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The Purpose of the Publication

The Journal of Issues and Practice in Education (JIPE) is a refereed journal produced by the Faculty of Education of the Open University of Tanzania. It is published twice a year, that is June and December. The journal is designed to inform both academics and the public on issues and practices related to the field of education.

The journal provides academics with a forum to share experiences and knowledge. It also informs the public about issues pertinent to their day-to-day educational experiences. We believe that sharing information related to education is important not only for academic, professional, and career development but also for informed policymakers and community activities in matters pertaining to the field of education.

EDITORIAL

Every issue of the *Journal of Issues and Practice in Education (JIPE)* is a reflection of the diverse, evolving, and interconnected challenges that shape education across Africa and beyond. This first issue of 2025 captures that diversity vividly—spanning topics from academic staff retention in universities to the role of children's songs in early learning, from artificial intelligence in school administration to the vulnerabilities that push students out of classrooms.

We open with **"Effectiveness of Institutional Policies for Academic Staff Retention"**, where *Mwanaisha Alli and Jacob Lisakafu* explore how private higher learning institutions in Tanzania can keep their most valuable resource—qualified academic staff. Their findings, grounded in evidence from three universities, remind us that policies alone are not enough; they must be resourced, implemented, and aligned with staff aspirations if they are to reduce turnover.

From higher education, we shift to the earliest stages of learning with *Juhudi Karugendo Cosmas*' **"Teachers' Understandings of Disability and Barriers to Disability-Inclusive Pre-Primary Education"**. This study captures teachers' deeply varied perceptions of disability—from medical and social paradigms to cultural beliefs—and shines light on the practical and attitudinal barriers that still keep many children with disabilities from fully participating in pre-primary education.

Teacher motivation takes centre stage in **"Motivational Factors Influencing Teaching Choice Among Primary School Teachers in Tanzania"**, where the authors unpack why individuals choose teaching as a career. The findings have strong implications for recruitment strategies and for policies aimed at keeping teachers engaged and committed.

Technology and innovation are recurring themes in this issue. In **"Awareness and Utilisation of Artificial Intelligence Tools for Effective Administration in Public Secondary Schools in North-Central Nigeria"**, we see how AI is beginning to influence school management. *Elsewhere, "Factors Influencing Teachers' Adoption of Digital Technologies in Tanzanian Special Needs Classrooms"* and **"What Drives Effective Tablet Use in Education?"** explore the conditions that make technology truly transformative for teaching and learning—especially for learners with special needs.

Assessment practices come under scrutiny in **"The Prevalence of Students' Guesswork in Multiple-Choice, Matching Items, and True-False Test Formats"**, which exposes the hidden impact of guessing on academic

performance in tertiary institutions. Similarly, **"Instructional Modes and Manipulative Skills of Pre-Primary School Children in Ibadan, Nigeria"** bridges curriculum design with skill acquisition in early education.

Inclusive education appears again in **"Learning Environment for Visually Impaired Learners in Selected Inclusive Primary Schools in Tanzania"**, which examines how physical, social, and instructional environments enable—or hinder—learning for visually impaired pupils.

Pedagogical innovation is highlighted in **"The Feasibility of Flipped Classroom Approaches"**, offering insights from Tanzanian secondary school teachers and students. At the same time **"Teaching Numeracy Skills in Early Childhood Education in Mkuranga District"** and **"Applying Children's Songs in the Mother Tongue in Early Childhood Education"** illustrate creative, contextually relevant strategies for foundational learning.

Social realities and student well-being are addressed in **"How Vulnerable Living Conditions Drive School Dropout in Tanzania"**, which maps the causal links between home circumstances and educational disengagement. Complementing this is **"Strategies for Addressing Teachers' Workload under Fee-Free Basic Education"**, which considers how workload management can also serve students' social development.

From Ghana, **"In-Service Education and Training and Teacher Performance in Senior High Schools"** provides valuable comparative insight into how professional development shapes teaching effectiveness. Finally, **"Challenges of the Form One Orientation Programme in Tanzania"** gives a candid look at the gaps and opportunities in helping students transition smoothly into secondary school life.

Together, these sixteen papers form a tapestry of pressing educational issues—policy, pedagogy, technology, inclusion, assessment, and the socio-economic conditions that influence learning outcomes. They remind us that while contexts differ, the core questions are shared: How do we make education more inclusive, more effective, and more relevant for every learner?

We thank our authors for their scholarship, our reviewers for their dedication to rigour, and our editorial and technical teams for ensuring that each contribution meets the journal's high standards. As you read, we invite you to reflect not only on the findings but on the conversations, they inspire—and to carry these discussions into your classrooms, institutions, and policy spaces.

Dr. Mohamed Msoroka
Chief Editor, *Journal of Issues and Practice in Education (JIPE)*
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CONTENTS

Effectiveness of Institutional Policies for Academic Staff Retention: A Case of Three Selected Private Higher Learning Institutions in Tanzania

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Abstract
This paper examines the effectiveness of university policies in retaining academic staff in private higher learning institutions (HLIs) in Tanzania. The study employed a mixed-methods research approach, collecting both qualitative and quantitative data to examine incentives, training, research support, and career development policies as variables for motivating academic staff in Tanzanian private HLIs in three universities in Tanzania. Additionally, 132 respondents were selected through a combination of random and purposive sampling procedures from the total population of 180 academic staff. The findings revealed that all three universities lacked career development policies. The study further revealed that the practice of religious regulations within an institution had a significant impact on promoting academic staff retention, but this effect depended on one's religious affiliation. Additionally, it was revealed that training, research support, and career development policies had an impact on the retention of academic staff members at SEKOMU, SUMAIT, and ZU. The career development policy was observed as the most preferred policy among the others. The study concludes that retaining effective academic staff can give a university a competitive edge in recruiting qualified faculty. The study recommends that each private HLI in Tanzania should consider formulating and effectively implementing the relevant policies, such as training, career development, and research support, to attract and retain competent academic members of staff.

Keywords: *Academic staff retention, institutional policies, and higher learning institutions*

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Introduction

Background of the study

Retaining well-motivated academic staff is crucial for any higher learning institution (HLI) that aspires to thrive. This is because motivated staff will attract quality services, increase output and enhance the institutional productivity (Metcalf *et al*., 2005). Indeed, the problem of academic staff retention is a global challenge, affecting both developing and developed countries (Tettey, 2006). A 2000 survey of full-time faculty members in the US found that more than 40% had considered changing careers. In a study carried out in Australian higher education institutions, 68 per cent of academic personnel indicated that they wished to leave higher education (Nge'the, 2013). Similarly, the situation of academic staff retention in many African countries appears to be particularly urgent and alarming (Tettey, 2006). This is because higher learning institutions are essentially more dependent on intellectual and creative abilities, including the commitment of academic staff, than most other organisations (Tettey, 2010). Also, higher learning institutions are expected to be repositories of the most specialised and skilled intellectuals (Metcalf *et al*., 2005) as they serve as storehouses of knowledge for nurturing the nation's human resource needs and, hence, satisfying people's aspirations for a good human society (White *et al*., 2018).

A study conducted by Ibrahim *et al*. (2019) revealed that most private learning institutions in Sierra Leone have, over the years, failed to retain their most talented and valuable employees. According to Ibrahim *et al*. (2019), the inherent retention strategies include spontaneous, sensitive, and agreeable behaviour, which is classified into three elements: power, achievement, and affiliation. In this scenario, power refers to supremacy and recognition. In contrast, achievement refers to personal standards of excellence that are to be fulfilled or overfulfilled, and affiliation refers to social relationships established (Ibrahim *et al*., 2019).

In South African higher education institutions, the issue of staff retention is evident, as the available data indicate that a substantial number (between 5% and 18%) of academics leave these institutions. It is reported that although public universities have developed alternative sources of funds, such as the self-sponsored programmes, the effect seems not to have reached academic staff, as a significant number of staff continue to quit in search of better working conditions (Nge'the, 2013).

Studies from East Africa also indicate that qualified academic staff have resigned from Kenyan public universities and secured better-paying jobs abroad. The Kenyan Public Universities Inspection Board has established that many qualified academic staff from public universities in Kenya emigrate each year. In many cases, Kenyan universities have found that graduates sent

abroad for training tend to remain abroad or join the private sector or quit shortly after their return in search of better remuneration (Nge'the *et al.,* 2012).

To be specific, the situation in Tanzania is not different; private universities also operate in a highly competitive environment, and one of the challenges they face is the retention of their academic staff. Mkude (2009), Istoroyekti *et al*. (2006), and Mkulu (2018) reported that in Tanzania, there is high academic staff turnover in private universities compared to public universities. Similarly, Muhoho (2014) showed that there is a high rate of turnover in Tanzania's work organisations and that those who stayed in the same organisation were from public organisations, particularly the higher learning institutions. Mkulu (2018) indicates that low remuneration in the workplace in private HLIs leads to a high rate of turnover and low retention, as well as delays in payment, a lack of job security, and low academic staff career development. The situation was even worrying in Sebastian Kolowa Memorial University (SEKOMU) and other private universities in Tanzania, where competent staff could not stay for a long time.

Private universities of Tanzania play the same role as public universities. The National Development Vision 2050, among others, envisions a well-educated and knowledgeable society. That means Tanzanian universities should produce high-quality graduates from both private and public higher learning institutions. Quality education will be produced by competent academics who can be well retained in the higher learning institutions. This is because academic staff retention plays an important role, and academic members of staff play a significant role in higher learning institutions.

It should be noted that retaining competent staff is crucial for any organisation striving to achieve its goals. Many of the challenges faced by modern organisations are closely linked to the nature of institutional policies designed to attract and retain employees. Irshad (2012) argues that the health of an educational institution depends on the retention of its quality employees. This suggests that the effective implementation of institutional policies and other incentives, including fringe benefits, is paramount for the welfare and career development of academic staff in HLIs. Tettey (2010) showed that one of the strategies expected by members of academic staff at higher learning institutions for retention is the presence of policies on academic staff: sabbatical leave, children's education programmes, research programmes, and training schemes.

Effects of University Policies on Academic Staff Retention
University policies should not be overly rigid; instead, they should be fair, transparent, and flexible. Key policies that contribute to academic staff

retention include healthcare, research support, study leave, motivation and incentives, promotion criteria, transportation, and benefits for family members, among others (Dwyer, 2013). Ibrahim *et al.* (2019) report that several studies have indicated that most organisations are successful as a result of valuing their employees and investing in their capacity building. Some scholars believe that people with high achievement, motivation, and higher aspirations also quit their jobs due to a lack of opportunities for advancement and promotion.

This also applies to academic staff members. Apart from a good financial package, which academic institutions might offer, the academic staff will only remain in the institution if there are planned policies on training, advancement, incentives, and recognition (Dwyer, 2013). Short of this, academic staff members have opportunities to quit and join another institution with well-organised plans for career advancement (Tettey, 2010). An organisation views that retaining talented employees is a fundamental principle for achieving a competitive advantage (Ibrahim *et al.*, 2019). Lyengi (2014) argues that the factors influencing an individual to stay in the same organisation include company policies, transparency, keeping promises made during hiring, orientation of new employees, working conditions, and job expectations. Other factors include support from fellow employees, management support, flexibility and freedom in work, technology, sufficient training opportunities, job satisfaction, salary and benefits, opportunities for personal growth, and opportunities to provide feedback and express concerns.

A study conducted by Metcalf *et al. (2005) has shown that a well-designed institutional incentive policy will motivate staff,* as it is considered a strong retention strategy and a predictor of retention for staff. Therefore, the present study aimed to explore the effectiveness of institutional policies in the retention of academic staff in private HLIs in Tanzania. The primary objective of this study was to examine the effectiveness of institutional policies in retaining academic staff in Tanzania's private higher learning institutions. Specifically, the study focused on policies related to incentives, training, research support, and career development. Central to this investigation was the question: How effective are these institutional policies in promoting the retention of academic staff within private higher education institutions in Tanzania?

Statement of the problem
The issue of academic staff retention has been a pressing concern in Tanzanian private higher education institutions. Records covering the period from 2013 to 2016 indicate that private universities had lost a substantial number of academic staff members through brain drain (Muhoho, 2024), both

internally and externally. For example, at SEKOMU, a total of 16 academic staff members left the institution, while SUMAIT lost nine academic staff, and Zanzibar University lost 15 academic staff. While the number may be insignificant, losing even one academic staff member, for whatever reason, means a loss in human capital by the concerned university because they might have invested in training that academic staff. Due to the issue of staff turnover, along with an overreliance on part-time and retired academic staff, private universities encounter substantial challenges in effectively carrying out their fundamental functions of teaching, research, and consultancy.

Numerous studies have examined academic staff retention (Mkude, 2011; Muhoho, 2014; Nnko, 2014; Tettey, 2010). However, a noticeable gap exists in the literature regarding specific factors that influence the retention of academic staff in private higher learning institutions in Tanzania. Therefore, identifying and understanding the factors that influence the retention of academic staff in Tanzania's private higher learning institutions is essential. This issue is critical to ensuring the sustainability and continued development of higher education in the country. Consequently, a thorough investigation into the key drivers and barriers to staff retention was both necessary and timely.

Theoretical framework
This study adopted the Two-factor theory, which was pioneered by Herzberg (1954). The Two-Factor Theory posits that there are factors that contribute to job satisfaction and job dissatisfaction in the workplace. According to this theory, factors that cause job satisfaction, also known as *true motivators,* are intrinsic to the workplace (Herzberg, 1954). They include job satisfaction, achievements, recognition, challenging tasks, delegation of power, and authority through responsibility, freedom, and control during the execution of tasks as well as duties (Irshad, 2012). Factors causing dissatisfaction, which are also known as hygienic factors, mainly result from non-job-related variables that are called extrinsic variables (Metcalf *et al*., 2005). These variables include salary/pay, co-worker relationships, company policies, supervisory or management style, and work environment (Mwita *et al.,* 2018).

According to the Two-factor Theory, it is argued that employees are motivated by internal values rather than external values (Irshad, 2012). In other words, remaining in the work is internally motivated and propelled by variables that are intrinsic to the work. When someone is internally satisfied, it is not easy to quit the job (Irshad*,* 2012). The two-factor theory was selected because it is relevant to the present study problem. It means that if employers in private HLIs in Tanzania do not have effective retention

policies for their academic staff, the rate of staff turnover will be high and vice versa.

Research Gaps

Although several studies were conducted in Tanzania on retention of academic staff (Nnko, 2014; Mkude, 2011; Muhoho, 2014; Tettey, 2010), scholars have concentrated little on the effectiveness of institutional policies as a factor for retention of academic staff, especially in private higher learning institutions. The majority of them focused on staff satisfaction, promotion, career development, motivation, compensation, working conditions, workload, job security, and leadership styles as the primary retention factors for academic staff. As noted by Nnko (2014), many higher learning institutions in Tanzania have not conducted surveys on academic staff retention due to limited funding. This makes it particularly challenging to uncover the factors influencing staff retention in private higher learning institutions, especially since their retention programmes often differ from those of public institutions.

Several scholars (for instance, Metcalf *et al*., 2005 and Tettey, 2010) put little consideration on university policies when they reviewed retention factors for academic staff. Institutional policies that are crucial for academic staff retention are often not adequately addressed by many scholars. This study identified a gap in the literature regarding specific university policies that should be implemented to retain academic staff. Moreover, while the Two-Factor Theory suggests that organisations should adopt retention strategies to address employee dissatisfaction, it fails to identify which specific policies are most effective, particularly in the context of academic staff. Therefore, this study was developed to address that theoretical gap by applying the Two-Factor Theory to explore effective institutional policies for academic staff retention. This study aimed to fill gaps, particularly in identifying effective policies for retaining academic staff in higher learning institutions.

Methodology

This study employed a mixed-methods research approach, combining both qualitative and quantitative methods. The rationale for using a mixed-methods approach in this study is that the quantitative data and the qualitative data complement each other in providing a deeper understanding of statistical and detailed respondents' views. Data from SEKOMU, SUMAIT and Zanzibar University were collected effectively, which led to the conclusion of this study. Moreover, mixed methods give voice to the study's respondents and ensure that the study findings are well analysed. Using this approach, questionnaires and interviews were administered to the study's participants.

Study Design, study area, sample size and sampling procedures

This study employed a case study design. This case study design enabled the researcher to gather sufficient information regarding institutional policies for the retention of academic staff at each university, categorised into three groups: employed academic staff, management leaders, and former academic staff. Moreover, Yin (2018) explains that the case study enables the researcher to study and collect information within an organisation in a detailed manner. Case studies emphasise detailed contextual analysis of a limited number of events or conditions and their relationships (Chiwamba, 2022).

The study was conducted in three PHLIs selected from Zanzibar and the Tanzanian Mainland, namely, Sebastian Kolowa Memorial University (SEKOMU) from the Tanzanian Mainland, and SUMAIT University and Zanzibar University (ZU), both located in Zanzibar. While SEKOMU was selected because of a critical shortage of lecturers and high staff turnover rates, SUMAIT and ZU were selected for two main reasons: first, they were the only private universities established in Zanzibar. Second, the two HLIs had frequent incidences of academic staff turnover (TCU, 2019). For this study, the target population consisted of all academic staff teaching at the three private universities in Tanzania as of December 2016. The total number of academic staff employed on both contractual and permanent bases varied across the universities. In 2016, SEKOMU employed 68 academic staff, SUMAIT had 48, and ZU had 64, resulting in a combined target population of 180 academic staff members.

