwenye neno, wakati kiolezo cha 2(b) kinaonesha kuwa kina toni msingi inayoelea kwa sababu haijahusishwa na silabi maalumu katika neno na mwisho kiolezo cha 2(c) kinaonesha neno ambalo halina toni msingi na hivyo kuwa neno lisilo na toni.

Katika lugha ya Kirombo toni msingi hujitokeza kwa namna ya kwanza iliyotajwa na Moller (keshatajwa) ambapo TJM huhusishwa na silabi maalumu kwenye kitenzi katika umbo la ndani, kwa kufuata utaratibu unaofanana kwa vitenzi visoukomo sahili vyote vya lugha inayohusika. Ili tuweze kujua ni silabi ipi katika kitenzi cha silabi moja huhusishwa na TJM katika Kirombo, hatuna budi kufanya uchanganuzi wa kimajaribio utakaoongozwa kwa kanuni maalumu. Tunapendekeza kanuni itakayotumika katika upachikaji wa TJM kwenye silabi maalumu ya shina la kitenzi kisoukomo sahili cha silabi moja kuwa ni kanuni ya jumla ya upachikaji wa toni J msingi katika silabi maalumu ya shina la kitenzi kisoukomo sahili cha silabi moja.

Katika kufanya hivyo, tumechukua kitenzi kisoukomo sahili cha silabi moja ya shina katika lugha ya Kirombo ‘í ta ‘kupita’ na kukifanyia majaribio mbalimbali ya kiukokotozi hadi kubaini TJM hupachikwa katika silabi ipi ya shina la kitenzi kisoukomo cha silabi moja. Mtafiti alianza kupachika TJM katika silabi ya shina la kitenzi kisoukomo sahili cha silabi moja husika ambapo alipata matokeo yasiyokubalika katika usemaji wa wazungumzaji wazawa wa Kirombo [*i tá] kama inavyoonekana katika jaribio la (1);

	í ta	**‘kupita’**
	/i ta/	‘Umbo la ndani’
1.	J | i ta	‘Upachikaji wa TJM’
	C J | / i ta	‘ Uhusishaji wa Tonichini na Vitamkwa’
	C J | | i ta	‘Sharti la Ukubalifu’
	[*i tá]	‘Umbo la nje’

Jaribio la (1) limelenga kuona kama tukipachika TJM katika silabi ya kwanza ya shina la vitenzi visoukomo sahili vya silabi moja katika Kirombo, itatupatia majibu yanayokubalika au laha! Ukokotozi wa kitenzi cha silabi moja ya shina kwa kuanza na upachikaji wa TJM katika silabi ya kwanza ya shina la kitenzi, umetupatia matokeo yasiyokubalika katika usemaji wa wazungumzaji wa Kirombo *[i tá]. Matokeo ya ukokotozi (1), yanaonesha kwamba kiambishi awali (KA) {i-} kina toni C na silabi ya kwanza ya shina ina toni J ambayo haikubaliki katika Kirombo. Kutokana

na matokeo ya ukokotozi wa uibuzi wa toni katika kitenzi *[i tá], kutokubalika katika usemaji wa wazungumzaji wa Kirombo, na kwa kuwa ukokotozi wake umezingatia kanuni ya jumla ya upachikaji wa TJM katika silabi ya kwanza ya shina, tunapaswa kutazama njia mbadala ambazo zinaweza kutupatia majibu kubalifu katika uibuzi wa toni katika umbo la nje kutoka umbo la ndani la vitenzi vya silabi moja ya shina kama ifuatavyo:

Njia nyingine tunayoweza kuitumia ni ile ya kuchukulia kwamba, vitenzi vya silabi moja ya shina zina TJM mbili [í ta], ambapo moja hujitokeza katika KA na TJM ya pili hujitokeza katika silabi ya shina kama inavyoonekana katika jaribio la (2);

	í ta	‘kupita’
	/i ta/	‘Umbo la ndani’
2.	J J | | i ta	‘Upachikaji wa TJM’
	*[í tá]	‘Umbo la nje’

Matokeo ya njia ya (2) ya upachikaji wa TJM katika KA na katika silabi ya shina pia hayakubaliki katika usemaji wa wazungumzaji wa Kirombo *[í tá]. Hii ni kwa sababu silabi ya kwanza ya shina imehusishwa tena na TJM wakati ilishatupa matokeo yasiyokubalika katika njia ya kwanza ya upachikaji wa TJM katika silabi ya kwanza ya shina la kitenzi. Pia, matokeo yanaonesha wazi kwamba hakuna mpandoshuko katika utamkaji wa kitenzi *[í tá] unaoweza kutupatia TJM kama inavyoonekana kwenye matokeo ya ukokotozi (2), hali inayosababisha kutokukubalika katika usemaji wa wazungumzaji wa Kirombo *[í tá] .

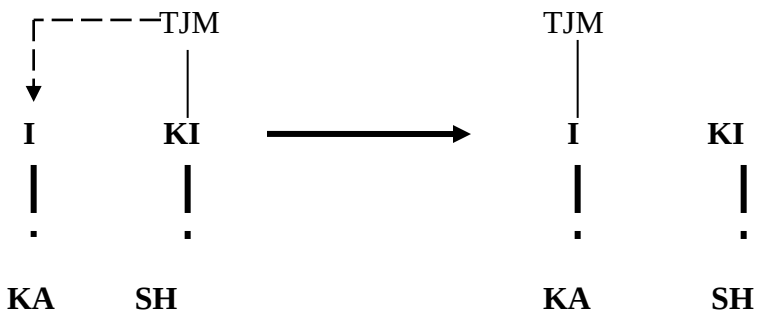
Kutokana na matokeo ya upachikaji wa TJM katika KA na katika silabi ya shina kutokubalika katika usemaji wa wazungumzaji wa Kirombo, bado tunaweza kutumia njia nyingine ya kuchukulia kwamba, TJM ya shina katika njia ya pili inaweza kutenganishwa na kitamkwa kinachohusishwa nacho na hivyo kuchukulia kwamba kina toni C, hasa ukizingatia mwanzoni mwa uchanganuzi wetu wa ruwaza ya ujitokezaji wa toni tulikwisha sema kwamba kitamkwa ambacho hakijaalamishwa au hakijahusishwa na toni J basi kichukuliwe kuwa kina toni C kama inavyoonekana katika (3):

	í ta	‘kupita’
	/i ta/	‘Umbo la ndani’
3.	J J | | = | | i ta	‘Upachikaji wa TJM’
	[í ta]	‘Umbo la nje’

Matokeo ya ukokotozi wa 3 hapo juu yanaonekana kukubalika katika usemaji wa wazungumzaji wa Kirombo [í ta]. Ingawa matokeo ya ukokotozi wa (3) yanaonekana kukubalika, bado kitoni yana tupa maswali ya kujiuliza kama vile: kitamkwa kikishahusishwa na toni J, kinapotenganishwa na toni hiyo kama inavyoonekana katika ukokotozi (3) kinaweza kuhusishwa na toni C? jibu hapa ni hapana. Swali la pili, Je, toni J iliyotenganishwa na kitamkwa cha silabi ya kwanza inaelea wapi katika matokeo ya 3? Ukweli ni kwamba unapotenganisha toni na kitamkwa kinachohusishwa nacho, toni hiyo hubaki ikielea. Hueleaji wa toni J iliyotenganishwa na kitamkwa huwa na maana ya kuruhusu kanuni nyingine za kitoni kama vile msambao wa toni J kuelekea kulia kuweza kufanya kazi. Ila ukokotozi (3) hauoneshi utokeaji wa msambao wa toni J, hali iliyofanya tujiulize kuwa toni J ya shina imeenda wapi, na kufanya njia hii bado kutupa mashaka ya kukubaliana na matokeo yaliyopatikana kwa haraka. Pia, hata kama kungekuwa na msambao wa toni J kuelekea kulia matokeo yake yangekuwa [í tá] ambayo pia hayakubaliki katika usemaji wa wazungumzaji wa Kirombo *[í tá]. Kulingana na ufafanuzi huo, imeshaonekana wazi kwamba, matokeo ya njia ya tatu hayawezi kutupatia udhibitisho sahihi kitoni. Hivyo, hatuna budi kupendekeza njia nyingine ya upachikaji wa TJM katika vitenzi vya silabi moja ya shina itakayoweza kutupatia matokeo ambayo hayana mashaka kitoni.

Njia nyingine tunayoweza kuipendekeza ni kuchukulia kwamba, kwa kuwa katika kitenzi [í ta], kiambishi awali /i-/ ndicho chenye toni J, na kwa kuwa kanuni ya jumla ya upachikaji wa TJM katika kitenzi kisoukomo sahili inahitajia TJM ipachikwe katika silabi maalum ya shina, na ukizingatia /i-/ siyo silabi ya shina, basi, kanuni ya jumla ya upachikaji wa TJM katika kitenzi itatekelezwa kama inavyohitajia, kisha TJM hiyo itahamishiwa katika kiambishi awali /i-/ kwa kuwa ndicho kilichobeba toni J katika kitenzi [í ta]. Katika kutekeleza hilo, tunahitajika kuchonga kanuni itakayotumika kuhamishia TJM katika KA kutoka silabi ya shina la kitenzi [í ta]. Tunapendekeza kanuni ya *Mbiruko Nyuma* wa TJM itumike katika ukokotozi wa uibuzi wa toni katika mfano wa kitenzi cha silabi moja ya shina [í ta]. Tuchunguze kanuni ya (2) hapa chini:

Kanuni ya 2 ya Mbiruko Nyuma wa TJM katika KA cha Kitenzi



Kanuni (2) inasema kuwa, ikiwa TJM imejitokeza katika silabi ya kwanza ya shina na ikiwa ndiyo silabi pekee ya shina la kitenzi husika, basi TJM ibirukie kwenye KA. Katika kutekeleza kanuni (2), sharti TJM hihusishwe kwanza na silabi ya kwanza ya shina kabla ya utekelezaji wa kanuni ya *Mbiruko Nyuma wa TJM*.

Tunaweza sasa kutumia kanuni (2) katika ukokotozi wa uibuzi wa toni kwa kuanza na upachikaji wa TJM katika silabi ya shina la kitenzi [í ta], kuona kama itatupatia matokeo yanayokubalika katika usemaji wa wazungumzaji wa Kirombo katika (4):

	í ta	‘kupita’
	/i ta/	‘Umbo la ndani’
4.	J i ta	‘Upachikaji wa TJM’
	J i ta	‘Mbiruko Nyuma wa TJM’
	J i ta	‘Upachikaji wa TJM kwenye KA’
	J C i ta	‘Uhusishaji wa Tonichini na Vitamkwa’
	[í ta]	‘Umbo la nje’

Njia ya ukokotozi wa toni kwa kutumia kanuni ya *Mbiruko Nyuma wa TJM* katika (4) hapo juu, imetupatia matokeo yanayokubalika katika usemaji wa wazungumzaji wa Kirombo [í ta] . Ukichunguza matokeo ya ukokotozi (4) utaona kwamba, KA ina toni J na silabi ya shina ina toni C na hivyo, kufanya ujitokezaji wa tabia ya toni katika kitenzi cha silabi moja ya shina kuwa JC. Matokeo haya hayatofautiani na matokeo ya tafiti za baadhi ya lugha nyingine za Kibantu kwa mfano: Kitenzi [kú-l-] ‘grow’ katika Kitotela, [bál-] ‘bear fruit’ katika Kiganda (Snoxall 1967:12). Pia Kitenzi [pɛ́n] ‘skip’ or ‘jump’ katika Kiakoose (Hedinger, 2012:131) na Kitenzi khú[ly-a] ‘to eat’ katika Kiluyia (Marlo, 2013:97). Matokeo ya tafiti hizo katika kitenzi cha silabi moja ya shina yanaonesha kuwa Kiambishi awali kina toni J ikifuatiwa na toni C katika silabi ya shina.

Katika ukokotozi (4) upangiliaji wa kanuni kitoni, umeanza na kanuni ya jumla ya upachikaji wa TJM kwanza kwa kupachikwa kwenye silabi ya kwanza ya shina kabla ya utekelezaji wa kanuni ya *Mbiruko Nyuma wa TJM*. Pia, hatua ya uhusishaji wa Tonichini na Vitamkwa imetekelezwa baada ya utekelezwaji wa kanuni ya Mbiruko Nyuma wa TJM. Katika ukokotozi 4 hatuhitaji kutekeleza kanuni nyingine ya Sharti la Ukubalifu kwa kuwa tayari imeshatekelezwa katika hatua ya uhusishaji wa Tonichini na Vitamkwa kama inavyoonekana hapo juu. Hebu tuongeze mfano mmoja wa ukokotozi katika (5) hapa chini:

í wa	‘kuuwa’
/i wa/	‘Umbo la ndani’
J | 5. i wa	‘Upachikaji wa TJM’
J ↙| i wa	‘Ubirukaji wa TJM’
J | i wa	‘Uhusishaji wa TJM kwenye KA’
J C | | i wa	‘Uhusishaji wa Tonichini na Vitamkwa’
[í wa]	‘Umbo la nje’

Kama ilivyokuwa katika (4) ukokotozi wa (5) nao pia, umetupatia matokeo yanayokubalika katika usemaji wa wazungumzaji wa Kirombo [í wa]. Ukichunguza matokeo ya ukokotozi (5) utagundua kwamba, KA ina toni J na silabi ya shina ina toni C na hivyo, kufanya ujitokezaji wa ruwaza ya toni katika kitenzi cha silabi moja ya shina kuwa JC. Hivyo, upangiliaji wa kanuni kitoni, kanuni ya jumla ya upachikaji wa TJM imetekelezwa kwanza kwa kupachikwa kwenye silabi ya kwanza ya shina kabla ya utekelezaji wa kanuni ya Mbiruko Nyuma wa TJM. Pia, hatua ya uhusishaji wa Tonichini na Vitamkwa imetekelezwa baada ya utekelezwaji wa kanuni ya Mbiruko Nyuma wa TJM. Katika ukokotozi 5 hatuhitaji kutekeleza kanuni nyingine ya Sharti la Ukubalifu kwa kuwa tayari imeshatekelezwa katika hatua ya uhusishaji wa Tonichini na Vitamkwa kama inavyoonekana katika (5).

Pamoja na hayo, badala ya kutumia hatua nyingi za ukokotozi wa uibuzi wa toni katika vitenzi vya silabi moja ya shina, katika kufikia matokeo yanayokubalika, tunapendekeza kutumia hatua chache na ambazo ni rahisi kwa msomaji na watafiti wengine wa lugha ya Kirombo kwa kuchukulia kwamba, TJM inapaswa kupachikwa moja kwa moja kwenye KA ikifuatiwa na C katika silabi ya shina, kwa vitenzi visoukomo sahili vya silabi moja ya shina katika Kirombo. Hebu tuchunguze mfano wa ukokotozi katika (6) hapa chini:

	í dwa	‘kupanda’
	/I dwa/	‘Umbo la ndani’
6.	J | i dwa	‘Upachikaji wa TJM’
	J C | | i dwa	‘Uhusishaji wa Tonichini na Vitamkwa’
	[í dwa]	‘Umbo la nje’

Matokeo ya ukokotozi (6) hapo juu, ni sahihi na yanakubalika katika usemaji wa wazungumzaji wa Kirombo [í dwa]. Matokeo ya ukokotozi (6) yanaonesha kuwa KA ina toni J na silabi ya kwanza ya shina ina toni C. Aidha, ukichunguza kwa umakini ukokotozi 6 utaona kwamba, kanuni ya jumla ya upachikaji wa TJM imetekelezwa kwa kupachikwa kwenye KA kabla ya utekelezaji wa hatua ya uhusishaji wa Tonichini na Vitamkwa. Katika ukokotozi huu hatuhitaji kutekeleza kanuni nyingine ya Sharti la Ukubalifu kwa sababu limeshatekelezwa katika hatua ya pili kama inavyoonekana katika ukokotozi (6). Hivyo, njia hii imetumia hatua mbili tu za ukokotozi ukilinganisha na ukokotozi wa (4 na 5) ambao umetumia hatua 4 za ukokotozi wa uibuzi wa umbo

la nje kutoka umbo la ndani la vitenzi husika. Tuongeze mfano mmoja wa ukokotozi katika 7 hapa chini:

	í lya	‘kula’
	/i lya/	‘Umbo la ndani’
7.	J | i lya	‘Upachikaji wa TJM’
	J C | | i lya	‘Uhusishaji wa Tonichini na Vitamkwa’
	[í lya]	‘Umbo la nje’

Kama ilivyokuwa katika ukokotozi wa 6 hapo juu, ukokotozi wa 7 nao pia, umetupatia matokeo sahihi na yanayokubalika katika usemaji wa wazungumzaji wa Kirombo [í lya]. Matokeo ya ukokotozi wa kitenzi [í lya], yanaonesha kuwa KA ina toni J na silabi ya kwanza ya shina ina toni C. Hapa yafaa ikumbukwe kuwa, kitenzi [í lya] kimetokana na mchakato wa uyeyushaji ambapo awali kilikuwa /í-li-a/ na tunaona silabi ya kwanza na ya mwisho ya shina lote zina toni C. baada ya uyeyushaji huwa [í-lya] ambapo irabu /-i-/ imeyeyushwa na kuwa [j] katika mazingira ya kukabiliana na irabu /-a/ katika mpaka wa mofimu. Hata hivyo katika Kiganda hali ya ujitokezaji wa ruwaza za toni katika Kitenzi kisoukomo cha silabi moja ya shina kilichotokana na uyeyushaji kama vile [ku-lyâ] ‘to eat’ (Hyman na Katamba, 2010:70). Kitenzi [ku-lyâ] kina maana sawa na kile cha Kirombo [*í lya*] ‘kula’, ila kitenzi [ku-lyâ] kinaonekana kuwa na tonishuka (TS) katika silabi ya mwisho wa shina. Tunaamini kuwa, tofauti za kimofolojia na kifonolojia (kiisimu) baaina ya lugha huweza kusababisha utofauti wa utokeaji wa toni kati ya lugha moja na nyingine hata kama zote ni jamiilugha za Kibantu. Aidha, ukichunguza kwa umakini ukokotozi 7 utagundua kwamba, kanuni ya jumla ya upachikaji wa TJM imetekelezwa kwa kupachikwa kwenye KA kabla ya utekelezaji wa hatua ya uhusishaji wa Tonichini na Vitamkwa. Katika ukokotozi 7 hatuhitaji kutekeleza kanuni nyingine ya Sharti la Ukubalifu kwa sababu limeshatekelezwa katika hatua ya pili kama inavyoonekana katika ukokotozi (7) hapo juu.

Kwa hahika, tunaweza kuhitimisha kwa kusema kuwa, ruwaza ya ujitokezaji wa toni katika vitenzi visoukomo sahili vya silabi moja ya shina ni JC, ambapo toni J upachikwa kwenye KA na kufuatiwa na toni C inayohushwa na silabi ya shina la kitenzi husika. Aidha, kanuni ya Ubirukaji wa TJM hufanyika baada ya utekelezwaji wa kanuni ya jumla ya Upachikaji wa TJM na kabla ya utekelezaji wa hatua ya Uhusishaji wa Tonichini na Vitamkwa. Pia, kwa upande wa vitenzi visoukomo vya silabi mbili hadi sita, kanuni anuwai kama vile usambaaji wa TJM kuelekea kulia mwa shina la kitenzi, uhamaji wa TJM, uradidi wa TJM na Udondoshaji wa kitamkwa, zimetekelezwa baada ya utekelezwaji wa kanuni ya jumla ya Upachikaji wa TJM, katika uibuzi

wa tabia ya ujitokezaji wa toni katika umbo la nje kutoka umbo la ndani. Baada ya kuona tabia za ujitokezaji wa toni na kanuni zinazotawala ujitokezaji huo katika vitenzi visoukomo sahili vya silabi moja ya shina, hatuna budi kuendelea kujadili tabia za ujitokezaji wa toni katika nomino za silabi moja ya shina katika Kirombo kama ifuatavyo.

5.2 Ujitokezaji wa Tabia ya Toni katika Nomino za Silabi Moja ya shina katika Kirombo

Baada ya kuchanganua kwa undani tabia za ujitokezaji wa toni katika vitenzi visoukomo sahili vya silabi moja ya shina kwa kutumia kanuni mbalimbali za kitoni, sasa tunaweza kushughulikia ujitokezaji wa tabia za toni katika nomino za silabi moja za Kirombo baada ya kupata maarifa ya kutosha kupitia vitenzi visoukomo vya silabi moja. Kama ilivyo kwa lugha nyingine za Kibantu, nomino za silabi moja ya shina ni kundi dogo lenye shina la ama konsonanti moja au zaidi na ambalo halina shada la irabu (overt vowel) ambapo kwa baadhi ya lugha nyingine huweza ama kudondosha irabu mojawapo au moja kufanyiwa mchakato wa uyeyushaji (deletes or glid formation). Mara nyingi ujitokezaji wa ruwaza ya toni katika nomino za silabi moja hutofautiana na makundi mengine ya nomino zenye shina refu kuanzia silabi mbili hadi silabi tano za shina.

Hapa yafaa ikumbukwe kuwa, kama ilivyokuwa kwa vitenzi visoukomo sahili vya silabi moja ya shina, pia kundi la nomino za silabi moja ya shina lina upekee wake katika ujitokezaji wa tabia za toni kama itakavyodhihirika katika uchambuzi huu. Hii inatokana na ukweli kwamba, tabia za ujitokezaji wa toni katika kundi la nomino za silabi moja ya shina ni JC. Tuanze kwa kuchunguza kwa umakini data ifuatayo katika 8 hapa chini:

8.	a) ú sha	‘ukucha’
	b) í ryu	‘ndizi’
	c) í shi	‘kabari’
	d) í rya	‘jani’
	e) k ryi	‘sizi’
	f) í sha	‘nje’
	g) k te	‘ndege’
	h) k du	‘siko’
	i) kí te	‘mbwa’
	j) í yo	‘jino’
	k) í we	‘jiwe’

Tukichunguza data (8) hapo juu kwa umakini, tunaweza kugundua masuala ya kimofolojia na kitoni kama ifuatavyo: Kimofolojia nomino za silabi moja ya shina katika (8) zina idadi sawa ya silabi moja ya shina. Silabi za shina la nomino katika (8) zina maumbo na miundo tofauti ya utokeaji. Kwa mfano silabi za shina la nomino katika 8(a – f) zina muundo wa KKI na KkyI, wakati silabi za shina la nomino katika 8(e –i) zina muundo wa KI na zile zilizopo katika 8(j –k)

zina muundo wa kyI (kiyeyusho na irabu). Yafaa, ikumbukwe kuwa, ilielezwa kwamba si kila kiyeyusho kinachounda silabi kiwe kimetokana na mchakato wa uyeyushaji, bali ni asili ya sauti za Kirombo kama ilivyo kwa lugha nyingine za Kibantu kuwa na viyeyusho kama sehemu ya idadi ya sauti za kifonolojia katika lugha husika. Pia, nomino za silabi moja katika data (8) zina viambishi awali ambavyo navyo vimejitokeza kwa maumbo tofauti tofauti kama vile {i-}, {u-}, {k-} na {ki-} kutegemeana na aina ya nomino husika. Kiambishi awali {i-} na {u-} hufanya kazi ya kuwakilisha hali ya umoja wa nomino husika, wakati kiambishi {k-} ni matokeo ya mchakato wa udondoshaji wa irabu /-i-/ kutoka {ki} katika mazingira ya kufuatiwa na konsonanti halisi za ufizi /r, t, s, na d/ kama inavyoonekana katika data (8) hapo juu. Pia, viambishi {k-} na {ki}, vyote katika (8) hufanya kazi ya kuwakilisha hali ya umoja katika nomino husika.

Sanjari na masuala ya kimofolojia, kitoni tunaweza kuona kuwa nomino za silabi moja ya shina katika Kirombo zina toni J moja na toni C moja, ambapo ujitokezaji huo wa toni ndio unafanya kundi hili la nomino kuwa na ruwaza ya ujitokezaji wa toni wa JC. Yaani, kiambishi awali cha nomino za silabi moja huwa na toni J na kufuatiwa na toni C katika silabi ya shina la nomino. Ujitokezaji wa ruwaza ya toni katika nomino za silabi moja ya shina husigana kwa kiwango kikubwa na ruwaza ya ujitokezaji wa toni katika nomino za silabi mbili hadi tano za shina. Ili tunachokieleza kiweze kueleweka kwa uwepesi, tunaweza kuhusianisha kwa kuchunguza data ya (8) dhidi ya data (9) hapa chini:

117.	a) i rí so	jicho
	b) u tú fa	unyayo
	c) i kó jó rho	godoro
	d) i kú dú lyé ni	kwenye galoni
	e) i m sú má ryi	msumari mkubwa
	f) i m bá rí shé she	limwiba la uzio
	g) i m kí rí ng'á ngé ni	kwenye limwiba la uzio

Tukichunguza kwa umakini data (8) dhidi ya (9) hapo juu, tunaweza kuona mambo kadhaa ya kimofolojia na kitoni: kimofolojia tunaona kwamba, nomino zilizopo katika data ya (8) zina silabi moja tu ya shina, wakati katika data ya (9) zina silabi za shina zenye idadi tofauti ya silabi kuanzia mbili hadi tano za shina. Pia, idadi ya toni kwenye mifano ya nomino ya data 8 ni mbili tu, ilhali idadi ya toni katika data ya 9 huanzia tatu na uongezeka kiidadi kulingana na idadi ya silabi zinavyoongezeka kwenye hizo nomino kama inavyoonekana katika 9 (a – g) hapo juu. Aidha, ruwaza ya ujitokezaji wa toni katika data (9) huanza kwa toni C kwenye KAK na KA, ikifuatiwa na toni J katika silabi ya kwanza ya shina na ambayo usambaa ama hadi silabi ya mwisho kasoro moja kutoka mwishoni mwa shina au hadi silabi ya pili ya shina, wakati katika data (8), toni J ujitokeza katika KA, kinyume na hutokeaji wa toni J katika makundi mengine ya nomino na hufuatiwa na toni C katika silabi ya shina. Kulingana na tofauti tulizozibainisha katika ulinganishaji wa data 8 dhidi ya 9, imeonekana wazi kwamba tabia za ujitokezaji wa toni katika

nomino za silabi moja ya shina ni za kipekee na hivyo inapaswa ishughulikiwe kulingana na upekee huo.

Tumeona katika ukokotozi wa tabia za toni katika vitenzi visoukomo vya silabi moja ya shina TJM hupachikwa kwenye KA. Hapa swali tunalojiuliza ni kwamba: Je, hali ya upachikaji wa TJM ipoje kwa nomino za silabi moja ya shina? Je, TJM ikipachikwa kwenye silabi ya kwanza ya shina itatupa majibu sahihi kulingana na usemaji wa wazungumzaji wa Kirombo? Kwa vile kitoni inatupasa kupachika TJM kwenye silabi maalumu ya shina na kwa kuwa katika vitenzi visoukomo sahili vya silabi moja ya shina TJM ilipachikwa kwanza kwenye silabi ya kwanza ya shina kwa mujibu wa kanuni ya jumla ya upachikaji wa TJM, basi katika kundi la nomino za silabi moja ya shina tumeanza pia kwa kutumia kanuni ya jumla ya upachikaji wa TJM inayosema pachika TJM katika silabi ya kwanza ya shina la nomino za Kirombo katika ukokotozi wa uibuzi wa toni katika umbo la nje kutoka umbo la ndani la nomino husika. Hebu tutumie kanuni hiyo ya jumla pamoja na kanuni nyingine kufanya ukokotozi wa uibuzi wa toni kwenye nomino *ú sha* ‘ukucha’ katika 10 hapa chini:

	ú sha ‘ukucha	
	/u sha/	‘Umbo la ndani’
	J	
	|	
10.	u sha	‘Upachikaji wa TJM’
	C J	
	| |	
	u sha	‘Uhusishaji wa Tonichini na Vitamkwa’
	*[u shá]	‘Umbo la nje’

Ukokotozi wa nomino za silabi moja ya shina kwa kuanza na upachikaji wa TJM katika silabi ya kwanza ya shina la nomino, umetupatia matokeo yasiyokubalika katika usemaji wa wazungumzaji wa Kirombo *[u shâ]. Matokeo ya ukokotozi (10), yanaonesha kwamba kiambishi awali (KA) {u-} kina toni C na silabi ya kwanza ya shina ina toni J ambayo haikubaliki katika Kirombo. Kutokana na matokeo ya ukokotozi wa uibuzi wa toni katika nomino *[u shá], kutokubalika katika usemaji wa wazungumzaji wa Kirombo, na kwa kuwa ukokotozi wake umezingatia kanuni ya jumla ya upachikaji wa TJM katika silabi ya kwanza ya shina, tunapaswa kutazama njia mbadala ambazo zinaweza kutupatia majibu kubalifu katika uibuzi wa toni katika umbo la nje kutoka umbo la ndani la nomino za silabi moja ya shina kama ifuatavyo.

Njia nyingine tunayoweza kuitumia ni ile ya kuchukulia kwamba, nomino za silabi moja ya shina zina TJM mbili [ú sha], ambapo moja hujitokeza katika KA na TJM ya pili hujitokeza katika silabi ya shina kama inavyoonekana (11) hapa chini:

ú sha ‘Ukucha’

/u sha/ ‘Umbo la ndani’

J J
| |
11. u sha ‘Upachikaji wa TJM’

*[ú shá] ‘Umbo la nje’

Matokeo ya upachikaji wa TJM katika KA na katika silabi ya shina pia hayakubaliki katika usemaji wa wazungumzaji wa Kirombo *[ú shá]. Hii ni kwa sababu silabi ya kwanza ya shina imehusishwa tena na TJM wakati ilishatupa matokeo yasiyokubalika katika njia ya kwanza ya upachikaji wa TJM katika silabi ya kwanza ya shina la nomino. Pia, matokeo yanaonesha wazi kwamba hakuna mpandoshuko katika utamkaji wa nimono *[ú shá], hali inasababisha kutokukubalika katika usemaji wa wazungumzaji wa Kirombo.

