

Code-Switching as a Multilingual Communication Strategy in Group Discussions among Female Foundation Science Students at the Open University of Tanzania

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Abstract

This study investigated code-switching as a multilingual communication strategy among newly enrolled university students in Tanzania, focusing on common patterns, communicative functions, and perceived limitations. Guided by Communication Accommodation Theory (CAT) and the Markedness Model, the study employed a qualitative descriptive design within an interpretive paradigm. Twenty-two students at the Singida Regional Centre of the Open University of Tanzania were purposively selected, and data were collected through non-participant observations and focus group discussions and were analysed thematically. Findings revealed that inter-sentential and intra-sentential code-switching between English and Swahili predominated. Students used code-switching to clarify concepts, facilitate cognitive processing, promote social inclusion, express identity, maintain scientific accuracy, and bridge language-proficiency gaps. From a CAT perspective, these practices reflected convergence to enhance mutual understanding, while the Markedness Model demonstrated the social and academic meanings embedded in language choices. Students nonetheless perceived excessive reliance on code-switching as a potential constraint on English proficiency development. The study concludes that code-switching functions as both a communicative and pedagogical resource, with its effectiveness contingent on purposeful use alongside deliberate opportunities for English development. It recommends that Universities provide institutional guidance for bilingual practice, including lecturer-directed switching strategies, support for bilingual scientific terminology, and structured approaches that bridge Swahili-mediated discussion with English academic communication.

Keywords: Code-Switching, Group Discussion, Communicative Functions, Higher Education Language Policy, Multilingualism, Tanzania.

Introduction

Recent research shows that multilingualism, the ability to use more than one language, is a common and growing phenomenon worldwide (Cenoz &

Gorter, 2023; Projoga *et al.*, 2023; Zhao *et al.*, 2024; Haukas *et al.*, 2024; Mirzayeva, 2026). It has become an important subject of scholarly inquiry in sociolinguistics, psycholinguistics, applied linguistics, and educational research (Bhatt & Bolonyai, 2022; Liu & Hu, 2024) owing to its pervasive role in human communication (Gao & Yang, 2023). In higher education, multilingualism is regarded as a core dimension of communicative competence. It enables students to express themselves clearly, fosters critical thinking (Rayyona, 2026), cultivates cultural awareness, enhances creativity (Diaconu, 2022), and ultimately facilitates learning (Cenoz & Gorter, 2023). It also contributes to the development of unique knowledge among students and enriches both teaching and learning environments (Mbiri-Hungwe, 2023). Consequently, many Universities worldwide promote multilingual practices to prepare students for international careers, strengthen their communication skills, and enhance learning outcomes (Oliinyk *et al.*, 2024; Lasagabaster-Herrarte, 2023). In today's globalised world, multilingual communication enables people from diverse linguistic backgrounds to understand one another, exchange ideas, and collaborate more effectively (Padilla & Chen, 2025; Kalyani, 2025).

One defining feature of multilingual language practice is code-switching, the alternation between two or more languages or language varieties within or across sentences during a single communicative interaction (Poplack, 1980; Myers-Scotton, 1993). It operates at different structural levels, ranging from shifts across sentence boundaries (inter-sentential) to the embedding of elements from a language within the grammatical frame of another (intra-sentential). Independently of topic or interlocutor shifts, code-switching serves diverse communicative functions, including facilitating comprehension, emphasising ideas, and managing interactional relationships (Ahmad *et al.*, 2023; Mona, 2024). Code-switching is increasingly recognised as a natural feature of multilingual communication across all language modalities such as speaking, listening, reading, and writing, rather than an indicator of linguistic deficiency (Vida-Mannl *et al.*, 2023; Cedden *et al.*, 2025).

The conceptualisation of code-switching has evolved considerably over time. Initially, it was regarded as a big sign of weak language skills or low communicative competence in the target language (Haddad & Djemaoune, 2025), and it was commonly associated with social class, perceived as a strategy used by speakers to navigate interactions with higher-status interlocutors outside their social group (Tahir *et al.*, 2025). In educational settings, it was viewed as a source of language interference that could constrain learners' proficiency in the target language (Mzeil, 2025), limit the target-language exposure necessary for effective second language acquisition,

and disrupt the continuity of instructional delivery (Bardinas *et al.*, 2025). In contemporary sociolinguistic and educational research, however, code-switching is now widely recognised as a strategic communicative resource that multilingual speakers employ to negotiate meaning, facilitate comprehension, sustain interaction, and accomplish specific social and academic goals (Jusufo & Jusufo, 2024; Lautu & Estremera, 2025; Tenés *et al.*, 2023; Ramaila, 2025).

A growing body of literature demonstrates that code-switching serves various functions in multilingual educational backgrounds, particularly in classrooms where group discussions take place often. Students typically code-switch to express themselves more effectively (Candilas *et al.*, 2023), articulate their points with greater clarity (Ye, 2023), support mutual understanding among peers (Tyas, 2020), maintain conversational flow (Hafid & Margana, 2022; Kumari, 2024), and assert social identity (Susiawati *et al.*, 2025). It also enables students who are not self-assured in the language of instruction to participate meaningfully in discussions and learning activities (Torres, 2025). Code-switching is therefore not merely a marker of multilingual competence (Brdarević-Čeljo *et al.*, 2024) but a supportive communicative tool that facilitates learning among students from diverse sociolinguistic backgrounds (Gámez, 2023; Susiawati *et al.*, 2025). Rather than simply alternating between two languages or dialects, multilingual students draw on their integrated linguistic repertoire to construct meaning and communicate in stylistically varied ways (Treffers-Daller, 2025; Urbaite, 2025).