The sample size for this study consisted of 180 employees from the three universities at the time of the study. The selected sample of 180 participants was deemed appropriate, as it aligned with the principles of a normal distribution, ensuring the sample was unbiased, adequate, and statistically reliable. From this population, a stratified sampling technique was employed to ensure representation across relevant groups, resulting in a final sample of 132 respondents, as presented in Table 3.1. According to Singh and Masuku (2014), a specific formula exists for determining a sample size. Thus, the sample was obtained through the following formula:

$$n = \frac{N}{1 + Nxe^2}$$

$$n = \frac{180}{1 + 180x0.045^2} \quad n = 131.9$$

$$n = 132$$

Where n = sample size, N = population and e = sampling error (99.55%).

Table 2.1: Population and Sample size

Category	Respondents Per university	Total number of expected respondents	Sampling technique employed to pick different categories of respondents
Permanent and contractually employed academic staff	30 from each university	90	Random sampling
Management: top 3 management leaders, senate and council members and deans of faculty,	6 from each university	18	Purposive sampling and random sampling
Academic staff who left their jobs from 2013 to 2016)	8 from each university	24	Random sampling
Total	44	132	

Source: Field Data (2018)

Response Rate

A total of 119 out of 132 (90.1%) respondents filled the questionnaire, and they were involved in interviews. Then, 18 respondents from management leaders (members of the senate and council, and deans of faculty) were interviewed. On a permanent and contractual basis, 90 respondents were sampled, comprising 11 members of academic staff who were interviewed and 66 who completed the questionnaires. Such a stance made an 85.6 per cent response rate. In this regard, a total of 37 academic members of staff from three HLIs had quit their jobs during the period from 2013 to 2016. All 24 (100.0%) academic members of staff sampled for this study from the three selected HLIs filled the questionnaires and were interviewed accordingly (i.e., six were interviewed and 18 filled the questionnaires) (see Table 2.2).

Table 2.2: Response rate

Category	Sample Size	Total Number of Respondents	Percentage
Permanent and contractually employed academic staff	90	77	86%
Management: top 3 management leaders, Senate. Council members and Deans of Faculty	18	18	100%
Academic staff who left their jobs from 2013 to 2016	24	24	100%
Total	132	119	90%

Source: Field Data (2023)

Data collection methods
This study adopted a mixed-methods approach to comprehensively gather both qualitative and quantitative data from a targeted sample comprising academic staff (permanent and contractual), university management, and academic staff who had exited their positions between 2013 and 2016. The primary data collection tools included interviews, questionnaires, and document analysis.

Interviews were conducted with 29 purposively selected participants representing all three respondent groups. These included top university management officials, who play a central role in institutional decision-making processes, particularly regarding staff retention, as well as current and former academic staff who had resigned. Semi-structured interview guides facilitated the collection of in-depth responses while maintaining consistency across interviews. Depending on availability and convenience, interviews were conducted either face-to-face or via telephone, and were held in either English or Swahili to accommodate the participants' preferences. Each session lasted approximately 40 minutes to one hour. The researcher personally conducted all interviews and documented responses through detailed note-taking.

Questionnaires were distributed to 113 respondents, encompassing the same target groups. A total of 90 completed questionnaires were returned, reflecting a strong response rate, while 13 were not recovered. The distribution and collection of questionnaires were carried out with the support of senior university personnel, including faculty deans at SUMAIT and Zanzibar University and the Human Resource Manager at SEKOMU. Their assistance ensured organised dissemination and the establishment of central collection points, minimising the risk of data loss. The questionnaires were designed to gather quantitative data and were administered primarily to currently employed academic staff and top university leaders. To enhance efficiency, questionnaire collection was coordinated to coincide with interview schedules.

Document analysis provided additional secondary data to complement the primary findings. The researcher reviewed a range of institutional and regulatory documents, including the Tanzania Commission for Universities' (TCU) reports—such as the Higher Education Students Admission, Enrolment, and Graduation Statistics (2012/13–2017/18)—as well as internal documents like schemes of service, salary structures, fringe benefit policies, training and incentive programs, employment contracts, and relevant TCU circulars. These documents were obtained through official channels at the respective universities and from their official websites. The document review

was instrumental in contextualising institutional practices and policies, thus enhancing the depth and validity of the research findings. Data collection was conducted sequentially across the three institutions, beginning with SUMAIT University, followed by Zanzibar University, and concluding with SEKOMU, allowing for a structured and systematic research process.

Validity, Reliability, Data Analysis, and Ethical Considerations
To ensure validity, data were accurately recorded and presented without falsification or unwarranted modifications. Proper academic citation and adherence to research objectives guided the data analysis and interpretation. Reliability was reinforced by using uniform and objective questionnaires across all three universities. All 132 sampled respondents were selected through random sampling, and 119 (90.1%) completed the survey. The questionnaire consisted of 14 relevant questions, tested for consistency and clarity.

Data analysis for quantitative data was conducted using descriptive statistics, including percentages and bar charts, to identify patterns and support interpretation. Data were processed and analysed using SPSS version 20.0, chosen for its accessibility. Responses were coded, categorised, and tabulated in Microsoft Excel for clarity and comparability across respondent groups. In addition, qualitative data from interviews were organised, coded, and analysed using narrative analysis. This method allowed for thematic comparison across academic staff, management, and former employees, incorporating direct quotations and aligning findings with the literature and theoretical framework.

To uphold ethical standards, research clearance was obtained from the Open University of Tanzania, as well as from SEKOMU, SUMAIT, and Zanzibar University, where permission was granted to conduct the study. Participation was voluntary, and confidentiality was assured. Data were analysed objectively, maintaining the integrity of the research process.

Results and discussions
This section presents the study's findings, utilising both descriptive statistics and qualitative analysis procedures as guided by specific research questions. The first question was formulated to determine the effectiveness of the university's policies for retention of academic staff in Tanzanian private HLIs. Table 3.1 indicates that more than half (55%) of respondents agreed that SEKOMU policies were effective in retaining academic staff. Besides, 52% disagreed that the university had a planned and effective career development policy for academic staff; 52% agreed that the university had planned and effective policies for training academic staff, while 52% agreed

that the university had plans and effective policies for research support for academic staff (see Table 3.1). Furthermore, 65% agreed that the university had good and effective incentive policies for academic staff, whereas 52% disagreed that the university's religious-related regulations influenced the retention of academic staff (see Table 3.1).

Furthermore, just over two-thirds (68%) of respondents from SUMAIT agreed that the university's policies were effective in retaining academic staff. However, 52% disagreed that the university had a well-planned and clear career development policy. In contrast, 80% agreed that the university had established clear policies for training academic staff, and 68% confirmed the presence of clear research support policies. Additionally, 75% agreed that SUMAIT had effective and transparent incentive policies for academic staff. Lastly, 48% of respondents acknowledged that the university's religious-based regulations influenced staff retention (Table 3.1). Moreover, 66% of respondents agreed that Zanzibar University's policies were effective in retaining academic staff. However, 52% disagreed that the university had a well-planned and effective career development policy. In contrast, 73% agreed that the university had clear and effective training policies for academic staff, and 59% confirmed the existence of a structured research support policy. Additionally, 45% agreed that the university had a good and effective incentive scheme. Notably, 84% of respondents agreed that the university's religious-related regulations had a significant influence on academic staff retention (Table 3.1).

Table 3.1: Effectiveness of University Policies on Academic Staff Retention

Statement	Response			
	Agree	**Disagree**	**Undecided**	**TOTAL**
University's policies are effective for academic staff retention	**SEKOMU** 17 (55%)	14 (45%)	0 (0%)	31 (100%)
	SUMAIT 30 (68%)	13 (30%)	1 (2%)	44 (100%)
	ZU 29 (66 %)	15 (34%)	0 (0%)	44 (100%)
This university has a planned and clear career development policy for academic staff.	**SEKOMU** 15 (48%)	15 (34%)	0 (0%)	31 (100%)
	SUMAIT 19 (43%)	23 (52%)	2 (5%)	44 (100%)
	ZU 21 (48%)	23 (52%)	0 (0%)	44 (100%)
This university has a planned and clear policy for training academic staff.	**SEKOMU** 16 (52%)	15 (48%)	0 (0%)	31 (100%)
	SUMAIT 35 (80%)	9 (20%)	0 (0%)	44 (100%)
	ZU 32 (73%)	9 (20%)	3 (7%)	44 (100%)
This university has a planned and clear policy for research support for academic staff.	**SEKOMU** 16 (52%)	15 (48%)	0 (0%)	31 (100%)
	SUMAIT 30 (68%)	13 (20%)	1 (2%)	44 (100%)
	ZU 26 (59%)	15 (34%)	3 (7%)	44 (100%)
This university has good and clear incentive policies for its academic staff.	**SEKOMU** 20 (65%)	10 (32%)	1 (3%)	31 (100%)
	SUMAIT 33 (75%)	10 (23%)	1 (2%)	44 (100%)
	ZU			

Statement	Response			
This university's religious regulations influence the retention of academic staff.	20 (45%) **SEKOMU**	19 (43%)	5 (11%)	44 (100%)
	15 (48% **SUMAIT**	16 (52%)	0 (0%)	31 (100%)
	21 (48%) **ZU**	16 (36%)	7 (16%)	44 (100%)
	37 (84%)	7 (16%)	0 (0%)	44 (100%)

Source: Field Data (2023)

Table 3.1 illustrates that university policies have an impact on the retention of academic staff. It was also revealed that SEKOMU had three out of four selected policies, which are training, research support and incentive policies. The majority of respondents disagreed that SEKOMU had a career development policy. However, it was noted that the existence of a policy does not guarantee its effective implementation. Oral interviews revealed that SEKOMU faced challenges in implementing its training policies, primarily due to funding and sponsorship constraints. As a result, many eligible staff members were not sponsored adequately. Although training policies were in place, academic staff reported that only a few had received university sponsorship for further studies. It was further revealed that there were a few opportunities for academic staff to go abroad for studies on exchange programmes. This was substantiated by former members of staff from SEKOMU who narrated that:

> I quit my job at SEKOMU because I was not given the opportunity for further training, despite the presence of the policy on staff training. (Former assistant lecturer from SEKOMU)

This quotation suggests that since training is important, SEKOMU should facilitate continuous professional development programmes for the growth and improvement of their staff, enabling them to acquire relevant training and appropriate skills. The SEKOMU, like other private higher learning institutions, was reluctant to sponsor its academic staff to study abroad, as many African academic staff did not return after training. Such a stance was argued by Tettey (2006), who suggested that training offered outside the country influenced staff to leave, as the majority did not return. As the Expectancy Theory posits, many academic staff join higher learning institutions with the expectation that they will develop their careers. If their hope fades, it is easy for them to leave and find another job.

Accordingly, Tettey (2006), who examined the work life of three sets of probationary faculty members at one university, emphasised three variables that shape the lives of academics and subsequently compel them to stay or leave their institutions. They include attacks on their professional priorities, a lack of confidence that their institutions will support and defend their personal as well as professional interests, and a deterioration in their quality of life (Tettey, 2006).

Furthermore, the results of this study showed that SUMAIT had three of the studied policies (incentives, training, and research support policies), but it missed the career development policy. The findings demonstrated that SUMAIT had attempted to implement policies to retain its academic staff. Therefore, academic staff are more likely to be satisfied when incentive,

training, and research support policies are effectively implemented. A well-structured incentive policy not only enhances motivation but also serves as a critical strategy for staff retention. Numerous studies have identified reward systems as significant predictors of employee retention and turnover, highlighting their importance in maintaining a stable and committed academic workforce (Metcalf *et al.*, 2005; Chivandire, 2019).

Research data in Table 3.1 showed that Zanzibar University, like other studied universities, had three out of four studied policies: training, incentive scheme, and research support policies. However, it lacked a career development policy. Because of this situation, academic staff who join Zanzibar University with aspirations for career advancement may be inclined to leave if they perceive greater development opportunities elsewhere, such as in public universities or other organisations. While data revealed that Zanzibar University provides sponsorships for staff pursuing master's and PhD programmes, both locally and internationally, the effectiveness and accessibility of these opportunities play a crucial role in influencing staff retention and long-term institutional commitment.

The findings also showed that Zanzibar University was attempting to implement a programme that could be effective for academic staff retention. The sponsorship was offered annually to a limited number of academic staff. One assistant lecturer who was employed asserted that: "Although the employer sponsored its academic staff, the number was still very low." Zanzibar University sponsored its academic staff, as the training acquired from successful organisations was deemed most important and of high value for the academic development of the institution. This finding aligns with the results of Chivandire (2019), who reports that to gain a competitive advantage in the international market, business organisations need to hire and retain proficient employees.

Elrasheed *et al.* (2017) add that employees' retention is controlled by elements that should be overseen compatibly: organisational culture, policies, salary and reward systems, together with training, including professional development systems. An era of "take it or leave it" has gone; Zanzibar University and other private higher learning institutions have no option. Instead, they need an attractive career development policy. This would help in attracting an employee to remain in an organisation. The retention of academic staff was beneficial to Zanzibar University, the Revolutionary Government of Zanzibar, as well as the Government of the United Republic of Tanzania, at large. This is because the skills and knowledge of academic staff are significant to Zanzibar University.

Moreover, the results showed that all three universities had three out of the

four studied policies, namely, training, incentive schemes, and research support policies, but they lacked a career development policy. As academic titles depend on the attained education level, a career development policy is essential for any academic institution that aims to thrive. The findings also showed that academic staff were likely to leave these universities because the universities lacked effective career development plans. It is worth noting that in academic institutions, career development is closely tied to promotion practices. Chivandire (2019) argued that among other factors that influence the turnover of employees are poor promotion and a lack of career advancement policies. To avoid losing competent academics, universities need to identify and apply suitable retention programmes. One of the retention factors recommended in the literature is the implementation of career development programmes (Nyamumbarwa, 2013; Chiboiwa, 2009).

When reviewing the TCU (2019) document on standards and Guidelines for University Education in Tanzania, it was noted in clause number 1.7 that:

> As the quality of staff is key to maintaining the quality of university education, every University shall establish inclusive human resource policies that ensure the recruitment and retention of adequate numbers of qualified and competent staff to achieve the mission and carry out the legal mandate.

The guideline further emphasises in its clause No.1.7.3 that:

> Every University shall establish clear policies and procedures for staff development and continuous professional development.

Furthermore, academic staff members in private higher learning institutions desire to be employed by an organisation that has policies encouraging internal social relationships among employees, fostering interpersonal relationships that extend beyond work schedules. These benefits include study scholarships, annual leave, security, research opportunities, training opportunities, and permanent and pensionable employment.

The second research question aimed to reveal the preferred university policies in relation to the retention of academic staff in Tanzanian private HLIs. Respondents provided varied opinions on key institutional policies related to training, incentives, career development, and research support, as illustrated in Figure 3.1. The results indicated that nearly half (48%) of respondents from SEKOMU acknowledged the existence of a research policy, while 26% identified career development policies as a critical factor in retaining academic staff in private HLIs. The findings from this study emphasised that private higher learning institutions should consider that one of the important duties of academic staff is to conduct research. Thus, the research support policy should explicitly state that academic staff are entitled

to institutional support for conducting research, whether within or outside the university. A majority of respondents emphasised the importance of this policy, highlighting the critical role of research in both individual academic careers and institutional development.

In a globalised world, research is essential for fostering knowledge-driven growth and innovation. It also enhances teaching quality and contributes significantly to the professional success of academic staff (Figure 3.1). When respondents from SUMAIT were asked about effective policies for retaining academic staff, career development policy (43%) and training policy (34%) were identified as the most effective policies for retaining existing staff and attracting new talent to join the university (see Figure 3.1). Figure 3.1 illustrates that the training development policy was crucial to Zanzibar University's academic staff retention and turnover reduction. This concurs with results from a study by Nge'the (2013), who observed that the level of employee turnover and training was expected to be inversely proportional; the higher the level of training, the lower the turnover intention. This assumes that the longer an employee stays with an employer, the higher the return on training will be (Mwita *et al.,* 2018).

The Zanzibar University programme, which offers sponsorship for training to its academic staff, creates an environment where academic staff feel recognised for their strengths, while also providing opportunities for them to enhance their skills and gain more knowledge for their institution. The training programme could be availed inside or outside the university (Mwita *et al*., 2018). Private higher learning institutions can plan quarterly or annual training schedules for their academic staff, which internal or external experts will provide.