Kutokana na matokeo ya upachikaji wa TJM katika KA na katika silabi ya shina kutokukubalika katika usemaji wa wazungumzaji wa Kirombo, bado tunaweza kutumia njia nyingine ya kuchukulia kwamba, TJM ya shina katika njia ya pili inaweza kutenganishwa na kitamkwa kinachohusishwa nacho na hivyo kuchukulia kwamba kina toni C, hasa ukizingatia mwanzoni mwa uchanganuzi wetu wa tabia za ujitokezaji wa toni katika vitenzi visoukomo sahili vya silabi moja ya shina tulikwisha sema kwamba kitamkwa ambacho hakijaalamishwa au hakijahusishwa na toni J basi kichukuliwe kuwa kina toni C kama inavyoonekana katika (12) hapa chini:

ú sha ‘Ukucha’

/u sha/ ‘Umbo la ndani’

J J
| |
12. u sha ‘Upachikaji wa TJM’

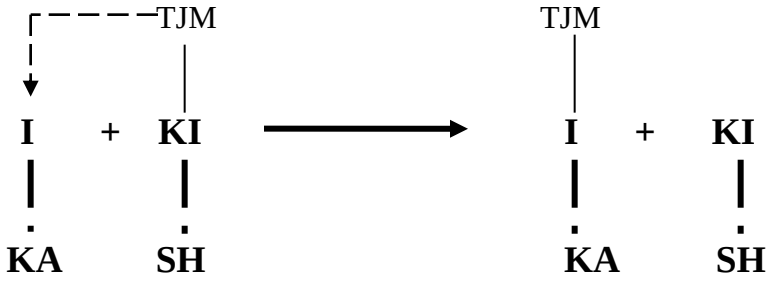
[ú sha] ‘Umbo la nje’

Matokeo ya ukokotozi wa 12 hapo juu yanaonekana kukubalika katika usemaji wa wazungumzaji wa Kirombo [ú sha]. Ingawa matokeo ya ukokotozi wa (12) yanaonekana kukubalika, bado kitoni yanatupa maswali ya kujiuliza kama vile: kitamkwa kikishahusishwa na toni J, kinapotenganishwa na toni hiyo kama inavyoonekana katika ukokotozi (12) kinaweza kuhusishwa na toni C? jibu hapa ni hapana. Swali la pili, Je, toni J iliyotenganishwa na kitamkwa cha silabi ya kwanza inaelea wapi katika matokeo ya 12? Ukweli ni kwamba unapotenganisha toni na kitamkwa kinachohusishwa nacho, toni hiyo hubaki ikielea. Hueleaji wa toni J iliyotenganishwa na kitamkwa

huwa na maana ya kuruhusu kanuni nyingine za kitoni kama vile msambao wa toni J kuelekea kulia kuweza kufanya kazi. Ila matokeo ya (12) hayaoneshi utokeaji wa msambao wa toni J, hali iliyofanya tujiulize kuwa toni J ya shina imeenda wapi na kufanya njia hii bado kutupa mashaka ya kukubaliana na matokeo yaliyopatikana. Pia, hata kama kungekuwa na msambao wa toni J kuelekea kulia matokeo yake yangekuwa [ú shá] ambayo pia hayakubaliki katika usemaji wa wazungumzaji wa Kirombo *[ú shá]. Kulingana na ufafanuzi huo, imeshaonekana wazi kwamba, matokeo ya njia ya tatu hayawezi kutupatia udhibitisho sahihi kitoni. Hivyo, hatuna budi kupendekeza njia nyingine ya upachikaji wa TJM katika nomino za silabi moja ya shina itakayoweza kutupatia matokeo ambayo hayana tashwishi kitoni.

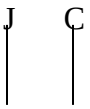
Njia nyingine tunayoweza kuipendekeza ni kuchukulia kwamba, kwa kuwa katika nomino [ú sha], kiambishi awali /u-/ ndicho chenye toni J, na kwa kuwa kanuni ya jumla ya upachikaji wa TJM katika nomino inahitajia TJM ipachikwe katika silabi ya kwanza ya shina, basi, kanuni ya jumla ya upachikaji wa TJM katika nomino itatekelezwa kama inavyohitajia kisha TJM hiyo itahamishiwa katika kiambishi awali /u-/ kwa kuwa ndicho kilichobeba toni J katika nomino [ú sha]. Katika kutekeleza hilo, tunahitajika kuchonga kanuni itakayotumika kuhamishia TJM katika KA kutoka katika silabi ya shina la nomino [ú sha]. Tunapendekeza kanuni ya *Mbiruko Nyuma* wa TJM itumike katika ukokotozi wa uibuzi wa toni katika mfano wa nomino ya silabi moja ya shina [ú sha] katika (12). Tuchunguze kanuni ya (4) hapa chini:

Kanuni ya 4 ya Mbiruko Nyuma wa TJM katika KA.



Kanuni (4) inasema kuwa, ikiwa TJM imejitokeza katika silabi ya kwanza ya shina na ikiwa ndiyo silabi pekee ya shina la nomino husika, basi TJM ibirukie kwenye KA. Katika kutekeleza kanuni (4), sharti TJM hihusishwe kwanza na silabi ya kwanza ya shina kabla ya utekelezaji wa kanuni ya *Mbiruko Nyuma wa TJM*.

Tunaweza sasa kutumia kanuni (4) katika ukokotozi wa uibuzi wa toni kwa kuanza na upachikaji wa TJM katika silabi ya shina la nomino [ú sha], kuona kama itatupatia matokeo yanayokubalika katika usemaji wa wazungumzaji wa Kirombo katika (13) hapa chini:

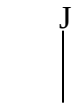
	ú sha	‘ukucha’
	/u sha/	‘Umbo la ndani’
13.		‘Upachikaji wa TJM’
		‘Mbiruko Nyuma wa TJM’
		‘Upachikaji wa TJM kwenye KA’
		‘Uhusishaji wa Tonichini na Vitamkwa’
	[ú sha]	‘Umbo la nje’

Katika njia ya ukokotozi wa toni kwa kutumia kanuni ya Mbiruko Nyuma katika (13) hapo juu, umetupatia matokeo sahihi na yanayokubalika katika usemaji wa wazungumzaji wa Kirombo [ú sha]. Ukichunguza matokeo ya ukokotozi (13) utagundua kwamba, KA ina toni J na silabi ya shina ina toni C na hivyo, kufanya ujitokezaji wa tabia ya toni katika nomino za silabi moja ya shina kuwa JC. Hivyo, upangiliaji wa kanuni kitoni, kanuni ya jumla ya upachikaji wa TJM imetekelezwa kwanza kwa kupachikwa kwenye silabi ya kwanza ya shina kabla ya utekelezaji wa kanuni ya Mbiruko nyuma wa TJM. Pia, hatua ya uhusishaji wa Tonichini na Vitamkwa imetekelezwa baada ya utekelezwaji wa kanuni ya mbiruko nyuma wa TJM. Katika ukokotozi 13 hatuhitaji kutekeleza kanuni nyingine ya Sharti la Ukubalifu kwa kuwa tayari imeshatekelezwa katika hatua ya uhusishaji wa Tonichini na Vitamkwa kama inavyoonekana hapo juu. Hebu tuongeze mfano mmoja wa ukokotozi katika 14 hapa chini:

í yo ‘jino’

/i yo/ ‘Umbo la ndani’

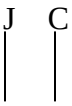
14.



i yo ‘Upachikaji wa TJM’

i yo ‘Mbiruko Nyuma wa TJM’

i yo ‘Upachikaji wa TJM kwenye KA’



i yo ‘Uhusishaji wa Tonichini na Viitamkwa’

[í yo] ‘Umbo la nje’

Kama ilivyokuwa katika 13, ukokotozi wa 14 nao pia, umetupatia matokeo yanayokubalika katika usemaji wa wazungumzaji wa Kirombo [*í yo*]. Ukichunguza matokeo ya ukokotozi (14) utagundua kwamba, KA ina toni J na silabi ya shina ina toni C na hivyo, kufanya ujitokezaji wa tabia ya toni katika nomino za silabi moja ya shina kuwa JC. Hivyo, upangiliaji wa kanuni kitoni, kanuni ya jumla ya upachikaji wa TJM imetekelezwa kwanza kwa kupachikwa kwenye silabi ya kwanza ya shina kabla ya utekelezaji wa kanuni ya Mbiruko nyuma wa TJM. Pia, hatua ya uhusishaji wa Tonichini na Vitamkwa imetekelezwa baada ya utekelezwaji wa kanuni ya mbiruko nyuma wa TJM. Katika ukokotozi 14 hatuhitaji kutekeleza kanuni nyingine ya Sharti la Ukubalifu kwa kuwa tayari imeshatekelezwa katika hatua ya uhusishaji wa Tonichini na Vitamkwa kama inavyoonekana katika (14).

Kwa kuwa tumeshafamu kwamba TJM inapaswa kupachikwa katika kiambishi awali (KA) kwa nomino za silabi moja ya shina, tunapendekeza njia nyingine ya ukokotozi wa uibuzi wa toni katika umbo la nje kutoka umbo la ndani la nomino za silabi moja ya shina kwa kupachika moja kwa moja TJM kwenye KA kama inavyoonekana katika ukokotozi 15 hapa chini:

	í we	‘jiwe’
	/ i we/	‘Umbo la ndani’
	J |	
15.	i we	‘Upachikaji wa TJM’
	J C | |	
	i we	‘Uhusishaji wa Tonichini na Vitamkwa’
	[í we]	‘Umbo la nje’

Matokeo ya ukokotozi katika 15 hapo juu, ni sahihi na yanakubalika katika usemaji wa wazungumzaji wa Kirombo [*í we*]. Matokeo haya yanaonesha kuwa KA ina toni J na silabi ya kwanza ya shina ina toni C. Aidha, ukichunguza kwa umakini ukokotozi 15 utaona kwamba, kanuni ya jumla ya upachikaji wa TJM imetekelezwa kwa kupachikwa kwenye KA kabla ya utekelezaji wa hatua ya uhusishaji wa Tonichini na Vitamkwa. Katika ukokotozi huu hatuhitaji kutekeleza kanuni nyine ya Sharti la Ukubalifu kwa sababu limeshatekelezwa katika hatua ya pili kama inavyoonekana katika ukokotozi (15). Tuongeze mfano mmoja wa ukokotozi katika 16 hapa chini:

í ryu	‘ndizi’
/i ryu/	‘Umbo la ndani’
J |	
i ryu	‘Upachikaji wa TJM’
J C | |	
i ryu	‘Uhusishaji wa Tonichini na Vitamkwa’
[í ryu] = *i ryu*	

Kama ilivyokuwa katika ukokotozi wa 15 hapo juu, ukokotozi wa 16 nao pia, umetupatia matokeo sahihi na yanayokubalika katika usemaji wa wazungumzaji wazawa wa lugha ya Kirombo [*í ryu*]. Matokeo haya yanaonesha kuwa KA ina J na silabi ya kwanza ya shina ina C. Matokeo ya ukokotozi wa toni katika umbo la nje kutoka umbo la ndani la nomino za silabi moja ya shina za Kirombo hushadidiwa na matokeo ya nomino za silabi moja ya shina za Kivenda. Kwa mfano nomino [mú-thu] ‘person’ na [mú-ri] ‘tree’ (Casemjee, 1986: 37). Matokeo ya utafiti wa Casemjee yanaonesha kwamba, tabia ya ujitokezaji wa toni katika nomino za silabi moja ya shina katika Kivenda huanza na toni J katika KA, ikifuatiwa na toni C katika silabi ya shina la nomino

husika kama ilivyoonekana katika utafiti huu. Aidha, ukichunguza kwa umakini ukokotozi huu utagundua kwamba, kanuni ya jumla ya upachikaji wa TJM imetekelezwa kwa kupachikwa kwenye KA kabla ya utekelezaji wa hatua ya uhusishaji wa Tonichini na Vitamkwa. Katika ukokotozi huu hatuhitaji kutekeleza kanuni nyingine ya Sharti la Ukubalifu kwa sababu limeshatekelezwa katika hatua ya pili kama inavyoonekana katika ukokotozi (16).

Tunaweza kuhitimisha kwa kusema kwamba, tabia ya ujitokezaji wa toni katika nomino za silabi moja ya shina ni JC, ambapo J upachikwa kwenye KA na kufuatiwa na C inayohusishwa na silabi ya shina la nomino husika. Aidha, kanuni ya Ubirukaji wa TJM hufanyika baada ya utekelezwaji wa kanuni ya jumla ya Upachikaji wa TJM na kabla ya utekelezaji wa hatua ya Uhusishaji wa Tonichini na Vitamkwa. Sanjari na hayo, tumebaini kuwa tabia za ujitokezaji wa toni katika nomino za silabi moja za Kirombo zina muundo tofauti ambao hutawaliwa na kanuni ya msingi kisha kufuataiwa na kanuni nyingine za toni katika ukokotozi wa uibuzi wa toni katika umbo la nje kutoka umbo la ndani la nomino za silabi moja. Tabia ya ujitokezaji wa toni katika nomino za silabi moja ya shina ina muundo wa JC ambao uchanganuliwa kwa kutumia kanuni ya msingi ya Mbiruko Nyuma wa TJM kama ilivyoonekana katika uchanganuzi wake.

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Challenges Faced by Heads of Secondary Schools on Implementing Inclusive Education (IE) in Regular Schools in Moshi District, Tanzania

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ABSTRACT

Inclusive Education (IE) is a pressing global issue, particularly in developing countries like Tanzania, where its implementation faces numerous challenges. Despite the government's efforts to legislate IE in 2009, its implementation remains difficult due to lack of awareness among parents, inadequate infrastructure, and insufficient numbers of special education teachers. This study aimed to investigate the challenges faced by heads of schools in implementing IE in regular schools in Tanzania. A qualitative approach was employed, with a sample of 31 participants comprising teachers, head teachers, and an education officer. The findings revealed that lack of adequate training and professional development for teachers, inadequate resources, resistance to change, policy implementation gaps, and large class sizes are significant challenges to IE implementation. To address these challenges, the study recommends intensive efforts from governments, international organizations, and educators to provide necessary training programs for teachers, improve infrastructure accessibility, increase funding, and enhance collaboration among stakeholders. Additionally, community awareness campaigns, policy clarity, and lower teacher-to-student ratios are crucial for successful IE implementation. The study's findings have implications for policymakers, educators, and other stakeholders involved in promoting inclusive education in developing countries.

KEYWORDS: Inclusive Education, Implementation Challenges, Teacher Training, Infrastructure, Policy, Community Awareness.

1.0 Introduction

Implementing inclusive education globally is a pressing issue that has attracted global attention in recent decades. Inclusive Education (IE) means that all children who have been traditionally excluded from learning opportunities, including those with disabilities and those without disabilities, are in the same classrooms and schools (UNICEF, 2024). This involves providing education and access to education for groups that have traditionally been excluded, including children with physical disabilities, impairment, mental disabilities, autism, and those who speak minority languages. It has been taken into consideration by the United Nations' Sustainable Development Goals (SDGs) to promote lifelong learning by 2030, which aims to ensure that education is provided to all.

According to UNESCO (2020), to meet the United Nations' sustainable goal of providing quality education to all children, regardless of their vulnerabilities, there is a need to implement Inclusive Education (IE) within regular education systems and schools in developing countries.

Other organs that support Inclusive Education worldwide include Inclusion International (II) an organ that deals with advocating for the rights of people with intellectual disabilities, International Disability Alliance (IDA) which acts as a spokesperson for people with disabilities for international policy matters, The World Bank (WB) this organization supports countries on

integrating education with nations economic strategies and education systems, the World Bank supports Education For All (EFA) goals to be achieved and hence supporting Inclusive Education to disabled and special needs groups. Inclusive education is often said to have originated in high-income countries, driven by concerns about the violation of the educational and social rights of disabled people and their families (Mahlo, 2017).

An argument by Simsek and Kilcan (2017) states that; the inclusive education population has expanded to include not only students in need of special education but also all other students from disadvantaged groups. These students should be provided with equal and quality education, which is the aim of Inclusive Education (IE). Education should be provided equally to both typical children and those who are exceptional or have special needs or barriers to learning. This includes blind children, children with epilepsy, partially sighted children, physically handicapped children, children with cerebral palsy, and children with various defects-all of whom need access to the education system.

In Africa, the implementation of Inclusive Education (IE) depends on international agreements and declarations that support Inclusive Education, the most distinguished being the 1994 UNESCO document known as the Salamanca Statement. Inclusion in African schools involves students with disabilities spending school time with non-disabled students. School leaders in Kenyan schools have developed strategies such as preparing a supporting network within the school community and collaborating with other organizations such as non-governmental organizations to ensure IE implementation in their schools. According to Kinuthia (2022), school leaders should implement inclusion by ensuring that they meet the needs of all learners within their schools.

African countries have put much focus on reducing education gaps between children with disabilities and those without disabilities. Increasing access to education for children with disabilities contributes to knowing the challenges that face these groups in accessing education opportunities. For instance, Zambia has faced many challenges, therefore, the government of Zambia through the Ministry of General Education has launched a manual for teachers and trainers aiming to introduce teachers to the theories and concepts of Inclusive Education and how to implement it, (MGE Zambia, 2019).

Most African countries have poor accessibility to quality education which causes most children not to be taken to schools. According to a survey conducted in 11 African countries Ghana, Liberia, Kenya, South Africa, South Sudan, Zambia, Burkinafaso, Mozambique, Malawi, Mali, and Ethiopia, it was revealed that there is a lower enrollment of children with disabilities compared to those without disabilities (Wodon et al., 2018). An argument by Chitiyo (2021) supports this by stating that, Inclusive Education in some African countries faces challenges like unavailable resources, under-equipped, and low enrollment of vulnerable children.

Conversely, Tanzania began implementing Inclusive Education (IE) in 1997 by establishing a National Inclusive Education Strategy that focused on ensuring that resources are available at the school level. This strategy was prepared to enable teachers and learners, including those with special needs, to access education as a requirement of Education for All (EFA). Although there are some challenges in implementing IE, Tanzania has prepared a national strategy for Inclusive Education 2018-2021. The plan aimed at mobilizing the community to support education for vulnerable children and also strengthening early identification, assessment, and support for learners with special needs (URT, 2017). Accordingly, in October 2022, the government of Tanzania established guidelines for implementing the Inclusive Education Strategy 2022-2026. According to the 2022-2026 strategy, Inclusive Education (IE) is a process aimed at increasing participation in learning for all children, including those with special needs, so they can learn without obstacles. This initiative was designed to prepare policies, culture, and practices to enable vulnerable children and special groups who are outside the education system to access schools and educational programs such as; Mpango wa Maendeleo ya Elimu kwa Walioikosa (MEMKWA), Mpango wa Maendeleo ya Elimu ya Sekondari (MMES) and Mpango wa Maendeleo ya Elimu ya Msingi (MMEM).

Although Inclusive Education was legislated in 2009 in Tanzania, its implementation has been challenging due to a lack of awareness among parents, inadequate infrastructure to support children with special needs, a shortage of knowledgeable special education teachers, and societal perspectives on disability and special needs. Inclusive Education (IE) in developing countries like Tanzania faces various challenges, including discrimination, stigma, prejudgment, and negative attitudes (Dewi, 2024).

Losioki and Ngowoko (2024) argue that further research on Inclusive Education (IE) is needed to identify whether the policies, laws, and strategies of the government of Tanzania meet the requirements for better implementation of Inclusive Education. Additionally, Khoiriyah et al. (2024) continue that although Tanzania has policies supporting Inclusive Education, their execution is inconsistent, often failing to meet the needs of disabled students. According to Mwambe and Mrema (2020), issues such as the availability of well-trained teachers, access to education, necessary infrastructure, funding, and an appropriate curriculum must be considered. Chiwamba and Kigobe (2022) said that heads of schools face challenges such as negative attitudes from society and a lack of life skills in handling students with special needs.

Negative perceptions toward Inclusive Education hinder the support school heads receive from the community, impacting their ability to implement necessary programs (Simamora & Pasaribu, 2023). The lack of life skills among educators to address diverse needs further complicates the situation, necessitating targeted professional development programs (Adoyo, 2019). These challenges prevent and limit the provision of Inclusive Education to all students who need access to the education system. Suja Elamaran (2024) argues that overcoming these

challenges requires intensive efforts from governments, international organizations, and educators to address the identified issues. They should collaboratively provide necessary training programs for teachers, improve infrastructure accessibility, increase funding, and enhance collaboration among stakeholders to ensure the successful implementation of Inclusive Education in schools. Unfortunately, it is crucial to eliminate the challenges that hinder the provision of inclusive education for all students who need access to the education system.

In Moshi, some schools have started enrolling students with special needs, but teachers are not adequately prepared to attend to these students. Moshi faces the challenge of a low number of teachers trained in special education, especially in secondary schools. The majority of special education teachers in Moshi are trained to teach in primary schools. Although secondary schools in Moshi have also begun implementing Inclusive Education (IE), they still face many challenges. For instance, Moshi Technical Secondary has started enrolling students with hearing impairments. However, there are issues with teachers from normal schools being unable to meet the needs of these students. Teachers in secondary schools struggle due to a lack of knowledge in addressing the needs of students with special needs, as they were primarily trained to teach in primary schools (Possi & Milinga, 2017).

2.0 Methodology

2.1 Study Approach

This study has used the qualitative method because it intended to explore and grasp information about the issue of Inclusive Education (IE) using teachers' and heads of schools' perspectives, especially about the challenges that they are facing in implementing IE within their schools. The approach will help participants to give out their perceptions, experiences, and behaviors which will help the researcher to gather data, (Tenny et al., 2022). The approach allowed participants themselves to explain how, why, and what they think, feel, or experience about Inclusive Education. Therefore the researcher used a qualitative approach to look for patterns and themes where there was expansion and deepening in understanding data and results analyzed.

2.2 Sample size

The study sample included a population of 31 participants, comprising 25 teachers representing different groups at the school, including various grade levels and subjects they teach. Additionally, the sample included 5 head teachers and 1 Education Officer. These leaders provided insightful information and shed light on the leadership challenges of implementing Inclusive Education (IE) in their schools and the area of study. The Education Officer offered an overview of the policies by explaining the broader context of IE implementation.

2.3 Sampling techniques

The study used purposeful sampling due to its qualitative nature. Samples were chosen based on who could provide significant information concerning the study topic and research questions. This sampling technique offered a depth of understanding, as it allowed for the selection of participants based on their unique characteristics, such as being an Education Officer or a head of a school. Additionally, purposive sampling enabled the researcher to obtain a diverse range of perspectives, enriching the data by including teachers from different schools, varying class levels, and subjects taught.

2.4 Data Collection Methods

Data was collected using interviews and focus group discussions. The interviews were semi-structured and included open-ended questions aimed at uncovering personal experiences and participants' perspectives. Interviews were conducted in three days because the researcher had to travel from one school to another, to the areas where the researcher failed to reach due to time and distance he used a mobile phone interview. Key points were noted during the interviews, and with participants' consent, some were recorded using a mobile device. Issues such as the challenges facing schools in the implementation of inclusive education, teaching practices, and the learning environment were discussed during the interviews.

On the other hand, group discussions were conducted with teachers in groups of five, following the guidance of the researcher as facilitator. A set of prepared questions allowed them to share their views. The discussions involved mixing teachers from different schools in a single group to encourage dialogue and engagement.

2.5 Data Analysis

Data were analyzed using thematic analysis by reporting themes within the data. The researcher noted information presented by participants during group discussions. Additionally, the researcher employed a re-reading method to gain an in-depth understanding of the data and to familiarize themselves with the themes. The data were broken down into manageable portions, and codes were assigned to each segment. These codes were organized systematically using ATLAS.ti software and related themes were clustered to form potential themes. Coded data were exported to Word format for further analysis. Lastly, periodic reviews were conducted to ensure that the analyzed data remained relevant and comprehensive as the analysis progressed. Themes related to the research questions and existing literature were considered, while unrelated themes were discarded. The findings were connected to the research questions to extend their context within the field.

2.6 Ethical Considerations

The researcher informed all participants about the study's purpose, procedures, and benefits prior to their involvement in interviews and focus groups. To maintain anonymity, personal identifiers were removed from all documents and recordings, and confidentiality was assured by stating that responses would be used solely for research purposes. Purposive sampling was employed to gather diverse perspectives, particularly highlighting the experiences of teachers, school leaders, and educational leaders in implementing Inclusive Education (IE). The researcher facilitated discussions to ensure that all voices were heard, preventing the dominance of more vocal participants. Additionally, a letter of data clearance was obtained from Moshi District Council, and sample questions were tested for suitability before the research began.

3.0 Findings

The findings synthesize the key challenges identified in the research, highlighting the persistent need for systemic change to promote a truly inclusive educational environment. The following were the identified key challenges by the respondents:

3.1 The lack of adequate training and professional development for teachers

Many teachers are unprepared, this challenge is evidenced in schools that effectively implement Inclusive Education (IE) practices. This issue was only addressed with the heads of schools, who highlighted a significant gap in teachers' training. The feeling of unpreparedness often stems from insufficient initial training programs that fail to equip teachers with the necessary skills and strategies to address the diverse needs of all students. Moreover, the perspectives of school leaders reinforce this concern, as three (03) out of five (05) heads of schools reported that ongoing professional development opportunities for teachers are limited. They insisted that the government has been providing on-the-job training known as Mafunzo Endelevu ya Walimu Kazini (MEWAKA), but this initiative is not sufficient. There is a need to train as many teachers as possible in schools.

Heads of schools insisted that; lack of continuous learning opportunities inhibits teachers from staying updated on best practices and innovative approaches in inclusive teaching. Without proper training and professional development, teachers may struggle to create inclusive environments that foster equity and accessibility for all learners. Consequently, addressing these training deficiencies is essential not only for enhancing teachers' confidence and competence but also for ensuring that all students, regardless of their individual needs, can thrive in a supportive and inclusive educational environment. Effective professional development programs should be prioritized to empower teachers and improve educational outcomes for all students.

Table 1

Lack of adequate training and professional development for teachers in Inclusive Education (IE)

Aspect	Respondents	Percentage
Available training	1	20%
Limited training	3	60%
Not Available	1	20%
Total	**5**	**100%**

Source: Researcher (2024)

3.2 Inadequate resources in schools significantly impact the quality of instruction and the overall learning experience for students, specifically those with special needs

This study has revealed that approximately 76% (19) of teachers report a shortage of essential teaching materials and assistive technologies tailored to meet the diverse needs of these students. This scarcity not only hampers the effectiveness of lesson delivery but also limits opportunities for inclusive education, where every child can thrive. Heads of schools, on the other hand, have echoed these concerns, highlighting that financial constraints are a major barrier to acquiring the necessary resources. This is supported by Alcaraz et al. (2024), who notes that teachers in schools face challenges in delivering effective lessons due to a lack of essential resources, which is critical for meeting the diverse needs of students with special needs.

Table 2

Inadequate resources in schools on instruction quality, specifically for students with special needs

Aspect	Respondents	Percentage
Available Resources	6	24%
Limited Resources	19	76%
Resources Not Available	-	-
Total	**25**	**100%**

Source: Researcher (2024)

3.3 The challenge of a lack of funds and struggle to secure funding

Many schools find it difficult to obtain financing for specialized tools and materials, which are crucial for fostering an engaging and supportive learning environment. Heads of schools 4 out of 5 synthesizes the challenge of limited funds with that of limited resources. They insisted that their schools are faced with financial difficulties that hinder the implementation of IE. On the other side, education officers stressed the urgent need for increased funding and resource allocation from other stakeholders to assist the government in addressing these gaps. This is supported by Matthew (2017) and Perdana et al. (2024), who state that encouraging private sector participation and external funding sources can enhance financial support for education, thereby addressing the persistent funding gaps. Additionally, increasing collaboration among government, schools, and communities will help schools secure additional funding and support for implementing inclusive education initiatives. Therefore, without adequate investment, schools may continue to face challenges in providing equitable education, leaving students with special needs at a disadvantage. This systemic issue calls for a comprehensive approach that prioritizes resource availability and ensures that all teachers are equipped to support their students effectively, thereby promoting an Inclusive Education system that benefits everyone.

Table 3

Challenge of a lack of funds and struggle to secure funding

Aspect	Respondents	Percentage
Fund Available	-	-
Low Fund	4	80%
Fund Not Available	1	20%
Total	**5**	**100%**

Source: Researcher (2024)

3.4 Resistance to change in educational settings

Resistance to change among community members' mindsets about inclusive education, is significant for teachers, school leaders, and education officers. Approximately 52% (13) of teachers reported encountering resistance from some parents when it comes to embracing inclusive education. This resistance often stems from deeply ingrained mindsets and cultural attitudes that prioritize traditional teaching methods over innovative, inclusive approaches. Odongo (2018) supports this by stating that some parents ignore their responsibility to care for their children after taking them to school; children with special needs are taken to school and left in the care of teachers. Heads of schools have highlighted the difficulty in shifting these mindsets, noting

that many educators may feel apprehensive about altering their established routines or may lack confidence in their ability to implement inclusive strategies effectively.

To address this challenge, education officer has proposed the implementation of community awareness campaigns aimed at enhancing understanding and acceptance of inclusive education. By engaging the broader community and fostering discussions around the benefits of inclusivity, these campaigns can help alleviate misunderstandings and create a supportive environment for change. Ultimately, overcoming resistance requires a collaborative effort that includes professional development for teachers, educating parents on the importance of inclusive education, clearly communicating the benefits of inclusion, and providing ongoing support from school leadership to nurture a culture of acceptance and adaptability within educational institutions.

Table 4

Resistance to change in educational settings by parents

Aspect	Respondents	Percentage
Resistance Available	13	52%
Resistance Not Available	12	48%
Total	**25**	**100%**

Source: Researcher (2024)

3.5 Policy implementation gaps in the educational sector have become increasingly evident, particularly concerning Inclusive Education (IE).