Research conducted in multilingual African contexts demonstrates that code-switching is a key communicative practice among students in countries where indigenous, national, and colonial languages coexist (e.g., Bamgbose, 2011; Banda, 2020; Probyn, 2020; Agbozo & ResCue, 2021; Knaus *et al.*, 2022). This practice is largely shaped by language policies that grant official status to colonial languages such as English, French, and Portuguese for educational and institutional communication (Bamgbose, 2011; Knaus *et al.*, 2022), while indigenous languages remain central to daily social, economic, and political life (Bamgbose, 2011; Banda, 2020). This gap between policy and practice has given rise to widespread code-switching, particularly in educational settings. Evidence from Nigeria, Kenya, Uganda, South Africa, Zimbabwe, Madagascar, and Namibia indicates that students employ code-switching to enhance comprehension, clarify complex ideas, negotiate meaning, construct social identities, build interpersonal relationships, and encourage participation in academic discourse (Probyn, 2020; Banda, 2020; Knaus *et al.*, 2022; Ngubane, 2025; Henok & Julius, 2026). Despite these benefits, code-switching remains largely unacknowledged in many African education systems, which continue to privilege official languages in academic contexts,

highlighting a persistent disconnect between language policy and classroom practice.

Evidence from Tanzania provides a particularly relevant context for examining code-switching as a multilingual communication strategy among university students. As a linguistically diverse society, with estimates ranging from 125 to 164 living languages, including Swahili, which serves as the national language and lingua franca (Polomé, 2017). Tanzanian university students come from varied linguistic backgrounds and routinely communicate in indigenous languages alongside Swahili and English, the official medium of instruction in higher education institutions (MoEST, 2023). This linguistic diversity seems to be a classroom learning challenge when group discussions are undertaken (Wijayanti, 2024), where clear communication, mutual understanding, and inclusive participation are essential for effective learning (Pattiasina *et al.*, 2025). As a result, code-switching has become a pervasive feature of academic interaction in Tanzanian tertiary institutions (Prosper, 2025; Fredinand, 2025; Razzaq, Rubagumya, & Mgimba, 2026).

Although code-switching among multilingual university students in Tanzania has been documented (Prosper, 2025; Fredinand, 2025; John & Prosper, 2026; Razzaq *et al.*, 2026), important gaps remain. Existing studies have largely focused on broader educational contexts, with no identified study exploring naturally occurring code-switching in student-led peer group discussions within a Foundation Science programme while simultaneously analysing its structural patterns and communicative functions. The combined application of Communication Accommodation Theory (CAT) and the Markedness Model to explain how and why students alternate between Swahili and English in such interactions also remains underexplored. Addressing these gaps is significant because peer-led discussions constitute a distinctive interactional space in which students negotiate meaning, accommodate peers, assert identity, and navigate scientific content through their multilingual resources.

Despite the official use of English as the medium of instruction in Tanzanian higher education (MoEST, 2023), students operate within a multilingual environment in which Swahili serves as a widely shared lingua franca. It therefore remains unclear which structural patterns students employ in such discussions and how these functions support comprehension, scientific communication, peer interaction, identity, and accommodation. The absence of such evidence limits understanding of how students negotiate the demands of English-medium science education while drawing on their full linguistic repertoire. The present study therefore examines the structural patterns and

communicative functions of code-switching among female Foundation Science students at the open and distance learning university in Tanzania.

Specific Research Objectives

- i) To identify the most common code-switching patterns employed in group discussions.
- ii) To interpret the communicative functions of code-switching patterns during group discussions.
- iii) To examine students' perceptions of the limitations of code-switching in group discussions.

Theoretical Framework

This study is informed by two complementary theoretical frameworks: Communication Accommodation Theory (CAT) and Myers-Scotton's Markedness Model. CAT was developed from Howard Giles's (1973) Speech Accommodation Theory and later expanded to explain how individuals adjust their communicative behaviour in response to interlocutors and social contexts. The theory identifies three key strategies: convergence, whereby speakers adapt their behaviour to become more similar to an interlocutor to aid understanding, reduce social distance, or gain approval; divergence, which involves emphasising communicative differences to assert group identity; and maintenance, through which speakers retain their existing communicative patterns. In multilingual contexts, these strategies are expressed through language choice and code-switching.

CAT is particularly relevant in multilingual settings such as Tanzania, where university students alternate between English and Swahili during group discussions. Through convergence, students may code-switch to facilitate mutual understanding, foster group cohesion, and accommodate peers with varying levels of language proficiency, thereby promoting a more inclusive and collaborative learning environment. Divergence may occur when students use English predominantly within a Swahili-dominant context to signal academic identity, demonstrate language proficiency, or distinguish themselves socially or intellectually. Maintenance is evident when students preserve English scientific terms within otherwise Kiswahili utterances. CAT thus positions code-switching as a deliberate communicative strategy through which students negotiate meaning and manage peer relations, directly informing the interpretation of the communicative functions of code-switching patterns in group discussions.

Myers-Scotton's Markedness Model was developed in the late 1980s and subsequently refined in the 1990s. The model complements CAT as it describes language choices as socially meaningful and shaped by the

perceived rights and obligations associated with particular interactions (Myers-Scotton, 1993). The model fundamentally focuses on the distinction between the Matrix Language (ML), which provides the syntactic structure of an utterance, and the Embedded Language (EL), from which lexical items are drawn. By examining participants' choices between the ML and EL, switches can be classified structurally as intra-sentential, inter-sentential, or tag switching. The model also differentiates between unmarked switching (expected and routine), marked switching (deliberately signaling a change in social relationship or interactional meaning), and exploratory switching (employed when speakers are uncertain about the appropriate language choice). Documenting the frequency of each structural type across interactions enables the identification of the most commonly employed code-switching patterns.

Therefore, CAT and the Markedness Model collectively provide an integrated analytical framework for this study. The Markedness Model supports the first objective by enabling the structural classification and frequency analysis of code-switching patterns. CAT informs the second objective by providing the conceptual tools to interpret whether those patterns represent acts of convergence, divergence, or maintenance within the social dynamics of group discussions. Thus, in this study, the two frameworks mutually enlighten how and why students shift between English and Swahili in response to contextual, linguistic, and social factors during academic interactions.

Empirical Literature Review

This section reviews empirical studies on code-switching practices, organised by communicative function in line with the study's research objectives, to broaden understanding of the topic and identify the gap the present study addresses.