Figure 3.1: Preferred University Policies in relation to the retention of Academic staff
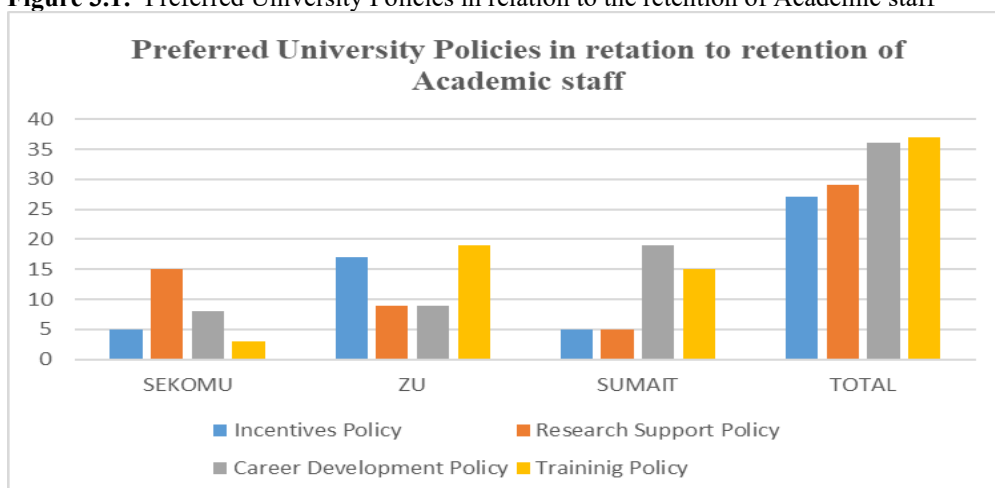
Training, development, and career development policies have a significant impact on the academic staff development. Thus, these two policies are crucial for retaining academic staff members in higher learning institutions. The present study argues that an appropriate training programme for academic staff members would contribute positively to academic staff retention, as training is one of the key motivational factors for employees. Career development policy involves the growth and advancement of academic staff from one level to another. Career development policy is at the heart of academic staff, as it enhances their professional knowledge and skills. Moreover, career development policy is important to academic staff because of its impact on compensation, promotion, and responsibility. For the academic staff's upward mobility, it is highly desirable since the majority of academic staff are career-oriented. Career-minded employees consider career growth and development as a crucial deciding factor in their decision to remain in an organisation or leave. Where growth is not guaranteed, employees leave for alternative employment. Career growth, particularly through promotion, enables employees to plan for the future and acquire the necessary skills to remain competitive (Mwita *et al*., 2018). Private universities must invest in supporting their academic staff for career development. Therefore, private universities should seek scholarships to attract their academic staff members to stay at the institution where they are employed.

Employees are more likely to leave their current employer in favour of another organisation that offers better training and professional development opportunities. High job retention is generally reflected in an organisation where most established positions are consistently occupied, employees show minimal intention to leave, job stability is maintained, career development opportunities are accessible, and staff tend to remain with the organisation over an extended period. A study by Nyamumbarwa (2013) on turnover intentions of academic Librarians in Zimbabwe showed that 60% of the respondents in the lower-level grades indicated that there were no opportunities for progress in the profession in Zimbabwe. The apparent lack of career growth in the profession was cited as the reason why some academic librarians were considering leaving the profession.

Research support policy was mentioned as a third strategy for retaining employees. It was recommended by respondents from all three universities as an effective strategy for retaining academic staff in private higher learning institutions. Furthermore, research support policy helps to improve academic staff's skills, especially in academic, social, and economic issues, as academic staff and academic institutions have important duties in these areas, particularly in the development of a country. Universities should be generous

in their provision for externally funded research and the employment of research and teaching assistants to stimulate a research culture and free up teaching staff to undertake research. This can include schemes to encourage fast-track promotion, as well as a pleasant campus and a positive institutional ethos (Lyangi, 2014). The objective of retention policies should be to identify and retain committed employees for as long as it is mutually profitable to the organisation and the employee. The results indicate that academic staff can be retained when the HLI has in place the research support, training and career development policies. These policies were crucial for retaining academic staff members when they were effectively implemented.

Drawing inferences from the findings in all three institutions (SEKOMU, SUMAIT, and ZU), one can deduce that the presence of institutional policies, especially those related to career development, training, and research support for staff welfare, is an important strategy for staff retention. Conversely, the absence of these policies can motivate staff turnover. Tettey (2006) argued that three variables shape the lives of academics and subsequently compel them to leave their institutions: attacks on their professional priorities, a lack of confidence that their institutions will support and defend their personal and professional interests, and a deterioration in their quality of life. This means that staff's personal and professional interests must be defended and protected to retain competent staff in an institution. The finding aligns with what Nyamumbarwa (2013) found on the turnover intentions of academic Librarians in Zimbabwe. In that study, it was revealed that 60% of the respondents in the lower-level grades had no opportunities for developing their professions in Zimbabwe. Thus, the apparent lack of career growth in one's profession was cited as the reason why academic librarians were considering quitting their jobs. A study by Chiboiwa (2009) highlights that high academic staff turnover has a negative impact on the quality of university graduates, the achievement of institutional goals, and national educational development. In private higher learning institutions (HLIs), such turnover is often linked to the absence of relevant institutional policies or the ineffective implementation of existing ones, as observed in SEKOMU, SUMAIT, and ZU in this study. One of the key strategies recommended for retention is the establishment of robust career development programs (Chevindare, 2019; Chiboiwa, 2009). Career development is closely linked to promotion practices in academic institutions, both of which impact staff retention. Retaining academic staff is vital for effective university governance and national academic performance. Abeli et al. (2010) further argue that staff retention reduces the costs associated with recruitment, training, and onboarding of new employees. High job retention within an organisation is characterised by the consistent fulfilment of established positions, low or absent turnover intentions among employees, stability in job

status, access to career development opportunities, and employees maintaining long-term employment with the institution (Ng'ethe *et al.,* 2012).

The findings from this study are in line with results by Lyengi (2014) and Mwita *et al*. (2018), who reported that factors for retaining academic staff include participatory institutional governance, reasonable remuneration, research support, autonomy, recognition of performance, and hiring processes. Additional factors contributing to academic staff retention include a collegial work culture, transparent promotion and training pathways, access to publication opportunities, a positive and supportive work environment, and a democratic leadership style. Moreover, reasonable workloads, structured non-monetary reward systems, overtime compensation, comprehensive health benefits, retirement and pension schemes, as well as generous leave and vacation provisions—including extra paid days—were also identified as important retention drivers (Mwita *et al.,* 2018). To achieve a quality retention programme, organisations ought to determine the retention factors relevant to each of their employee groups. This suggests that private higher learning institutions should focus on preparing research support, training and career development policies to retain their academic staff.

Conclusions and Recommendations
The present study concludes that the financial and non-financial benefits are significant variables and should be considered together in the process of retaining academic staff in Tanzanian private HLIs. Research support, training, and career development policies were relevant for the retention of academic staff in all three selected universities, although the effective implementation of these policies was a prerequisite. However, the objective of retention policies should be to identify and retain committed employees if it is mutually profitable to the organisation and the employee (Chevindare, 2019). Furthermore, retention of academic staff in private HLIs is critical due to the increased number of HLIs in Tanzanian academic staff, for the higher education labour market is fundamentally competitive. Retention of effective academic staff can give a university a competitive edge in recruiting qualified academic talent. This is because the number of private universities and students' enrolments in Tanzania has significantly increased. It further revealed that the practice of adhering to religious regulations within an institution had a significant impact on promoting academic staff retention, depending on one's religious affiliation.

Based on the findings, the study recommends that each private HLI in Tanzania should consider formulating and effectively implementing the relevant policies, such as training, career development, and research support policies, that target attracting and retaining competent academic members of

staff. The career development policy outlines the university's plans and vision. In this era of a highly competitive labour market for academic staff, academic institutions, especially private HLIs, should prepare their internal plans for developing academic staff. To achieve quality retention programmes, institutions ought to determine the retention factors relevant to each of their employee groups and then focus their strategies on these factors by streamlining the needs into desired policies.

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Teachers' Understandings of Disability and Barriers to Disability-Inclusive Pre-Primary Education

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Abstract
Though there is a good amount of research on inclusive education in Tanzania, there has been less attention to the teachers' views on the concept of disability and barriers in the provision of inclusive pre-primary education. This study, therefore, was undertaken to explore how teachers view the concept of disability and barriers to disability-inclusive pre-primary education. This qualitative multiple case study used individual interviews and focus group discussions with teachers to collect data from four sampled schools that enrolled children in Tanzania, predominantly within Kagera Region. The study involved a sample of 26 participants, of whom 11 were female and 15 were male. The collected data through 15 individual interviews and four focus group discussions were subjected to thematic analysis procedures. Findings show that teachers understand the concept of disability differently: disability as a tragedy, disability as a societal problem, disability as a spiritual issue, disability as anger of ancestors, and disability as an ability-disability continuum. The identified barriers to disability-inclusive pre-primary education included: poverty; attitudes, stigma, and discrimination; inadequate teaching resources; inadequate infrastructure; and teachers and their practices. These barriers impact the transformation of pre-primary education into more inclusive education. The combined initiatives and efforts of various stakeholders to combat obstacles to promote inclusion in pre-primary education remain critical.

Keywords: *Disability, barriers, inclusion, pre-primary education*

Introduction
Research evidence shows that all children, especially children with disabilities, benefit from inclusive pre-primary education (Dombrowski *et al*., 2022; United Nations Children's Fund [UNICEF], 2019). For children with disabilities, inclusive pre-primary sets foundational academic competence; it enables them to acquire socio-cultural skills to enable them to create and live in an inclusive community; it facilitates early identification of disability; and it offers the chance for interventions at an early age (Dombrowski *et al*., 2022; UNICEF, 2019). However, a significant percentage of children with

disabilities in early childhood are "denied access to essential health, nutrition, education and early childhood development services, and to adequate water, sanitation, and hygiene (WASH)" (UNICEF, 2022a, p. 1). The report on children with disabilities by UNICEF (2022b) revealed the following:

i) Twenty-five per cent of children with disabilities are less likely to access early stimulation and responsive care.
ii) Twenty-five per cent of children with disabilities are less likely to enrol in early childhood education.
iii) Forty-two per cent of children with disabilities are less likely to be competent in basic numeracy and reading skills.
iv) Forty-nine percent of children with disabilities are more likely to have never attended school.

Disability is a common phenomenon in the global population, and any human being can acquire it at any age. Disability is a global concern. The World Report on Disability (WHO & World Bank, 2011) presents a global estimate of about a billion people with disabilities, of whom about 93 million to 150 million are children with disabilities worldwide. The most recent estimate of children with disabilities by UNICEF (2022b) indicates about 240 million children with disabilities in the age range of zero to 17 years worldwide. These children require an education system that embraces diversity and inclusion, and guarantees opportunities to access education and wellbeing. Inclusive education is a vital strategy to embrace diversity and inclusion as well as achieve education for all (UNICEF, 2022b).

Global legal framework of inclusive education
Within a global legal framework, inclusion of children with disabilities in education and other social services to attain their potential is enshrined, inter alia, in: (i) the Salamanca Statement by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) in 1994; (ii) the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) enacted by the United Nations (UN) in 2006; and (iii) the Sustainable Development Goals, especially Goal 4 (SDG4) on education endorsed by the UN in 2015. All these legal frameworks proclaim the obligation of promoting inclusive education for all children.

The Salamanca Statement, published by UNESCO in 1994, has been a foundation for introducing and promoting inclusive education globally. The Statement requires countries to embrace education for children with disabilities within regular schools with an inclusive orientation. In so doing, the Statement endorses an inclusive orientation system to educate children with disabilities in regular school without considering their disability or other conditions. It stipulates:

regular schools with this inclusive orientation are the most effective means of combating discriminatory attitudes, creating welcoming communities, building an inclusive society, and achieving education for all; moreover, they provide an effective education to the majority of children and improve the efficiency and ultimately the cost-effectiveness of the entire education system (UNESCO, 1994, p. ix).

This key message, as suggested in the quotation, implies the impetus towards an inclusive orientation within schools.

Another impetus for establishing an inclusive education system is provided by the UNCRPD (UN, 2006). It is well stated in Article 24(1) that the goals of inclusive education should be to:
 i) develop and foster human potential and promote self-worth, respect for diversity, and dignity;
 ii) help children with disabilities reach their full potential in terms of personality, talents, and creativity; and
 iii) enable children with disabilities to engage fully in a free and inclusive society.

For exercising complete inclusive education, Article 24 of UNCRPD emphasises non-exclusion of children with disabilities, reasonable accommodation of the learner's needs, and effective individualised support (Article 24[2]). For teachers, the Article compels nations to take the necessary steps to hire and attract qualified teachers who should be knowledgeable in Braille and/or sign language (Article 24[4]). This suggests that teachers must be adequately educated and well-trained if they are to support all students in inclusive settings appropriately.

Notably, SDG4 affirms the value of "inclusive and quality equitable education" at all levels of education (UN, 2015, p. 17). When working towards reaching SDG4: "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" (UN, 2015, p. 17), the countries are obliged to ensure inclusive education systems. The SDG4 emphasises the provision of inclusive education that should include "early childhood development, care, and pre-primary education" (Target 4.2). For teaching and learning environment, Target 4.a provides to "build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all." The message is that learning environments should be safe and disability-sensitive. non-violent, and inclusive for all. This implies that schools must create safe, healthy, inclusive, and adequately resourced environments with accessible facilities for effective teaching and learning.

Pre-primary education

Pre-primary education is a crucial part of early childhood development, which encompasses all the initiatives and policies needed to promote children's healthy growth from birth to age eight, including protection, health, nutrition, early learning opportunities, and responsive care (Britto, 2017). Pre-primary programs often take a comprehensive approach to exposing young children to structured learning outside of the home, to promote their social, emotional, physical, and cognitive development. Research evidence shows that all children, especially children with disabilities, benefit from pre-primary education. Inclusive preprimary education enables children with disabilities to gain the foundational skills they need to succeed in life, benefit from the school system, and go on to contribute to society as a whole (Dombrowski *et al*., 2022; UNICEF, 2019). The skills include phonological awareness, pre-numeracy, social and emotional intelligence, physical aptitude, and other skills needed by children for early schooling and starting primary education.

Target 4.2 of Sustainable Development Goal 4 (SDG4) requires countries to provide a year of "free and compulsory quality pre-primary education" for all children. Tanzania acknowledges the prominence of pre-primary education, echoed by policy provisions in the Education and Training Policy (ETP) of 2014 version 2023 and its predecessor ETP of 1995. Pre-primary education is part of the formal education system, and it is compulsory and provided without fees in public schools within one year for children aged five years (United Republic of Tanzania [URT], 2023). One of the main goals of pre-primary education is to identify children with disabilities and provide them with the necessary support and accommodations (URT, 2023).

Since they adopted the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), Tanzania has made commitments to the inclusion of children with disabilities in pre-primary education. For example, through MoEST, the country has developed Education Support and Resource Assessment Centres (ESRACs) (URT, 2017) to promote:
i) early special needs identification and evaluation;
ii) care and assistance for children with low vision and albinism;
iii) teaching the 3Rs to blind or deaf children; and
iv) teaching children who have autism and intellectual disabilities.

The country has also advanced much in the diagnosis, identification, and evaluation of children with disabilities, as well as improved provisions for children with disabilities through ESRAC. Among other things, ESRAC's efforts have assisted in locating, assessing, and enrolling students with disabilities in inclusive educational settings in recent years (URT, 2021). As

stated in the ETP of 2014 version 2023, inclusive education for children with disabilities has improved in pre-primary education. For example, enrollment of children with disabilities has increased in pre-primary education by 31.8% from 4,171 (2,502 boys; 1,669 girls) students in 2016 to 6,120 (3,575 boys; 2,545 girls) students in 2022. (URT, 2023).

Paradigms of disability

Disability studies provide several frameworks or viewpoints for understanding impairments and disability, such as social, medical, theological, or African belief systems. These three paradigms are crucial in this study to explore teachers' understanding of disability and barriers to inclusive pre-primary education. The medical paradigm of disability sees a child with disability as broken. This paradigm essentially conceptualises disability as "a consequence of some 'deviation' from 'normal' body functioning... an underlying physical abnormality" (Berghs *et al*., 2016, p. 26). Therefore, a child with disability needs medication in order to return to normalcy (Berghs et al., 2016; Jackson, 2018). The medical paradigm can spark ableist attitudes, defined as discriminatory beliefs and behaviours that a child with disability is inferior to a child without disability (Cologon, 2013). This, in schools, can lead to the usage of statements of deficit or abnormality. Consequently, children with disabilities can be excluded from the regular school system and the focus is on special needs and special education methods.

In contrast, the social paradigm views disability as a response to personal tragedy (Berghs et al., 2016). To the social paradigm, disability is an experience of social oppression and disadvantage (Berghs *et al*., 2016; Lawson & Beckett, 2020). The social paradigm was extended into the social relational paradigm (Thomas, 2007; Cologon & Thomas, 2014). Within a social relational paradigm of disability, disablement is thought to arise through barriers to doing, barriers to being, and impairment effects. Barriers to doing are socially imposed economic or environmental restrictions that limit or impede participation (Cologon & Thomas, 2014). Barriers to being are defined as inappropriate, harmful statements or acts that negatively affect an individual's sense of self-worth or well-being (Cologon & Thomas, 2014). "Impairment effects are the direct and unavoidable impacts that impairments (physical, sensory, intellectual, emotional) have on individuals' embodied functioning in the social world. Impairments and impairment effects are always bio-social and culturally constructed in character and may occur at any stage in the life course" (Thomas, 2010, p. 37).