A significant number of teachers, approximately 64% (16), have expressed confusion about the policies that govern IE, highlighting a critical issue in the dissemination and clarity of these guidelines. This argument is supported by Khoiriyah et al. (2024) and Novrizal and Manaf (2024), who stated that the implementation of Inclusive Education policies in developing countries faces challenges related to accessibility, a lack of accompanying teachers, poor acceptance by school community members, and less-than-optimal funding. This lack of understanding among educators can lead to inconsistent practices in classrooms, ultimately affecting student outcomes.

Furthermore, feedback from school leaders reveals a concerning disconnect between policy and practice; three out of five heads of schools indicated that the policies intended to support inclusive education are not effectively translated into actionable strategies within their institutions. This disconnect suggests that while policies may be well-intentioned, they often lack the necessary frameworks and support for successful implementation. Education officers have also recognized

these challenges, emphasizing the urgent need for clearer communication from the Ministry of Education. Without concerted efforts to bridge these gaps, the goals of Inclusive Education may remain unfulfilled, leaving many students without the support they require. Addressing these issues will require a collaborative approach involving teachers, school leaders, and policymakers to ensure that inclusive education is not only a policy on paper but a lived reality for all students.

Table 5

Understanding of the policies governing Inclusive Education (IE)

Aspect	Head Teachers	Percentage	Teachers	Percentage
Policy Gaps Available	3	60%	16	64%
Policy Gaps Not Available	2	40%	9	36%
Total	**5**	**100%**	**25**	**100%**

Source: Researcher (2024)

3.6 Class size and diversity present significant challenges in contemporary education, as highlighted by various stakeholders in the field

A substantial 67% (17) of teachers reported that large class sizes hinder their ability to address the diverse needs of their students. This sentiment underscores a critical issue: when classrooms are overcrowded, it becomes increasingly difficult for educators to tailor their teaching strategies to accommodate varying learning styles and abilities. "*The disabled students enrolled in primary schools also face the problem of overcrowded classrooms, lack of seats, standing space, and poor acoustics*," as revealed by Mmbuji (2017). The average class size is 45 students, but some classes have more than that number. Large class sizes affect the smooth implementation of Inclusive Education (IE) and negatively impact student achievement (Kamoet & Mbirithi, 2024).

Heads of schools 05 out of 05 echoed these concerns, noting that managing classrooms with students who possess a wide range of skills and challenges can overwhelm even the most experienced educators. The complexities of Inclusive Education require an environment where individualized attention is feasible; however, large class sizes compromise this ideal. An education officer emphasized the urgency of addressing teacher-to-student ratios, arguing that lower ratios are essential for supporting IE effectively. Without targeted support, students who may require additional assistance or specialized instruction risk falling behind. Therefore, a systemic reevaluation of class sizes and resource allocation is vital to ensure that all students receive the equitable education they deserve, fostering an inclusive learning environment that meets the diverse needs of every learner.

Table 6

The impact of large class sizes on addressing diverse student needs

Aspect	Head Teachers	Percentage	Teachers	Percentage
Hinder learning	5	100%	17	67%
Not hindering learning	-	-	8	33%
Total	**5**	**100%**	**25**	**100%**

Source: Researcher (2024)

4.0 Discussion

The implementation of Inclusive Education (IE) in regular schools faces multidimensional challenges that significantly impact the provision of education for all students, especially those with special needs. One of the most persistent challenges is the lack of adequate training and professional development for teachers. The evident gap in teachers' preparedness to implement IE practices underscores the necessity for robust initial training programs. Reports indicate that a staggering 80% of school heads identified limited opportunities for professional development, which inhibits teachers from staying updated on best practices. The lack of continuous training among teachers in regular schools not only affects their confidence but also compromises the quality of education provided to diverse learners. Effective professional development programs must be prioritized to empower educators with the necessary skills and strategies to foster inclusive classrooms where every student feels valued and supported.

Inadequate resources further exacerbate the challenges of implementing IE. Approximately 76% of teachers reported shortages of essential teaching materials and assistive technologies tailored for students with special needs. The financial constraints faced by schools hinder their ability to acquire necessary resources, which are critical for creating engaging and supportive learning environments. Research indicates an urgent need for increased funding and resource allocation from both government and community stakeholders. Collaboration between these entities is essential to address funding gaps and ensure that educators have access to the tools they need to support all students effectively.

Cultural attitudes and resistance to change within the community also pose substantial barriers to the successful implementation of IE. The reported resistance from parents indicates a broader societal challenge, where traditional educational mentalities may overshadow the benefits of inclusive practices. To combat this, community awareness campaigns are essential to foster understanding and acceptance of IE. Such initiatives should not only educate parents but also

involve teachers and school leaders, promoting a unified approach to inclusivity. Building a supportive community environment will require ongoing dialogue and engagement to shift mindsets toward embracing innovative educational strategies.

The research highlights critical gaps in the implementation of IE policies, as many educators lack clarity regarding these guidelines. Approximately 64% of teachers expressed confusion about the policies governing IE, revealing a significant disconnection between policy intentions and practical application. School leaders echoed this concern, noting that there is a low understanding of existing policies among teachers and other education stakeholders. This often results in their failure to translate those policies into actionable strategies within their schools. Clearer communication and comprehensive training related to IE policies are vital for ensuring that teachers effectively implement these strategies in their classrooms. Bridging this gap will require collaboration among school leaders, teachers, and policymakers to ensure that Inclusive Education becomes a reality rather than a theoretical aspiration.

Finally, the challenges posed by large class sizes cannot be overlooked. A considerable 67% of teachers indicated that overcrowded classrooms hamper their ability to meet the diverse needs of their students. The complexities of managing large groups of students with varying abilities significantly impact the effectiveness of inclusive education strategies. Education officers emphasize the necessity of addressing teacher-to-student ratios to create an environment conducive to individualized attention. A general reassessment of class sizes and resource allocation is essential to ensure that all students, particularly those requiring additional support, receive equitable education.

The challenges identified in this research highlight the urgent need for a comprehensive approach to fostering inclusive education in regular schools. By addressing gaps in professional development, resource allocation, community attitudes, policy implementation, and class size, stakeholders can create a supportive environment that meets the diverse needs of all learners. Collaborative efforts among teachers, school leaders, policymakers, and the community are crucial in realizing the vision of an inclusive educational system that empowers every student.

5.0 Conclusion and Recommendations

In conclusion, the challenges that face school leaders in implementing Inclusive Education (IE) within regular schools are multifaceted and deeply rooted in systemic issues. A significant gap in teacher training and professional development limits teachers' preparedness to meet the diverse needs of all learners, as evidenced by the high percentage of teachers who feel untrained. Moreover, inadequate resources and financial constraints hinder schools from acquiring essential teaching materials and assistive technologies, further obstructing effective lesson delivery.

Resistance to change within the community, coupled with policy implementation gaps, complicates the transition to an Inclusive Educational framework. Many educators struggle with

unclear policies, leading to inconsistencies in classroom practices. Additionally, large class sizes intensify these challenges, making it increasingly difficult for teachers to provide the individualized attention and follow-ups necessary for successful IE.

To address these issues, a comprehensive approach is required, emphasizing professional development, resource allocation, community awareness, and clearer policy communication. By fostering collaboration among educators, the community, and policymakers, we can create an inclusive educational environment that truly supports all students, ensuring their right to equitable and accessible education is realized. Only through concerted efforts can we hope to overcome these barriers and cultivate an inclusive culture within our schools.

This study has investigated the challenges faced by heads of schools in the implementation of Inclusive Education (IE) in regular schools therefore the study recommends various issues concerning Inclusive Education to the education authorities and other education stakeholders as follows. There should be enhanced teacher training programs and ongoing professional development opportunities for teachers in regular schools. Teachers must be equipped with the skills to address diverse student needs. This includes mentoring, workshops, and access to resources that focus on inclusive teaching strategies.

On the other hand, schools should allocate sufficient resources. There should be advocacy for increased funding and resource allocation to acquire essential teaching materials and assistive technologies. Educational stakeholders should collaborate with schools, including government bodies and private organizations, to help bridge the resource gap, ensuring that all students have the tools they need to succeed in their learning process.

Accordingly, there should be community engagement. This can be achieved by implementing community awareness campaigns to foster understanding and acceptance of IE among parents and local communities. Engaging stakeholders through discussions and informational sessions may help shift mindsets and reduce resistance to inclusive practices.

Additionally, it is crucial to ensure clear communication and understanding of IE policies among educators. The Ministry of Education should provide actionable guidelines and frameworks to facilitate the effective implementation of these policies in schools. Schools should also be prepared to implement these policies to ensure that IE is present in their institutions. Through the implementation of the above recommendations, there will be effective implementation of IE to foster the success of all students, especially those with special needs.

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The Impact of Compensatory Vowel Lengthening in Phonological Processes Among Standard Kiswahili Words

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ABSTRACT
The purpose of this paper was to discuss the impact of Compensatory Vowel Lengthening in Phonological Processes Among Standard Kiswahili words. A quick examination of a random sampling of words and / or morpheme tend to suggest that different languages have phonological processes that determine well-formedness of sound sequences and combinations. To this effect, within a phonological system, a language has restrictions that inhibit the appearance of succession of two vowels. The general objective of this paper is to describe the extent to which these phonological processes result in Compensatory vowel lengthening. In most cases, lengthened vowels in standard Kiswahili are not acceptable forms at the surface level, thus necessitating employing a process of vowel shortening. Vowel shortening is one of the strategies that is employed in order to yield an acceptable form. This paper examines the vowel shortening processes that take place word initially, medially or finally in Kiswahili. The paper uses extended models of generative phonology as a theoretical framework. The paper concludes that the surface representations that we observe in most of the lexicons are subject to well-formedness conditions which include, inter alia, vowel shortening.

KEYWORDS: vowel shortening, standard Swahili, glide formation, coalescence

1.0 Introduction

The objective of this paper is to revisit the status of Vowel Shortening in Glide Formation and Vowel Coalescence in Standard Kiswahili. These phonological processes has been assumed to result to compensatory vowel lengthening in Standard Kiswahili and other related Bantu languages. While this is true but the question is why should phenomena be taken from historical perspective that the compensatory vowel lengthening is a mandatory? There is a need of rethinking and revisiting to this generalization. While there is an evidence that glide formation and vowel coalescence may result to compensatory lengthening, but in some cases this process may also result to unacceptable form in standard swahili at the surface level. When this state off affair do happens, it necessitates other phonological processes such as vowel shortening to take place. Before proceeding with the discussion of the paper, it is important to review, on phonological process and how this process affect the standard Kiswahili**.** In identifying and discussing the phonological processes that affecting vowel sounds in any language, one must know what is the term phonological processes means.

Massamba (2010:14) defined phonological processes are those processes that convert phonological representations into phonetic representations. McMahon (2000:23) adds that such processes are local and non- arbitrary, in that there must be a clear connection between a process and its environment. Also, Crystal (2008:366) asserts that phonological processes are held to be innate. Another important word that needs to be defined is a vowel, of which according to Crystal (2008:517) has defined both phonetically and phonologically, whereas phonetically vowels are sounds articulated without a complete closure in the mouth or a degree of narrowing which would produce audible friction, and from a phonological point are units which function at the Centre of

syllables. The representations here mean underlying representation (//) and surface representations ([ ]). Other linguists such as Chomsky and Halle (1968) assert that the surface structure must meet two independent conditions: first, it must be appropriate for the rules of phonological interpretation; second, it must be "syntactically motivated," that is, it must result from the application of independently motivated syntactic rules. According to Chomsky and Halle, surface structure has two concepts which are input to the phonological component and output of the syntactic component. These processes are sometimes called natural processes. Phonological processes affect can affect both consonants and vowels. The present paper aims at identifying and discussing the impact of Compensatory Vowel Lengthening in Phonological Processes Among Standard ki-Swahili words which include glide formation, vowel coalescence and high vowel deletion, particularly in Standard ki-Swahili.

Phonological processes may effect both vowels and consonants of which this paper, the general concern is on phonological processes affecting vowels. Phonological process is a linguistic process used by the speakers of the language to simplify the production of complex words, by deleting or omitting some of the phonemes in the word, or combining two phonemes in the production of some words. It is important to note that the processes are not randomly practiced rather they follow some rules.

Another aspect that needs to be clarified briefly is Standard Kiswahili. Standard Kiswahili can be taken as the standard dialect called Kiswahili *Sanifu (or Kisanifu)* which is a result of the inter-territorial language (*Kiswahili*) Committee which was founded in 1930. It was this committee that selected standard Kiswahili as being that dialect which is spoken in Zanzibar-(*Kiunguja*, (Whiteley 1969). Standard Kiswahili is a lingua franca of the African Great Lakes region and other parts of eastern and south-eastern Africa, including Tanzania, Kenya, Uganda, Rwanda, Burundi, Mozambique, and the Democratic Republic of Congo (DRC). Estimates of the total number of Swahili speakers vary widely, from 50 million to over 100 million. It is assumed that a significant fraction of Swahili vocabulary is derived from Arabic through contact with Arabic-speaking Muslim inhabitants of the Swahili Coast. In Guthrie's geographic classification, Kiswahili is in Bantu zone G. It has become a second language spoken by tens of millions in three African Great Lakes countries (Tanzania, Kenya, and the DRC) where it is an official or national language. It is the only African language used in the African Union.

Vowel shortening is the change that affects sound segments when vowels are juxtaposed at a morpheme and/or word boundaries. Essentially, phonological processes convert phonological representations into phonetic representations. In phonological rules, we construct paradigms of words to look for regular alternations and/or derivations in the phonetic shape of the stem as different affixes are added; as well as for systematic differences in the realization of the affix as a function of the stem. These rules may also study variations in the pronunciation of a word as the phrasal context changes. In standard Kiswahili, as in the case with other Bantu languages, gliding and coalescing processes operate at the morpheme boundaries within words. Some processes, however, operate at

a word boundary within phrases. We will now delve into these processes more closely and discuss their impacts on standard Kiswahili. The types and levels of representation involved in phonological derivations and that will be applied in this paper are those which are standard in generative approach, that is, underlying representation (UR) "//" and surface representation (PR) "[ ]". The phonological processes affecting vowels in the language being discussed that have an impact on shortening one of the vowels are glide formations, coalescence and high vowel deletion. The phonological processes result into a compensatory vowel lengthening. The process yields unacceptable forms in the standard language in question. Therefore, vowel shortening is an imposed strategy to the lengthened vowel to yield an acceptable form in the language under study.

This paper is approached from the Standard and Extended Models of Generative Phonology points of view. As a theory, Generative Phonology (henceforth GP) is part of a more general theory of grammar propounded by Noam Chomsky in the late 1950's, and which came to be known later as Generative grammar. According to this theory, a grammar of a language is to be defined as a set of rules, which enable speakers to produce an infinite number of sentences in their language. This grammar should also be able to adequately analyse each sentence in the language. Generative grammar is rule-based in that it is based on the assumption that when one knows a language it means one has internalised a set of finite rules that operate at the different levels of the language in question.

The most authoritative and comprehensive presentation of the theory of generative phonology is articulated in the Sound Pattern of English (SPE), by Chomsky and Halle (1968) which is generally regarded as the Standard Model of Generative Phonology. The theory was subsequently revised by other phonologists such as Kisseberth (1970), Kiparsky (1973b, 1976), Anderson (1974), McCawley (1974), Kenstowicz and Kisseberth (1977) and Kenstowicz (1994), to mention but a few. These revised versions gave rise to what has come to be called Extended Models of Generative Phonology.

In Phonological analysis, generative phonology attempts to achieve three levels of adequacy: namely observational, descriptive and explanatory. According to Chomsky (1965: 24-27) observational adequacy is achieved when the theory observes and transcribes the data correctly. Descriptive adequacy is achieved when the theory in addition to observing and transcribing the data correctly, it also accounts for the linguistic competence of the native speaker. Finally, explanatory adequacy is achieved when a principled basis is established for deciding between alternative solutions to a problem leading us to choose the one solution, which captures the native speakers, competence. An evaluation procedure is used in which one out of a range of possible descriptions can be chosen and justified as being correct for a given data.Generative Phonology attempts to make explicit the relationship between the physical actualization of the uterance and what underlies it. Massamba (1996: 82) as summarizes the major issues of emphasis:

(a) The need for making explicit the formal character of phonological and phonetic representations.
(b) The need for an explicit notational system in describing sound structure of language.
(c) The operational procedures of mapping one representation onto another.

(d) The need for providing empirical reasons as to why a particular description of a given set of data was to be preferred over other possible ones.

In this paper, the lengthened vowel will be represented as [vv] and a shortened one as [v]. The paper has five sections. Section one is the introduction and theoretical framework, section two methodology, section three results and discussion, section four conclusions and section five recommendations.

2.0 Methodology

This study employed two methods for data collection, namely self-data generation and documentation via library research.

The first method was self-data generation of which the author relied on his own native intuition of which 50 lexicons were generated. For checking data and confirming various facts, two Kiswahili speakers were involved.

The second method was the documentary review of which relevant literature from different sources were consulted to obtain linguistic information about the standard Kiswahili. One of the documents that data were gathered is Maganga (1991). Through this doctoral dissertation titled: A study of morphophonology of Standard Kiswahili, *Kipemba, Kitumbatu and Kimakunduchi*, a total of 50 lexicon were made available. This was done by randomly picking any verb from the first page of the list to the last one. Sometimes, two or more pages were opened and no word was chosen. This was the case throughout the pages. We have had the opportunity to check the standard Swahili dictionary (2013), of which we noted that some of the vocabulary is either outdated or not in the standards Kiswahili despite the dictionary being a very valuable tool for identifying words and other phrases necessary for supporting phonological issues raised in this paper.

3.0 Findings and Discussions

3.1 Glide Formation and the Resulting Features

Glide Formation (henceforth GF) is a phonological process which has the effect of changing back vowel /u/ into bilabial /w/ and high vowel /i/ into palatal glide /y/. This process does not affect the identical vowel sequences such as */a+a/, /e+e/ /i+i/, /o+o/* and */u+u/* since in such sequences one of the identical vowels gets deleted and the remaining vowel get lengthened or may remain unchanged as */u+u/* to yield *[mu+ungano] ~"union".* In standard Kiswahili, both glides [w-] and [y-], may occur. Let us begin our discussion by considering a **'w'** glide. The non-syllabic back high glide [w] is formed when a non-syllabic high back vowel/u/ precedes any vowel except an identical vowel. Observe the following examples in (1):

1. ı) *ˈmu+alimu/* → *ˈmwalimu]* 'a/the teacher"
   ɔ) *ˈmu+ezi/* → *ˈmwezi]* 'the moon"
   ː) *ˈmu+izi/* → *ˈmwizi]* 'a/the thief"
   l) *ˈmu+ongo/* → *ˈmwongo]* 'the/a lier"

ɔ) *mu+uzaji/* → *muuzaji]* 'the/a seller"

In data (1), the phonological process that take place is known as glide formation, that is the vowel /u/ of /mu/ changes to [w] when its immediately followed by any vowel except it's identical. It is also observed that, for the gliding process to take place, the root of a word begins with the vowel /a/;/e/; /i/; /o/.The gliding process does not take place in any identical vowel as in 1 (e), of which the root a word */u-zaji/* blocks the application of the gliding processes. Other Kiswahili words that demonstrate this phonological behaviour include /*muungano/; /muuguzi/; /muungwana*/, just to mention but few. Glide formation can affect any word category without considering the number of syllables in the given words, consider the different number of syllables in 1(a and b) above but all has been affected by glide processes. The gliding process take place in the morpheme boundary (+).

In Standard Kiswahili words, happening of the glide formation can be blocked by historical nature of the word itself. Several occasions, the sound may have similar combinatory vowels along morpheme boundary but it does not glide or it may glide but resulting to unacceptable forms as in (2):

2. ɪ) *mi+ezi/* → *myezi]* 'months"
ɔ) *mi+aka/* → **myaka]* 'years"
ɔ) *mi+onzi/* → **myonzi]* 'rays"

In (2), glide formation has taken place and has resulted ill-formed Kiswahili words and what happens is copping similar words as they appear in the underlying representation. Therefore, in standard Kiswahili, it's difficult to tell the context in which such a process is prohibited from taking place as in (3).

3 ɪ) *mi+ezi/* → *miezi]* 'months"
ɔ) *mi+aka/* → *miaka]* 'years"
ɔ) *mi+onzi/* → *mionzi]* 'rays"

In these words (3), the the well-formed words remain to be *[miezi]; [miaka]; and [mionzi]*. We can expand our discussion by observing the following data (4) of which the gliding has resulted to unacceptable forms in Standard Kiswahili.

		level I	level II	level III	
4	ɪ)	*mu+alimu/*	→ **mwaalimu]*	→ *mwalimu]*	'a/the teacher"
	ɔ)	*mu+izi/*	→ **mwiizi]*	→ *mwizi]*	'a/the thief"
	ɔ)	*mu+aka/*	→ **mwaaka]*	→ *mwaka]*	"a year"
	l)	*mu+ezi/*	→ **mweezi]*	→ *mwezi]*	'the month"
	ɔ)	*u+embe/*	→ **weembe]*	→ *wembe]*	'a razor blade"

	')	*'vi+akula/*	→ **vyaakula]*	→ *vyakula]*	'the food"

In these examples we see that, in the process of glide formation, words in underlying structure at level I get gliding at level II at the surface structure, which has resulted the lengthened vowels in all cases 4 (a-f) in such that we get forms of [aa; ee; ii;] in level II; instead of resulting [a; e; e] at surface forms in level III which is acceptable form in Standard Kiswahili. The closer observation in 4, we notice two phonological processes to take place, namely glide formation at level II and vowel deletion at level II. The gliding formation at level I has resulted a lengthened vowels at level II, which is normally not acceptable in Standard Kiswahili. It's urged by Generative phonologists that the lengthened vowel is there to compensatory the lost vowel which was suffices in level I.in the process of gliding. In that state of affair forced us to invoke another phonological process known as Vowel deletion in order to yield acceptable Standard Kiswahili words as seen in 4(a-f) at level III. The fundamental question remains, why are we creating this round about derivation phenomena which losses linguistics simplicity and economy avoiding unnecessarily redundant to our descriptive study? The answer to this theoretical question is not a straight forward. Two explanations can be explored to this theoretical matter. One explanation is to argue on where the lost vowel /u/ and /i/ at level I go. These lost vowel /u/ and /i/ and other related vowel at level I they got lost at the gliding process. The surfacing vowels in level II, is there to compensate the lost vowel, otherwise one may get difficult in explaining the disappearance of that vowel. This is diachronically phonological point of view. Another thought is explaining this by synchronically point of view that the speakers of language should be considered before placing those theoretical perspectives. That Standard Kiswahili speaker, knows and uses *[mwalimu];[mwaka];[mwezi]; [mwizi]*,etc. Therefore, issues on lengthening in order to compensate the lost vowel does not yield any fruits.

Similar explanation can been provided in the following verb and adjective clusters. Observe the following data.

5	ı)	*'ku+enda/*	→ **kweenda]*	→ *kwenda]*	'to go"
	ɔ)	*'mu+izi/*	→ **mwiizi]*	→ *mwizi]*	'a/the thief"
	:)	*'mu+aka/*	→ **waazimu]*	→ *wazimu]*	'madness"
	l)	*'ku+engine /*	→ **kweengine]*	→ *kwengine]*	'another place"
	ɛ)	*'ku+ingine/*	→ **kwiingine]*	→ *kwingine]*	'another place"

Let us expand our discussion by providing adverbial forms which may also attract gliding processes as in the following data in (6) suggest:

6	ı)	*'u+ekundu/*	→ **weekundu]*	'reddish"
	ɔ)	*'u+endawazimu/*	→ **weendawazimu]*	'madness"
	:)	*'u+eupe/*	→ **weeupe]*	'whiteness"

Clearly in the above example, there seem to be no theoretical explanation that justifies the creation of the lengthened vowels for standard Swahili speakers without moving direct to *[wekundu]; [wendawazimu] and[weupe]*.

Before we make a discussion on the above data, let us expand our discussion by considering a front glide /y/. A front glide [y] is formed when a high front vowel is followed by a non-identical vowel. This take place across morphemes and/or word boundaries. Observe the following examples in (7):

7	ɪ)	/vi+eti/	→ *[vyeeti]	→ [vyeti]	‘certificates”
	ɔ)	/vi+ura/	→ *[vyuura]	→ [vyura]	‘frogs”
	ː)	/vi+ungu/	→ *[vyuungu]	→ [vyungu]	‘pots”
	l)	/vi+upa/	→ *[vyuupa]	→ [vyupa]	‘bottles”
	ɛ)	/vi+umba/	→ *[vyuumba]	→ [vyumba]	‘rooms”
	ʊ)	/vi+uma/	→ *[vyuuma]	→ [vyuma]	‘iron “

As in the case we observed in (7), once again data (8) suggest that a glide formation does not apply in the following forms:

8	ɪ)	/vi+unzi/	→*[vyuuzi]	→[viuzi]	‘fibers or strings”
	ɔ)	/vi+ungo/	→*[vyuungo]	→[viungo]	‘spices/ organs”
	ː)	/vi+ungu/	→*[vyuungu]	→[vyungu]	‘pots”
	l)	/vi+umbe/	→*[vyuumbe]	→[viumbe]	‘Living ɔrganisms”
	ɛ)	/vi+azi/	→*[vyaazi]	→[viazi]	‘potatoes”

The examples in (8) suggest that words in standard Kiswahili may undergo gliding which results into unacceptable forms. In this context, underlying representations are similar to the surface representation. If vowel shortening applies to these forms, still will yield unacceptable forms in standard Kiswahili as (9) suggest.

9	ɪ)	/mi+ezi/	→ *[myeezi]	→ *[myezi]	‘months”
	ɔ)	/mi+aka/	→ *[myaaka]	→ *[myaka]	‘years”
	ː)	/mi + onzi/	→ *[myoonzi]	→ *[myonzi]	‘rays”

The discussions on gliding formation and vowel lengthening in standard Kiswahili leads us to the following observations:

Sounds /w/ /y/ are the result of glide formation. These processes can affect any vowel within the morpheme syllable except its identical vowel. The output of glide formation yields words that can be acceptable to some dialects of Kiswahili but they are not acceptable to standard Kiswahili. We take note that, as a standard in generative phonology that unacceptable form is indicated by astaric (*) on a preceding sound as in (5-9). Therefore, for the acceptability forms of the language, dictates yet other phonological processes to apply that will delete the lengthened vowel to remain

only one, thus shortening of a vowel. In order to form a Standard Swahili language, the vowel shortening process is applied as shown everywhere in this paper. Now, what arguments we can put forward that actually the acceptable forms we claim in standard Kiswahili is a result to gliding and not otherwise? We can discuss this phenomenon by borrowing one of our examples in this paper to draw our point home.

10. *mu+alimu/* → *mwalimu]* 'a teacher"

Compare with:

11 *mu+alimu/* → **mwaalimu]* → *mwalimu]* 'a teacher"

In (10), it is taken for granted that the surface representation of /mu+alimu/ is [mwalimu]. Therefore, it is a one level relationship. In (11), it suggests that the surface representation of /mu+alimu/ is [*mwaalimu] and then in the second level within [mwaalimu], one vowel among the two gets deleted and thereafter it shortens to "mwalimu". Theoretically, the derivation in (10) is less explanatory. The reason is a straightforward one, universally, it is well known that the output of gliding is lengthening and the lengthening takes place as a strategy of compensating the duration for the lost vowel in the gliding process. The application of the vowel shortening rule deletes the lengthened vowel in order to yield acceptable forms in standard Kiswahili. Therefore, the derivation (11) can be urged a self-explanatory and descriptively acceptable in standard Kiswahili.

We can expand our discussion by considering formal rules that capture the generalization as discussed in this paper. The processes are gliding, lengthening and deletion. The general phonological rules that capture glides *w* is formulated in (1) below:

Rule 1: [w] formation

$$\begin{matrix} V_1 & & V_2 \\ \begin{bmatrix} -\text{cons} \\ +\text{high} \\ +\text{back} \end{bmatrix} & \rightarrow & \begin{bmatrix} -\text{syll} \\ -\text{cons} \\ +\text{lab} \\ -\text{cor} \\ +\text{high} \\ +\text{back} \end{bmatrix} \end{matrix} \Big/ ([+\text{cons}])-\begin{Bmatrix} + \\ \# \end{Bmatrix}[+\text{syll}]\text{; Condition: where } V_1 \neq V_2$$

That is to say, a high front vowel becomes a front glide in a morpheme boundary before any identical vowel.

Now, let us formulate the /y/ glide in (vv) bellow:

Rule 2: [y] formation

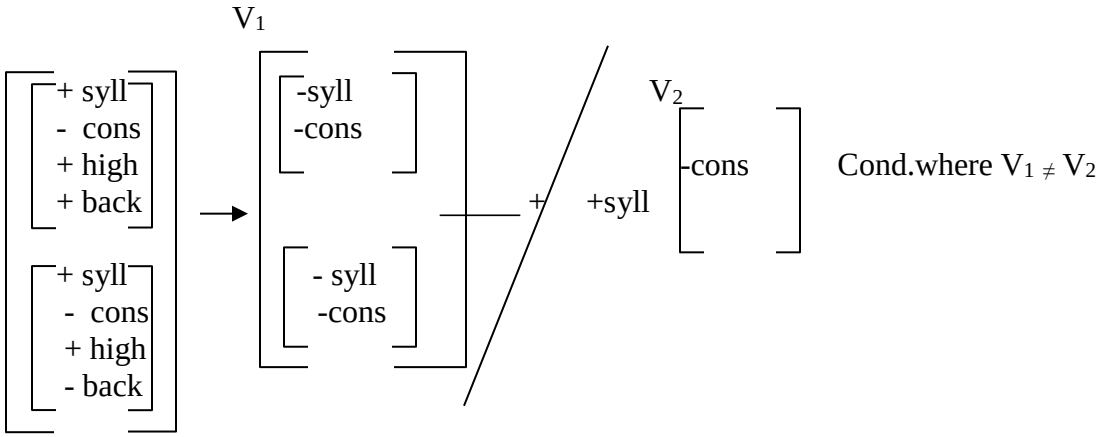
V_1 V_2

$$\begin{bmatrix} -\text{cons} \\ -\text{back} \\ +\text{high} \end{bmatrix} \rightarrow \begin{bmatrix} -\text{syll} \\ -\text{cons} \\ -\text{back} \\ +\text{cor} \\ +\text{cont} \end{bmatrix} \Big/ \_\_\_ + [+\text{syll}]$$ Condition: where $V_1 \neq V_2$

That is to say, a high back vowel becomes a back glide in word or morpheme boundary position before non-identical vowels.