Code-Switching Patterns

Scholars have classified code-switching both structurally and functionally. Blom and Gumperz (1972) distinguished situational switching, triggered by changes in setting, topic, or participants, from metaphorical switching, used for rhetorical emphasis. Poplack (1980), Ghyfari *et al.* (2025), and Al Yousef *et al.* (2025) identified three structural types: intra-sentential (within a clause), inter-sentential (across clauses or sentences), and tag-switching (insertion of a tag or phrase from one language into a sentence structured in another); Al Yousef *et al.* (2025) noted that inter-sentential switching is most prevalent among highly proficient bilinguals. In technical domains, Tejasri and Shri (2026) observed that limited L1 vocabulary often necessitates intra-sentential switching and introduced intra-word switching, where morphemes

from different languages blend within a single word. Murtiningsih *et al.* (2022) further showed that code selection reflects topic, context, participants, and social identities. These classifications inform the examination of switching patterns that newly enrolled university students in Tanzania may employ during group discussions.

Communicative Functions of Code-Switching in Multilingual Education

Research consistently treats code-switching as an effective communication strategy in multilingual educational settings (e.g., Gámez, 2023; Hafid & Margana, 2022; Kumari, 2024; Lautá & Estremera, 2025; Ramaila, 2025; Susiawati *et al.*, 2025). Komariah *et al.* (2020) define communication strategies as techniques speakers use to overcome linguistic difficulties and sustain interaction; Ramaila (2025) and Susiawati *et al.* (2025) add that, in multilingual education, these increasingly involve flexible language alternation. The empirical literature documents five main functional categories: comprehension, participation and inclusion, identity, terminological precision, and risk.

Comprehension

There is broad cross-contextual agreement that code-switching aids comprehension. Studies conducted in Indonesia (Hafid & Margana, 2022; Rohmana & Salsabil, 2024; Mulyani *et al.*, 2024; Sari, 2026), Malaysia (Elias *et al.*, 2022; Abdullah & Rahmat, 2025), Europe (Cicillini, 2023; Luporini *et al.*, 2024), Rwanda (Habintwali *et al.*, 2024), South Africa (Vilakazi *et al.*, 2024), Kenya (Jepkosgei, 2025), and Tanzania (Fredinand, 2025; John & Prosper, 2026) consistently report that switching enables learners to grasp complex ideas and access content more readily. Haddad and Djemaoune (2025) further note that it helps students bridge lexical gaps and maintain communication when target-language proficiency is limited.

A point of divergence concerns motivation. Luporini *et al.* (2024) and Habintwali *et al.* (2024) frame comprehension-driven switching as a response to proficiency gaps, whereas Tenés *et al.* (2023), working with learners in Switzerland and Germany, found that it reflects linguistic competence rather than deficiency, a position echoed by Jusufi and Jusufi (2024), who attribute switching to multilingual exposure, word retrieval, and communicative comfort rather than to inadequacy. For Tanzanian university students who use English as the medium of instruction but Swahili in everyday life, both motivations may operate simultaneously.

Participation and Inclusion

Code-switching is widely associated with broader learner participation and a more inclusive classroom climate. Lautá and Estremera (2025) found that it

enables students to contribute to discussion even without full target-language proficiency, helping them feel included and fostering a welcoming environment. Convergent findings come from Nigeria (Jegede, 2025), Kenya (Jepkosgei, 2025), South Africa (Vilakazi *et al.*, 2024), and Tanzania (Fredinand, 2025; John & Prosper, 2026), where switching facilitates active engagement among linguistically diverse learners. These convergent findings suggest that newly enrolled university students in Tanzania may code-switch during group discussions to ensure equitable participation, particularly in multicultural peer groups.

Identity

Beyond cognitive functions, code-switching carries social and identity-related meanings. Bonds (2025), studying African American school leaders in Chicago, found that switching allowed speakers to balance academic participation with vernacular identity, though it sometimes created tension between English use for academic purposes and the L1 for social comfort. Alruwaili (2023) and Karmanov (2023), drawing on US and Canadian data respectively, similarly report that switching signals group cohesion, shared ideology, and cultural acceptance; Canadian bilinguals showed particularly positive attitudes toward the practice. Savase and Ganmote (2025) and Kipchoge (2024) generalise these findings, arguing that switching affirms cultural identity and social integration. In Tanzania's ethnically diverse university peer groups, students may therefore code-switch to express identity and belonging, not merely to address communicative limitations.

Terminological Precision

A distinct function concerns domain-specific vocabulary. Where the L1 lacks equivalent terms, switching serves precision rather than compensation. Tejasri and Shri (2026) noted that technical fields frequently necessitate intra-sentential and intra-word switching for this reason. Cicillini (2023) found that EMI lecturers across five European universities switch to explain specialised vocabulary and address lexical gaps, and Jepkosgei (2025) reports comparable practices in Kenyan classrooms. Hafid and Margana (2022) and Fredinand (2025) document parallel uses, vocabulary translation, and technical-term translation likewise in Indonesian and Tanzanian contexts. Students, when discussing academic content in Tanzania, may similarly switch to Swahili when precise English terminology is unavailable or unfamiliar.

Risks

Despite its documented benefits, several studies caution against unregulated switching. Lautu and Estremera (2025), Hafid and Margana (2022), Mulyani *et al.* (2024), and Sari (2026) warn that excessive L1 use restricts target-

language exposure, producing recurring errors and avoidance of complex grammatical structures. Abdullah and Rahmat (2025) and Elias et al. (2022) stress the need to limit switching to maintain adequate English immersion. The most cautionary evidence comes from within Tanzania: Kambey and Vuzo (2022) found that code-switching in primary schools negatively affected English proficiency and contributed to examination difficulties. This finding stands in tension with Fredinand (2025) and John and Prosper (2026), who document productive functions at higher levels of the same system. This internal contradiction suggests that newly enrolled university students must navigate a genuine trade-off between short-term communicative support and longer-term English language development.

The empirical literature confirms that code-switching is a multifunctional strategy in multilingual education. Agreement is strongest in its comprehension-facilitating and inclusion-supporting roles; its identity function involves a documented tension between social comfort and academic expectations; and whether switching reflects a deficiency in proficiency or linguistic competence remains contested. The literature does not yet address how this strategy operates among newly enrolled university students in Tanzania during peer group discussions. This study therefore investigates the patterns, functions, and motivations of language switching in that specific context.