Apart from those western-based paradigms of disability, "some African beliefs promote the stigmatisation and marginalisation of people with disabilities through exclusion and depiction of them as objects of pity or

ridicule and as victims of evil forces" (Ndlovu, 2016, p. 29). These beliefs depict disability as deviant. Consequently, practitioners and educators can be influenced by these beliefs to understand the child's disability in their day-to-day educational activities. In contrast, sometimes, African spiritualism celebrates disability, and a person with disability is considered normal (Ojok & Musenze, 2019). By portraying people with disabilities as complete human beings, traditional African beliefs are said to imbue "empathetic moral and ethical teaching aimed at protecting and empowering those living with disabilities" (Ndlovu, 2016, p. 29). This implies that African spiritualism can influence how people, especially educators, view and understand children's disabilities positively in their day-to-day lives.

Teachers for inclusive education
Teachers are an essential input for assuring quality, inclusive pre-primary education. Article 24 of the UNCRPD acknowledges the importance of skilled teachers in providing high-quality inclusive education. Specifically, Article 24(4) of UNCRPD compels nations to take the necessary steps to hire and attract qualified educators. Teachers should be knowledgeable in Braille and/or sign language. Nothing less than all students receiving instruction from qualified teachers. Teachers need to possess core values and competence to approach diversity among learners with disabilities, and develop and sustain inclusive practice. Four core values have been identified in research on teacher education for inclusive education: "valuing learner diversity, supporting all learners, working with others, and continuing personal professional development" (Watkins & Donnelly, 2014, p. 84; Hick *et al*., 2019, pp. 22-23).

Teachers must have pedagogical skills to apply inclusive pedagogy, which is described as a teaching and learning approach where a teacher responds to learners' diversity to ensure the inclusion of all learners (Florian & Black-Hawkins, 2011; Florian & Beaton, 2018). An inclusive pedagogical approach requires the following three norms:

> shifting the focus from one that is concerned with only those individuals who have been identified as having 'additional needs' to the learning of all children in the community of the classroom; rejecting deterministic beliefs about ability as being fixed and the associated idea that the presence of some will hold back the progress of others; and seeing difficulties in learning as professional challenges for teachers, rather than deficits in learners, that encourage the development of new ways of working (Florian & Black-Hawkins, 2011, pp. 818-819).

The study
In this study, the views on the concept of disability and barriers to inclusive pre-primary education are shared by 26 teachers from four primary schools

(two with inclusive practices and two with special units). Their experiences and views about disability and barriers to inclusive education were explored. Since understandings of disability evolve over time, the views presented in this paper are subject to change. However, they shed light on how teachers see disability, their own experiences with it, and the obstacles that prevent children with disabilities from accessing inclusive pre-primary education. The following two research questions were addressed in this paper:

i) How do teachers understand the concept of disability?
ii) What are teachers' views on the barriers that restrict children with disabilities from accessing inclusive pre-primary education?

Methodology
Research approach
This study used a case study approach to explore in depth teachers' understandings of disability and barriers that prevent inclusive pre-primary education by teachers working with learners' disabilities. A case study, according to Yin (2009), is used to examine contemporary events in the context of their actual lives. This multisite case study explored how teachers in the real context of four primary schools understand the concept of disability and the barriers that limit children with disabilities from accessing inclusive pre-primary. The study used a collective design (combining findings across schools and participants).

Location and participants
The population were teachers in primary schools that enrolled children with disabilities and resided in rural settings in Tanzania, predominantly within Kagera Region. Four schools were purposefully selected to include children with disabilities in pre-primary education. These schools were named S1, S2, S3, and S4. Two schools (S1 and S2) had the special unit integrated into primary schools, while the other two schools (S3 and S4) had children with disabilities attending regular classes.

Following the purposive sampling technique, a sample of 26 participants from these four schools was formed based on a saturation strategy. Of 26 participants, 11 were female and 15 were male. Participants were subject teachers teaching in schools that enrolled children with disabilities. Female participants' ages ranged between 35 and 47 years, and male participants' ages were between 35 and 50 years. All participants were teachers. Teachers in schools that enrolled children with disabilities were involved in this study, with the assumption that such teachers are in the best position to provide experiences and situations of disability and barriers to education for children with disabilities.

Data collection

A researcher collected data through 15 individual interviews and four focus group discussions in four sampled schools. All participants provided informed consent for interviews and focus group discussions. Each interview session with teachers took between 40 and 50 minutes. During the focus group discussions, the researcher introduced the topic, led the discussions, kept participants on topic, and prompted follow-up questions. There were four focus group discussions (one from each school). Each focus group discussion lasted between 50 and 70 minutes. Each focus group discussion comprised four to six participants.

With the consent of each participant, the researcher audio-recorded each session of individual interviews and focus group discussions. The researcher conducted both individual interviews and focus group discussions in Kiswahili, and with the aid of an English language expert, the researcher translated them verbatim.

All individual interviews and focus group discussion sessions occurred in a private meeting room at each school. In both individual interviews and focus group discussions, the participants responded to two questions:
 i) How would you define disability?
 ii) In your view, what are the barriers that limit children with disabilities from accessing pre-primary education?

Data analysis

A researcher asked the participants questions relating to disability and barriers to pre-primary education. Teachers' responses to the following questions: "How would you define disability?" and "What are barriers for inclusive pre-primary education?" were analysed. Data were analysed using thematic analysis following the six-phase approach outlined by Braun and Clarke (2006). All interview transcripts were read repeatedly to ensure familiarity with the data. Initial codes were generated manually and grouped into meaningful categories. Through an iterative process, categories were clustered into broader themes that captured patterns in participants' perceptions and experiences. To foster deep familiarity and immersion, the researcher reviewed participants' verbatim expressions repeatedly several times. Constant comparison made it possible to identify patterns and repetitions in the data that eventually formed themes (Ryan & Bernard, 2003). The researcher looked for similarities and differences, and the repeating ideas that fit together were categorised to form themes. Table 1 summarises qualitative data analyses. Then, the researcher related themes to the social, medical, theological, or African belief systems of disability and

barriers to pre-primary education, combining to create an inductive and deductive analysis process.

Table 1: Summary of qualitative data analyses

Research Question	Main Themes	Subthemes
How would you define disability?	Understanding of Disability	• Disability as a tragedy • Disability as a spiritual issue • Disability as anger of ancestors • Disability as an ability-disability continuum
What are the barriers to inclusive pre-primary education?	Barriers to Inclusive Pre-Primary Education	• Poverty • Attitudes, stigma, and discrimination • Inadequate teaching resources • Inadequate infrastructure • Teachers and their practices

Source: Field Data

Ethical issues
The researcher observed the clearance logistics of the research. The researcher sought the participants' consent to take part in the study. The participants provided their informed consent and agreed to participate in interviews as well as in focus group discussions. The researcher explained the goal and advantages of the study, as well as the measures to be followed to ensure confidentiality and anonymity. For confidentiality and anonymity purposes, the researcher omitted the identities of the participants and the schools in the final research report.

Findings
The findings from data analysis in this study have been presented around the two predominant themes of understanding disability and barriers to inclusive pre-primary education. Table 1summarises these themes and subthemes.

Understanding of disability
Participants varied cultural, societal, and spiritual perceptions of disability reflected varying perspectives on its definition and causes. This central theme included comments of participants on their understanding of disability. It consisted of five subthemes: disability as a tragedy, disability as a societal problem, disability as a spiritual issue, disability as anger of ancestors, and disability as an ability-disability continuum.

Disability as a tragedy
In this study, some teachers viewed disability as a tragedy, believing that it results from defects that represent ableism and medical perspectives on

disability. They labelled students with disabilities as unable, perpetually ill, deviant, or abnormal, and reliant on others. The teachers' direct quotations that follow illustrate their views on disability: *"a child with a disability does not speak or hear and lacks one or more body organs, such as a hand or limb"*; *"in my opinion, a child with a disability is not as competent as a child without a disability"*; *"a child with a disability depends on one or more normal individuals"*; *"a child with a disability requires medication to survive; they are sick all the time"*; *"a child with a disability experiences illness throughout their entire life."* These teachers perceived disability as a personal issue or shortfall that required medical intervention in the form of medicines and treatment methods.

Disability as a societal problem

Notably, a few teachers acknowledged disability as a societal problem, placing it within the social paradigm of disability. Teachers made the case that if the classroom was equipped with qualified teachers, age-appropriate teaching resources and technology, students with disabilities could do well in educational activities. The following are statements from teachers: *"a child can* participate *in school activities provided the learning environment is supportive of impairments"*; *"disability is not inability"*; *"a child is disabled when the school environment does not accommodate their impairment(s)."* These comments demonstrated the teachers' beliefs that inclusive environments might be used to educate students with disabilities if the classroom's process and structure were supportive.

When it came to helping students with disabilities, teachers who possessed social thinking felt at ease. The teachers' opinions on supporting children with disabilities are demonstrated by the statements that follow: *"having children with disabilities in my class is rewarding"; "I can help children with disabilities, so I feel comfortable helping and including them"*; *"I think children with disabilities can learn something in their lives, so I don't worry about including them in my class"*; *"including children with disabilities in my class with other children doesn't hurt anything."* These teachers felt that it hurt to see students with disabilities placed in separate classrooms and not given any opportunities to learn in an inclusive setting.

Disability as a spiritual issue

A few teachers possessed optimistic outlooks and acknowledged children with disabilities as divine gifts and desires. The teachers contended that children with disabilities required the same care and education as non-disabled children. Those teachers said that since God is all-knowing, no one can dispute His plans. Example of quotes from teachers: *"God wanted these children to be born, even though they weren't expected to"*; *"we acknowledge*

them as the will of God"; *"God created them just as He created us, therefore we must love and care for them."*

Disability as anger of ancestors

Only one teacher discussed the long-held customs that *"sometimes, disability is associated with anger of ancestors for bad behaviour in families*." Many teachers had little to say about witchcraft or curses about disability. When they were probed about traditional beliefs on disability, many of them said that traditional beliefs are outdated in the presence of Christian religious beliefs.

Disability as ability–disability continuum

One teacher viewed disability as a continuum between ability and disability. The teacher stated that *"no one is either capable or entirely incapable."* This implies that there is nobody completely able or completely disabled.

Barriers to inclusive pre-primary education

In order to effectively implement disability-inclusive pre-primary education, participants highlighted several structural, attitudinal, and resource-related hurdles. Subthemes within this main theme included: poverty; attitudes, stigma, and discrimination; inadequate teaching resources; inadequate infrastructure; and teachers and practices.

Poverty

The findings revealed that the pervasive poverty among parents prevented their children with disabilities from attending pre-primary school. Teachers connected poverty to an inability of parents to find employment and insufficient funds. The teachers reported that parents could not afford the price of rehabilitative treatments or assistive devices like wheelchairs and walkers. Teachers were saddened that parents could not afford to provide their children with a comfortable life and education. On this, for example, one teacher remarked that *"parents don't have money to afford the cost of wheelchairs for their children."* Another teacher stated that *"many parents in this district are poor, so they cannot afford to support their children with disabilities in terms of education and medical services."* It was apparent that parents were unable to provide for other physiological needs like clothing and nutrition (food) due to poverty.

Attitudes, stigma, and discrimination

In this study, all teachers stated that they were providing support to children with disabilities who were at-risk in society. Harmful attitudes, stigma, and discrimination against people with disabilities continued in communities, despite the fact that they were drastically declining. On this, some teachers

had the following to say: *"Some peers without disabilities ridicule youngsters with disabilities when they move around. We watch out for them to make sure that they are not bothered or teased"*; *"some people think that children with disabilities should be kept apart from society and placed somewhere else because they are abnormal and strange to live with others"*; *"some people in this area disvalue children with disabilities, and they use abusive names in a dehumanizing way."* These claims implied that there were unfavourable social norms regarding children with disabilities. Teachers reported that in this case, parents of children with disabilities found it difficult to provide their children with the necessary support and education.

Inadequate teaching resources

All teachers mentioned the inadequacy of teaching resources as one of the main obstacles to including children with disabilities in pre-primary education. The teachers were concerned that there were insufficient teaching materials to provide teaching that included students with disabilities. These teaching materials included braille books and teaching tools like braille machines, charts, maps, hearing aids, graphics for deaf learners, sign language dictionaries, and sign language alphabets. One teacher stated the following: *"We don't have enough teaching and learning materials like charts, maps, hearing aids, pictures for deaf learners, Braille machines, and sign language dictionaries."*

Inadequate infrastructure

Teachers disclosed that the infrastructure of the school was not suitable for helping students with impairments. Basic classroom furniture, including desks, tables, and chairs, was found to be inadequate, and some of the items that were present were unsuitable to support children with disabilities. Teachers expressed that the schools lacked adequate facilities for children with disabilities, for example, special toilets, ramps, and spacious doors for wheelchairs.

Teachers and their practices

Teachers expressed that there was an inadequacy of teachers to support and teach children with disabilities in inclusive pre-primary education. Teachers in this study argued that a lack of knowledge about inclusive education and disability was impeding efforts to provide pre-primary education in an inclusive setting. Teachers felt that they lacked the knowledge to help or support children with disabilities. One teacher expressed the following:

> … even if they teach children with disabilities, teachers who are not trained in inclusive education do not have the necessary knowledge and skills to support them. For example, teachers in this school seem to lack knowledge

and proficiency in sign language and braille. They cannot support deaf
children or those with visual impairment.

This study also revealed that due to their perception that children with
disabilities were disruptive and incapable of learning, teachers hesitated to
include them in regular classes. They believed that children with disabilities
and those without disabilities were like two parallel lines that could never
meet. One teacher said, "I can assure you that, for children with disabilities,
learning in an inclusive classroom is a challenge because sometimes you may
concentrate on those without disabilities." Another teacher added, "Some
teachers dump children with disabilities without any reasonable support."
Therefore, with an understanding of disability as medical, teachers are
unlikely to teach and support such children in schools.

Discussion

It was apparent that the teachers in this study viewed disability as a tragedy,
believing that it results from defects that represent ableism and medical
perspectives on disability. These teachers believed that students with
impairments were defective and presented a challenge. The research evidence
shows that medical paradigm conceptions of disability are based on physical
impairments brought on by illness or injury that call for medical intervention
to return an individual to health or normalcy (Berghs *et al*., 2016; Jackson,
2018). According to Cologon (2013), the medical paradigm perspective on
disability gives rise to ableism, which is the belief that an individual with a
disability is less valuable than someone without one. This belief implies
discriminatory attitudes. Significantly, these medical paradigm perspectives
on disability impact teachers' use of terms like deficit or abnormal, as well as
their emphasis on special needs and special education methods, all of which
may result in the exclusion of students with disabilities from the regular
school system.

Teachers in this study also had a deeper understanding of disability in the
social paradigm of disability. These teachers believed that children with
disabilities were unable to receive quality care and inclusive pre-primary
education because of societal structures, attitudes, and other barriers within
society. They saw society as dysfunctional. These teachers demonstrated the
ability to differentiate between a person's impairment and their sickness.
These findings are consistent with other findings in the literature (Rerief &
Letšosa, 2018; Lawson & Beckett, 2020) that disability is linked to societal
discrepancies. However, teachers with social paradigm thinking did not
downplay the possibility that certain diseases could have incapacitating
effects or downplay the need for professional doctors to treat a range of
illnesses (Rerief & Letšosa, 2018).

It was found that there were teachers who saw disability as a spiritual issue and acknowledged that all children are divine gifts. The teachers contended that children with disabilities require the same attention as peers without disabilities. Such children are accepted because of the impact of Christian theological ideas that all children are gifts from God. These findings are in line with those of Stone-MacDonald (2012b), who found that people's religious views and values toward disability, which Muslims and Christians share, suggest that people view children with impairments as a blessing from God. This means that the parents of such children should consider themselves fortunate.

In this study, there was less information regarding witchcraft or curses on disability. Notably, teachers in this study paid less attention to the African belief paradigm of disability. Elsewhere in Tanzania, Stone-MacDonald (2012a; 2012b) found that although some native people still go to local healers to address the signs of children's impairments. People's views about Christianity or Islam discourage people from discussing curses or witchcraft and consider these practices to be relics from the past (Stone-MacDonald, 2012b). While there was minimal discussion of curses or witchcraft in relation to disability in this study, some people in other parts of Tanzania felt that having a child with an impairment was a sign of witchcraft (Cosmas, 2018).

In this study, barriers to inclusive pre-primary education included poverty, attitudes, stigma, and discrimination; inadequate teaching resources; inadequate infrastructure; and teachers' practices. These findings are consistent with the social paradigm and its extension, the social relational paradigm of disability, which focuses on resolving the obstacles to participation of children with disabilities due to different aspects of the social structure. Key ideas in Thomas' social relational paradigm of disability are barriers to doing and being (Cologon & Thomas, 2014; Thomas, 2010). Barriers to doing are socially imposed environmental restrictions that limit or impede participation (Cologon & Thomas, 2014). Teachers in this study expressed barriers to doing so, such as inadequate furniture, inadequate educational facilities, and inadequate classrooms and toilets, which limited children with disabilities from receiving an inclusive pre-primary education. Similarly, literature evidence in Tanzania indicates that infrastructural barriers and a lack of necessary assistive resources obstruct the provision of inclusive education (Mapunda *et al*., 2017; Thompson, 2017; William *et al*., 2024).