In glide formation we need only one rule and consequently demanding us to collapse rile 1 and 2 in the following way:

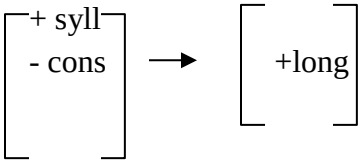
Rule 3: Glide formation (collapsed)



The rule states that a high vowel will change into its corresponding glide when immediately followed by any non-identical vowel across a morpheme boundary.

As we have observed in (4.7,8, 11), the glide formation processes trigger yet another process known as compensatory vowel lengthening by which the duration of the non-identical vowel is increased in order to compensate for the duration of the underlying syllable which was represented by the vowel which has changed into a glide. We now formulate a compensatory vowel lengthening in the following way:

Rule 4: Compensatory Vowel Lengthening



As shown here the vowel is lengthened.

Now, what happens after vowel lengthening in order to yield acceptable forms in standard Kiswahili? We have employed the vowel shortening, the process of which rule 5 is formulated as follows:

Rule 5: Vowel shortening

$$\begin{bmatrix} +\text{syll} \\ -\text{cons} \\ +\text{long} \end{bmatrix} \longrightarrow \begin{bmatrix} +\text{syll} \\ -\text{cons} \end{bmatrix}$$

As shown here the vowel is shortened.

Now let us exemplify [w-] glide formation to derive the PR of /mu +aka/ as follows:

12	/ mu + aka /	`year'
	/ mu + aka/	UR
	mwaaka	GF
	[*mwaaka]	CVL (in standard Kiswahili)
	[mwaka]	vowel deletion
	[mwaka]	PR

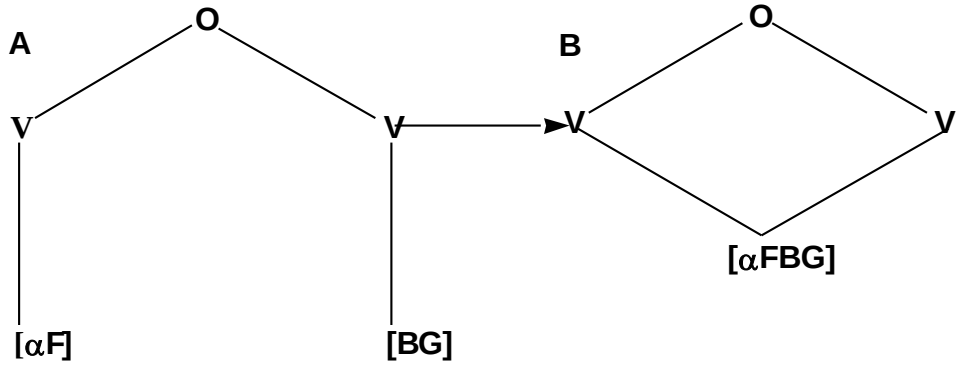
In these derivations GF and CVL are crucially ordered in that the former feeds the latter. If the order were reversed, incorrect results such as *[mwaaka] would be yielded. Note also that, the ordering of GF and CVL before vowel deletion is crucial because segmental rules have to apply before auto-segmental rules.

Underlyingly there are three syllables mu, e and to but on the surface there are only two; mwa and to ; the a of mwa being lengthened in order to compensate for the lost duration of the lost syllable (i.e. $ mu $).We note here that glide formation and compensatory vowel lengthening rules are in a feeding relationship, the former feeds the latter.

3.2 Vowel Coalescence Processes the Resulting Features

Vowel Coalescence (henceforth VC) is a phonological process in which two adjacent vowels affect one another to the extent that they get neutralized and result in a vowel which is not identical to either one of the two underlying vowels. The neutral vowel is consequently lengthened. This neutral vowel is sometimes referred to as a `Compromise' vowel (cf. Massamba 1996:96). Cammenga (1988:11) argues that vowel coalescence is essentially a type of phonological operation and that, therefore, the theory should be able to accommodate it as such. He formalizes his proposal by means of rule (8).

13 Vowel Coalescence Rule



This convention states that, any floating syllable node symbolised by O, is automatically linked to the nearest two vocalic feature Matrix for which it is unspecified as in13 (A); and coalesce resulting into unspecified compromise features as in 8(B), and adds (op.cit 3) that "this format makes the claim that vowel coalescence is confined to the domain of the syllable, and that the lexically marked or dominant feature values of both input vowels are preserved in the course of fusion. A further aspect of the format (V:) is that the output is predicted to be a long vowel. Cammenga indeed makes the claim of universality for the format above.

The neutral vowel is consequently lengthened. This neutral vowel is sometimes referred to as a `Compromise' vowel (cf. Massamba 1996:96). Standard Kiswahili data also attests to this:

		Level I		Level II	
14	ı)	*ma+ino/*	→	**meeno]*	'teeth"
	ɔ)	*wa+ingi/*	→	**weengi]*	'many"
	:)	*wa+izi/*	→	**weezi]*	'thieves"
	l)	*ma+iko/*	→	**meeko]*	'stove"
	ɔ)	*pa+ingi/*	→	**peengi]*	'many"

In these standard Kiswahili examples we see that, in the process of Coalescence, words /a/ in underlying structure at level I are juxtaposed to get new compromised words with the vowed [e] at level II at the surface structure, which has resulted the lengthened vowels in all cases 14 (a-e) in such that we get words with forms [ee] in level II; instead of resulting [e] at surface forms in level.

We also note that what results from coalescence is not acceptable form in standard Kiswahili, therefore, we invoke another process namely vowel shortening and this is what happens in (15):

15 ı) *ma+ino/* → **meeno]* → *meno]* 'teeth"

ɔ) *wa+ingi/* → **weengi]* → *wengi]* 'many"

ː) *wa+izi/* → **weezi]* → *wezi]* 'thieves"

l) *ma+iko/* → **meeko]* → *meko]* 'stove"

ɛ) *pa+ingi/* → **peengi]* → *pengi]* 'many"

In the above examples (15) we note that, a juxtaposition of the vowels /a/ and /i/ results in the disappearance of both vowels and instead a new lengthened compromise mid back vowel [ee] appears. Therefore the /a + i/ VC rule can be expressed in the following way:

Rule 6: Vowel coalescence

$$\begin{matrix} & V & & V & & V \\ [+\ \text{low}\ ] + & \left[\begin{matrix} +\text{high} \\ +\text{back} \end{matrix}\right] & \rightarrow & & \left[\begin{matrix} -\text{high} \\ -\text{low} \\ +\text{back} \\ +\text{long} \end{matrix}\right] \end{matrix}$$

That is to say, when a low vowel and a high back vowel are juxtaposed, the two vowels coalesce resulting onto a lengthened mid-back vowel.

We will exemplify /a + i / VC using rule (16) to derive the PR of /ma + ino/ as follows:

16.	/ma + ino /	UR
	meno	VC
	[*me:no]	CVL (in standard Kiswahili)
	[meno]	
	----------	PVL
	[meno]	PR

Looking at the two processes CVL and PVL one could argue that they apply independently; any one could apply first and the intended results would be obtained. However, as we shall see below, when both conditions for CVL and PVL are met, CVL applies first, and PVL is rendered superfluous. Observe the following example: [meko]

17	maiko	UR
	me ko$	VC
	$me :ko$	CVL
	----------	PVL
	[me : ko]	PR

PVL has been rendered superfluous.

4.0 Conclusion

In this paper, we have discussed certain aspects of Standard Kiswahili words that undergo phonological processes, namely glide formation and Coalescence. These processes yield the lengthened vowel which requires us to impose another rule which we have termed loosely deletion. The Deletion process has been invoked in order to compromise to the acceptable form of Standard Kiswahili words otherwise unacceptable forms have been yielded. which results in the shortening of words. As it turns out the processes affecting vowels that yield unacceptable ford in standard Kiswahili are glide formation and vowel coalescence. These processes result in a lengthened vowel to compensate for the lost duration, hence compensating it. Therefore, we employed vowel shortening in order to get acceptable Kiswahili forms.

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Consonantal Adaptation of Kiswahili Loanwords in Echijita

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ABSTRACT
It has been observed that each language has its phonological system which counts as a phonologically well-formed word. This variation is also realized between Kiswahili and Echijita whereby Kiswahili consonants such as /b/, /ð/, /θ/, /ɣ/, /h/, /l/, /r/, /ʃ/, /v/, and /z/ are not available in the native phonological system of Echijita. It happens that most often when speakers of a certain language borrow words of another language whose phonology is different to it, the borrowing language makes some phonological modifications to make that borrowed word conform to the phonological inventory of the borrowing language. This raised interest in determining what happens when Echijita speakers borrow Kiswahili words whose consonants do not conform to Echijita phonology. Therefore, this study attempted to analyze the consonantal adaptations applied in nativizing loanwords from Kiswahili to Echijita. The study was qualitative and based on a descriptive design. The study involved Echijita speakers from three villages, namely, Mwitende, Genge and Nansimo. The study used a convenience sampling technique to select 66 conversations observed. The data were collected using observations, and semi-structured interviews. The study found that Echijita borrows Kiswahili words and those loanwords are always repaired through various processes: flapping, palatalization, alveolarization, plosivization, and fricativization to make the consonants conform to Echijita phonology. The study concluded that the phonological nativization of loanwords is a natural process which depends on the phonological similarities and differences between the borrowing language and the donor (lending) language. If a loanword contains a sound or syllable structure that is impermissible in the borrowing language, the speakers may either accept or repair it. The study recommends that further studies on loanwords in Echijita explore various changes in prosodic features and vowel-changing adaptations.

KEYWORDS: loanwords, adaptation, nativization, phonological rules, Echijita, Kijita, Jita

1.0 Introduction

When speakers of two distinct languages come into day-to-day contact with each other, some degrees of bilingualism are to be expected. Since languages can influence one another, language contact, over a while, leads to some changes in the languages involved (Siemund and Kintana, 2008). From that contact, the most common result is that the dominant language will usually influence the recessive one. The most common specific type of influence is the borrowing of linguistic items. The borrowed items are copied from the donor language (*henceforth*, DL) to the borrowing language (*hereafter*, BL) but without speakers of the BL shifting to DL. Such borrowings, almost involve words and phrases (Hickey, 2010). More specifically, lexical borrowing involves borrowing words from one language to the other, and those words are what we can call "loanwords". It is, of course, admitted that loanwords are very common and unavoidable in all languages (Daulton, 2013). Therefore, all languages borrow words from other languages.

The pronunciation of the loanwords depends on the phonological experiences of the speakers of the borrowing language. To put it clearly, after having acquired the sounds of a given

language system, the sounds from the donor language will be changed according to the degree of perception of the speakers of the borrowing language (Kagiyema, 2010). This is the so-called "Phonological Nativization", and it is because loanwords contain foreign sounds or phonological structures that the borrowing languages do not permit. These mismatches, if they are not adopted, have to be nativized (changing them to conform to the sounds and structures of the BL) (Goldsmith, *et al*., 2011). Generally speaking, if a loanword consists of phonological features that do not exist in a given language, that loanword gets modified to make its sound system relevant to the BL language.

The current study, therefore, analyzed the consonantal adaptation of Kiswahili loanwords in Echijita, paying attention to the consonant-changing rules. The study was conducted to contribute to the existing knowledge of Bantu phonology. Because modern linguistics focuses more on current approaches to linguistic theory, thus, different languages of the world have been and continue to be researched, an aspect which plays a vital role in improving our understanding of human languages.

1.1 Languages of the Study

The study involved two languages, namely Echijita and Kiswahili which are both Bantu languages. Their background is based on a brief overview and their phonological systems.

1.1.1 Echijita

Echijita is a Bantu language spoken in the Mara Region in Tanzania on the South-eastern shore of Lake Victoria, in the South and West of Musoma town. The origin of the name Echijita or Wajita came after they settled in one long mountain in Musoma called Masita. When Germans came, they (Germans) failed to pronounce "Masita" instead they named all the people around that area "Majita" and that is when the name "Wajita" or Jita people was formed (Lewis, *et al*., 2014). According to Maho (2009), the language is classified as JE25 in the JE20 Haya-Echijita Group of Bantu and is a part of the lacustrine languages because of its proximity to Lake Victoria. The ISO 639-3 code of the language is [jit] (SIL, 2006).

"Echijita is estimated to have more than 365,000 native speakers (LOT, 2009). However, the current number may have increased or decreased due to life changes. The alternate names of Echijita are *Ecijiita, EciEchijita,* and *Echijita* and it uses Latin script [Latn] (Lewis, *et al*., *ibid*). By its status in Tanzania, the language is termed as vigorous as it is used at home and local gatherings. Echijita is used for daily communication by all generations and that situation is sustainable. Phonologically, Echijita has 17 consonants: /β/, /ʧ/, /d/, /f/, /g/, /ʤ/, /k/, /m/, /n/, /ŋ/, /ɲ/, /p/, /ɾ/, /s/, /t/, /w/, and /j/ (SIL, 2006). This study focuses exclusively on consonants.

1.1.2 Kiswahili

Kiswahili is a Bantu language which belongs to the North-East coastal Bantu group of the Benue-Congo family, which is a member of the Niger-Congo group of languages, one of the largest families of languages in Africa (Amidu, 1995). Based on consonant inventory, there are various arguments for the exact number of Swahili consonants. Habwe & Karanja (2004:49): */p, m, w, f, v, θ, ð, t, d, l, r, n, s, z, ɟ, ɲ, j, ʃ, ʧ, k, g, ŋ, ɤ, h/*. Contrary, Massamba, *et al*. (2004, p.40) contend that Kiswahili consists of 27 consonants, namely /b/, /ʧ/, /d/, /f/, /g/, /x/, /ɣ/, /h/, /ʤ/, /k/, /l/, /m/, /n/, /ɲ/, /ŋ/, /p/, /r/, /s/, /ʃ/, /t/, /θ/, /ð/, /v/, /w/, /j/, ɳ, and /z/. On the other hand, Kihore, *et al*. (2009:16) recognizes 25 consonants: */b, ch, d, ð, f, g, ɤ, h, j, k, l, m, n, ɲ, ŋ, p, r, s, sh, t, θ, v, w, y, z/*. TATAKI (2013: xvi) identifies 26 consonants: */b, ʧ, d, ð, f, g, ɤ, h, ɟ, k, x, l, m, n, ŋ, ɲ, p, r, s, ʃ, t, θ, v, w, j, z/.* The current study considers 26 vowels as contemplated by TATAKI (2013).

Kiswahili consonants are always pronounced whenever they appear in a word. In other words, no Kiswahili words have silent letters (Mwangi, 2010). Kiswahili is an open-syllable language because almost all its words end in vowels. This applies even to loanwords that in the original language end in a consonant, to which Kiswahili adds a vowel, like *kitab* (Arabic for 'book') *kitabu, television, **televisheni*** (Deen, 2005). Therefore, this study dealt with the consonantal adaptation of Kiswahili loanwords in Echijita, paying attention to the consonant-changing rules.

1.2 Statement of the Problem

It has been observed that each language has its own phonological system which counts as a phonologically well-formed word. This variation is also realized between Kiswahili and Echijita whereby Kiswahili consonants such as /b/, /ð/, /θ/, /ɣ/, /h/, /l/, /r/, /ʃ/, /v/, and /z/ are not available in the native phonological system of Echijita. It happens that most often when speakers of a certain language borrow a word of another language whose phonology does not allow a particular sound system, the speakers of the borrowing language make some phonological modifications to make that word conform to the phonology of the borrowing language. This raised interest in determining what happens when Echijita speakers borrow Kiswahili words whose consonants do not conform to the phonological system of Echijita. This study, therefore, analyzed the phonological processes in nativizing loanwords from Kiswahili to Echijita. The study was conducted to contribute insights into Bantu linguistic theories, loanword phonology, comparative linguistics and phonological theories in general. Therefore, the current study analyzed the consonantal adaptation of Kiswahili loanwords in Echijita.

2.0 Theoretical Framework

The study utilized the Generative Phonology Model (GP), as developed by Chomsky and Halle in their seminal work, *The Sound Pattern of English* (1968). The GP is based on the concept that speech sounds function at two distinct levels: the phonemic (underlying representation, UR) and the phonetic (surface representation, SR). This theory builds on earlier linguistic ideas from scholars such as de Saussure and Trubetzkoy, and it emphasizes the role of distinctive features and phonological rules in explaining how sounds transform from their underlying to surface forms. The GP posits that these transformations are governed by systematic rules that explicitly detail the relationship between UR and SR.

Chomsky and Halle's contribution involved clarifying how these two levels of representation are connected through formal and precise rules. These rules are essential for understanding how underlying phonological structures are systematically altered to produce surface forms in actual speech. In this study, GP was instrumental in analyzing the phonological and morphological processes involved in the adaptation of Kiswahili loanwords into Echijita. It provided a framework for explaining the systematic changes observed, using distinctive features and phonological rules to account for the nativization processes. Thus, GP proved to be a relevant and effective theory for elucidating the phonological adaptations in the study.

3.0 Methodology

The study utilized a qualitative approach to design data collection tools and analyze findings, focusing on detailed explanations of therefore, analyzing the consonantal adaptation of Kiswahili loanwords in Echijita. A descriptive design provided a comprehensive portrayal of these processes, minimizing interpretation and emphasizing detailed descriptions. The study, conducted in Nansimo Ward, Bunda District, Tanzania, was selected due to its high rate of vocabulary borrowing from other languages by Echijita speakers, supported by linguistic evidence from Odom (2016).

The study targeted over 365,000 native Echijita speakers, with a sample size determined by the data collection methods. The findings were obtained from 66 conversations through observations from various social settings. Convenience purposive sampling was used to select accessible conversations. Data collection included non-participant observations and semi-structured interviews, identifying 1003 Kiswahili loanwords, which were verified for reliability through interviews with native speakers. Data analysis followed a deductive approach, categorizing data according to specific objectives and exploring relationships, with a qualitative method providing a detailed description of the loanwords, factors driving lexical borrowing, and phonological processes, supported by Tavakoli (2012).

4.0 Findings and Discussion

This part presents and discusses the findings on the consonantal adaptation of Kiswahili loanwords in Echijita, paying attention to the consonant-changing rules. The analysis revealed that when Kiswahili loanwords contain sounds which do not conform to the Echijita phonological system; various phonological modifications are likely to be made to nativize those words. The processes determined include flapping, epenthesis, elision, palatalization, alveolarization, plosivization, fricativization and vowel lowering as follows:

4.1 Flapping

Flapping is a phonological change through which a non-flap becomes a flap (Katamba, 1989). The study observed that Echijita nativize some words by changing a voiced alveolar trill [r] and a voiced alveolar lateral approximant [l] into a voiced alveolar flap /ɾ/ as follows.

4.1.1 Voiced Alveolar Trill Flapping

It has been observed that, when nativizing Kiswahili loanwords, Echijita speakers change a voiced alveolar trill [r] into a voiced alveolar flap /ɾ/ when it is in between vowels or when it occurs at the initial position of a word boundary, as indicated in (1).

(1) Data on Voiced Alveolar Trill Flapping

	Kiswahili (UR)		**Echijita (SR)**	**English Gloss**
a)	/burudani/	→	[ibuɾudaani]	entertainment, refreshment
b)	/daftari/	→	[ɾidafutaaɾi]	exercise book
c)	/dharau/	→	[izaɾaawu]	scorn; contempt
d)	/usafiri/	→	[ɔβusafiɾi]	transport

The rule states that a voiced alveolar trill becomes changed into a voiced alveolar flap in any environment within a Swahili loanword.

4.1.2 Voiced Alveolar Lateral Approximant Flapping

It has been observed that Echijita speakers change a voiced alveolar lateral [l] into a voiced alveolar flap /ɾ/ when they are between vowels or when they occur at the initial position of a word boundary (in any environment) as indicated in (2).

(2) Kiswahili (UR)			**Echijita (SR)**	**English Gloss**
a)	/utu*l*ivu/	→	[ɔβutuɾivu]	calm, tranquility
b)	/waki*l*iʃa/	→	[wakiɾisja]	represent
c)	/utawa*l*a/	→	[ɔβutawaaɾa]	reign
d)	/da*l*a*l*i/	→	[daɾaɾi]	auctioneer; broker
e)	/ɛ*l*ɛmɛa/	→	[ɛɾɛmɛja]	be a burden to
f)	/faði*l*a/	→	[ʤifaziɾa]	kindness,
g)	/*l*ɛsɔ/	→	[iɾɛɛsɔ]	handkerchief

The rule states that a voiced alveolar lateral approximant [l] becomes changed into a voiced alveolar flap in any environment within a Swahili loanword. Since [l] is not part of the Echijita phonology, it is changed into a counterpart flap [ɾ] within Swahili loanwords in Echijita.

Generally, in Kiswahili loanwords, a voiced alveolar trill or a voiced alveolar lateral approximant is replaced by a voiced alveolar flap in any environment. This phonological change involves the manner of articulation. A flap is produced by a quick, single tap of the tongue against the roof of the mouth, unlike a trill [r], where the tongue repeatedly contacts the roof of the mouth. Since [l] and [ɾ] are not part of Echijita phonology, both sounds are substituted with the flap [ɾ] in Kiswahili loanwords adapted into Echijita.

4.2 Elision

This is a phonological change in which a sound segment is lost often in a certain environment (Roach, 2002). The study found that during the nativization of Kiswahili words in Echijita, a voiceless glottal fricative [h] is deleted without being replaced by any sound. The analysis of this process is based on word positions. The data in (3) indicate the examples of Kiswahili loanwords which have undergone the elision of [h] in the word-initial and middle positions. This happens because the sound does not exist in the borrowing language.

(3)	**Kiswahili (UR)**		**Echijita (SR)**	**English Gloss**
	(a) /hadi/	→	[adi]	until
	(b) /hadiθi/	→	[ijadiisi]	story
	(a) /ʤitihada/	→	[ʤiʤitijada]	diligent efforts
	(b) /mʃahara/	→	[ɔmuʃaaɾa]	salary

This sound change is not influenced by any specific phonological context; the sound is deleted wherever it occurs. The main reason for the process is the phonological mismatch between Kiswahili and Echijita through which Echijita does not comprise the sound [h] hence it becomes deleted for the demanded loanword to become a part of the Echijita lexicon. The same process applies in Lubukusu[2] whereby [h] is always deleted whenever it appears in English words borrowed in Lubukusu. The reason is that the sound does not exist in the language. This is realized in the nativization of the word *hotel* which becomes *eotel* (Evans, 2014:48). The sound [h] is also deleted during the nativization of Kiswahili loanwords in Gĩ-Gĩchũgũ because it is not a part of the phonological inventory of the language. For example, /kahawa/ becomes /kaoa/ "coffee", and /hɛkalu/ becomes /ɛkaro/ "temple" (Mwangi and Karũrũ, 2012:57).

[2] Lubukusu is a dialect of Luhyia language spoken in Western Kenya and Eastern Uganda (Evans, 2014:46).

4.3 Palatalization

This is a phonological process that makes non-palatal sounds become palatal. For a non-palatal sound being palatalized, the speaker moves the blade of the tongue to the hard palate (Campbell and Mixco, 2007). The study found that Palatalization is also used in nativizing Kiswahili loanwords in Echijita. This process affects two sounds: [z] and [n] which change into [ʤ] and [ɲ] respectively. The process was analyzed and presented as follows:

4.3.1 Voiced Alveolar Fricative Palatalization

The study realized that in some Kiswahili loanwords, a voiced alveolar fricative [z] becomes a voiced palatal affricate [ʤ]. After a critical analysis, it was realized that [z] which seems to have undergone palatalization in some loanwords are those occurring in a word-final position of the stem of the loanword being followed by a low front vowel, as in (4).

(4)	**Kiswahili (UR)**		**Echijita (SR)**	**English Gloss**
a)	/ambukiza/	→	[ambukiʤa]	infect
b)	/batiza/	→	[βatiiʤa]	baptize
c)	/pandikiza/	→	[pandikiʤa]	transplant
d)	/taŋgaza/	→	[taŋgaaʤa]	announce (to the public)
e)	/tɔkɛza/	→	[tɔɔkɛʤa]	appear
f)	/nguzɔ/	→	[inguʤɔ]	pillar; column, post

Since the sound [z] does not exist in Echijita, it is replaced by [ʤ]. This substitution occurs because [z] is a purely fricative sound, whereas [ʤ] combines both stop and fricative characteristics. The voiced palatal affricate [ʤ] serves as the closest phonetic match to [z], making it the most suitable replacement within Echijita's phonological system. This substitution occurs only when the sound [z] appears in the final syllable of a word.

However, it was observed that some Kiswahili loanwords retain the sound [z] in their pronunciation. After a critical analysis of those words, it was found that a preserved [z] is followed by all vowels except a low front vowel. Nevertheless, the rule is unpredictable because the sound [z] seems to have similar features of an indigenous sound [ʤ] and thus is tolerated in most of the loanwords. Even the words in (4) when pronounced with a preserved [z] become meaningful denoting the meaning as the same as its meaning in Kiswahili, as in (5).

(5)	**Kiswahili (UR)**		**Echijita (SR)**	**English Gloss**
a)	/ʤazba/	→	[ʤiʤaziba]	emotion
b)	/ʤinamizi/	→	[ʤinamizi]	nightmare
c)	/kiɲɔɔzi/	→	[kiɲɔɔzi]	barber
d)	/kiɔŋgɔzi/	→	[kijɔŋgɔɔzi]	leader, guide

As shown in data (5), the voiced alveolar fricative [z] can be preserved regardless of its position in a word. This suggests that the phonemes [z] and [ʤ] are not distinctive in Echijita, as their substitution does not result in a change of meaning.

4.3.2 Voiced Alveolar Nasal Palatalization

Also, palatalization was observed in the change of a voiced alveolar nasal [n] into a voiced palatal nasal [ɲ]. Though the nasal [n] is a part of Echijita phonological inventory, it is palatalized when the preceding or the following syllable contains a voiceless post-alveolar fricative [ʃ]. The process is illustrated in (6).

(6)	Kiswahili (UR)		Echijita (SR)	English Gloss
a)	/tenganiʃa/	→	[tɛɛngaɲisja]	cut, separate
b)	/badiliʃana/	→	[badiɾisjaaɲa]	exchange each other

The data in (6) reveal that the voiced alveolar nasal [n] changes into a voiced palatal nasal [ɲ] when it occurs between front vowels, particularly [i] and [i]. However, this change does not occur when [n] appears in the initial syllable of the loanword. For instance, the Swahili word "nazi" (coconut) becomes "inazi," with the preservation of [n]. This process also applies in Nandi and it occurs when a consonant is followed by the high vowel [i] (Boen, 2014:44).

4.4 Alveolarization

The study found that alveolarization is also used in the nativization of Kiswahili loanwords in Echijita. It was found that this process affects a voiceless palato-alveolar fricative [ʃ], a voiced dental fricative [ð], and a voiceless dental fricative [θ] which change into a combination of a voiceless alveolar fricative [s] with a palatal glide [j], a voiced alveolar fricative [z], and a voiceless alveolar fricative [s] respectively.

4.4.1 Voiceless Post-alveolar Fricative Alveolarization

Alveolarization was observed in the change of a voiceless palatal-alveolar fricative [ʃ] into a voiceless alveolar fricative [s] and a front glide. This is due to the reason that [ʃ] is not part of the Echijita phonological inventory thus it is changed into its near counterpart [s]. The process is illustrated in (7).

(7)	Kiswahili (UR)		Echijita (SR)	English Gloss
a)	/amriʃa/	→	[amuɾisja]	order, command
b)	/badiliʃa/	→	[badiɾisja]	replace
c)	/ɛpuʃa/	→	[ɛpusja]	keep away from, cause to avoid
d)	/fundiʃa/	→	[fundisja]	teach
e)	/gundiʃa/	→	[gundisja]	bond, paste
f)	/kanuʃa/	→	[kanusja]	deny emphatically

The data in (7) suggest that [s] is substituted with [s] and combined with [j]. This occurs because [s] lacks palatal features, and the combination with the palatal glide [j] allows [s] to behave like a palatal sound. However, the study reveals that this alveolarization process only takes place when the sound [ʃ] is not in the initial position of the stem of a Kiswahili loanword. When [ʃ] appears in the initial position of the base of a loanword, it is preserved. Consider the data in (8).

(8)	**Kiswahili (UR)**		**Echijita (SR)**	**English Gloss**
	a) /ʃimɔ/	→	[ɾiʃimɔ]	pit, hole
	b) /ʃirikiana/	→	[ʃiɾikijana]	cooperate
	c) /ʃudʒaa/	→	[ʃudʒaa]	hero
	d) /ʃamba/	→	[ɾiʃaamba]	farm

As the data in (8) reveal, the voiceless palatal-alveolar fricative [ʃ] can be preserved in Echijita when it appears in the initial position of a loanword, as it is not a distinctive phoneme in the language.

4.4.2 Voiced Dental Fricative Alveolarization

The study, also, realized that in nativizing Kiswahili loanwords, a voiced dental fricative [ð] changes into a voiced alveolar fricative [z] in any environment it occurs. The reason is that [ð] is not a part of the phonological system of Echijita, thus it is changed into its fricative counterpart [z] as illustrated in (9).