Research Methodology

Research Approach and Design

This study employed a qualitative descriptive design within an interpretive research paradigm to understand code-switching practices in group discussions at the Open University of Tanzania (Sandelowski, 2000, 2010; Villamin *et al.*, 2025). The design enabled the researcher to observe, describe, and interpret naturally occurring language alternation during group discussions. A preliminary familiarisation visits in June 2025 indicated that newly enrolled multilingual university students communicated more naturally when they were free to use languages beyond English as the medium of instruction.

Data were collected over two months, from July to August 2025, focusing on students' language alternation practices to examine how and why they engaged in code-switching during academic discussions (Villamin *et al.*, 2025). The descriptive design enabled participants to share their experiences in detail, affording the researcher a comprehensive understanding of how newly enrolled university students drew on different languages during group discussions (Thorne, 2025).

Research Site

This study was conducted at the Singida Regional Centre of the Open University of Tanzania (OUT). The centre was selected because it hosted a special foundation science programme for female students across the country, designed to help them meet university admission requirements. It offered a suitable setting for this study, as it reflected Tanzania's multilingual diversity (Pérez Cañado, 2023). As suggested by Tibategeza (2010, bringing students from various regions, it results in a diverse linguistic background.

Methods and Instruments

Data were collected through non-participant observation and focus group discussions (FGDs). After establishing rapport with participants, the researcher was present during three group discussions without obstructing the proceedings (Thorne, 2025). The observed groups were engaged in discussions of science subjects, namely Physics, Chemistry, and Biology. The three groups included 22 participants: 7 in the first group, 7 in the second group, and 8 in the third group, respectively. Each group was observed on four occasions at two-week intervals to determine the recurrence of code-switching practices (Morgan, 2024), yielding 12 observed sessions in total. Each discussion lasted approximately 50 to 65 minutes.

As a non-participant observer, the researcher recorded all observations without interfering the participants. Guided by an observation checklist, the researcher took field notes and made audio recordings of the discussions to support thorough analysis. The checklist facilitated the systematic documentation of code-switching practices as they emerged in authentic settings (Villamin *et al.*, 2025), capturing both structural patterns and communicative functions.

Following the observation period, three FGDs were conducted with the same participants. The discussions were moderated by the researcher and supported by a note-taker, and were held in a quiet classroom at the Singida Regional Centre of the OUT, where participants felt at ease. These face-to-face, in-depth FGDs brought participants together to discuss their language practices (Anis & Olisa, 2024). Each session lasted approximately 45 to 55 minutes. Open-ended questions guided the discussions, focusing on language alternation practices, principally between English and Swahili, and their communicative roles, with flexible probing employed to generate detailed information relevant to the research objectives.

All FGDs were conducted in Swahili to enable participants to express themselves freely and were audio-recorded to capture their accounts of code-switching practices accurately (Thorne, 2025; Villamin *et al.*, 2025). The

recordings were then transcribed verbatim in Kiswahili and analysed in the original language to preserve linguistic features and meaning. English translation was subsequently prepared for presentation in the findings. During translation, particular attention was paid to maintaining the intended meaning and contextual nuances of the original Kiswahili. In the Findings chapter, original Kiswahili extracts are presented alongside their English translations to allow readers to evaluate the fidelity of the translations. Observations documented students' code-switching practices, patterns, and functions, while FGDs elicited participants' accounts of why they alternated between Swahili and English. Together, these methods provided a comprehensive understanding of how code-switching operates as a communicative strategy among university students in Tanzanian multilingual contexts (Morgan, 2024).

Recruitment of Participants

The study population comprised newly admitted female university students enrolled in the special foundation science programme at the Singida Regional Centre of the OUT. These participants were selected because they represented the linguistic diversity characteristics of Tanzania's multilingual society. In addition to their vernacular languages (Tibategeza, 2010), they had been exposed to Swahili as the medium of instruction in primary education and to English in secondary education (MoEST, 2023). Participants were purposively selected based on their self-reported preference for group discussions as a learning strategy. During screening, students were asked whether they regularly engaged in group discussions when undertaking academic activities. Those who indicated a clear preference and were willing to participate were included, while those who did not regularly engage in group discussions or were unwilling to participate were excluded. These criteria ensured that participants had sufficient experience with group interaction for examining code-switching in naturally occurring communication.

The sample comprised 22 students, a size determined by data saturation. Data collection continued until saturation was reached, indicated by the absence of substantially new codes or patterns during the final two observation rounds and the third FGD (Hennink & Kaiser, 2022). Given that the study employed reflexive thematic analysis, saturation was treated cautiously as an indication of sufficient depth of information rather than as a claim that all possible meanings had been exhausted (Braun & Clarke, 2023).

The participants varied in age, geographical background, first language, and type of secondary school attended. These characteristics were considered relevant to the study because participants' linguistic backgrounds and

educational experiences may shape their language practices in group interaction settings (Syam *et al.*, 2023). Each participant was assigned an anonymous identifier from P1 to P22 in the order of recruitment.

Table 1:
Participants' Background Characteristics

Participant's Anonymous Name	Age	Region of Origin	First Language	Type of Primary School
P1	21	Iringa	Hehe	English medium
P2	19	Tanga	Sambaa	Swahili medium
P3	21	Singida	Nyiramba	Swahili medium
P4	20	Mtwara	Yao	Swahili medium
P5	22	Mwanza	Sukuma	Swahili medium
P6	20	Mbeya	Safwa	English medium
P7	21	Singida	Nyaturu	Swahili medium
P8	19	Kilimanjaro	Chaga	English medium
P9	22	Dodoma	Gogo	English medium
P10	21	Dar es Salaam	Swahili	English medium
P11	19	Morogoro	Luguru	Swahili medium
P12	20	Ruvuma	Ngoni	Swahili medium
P13	19	Kigoma	Ha	English medium
P14	21	Shinyanga	Sukuma	Swahili medium
P15	19	Lindi	Makonde	Swahili medium
P16	19	Kagera	Haya	English medium
P17	21	Rukwa	Fipa	Swahili medium
P18	20	Tabora	Nyamwezi	Swahili medium
P19	22	Kigoma	Ha	Swahili medium
P20	21	Dodoma	Gogo	English medium
P21	19	Manyara	Iraqw	Swahili medium
P22	20	Njombe	Bena	Swahili medium

Source: *Research data, 2025.*

Data Analysis

This study analysed data using reflexive thematic analysis, following Braun and Clarke's (2006) six-phase approach: familiarisation, coding, theme development, theme review, theme definition, and report production. Both datasets, drawn from non-participant observations and FGDs, were processed using this method. Observation checklists were reviewed to identify and label relevant code-switching patterns, which were subsequently grouped to establish initial themes. The translated FGD transcripts were similarly examined to identify code-switching patterns and their communicative functions. Patterns and functions were coded, organised into themes, and refined for consistency and analytical relevance before interpretation. Refined themes were presented with supporting participant quotations to illustrate the findings.