Barriers to being are inappropriate, harmful, or aggressive behaviours that prevent children with disabilities from accessing inclusive preprimary

education and interactions at the individual, as well as at the institutional or systemic level (Cologon & Thomas, 2014). This study found that obstacles to the inclusion of children with disabilities in pre-primary education included ableist thinking, harmful and discriminatory attitudes and behaviours towards children with disabilities, as well as the absence of appropriate support to promote inclusive education. This suggests that it is challenging to achieve inclusive pre-primary education in the school, where discriminatory attitudes and behaviours and ableist thinking exist. These findings are consistent with the literature in Tanzania that the education of children with disabilities is hampered by negative attitudinal and discriminatory behaviours (Mapunda *et al*., 2017; Thompson, 2017).

Therefore, one way to support inclusive practice is to remove obstacles to doing and being. Dismantling ableist thinking is crucial because it involves discriminatory beliefs and behaviours stemming from the idea that a child with disability is somehow less important than a person with disability. As stated clearly by Cologon (2019, p. 3), "*to be inclusive means recognising that education needs to be open and responsive to the vast range of 'differences' among humans and directly and actively rejecting common myths of 'normal*." The universal design for learning, which incorporates every child's needs into educational processes, must be adopted (Spratt & Florian, 2015).

Despite Article 24(4) of the UNCRPD emphasising that teachers must be properly educated and well-trained for inclusive education, this study found that many teachers lacked training in inclusive education and were not knowledgeable in Braille and/or sign language. Unqualified teachers teach children with disabilities. The study also found that the provision of inclusive pre-primary education was hampered by teachers' attitudes and everyday practices. Similarly, in other research elsewhere in Tanzania, research evidence shows that children with disabilities are not well supported, segregated by unqualified teachers who hold unfavourable attitudes about disability (William *et al*., 2024; Mapunda *et al*., 2017). This implies the need for continuous professional development for all teachers on inclusive education to equip them with competencies of inclusive learning and teaching.

Conclusions
In the 21st century, there has been a significant increase in awareness of inclusive education of children with disabilities worldwide, backed up by international agreements such as the Salamanca Statement, UNCRPD, and SDG4. These international agreements, signed by the Government of Tanzania, articulate that children with disabilities should have access to an

inclusive education as their fundamental right. The Salamanca Declaration (UNESCO, 1994) provided the impetus for inclusive education. The declaration claims that an inclusive school combats prejudice and segregation, fosters open communities, and helps in the growth of an inclusive society. The declaration acknowledges that children differ from one another and that every individual has unique physical, socioemotional, and learning requirements. This means that rather than concentrating on a child's deficit, teaching and learning should address each child's unique learning needs.

Notably, UNCRPD establishes that children with disabilities should access an inclusive education as their right, which will develop their "*personality, talents, and creativity [and] their mental and physical abilities*" (UN, 2006, p. 16). Article 24 contains clauses for employing qualified and competent teachers with skills in braille and/or sign language, the provision of accessible educational materials, and awareness training on disability. Therefore, nations like Tanzania must guarantee the equitable provision of inclusive education for all, employ qualified and competent teachers, and create awareness of disability.

Target 4.2 of SDG4 (UN, 2015) ensures access to "quality early childhood development, care, and pre-primary education" for all children. Therefore, countries like Tanzania should guarantee quality, inclusive pre-primary education for all. Responding to Target 4.5, Tanzania should guarantee that children with disabilities have access to "inclusive, equitable, quality education and lifelong learning opportunities." Referring to target 4.a of SDG4, Tanzania should also construct and renovate educational facilities to meet the needs of children with disabilities and offer secure, non-violent, and accessible school environments.

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Motivational Factors Influencing Teaching Choice Among Primary School Teachers in Tanzania

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Abstract
Understanding Motives behind choosing a teaching profession is crucial in influencing teachers' commitment and credibility. This study explores motivational factors influencing career choice among primary school students in the Tanzanian context. Based on the FIT-Choice Framework, the mixed-research design approach was used to integrate the quantitative and the qualitative aspects. The proportionate stratified random sampling technique was used to select 381 respondents, and the homogeneous purposive sampling was used to select 15 participants. The questions and the interview Questionnaires and interview guides with factors influencing teaching choice were used to collect information. Data were analysed using means, standard deviations (SD), Analysis of Variance (ANOVA) and thematic analysis. Data on rating-scale responses involving pragmatic, intrinsic, extrinsic and altruistic motives were identified. The results showed that pragmatic factors prompt 75% of teachers to aspire for a teaching career. In light of the findings recounted, teacher training policies should be revisited to professionalise teaching within the framework of lifelong learning and workshops on professional development for newly recruited teachers should be organised.

Keywords: *Motivational factors, teaching choice, influencing, teacher, Tanzania*

Introduction
Career choice is a significant concern for individuals nearing the end of their schooling (Abotsi *et al*., 2019; Ishumi, 2013; Stuart, 2013; OECD, 2005). Specifically, the choice of a teaching career encompasses essential aspects of professional development within educational systems (Salifu, Alagbela & Ofori, 2017; Sun *et al*., 2022; Saito, 2024). Teachers are indispensable stakeholders in education, without whom no country can achieve its educational goals. Understanding the motives behind choosing a teaching profession is crucial, as they can influence teachers' commitment and credibility (Richardson & Watts, 2007; Gore *et al*., 2015). There are two

major taxonomies of teaching motivations (Low *et al.*, 2017). One of the widely cited models on teaching motivations is the tripartite framework (i.e. intrinsic, altruistic and extrinsic motivations) noted by Kyriacou and Coulthard (2000) and Moran, Kilpatrick, Abbot, Dallat, and McClune (2001). Another taxonomy of teaching motivations is the factors influencing teaching choice (FIT-Choice) framework proposed by Richardson and Watt (2006) and Watt and Richardson (2007).

Research highlights various motivations for aspiring teachers, categorised into four key areas: intrinsic, extrinsic, altruistic, and pragmatic (Bastick, 2000; Lai *et al*., 2005; Watt & Richardson, 2012). Intrinsic motives are driven by personal beliefs and values, such as a passion for working with children and the desire for intellectual fulfilment (Jarvis & Woodrow, 2005; Sinclair, 2006). In contrast, extrinsic motivations include factors like job security and financial benefits (Butt *et al*., 2010). Altruistic motives often reflect a commitment to social contribution and equity (Richardson & Watt, 2006), while pragmatic factors may arise from life circumstances leading individuals to the teaching profession (Watt & Richardson, 2007).

This study assessed the motivational factors influencing teaching choice among primary school teachers in Tanzania.

While substantial research has explored motivations for choosing a teaching career, most studies have concentrated on Western contexts or secondary education settings (Watt & Richardson, 2012; Gore *et al*., 2015). These studies often overlook the unique cultural and economic factors that influence career decisions in developing countries. For instance, existing literature has not sufficiently addressed how local societal values or educational policies in Tanzania shape the motivations of primary school teachers. Moreover, while intrinsic and extrinsic motivations have been categorised broadly, the specific influences on Tanzanian teachers remain under-explored, particularly in light of recent changes in educational policy and societal attitudes towards teaching. This gap is significant, as understanding the unique factors of teaching choice in this context could inform effective recruitment and retention strategies.

The motivations behind individuals choosing a teaching career have led to a steady stream of studies and reports from various countries worldwide (Watt & Richardson, 2007). These motivations can be categorised into intrinsic, extrinsic, altruistic, and pragmatic domains (Abotsi *et al*., 2019). Research indicates that approximately 30% of teachers leave the profession within five years of graduation (Liu *et al*., 2000). In countries like Australia, the United States, and the United Kingdom, for example, one in five teachers exits the

profession within three years due to the widening salary gap between teaching and other professions, coupled with the challenges and disappointments associated with the teaching profession.

Drawing insights from Liu *et al*. (2000), Brookhart and Freeman (1992), and Nesje *et al*. (2017), intrinsic, extrinsic, and altruistic motivations emerge as the most significant factors influencing career choice. In one study, Nesje *et al*. (2017) explored the motivations for becoming a teacher in Norway, identifying economic, social, interpersonal, intellectual, and ethical reasons as key factors influencing teachers' career choices. Specifically, self-perception regarding abilities, the desire to shape the futures of children and adolescents, and the appeal of working in a people-oriented profession were major determinants. Additionally, factors such as social mobility, family time, social status, and job-related benefits—including security, pensions, and vacations—were crucial in influencing the decision to pursue a teaching career.

Furthermore, Suryani *et al*. (2016) examined the motivations of undergraduate teacher education students at four public and private universities in Jakarta and Yogyakarta, Indonesia. Determinants included religious influences, the availability of time for casual work, lower tuition fees for teacher education, less competitive admission processes, shorter study durations, and media dissuasion. The findings suggested that pragmatic factors were rated lower, indicating that teaching is perceived as a prestigious career with high social status.

In Switzerland, Berger and Girardet (2014) investigated the motives for choosing the teaching profession among teachers at various school levels. Their results revealed several motives, including contact with youth (32%), earning a living (31%), love for the subject (29%), and the discovery of the profession (25%). Notably, 22% of teachers reported passive motivations, indicating they chose teaching due to a lack of better options or through the process of elimination. From these findings, intrinsic value emerged as the most significant determinant of career choice. Low *et al*. (2017) reported that personal fulfilment, working with young people, working conditions, lifestyle, and professional status were among the most influential factors affecting Australian teachers' motivation to teach. In Turkey, intrinsic career value, salary, social status, social influences, and the desire to contribute to society were pivotal factors motivating teachers.

In Ghana, Abotsi *et al*. (2019) explored how ease of attrition from the teaching profession, high social mobility, and greater job opportunities influenced the choice of teaching. Their findings indicated that the ease of

leaving the profession did not significantly affect the decision to pursue a teaching career. However, the context-specific and institutionally specific findings are not universally applicable. Additionally, Mruma (2013) conducted a study in Tanzania that revealed job security and the lack of alternative job options as major determinants of teaching career choice. Interestingly, salary did not serve as a significant motivator for joining the profession, despite existing literature suggesting otherwise. A small percentage of individuals were motivated by intrinsic factors, and contrary to popular belief, low job status did not deter those interested in a teaching career; many individuals viewed the teaching profession as a backup option.

Collectively, various studies highlight the critical role of factors influencing teaching choice. Despite these valuable insights from empirical research, there is no consensus among scholars regarding the factors influencing the choice of the teaching profession in the Tanzanian context. While teaching choices encompass intrinsic, extrinsic, and altruistic motives, there is growing concern that the motivations behind selecting teaching as a profession are complex and multifaceted. In contrast, few studies—such as those by Mruma (2013) and Abotsi *et al*. (2019)—identify pragmatic factors of teaching career choice. The generalizability of these findings may be problematic due to differing contexts and job descriptions among teachers. Thus, further exploration of the determinants of career choices among primary school teachers, particularly in the Tanzanian context, is warranted.

Theoretical Framework
The Factors Influencing Teaching Choice (FIT-Choice) framework developed by Watt and Richardson (2007) was adopted to provide a valid and reliable investigation into why individuals choose teaching (Nesje *et al*., 2017). The FIT-Choice framework is grounded in the expectancy-value theory of achievement motivation, which posits a set of higher-order constructs—ability, beliefs, subjective task value, and perceived task difficulty—that influence academic choices (Wigfield & Eccles, 2000). The model includes precursor socialisation influences, followed by more proximal influences such as task perceptions, self-perceptions, values, and fallback career options (Lawver & Torres, 2011). Socialisation influences on career choice include social dissuasion, individual teaching and learning experiences, and the impact of significant others. Individuals' perceptions of their teaching abilities, as related to task demands (i.e., expert and high demand) and returns (i.e., social status and salary), are crucial in the teaching profession (Watt & Richardson, 2007; Watt *et al*., 2012).

Furthermore, the model proposes three main value classes: intrinsic value, personal utility value, and social utility value. Intrinsic value refers to the

enjoyment and interest in teaching, while personal utility value encompasses extrinsic motivations such as job security, family time, and job transferability. Social utility value pertains to altruistic motivations, including shaping the future of children and adolescents, enhancing social equity, making a social contribution, and working with youth. Additionally, the model addresses maladaptive motivation for selecting teaching as a fallback career (Nesje *et al*., 2017). As an outcome variable, the model highlights satisfaction with the choice of teaching, which subsequently influences professional engagement and career development aspirations. Figure 1 indicates factors influencing the teaching choice model.

Figure 1. FIT-Choice Model (Adopted from Watts & Richardson, 2012).
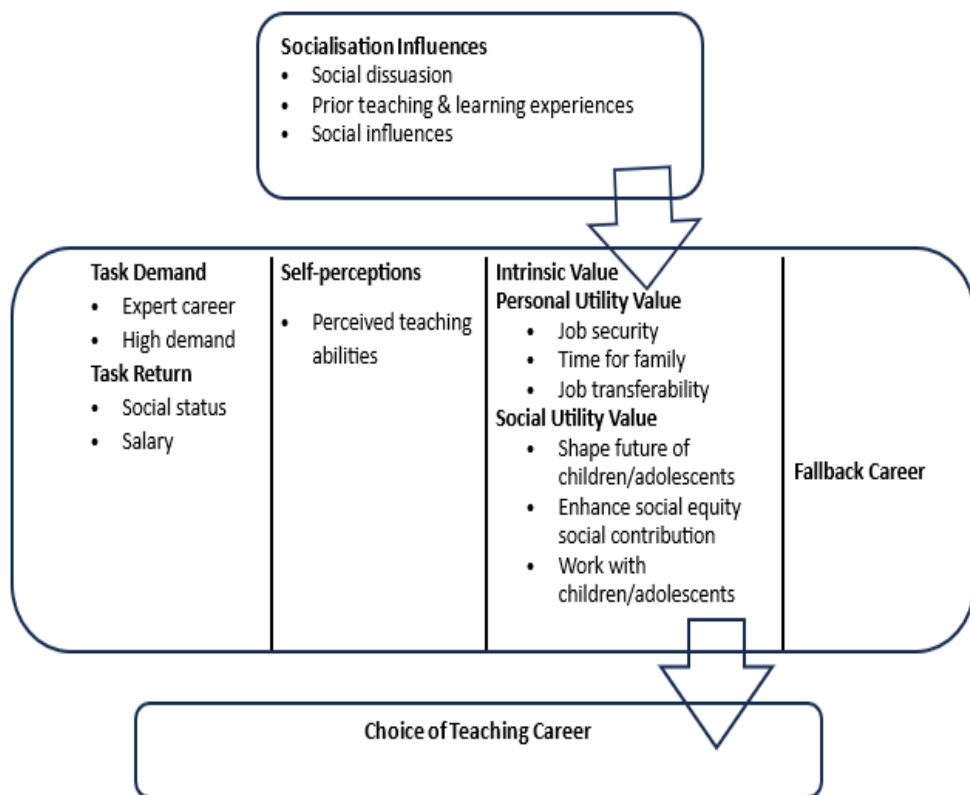
The FIT-Choice framework accounts for cultural variations in teaching motivations through its emphasis on contextual factors and individual differences that influence career choices. Here are several key aspects: The framework acknowledges that socialisation processes, such as family expectations, community values, and cultural norms, play a significant role in shaping individuals' motivations. Different cultures may prioritise various aspects of teaching, such as community service or social status, which can affect motivations.

The framework also includes intrinsic, personal utility, and social utility values, allowing for a diverse interpretation of what motivates individuals across different cultures. For instance, in some cultures, social utility values (like contributing to community welfare) may be more pronounced than in others. Additionally, the FIT-Choice Framework incorporates subjective perceptions of teaching, which can vary widely across cultures. Individuals may perceive the teaching profession's value differently based on local economic conditions, societal expectations, and educational policies.

Moreover, the model emphasises the importance of contextual factors, such as job security, salary, and working conditions, which can differ significantly between countries and cultures. These factors influence individual motivations and perceptions of the teaching profession. Lastly, the FIT-Choice framework is adaptable, allowing researchers to modify its components to fit specific cultural contexts better. This flexibility helps ensure that the framework remains relevant across diverse educational settings.

By incorporating these elements, the FIT-Choice framework provides a comprehensive understanding of how cultural variations impact motivations for choosing a teaching career. Empirical studies on the motivational factors of teaching choice seem not comparable to one another in terms of their results. The arguably lack of integrative definitional precision and overlapping categorisations of motivational factors leave the teaching profession with poorly defined constructs, warranting further knowledge on teachers' career motivations.

The demographic variables of sampled teachers constitute the type of school ownership, geographical location, sex category, age category, educational qualifications, teaching experiences, promotional position and marital status. Table 1 indicates the statistical profiles of primary school teachers among the selected schools from three districts- Kongwa, Dodoma Municipality and Chemba with respect to frequencies and percentages.