(9)	**Kiswahili**		**Echijita**	**Gloss**
	a) /baaði/	→	[baazi]	some of, a portion of, a section of
	b) /ðaifu/	→	[zajifu]	weak, feeble, powerless
	c) /ðihaka/	→	[dʒizijaka]	mockery (s); ridicule(s)
	d) /faðili/	→	[faziɾi]	do kindness to
	e) /ɣaðabu/	→	[igazabu]	rage, fury, passion, anger

As observed in (9), the voiced dental fricative [ð] is always substituted with the voiced alveolar fricative [z]. Even though [z] is not a part of the Jita phonology, it is tolerated and used as it acquires features of the indigenous sound, the voiced palatal affricate [dʒ].

4.4.3 Voiceless Dental Fricative Alveolarization

The study, also, realized that, in nativizing Kiswahili loanwords, a voiceless dental fricative [θ] changes into a voiceless alveolar fricative [s] in any environment it occurs. The reason is that [θ] is not a part of the phonological inventory of Echijita, and therefore it is replaced with its fricative counterpart [s] as illustrated in (10).

(10) Data on Voiceless Dental Fricative Alveolarization

	Kiswahili (UR)		**Echijita (SR)**	**English Gloss**
a)	/θɛlaθini/	→	[saɾasiini]	thirty
b)	/θɛmanini/	→	[samaniini]	eighty
c)	/hadiθi/	→	[ijadiisi]	story
d)	/mɛθali/	→	[imɛsaaɾi]	proverb

From the data in (10), the voiceless dental fricative [θ] is consistently substituted, regardless of its position in a word. The reason for this substitution is that [θ] does not exist in the language.

Therefore, it is replaced with its counterpart, the voiceless alveolar fricative [s], which alters the place of articulation while maintaining the voicing feature and manner of articulation.

4.5 Plosivization

The study found that in the nativization of Kiswahili loanwords in Echijita, a voiced velar fricative [ɣ] is changed into a voiced velar plosive [g]. This is because [ɣ] is not a part of Echijita phonology, then it is replaced with its counterpart voiced velar plosive [g]. The process is illustrated in (11).

(11) Kiswahili (UR)		**Echijita (SR)**	**English Gloss**
a) /ɣaðabu/	→	[igazabu]	rage, fury, passion, anger
b) /ɣarama/	→	[igaɾama]	cost, expense
c) /ɣarika/	→	[igaɾika]	deluge
d) /ɣasi/	→	[igasija]	disorder; chaos
e) /ɣorofa/	→	[igoɾofa]	skyscraper
f) /luɣa/	→	[iɾuuga]	language

The data in (11) indicate that the voiced velar fricative [ɣ] changes to a voiced velar plosive [g] wherever it appears in a loanword. The change is a natural simplification to align with the phonological patterns of Echijita.

4.6 Fricativization

Fricativization is the process whereby a non-fricative sound is changed into a fricative due to the influence of the fricative sounds they precede in their environment (Garoma, 2012). It was found that nativization of Kiswahili loanwords in Echijita undergoes two kinds of Fricativization which involves a voiced bilabial stop. It was found that Echijita speakers nativize some loanwords containing a voiced bilabial stop [b] by changing it into a voiced bilabial fricative [β]. The data in (12) indicate examples of Kiswahili loanwords which have undergone this type of Fricativization in Echijita.

(12) Kiswahili (UR)		**Echijita (SR)**	**English Gloss**
a) /bati/	→	[ɾiβaati]	tin, iron sheet
b) /biaʃara/	→	[ɛβjaasaɾa]	business, commerce
c) /dɛbɛ/	→	[ɾidɛβɛ]	tin (big)
d) /sababu/	→	[isaβaaβu]	reason, cause

The data in (12) illustrates the substitution of the voiced bilabial stop [b] with a voiced bilabial fricative [β]. The reason for this change is that the bilabial stop [b] does not exist in the phonology of Echijita. As a result, it is substituted with a sound that is more compatible with the language's phonemic inventory, the voiced bilabial fricative [β], which is present in Echijita. This substitution ensures that the sound conforms to the phonological patterns of Echijita while maintaining the voicing feature. The same process has been realized in Nandi in nativizing loanwords from

Kiswahili and English language whereby the voiceless bilabial and velar plosives /p/ and /k/ change into fricatives when they occur intervocally. The voiceless bilabial plosive /p/ changes into a voiced bilabial fricative /β/ while the voiceless velar plosive /k/ is realized as the voiced velar fricative /ɣ/ (Boen, 2014:41).

However, there are some words whose [b] is not fricative. Even the words in (12) when pronounced with a preserved [b], neither become ill-formed nor change in meaning. The reason for this preservation is that [b] has features which are very close to the phonological inventory of Echijita, as in (13).

(13)	**Kiswahili (UR)**		**Echijita (SR)**	**English Gloss**
a)	/bɛbɛru/	→	[ɾibɛbɛɾu]	he-goat
b)	/balaa/	→	[ibaɾaa]	calamity, misfortune
c)	/bamia/	→	[ʤibamija]	okra
d)	/bastɔla/	→	[ibasitɔɔɾa]	pistol, handgun, revolver

As observed in (13), the sound [b] is preserved in some words because Echijita has other stops in its phonological inventory. This makes it easier for the speakers to retain [b] in Kiswahili loanwords, as it aligns with the language's existing phonemic patterns. The presence of similar sounds in the language allows for the natural preservation of [b] without requiring substitution.

5.0 Conclusions

The study analyzed the phonological processes involved in the nativization of Kiswahili loanwords in Echijita, utilizing a qualitative and descriptive approach. The findings from this study highlight a diverse range of consonantal adaptations employed by Echijita speakers to nativize Kiswahili loanwords. The analysis reveals how these processes ensure that loanwords are adapted to fit Echijita's phonological system, facilitating their pronunciation and integration into the language. Prominent processes observed include flapping, where voiced alveolar trills and lateral approximants are transformed into voiced alveolar flaps, simplifying pronunciation.

The other consonantal adaptation is the elision of the voiceless glottal fricative [h], highlighting a tendency to omit sounds in all word positions. Further phonological modifications observed include palatalization and alveolarization. Palatalization affects sounds such as [z] and [n], while alveolarization adjusts fricatives and dental sounds to align with Echijita's phonological inventory. Plosivization is evident in the replacement of a voiced velar fricative [ɣ] with a voiced velar plosive [g]. Additionally, fricativization involves converting a voiced bilabial stop [b] into a voiced bilabial fricative [β], and vowel lowering modifies mid-front vowels to low vowels when preceded by certain sounds, contributing to the phonological cohesion of the language.

In general, the findings suggest that phonological adaptation in Echijita underscores the intricate interplay between linguistic systems when integrating loanwords. The necessity for modification arises from phonotactic constraints and sound system differences between languages,

leading to automatic adaptations guided by grammatical rules rather than conscious decisions. This highlights the adaptive nature of language contact, where foreign elements are systematically transformed (adapted, nativized) to fit the phonotactics of the borrowing language. The specific strategies employed (such as sound substitution, deletion and insertion) reveal how Echijita's phonological preferences and structural constraints shape the nativization processes, ensuring that borrowed terms are seamlessly integrated into its linguistic framework.

6.0 Recommendations

Due to the limitations of the current study, certain elements of loanwords in Echijita, particularly their tonal patterns and vowel adaptations, have not been explored. It is thus recommended that future studies on Echijita loanwords focus on vowel-changing phonological rules and prosodic aspects, particularly the tonal features. Moreover, as this study focused solely on the Echijita language, further studies may incorporate other Bantu languages to stimulate cross-linguistic studies on lexical borrowing in African languages.

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Assessing Obstacles Encountered by Teachers in Using CBC Pedagogical Principles in Government Secondary Schools: A Case of Dodoma City Council in Tanzania

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ABSTRACT

This study sought to Assess Pedagogical Factors Hindering Enactment of Competence-Based Curriculum in Government Secondary Schools in Dodoma City Council, Tanzania. It had three objectives: to assess teachers' knowledge of the pedagogical principles necessary for enacting CBC in government secondary schools; to identify challenges that teachers faced when enacting CBC pedagogical principles in government secondary schools; and to identify potential solutions to teachers' challenges with enacting CBC pedagogically in government secondary schools. The study used convergent parallel research design, mixed approaches, and Jerome Brunner's (1966) constructivism theory as its theoretical foundation. Questionnaires, interviews, and observation techniques were used to gather data. 100 pupils, 76 teachers, 04 academic teachers, 04 heads of schools, one CSEO, and one CSQA made up the sample size of 186 responses. Since the reliability of the questionnaires had a correlation coefficient of 0.84, the validity and reliability of the research tools were put to the test. Descriptive statistics were used in SPSS to analyse the quantitative data & thematic analysis was used to analyse the qualitative data. The results of this study showed that by teaching students the CBC basic competencies, quality education may be improved, producing graduates who are mastery, employable, communicative, and knowledgeable in problem-solving skills for everyday life. This study revealed that, the enactment of CBC in Dodoma City government secondary schools was hampered by the lack of all CBC requirements, lack of CBC on job teacher training, and a failure to acquire CBC core competencies in training colleges. The study's recommendations included: CBC training for teachers beginning in college; infrastructure improvements for every school; in-service teacher training; good teacher compensation; significant investment in the education sector; and maintaining a political policy that is supportive.

KEYWORDS: obstacles, encountering, pedagogical principles, competence-based curriculum, government secondary schools

1.0 Introduction

This study was conducted in the central part of Tanzania, Dodoma City Council in Dodoma region. Basing on the context of this study, pedagogical factors play a great role in enactment of CBC in government secondary schools. The availability of all pedagogical factors contributes to quality education resulting in competent graduates with: knowledge, mastery, employability, communication, and personal problem-solving skills in daily life. This is because the Tanzanian government's commitment to education as an integral part of its social and economic development began shortly after independence and introduced a competency-based curriculum (CBC) which evolved into a prominent method in Tanzania since 2005. This approach should help form inquiring students with creative and employable skills to accomplish diverse tasks. In the enactment of CBC, a teacher may adhere to various teaching pedagogies or methods of pedagogy

such as LCM and TCM (learner-centred and teacher-centred methods), choosing from among various pedagogical approaches, namely a Constructivist, Collaborative, Inquiry-based, Integrative, and Reflective approach (Mortimore & Watkins, 1999). However, the Nisai group (2022) develops pedagogical principles which involve inclusion, motivation, quality assurance, innovation, consistency, and transparency.

In TCM, teachers still deliver content, but they take on more coaching or mentoring roles to help students learn. Learner-centred assessment (LCM), like formative assessment, is given more frequently to assess their learning progress and can be more objective than teacher-centred assessment. This means that LCM is meant to develop core competencies of CBC in learners, for instance numeracy, communication and association, critical intellectual and problem deciphering, imagination and creativity, citizenship, learning to study, self-efficiency, and digital literacy. CBC can also be implemented by the use of low- and high-tech approaches in which digital tools are incorporated into the learning process. A high-tech method could include technology such as a learning management system (LCM) and a how-to technology approach, such as the use of a press presentation or videos to supplement a lesson on the Stone Age. In the end, each of these teaching pedagogies or methods have advantages and disadvantages in practice (Webster, 2021).

Historically, pedagogical approaches in the enactment of CBC globally, regionally, and in a local context (Tanzania) have been revealed and traced back by various researchers in different parts of the world. For example, Marzano (2010) has argued that competency-based training was first introduced in the United States of America (USA) in the 1950s and 1960s, in the 1970s in Germany and the United Kingdom (UK), and in Australia in the 1990s. In the African context, CBC was implemented for the first time in South Africa in 1998, and in Kenya, it was introduced in 1985, when a major curriculum reform was experienced. In fact, it seems that each country in the world introduced CBC and integrated it into their education systems' curriculum to ensure that learners are being equipped with CBC core competencies, which are necessary skills required in the 21st century for sustainable development. In the local context of Tanzania, CBC is not a new approach; as an approach it was developed in the education system before or by the year of 1970s. For instance, in 1967, there was a second major pedagogical change in the introduction of competence-based education in Tanzania, in which education for self-reliance philosophy was presented.

In 2005, Tanzania (re-)introduced competence studying and competence-based valuation in secondary education (World Bank, 2011; Kafyulilo et al., 2012). In 2006, a competence-based curriculum was familiarized in primary education. Since 2005 and 2006, when competence-based curriculum became effective in all primary and secondary schools, there has been a severe financial and human commitment supported by the Tanzanian government to reskill and support teachers, heads of schools, and extra-educational specialists to advance the essential proficiencies, and self-reliance to efficiently handle the competency-based curriculum (Woods, 2008).

Despite the effort done by the government in introducing CBC in Tanzanian secondary

schools since in 2005, and teachers being the facilitators and implementers of the CBC, research has reliably shown poor enactment of the competence-based curriculum (CBC) in Tanzania (Allophone, 2008; Paulo & Tilya, 2014). It is anticipated that there are basic pedagogical factors causing poor enactment of the competence-based curriculum by teachers in schools, including Dodoma city council secondary schools. Reviews by Shemwelekwa (2008), Tilya and Mafumiko (2010), Muneja (2015), and Bunju (2020) reveal the extent to which teachers in Tanzanian secondary schools do not use pedagogical methods or approaches like LCM to ensure successful enactment of CBC core competencies. Instead, TCM has been used, which has led students to be filled with theories and abstract concepts, causing failure of students to merge theory and practice in applying what they have been studying to solve daily difficulties in society at the end of their studies. Consequently, they become less fruitful to contend in the workforce market and self-employment.

Furthermore, it has been revealed that teachers have limited skills and competence to use PBA during the teaching and learning processes, as well as unable to attain meaningful learning by integrating effective pedagogies (Bunju, 2020). Therefore, this study intends to critically and in detail assess obstacles encountered by teachers in using CBC pedagogical principles in government secondary schools and recommend how to intervene in the existing situation.

2.0 Literature Review

Theoretical Literature Review

This study is guided by Constructivist theory put forward by Jerome Bruner in 1966 (Olorode & Jimoh, 2016). This theory states that people build their own understanding and knowledge of the world by experiencing things and reflecting on those experiences. The study uses this theory because the theory is relevant, since it is based on the cognitive principles - hence the theory is also referred to as cognitive constructivism. This theory explains that learning is an active process, based on the assumption that knowledge is constructed as learners try to make sense of their experiences. To do this, you need to ask questions, research what you know, and evaluate. In the classroom, constructivist views of learning can be used to encourage students to use hands-on approaches to generate more knowledge, to think critically and creatively, as well as discuss and demonstrate what they are doing - hence, by so doing they acquire knowledge, confidence, and develop mastery, communication, employability, and personal skills for their daily personal problem solving.

Empirical Review

This section presents the empirical literature related to this study. The literature review

was organized based on one research objective, which is obstacles encountered by teachers in the pedagogical enactment of competence-based curriculum in government secondary schools.

Obstacles Encountered by Teachers in Using CBC Pedagogical Principles

Overseas, Saxena (2017) conducted a study in Canada to explore the current obstacles to ICT integration in the Canadian classroom as well as the issues faced by educators related to these obstacles. In other words, this study focused on how teachers in many schools struggle to integrate Information and Communications Technology (ICT) as part of their teaching practice in imparting CBC core competencies (digital literacy) to learners. The study findings revealed that among the issues faced by teachers when attempting to integrate ICT into their classrooms are: gaps in ICT knowledge and skills, lack of training, and inadequate support and scaffolding. Other issues include the inability to translate training into pedagogical practice and curriculum design and the lack of access to current hardware and software.

Furthermore, the research in the field addresses the exponential pace of technology development and obsolescence as well as the financial and educational implications of teaching and learning in such an environment. Teachers are core to the integration of ICT in the classroom and hence are often under pressure, as ICT integration is not just about having the right hardware and software, but goes deeper and covers many layers. The study recommended that integrating ICT requires a harmonious synchronicity of content, teacher knowledge, compatible theoretical framework, and suitable pedagogy all at the appropriate stage of knowledge acquisition. Based on the study findings, the researcher acknowledged the study objectives as it explored teachers' pedagogical ability in ICT integration in the teaching and learning process, which intends to equip learners with digital literacy as one of the CBC core competencies. However, the study failed to reveal the research theory, approach, and design used as well as methodology in general. This created both theoretical and methodological gaps. Such weaknesses may leave the problem of obstacles encountered by teachers in using ICT integration as one of CBC core competencies needed to be implemented pedagogically in the acceptable teaching and learning principles remain unsolved. Hence, the current study sought to overcome it and revealed reliable findings pertaining to obstacles encountered by teachers in using pedagogical principles in government secondary schools.

In Africa, Omondi (2014) conducted a study on factors in pedagogical approach that hinder curriculum implementation and revealed, that lack of teacher training on curriculum, inadequate time allocation, and insufficient teaching and learning materials on the subject impacted negatively the implementation of curriculum in public primary schools in Ukwala, division of Siaya County, Kenya. The study recommended the county government should provide enough funds so as to address the challenges. The researcher acknowledges that the study findings relate to the objectives of this study, however, the researcher critiques that the study did not pinpoint the theory which

guided it, hence would make the study findings untrustworthy. This is because a guiding theory is very important in the study because it shows the relationship between the study objectives, research design, methodologies as well as study findings. The revealed theoretical gap was covered by this new study in which constructivism theory was used to guide a study objective in finding out the obstacles encountered by teachers in using CBC pedagogical principles in government secondary schools, hence this new study findings would be trustworthy.

Similarly, Onyango & Thomas (2022) conducted a study on administrative challenges preventing effective curriculum implementation in public secondary schools in Nyamagana District, Mwanza City, Tanzania. The study findings revealed that school administrators face many challenges that do not allow the curriculum to be implemented effectively - those include: lack of fiscal infrastructure, lack of guidelines for curriculum implementation, insufficient funds, overcrowded classrooms, heavy workloads, teachers' lack of commitment, complexity of managing curriculum, and heads inability to supervise curriculum delivery. The study recommended that the government should provide more funds to education so as to promote innovation and provide workshops to school administrators to enable them to implement school curricula.

Based on the study objectives, the researcher acknowledged the study findings as related to its objectives and research design and methodologies used, however, the researcher critiqued that the study did not pinpoint the theory which guided it. This would make the study findings untrustworthy. Guiding theory is very important in the study as it links between study objectives, research design, methodologies as well as study findings. The revealed theoretical gap was covered by this new study in which constructivism theory was guided by a study objective of finding out the obstacles encountered by teachers in using CBC pedagogical principles in government secondary schools, hence this new study findings would be trustworthy. Therefore, the suggested recommendations by the researcher may leave the challenge unsolved. Therefore, the knowledge gap in that area was curbed by the current study.

3.0 Methodology

This paper aimed to assess pedagogical factors hindering the enactment of competence-based curriculum in government secondary schools in Dodoma City Council, Tanzania. The study was conducted in Dodoma City Council, in Dodoma Region- Tanzania. The study used convergent parallel research design and mixed approaches. Questionnaires, interviews, and observation techniques were used to gather data. 100 pupils, 76 teachers, 04 academic teachers, 04 heads of schools, 01 CSEO, and 01 CSQA made up the sample size of 186 responses. Since the reliability of the questionnaires had a correlation coefficient of 0.84, the validity and reliability of the research tools were put to the test. Descriptive statistics were used in SPSS 23 version, to analyse the quantitative data in computing frequencies, percentages, and charts in quantitative data while

thematic analysis was used in qualitative data.

4.0 Results and Discussion

Obstacles Encountered by Teachers in Using CBC Pedagogical Principles

The study intended to identify the constraints encountered by teachers in using CBC pedagogical principles in government secondary schools. The data to respond to this objective was collected through questionnaires that were administered to students, teachers, and academic teachers, while interviews were administered to heads of schools, city school quality assurers, and city secondary education officers.

Observations were administered to subject teachers in which a non-participatory observation technique was used to collect data from subject teachers during classroom teaching sessions. The findings revealed that there are several constraints that are encountered by teachers in using CBC pedagogical principles, especially during the whole teaching-learning process in schools. The information was gathered from various sources, as shown in Table 1 below, and its elaboration reveals the challenges. The revealed obstacles that teachers encountered were as follows:

Table 1

Teachers' Responses on Obstacles Encountered in Using CBC Pedagogical Principles

Response	F	A	N	DA
Teachers who have trained on CBC core competencies in professional colleges or universities	58	09 (15.5%)	09 (15.5%)	40 (69%)
In-service training about pedagogical methods and approaches to be used in delivering CBC knowledge in secondary schools	58	21 36.2%)	04 (6.9%)	33 (56.9%)
Availability of all requirements for CBC enactment in secondary schools	58	12 (20.7%)	13 (22.4%)	33 (56.9%)
Use of teaching aids and experiments or practicals in the T/L process	58	24 (41.4%)	01 (1.7%)	33 (56.9%)

Source: Field data (June, 2022)

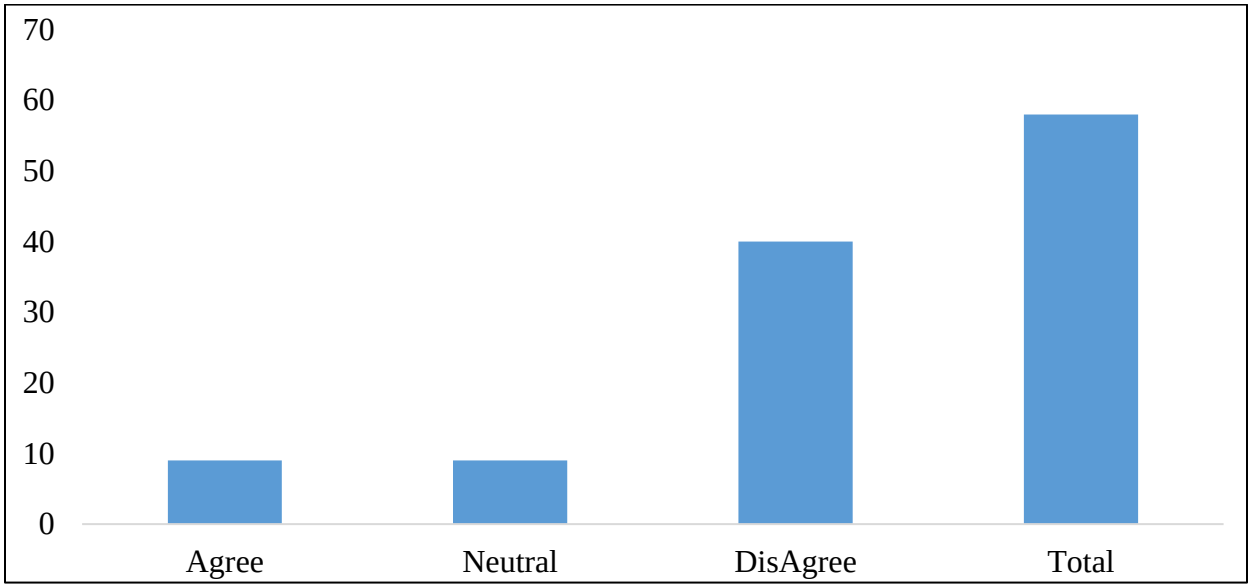
Lack of Trained Teachers on CBC Core Competencies in Professional Colleges

Table 1 indicates that 15.5% of respondents agree that teachers have been trained on CBC in their teaching college, (15.5 %) are neutral, and 69% disagree. This means that a larger number of the participants did not accept that teachers in Dodoma City Council secondary schools are

trained on CBC in their professional colleges or universities. The findings of this study, correlate with the study done by Abdullah (2019), which revealed that 68% of teachers in public pre-primary schools had not attended specialized courses for the enactment of CBC in Kenya. In this regard, it becomes difficult for them to deliver CBC knowledge to their learners. *Figure 1* below reveals respondents' responses to teachers trained on CBC core competencies in their professional colleges or universities.

Figure 1

Respondents' Responses on Teachers Trained in CBC Core Competences



***Source**: Field data (June, 2022)*

Figure 1 shows the response of teachers trained on CBC core competencies in professional colleges or universities, where 15.5 % of respondents agreed, 15.5% were neutral, and 69% disagreed, indicating that they were not trained on CBC core competencies in their professional colleges or universities. This implies that most teachers in secondary schools are not trained on CBC during their teaching profession studies. In support of this, the researcher interviewed Respondent 'C' one of the heads of the school, who revealed:

> In reality, CBC core competencies are not trained in most of the Tanzanian teaching profession colleges due to the lack of enough lecturers and overpopulated students in the single lecture room. For instance, in the university "X" where I studied for my bachelor's degree, the carrying capacity of one lecture room was only 500 students per lecture session, but due to the above factors, students were being directed by the lecturer to enter into one room until 700 students, especially during group presentation, wherein the group of say 20 students, only three were presented by reading the introductory part, a single sentence in the main body, and conclusion only. Furthermore, the interviewee portrayed that he/she acquired a three-year bachelor's degree without presenting even a single day. In this way, do you think CBC core competencies can be attained by a learner? "Is it impossible?" the interviewee asked the researcher, who replied, "Yes, it is" (Interviewee 'C' on June 23rd, 2022).

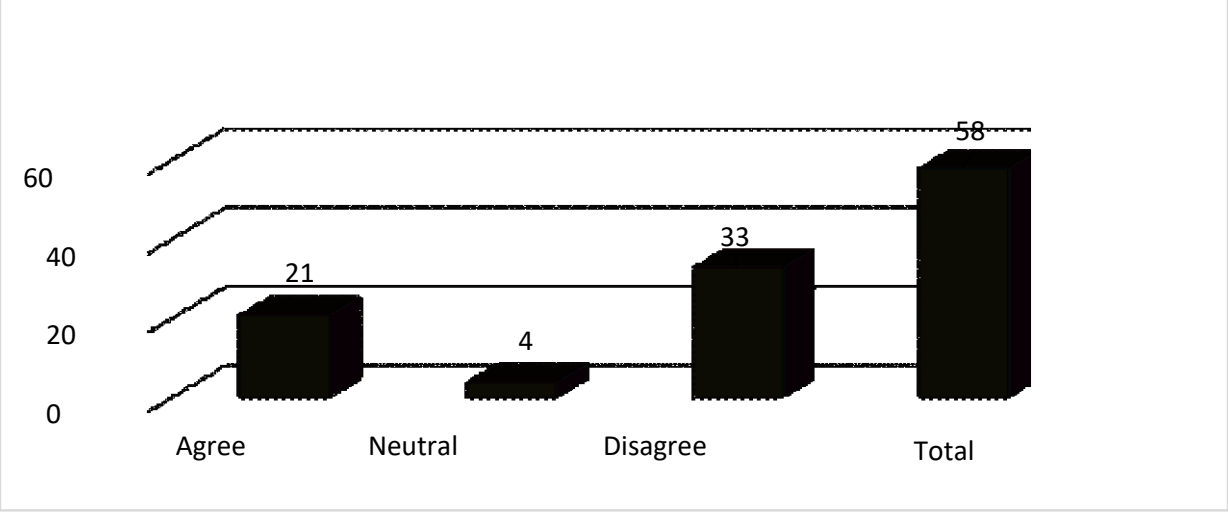
This finding implies that if teachers who are CBC key implementers in our secondary schools are not trained on the CBC core competence base in their professional colleges or universities, students will also not be taught in the CBC core competence base because teachers are not aware of that, hence the failure in pedagogical enactment of CBC in secondary schools. Similarly, these study findings correlate with the study conducted by Webster (2021), which identified CBC core competencies that a student is supposed to acquire through LCM, meant to develop core competencies of CBC to learners such as numeracy, communication and collaboration, critical thinking and problem-solving, imagination and creativity, citizenship, learning to learn, self-efficiency, and digital literacy. CBC can also be implemented by the use of low-high-tech approaches in which digital tools are incorporated into the learning process. A high-tech method could include technology like a learning management system (LMS) and a technology approach like the use of a press presentation or video that supplements a lesson on the Stone Age. Ultimately, each of these teaching pedagogies or methods has strengths and drawbacks in practice.

Lack of in-service training on CBC pedagogical methods and approaches to teachers

In this study, it was found that the majority of teachers had not received in-service training pertaining to pedagogical principles required in the enactment of CBC (56.9 percent) disagreed with receiving CBC in-service training, (6.9%) were neutral and (36.2 percent) agreed. Figure 4.2 below shows teachers' responses to in-service training on CBC Pedagogical methods and approaches.

Figure 2

Teachers' response about in-service training on CBC pedagogical methods and approaches



***Source**: Field data (June 2022)*

Figure 2 shows the response of teachers to acquiring in-service training pertaining to CBC

pedagogical methods and approaches in secondary schools. 21 respondents agreed, 4 were neutral, and 40 disagreed, indicating that they had not acquired any in-service training based on CBC pedagogical methods and approaches. Mortmore and Watkins (1999) support the findings by revealing that when implementing CBC a teacher may adhere to various teaching pedagogies or methods of pedagogy, such as LCM and TCM, through which a teacher may choose various pedagogical approaches to use, namely Constructivist, Collaborative, Inquiry-based, Integrative, and Reflective. This implies that in Dodoma City Council secondary schools, most teachers are not aware of pedagogical methods and approaches. Due to this fact, there is a need for immediate measures to address this situation to ensure the smooth enactment of the current government competence-based curriculum policy in Tanzania. Otherwise, CBC cannot be effectively implemented, considering that teachers who are key implementers are not aware of it.