Trustworthiness of the Findings

The trustworthiness of the study was established through four principles proposed by Lincoln and Guba (1985): credibility, transferability, dependability, and confirmability. Credibility was supported through prolonged engagement with the study setting across four observation rounds and triangulation of observational and FGD data. Transferability was addressed through detailed descriptions of the study setting, participants, and interactional contexts to enable readers to assess the applicability of the findings to similar contexts. Dependability was enhanced through a pilot observation, which informed the refinement of observation procedures, and through maintaining detailed records of all procedural and analytical decisions throughout the research process. Confirmability was supported by grounding interpretations firmly in the data and using verbatim extracts to illustrate the findings.

Research Ethics

Ethical approval for this research was obtained from the Research Ethics Committee of the OUT, with a research permit subsequently granted by the Ministry of Education, Science, and Technology. Permission to conduct the study was further obtained from the Singida Regional Administrative Secretary, the District Executive Director of Singida Municipality, and the Director of the Singida Regional Centre of the OUT. Before participation, all 22 participants were informed of the study's purpose and procedures, the voluntary nature of participation, their right to confidentiality, and their right to withdraw at any time without repercussion. Written informed consent was obtained from all participants, including specific consent for audio recording. To protect participants' identities, anonymous identifiers were assigned from P1 to P22 in the order of recruitment. All audio recordings, transcripts, and related data are stored securely in password-protected electronic files accessible only to the researcher and will be retained for six months before secure deletion.

Findings

This study aimed to investigate code-switching practices as a communicative strategy during group discussions among the newly enrolled university science students in Tanzania. Specifically, the study sought to: (1) identify the most common code-switching patterns employed in group discussions; and (2) interpret the communicative functions of code-switching patterns during group discussions. Table 2 shows the categories and themes generated from data.

Table 2:

Major Findings

Category of Data	Themes
Code-switching patterns in group discussions	Intra-sentential code-switching Inter-sentential code-switching
Communicative functions of code-switching patterns	Explanation and clarification Promoting understanding and cognitive processing Facilitating social interaction and inclusive participation Revealing habitual and natural practice Expressing identity, personality, and status Bridging language proficiency gaps
Shortcoming of Code-switching	Swahili overreliance and English proficiency

Source: Research data, 2025

1. Code-Switching Patterns identified in Group Discussions

Data from non-participant observations and FGDs revealed that the two predominant code-switching patterns employed by newly enrolled university science students during group discussions were inter-sentential and intra-sentential code-switching, occurring primarily between English and Swahili. Notably, no use of any native language was observed during the group discussions, whether for greetings or academic communication. This is likely attributable to the linguistic diversity within the groups, as students came from various ethnic backgrounds with mutually unintelligible native languages.

a) Inter-Sentential Code-Switching

The data revealed that newly enrolled university science students alternated between English and Swahili at sentence or clause boundaries. During group discussions, students were commonly observed to introduce points or scientific concepts in English, the medium of instruction before switching to Swahili, the national lingua franca, to elaborate, clarify, or rephrase for better comprehension. This pattern is illustrated in the following extract from Group 2, during a discussion of photosynthesis:

P4: *Mimi sijaelewa maana ya photosynthesis. ['I don't understand the meaning of photosynthesis.']*

P12: *Photosynthesis is the process through which green plants make their own food using sunlight, chlorophyll, carbon dioxide, and water. Kwa hiyo, photosynthesis ni mchakato ambao mimea ya kijani hujitengenezea chakula kwa kutumia mwanga wa jua, hewa ya carbon dioxide, maji, na krolifili.*

P4: *Aaah, sasa nimeelewa. Kwa hiyo mwanga wa jua, maji, krolifili, na karonidayoksaidi ni mahitaji muhimu katika process ya photosynthesis. ['Ah, now I understand. Therefore, sunlight, water, chlorophylls, and carbon dioxide are important requirements in the process of photosynthesis.']*

P12: *Ndiyo. ['Yes.']*

This extract gives empirical evidence of inter-sentential code-switching. P12 initially explained the concept of photosynthesis in English and immediately restated the explanation in Swahili. The Swahili utterance was rephrased and clarified the preceding explanation, and P4 subsequently indicated that they understood the concept.

Similarly, evidence from Group 1, who discussed atomic structure, revealed the prevalence of an inter-sentential code-switching pattern:

- P6: *An atom is made up of three main particles: protons, neutrons, and electrons. Yaani, atom inaundwa na chembe kuu tatu, ambazo ni protoni, niutroni, na elektroni.*
- P9: *Aaah, sasa nimeelewa. Kumbe hizo ndizo particles zinazounda atom. ['Ah, now I understand. So, those are the particles that make up an atom.']*
- P6. *Ndiyo. ['Yes.']*

The extract illustrates inter-sentential code-switching because P3 alternated from English to Swahili at sentential boundaries. The Swahili sentence does not introduce new information; instead, it rephrases and clarifies the preceding English explanations. P9's response suggests the switch served to rephrase and clarify, making the scientific concept more accessible in the group discussion.

This inter-sentential pattern was also evident in the data from FGDs, when a participant said:

We usually switch the languages, either from English to Swahili when explaining scientific concepts, because the majority of us want to know in Swahili what that concept means... and then back to English (P3).