Table 1: Demographic Variables of the Respondent (N=381)

Biographical Variable	Variable Description	Frequency	Percentage
Type of School Ownership	Government	334	87.7
	Private	47	12.3
Sex Category	Male	178	46.7
	Female	203	53.3
Age Category (Years)	20-30	126	33.1
	31-40	168	44.1
	40-Above	87	22.8
Geographical Cohort	Urban	171	44.9
	Rural	210	55.1
Educational Qualification	Grade IIIA	318	83.5
	Diploma	43	11.3
	Bachelor Degree	15	3.9
	Master Degree	5	1.3
Teaching Experience (Years)	Below 10	199	52.3
	10-20	101	27.3
	21-Above	81	20.5
Promotional Position	Leader	68	17.8
	Not Leader	313	82.2
Marital Status	Married	275	72.2
	Single	93	24.4
	Divorced/Separated	7	1.8
	Widowed	6	1.6

Source: Field data

Methods

This study employs a mixed-methods research approach with an explanatory sequential design, integrating both quantitative and qualitative data to draw credible and well-founded conclusions (Creswell, 2009; Fraenkel & Wallen, 2009; Fetter & Freshwater, 2015; Punch, 2011; Tashakkori & Teddlie, 2009). The explanatory sequential design operates on a methodological hierarchy, where an initial quantitative phase is followed by a qualitative phase that serves to enhance understanding through exploration of fewer cases not amenable to numerical analysis (Denzin & Lincoln, 2003; Mugenda & Mugenda, 2003; Teddlie & Yu, 2007; Creswell, 2012; Cohen *et al*., 2007; Punch, 2011; Yin, 2011). The integration of quantitative and qualitative phases culminates in a comprehensive interpretation of findings, leading to robust and substantiated conclusions addressing the multifaceted nature factors influencing teaching choice (Cohen *et al*., 2007; Creswell, 2012; Fraenkel & Wallen, 2009; Gall *et al*., 2005; Singh, 2007).

The study was conducted in the Dodoma region, selected due to its relatively low academic performance. Backwards mapping analysis of educational statistics reveals that Dodoma suffers from a high attrition rate and significant teacher turnover (United Republic of Tanzania [URT], 2021). Reports indicate that out of 193,853 permanent primary school teachers,

31,270 abandoned the profession for various reasons, including attrition (URT, 2017). The Dodoma region has particularly high teacher attrition rates, as many teachers are drawn to more lucrative opportunities outside the education sector.

Participants were recruited from three Districts: Chemba, Dodoma Municipality, and Kongwa, encompassing teachers from both urban (171) and rural (210) areas. Eligibility criteria required in-service teachers who consented to participate and held a valid certificate, diploma, or degree. The sample size (N = 381) was selected to reflect the proportional representation of teachers in the region, ensuring sufficient cases in each category to avoid selection bias and sampling variance (Cohen *et al*., 2007; Johnston & Vanderstoep, 2009; Lewis *et al*., 2009; Marshall & Rossman, 2006; Kumar, 2005; Teddlie & Yu, 2007). Additionally, 15 teachers were purposefully selected using homogeneous purposive sampling to enhance the depth and richness of the data, thereby providing a valid description of the determinants influencing teaching career choices (Teddlie & Yu, 2007; Onwuegbuzie *et al*., 2011).

A survey was administered to assess factors influencing the choice of teaching as a career. The demographic profile of respondents included school ownership type, school location, age category, gender, educational qualifications, teaching experience, promotional position, and marital status. The survey identified intrinsic, extrinsic, altruistic, and pragmatic motives influencing the choice of teaching career. The response scale descriptors were tailored to align with the nature of each statement (Lewis *et al*., 2009; Creswell, 2012; Bordens & Abbott, 2011; Punch, 2011). The use of questionnaires increased response likelihood due to their relative freedom from bias, allowing for a more accurate assessment of beliefs and attitudes.

Cronbach's Coefficient Alpha (α) tests were performed to evaluate the reliability and internal consistency of the data, with a minimum acceptable threshold set at 0.70 (Nunnally & Bernstein, 1994; Alvariñas-Villaverde *et al*., 2022). The internal consistency of the sub-scales was adequate; Cronbach's value for a global scale of determinants of teaching career choice was 0.88. However, given the limited number of items (fewer than ten), a threshold of 0.50 was deemed acceptable for this study. Multiple sources of evidence, including expert and peer reviews, triangulation of instruments, and pilot studies under actual field conditions, were employed to ensure validity and reliability (Pallant, 2005).

Quantitative data were subjected to descriptive analysis (means, standard deviations, and variance). In contrast, inferential statistical analysis,

specifically Analysis of Variance (ANOVA), was utilised to examine differences in scores among various groups. ANOVA was employed to assess the statistical significance of mean differences across more than two groups of data (Pallant, 2005), considering the probability value (p-value) against the level of significance using the Kaiser-Meyer-Olkin (KMO) measure (Kaiser, 1974) and Bartlett's test of sphericity (Bartlett, 1954). A p-value of less than 0.05 was regarded as statistically significant, corresponding to a 95% confidence level (Pallant, 2005). Finally, the internal consistency of the factors was assessed using Cronbach's alpha, following the recommendations of George and Mallery (2003) (>0.9 excellent, >0.8 good, >0.7 acceptable).

In addition to quantitative analyses, teachers were interviewed regarding their motivations for choosing a teaching career. A coding system for interview transcripts was developed based on the Auerbach and Silverstein (2003) coding scheme, allowing data classification according to key themes, concepts, and emergent patterns related to the research questions (Hollway & Jefferson, 2000; Braun & Clarke, 2006; Saldana, 2009).

Interviews were conducted to verify the authenticity of questionnaire responses and to gather qualitative narratives related to motives for choosing a teaching career. This method facilitated cross-validation of information obtained from various research tools (Newton & Rudestam, 1999; Nunnally & Bernstein, 1994; Seidman, 2006).

Thematic analysis involved specific stages: familiarisation, generation of initial codes, theme identification, theme refinement, and defining and renaming themes (Auerbach & Silverstein, 2003; Berg, 2001; Gall *et al*., 2005; Onwuegbuzie *et al*., 2011; Marshall & Rossman, 2006; Dey, 1993; Edward & Lampert, 1993). The renaming process included reviewing themes for potential merging or separation. The researcher analysed raw text to identify relevant excerpts and recurring ideas, which formed the basis for themes and narratives leading to conclusions regarding key concerns.

Ethical considerations were paramount, given the study's interaction with human participants (i.e., primary school teachers). Ethical clearance was obtained from District Executive Directors to facilitate access to participants within their jurisdictions prior to data collection. The research ensured confidentiality through a numerical coding system, allowing anonymity in the presentation of findings to prevent any potential traceability. Participants were provided with comprehensive information regarding the study's aims and potential benefits, and participation was entirely voluntary, with individuals free to withdraw at any time without consequence.

Results

Motivational factors influencing teaching choice among primary school teachers were realised with respect to four factors: intrinsic, extrinsic, altruistic and pragmatic motives. Originally, determinants of career choice varied from 0.72 to 3.92 from the mean, and so, for comparison and estimation purposes of the responses, it was transformed to 1-5.

Figure 2: Box Plot on motivational factors of teaching choice
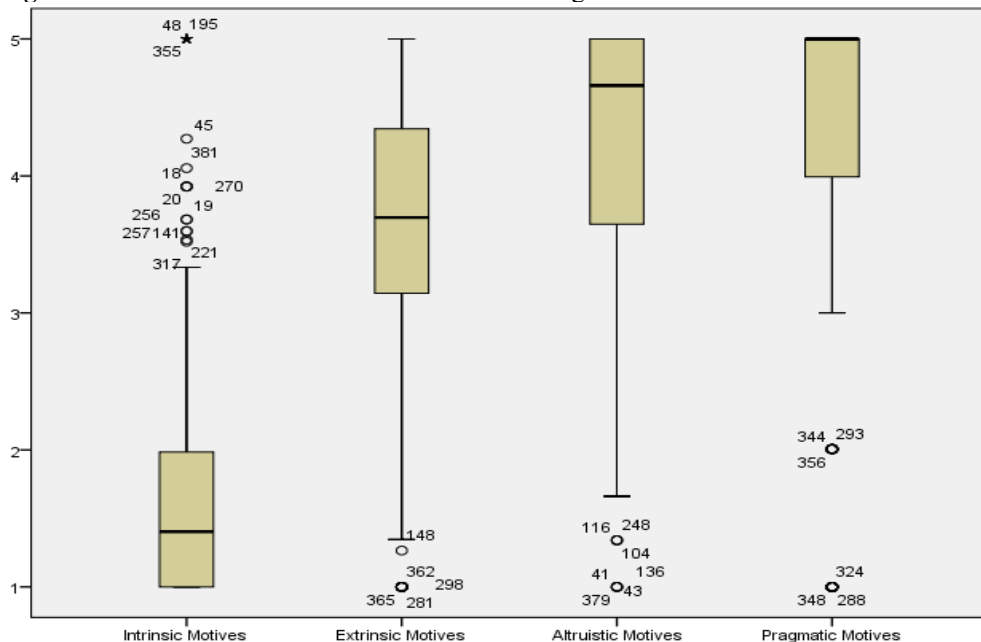
The Box plot reveals that the most pressing contributive factors for career choice were the pragmatic motives, with a variation of 4 to 5 for 75% of the data. It was notable that the uppermost 25% of the data coincides with the opinion 5 to a great extent. The lower 25% varies between 3 and 5. The factor of second order consideration was the altruistic motives, which had 50% varying between 3.6 and 5, and at least 25% which varied between 1.52 and 3.6. About six values were in the lower extremes of the factors 3 and 4. Extrinsic motives had a balanced distribution in the middle 50% values. High 25% was varying in a small region, 4.5 to 5. However, the minimum 25% has a large span of 0.4 to 3.5. Finally, the least pressing factor, however, worthy to mention was the intrinsic dimension clustered between 1 and 2 with 75% of the data. 25% of the least values are centred at 1, and the middle 50% varies between 1 and 2, with a median of 1.4.

The largest 25% falls between 2 and 3.2. There were six large values and three extreme values found in intrinsic motives. Determinant of teaching career choice from intrinsic motives varies between 1.8 and 4.9, with a

median value of 3.1. The middle 50% was highly concentrated in equal ranges from 2.92 to 3.8, with a median value of 3.1. The minimum 25% and the maximum 25% were equally distributed in a span of about 1.2 distances. So, the distribution of determinants of teaching career choice was symmetric. It was noticeable that more than 15 least observations and one large observation were found in the data.

From the means of the four factors, it was evident that pragmatic motives were most influential, with a mean of 4.43 (32%), followed by altruistic motives, with a mean of 4.24 (31%), then extrinsic motives, with a mean of 3.63 (26%) and finally, intrinsic motives, 12% (1.64 mean). The average was 3.18, implying that on average, teachers favoured a little extent response in the determinants of teaching career choice. The median was 3.27 and mode was 3.80 which show the increasing tendency depicting a negative skewness. Not at all and great extent options of teaching career choice were taken by 2.1% of the teachers. Very little extent was found by 11.5%. Majority of the teachers (52%) agreed with little extent and another 32% with some extent.

The basic distribution analysis was developed by finding the location, scale and shape parameters of the distribution. The location identifies the central tendency of the data using the arithmetic mean, median or mode, where clustered data were expected. The scale parameter was indicative of how much the data were distributed from the central value. It was the essential feature to identify the nature of the distribution of data. Even though the location and scale were fixed, there was a chance of the distribution of data to one side or both sides. This was presented by the shape parameter, showing how the data were clustered to one side or scattered to the whole range, and so on. Thus, location, scale and shape parameters were indicative of how the data were behaving and how much they deviated from the normal distribution. Table 1 displays the location parameter of the motivational factors influencing teaching choice among primary school teachers.

Table 1: Descriptive statistics of motivational factors of teaching choice

DTCC	MC_1	MC_2	CM_3	MC_4	MC_5
Mean	1.6	3.63	4.24	4.43	3.18
Median	1.4	3.7	4.66	5.0	3.27
Mode	1.0	5.0	5.0	5.0	3.80

Note: DTCC= Dimensions of teaching career choice

MC_1=, MC_2=, MC_3=, MC_4= and MC_5= Respective dimensions of intrinsic, extrinsic, altruistic, pragmatic and a combination of motives of choice. Extrinsic motives were gently scored to a little extent on a Likert 3, which was the middle value. A t-test proved it as t=12.033 with p 0 <0.05.

Similarly, the altruistic motives and pragmatic motives were very highly scored compared to the middle response of little extent by the t-test. It was established as t=23.874 and 24.170 with p value 0<0.05, respectively. This means that altruistic and pragmatic motives were gentle or to a great extent. Generally, determinants of career choice were little away from little extent or middle responses since t=5.266 with p value 0<0.05.

Interview items on motivational factors influencing teaching choice were put discreetly reiterated, followed by responses drawn from the complete transcript text. The reasons given were diverse and numerous. In reporting excerpts from these responses, each interviewee was given a one-letter identity code preceding their answers to the question. Responses were coded according to four dimensions reflecting commonly cited reasons for teaching career choice in the literature reviewed; intrinsic, extrinsic, altruistic and pragmatic motives. The following excerpts were taken from full transcripts of fifteen interviewed primary school teachers. Figure 3 describes transcripts of motivational factors influencing teaching choice.

Figure 3: Transcripts on the motivational factors influencing teaching choice
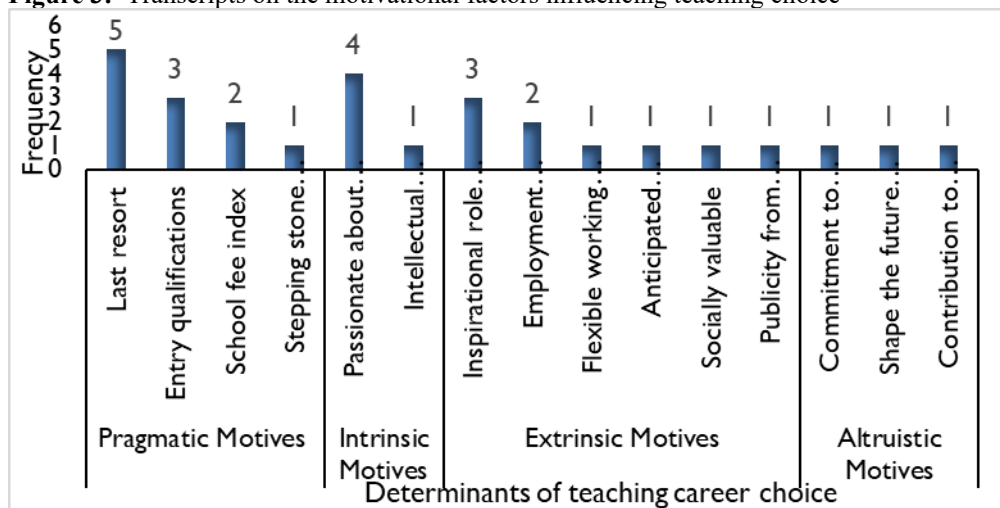
Remarkably, similar responses emerged to the question of choice of the teaching profession. 11 responses (39.3%) indicated that the motivation for entering teaching was, by 75% driven by pragmatic factors. Taking a closer look at the other dimensions, 9 responses (32.1%) expressed a greater regard for extrinsic motives, producing remarkably parallel sentiments with the survey. 71.4% of teachers admitted that extrinsic and pragmatic motives were the significant factors that had influenced them to join the teaching profession. Five responses (17.9%) explicitly and willingly stated intrinsic motives for the choice of the teaching career. Interestingly, three responses

(10.7%) dissented from the majority's view mentioned the altruistic motives to join the teaching profession.

Intrinsic motives included two components: passionate about teaching and intellectual stimulation. Extrinsic motives included six components which were inspirational role models, employment prospects, flexible working hours, anticipated pension benefits, socially valuable and publicity from mass media. Altruistic motives included three components which were commitment to serve others, shape the future of the children and contribution to the society. Other motivation factors included pragmatic reasons such as last resort, entry qualifications, school fee index and stepping stone to another career. In total, 15 motivation factors about determinants of teaching career choice were measured. It was evident that most teachers who choose teaching profession have their attention directed away from teacher education pedagogy and the teaching practicum in schools.

The findings suggest that teacher training programmes in Tanzania may need to reevaluate their approaches. Emphasising intrinsic motivation and passion for teaching could enhance teachers' commitment and effectiveness in the classroom. Additionally, addressing the pragmatic concerns, such as job security and career advancement opportunities, could make the profession more attractive. Furthermore, the significant impact of altruistic motives implies that initiatives promoting community engagement and societal contributions could enhance the attractiveness of the teaching profession. Policies that recognise and reward teachers' contributions to society may also help in elevating the profession's status.

Discussion
The study on the motivational factors influencing teaching career choice among primary school teachers in Tanzania reveals a complex interplay of various motivational factors influencing teachers' decisions. This discussion will delve into the four identified factors: intrinsic, extrinsic, altruistic, and pragmatic motives, and analyse their implications on the teaching profession. The research categorised the determinants of career choice into four primary motives. First, intrinsic motives relate to personal satisfaction and passion for teaching. However, the findings indicate that intrinsic factors scored the lowest overall, with a mean of 1.64. This suggests that personal fulfilment and passion are not the primary drivers for most teachers' career choices. Second, extrinsic motives encompassing various external rewards such as employment stability and benefits. The mean score of 3.63 indicates a moderate influence but still reflects a reliance on external validation rather than intrinsic satisfaction. Third, altruistic motives representing a commitment to societal contributions and shaping future generations.

Altruistic motives had a mean score of 4.24, indicating a significant but secondary influence on career choice, suggesting that many teachers feel a moral obligation to contribute positively to society. Fourth, pragmatic motives, which are the most significant factors, with a mean of 4.43. Pragmatic motives encompass practical considerations such as job availability and career progression. This finding suggests that many teachers view the profession as a pragmatic choice influenced by external conditions rather than a passion for teaching.