Poor Living and Working Conditions for Teaching and Non-teaching Staff

The findings of this study reveal that low teacher and non-teaching staff salaries, lack of motivation, and remuneration have led to a sense of ineffective accountability, low integrity, and lack of patriotism and low morality in those who admire the teaching profession. This is also supported by the response from respondent 'Z', interviewed by a researcher, as the interviewee revealed:

> Personally, I think in any nation, education is a powerful weapon which can be used to bring sustainable development, so it is better for the government of our country to embark on improving teachers' salaries. Most teachers have negative attitudes towards their teaching profession because they think that the education sector is undermined by the government. Despite the fact that the education sector is the mother of all professions, our government does not give first priority to it. As a result, most teachers lose hope and work in the form of business as usual. The teaching profession, as the mother of all professions, is supposed to be highly paid, motivated and remunerated, but the situation in Tanzania is vice versa. As a result, teachers have lost hope in their careers, leading to poor accountability, dishonesty, and lack of patriotism. Additionally, as a researcher, let you consider that most schools in Dodoma city here have no teachers' residential houses; some students have family problems and bullying; lack of funds; indiscipline behaviour of students; parents pretending to know each and everything; even sometimes there is un-necessary political interference in academic matters in which almost every person needs to be a teacher's boss. A vivid example may be found in the village or *mtaa* chairperson/village executive officer/ward executive officer/ward education officer/ward councillor /DSEO among others. Each one of these, in different circumstances, needs to be the boss of a teacher. At the same time, a teacher is teaching large numbers of students in the class; high commitments with little or lack of motivation or recognition. This situation may subject teachers to burnout. All these challenges face teachers in their daily schedule of duty as leaders or school curriculum implementers. Also, the absence of school teachers' residential houses has pushed teachers to incur the cost of renting private houses with their families and pay from their low monthly salaries. Neither accommodation nor travelling allowances from employers are provided. Surprisingly, some teachers rent far from the working station to which they are supposed to commute daily and pay the fare. In such a situation, I think it is difficult to find any teacher who can work in a settled mind situation to implement CBC (Interviewee "Z" on June 23, 2022).

The quotation implies that poor living and working conditions of both teaching and non-teaching staff contribute to poor pedagogical enactment of CBC in government secondary schools, as most of them work under capacity due to such unfavourable working and living environments. The findings of this study are similar to the study done by Jen (2021), which that found the challenges facing teachers in the effective enactment of CBC in secondary schools include; understanding the different learning challenges among students, lack of funding, students' family problems and bullying, lack of effective communication, being encouraged or motivated in challenging times, disciplining students, time management, endless paperwork, extended working hours, burnout, teaching notes, and student evaluation.

Language In-Proficiency & Lack of Extra-Curricular Activities

The findings also indicated that there is a challenge to the English language as a medium of instruction facing teachers and students in Tanzanian secondary schools. Some teachers are not competent in the English language as a medium of instruction while students do not fully understand it. To support this, a researcher administered an open-ended questionnaire to students to realize the extent to which students were satisfied with their teachers' ways of teaching based on the pedagogical enactment of CBC in the classroom. The study revealed that most students (59.7 %) disagreed and 40.3% agreed. This implies that students were not satisfied with their teachers' ways of teaching based on the pedagogical enactment of CBC. One of the identified obstacles is the use of English as a medium of instruction during the teaching and learning process,, according to them, when teachers teach by using the English language, it becomes difficult to understand the subject because it is a foreign language.

Furthermore, the study revealed that even some teachers did not master English language skills during the teaching and learning process. To support this, the researcher administered an observation data collection method by assessing how the teachers were teaching in the classrooms so as to realize the extent to which CBC core competencies are delivered by teachers to students. Through the use of an observation checklist, a researcher detected many English language grammatical errors made by subject teachers as well as an incompetent situation of the teacher’s English language, low mastering skills, as some English words were being switched into Kiswahili as a technique to make the lesson clearer and understood to students. Moreover, the findings revealed that the lack of different extra-curricular activities in government secondary schools is another obstacle to effective CBC enactment. The researcher revealed this after administering a questionnaire to students to identify the types of CBC activities that the school offers. Table 2 below shows students' responses.

Table 2

Students' Response to CBC Activities Provided in Their Schools

Item	F	P
Classroom activities	28	36.4
Social clubs	04	5.2
Debate clubs	22	28.6
Games and sports	03	3.9
Project-based activities	03	3.9
All of the above	17	22.1
Total	77	100.0

***Source:** Field data (June, 2022)*

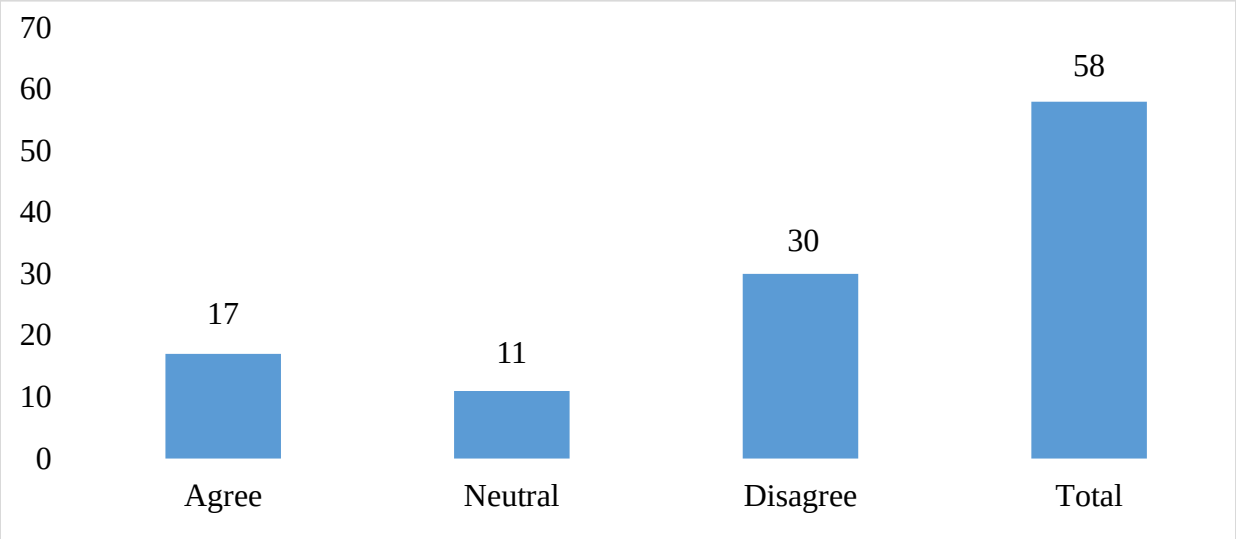
Table 2 shows that 28 (36.4 %) agree that their school offers only classroom activities, (5.2 %) social clubs, (28.6 %) debate activities, (3.9) games and sports, (3.9 %) project-based, and (22.1 %) all the above activities. This implies that CBC is not well implemented in government secondary schools because the majority of schools do much more with classroom activities than exercise all the above or more knowledge- and competence-oriented activities that attract students' attention, expose their talents, and make them competent for their bright future in terms of self-employment and national development at large.

Unavailability of all Requirements for CBC in Secondary Schools

The researcher intended to assess the availability of all CBC requirements needed for the smooth enactment of CBC in secondary schools. The majority of respondents (51.7 %) disagreed, indicating that schools lack all CBC requirements. (29.3 %) agreed, and (19 %) remained neutral. *Figure 3* below shows teachers' responses on the availability of all CBC requirements in government secondary schools, including school infrastructure.

Figure 3

Teacher's Response to Availability of All CBC Requirements



***Source**: Field data (June, 2022)*

Figure 3 implies that there is no availability of all CBC requirements in Dodoma City Council secondary schools. As a result, most teachers fail to impart CBC knowledge to students due to a conducive environment. Furthermore, in the same aspect, the researcher interviewed school quality assurers and it was revealed that most secondary schools in Dodoma city council did not all CBC requirements which could enable teachers to smooth their teaching-learning activities. To support this, one of the interviewees revealed that:

> As you know, enactment of CBC requires a friendly school environment including enough classrooms, a small number of students in the class, enough furniture, a sufficient number of teachers, teachers and students balanced toilet pits, availability and use of teaching aids, use of modern technology devices (digital literacy), availability of CBC textbooks and other materials with reasonable student-to-book ratio, good salaries, living and working conditions, and motivation for teachers among others, but such an environment is not available. "Funnily enough, despite the fact that this is Dodoma city council, you cannot believe that there are some city council schools which are found in peripheral city areas which have no student toilets, in which during break time you may find some students running in the bush for toilet services," said one of the school quality assurers who witnessed such a situation during his/her schedule of duty enactment (Interviewee "B" on June 21st, 2022).

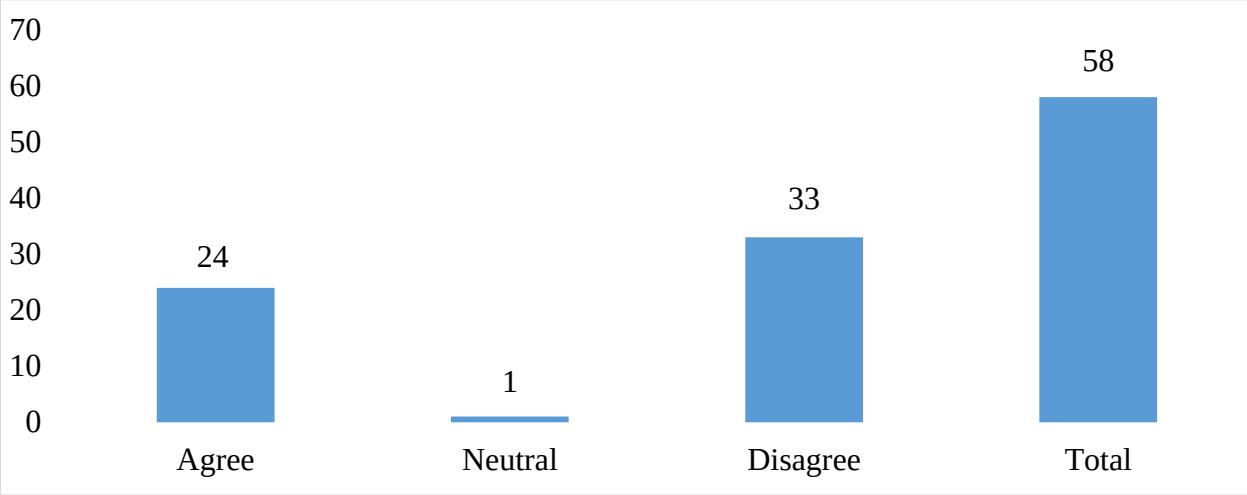
In the teaching/learning process, teaching aids and experiments or practicals are not effectively used.

According to *Table 1*, 41.4% of teachers agree to use teaching aids, conduct experiments, or perform practicals during each lesson period; 1.7% are neutral, and 56.9% disagree. This means that the majority of participants accept that teachers in Dodoma City Council secondary schools

do not use teaching aids or perform experiments in each lesson session. The findings of this study are supported by Hoy and Miskel (1987) who found that constructivists believe that in order to learn, it is necessary to provide students with basic skills and problem-solving. When students are not given or exposed to these activities in and out of the classroom, they find it difficult to develop the competencies that constructivists advocate. He added that research shows that teachers in various secondary schools in Tanzania do not use learner-centred approaches. This means that students are not doing activities such as lab exercises and experiments that provide a foundation of knowledge and skills that they can use to solve everyday life problems. *Figure 4* below shows teachers' responses on the use of teaching aids and performing experiments or practicals in the lesson period.

Figure 4

Teachers' response on the teaching aids and conducting experiments/practicals in lesson period.



Source: Field data (June, 2022)

Figure 4 above shows teachers' responses to the use of teaching aids and performing experiments or practical exercises, on which 33 (56.9%) teachers disagree, indicating that teachers are not involved in it due to several reasons, comprising lack of funds to finance all teaching aids and laboratory apparatus, motivating teachers, and financing all other academic activities including study tours. To support this, a researcher conducted an interview with heads of school 'A' on behalf of all school heads and revealed:

> Teachers in most of our government secondary schools fail to use teaching aids and perform experiments in each of their subject teaching sessions because some of them were not prepared in competence base in their colleges. Schools do not have the resources to enable teachers (both science and social science subject teachers) to teach students theory, so then they can perform experiments either within a classroom or travel for study tours outside of the classroom. For instance, if a teacher teaches about waterfalls or tourism in geography subject through theory, then takes his/her students

> to witness how waterfalls happen or visit one of the national parks to observe different animals' ecological systems and how the tourism industry is worth our national economy. This can help learners first to enjoy and then to construct critical reasoning as constructivism theory reveals, learners develop a high retention capacity (deep understanding). So, such things are impossible and it is very rarely done in government secondary schools in Tanzania due to the schools' financial limitations. The fee-free education fund, apart from not being disbursed on time, is also insufficient to fulfil all school requirements, although it helps in school running to a great extent (Interviewee 'A' on June 21st, 2022).

5.0 Conclusion and Recommendations

Conclusion

Based on the findings, the following conclusions were drawn:

Despite the government's efforts to provide fee-free education since 2016 and the current CBC-implementing guidelines (re-introduced in 2021), the majority of government secondary school teachers still have low awareness of the pedagogical knowledge required in the enactment of CBC principles in government secondary schools. Several challenges encountered by teachers in the pedagogical enactment of CBC principles include: unavailability of all CBC requirements in secondary schools; lack of in-service CBC teacher training; failure to acquire CBC core competences in training colleges; poor living and working conditions of teaching and non-teaching staff, among others. Therefore, by regarding the constraints being observed that hinder teachers in pedagogical enactment of CBC principles and the findings, the researcher generally proposed immediate measures to be taken by the government and all other education stakeholders so as to overcome the challenge, including: training teachers on CBC at college level; improving all infrastructure in the education sector; availability of enough teachers; provision of in-service teachers' training; good salaries and motivation to teaching and non-teaching staff; teachers and students' mind-set changing; involving teachers in curriculum design, heavy investment in the education sector; among others. To achieve these, good political policy is needed so that unnecessary political interference in education matters is avoided while quality education is promoted in our government secondary schools for the benefits of all the community and the nation at large.

Recommendations

Based on the research findings and conclusions arising from the study, the following recommendation is made:

The researcher suggested that teachers should be trained on CBC, starting at teaching colleges; in-service teacher training should be regularly done to equip CBC skills to all teachers who have not been trained on CBC, and teachers should be fully involved in curriculum design. The study suggested that the government should allocate sufficient funds to the education sector in order to address these issues seriously. Furthermore, since CBC is the core guideline which contains all formal and informal teaching and learning activities aiming to impart a set of skills, knowledge, and behaviours to someone who needs to have acquired them in order to perform tasks or activities at school or in the world of work, it is recommended as follows:

The government, other educational stakeholders, and school administrators should join hands to strengthen the enactment of CBC. School administrators should set a calendar to ensure that specific times and conducive or friendly teaching and learning environments are created for effective pedagogical enactment of CBC. Teachers should change their mind-set of thinking that the education sector is not among the government's priority sectors and work hard while the government deals with various teachers' challenges. The government should give the first priority to the education sector by allocating enough budget to education rather than to all other sectors so as to overcome all identified obstacles. The government also needs to reform its taxation policies to attract more investors in the education sector who can absorb some students from public schools. The Ministry of Education, Science and Technology (MOEST) should ensure that effective CBC is being taught to all teachers at college or university levels, and immediate measures should be taken to provide in-service CBC teacher training to all who have not trained on that basis in colleges. The government, through MOEST, should ensure that before opening any new school, all infrastructures for CBC enactment are available.

Limitations of the Study

The limitations of this study include, that the researcher involved only government secondary schools and left out private secondary schools, which if involved would make the study richer. Also, some respondents did not show active participation and cooperation with the researcher during field data collection, although the researcher strove to make more clarification about the importance of the study and succeeded in getting information from those respondents. However, the researcher faced financial constraints regarding funds required for fare to and fro in the field, research printing and photocopying expenses, as well as accommodation costs. Furthermore, few respondents did not return their questionnaires, although this did not negatively affect the required respondents' rate to continue with data analysis and interpretation procedure.

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The Comparative Study of Syllable Structure of Ordinary and Onomatopoeic Words in Four Selected Bantu Languages in Tanzania

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ABSTRACT

The study of syllable structure in ordinary words for Bantu has been given much attention by many linguists. It has been argued that the syllable of many Bantu languages permits open syllable structure and that structure has the optional syllable onset which consists of one or more consonants and the obligatory rhyme which must have a vowel peak followed by an optional coda. The rhyme is always the head constituent, that is, it is the only compulsory constituent. While the description of syllable structure in an ordinary word is wide spread, the study of syllable structure for onomatopoeic words in Bantu has not been given its due attention. It's not known, for example, what are the sound segments that combine to form ordinary and onomatopoeic syllables in Selected Bantu languages? And what are the similarities and differences between ordinary and onomatopoeic syllables in Selected Bantu languages? Onomatopoeia and ordinary words are inseparable since they are found in all languages of the world, as imitative sound make it easy to understand that it is the first language to human. When the language develops, it widens the gap of syllable structure which helps also to understand language structure. The present study describes the syllable structure of ordinary and onomatopoeic words and attempts a comprehensive discussion on the similarities and differences of the two linguistic manifestations. The study is expected to shade light into level of our linguistic understanding and shaping up of a linguistic theory on syllable structure of Bantu languages using CV-phonology.

KEYWORDS: syllable, onomatopoeic, ordinary word, CV phonology.

1.0 Introduction

The study describes syllable structure of ordinary and onametopiec words in order to establish their similarities and differences in Bantu. Languages have specific phonotactic constraints that control the syllable structures of their words (Douglas, 2015). Syllable is a unit in terms of which phonological systems are organized, (Katamba & Rottland 1987). There are two types of syllable structure: the open syllable and the closed syllable structure. In the open syllable structure, a word ends in a vowel whereas in a closed syllable structure, a word ends in a consonant sound. Onomatopoeia, on the other hand, refers to a device in which the sound of a thing can be imitated by the sound of a word. A good example is a sound of the expressions 'whisper, hiss'. Onomatopoeia is also considered as a kind of phonological patterning. It is a word or a combination of words, whose sound seems to resemble the sound it denotes: 'hiss', 'buzz', 'rattle', bang' "... Leech (1969: 96). Similarly, Bantu languages has words that connotes and imitates the action done against the object as in *moooo* (cow cry), *nyauuu* (car), *pwaa* (fall). Meaning of onomatopoeia sound can make a word depending on a speaker of a certain language pronouncing a word similar to an object or thing indicated. Thus, an object helps to make clear the meaning of the expressed object through imitation of the sound. When onomatopoeia are used, there are four main functions, either to enrich the contents of texts, and giving more vivid description of the environment, or to increase the degree of musicality of the spoken and written texts and to deepen the impression of

readers towards the message (Akhlaghi,2013). The benefit of studying the syllable structure of a given natural language has been elaborated by many scholars as summarized below:

Understanding Phonological Processes

Studying syllable structures helps linguists understand phonological processes such as assimilation, vowel harmony, and nasalization. For example, in Kiswahili, when the syllable m- precedes a bilabial sound, it often assimilates fully to that sound, becoming *mb-* in words like *mboga* (vegetable) (Odden, 1996).

Insights into Language Typology

Examining the syllable structure of Bantu languages allows linguists to compare these languages typologically with other language families. Bantu languages typically follow a CV pattern, which is simpler than many Indo-European languages that allow consonant clusters. This difference shows typological diversity and provides insights into the limits and flexibility of syllable structures across languages (Hyman, 2003).

Clarifying Morphological Structures

Syllable structures are essential for understanding morphological processes, especially in Bantu languages with rich noun class systems. For instance, the Kiswahili word *wa-tu* (people) breaks into the syllables *wa-* (plural noun class prefix) and *-tu* (root), highlighting how syllable structure interacts with morphology (Ashton, 1944).

Contributions to Language Teaching and Literacy

Knowledge of syllable structure aids in the development of literacy materials and language education. Since most Bantu languages follow a CV structure, syllable-based approaches to literacy and phonics instruction can be particularly effective. For example, teaching syllables such as ba- and ma- in Ganda helps learners easily form words like baana (children) and maama (mother) (Nurse & Philippson, 2003).

Historical Linguistics and Language Reconstruction

Analyzing syllable structures can provide clues for historical linguistics and language reconstruction. By comparing the syllable structures across Bantu languages, linguists can trace language changes and reconstruct Proto-Bantu forms. For example, shared syllable structures in words like *muntu* (person) across several Bantu languages support historical connections (Guthrie,

1948).

Influence on Loanword Adaptation

Understanding syllable structure helps linguists examine how Bantu languages adapt loanwords. When borrowing from languages with different syllable constraints, Bantu languages typically modify words to fit the CV structure. For instance, the English word school becomes *shul*e in Kiswahili, showing adaptation to fit a permissible syllable structure (Batibo, 1996).

Support for Language Documentation and Preservation

Bantu languages are spoken across diverse communities in Africa, and many are endangered. Documenting syllable structures provides essential linguistic data for preservation efforts, helping to ensure that phonological details are recorded for future generations. For instance, studying Kikuyu syllable patterns supports ongoing efforts to document this language as it faces increasing pressure from dominant languages (Kihara, 2017).

Improving Natural Language Processing (NLP)

As computational linguistics expands into African languages, understanding syllable structures helps improve NLP applications, such as speech recognition and text-to-speech systems. Since Bantu languages predominantly follow the CV pattern, NLP algorithms can be tailored to process syllables more effectively. This adaptation has shown success in Kiswahili NLP applications, where syllable-based segmentation improves word recognition accuracy (Mutuvi et al., 2020).

The study aimed to compare syllable structure of ordinary words and that of onomatopoeic words in Haya, Hehe, Rombo, and Siha languages, in order to find out the phonotactic constraints which are significant in understanding the similarities and differences between syllable structure of ordinary words and onomatopoeic words.

The study aimed to compare syllable structure of ordinary words and that of onomatopoeic in four selected Bantu languages, namely, Haya, Hehe, Rombo, Bena and Siha languages, in order to find out the phonotactic constraints which are significant in understanding the similarities and differences between syllable structure of ordinary and onomatopoeic words Haya is one of the Niger-Congo languages spoken by people in the western part of Tanzania and the places along the north-west of Lake Victoria. The Haya zone is group twenty (20) on zone E 22 as classified by Guthrie (1948:47). The language and area of the study were Haya (Guthrie, J.22) spoken in Bukoba; Hehe (Guthrie, G. 60) . All these areas are within Tanzania. The study uses the standard convections used in the generative phonology ($ for syllable boundary, Cfor consonant; V for

vowel; N for nasal and G for glide).

2.0 Literature Review

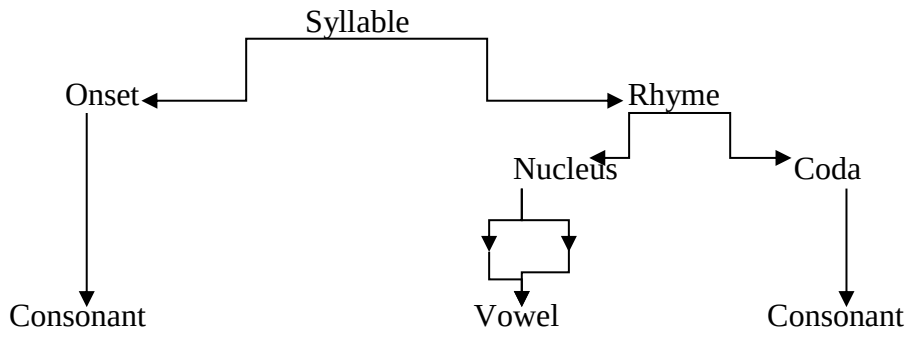
Before proceeding with the details of the study, it is important to review, albeit briefly, what constitute a syllable structure in a language? The syllable is the basic rhythmical phonic unit. Phonologically it is the basic unit at the prosodic level, i.e it is the bearer of prosodic, suprasegmental features such as stress, quantity, tone and rhythm. Roach (1995) presents it in his book the nature of the syllable from a phonetic point of view that syllables are usually described as consisting of a Centre which has little or no obstruction to airflow and which sounds comparatively loud; before and after the Centre, greater obstruction to airflow and/or less loud sound. Syllables are basically carried out by obligatory vowels which are preceded and followed by optional consonants.

Clements, (1990) studying on cross-linguistic descriptions of syllable noted that the segments composing syllables are patterned in certain based sonority. The preferred syllable type in all languages is one in which the nucleus is the most sonorant constituents and consequently, composed of a vowel. In turn, the segments comprising the onsets and coda rise continuously in sonority from the most peripheral member; this pattern is known as the sonority sequencing principle. If an onset consists of one segment, a strong universal tendency exists for the segments to be weak in sonority, therefore, the obstruct is preferred over sonority in that position The complex onset consist of a stop followed by a liquid, or a fricative followed by glide adhere to the sonority sequencing principle, in turn complex codas are formed by selecting a segment higher on the scale and followed it with one lower on the scale. Syllables adhering to the sonority of sequencing principle occur in all languages, and many languages have only syllable that adhere to it.

Kenstowicz, (1994) explains that the syllable structure caries an obligatory nuclear preceded and followed by an optional consonantal onset and consonantal coda respectively. The nucleus plus coda then the onset plus nucleus makes the tight bond. The rhyme which is an additional of sub-constituents is juxtaposed with nucleus and coda. Kenstowicz, (1994) argue that the general syllable structure forms in most languages are CVC syllable structure, as a syllable most has a vowel sound, the most common type of syllable in language also has a consonant before vowel, represented as CV. The syllable like $*me$,$ to$* or *$one$* has an onset and a nucleus, but no coda. All these three are known as open syllables. When a coda is present as in the syllable up, *cup,at, or hat,* they are called closed syllables.The typical tree structure of the syllable is as shown in figure (1).

Figure 1.

Syllable Structure



Kindija (2003), discussing the syllable structure of Jidakama, one of the dialect of Sukuma, noted that a syllable may consist of only a single vowel. He adds that all vowels except high back vowel /u/ can occur at the initial position of a morpheme or word. The occurrence of this morpheme is therefore a word morpheme. Kindija also explain that the Nucleus is the obligatory part every syllable has and is occupied by one or more vowels sound. In some cases, the Nucleus is occupied by consonant and in this case is called syllabic consonant, usually not available in Bantu languages.

Savala (2005) focuses on the CVV and V syllable structures to find out the difference between the diphthongs and the long vowel in terms of phoneme composition. This is necessitated by the fact that the two syllable structures have V sequences that follow each other and can easily be confused unless the words are postulated and the syllable boundaries shown as seen in (1):

Example 1:

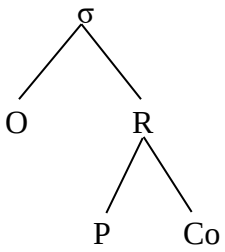
a)	*mwiimi*	(selfish*)*	*mwaana* (child)
b)	*$mwii mi*		*$mwa ana*

Generally, the literature review above shows that studies that have been conducted on the syllable structure of particular language did not make any comparative study on analyzing the similarities and differences between ordinary and onomatopoeic structure in Bantu phonology. The present study was an attempt to fill this descriptive gap

Theoretical Framework

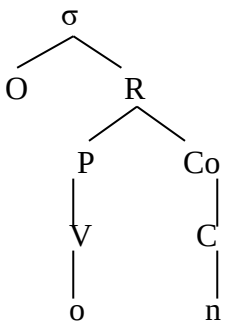
The study used the CV Phonology theory as formulated by Clements and Keyser (1983). The theory represents the phonological representation of the CV-tier function within the syllable. According to CV Phonology theory, a syllable (σ) consists of an onset (O) and a rhyme (R). The rhyme has a peak (P) and a coda (Co). The syllable is represented as a branching tree as shown in example (2).

Example 2: Syllable branching tree



Apart from the (P), which is also called the nucleus (N), all the other categories may be empty (Lass 1984: 252). The higher nodes shown in Figure 2.1 above dominate the lower categories of VC which in turn dominate specific segments as shown in Example 3:

Example 3: Dominate categories branching of VC



CV- Phonology theory is useful in showing the syllable structures that are not allowed in certain word positions and the sequential constraints in the formation of the syllable structures in a given language, including the present study. Again, the model is useful in showing the way graphemes and phonemes or sound segments in Bantu languages combine to form syllables since not all phonemes can precede or follow all other phonemes. The CV Phonology model as propounded by Clements and Keyser (1983) provides this study with a mechanism to deal with language specific syllable structures. The model was useful to show the kind of CV tier model which represented in the language, including Bantu languages language and compare it with that given by Clements and Keyser (1983). The CV tier model was useful to analyze Selected Bantu languages syllables formed by combining more than two graphemes and two phonemes.

Clement and Keyser (1983:25) argued that a universal theory of a syllable has, in their view, three specific tasks or main issues. These are: *Firstly*, it must specify the well-formed expressions of the theory to provide an alphabet out of which syllable units are constructed together with a characterization of the permissible array of alphabetic units. *Secondly*, it must specify the parameters along which individual languages vary in their choice of syllable types.

Thirdly, it must characterize a class of language – particular rules which can modify or extend the underlying syllable representations ("syllabification rules") and state how these rules are integrated into the general organization of the phonological component.

3.0 Methodology

This study employed a qualitative research approach and descriptive design because the descriptive approach helps to obtain a richness of information not usually obtained by other methods. This study used purposive sampling. Participants were selected on the basis of age and being native speakers of Hehe and these native speakers could help the researcher to identify the lexical items that are potential in the analysis of the syllable structure for ordinary and onomatopoeic words. Data were collected by the use of two methods, namely: documentary review and word list generation in Haya, Siha, and Rombo languages. Documentary reviews were used to collect a total of fifty (50) lexical items from Mpalanz's dissertation on Hehe Morphology (2012). (1999). Three (3) participants were involved in the study. One participant was used to recheck the data on Hehe from Mpalanz's dissertation, the second participant was used to recheck Hehe onomatopoeic words and the third participant was used to recheck both crosscheck onomatopoeic words collected from Haya, Siha, Rombo languages Hehe data. The purpose of selecting this sample size was to enable a cross-checking of the pronunciation of words provided by participants in each group in order to ensure their naturalness, correctness and relevance for analysis.