These findings indicate that this code-switching pattern enabled group members with different levels of English proficiency to follow the discussions more effectively and understand the concepts being discussed, ultimately contributing to their mastery of the content.

b) Intra-Sentential Code-Switching

The data revealed that the newly enrolled university science students mixed languages, Swahili and English, at a sentence or clause level. During group discussions, students were often observed embedding English technical terms within Swahili sentences, especially for scientific vocabulary that has no direct or precise translation, such as chemical formulas and terminologies. The following observational extract from Group 3 provides an example:

- P10: *Kwa hiyo, kwenye formula ya water tunaandika H₂O, ambapo H inasimama kwa hydrogen na O ni oxygen. [‘So, in the formula for water, we write H₂O, where H stands for hydrogen and O stands for oxygen.’]*
- P8: *Halafu hiyo subscript 2 inaonesha kwamba kuna atoms mbili za hydrogen, siyo? [‘And that subscript 2 shows that there are two hydrogen atoms, right?’]*
- P17: *Yes, exactly. Kwa hiyo molecule moja ya water ina two hydrogen atoms na one oxygen atom. [‘So, one water molecule has two hydrogen atoms and one oxygen atom.’]*
- P1: *Sasa nimeelewa, kwa sababu nilikuwa naona hiyo 2 kama sehemu ya formula tu bila kujua maana yake. [‘Now I understand, because I used to see that 2 as just part of the formula without knowing what it meant.’]*
- P21: *Ndiyo, kila symbol kwenye chemical formula ina maana yake. [‘Yes, every symbol in a chemical formula has its own meaning.’]*

Data indicate that students alternated between English and Swahili within utterances. While English was retained for scientific terminology, such as *hydrogen, formula, oxygen, atoms, subscript, and chemical formula*, Swahili provided the grammatical structure for explaining relationships among these concepts. This suggests that code-switching is a valuable strategy to facilitate discussion of scientific concepts, as participants may combine familiar Swahili expressions with the English terminology used in their academic materials.

This was also revealed in the data from FGDs, whereby one participant clarified that:

Sometimes we mix languages, mainly Swahili and English, because, like in science, there are some words that you cannot change, such as chemical formulas and terminologies. You have to use them the way they are in English to maintain their scientific essence (P1).

Based on these findings, it is plausible to argue that despite the alternation of languages during discussion, students maintained the scientific accuracy and integrity of concepts while communicating in a more accessible language.

2. Communicative Functions of Code-Switching Patterns

Based on the data collected in this study through non-participant observations and FGDs, it was found that the identified code-switching patterns, namely inter-sentential and intra-sentential, served various communicative functions among the newly enrolled university science students during group discussions, as further presented below:

a) Explanation and Clarification

The data showed that code-switching was extensively used to explain complex scientific concepts and clarify English technical terms. The students in group discussions normally used inter-sentential patterns to explain and

clarify some concepts. They were observed extensively switching to Swahili when explaining and clarifying questions, complex scientific concepts, and terms. This function was especially important when students often encountered ambiguous or unfamiliar academic terms. Consider the following extract from the observation:

P7: *Nilivyoelewa mimi ni kwamba, a resistor is a component that opposes the flow of electric current. Kwa hiyo, resistor inapozidi, mkondo wa umeme hupungua kwenye saketi. [‘The way I have understood is that... Therefore, when the resistance increases, the electric current decreases in the circuit.’]*

The data from FGDs also indicated that code-switching was often used to clarify or explain scientific terms. This was confirmed by the participants in the following extracts:

When discussing, it happens that some of us cannot understand certain vocabulary and the contextual meaning of a given word, so we will have to code-switch so as to support one another to understand (P11).

Another participant added that:

During discussions, we code-switch particularly when giving examples and clarifying scientific terms... we often use Swahili during learning so everyone can understand (P22).

These findings indicate that code-switching was used by the newly enrolled university science students as a scaffolding strategy to facilitate their comprehension, ensuring no participant was left behind during the discussion.

b) Promoting Understanding and Cognitive Processing

The dataset revealed that Swahili, being the national language and mainly the first or dominant language for many students, served as the language of thought and everyday communication. Students stated that alternating to Swahili helped simplify abstract scientific ideas and connect them to practical and real-life examples. The following quotations were relevant to justify this perception:

Swahili is made in Tanzania and is the first or dominant language for the majority of us, so we think in Swahili, and we understand better in Swahili, so we shift from English to Swahili in order to understand each other (P15).

Another participant clarified that:

Using Swahili, a common language for many of us, helps in putting a topic more practically. That's why I usually code-switch to Swahili... to interact with others and take the real situation into account (P6).

These findings highlight the cognitive benefits of code-switching, enabling students to internalise and negotiate meaning successfully in a language they use for their daily communication.

c) Facilitating Social Interaction and Inclusive Participation

The data showed that code-switching was a useful technique to facilitate interaction and inclusive participation among students with their learning diversities. With the varied students' English proficiency levels, alternating to Swahili could provide a common ground that encouraged participation from all members during the group discussions. Some students explained this function as reported hereafter:

We, the students, are enrolled in the university with varied backgrounds, understanding, and English proficiency. In such situations, switching to Swahili becomes helpful for us to interact in learning and group discussions successfully (P5).

Another participant had the following opinion:

Despite the cultural diversities, we are bound to one another. Sometimes it happens that when you explain something to your fellows in English, you feel like they don't understand, so using Swahili comes naturally (P20).

These findings underscore the role of code-switching in building a collaborative and supportive learning environment. They also show its impact on enhancing collaboration, mutual assistance, and social interaction within group discussions, regardless of students' differences in cultural backgrounds, comprehension levels, or English language proficiency.

d) Revealing Habitual and Natural Practice

Research data indicated that code-switching was used habitually and naturally as a common practice. Students were often observed during group discussions switching to Swahili from English as a common practice, without any other necessary contextual reason, such as technical terms and explaining concepts. This practice was because they were used to code-switching in their normal conversation. Consider the following example from observation data:

P22: *Kwa kuongezea* ['In addition'], *photosynthesis happens in the chloroplast.*

This observation was supported by some participants who insisted that code-switching had become an automatic and habitual practice, deeply embedded

in their language behaviour during group discussions, just because they often practice it in their daily formal and informal conversations. One of them said the following:

We find ourselves code-switching unnecessarily because we are used to it. Code-switching has become part and parcel of our language practices... even in our informal communication, we just do it as a common practice (P10).