From the results and literature reviewed, generally, there is prime evidence to suggest that teachers admitted to primary schools are not genuinely interested in the teaching profession as their first choice (Ishumi, 2013). Teachers seem to choose teaching owing to the lack of a better option, contrary to the popular idea of teaching as a calling. The findings further support the earlier study by Ishumi (2013), who reported that people join the teaching profession because of the lack of qualifications in other occupations. This was especially true in the case of those who failed in gaining access to tertiary-level education, yet aspired to employment in the public service. While in most developed countries such as Canada, England and the United States of America, reasons such as working with children, liking teaching, the perceived ability of teachers were identified as the most influential (Stuart, 2013; Nyamubi, 2017). This scenario is reflective of the Organisation for Economic Co-operation and Development, which echoes factors influencing the teaching choice for this study.

Within the same line of thinking, Brookhart and Freeman (1992) assert that half of the number of teachers in different levels of schooling join the teaching profession because their examination scores fell below the requirements for the departments in which they had initially hoped to study. This was especially true in the case of those who failed in gaining access to tertiary-level education, yet aspired to white-collar employment in the public service. In contrast to earlier findings, however, no evidence of love of the subject as determining career choice was detected. Arguably, the teaching career was the last resort to many teachers seeking employment opportunities, as they most craved to become doctors, engineers or lawyers, but unfortunately would not (Papanastasiou & Papanastasiou, 2012). In the past, teaching was much sought after as a profession, but currently, teaching is widely regarded as the employment of the last resort. However, the little available working force is preoccupied with dissatisfaction, thus making the teaching career pipeline collapse at both ends.

The findings suggest that teacher training programmes in Tanzania may need to reevaluate their approaches. Emphasising intrinsic motivation and passion

for teaching could enhance teachers' commitment and effectiveness in the classroom. Additionally, addressing the pragmatic concerns, such as job security and career advancement opportunities, could make the profession more attractive. Furthermore, the significant impact of altruistic motives implies that initiatives promoting community engagement and societal contributions could enhance the attractiveness of the teaching profession. Policies that recognise and reward teachers' contributions to society may also help in elevating the profession's status.

Through the lens of factors influencing teaching choice, this research focus may bear far-reaching implications for educational policy makers to advocate for criteria for recruitment of teachers to ensure that only those who choose the profession as their career ambition are taken. Nevertheless, there are different factors influencing the teaching choice among different levels of schooling. It is potentially instructive to note, however, that findings of this study do not lend support to the contention that intrinsic, extrinsic and altruistic motives are mutually exclusive. Consistent with the findings of this study, Watt *et al*. (2012) concluded that any given factor, whether intrinsic, extrinsic or altruistic, could either evoke satisfaction or induce dissatisfaction. In contrast, the drive towards a teaching career cannot be induced by any amount of pressure from the government, educational managers or any other folk (Mwamwenda, 2010). Raising entrance standards, generating qualification standards and equitable competencies to teacher education programmes so that teachers are certified and become in touch with classroom dynamics and school realities.

Significant limitations might have beset the practical application of the knowledge generated in this study. Factors influencing teaching choice are self-reported measures drawn from within the limits of the items of the research tool. This provides no guarantee for honesty, as discrepancies such as subjective assumptions may exist, and the results may be influenced by what participants think is a socially desirable answer. The study was accurate only to the extent that reported data reflected honest and accurate statements by respondents.

Given the limitation, further lines of research aiming at diversifying data collection methods on teachers' insights can be done beyond what they say. Triangulation through comparing multiple data sources can verify the participants' answers, thereby increasing the reliability and accuracy of the research findings. Moreover, the data source of research into the choice of teaching as a career is relatively narrow, involving a small sample that is non-representative of teachers. Arguably, positivists might claim that no inductive conclusions could be generalised to a small sample if a

longitudinal study has to be conducted. Increasing sample size appropriately could be a way to address this limitation in future research.

Conclusion

Motivational factors influencing career choice among primary school teachers in Tanzania highlight a critical reliance on pragmatic motives where teachers in the Tanzanian context choose the teaching career, limited by alternative career opportunities. Altruistic and intrinsic motives play a subordinate role. Understanding these dynamics is essential for developing effective teacher training programmes and policies that align with teachers' motivations, ultimately fostering a more committed and satisfied teaching workforce.

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Awareness and Utilisation of Artificial Intelligence Tools for Effective Administration in Public Secondary Schools in North-Central Nigeria

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Abstract
The study investigated the awareness and utilisation of artificial intelligence (AI) tools in the administration of secondary schools across North-Central Nigeria—a region marked by distinctive educational challenges and opportunities. The objectives were threefold: to assess the level of AI awareness among school administrators, evaluate the extent of AI tool utilisation, and identify barriers hindering their adoption for effective school management. To address these aims, three research questions were formulated. Using a multi-stage random sampling technique, 300 secondary school principals were selected as respondents. Data were collected through a researcher-developed instrument titled Principals' Awareness and Utilisation of AI Tools Questionnaire (PAUATQ). Descriptive statistics, specifically mean and standard deviation, were employed for data analysis. Findings indicated low levels of AI awareness (M = 1.79, SD = ±1.04) and utilisation (M = 1.68, SD = ±1.29), with prominent adoption barriers including inadequate infrastructure and high costs of acquisition and maintenance (M = 2.86, SD = ±0.94). Based on these results, the study

recommended that counselling psychologists and key educational stakeholders organise targeted workshops, seminars, and training programmes to enhance the technical competence and confidence of school administrators and teachers in implementing AI tools.

Keywords: *Artificial intelligence, AI tools, awareness, utilisation, and effective administration*

Introduction

Education, in all parts of the world, is known for the production of balanced citizens for individual and national development. It remains a sensitive instrument and a means to sustain the development of a nation. No matter the number of natural resources a nation might have, without the potential efforts of education, the abilities and potentials that are needed to harness the skills and values that are responsible for national development would be lacking. Therefore, the structure of such a nation is bound to have defects (Muraina, 2018). This makes education an indefatigable and indispensable venture for the overall development of the nation. For education to be successful, it requires due commitment to policy implementation, provision, and maintenance of infrastructure, capacity development, and adequate provision of funds, as well as coping with technological trends to achieve the desired goals. Hence, the administration of schools is central and vital to the overall success of education.

In education, the traditional administrative paradigm shows an inward direction to cut costs, uphold rules, and division of labour (Muraina, 2018). This paradigm, by nature, is hierarchical, with an emphasis on control, enforced standards, and a disciplinarian approach. The consequence is mechanical orientation design, a high level of specialisation, and rigid departmentalisation. The focus of traditional administration is directed toward the improvement of productivity and resource utilisation in a stable society or environment (Edward & Muraina, 2024). Meanwhile, both society and the environment are inherently dynamic concepts, where nothing is permanent except for the idea of change. This is because technological innovations cause changes in the environment.

Since the middle of the 19th century, technology and technological tools have been the source of innovation, influencing all aspects of human endeavours. Technological innovations change the human approach to all issues and set the difference between traditional and modern approaches (Edward & Muraina, 2024; Muhammad-Jamiu & Muraina, 2023). The world is globally

connected, and activities in it are powered mainly by technology and the use of its tools. The rapid growth of technologies and technological tools has been substantial, marking one of history's most rapid adoption rates of new technologies.

Artificial intelligence (AI) is revolutionising industries globally, including the field of education. By facilitating automation, predictive analytics, and data-driven decision-making, AI has the potential to enhance the efficiency and effectiveness of educational administration significantly (Miao et al., 2021). Despite these global advancements, secondary school administration in Nigeria still largely depends on traditional, manual approaches—methods that are often inefficient, labour-intensive, and susceptible to human error. Recognising this technological lag, the present study explores the extent to which AI tools are understood and utilised in Nigerian secondary schools. It investigates the barriers that hinder their broader adoption (Muhammad-Jamiu & Muraina, 2023). This inquiry lays the groundwork for a deeper investigation into how educational institutions in North-Central Nigeria can harness emerging technologies for transformative change.

Artificial intelligence (AI) has emerged as a transformative force in various sectors, including education. In school administration, AI tools offer solutions for automating processes, improving decision-making, and optimising resource allocation. Despite its global significance, the adoption and utilisation of AI in the education sector, particularly in Nigeria, remain underexplored (Muraina, 2018). This section reviews relevant literature on the awareness and utilisation of AI tools, focusing on their potential benefits that could revolutionise education in Nigeria, global trends, challenges in adoption, and the Nigerian context. AI in education encompasses technologies such as learning analytics, predictive modelling, chatbots, and automated grading systems, which streamline administrative tasks and improve decision-making (Luckin et al., 2016). In educational management, AI has transformed the management of student records, staff schedules, and resource allocation (Holmes et al., 2019; Muraina, 2021). However, its adoption in developing countries like Nigeria remains nascent. Several studies highlight the challenges of integrating AI into education in Africa, including inadequate infrastructure, limited technical expertise, and resistance to change (Olaniyi & Okereke, 2020; Muraina, 2021). These challenges underscore the urgent need for a comprehensive understanding of the current state of awareness and utilisation of AI tools in Nigerian schools.

Furthermore, the lack of government policies promoting AI use in schools exacerbates the problem (Afolabi, 2022). Despite these challenges, there is

growing recognition of AI's potential to address administrative inefficiencies in Nigerian schools. Research by Adebayo and Ojo (2021) suggests that AI-driven attendance systems and data analytics could significantly improve resource management and student outcomes. This hopeful prospect underscores the importance of a comprehensive understanding of the current state of awareness and utilisation of AI tools in Nigerian schools and the potential of AI to transform the educational landscape in Nigeria.

Awareness of AI tools is the first step toward their adoption and effective utilisation. Luckin et al. (2016) describe AI as a technology capable of enhancing educational administration by automating tasks and analysing large datasets. Awareness includes understanding AI's potential, its applications, and how it can improve administrative efficiency. Globally, school administrators in developed countries are increasingly aware of AI applications in attendance tracking, resource scheduling, and performance monitoring (Holmes et al., 2019; Muraina, 2018). In the Nigerian context, awareness levels vary significantly. Olaniyi and Okereke (2020) note that while private school administrators often have a basic understanding of AI, their counterparts in public schools, particularly in rural areas, have limited exposure to such technologies. Adebayo and Ojo (2021) further argue that this disparity stems from uneven access to information and training programs.

AI tools have proven their utility in school administration worldwide. Automated attendance systems, predictive analytics, chatbots for communication, and digital grading systems are among the most commonly used AI tools (Miao et al., 2021; Muraina & Oladimeji, 2022). These tools streamline routine administrative tasks, allowing school administrators to focus on strategic planning and resource allocation. For example, AI-powered predictive analytics can analyse student performance data to identify at-risk students, enabling timely interventions (Holmes et al., 2019). Chatbots are being used to improve communication with parents, students, and staff, reducing response times and administrative burdens (Luckin et al., 2016; Edward & Muraina, 2024). However, in Nigeria, the utilisation of these tools remains limited. Afolabi (2022) highlights that less than 20% of secondary schools in Nigeria use AI tools, primarily due to financial constraints and inadequate infrastructure. Public schools are particularly affected, with administrators relying heavily on manual processes. Despite these limitations, private schools, especially those in urban areas, are beginning to adopt AI solutions, albeit at a slow pace (Adebayo & Ojo, 2021; Muhammad-Jamiu & Muraina, 2023).

The potential benefits of AI in education are well-documented. According to Miao et al. (2021), AI tools can improve administrative efficiency by automating repetitive tasks, such as data entry and scheduling. Additionally, they provide data-driven insights for better decision-making. AI can also enhance student outcomes by enabling personalised learning plans and identifying academic trends. For administrators, tools like automated grading and attendance tracking systems reduce the burden of manual processes, allowing them to focus on strategic initiatives (Muraina et al., 2022). Adebayo and Ojo (2021) argue that adopting AI tools in Nigerian secondary schools could significantly improve resource management, accountability, and overall efficiency.

Despite its potential, several barriers hinder the awareness and utilisation of AI in Nigerian schools. Infrastructural challenges, such as unreliable electricity and limited internet access, are significant obstacles (Olaniyi & Okereke, 2020; Muraina, 2018). Moreover, the high cost of AI tools makes them inaccessible to most public schools (Afolabi, 2022). Another significant barrier is the lack of training and technical expertise. Most school administrators and teachers are unfamiliar with how to implement and manage AI tools effectively (Adebayo & Ojo, 2021). Resistance to change and fear of job displacement among administrative staff further exacerbate the problem (Muraina et al., 2022; Muraina & Oladimeji, 2022). Policy gaps also play a critical role. Unlike developed countries with clear strategies for integrating AI into education, Nigeria lacks a cohesive policy framework to promote AI adoption in schools (Muraina & Oladimeji, 2022).

Globally, countries like the United States, China, and the United Kingdom have integrated AI into educational administration, resulting in improved efficiency and outcomes (Holmes et al., 2019). These countries have invested heavily in training educators, developing affordable AI tools, and creating policies to support AI integration. For Nigeria, these examples highlight the importance of strategic investments in infrastructure, capacity building, and policy development. Public-private partnerships, as seen in other countries, could also help make AI tools more accessible and affordable for Nigerian schools (Miao et al., 2021; Muraina & Oladimeji, 2022).

Statement of the Problem
Nigeria is often classified as a developing nation due in part to the limited influence of technological advancement in the management and administration of its education system. Research by Edward and Muraina (2024) confirms that effective educational administration plays a critical role

in achieving institutional goals. While school administrations across the globe share foundational values shaped by their cultural contexts, their primary mandate remains equipping learners with skills relevant to the demands of modern society. In Nigeria, however, many schools continue to struggle with bureaucracy, inefficiency, and low productivity—symptoms of an underleveraged technological ecosystem.

Despite growing global adoption of innovative tools, there is a noticeable research gap in Nigeria regarding school leaders' ability to integrate modern technologies for enhanced administrative outcomes. In particular, evidence remains scarce on the transformation of school management practices through the use of artificial intelligence. Against this backdrop, the present study investigates the level of awareness of AI tools, utilisation, and barriers towards their use for effective secondary school administration in North-Central Nigeria.

Objectives of the Study
The study examines awareness and utilisation of artificial intelligence tools for the effective administration of secondary schools in North-Central Nigeria. Other objectives of the study include:
i) Determine the level of awareness of AI tools for the effective administration of secondary schools
ii) Examine the level of utilisation of AI tools for the effective administration of secondary schools
iii) Assess the barriers to the adoption of AI tools for the effective administration of secondary schools

Research Questions
i) What is the level of awareness of AI tools for the effective administration of secondary schools?
ii) What is the level of utilisation of AI tools for the effective administration of secondary schools?
iii) What are the barriers to the adoption of AI tools for the effective administration of secondary schools?

Methodology
This study employed a quantitative research approach, which accommodates both descriptive and inferential designs (Creswell & Creswell, 2018). Given the nature of the research objectives, a descriptive survey design was considered most appropriate, as it does not require the manipulation of variables. Instead, it aims to collect information on how people view and use

artificial intelligence tools for better management of secondary schools, using answers from a set questionnaire.

Population and Sample

The population for the study was 4,135 public secondary school principals in 1,247 schools in North-Central Nigeria. The sample of this study consisted of 320 secondary school principals chosen through a multi-stage sampling procedure. The first stage involved the use of stratified random sampling techniques to select two states. The second stage involved the use of simple random sampling techniques to select five local government areas (LGAs) in each state. The third stage involved the use of simple random sampling techniques to select 16 public secondary schools in each LGA. The fourth stage involved the use of a simple random sampling technique to select two principals from each school. Out of 320 questionnaires distributed, only 300 were retrieved and used for data analysis.

Instrumentation

The instrument used for the study was a structured, self-designed questionnaire. The instrument used was tagged "Principals' Awareness and Utilisation of AI Tools Questionnaire (PAUATQ)" with 24 items and consists of four (4) sections: A-D. Section A assesses the demographic data of the respondents; Section B measures the awareness of AI tools; Section C assesses the utilisation of AI tools, and Section D measures the barriers to the use of AI tools for effective administration in schools. In developing the tool, the researcher followed the following procedures: (1) defining constructs based on existing literature, (2) item generation aligned with the objectives of the study, (3) expert review for content clarity and relevance, and (4) a pilot test to ensure functional clarity and reliability. To validate the instrument, a thorough *content validation process* involving subject-matter experts in educational technology and psychometrics was consulted, and their remarks on the items confirmed the adequacy of the instrument. Reliability analysis produced a Cronbach's alpha coefficient of 0.85, indicating strong internal consistency.

Procedure and Data Analysis

The researchers secured the necessary approvals from relevant school boards prior to conducting the study. The researchers personally distributed and collected the questionnaires on-site, assuring participants of the confidentiality and anonymity of their responses. This method yielded a remarkably high response rate. The data obtained were analysed using descriptive statistical methods, including frequency counts, percentages,

means, and standard deviations. The decision rule used to interpret the average (mean) scores from the Likert scale was as follows: If the calculated mean score ($\bar{x}$) is below 2.5, it indicates a low level of agreement among respondents, suggesting general disagreement or a negative perception. Conversely, if the mean score is 2.5 or above (up to 4.0), it signifies a high level of agreement, indicating general agreement or a positive perception.

Results
Research Question One: What is the level of awareness of AI tools for the effective administration of secondary schools?