The data collected were analyzed by applying the tools of the CV- Phonology theory. Using CV – Phonology theory tools, the data were transcribed from the recorded voice as given by the native speakers of the four Bantu languages selected. After the transcription, syllable boundaries for each lexical item were marked. By marking syllable boundaries it was easy to identify the syllable structure of Bantu, both in ordinary and onomatopoeic words.

All the data were presented in descriptions, figures and coding systems. Coding was used to translate the data through documentary and other records attributes which were relevant to the study. In both groups were labelled M- monosyllabic, D- disyllabic and Po- polysyllabic, The next step was to isolate the syllable structures attested in the categories, based on the V, CV, VCV and "CSV" clusters and observe the similarities and differences that were noted between syllables in ordinary words and that of Onometopeic structures. Finally, the syllables and the syllable structure were used to analyze the variations and similarities between the two-syllable structure word categories.

4.0 Discussion of the Findings

The study used the term 'ordinary word' to mean ordinary linguistic usage and expression which is not related to any kind of sound-meaning equivalent. Onomatopoeic words, as uncommon syllable structures of words that relate with imitation of sounds and meanings were used.

4.1 Syllable structure of ordinary words in Hehe

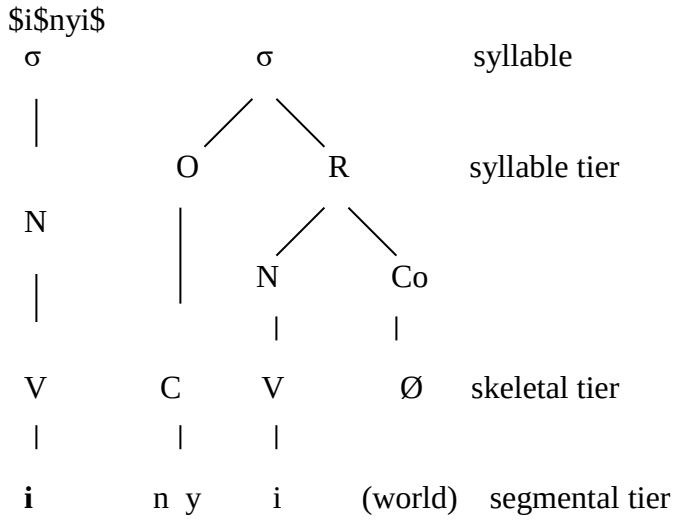
Hehe has $V& which can occupy in any position within the word, as indicated in the following example in (4):

Example 4:

a) # **i** $ n y **i** $
b) #l**i**$a$fwa# (lung)
c) #f**u**$i$ga$le# (tired)

Examples in 3 (a) can be illustrated in binary branching in 5 below :

Example 5:



In (5), the V syllable structure is very rare at the initial position of Hehe nouns and only occurs in word initial positions before pre-nasalised sounds like **i-nyumba** (house) and **i-singo** (neck).

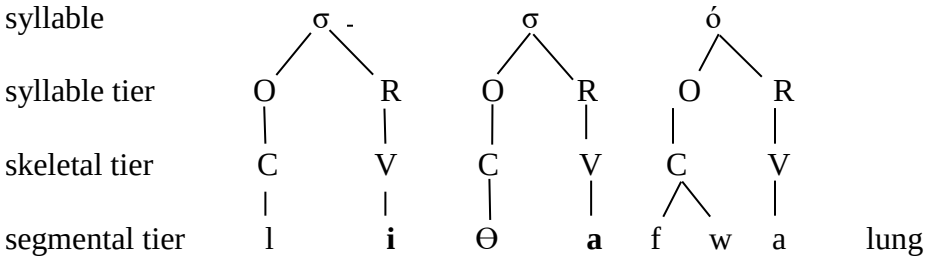
It was also observed that the V structure may occurs as the second syllable in common nouns and verb that have the CV structure as the first syllable. Let's observe from the following data here below.

Example 6:

a) # l**i** $ gu$ lu# (leg)
b) # l**i**$ no# (tooth)
c) # h**e**$ ke# (laugh)
d) # h**o**$se (think)

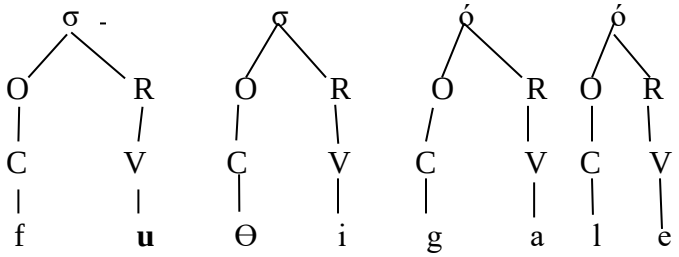
Example (6) shows that vowel is the nuclear or central part of the segment and consonant function as marginal elements of the segments, where the vowel sounds are more sonorous than any other speech sound and as illustrated vowels **i** and **u** are the intermediate vowel placed between open and closed syllable. In example 6 can be represented in binary branching as given below:

Example 7 : #li$a$fwa$



In example 7 represents vowel **i** placed between the open syllable structure here we observe that the vowel ***i*** has greater sonorous than the other in the syllable structure let us illustrate one more case from the same structure as seen here:

Example 8: # fu$i$gale



Here it is also observed that the vowel / **u/** has higher sonority than others in the open syllable as it placed as diphthong of the short segment and most of the vowel that appears at the first syllable has more sonorous than the other that appear at the final position in the same syllable. Another observation from the data analyzed was that the V structure (9):

Example 9:

a) $ i$mbwa$ dog
b) i$nywa$ a fly
c) **i**$ngwe$ a leopard
d) **i$**pwe**$** act of releasing

Illustration in (9) reveals that Hehe allows phonotactic process by attaching vowel at the beginning of the word where the end of the word behaves as a mirror image, thus vowel **i** operate as Hehe accents. Particularly that disyllabic word that begins with vowel i usually could not end with consonant sound.

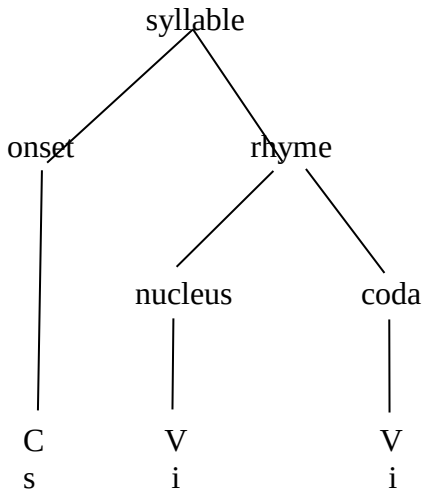
In onomatopoeia syllable structure includes both open and close syllable as in (10):

Example 10:

a) $CVVV$ as in /*siii/* as for hissing sound meaning snake;
b) $CCVV$ as in /*krooo/* for a cock
c) $CCCCC$ as in /*grrrr/ for* machine
d) $CVCVCV$ as in /*kokoko/ for* a high heel
e) $CCCVC$ as in /*chriii/* for a bird
f) $CVVVC $ as in /*kroook/* for a frog

In CV-phonology, the syllable structure can be represented as in example (11 below:

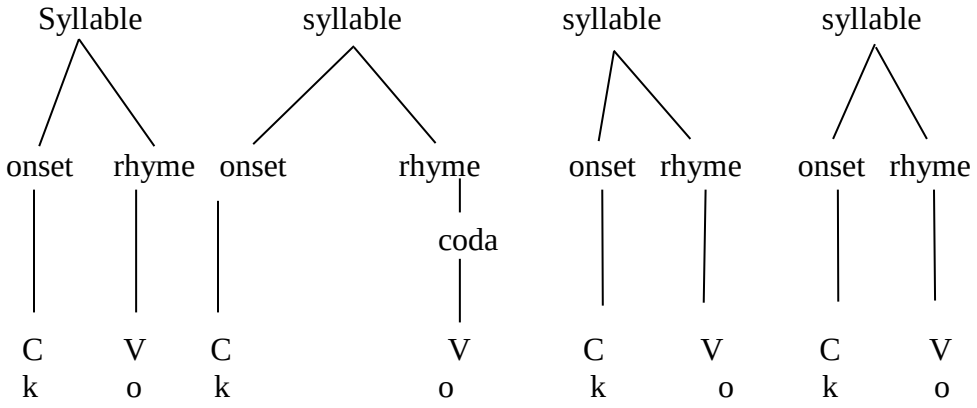
Example 11:



(of a snake)

In several cases, the onomatopoeic structure in Bantu can involve copying the sound. The copying or rather reduplication is observed in onomatopoeic word structure which is closely related to non-linguistic matters. Consider illustration (12) below:

Example 12:



(of shoes)

Another syllable structure that is observed in ordinary words in Hehe is CV. The following Hehe consonant sounds (bold) occur in this structure:

Example 13:

a) / **be**dala / despice
b) / **fu**kifu / warmth
c) / **ga**gala / cowshed
d) / **l**ave / see/ look
e) / **Íi**ma / dig

We note that the CV template for this data is consonant vowel (CV). This is the common CV template in Hehe language that forms most of words.

The following illustration in (14) is the syllable structure of the onomatopoeic word in Hehe:

Example 14: CVVVV – syllable structure

k o o i i i k o o i i moka 'high heels' sound when walking'
| | | | | | | | | |
CVVVVV CVVVV

The illustration in (xx) shows how items imitate or resemble the sound that it describes as it produces the syllable structure of a consonant first at the beginning and followed by several vowels. It was also observed that, onomatopoeic */nyaauuu/* imitating a cat's cry is also an example of the same kind.

Example 15: CGVVV - Syllable structure

n y a a u u nyau 'cat's cry'
| | | | | |
C G V V V V

The analysis further shows that in Heheas in the case of onomatopoeic syllable structure of other Bantu languages, there is a manifestation of sound imitation that accompanies senses. For example, sounds */uwiii/, /chaaa/ and /tirtir/* imitate a sense of cry, emotional response and shake of piece of iron, respectively.

4.2 Syllable structure of ordinary words in Haya

Haya is one of the Niger-Congo languages spoken by people of Tanzania west and north-west of Lake Victoria. The Haya zone is group twenty (20) on zone E 22 as classified by Malcom Guthrie (1948:47). In Haya, the syllable structure can be *as V* as in */eshule/;* CV as in */kunu/*; *NCV* as in/ *kutambi/; CGV* as in*/ bwiga*/ and *$NCGV$* as in /*ngwe/*.The representation of this structure can be demonstrated in (16) a-e below:

Example 16: a-e

a) V- syllable structure

e-shule ‘school’
|
V

b) CV – syllable structure

k u -nu ‘here’
| |
CV

c) NCV- syllable structure

kata-m b i ‘distance’
| \ |
N C V

d) CGV- syllable structure

b w i -ga ‘become fat’
\ | |
CGV

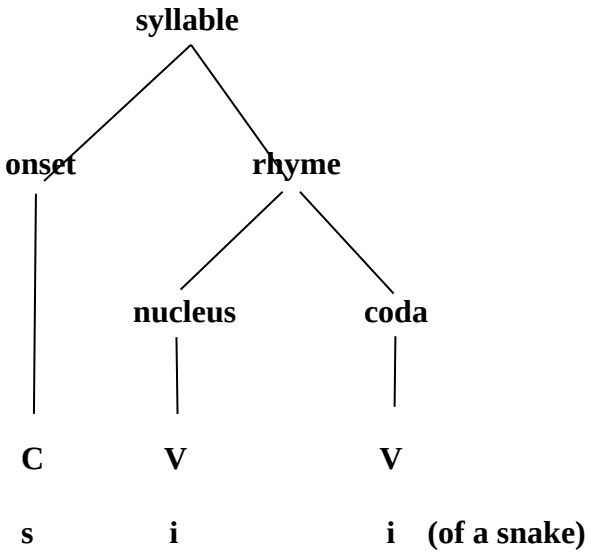
e) NCGV- syllable structure

n g we
| | | |
NCGV

Examples in (16a-e) indicate that, Haya has both closed and open syllable structure of which they can be arranged according to the combinatory behaviors.

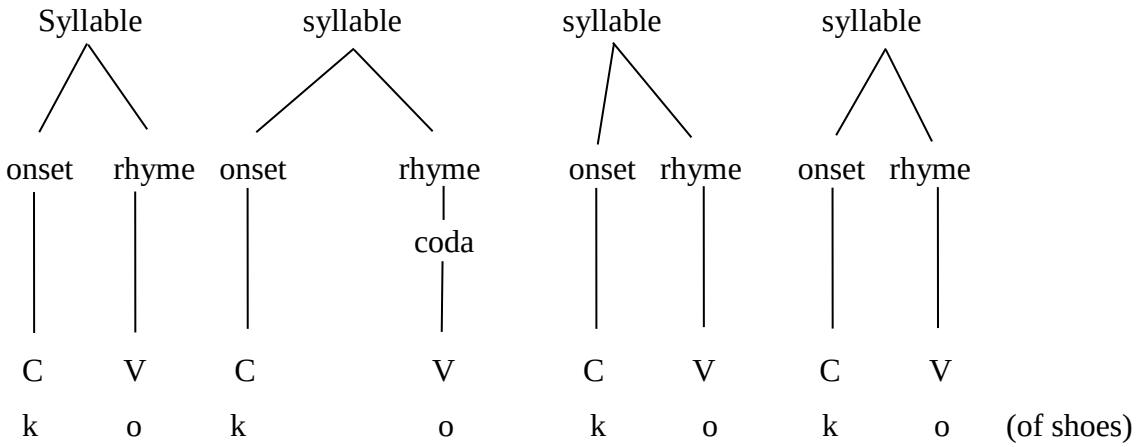
We have now to provide a descriptive account of onomatopoeic structure in Haya. However, in In Haya, onomatopoeia syllable structure includes both open and close syllable. For instances Onomatopoeia can have, $CVVV$ as in */siii/* as for of the hissing sound meaning of a snake; , $CCVV$ as in */krooo/* for of a cock; , $CCCCC$ as in */grrrr/ for* of machine; , $CVCVCV$ as in */kokoko/ for* of a high heel; , $CCCVC$ as in */chriii/* for of a bird and $CVVVC $ as in */kroook/* for of a frog, just to mention but a few. In CV-phonology, the syllable structure can be represented as in example (17) below:

Example 17:



In several cases, the onomatopoeic structure in Bantu can involve copying the sound. The copying or rather reduplication is observed in onomatopoeic structure which is much related with non-linguistic matters. Consider illustration (18) below:

Example 18:



We also observe that in (18), onomatopoeic word imitates sounds of shoes. This is somehow different from ordinary word due to that it is made up of one consonant which is an onset and several nucleus also known as vowels which makes it to be seemed special than any ordinary word in the world. The following is the structure of the onomatopoeic sounds in Haya:

Example 19a: CVVVV – syllable structure

k o o i i i	k o o i i	moka	'high heels' sound when walking'
| | | | |	| | | |		
CVVVVV	CVVVV		

Example 19b: CVVV – syllable structure

k o o o	k o o o	Nkolola	'cough's sound'
| | | |	| | | |		
CV V V	CVVV		

Example 19c: CGVVV - Syllable structure

n y a a u u	nyau	'cat's cry'
| | | | | |		
C G V V V V		

The illustrations in (19a-c) show how items imitate or resemble the sound that it describes hence produce the syllable structure of a consonant first at the beginning followed by several vowel We observe, for example onomatopoeic /*nyaauuu*/ imitating a cat's cry.

4.3 Syllable structure of ordinary words in Rombo language

Another language that we consider in this paper is Rombo. According to Guthrie (1948), classification, Rombo language is part of zone E and labeled as E 623. Let us now describe The syllable structure Rombo in ordinary word is made up of a single vowel plus zero or more consonants (occasional syllables have a syllabic consonant rather than a vowel). No syllable has more than one vowel. Rombo language has got words with the structure of zero onsets. Consider illustration in (20a-b) and (21):

Example 20:

a) #i $ t i $ k o #	zebra
| | | | |	
V C V C V	

b) # i $ r u # banana fruit

V C V

Rombo language has also words with onset as the initial consonants as demonstrated in (21) below,

Example 21:

k u $ t i # obligation

C V C V

This example shows that Rombo language has got words with open syllable structure in order to accommodate the /CV/ structure.

The analysis further shows that the syllable structure of Bantu, we consider the Syllable structure of Onomatopoeia words in Rombo. In Rombo, as in the case of onomatopoeic syllable structure of other Bantu languages, there is a manifestation of sound imitation that can accompany senses. For example, we observe sounds */uwiii/*, */chaaa/* and /*tirtir/* imitate ing a sense of cry, emotional response and shake of piece of iron, respectively. Following CV-phonology, the representation of the syllable structure is demonstrated in (22) below:

Example 22:

u w i i i i i crying

V C V V V V V

c h a a a emotional response

C C V V V

t i r t i r shake of piece of iron

C V C C V C

Clearly, the representations in (22) justify the presence of onomatopoeic words in Bantu languages

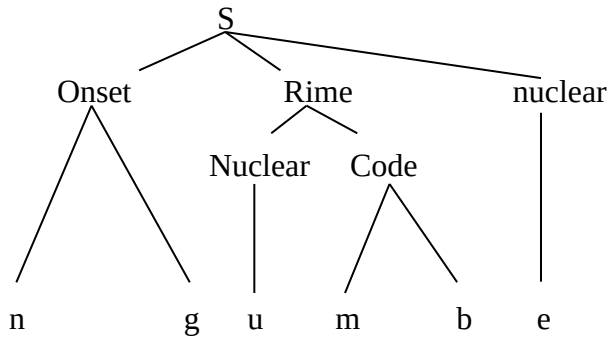
which contain both open and closed syllables.

4.4 Syllable structure of ordinary and onomatopoeic words in Siha language

Let us push discussion by considering the syllable structure in Siha. In Siha, the structure and identification of the syllable is the same as in other Bantu languages that have onset (initial consonant) and Rhyme that which consists of nucleus and coda. The example (xx) demonstrates a word */ng'umbe/* and is represented in CV- phonology as follows**:**

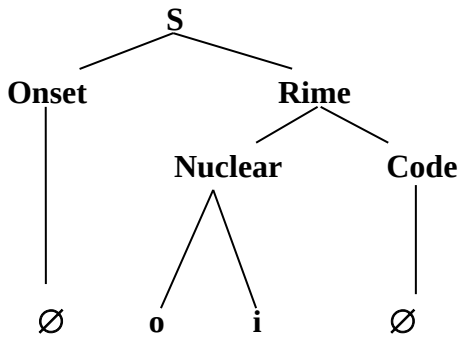
Example 23:

/ng'umbe/ cow



The example (23) indicates that both onset, nuclear and coda are realized. While in onomatopoeia words, syllable structure can have a consonant sound, the same cannot appear in syllable structure of ordinary words.The representation of the sound */oi!/* as an onomatopoeic word can be illustrated as follows.

Example 24:



In Siha language, the structure of syllables can contain consonants and vowels, but onomatopoeia can have consonant only or vowel only.

4.5 Similarities between ordinary words and onomatopoeic words

The first aspect that seems to relate to all Bantu syllable structures is that both syllable structures in ordinary and onomatopoeia words mostly begin with consonant sounds. We have observed, for examples that in Hehe many words, consonants start at the beginning of the word; onset initial consonant followed by a nuclear or another consonant as in (14). Also, it was observed that onomatopoeia sound starts with the syllable structure of consonants syllable followed by another consonant or vowel. Therefore, syllables and onomatopoeia in Bantu mostly start with an onset (initial consonant).

The second aspect, both have consonant and vowel as key phoneme or distinctive unit, and they usually occupy the onset and coda positions *Vowel* any sound which occupies the nucleus of a syllable. Therefore. there is a similarity in the syllable structure in ordinary and onomatopoeia words as indicated in the following illustration in Siha:

Example 25: Structural consonant-vowel similarities between ordinary and onomatopoeia words

ordinary word	*onomatopoeia word*	Syllable structure	Gloss
***sho**ka*	***si**iiii!*	**cv**vv!	snake
***shu**ki*	***pu**mmh!*	**cv**vv	bee
***mu**lusi*	***hu**uu! huuu!*	**cv**vv	whistle
***ku**koroma*	***nga**raaa! ngaraaa**!***	**ccv**cvvv	roaring

The description in this section brings us to the conclusion that both syllable structures in a language are made to fulfill a certain purpose to fit the linguistic or communication needs in the society. Thus, contributing to our understanding of theoretical issues that pertaining syllable structure in phonology and Bantu linguistics generally.

4.6 Differences between Ordinary words and onomatopoeic words

At this juncture, let us explore the differences between syllable structure in ordinary and onomatopoeic in Bantu. The syllable structure in ordinary words have got an Open syllable structure CV or $CVCV$. Let us recall that open syllables are syllables that end in a vowel. However, onomatopoeia syllable structure may include both open and closed syllables as in (26).

Example 26:

a) $CCVV$ as in /*krooo*/ for a cock
b) $CCCCC$ as in /*grrrr*/ for machine
c) $CVCVCV$ as in /*kokoko*/ for a high heel

d) $CCCVC$ as in /*chriii*/ for a bird
e) $CVVVC $ as in /*kroook*/ for a
f) $CVVV$ as in /*siii*/ as for hissing sound meaning snake

The phenomena of the type demonstrated in (26) can be quite different to that of the onomatopoeic which prefers closed syllable as in (27):

Example 27:

k a ng k a n g — falling of an object

C V C C V C

Clearly, the demonstration in (27) show the difference between onomatopoeic words which have got the closed syllable structure as compared to ordinary word which has the open syllable.

In an ordinary word, each morpheme in a syllable structure has meaning, as morpheme is the smallest meaningful unit in the grammar of a language, ordinary word each of its morpheme has meaning in Bantu. Let us take an examples a word /*embwa*/ consists of two morphemes and two syllable: Note that a morpheme like "-e" can just be a single phoneme and does not have to be a whole syllable. In onomatopoeic structure, words imitate the action that relate with the object which is signified. Consider example (28) below:

Example 28:

a) Shaa shaa kuchala sound of something being cut
b) Puu puu sound of beating
c) Mwaa mwaa sound of water falling
d) Koo koo moka sound of high hills
e) Nyau nyau nyau sound of the cat

The example in (28) illustrates how sounds are imitated or it shows how Onomatopoeia are formed by imitating the sounds. Onomatopoeia are mostly duplicative and in reduplicative it can be full reduplicative and in reduplicative it can be full reduplication and the partial reduplication.

In onomatopoeic structure, words imitate the action that relate with the object which is signified. Consider example (29) below:

Example 29:

a) Shaa Shaa kuchala	sound when cutting something
b) Puu puu	sound of beating
c) Mwaa mwaa	sound of water falling
d) Koo koo moka	sound of high hills
e) Nyau nyau nyau	sound of the cat.

The example in (29 illustrates how sounds are imitated or it shows how Onomatopoeia are formed by imitating the sounds. Onomatopoeia are mostly duplicative and in reduplicative, it can be full reduplicative and in reduplicative it can be full reduplication and the partial reduplication. The ordinary word has an open syllable structure, which means the word must end with the novel sound. This means there is no word in Haya which ends with a closed syllable, all words end with the novel, which means all the words end on an open syllable. Observe the data in example 30 below.

Example 30:

a) kulila	to cry
b) kuzana	to play
c) kucumba	to cook
d) kutela	to beat

Compare the example in (30) with that of (31) below:

Example 31:

a) Ptah! Ptah	sound of someone passing with slaps
b) shwaa	sound of overtaking
c) krrkrr	sound of phone vibration
d) ring ring	sound of the phone
e) tik tok	sound of the watch

In Onomatopoeia there is correspondence between the sound and the object while in ordinary words there is no correspondence between the sound and the object. Observe the following examples.

Example 32:

a) okulya	to eat
b) ekyakyula	food
c) amaizi	water
d) kwita	to kill
e) okulila	to cry

Compare with the following example in (33):

Example 33:

a) moooo	cow cry
b) nyauuu	cat
c) tick tock	watch sound
d) piki piki	motorcycle
e) pwaa	fall

The example in (33) indicates that in Bantu there is no correspondence between the sound and the object, while example (33) shows the correspondence between sound and the object that is associated to it.

5.0 Conclusion

In this paper, it has been discussed that the ordinary and onomatopoeic syllable structures differ substantially in their structures due to the fact that, the onomatopoeic structure is made up of several nucleus or vowels because of the nature of the sound imitated and it has few structures compared to the ordinary syllable structure. The syllable structure of ordinary word and onomatopoeia words are not inseparable since the structure of the word also depends on sound pronunciation to make someone to understand. Sound like animal, objects rely on imitation to determine the meaning of a certain whistle, open door, also shows a certain feeling like laugh, cry, happiness, sound makes the real word to accomplish its meaning. Onomatopoeia sound can make meaning of a word depending on a speaker of a certain language pronouncing a word similar to an object or thing indicated. Therefore an object helps to make clear the meaning of expressed object through imitation of the sound.

Onomatopoeia and ordinary words are inseparable since are found in all language of the world, as imitative sound make to understand that it is the first language to human. Spoke when language was develop, since the direct imitation help the hearer to understand more. When the language develops widen the gap of syllable structure which helps also to understand language structure.

Onomatopoeia are very important in any language because it helps to enrich the contents by giving vivid descriptions of words that imitate natural sounds. The syllable structure of the ordinary language differs to some extent from that of the onomatopoeic words because onomatopoeic words are made to imitate sounds.

6.0 Recommendations

The comparison between the study of syllable structures of ordinary words and that of onomatopoeia in Bantu is very important and crucial in linguistic studies because it allows the exploration of a small unit of phonological study, that is syllable structure. By so doing, other studies may enrich a wider conclusion of the issues pertaining to syllable structure in Bantu. Therefore it is recommended that other similar studies be undertaken that may lead to the generalization of Bantu syllable structure.

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Contribution of Artificial Intelligence on Teaching and Learning Process in Science Subjects in Bunda Town Council: A Case of Selected Public Ordinary Secondary Schools

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ABSTRACT
This study investigated the contribution of artificial intelligence to the teaching and learning process in science subjects in ordinary public secondary schools in Bunda Town Council. The study used a sample size of 124 respondents from six sampled schools whereby teachers and students were selected by using purposive sampling techniques, and simple random sampling techniques. The pragmatism research paradigm and mixed-methods approach were used in the whole process of collecting and generalising data. Data was collected with the help of open- and closed-ended questionnaires, and semi-structured interviews. Questionnaires were administered to the students and interviews with the teachers. The data from questionnaires was analysed descriptively with the aid of Microsoft Excel and presented in percentages and graphs, while data from interviews were analysed by content analysis. The study revealed that public secondary school teachers utilise artificial intelligence (AI) in enhancing personalized teaching and learning processes, helping teachers improve teaching in the classroom, helping students assess student performance, integrating AI technologies into teaching methods, and enhancing lesson planning and resource development. It was also recommended that the government should implement ongoing professional development programs focused on artificial intelligence integration development programs on AI integration in the classroom. Additionally, the study recommends that government should strategically integrate artificial intelligence into both the curriculum and classroom practices to enhance learning outcomes.

Keywords: Artificial intelligence, teaching process, learning process, science subjects, and public secondary schools

1.0 Introduction

Artificial intelligence is defined as the use of intelligent systems and algorithms to enhance educational experiences by personalizing content, providing real-time feedback, and supporting teachers in managing classroom activities. Scholars such as Russell and Norvig (2020) emphasize that AI systems can adapt to individual learners' needs, facilitating differentiated instruction and improving student engagement. AI applications in education, such as intelligent tutoring systems, can assist in learning by offering tailored problem-solving strategies and adjusting the complexity of tasks based on students' abilities (Shalev-Shwartz & Ben-David, 2014). Through these applications, AI can optimize the teaching and learning process by streamlining administrative tasks, enabling teachers to focus more on interactive and creative teaching methods

Globally, Artificial Intelligence (AI) is playing a transformative role in enhancing science education in secondary schools across developed countries such as the USA, UK, and Poland. In the USA, AI-powered platforms are improving personalized learning, particularly in science subjects. According to **Smith and Anderson (2024)**, an AI tool like intelligent tutoring systems provides tailored feedback, which helps students better understand complex scientific concepts and improves their academic performance. AI also automates administrative tasks like grading, allowing teachers more time to focus on interactive teaching, thus enhancing the overall educational experience. In the UK, AI is being leveraged to enhance both teaching and learning. A study by **Taylor and Roberts (2022)** highlighted that AI-driven educational tools, such as virtual science labs, have made science subjects more engaging by providing hands-on experiences that are otherwise difficult to simulate in traditional classrooms. These technologies have improved student engagement and understanding, especially in physics and chemistry. In Poland, AI is increasingly being used to support interactive learning in science education. **Nowak and Kowalski (2023)** found that AI-driven simulations and virtual laboratories have fostered deeper student engagement with scientific concepts, leading to better learning outcomes. These developments in the USA, UK, and Poland illustrate how AI is revolutionizing science education in secondary schools, enhancing personalization, engagement, and teaching efficiency.

In sub-Saharan Africa, In South Africa, the integration of Artificial Intelligence (AI) into secondary science education is gaining momentum, though its application remains limited. A study by Mhlanga and Moloi (2023) highlights that while AI has the potential to revolutionize teaching methods and enhance learning experiences; its adoption in South African schools faces challenges such as inadequate infrastructure, limited teacher training, and a lack of resources. The research emphasizes the need for comprehensive strategies to address these barriers, including investing in technology infrastructure, providing professional development for educators, and fostering collaborations between educational institutions and technology providers. In Uganda, the application of Artificial Intelligence (AI) in secondary science education is still in its nascent stages. A study by Tsegaye and Tadesse (2023) indicated that while there is a growing interest in incorporating AI into the educational sector, practical implementations are limited. The study suggests that AI could play a significant role in enhancing STEM education by providing personalized learning experiences and improving student engagement. In Kenya, the integration of Artificial Intelligence (AI) into secondary science education is gaining traction, with a focus on enhancing personalized learning experiences. AI-powered platforms enable students to learn at their own pace, facilitating a deeper understanding of complex scientific concepts. However, the adoption of AI in Kenyan schools faces challenges such as inadequate infrastructure, limited teacher training, and concerns about data privacy and security.