Another student commented on the following while explaining the way code-switching is regarded as a natural practice in learning groups, as in other communication:

Code-switching in learning groups is a common practice, and it comes naturally just because it involves conversations among participants (P17).

It was also discovered that students prefer re-explaining concepts in Swahili after explaining them in English. One participant opined the following about this:

During group discussions, code-switching is taken as normal. You explain the concept in English and then repeat it in Swahili even if not necessary (P6).

These findings suggest that code-switching functions not only as a communicative strategy but also as a socially embedded linguistic practice that has become normalised within everyday interaction among these students.

e) Expressing identity, Personality, and Status

The data indicated that students code-switched as a marker of their identity, social status, educational background, or personal comfort with either language. During group discussions, students were observed alternating languages as a way of expressing their personality, as determined by accents and pace during contributions. This was also evident in the data from FGDs, whereby students declared that code-switching was an instrument of expressing their identity, personality, status, and educational background. It helped them identify the areas they came from, whether rural or urban areas, their exposure to the languages being used, or the schools they studied in the previous education levels. Concerning this matter, one student said:

Sometimes, code-switching is used for people to express their identity, status, personality, and educational background. Based on the language proficiency in either English or Swahili, it is easy to recognise the area where someone comes from, the status of the schools he or she studied before this level, whether English-medium or not, and his or her exposure to specific language (P13).

Another student said the following while explaining the presence of students who could discuss in English without code-switching because of having a good command of English, as they studied in English-medium schools since the early stages of education:

In addition, there are some students who may not code-switch because they can speak English fluently, which indicates that they went to English-medium schools. However, they are forced to code-switch because there are also others who cannot endure discussions led in English throughout (P9).

These findings highlight that code-switching serves not only pragmatic but also symbolic and identity-related purposes.

f) Maintaining Scientific Accuracy

The body of data showed that code-switching was strategically used by students within their learning group discussions to maintain the scientific accuracy of the discussed content. It was observed that students regularly preserved English scientific terminologies and technical terms within Swahili discourse during group discussions.

P2: *Nafikiri tunakumbuka kuwa enzymes zinasaidia katika digestion. ['I think we remember that enzymes help in digestion.']*

This was also evident for scientific theories, principles, and formulas.

P16: *Usichanganye ['don't confuse'] atomic structure na ['and'] atomic theory. Atomic Structure is the arrangement and organisation of the particles that make up an atom; wakati ['while'] Atomic Theory is a scientific explanation that all matter is made up of particles called atoms.*

This was attributed to several factors: first, students were not informed of their equivalent translations in Swahili. Second, students believed that their equivalent terms in Swahili could hinder them from grasping the terms immediately. Lastly, the equivalents in Swahili could mislead them in exams because English is the medium of instruction used for assignments, presentations, and examinations. One participant remarked the following concerning this:

Even if most of us are used to Swahili, we do not code-switch everything that we learn. Scientific terms, principles, formulas, and theories are typically retained in their scientific form primarily for ease of understanding and to answer exams more effectively (P7).

Another participant added that:

That is true. We are also not familiar with the equivalent scientific terms in Swahili, as you may find that the Swahili term is hard even to pronounce. Again, we may mislead ourselves because we cannot encounter Swahili terms in exams (P19).

These findings suggest that code-switching can be used strategically to accommodate the constraints imposed by the technical nature of scientific language, without undermining academic integrity or the conventions of a specific field.

g) Bridging Language Proficiency Gaps

The data-set revealed that students code-switched to fill the gaps in language proficiency, particularly among bilingual or multilingual learners with unequal competence in the languages involved. During group discussions, participants frequently resorted to code-switching when they encountered gaps in vocabulary or grammatical structures in the target language. Students mainly switched to their stronger language (usually Swahili) to maintain the flow of communication and express intended meanings accurately:

- P2: ... chlorophyll *is important because it absorbs light energy from the sun during photosynthesis.*
- P3: Hapo kwenye it absorbs light energy sijaelewa vizuri. Chlorophyll inafanya nini hasa? [*'I have not understood "it absorbs light energy" clearly. What exactly does chlorophyll do?'*]
- P4: ... Inamaanisha kuwa, chlorophyll inasaidia mmea kufyonza mwanga wa jua, ambao ndiyo nishati inayotumika wakati wa photosynthesis. [*'... It means that chlorophyll helps the plant absorb sunlight, which is the source of energy used during photosynthesis.'*]
- P3: Kwa hiyo, bila chlorophyll mmea hauwezi kupata energy ya mwanga wa jua inayohitajika kwenye process? [*'Therefore, without chlorophyll, the plant cannot obtain the light energy needed in the process?'*]
- P5: Yes. Ndiyo maana [*'Yes. That is why'*] chlorophyll is important in the process of photosynthesis.
- P3: Aaah, sasa nimeelewa. Nilikuwa sielewi vizuri hiyo [*'Ah, now I understand. I did not understand'*] "*absorbs light energy.*"

Similarly, evidence from FGDs revealed that students alternated between Swahili and English to bridge the gaps in English proficiency. Alternation to Swahili was considered useful to enable continuous interaction rather than communication breakdown. Regarding this concern, one student stated:

In my opinion, code-switching between Swahili and English is used to overcome the challenges of not being conversant in English. So, Swahili helps us maintain communication when we fail to communicate or grasp some concepts in English (P11).

Generally, these data show that code-switching functions as a bridge across language proficiency gaps. It enables students to overcome temporary linguistic limitations, sustain communication, and access learning content more effectively. This suggests that code-switching should be viewed not as a deficit but as a valuable, context-sensitive resource in bilingual and multilingual educational settings.

3. Shortcomings of Code-Switching

Despite the notable benefits of code-switching, the dataset revealed that it is subject to several challenges and limitations. The research data indicated that language alternation may hinder the mastery of English among students. Through FGDs, students clarified that overreliance on Swahili in academic discussions may reduce or delay their proficiency and fluency in English, which are significant for their academic success and future employment. One participant had the following opinion regarding the way code-switching may affect students' communication and understanding in learning, especially in group discussions:

Although code-switching is common in our learning, the dominance of Swahili in learning at our level can make us not develop or delay developing necessary skills in the English language...It takes some time to process the information discussed in Swahili into acceptable English during presentations and examinations (P14).

Another student shared the following opinions on how overusing code-switching without caution limits explanations in English during examinations and presentations:

I see that if code-switching is overused without caution, it can make it difficult to use English during presentations or to answer examinations. A student may understand something in Swahili, but then fail to explain it in English, especially in presentations and examinations (P18).

Similarly, another student contributed the following views regarding the strategic use of code-switching to mitigate the limitations of its overused practices:

... I think code-switching should not be used just anywhere; it should be used strategically, especially for a clear purpose, such as explaining or clarifying something that seems not to be understood (P15).

These findings highlight the need for a formal framework for code-switching to be implemented within higher learning institutions, without undermining students' proficiency in English, to enhance more effective learning outcomes.

Discussion

This study investigated code-switching as a communicative strategy during group discussions among newly enrolled university science students in Tanzania. The findings showed that inter-sentential and intra-sentential code-switching were the predominant patterns, occurring primarily between Swahili and English. Ghyfari et al. (2025) and Al Yousef et al. (2025) similarly identified these patterns among bilingual learners. Tejasri and Shri (2026) further observed that technical subjects commonly generate intra-sentential switching because specialised terminology may not have readily available equivalents in the other language, consistent with the frequent embedding of English scientific terms within Swahili sentences observed across Biology, Chemistry, and Physics discussions.

The prominence of code-switching patterns can be understood in relation to the Tanzanian foundation-science context, where three linguistic conditions intersect: English is strongly associated with scientific terminology and academic assessment, Swahili functions as a widely shared national lingua franca, and students enter the university with different levels of exposure to English. Consequently, students can discuss concepts in the more accessible Swahili while retaining English terminology where disciplinary precision is important. From the Markedness Model, such choices can be understood as meaningful language selections shaped by the expected social and academic consequences of using one language rather than another (Myers-Scotton, 1993). English technical terms may represent the unmarked choice for specialised scientific content, whereas switching to Swahili can constitute an unmarked or accommodative choice for maintaining mutual understanding among peers. In some instances, however, English may acquire a marked function by indexing academic identity, English-medium educational background, or technical competence.

The findings also showed limited evidence of situational switching because participants, discussed topics, and interactional settings remained relatively stable. This supports the distinction between the structural and functional dimensions of code-switching: intra-sentential and inter-sentential switching describe where switching occurs, whereas situational and metaphorical switching concern its communicative function (Blom & Gumperz, 1972). Some intra-sentential switches nevertheless had metaphorical functions when English was used to signal academic identity or familiarity with formal educational discourse. The P9 account particularly illustrates the interaction between identity and accommodation. Students who were fluent in English and had attended English-medium schools could maintain English, thereby distinguishing themselves from less English-proficient peers. However, their shift to Swahili when other group members could not sustain English-only

discussions represents convergence, as they accommodated the linguistic abilities of their peers (Giles, 1973). Thus, the same interaction may involve both linguistic distinction and convergence depending on the communicative needs of participants.

The findings further indicate that code-switching supported comprehension, explanation, social interaction, inclusivity, cognitive processing, and the maintenance of scientific accuracy. These functions are consistent with CAT, as students adjusted their language use to reduce communicative difficulty, accommodate peers, and maintain effective interaction (Giles, 1973). In this sense, code-switching was not merely a deficiency-driven response but a resource for negotiating the demands of scientific discourse and peer interaction.

The limited use of other Tanzanian languages is also significant. Although students came from diverse regional linguistic backgrounds, Swahili appeared to function as a common linguistic space that enabled broad participation. From a language-policy perspective, this finding highlights the importance of recognising multilingualism beyond a simple Swahili–English binary and considering whether institutional language practices unintentionally marginalise other local languages.

The findings can also be situated within the broader debate between code-switching and translanguaging. From a translanguaging perspective, students may be understood as drawing flexibly on their entire linguistic repertoire to make meaning rather than switching between two clearly bounded languages (Treffers-Daller, 2025). However, the term code-switching is retained in this study because the analysis specifically identifies observable alternations between Swahili and English and examines their structural patterns and communicative functions. The translanguaging perspective nevertheless complements these findings by emphasising the strategic use of available linguistic resources rather than operating within completely separate language systems.

Importantly, the findings reveal a tension between students' positive perceptions of code-switching and their concern that excessive switching may weaken English proficiency. This finding is consistent with Lauta and Estremera (2025), Hafid and Margana (2022), Mulyani et al. (2024), and Sari (2026), who caution that excessive reliance on the first language can reduce opportunities for target-language development. From a CAT perspective, convergence towards the group's preferred language may improve immediate interaction but may conflict with the longer-term academic goal of developing English proficiency. The findings therefore suggest that the issue is not whether code-switching should be discouraged, but how it can be used

purposefully while maintaining sufficient opportunities for sustained academic English practice.

Limitations of the Study

The following limitations should be acknowledged. First, all participants were female students enrolled in a science foundation programme at one university in Tanzania. This reflects the characteristics of the study setting rather than a deliberate focus on gender; therefore, gender differences in relation to code-switching could not be examined, and the findings have limited transferability to male students, other programmes, and institutions. Second, the identification of code-switching patterns relied primarily on the researcher's field notes without a second coder or inter-coder check, which may have introduced interpretive bias. Third, the findings from the focus group discussions reflect participants' self-reported perceptions, which may not fully correspond to their actual language practices. Fourth, translating participants' Swahili responses into English may have resulted in some loss of linguistic and contextual meaning. Finally, the eight-week observation period preceding the FGDs may have influenced participants' subsequent responses, potentially affecting the authenticity of the data. Future research should include more diverse participants across genders, programmes, and institutions, employ multiple coders, triangulate self-reported data with direct observation or recorded interaction, and apply rigorous translation procedures to strengthen the credibility and transferability of the findings.

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The author declares no potential conflicts of interest.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request, subject to appropriate ethical and confidentiality considerations.

Ethics Approval Statement

Ethical approval for this study was obtained from the Open University of Tanzania (Ref. No. OUT/DRPI/Staff/No.47/2026). All participants provided informed consent before participating in the study. Participants willingly participated in this study, and they were assured of their right to withdraw at any time during the study.

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