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In Tanzania, Artificial Intelligence (AI) is significantly enhancing the teaching and learning of science subjects in secondary schools in Tanzania. A study by **Kavishe et al. (2023)** highlights the potential of AI-driven platforms to provide personalized learning experiences, where AI adapts content to suit individual student needs. This customization helps students learn at their own pace, making science education more effective. AI tools have also proven effective in improving student engagement, especially through virtual labs and interactive simulations, which provide hands-on experiences with scientific concepts. According to **Mwinyi et al. (2024),** such tools have allowed Tanzanian students to explore complex science topics in a safe, controlled environment, thus enhancing their understanding of abstract concepts. Additionally, AI applications in administrative tasks such as grading and scheduling are reducing teachers' workload, giving them more time for interactive teaching and focused instruction. **Juma and Ndalichako (2022)** found that the automation of these tasks significantly improved the efficiency of teachers and the overall learning environment. These studies demonstrate that AI is not only making science education more personalized but also improving its accessibility and efficiency in Tanzanian secondary schools, leading to better academic outcomes for students. In Bunda Town Council, secondary schools face challenges in achieving effective teaching and learning in science subjects, leading to low academic performance. These schools struggle with limited resources, outdated teaching methods, and insufficient student engagement in complex science concepts. Consequently, this study investigated the contribution of Artificial Intelligence (AI) as a potential mitigating measure to improve educational outcomes in public secondary schools.

2.0 Literature Review

In the United Kingdom (UK) Holmes et al (2022) conducted a study on artificial intelligence in Education. The study employed a qualitative research approach. The study employed a case study design and used interviews, observation, and documentary reviews to collect the data. The data were analyzed by using content analysis. The study revealed that artificial intelligence-powered platforms like Squirrel AI and Century Tech are being used to provide personalized learning pathways and formative assessments for students. These tools analyze student data and provide feedback, allowing teachers to focus on addressing specific learning gaps. The findings showed again that, Artificial intelligence teaching management systems (LMS) are helping to track student progress, making it easier for students' progress, making it easier for teachers to intervene early when students face difficulties.

A study conducted by Baker et al (2023) on educational data mining and artificial intelligence in American classrooms in the United States of America (USA). The study employed a mixed-methods approach. Questionnaires, observations, and interviews were used as data collection tools. The data obtained from qualitative sources were analyzed thematically, while the data obtained from quantitative were analyzed descriptively with the aid of SPSS computer program software. The findings found that artificial intelligence tools such as intelligent tutoring systems (ITS) have been used to facilitate instruction to individual student's needs, leading to improved academic outcomes. For example, Artificial intelligence-powered platforms like Dream Box and Khan Academy allow students to progress at their own pace, providing real-time feedback and customized learning experiences.

Chong and Lee (2022) conducted a study on artificial intelligence in education in Singapore. The study employed a mixed-methods approach. Questionnaires, observations, and interviews were used as data collection tools. The data obtained from qualitative sources were analyzed thematically, while the data obtained from quantitative were analyzed descriptively with the aid of SPSS computer program software. The findings found that artificial intelligence is increasingly integrated into public secondary schools to enhance teaching and learning experiences. The Ministry of Education has emphasized the role of artificial intelligence in personalized learning, where artificial intelligence tools that adapt to students' learning styles such as chatbots, automated grading systems, and intelligent tutoring are employed to provide real-time feedback and assist students in mastering difficult concepts.

Makgatho and Mokoena (2022) conducted a study on the impact of artificial intelligence on learning outcomes in South Africa. The study employed a qualitative approach. The data were collected through interviews, observation, and focus group discussion. The data were analyzed by using content analysis. The study found that artificial intelligence-powered platforms have enhanced outcomes by providing personalized support, especially for students who struggle with a certain subject. They showed that artificial intelligence is seen as a potential catalyst for modernizing education and preparing students for future technological advancements.

In Kenya, a study was conducted by Juma and Njiru (2023) on the role of artificial intelligence in enhancing education in Kenyan secondary schools. The study employed a mixed-methods approach. Questionnaires and interviews were used as data collection tools. The data obtained from qualitative sources were analyzed thematically, while the data obtained from quantitative were analyzed descriptively with the aid of SPSS computer program software. The findings showed that artificial intelligence technologies in Kenya have been effective in providing individualized learning support, particularly in subjects such as mathematics, where artificial intelligence tools offer real-time practices and guidance.

A study conducted by Khamis et al (2022) on the barriers to artificial intelligence adoption in secondary schools in Tanzania. The study employed a mixed-methods approach. The data were collected through questionnaires and semi-structured interviews. The data from the questionnaire were analyzed using descriptive statistics with the aid of computer software called SPSS version 23 while the data obtained from semi-structured interviews were analyzed using content analysis procedures. The findings indicated that although teachers in urban areas showed enthusiasm for artificial intelligence applications, especially for personalized learning and assessment, there was a significant lack of professional development in artificial intelligence. This showed most teachers in rural areas had little exposure to artificial intelligence technologies, and there was insufficient support from the government in terms of training and resources.

3.0 Theoretical Framework

This study was underpinned by cognitive load theory developed by John Sweller in 1988. CLT is essential in understanding how AI can impact the teaching and learning process, particularly in public secondary schools. The theory posits that human working memory has a limited capacity, which can be overwhelming if instructional materials are too complex or poorly structured. CLT identifies three types of cognitive load; intrinsic, extraneous, and germane. Intrinsic cognitive load refers to the inherent difficulty of the content, while extraneous cognitive load results from how information is presented. Germane cognitive load pertains to the mental effort dedicated to processing and understanding new information. AI tools can help reduce extraneous load by personalizing content delivery, breaking down lessons into manageable chunks, and adapting the place based on the learners' needs, making learning more efficient (Sweller, 2011).

In the context of AI-enhanced education, CLT suggests that technologies such as intelligent tutoring systems or adaptive learning platforms can optimize the cognitive load for students. By providing personalized and adaptive learning experiences, artificial intelligence can offer real-time feedback and adjust instructional materials based on individual progress, thus minimizing extraneous cognitive load, which enhances student engagement and learning outcomes. This makes AI a powerful tool for improving the effectiveness of teaching and learning in secondary schools, fostering a more individualized and supportive learning environment (Kalyuga, 2011)

4.0 Research Methodology

Th**e** study used a mixed-method approach to acquire more information during the time examining the contribution of artificial intelligence to the teaching and learning process in science subjects in ordinary public secondary schools in Bunda Town Council. The study employed a mixed-method approach which assisted well in understanding well the study. This is in line with Creswell and Creswell (2018) arguing that the mixed method approach develops a completely considerate study variable. The study employed a convergent parallel design which enabled the researcher to understand the research problem better due to the concurrent collection of data. Probability and non-probability sampling techniques were used to get the participants from a targeted population of where a sample size of 120 students and 24 teachers, making a total of 144 respondents from 6 sampled schools. Questionnaires and interview schedules were employed in data collection. Both open and close-ended questions were directed to students to gather information. While semi-structured interview was used to extract in-depth data from teachers. Content and face validity were checked by research experts to determine the arrangement of the content of the instruments for the study purpose. Data collection methods included questionnaires and semi-structured interviews. Quantitative data were analyzed through descriptive statistics with the support of Microsoft Excel and presented in frequency percentages and tables, and the 5-Likert scale was used as a measurement scale, ranging from 1 (Strongly disagree) to 5 (Strongly agree) while qualitative data was coded were analyzed by themes using the content method in narratives. The researcher adhered to all ethical consideration issues in the whole process of collection of data from study participants.

4.0 Discussion of Findings

4.1 Introduction

This section presents, analyzes, and discusses the findings of the study that examined the contribution of artificial intelligence to the teaching and learning process in public secondary schools in Bunda Town Council. The findings are presented, analyzed, and discussed according to the specific objective of this study.

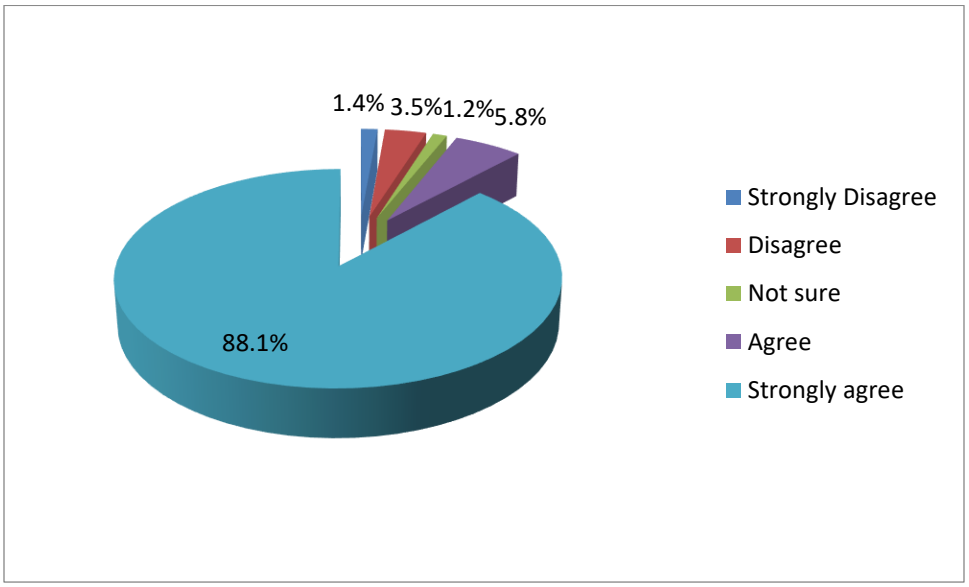
4.2 Contribution of artificial intelligence (AI) on teaching and learning process in science subjects in public secondary schools

The main objective of this paper was to assess the contribution of artificial intelligence (AI) to the teaching and learning process in science subjects in public secondary schools in Bunda Town Council. The five-point Likert scale ranging from 1= strongly disagree to 5 = Strongly agree was used to examine teachers' perceptions on the effects of school heads' behaviour in handling their rights and needs in public secondary schools. Microsoft Excel was used to carry out the analysis of data from a questionnaire, the data obtained through interviews were presented using words, phrases, and quotations, but data from the questionnaire were presented using graphs.

4.2. Artificial Intelligence enhances personalized teaching and learning process

Figure 4.1

AI enhances the personalized teaching and learning process in science subjects



Source: Field Data, 2024

When the respondents of this study were asked to respond to the statement whether artificial intelligence enhances personalized teaching and learning processes in science subjects, the majority of the respondents (88.1%) strongly agreed with the statement while the minority of the respondents (1.2%) was not sure about the statement asked. This implies that artificial intelligence facilitates a growing recognition of technology's potential to adapt educational content

to individual learning styles, which could lead to more effective teaching strategies and improved student outcomes in diverse educational environments. On the other hand, when the participants of this study were asked to respond to the statement whether artificial intelligence enhances personalized teaching and learning experiences in science subjects. One of the teachers from secondary school A quoted as saying, "Nowadays we use artificial intelligence software to enhance teaching and learning process in sciences subjects because we use to grasp different concepts and enlarge our understanding" (Teacher from school A, 11th October 2024)

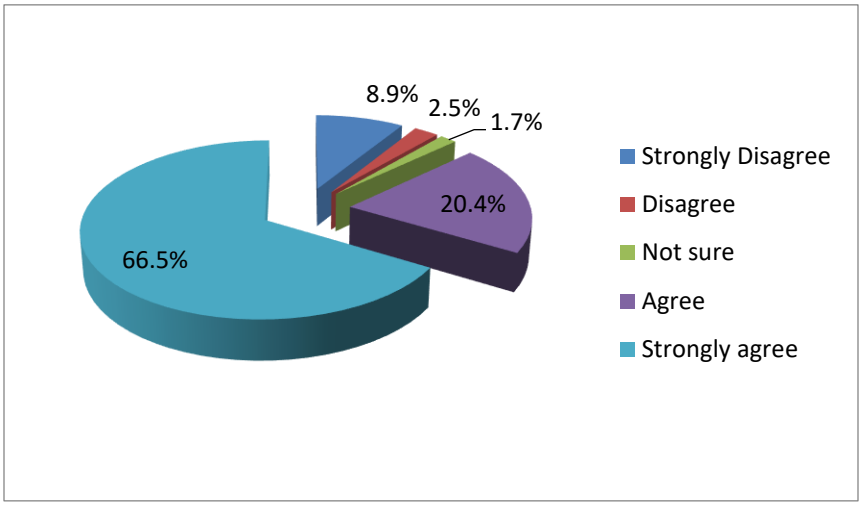
Similarly, another teacher from school B commented, "In our secondary school, teachers are usually using AI software to derive their classroom activities related to science subjects within their respective classes" (Teacher from school B, 12th October 2024)

The quoted interviews correlate with the findings obtained from the questionnaire as both reveal that artificial intelligence enhances personalized teaching and learning processes. This implies that artificial intelligence is crucial for enhancing personalized teaching and learning experiences as it enables to influence of educational approaches that cater to individual students' needs. By analyzing data on learning behaviours and preferences, AI can adjust content and pacing, improving engagement and comprehension. This indicates that teachers can use artificial intelligence tools to receive real-time feedback on students' academic performance in science subjects, enabling them to modify their teaching strategies promptly. Furthermore, artificial intelligence helps teachers in providing differentiated learning experiences, ensuring that students at varying levels of ability receive the appropriate resources and support. These findings correlate with the study conducted by Woolf *et al* (2013) who argued that adaptative learning technologies can provide customized pathways, helping students progress at their own pace and achieve deeper understanding. Cognitive Load Theory supports AI-enhanced personalized teaching by optimizing information delivery, reducing extraneous load, and adapting content to individual learner needs. This approach enhances focus on core concepts, improving retention and understanding of science subjects through tailored instruction. This personalized approach not only boosts academic performance but also fosters motivation and self-directed learning, leading to better educational outcomes overall. The findings suggest that artificial intelligence has the potential to transform education by fostering more individualized and effective learning environments.

4.2.2 The use of artificial intelligence tools helps teachers to improve teaching in the classroom

Figure 4.2

Use of AI in teaching and learning methods in science subjects



Source: Field Data, 2024.

When the respondents of this study were asked to respond on whether the use of artificial intelligence tools helps teachers in the teaching process and students in the learning process in the classroom. The majority of the respondents (66.5%) strongly agreed with the statement while the minority of the respondents (1.7%) were not sure about the statement asked. Therefore, this implies that integrating artificial intelligence tools in classrooms helps to enhance both teaching methods and the learning process, facilitating more efficient lesson planning, and improving students' engagement, ultimately leading to more dynamic and effective learning environments. On the other hand, when the participants of this study were asked to respond to the statement whether artificial intelligence tools help improve the teaching and learning process in the classroom. A teacher from school from school B commented:

> We usually use different artificial intelligence software such as ChatGTP and Poe to search for different ways of how teaching in the classroom is conducted; we normally use them when we want to learn about new concepts and when we want to expand our understanding. (Teacher from School B, 12th October 2024)

Again, another teacher from school A was quoted saying, "Artificial intelligence software helps us to learn different concepts in science subjects and impact them directly to our students to enhance the process of learning" (Teacher from school A, 12th October 2024)

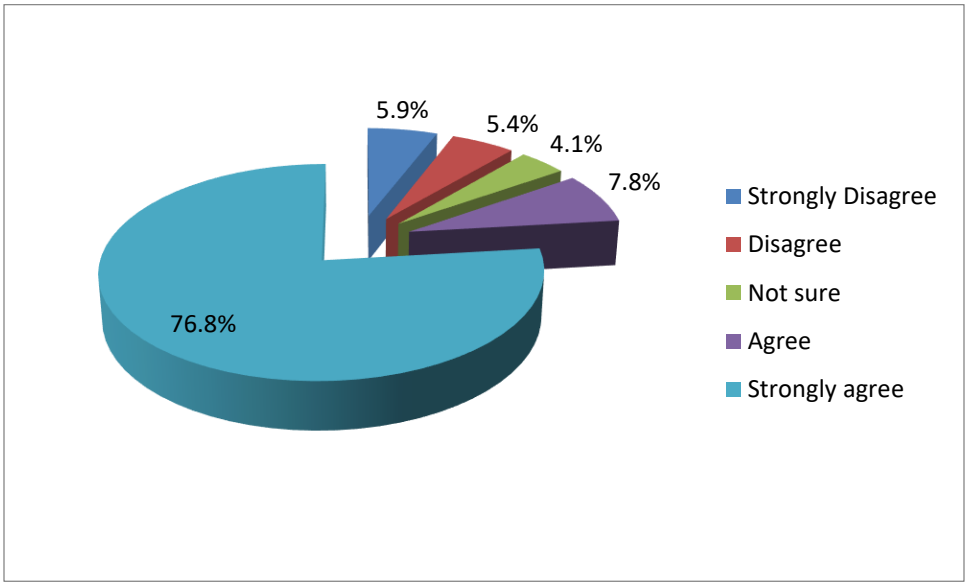
The quoted interviews correlate with the findings obtained from the questionnaire as both reveal the importance of artificial intelligence in enhancing the teaching and learning process in the classroom. This implies that artificial intelligence significantly enhances classroom learning by providing personalized learning experiences and real-time feedback. Artificial intelligence enables both teachers and students in the process of teaching and learning. Teachers also noted

that artificial intelligence-powered resources, like virtual assistants and intelligent teaching systems; provide students with additional support outside of class hours, reinforcing learning. The findings coincide with the study conducted by McKinsey and Company (2022) who found that integrating AI in education improves student engagement and outcomes, fostering a more effective and inclusive learning environment. This means that AI tools can analyze student data to inform instructional strategies, helping teachers improve their approaches to diverse learning needs. Additionally, Baker *et al* (2019) highlight that while artificial intelligence can enhance learning; its successful integration depends on adequate teacher training and support. Cognitive Load Theory supports these findings by emphasizing the importance of managing cognitive load for effective learning. AI reduces extraneous load by providing personalized, adaptive content, ensuring students focus on essential concepts. This fosters better understanding and retention in science subjects. This is consistent with the study's finding that teachers require ongoing professional development to use artificial intelligence tools in the classroom effectively.

4.2.3 Artificial intelligence helps teachers in assessing students' performance more effectively

Figure 4.3

AI in assessing students' performance in science subjects



Source: Field Data, 2024

When the respondents of this study were asked to respond to the statement whether artificial intelligence helps teachers in assessing student performance more effectively. The majority of the respondents (76.8%) strongly agreed with the statement asked while a minority of the respondents (4.1%) were not sure about the statement asked. This implies that AI enables teachers to identify learning gaps quickly and pose interventions accordingly. This leads to a more personalized learning experience, improved academic outcomes, and a more focused approach to student development in educational environments. On the other hand, when the participants of this study were asked to respond to the statement whether AI helps in assessing student performance

more effectively. One of the heads of secondary school in school D commented, "Artificial intelligence helps teachers review different learning materials; sometimes others use it to prepare questions suited for examinations and also to provide exercises and homework." (Teacher from school D, 13 October 2024)

Similarly, another teacher commented:

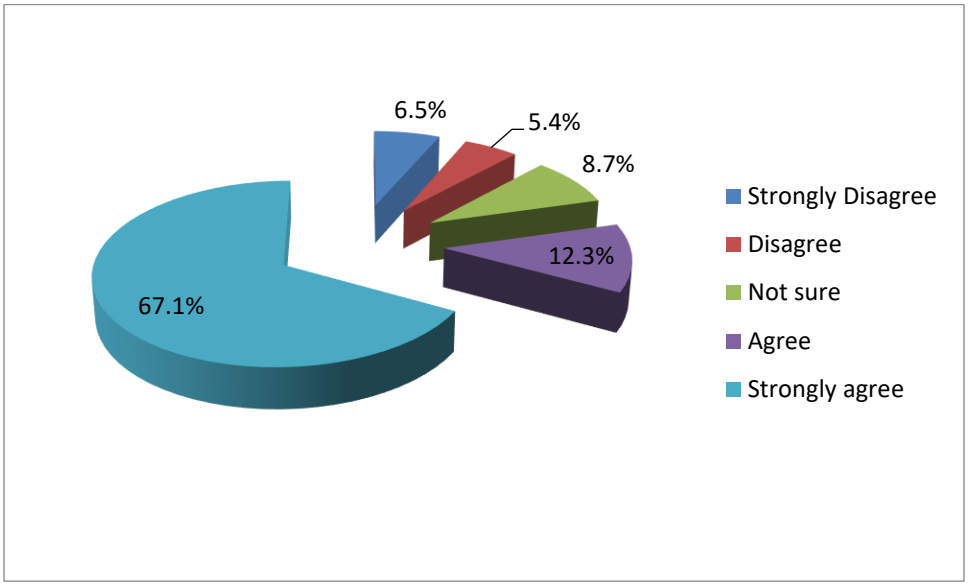
> In our school, science teachers tend to use computers available to search for different materials from artificial intelligence software such as ChatGTP to formulate questions that can be provided to the students to improve the student's academic performance in science subjects. (Teacher from school C, 12th October 2024)

The quoted interviews coincide with the findings obtained from the questionnaire as both reveal that artificial intelligence (AI) helps in assessing students' academic performance. This implies that artificial intelligence is essential for helping teachers assess student's academic performance by providing real-time analytics and identifying learning gaps. Artificial intelligence tools can analyze vast amounts of students' data quickly, offering insights into individual strengths and weaknesses, and enabling teachers to make data-driven decisions. These tools can track student progress over time, identifying patterns that might be overlooked in traditional assessments. Additionally, artificial intelligence helps to create adaptive assessments, where questions adjust based on student responses, providing more accurate measures of their abilities. The findings are in connection with the study conducted by Kizilcec *et al* (2023) found that AI-enhanced assessments lead to a more accurate evaluation and improved student engagement and achievement. This means that artificial intelligence tools can automate grading and offer personalized feedback, allowing teachers to focus on targeted interventions. Cognitive Load Theory supports the findings of AI in assessing students' performance by optimizing how information is presented. AI helps manage the intrinsic cognitive load by adapting assessments to the student's level, reducing unnecessary complexity. It also reduces extraneous load by automating grading and feedback, allowing students to focus on mastering concepts. Through real-time, personalized feedback, AI ensures students receive targeted support, which improves learning outcomes and prevents overload. Overall, artificial intelligence offers great potential for improving the precision and timeliness of academic assessments.

4.2.4 Integration of AI technologies in teaching methods and learning process in science subjects

Figure 4.4

Integration of AI on teaching methods and learning process in science subjects



Source: field data, 2024.

When the respondents of this study were asked to respond on whether integrating AI technologies has made teaching methods and learning processes more efficient. The majority of the respondents (67.1%) strongly agreed with the statement asked while a minority of the respondents (5.4%) disagreed with the statement asked. This implies that artificial intelligence in education enhances teaching methods by providing personalized learning experiences, identifying individual students' needs, and offering real-time feedback.

When the participants of this study were asked to respond to the statement whether artificial intelligence technologies made significant changes in teaching methods and learning process in science subjects. One teacher of secondary school from school E commented:

> In these schools, we notice that there are huge changes in teaching methods and learning processes among teachers and students especially when they use artificial intelligence technologies in teaching in the classroom and in the learning process (Teacher from school E, 13th October 2024)

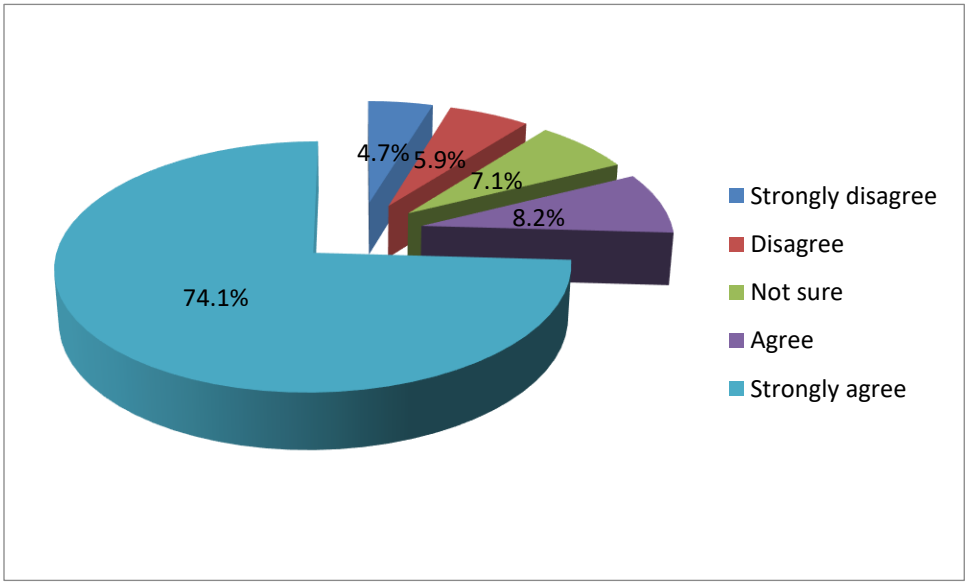
The quoted interview correlates with the findings obtained from the questionnaire as both reveal that artificial intelligence helps to improve teaching methods and the learning process efficiently. This implies that artificial intelligence is essential for improving both teaching methods and the learning process by providing personalized feedback and adaptive learning experiences. This means that AI analyzes student performance data, allowing teachers to improve their teaching

approaches. Artificial intelligence tools, such as intelligent tutoring systems (ITS) and learning management platforms, allow teachers to offer more interactive, data-driven, and personalized instruction to the students. These technologies enable real-time assessments of students' progress, helping teachers adjust their teaching strategies more dynamically. Additionally, artificial intelligence supports a blended learning environment, where students can engage with digital content outside the classroom, fostering greater flexibility. The findings obtained coincide with the study conducted by Heffernan and Heffernan (2022) who argued that AI-driven tools enhance instructional effectiveness, making lessons more engaging and relevant to individual student needs. Cognitive Load Theory supports the integration of AI in teaching and learning by optimizing the learning process. AI personalizes content delivery, aligning with the learner's cognitive capacity, thus reducing extraneous load. It provides tailored instruction, adjusting complexity based on student needs, which helps manage intrinsic load. By offering immediate feedback and interactive tools, AI ensures students focus on key concepts, enhancing understanding and retention in science subjects while preventing overload.

4.2.5 AI tools enhance lesson planning and resource development in science subjects

Figure 4.5

AI on enhancing lesson planning and resource development in science subjects



Source: Field data, 2024

When the respondents of this study were asked to explain whether artificial intelligence tools enhance lesson planning and resource development in science subjects. The majority of the respondents (74.1%) strongly agreed with the statement asked while the minority of the respondents (4.7%) strongly disagreed as indicated in the figure above. This implies that artificial intelligence tools automate routine tasks, increasing teacher efficiency and allowing more focus

on instruction. This includes data-driven insights for improved teaching strategies and broadens access to high-quality educational resources, benefiting diverse learning environments.

When the participants of this study were asked to respond to the statement about whether artificial intelligence enhances lesson planning and resource development in science subjects. One of the heads of secondary school was quoted saying. "It is true that artificial intelligence software greatly assists teachers in lesson planning and resource management. We have observed how effectively they use this software to organize and prepare their lesson plans" (HoS from school F, 12th October 2024)

Similarly, TSEO commented, "We always see teachers in their offices using artificial intelligence software to plan their lessons and, manage them accurately" (TSEO, 13th October 2024)

The interview quote coincides with the findings obtained from the questionnaire as both reveal that artificial intelligence helps teachers in preparing their lesson plans. This implies that artificial intelligence is vital in helping teachers prepare lesson plans and manage resources by streamlining administrative tasks and providing data-driven insights. This allows educators to focus more on teaching and student engagement. Through an artificial intelligence-powered platform, teachers can quickly access and generate a wide range of resources, from interactive activities to assessment tools, all of which are designed to improve student engagement and understanding. This efficiency not only saves valuable time but also ensures that the lesson plans are more diverse and adaptable. Findings correlate with the study conducted by Cummings *et al* (2022) as AI tools enhance efficiency in lesson planning, leading to improved instructional quality and more personalized learning experiences for students. This means that artificial intelligence in teaching practices offers a promising avenue for enhancing educational quality, provided that proper training and support are available. Cognitive Load Theory supports the findings of AI enhancing lesson planning and resource development by helping teachers structure lessons to manage cognitive load effectively. AI analyzes student data and suggests resources that align with their learning needs, reducing extraneous load. It also aids in breaking down complex topics into manageable segments, preventing cognitive overload. By automating the creation of customized resources, AI enables teachers to focus on higher-level instructional strategies, ensuring that the material is engaging and appropriately challenging for students in science subjects.

5.0 Conclusions

The study underscores the transformative impact of artificial intelligence on modern teaching in public secondary schools. The study concluded that artificial intelligence has significantly enhanced educational practices by providing personalized teaching and learning processes that cater to individual student's needs, fostering greater engagement and understanding. The integration of AI tools allows teachers to automate administrative tasks, thereby freeing up valuable time to focus on instructional strategies and student interactions. Additionally, artificial intelligence improves teaching efficiency by identifying strengths and weaknesses allowing teachers to adjust their strategies and provide timely, targeted interventions.

The study recommended that the government should implement ongoing professional development programs focused on AI integration development programs for teachers on AI integration in the classroom. These programs should equip teachers with the skills necessary to effectively utilize AI tools and resources in the teaching and learning process. Furthermore, the study recommended that the government should prioritize investments in AI infrastructure and resources. This includes acquiring advanced AI tools, software, and platforms that facilitate personalized learning and resource development.

Additionally, the study recommends that government should strategically integrate artificial intelligence into both the curriculum and classroom practices to enhance learning outcomes. Also, schools should begin incorporating artificial intelligence-related content into subjects such as mathematics, computer science, chemistry, biology and other related science subjects, helping students develop an understanding of artificial intelligence's role in modern society.

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