Table 1: Level of awareness of AI tools for effective administration of secondary schools

S/N	Items	$\bar{x}$	SD	Remark
1.	I am familiar with the concept of Artificial Intelligence (AI) and its applications in various fields	1.41	1.17	Low
2.	I am aware of specific AI tools designed for use in school administration, such as automated grading systems or attendance trackers	2.31	0.85	Low
3.	I understand how AI can assist in streamlining administrative tasks, such as managing student records and scheduling resources	2.02	1.01	Low
4.	I have received training or attended seminars on the use of AI tools in educational administration	1.62	1.11	Low
5.	I am aware of how AI-powered predictive analytics can help improve decision-making in school administration	1.15	1.06	Low
6.	I know about AI systems that can automate repetitive tasks, such as tracking attendance or sending notifications to parents and staff	1.77	1.07	Low
7.	I am familiar with AI-driven tools that provide insights into student performance and help in academic planning	2.29	0.96	Low
8.	I believe AI tools can significantly enhance the efficiency and effectiveness of school administration	1.78	1.08	Low
	Overall Weighted average	**1.79**	**1.04**	Low

Source: Research Field Work, 2024
Key: SD = 1; D = 2; A= 3; SA =4

Decision Rule for Mean Rating ($\bar{x}$): 0 < $\bar{x}$ < 2.5 = *Low*; **2.5 ≤ $\bar{x}$ ≤ 4.0** = *High*
Statistical analysis in Table 1 reveals that the respondents agreed that the level of awareness of AI tools for effective administration of secondary schools is low. The average response of the item was close to the weighted average ($\bar{x}$ =1.79; SD = ± 1.04). Since the mean is less than 2.5, it implies that the level of awareness of AI tools for effective administration of secondary schools is low.

Research Question Two: What is the level of utilisation of AI tools for the effective administration of secondary schools?

Table 2: Level of utilisation of AI tools for effective administration of secondary schools

S/N	Items	x̄	SD	Remark
1.	My school actively uses Artificial Intelligence (AI) tools to enhance administrative processes	2.29	0.81	Low
2.	AI-powered attendance systems are utilised in my school to track student and staff attendance efficiently	2.07	0.72	Low
3.	Automated grading systems are employed in my school to reduce the workload of teachers and improve grading accuracy	1.23	1.82	Low
4.	The use of AI tools has significantly improved the efficiency of administrative processes in my school	1.14	1.80	Low
5.	Chatbots or AI-enabled communication systems are used in my school to handle inquiries and improve communication with parents and staff	1.24	1.73	Low
6.	My school uses AI tools to optimise resource allocation, such as scheduling classes and managing facilities	1.91	0.96	Low
7.	AI-driven security systems, such as facial recognition or automated surveillance, are implemented in my school	1.17	1.52	Low
8	Teachers and administrators in my school are trained to use AI tools effectively for administrative tasks	2.41	0.94	Low
	Weighted average x̄ = Σx̄ (I, II, III…).	**1.68**	**1.29**	**Agreed to low utilisation**

Source: Research Field Work, 2024
Key: SD = 1; D = 2; A= 3; SA =4

Decision Rule for Mean Rating (x̄): 0 < x̄ < 2.5 = *Low*; **2.5 ≤ x̄ ≤ 4.0** = *High*
Analysis of data in Table 2 reveals that the average response regarding the level of utilisation of AI tools for effectively administering secondary schools indicates a low agreement on their usage. The average rating from the respondents, ranging from 1.14 to 2.41, indicates the level of utilisation of AI tools for the effective administration of secondary schools. The weighted average is very low (x̄ = 1.68 <2.5), which suggests that the utilisation of AI tools for effective administration of secondary schools is low.

Research Question Three: What are the barriers to the adoption of AI tools for the effective administration of secondary schools?

Table 3: Barriers to the adoption of AI tools for the effective administration of secondary schools

S/N	Items	$\bar{x}$	SD	Remark
1.	Inadequate infrastructure (e.g., unreliable electricity and internet) is a significant barrier to the adoption of AI tools in my school.	3.21	0.84	High
2.	High costs of purchasing and maintaining AI tools hinder their use in secondary school administration	3.14	0.90	High
3.	Lack of training opportunities for teachers and administrators prevents the effective utilisation of AI tools	2.98	0.83	High
4.	Limited awareness of AI tools and their potential benefits is a major challenge to their adoption in schools	3.21	0.79	High
5.	Resistance to change and preference for traditional administrative methods hinder the adoption of AI tools in my school	3.07	0.95	High
6.	There is insufficient government support or policy to encourage the integration of AI tools in secondary schools	3.14	1.08	High
7	Fear of job displacement among administrative staff contributes to resistance to AI adoption in schools	2.00	1.04	Low
8	The lack of technical support or expertise in managing AI tools is a significant barrier in my school	2.14	1.08	Low
	Weighted average	**2.86**	**0.94**	Agreed on the barriers to adopting AI

Source: Research Field Work, 2024
Key: SD = 1; D = 2; A= 3; SA =4

Decision Rule for Mean Rating ($\bar{x}$): $0 < \bar{x} < 2.5$ = *Low*; $2.5 \leq \bar{x} \leq 4.0$ = *High*
Analysis of data in Table 3 indicates that the mean and standard deviation of the respondents suggest several barriers to adopting AI tools. They include inadequate infrastructure, high costs for purchasing and maintaining these tools, a lack of training opportunities, limited awareness, resistance to change, and insufficient government support. This result implies that barriers to the adoption of AI tools for the effective administration of secondary schools are high and numerous. A weighted average of 2.86, greater than 2.5 of the decision criteria, supported this claim.

Discussion

This study examined the level of awareness and utilisation of artificial intelligence (AI) tools in the administration of secondary schools within North-Central Nigeria. Findings from research question one indicated a generally low level of awareness regarding the application of AI tools for effective school administration. This outcome aligns with the observations of Olaniyi and Okereke (2020), who reported that while private school administrators tend to possess a basic understanding of AI, their public-

school counterparts—especially those in rural areas—demonstrate limited exposure to such technologies. Building on this, Adebayo and Ojo (2021) link the disparity to disparities in access to vital information and training resources. The observed low level of awareness could also be attributed to personal and sociocultural factors, including age differences, cultural norms, and limited AI literacy among public school administrators.

The result of research question two (2), again, revealed a generally low utilisation of AI tools for the effective administration of secondary schools. This conclusion is in collaboration with the findings of Afolabi (2022), who highlights that less than 20% of secondary schools in Nigeria use AI tools, primarily due to financial constraints and inadequate infrastructure. Public schools are particularly affected, with administrators relying heavily on manual processes. Despite these limitations, private schools, especially those in urban areas, are beginning to adopt AI solutions, albeit at a slow pace (Adebayo & Ojo, 2021; Muhammad-Jamiu & Muraina, 2023). Notably, public schools seem to be the most disadvantaged, frequently battling with outdated technology, limited funding, and inadequate ICT capabilities. Because of this, school administrators still make decisions using traditional techniques that restrict effectiveness, data accuracy, and responsiveness.

The findings from research question 3 indicate that, on average, the respondents believe there are several obstacles to using AI tools. They include poor infrastructure, high costs for buying and maintaining these tools, a lack of training options, limited knowledge about AI, resistance to change, and insufficient support from the government. This result is in line with the findings of Olaniyi and Okereke (2020) and Muraina (2018), who claimed that infrastructural challenges, such as unreliable electricity and limited internet access, are significant obstacles. Moreover, the high cost of AI tools makes them inaccessible to most public schools (Afolabi, 2022). Another significant barrier is the lack of training and technical expertise. Most school administrators and teachers are unfamiliar with how to implement and manage AI tools effectively.

Conclusion
The study highlights a significant gap in both awareness and utilisation of Artificial Intelligence (AI) tools among secondary school administrators in Nigeria, despite a wealth of literature underscoring AI's potential to enhance administrative effectiveness. Key barriers—such as inadequate infrastructure, insufficient training, financial limitations, and resistance to change—continue to hinder the widespread adoption of these technologies. Overcoming these

challenges is critical for unlocking the transformative benefits of AI and achieving more efficient and responsive school administration across the country.

Recommendations

The following recommendations were made based on the study's findings.

i) Counselling psychologists and educational stakeholders should organise workshops, seminars, and training programs for school administrators and teachers to enhance their technical knowledge and confidence in using AI tools.

ii) Introduce grants and subsidies for schools to purchase and maintain AI tools, especially in underprivileged and rural areas.

iii) Develop national policies that encourage the integration of AI in school administration, with clear guidelines on its implementation and evaluation.

iv) Ensure the provision of AI infrastructure to increase accessibility and effective use among school administrators.

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The Prevalence of Students' Guesswork in Multiple-Choice, Matching Items, and True-False Test Formats: Implications for Academic Performance in Tertiary Institutions in Tanzania

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Abstract
This study examines the prevalence of guessing impact on performance in multiple-choice (MC), matching items (MI), and true-false (TF) test forms among Tanzania's university students. Since educational tests increasingly rely on objective test forms, the impact of guessing on test scores and student performance is worth understanding. In a correlational research design, data were collected from 121 participants from various programs in three institutions of higher learning in the Dodoma region. Data were collected using questionnaires designed to quantify students' guessing behaviour and perceived effects on examination performance. Data analysis using the Statistical Package for the Social Sciences (SPSS) revealed that 76% of students indicated guessing during examinations, and only 24% said they never did. The analysis also uncovered a statistically significant weak negative correlation (rs = -0.281, p = 0.002) between students' confidence in guessing and their belief about its impact on examination marks. This means that students who are more confident in their guessing strategies are less likely to view guessing as detrimental to their performance. The findings also indicate that guessing can threaten the validity of test outcomes such that correct answers do not accurately represent students' actual knowledge. It therefore implies that in this research, instructors should employ tactics that minimise guesswork behaviours.

Keywords: *Guesswork, Multiple-Choice, Matching Items, True-False, Test Formats, Academic Performance, Tertiary Institutions*

Introduction
The study focuses on the use of multiple-choice (MC) matching items (MI) and True-False (TF) questions, which are viewed as objective response test items. Multiple-choice (MC) questions are a popular closed-ended format in educational environments (Brassil & Couch, 2019; Couch et al., 2018). True-False (TF) questions, by contrast, are a multiple-response format that maintains the question stem and response option framework of multiple-

choice (MC) questions (Couch et al., 2018). However, TF questions require students to respond to each option separately as true or false rather than selecting one of the correct options (Brassil & Couch, 2019; Golvardi Yazdi et al., 2021; Hubbard et al., 2017; Moballegh & Barati, 2012). Multiple-choice and true-false type is generally used in the evaluation of learning and are used to evaluate outcomes of knowledge, recollection, comprehension, and usage (Golvardi Yazdi et al., 2021; Moballegh & Barati, 2012; Soeharto et al., 2019). True-false and multiple-choice assessments are more probable in nature since good answers can occur by combining knowledge and educated guessing, while incorrect responses could be a result of unintentional error or deeply rooted delusions (Abu-Ghazalah et al., 2023; McKenna, 2019; Soho, 2020; Ubulom et al., 2012).

The detrimental nature of guessing in examinations is characterised by formulating opinions that lack sufficient bases, evidence, reasoning, and critical thinking (Agulyansky, 2024; Jonge, 2023; Guthrie, Zhang & Chen, 2020; Shafiyeva, 2021) as this practice poses a significant challenge, it directly affects students' ratings (Evanick, 2023; Soho, 2020). Students providing a correct response without knowledge of the content may result from guessing, partial knowledge, or a combination of both (Abu-Ghazalah et al., 2023; Golvardi Yazdi et al., 2021). An incorrect answer may be due to guessing, misinformation, or other factors unrelated to the intended construct, such as poor item design or human error (Soho, 2020). Students are unable to address specific questions within the final moments of a test and resort to providing random answers to the remaining questions to garner some correct responses (Evanick, 2023; Golvardi Yazdi et al., 2021; Soho, 2020). Furthermore, Yazdi et al. (2021) observed that students employ two strategies when guessing answers: blind guessing, where they randomly select an option in the hope that it is correct and informed guessing, where they use partial knowledge to arrive at an answer that they believe to be correct to some extent. Students can answer multiple-choice and true/false questions incorrectly, even if they possess some level of knowledge, and it is emphasised that the correct answer is not always a reflection of a good understanding (Jonge, 2023; Roediger & Marsh, 2005; Soho, 2020). Teachers need to design and administer educational tests, and in doing so, there is a necessity for strategies to minimise the influence of guessing on students' performance (Brassil & Couch, 2019; Couch et al., 2018).

Empirical evidence supports that guessing in true-false (TF) and multiple-choice (MC) matching items (MI) has been investigated extensively, with most scholars focusing on the tendency of students to guess while taking

these tests (Abu-Ghazalah et al., 2023; Akyol et al., 2022; Brassil & Couch, 2019; Maguya, 2022; McKenna, 2019). Therefore, the study examined the prevalence and impact of guessing on performance for multiple-choice (MC), matching items (MI), and true-false (TF) test items among students in higher education institutions in Tanzania.

Statement of the problem

Multiple-choice (MC), True-False (TF), and Matching Items (MI) are universally accepted as normal forms of objective-type questions utilised in the assessment of students at various levels of education. Such question formats are primarily designed to assess students' knowledge, comprehension, and, in some cases, application of concepts. These are normally preferred because of their efficiency, objective marking, and wide coverage of content. Still, despite their intended functions, a serious problem arose in the reality of using such test formats: many students tend to guess when filling out such questions, particularly where they do not have enough mastery or confidence concerning the topic of the question. Interestingly, guessing appears to be a reasonably effective strategy for the majority of students, enabling them to score passing or even high grades without necessarily demonstrating actual mastery of content. This phenomenon is raising serious questions about the validity and authenticity of test scores, as they may not necessarily reflect students' academic ability or learning outcomes. Therefore, the purpose of this study was to investigate the prevalence of guesswork among tertiary-level students in responding to multiple-choice, true-false, and matching item questions and to what degree guesswork affects their overall performance in the examination.

Literature Review

Literature suggests that various factors aside from item quality and random error have the ability to influence student test scores (Thorndike, 1971; 1991; Bloom et al., 1984; Bloom, 1956). One of the most famous factors is test-wiseness, the clever behaviour that enables students to respond correctly even without mastery of the tested content. Researchers define test-wiseness as the skill that allows students to select the correct answer to a test question even when they do not know the correct answer (Bailey et al., 2022; Chittooran, 2018; Evans, 2015). These researchers point out that adaptive behaviour encompasses strategies such as the recognition of distractors, observing frequent answer patterns, or using partial knowledge to rule out implausible options. Chittooran (2018), Cohen (2012), Nagy et al. (2019) and Roberson (2020) elaborate that the strategies are capable of increasing scores on multiple-choice tests but produce random error and decrease reliability. Other

studies link guessing strategies to inflated scores and increased measurement error (Lesage et al., 2013; Lindner et al., 2019; Royal & Stockdale, 2017; Soho, 2020). Studies show that scores from a student who got lucky and guessed his or her way to a high score are meaningless and invalid (Espinosa & Gardeazabal, 2010; Foley, 2016; Frey et al., 2005; Jensen et al., 2018; The University of Kansas, 2024). Other studies suggested that educated guesses are not illegal; however, students should have some knowledge of the content, which allows them to narrow their answer options to a few reasonable alternatives (Dodeen, 2009; Haladyna et al., 2002; Mountstevens, 2020; The University of Kansas, 2024; Wainer, 2011). According to Guo & Ercikan (2020), low engagement occurs when students exhibit rapid response behaviour, such as quickly guessing at answers or randomly or systematically selecting responses without expending effort to arrive at a correct response. Other studies have suggested that guessing my elevated scores compromises both the reliability and validity of test score use and interpretation, and affects the estimated performance (Guo & Ercikan, 2020; Svetina Valdivia et al., 2023; Wise, 2017).

The theoretical ground for this rationale lies in the Test-Taking Strategies Theory, as discussed by Crews (2010), Kashkouli et al. (2015), and TUNÇ and Şenel (2021). This theory claims that pupils employ cognitive devices like time control, elimination methods, and answer regulation to achieve optimal test performance irrespective of actual content information (Crews, 2010; Kashkouli et al., 2015; TUNÇ & Şenel, 2021). Theoretically, Test-taking strategies focus on students' use of many techniques during the test, such as guessing when not sure of the answers (Peng et al., 2014; Rice et al., 2011; TUNÇ & Şenel, 2021). Studies show that test-taking strategies are thought processes which help students perform better on exams, independent of content knowledge (Dodeen, 2015; Dodeen et al., 2014; Peng et al., 2014; TUNÇ & Şenel, 2021). As noted by Dodeen et al. (2014), some of the strategies incorporated are time management, survey questions, and handling hard or multiple-choice questions. Researchers have described the test as assessing students' advancement in academic endeavours (Adom et al., 2020; Murphy et al., 2023; Schustack & Friedman, 2005). From a broader point of view, scholars like Adom et al. (2020), Brodowicz (2024), Ketworrachai and Sappapan (2022), and Murphy et al. (2023) describe tests as an official testing tool used to measure and quantify the capacity of test-takers in educational settings. However, TUNÇ and Şenel (2021), Akbulut (2024), and Ketworrachai and Sappapan (2022) also mention that whenever non-content strategies exert considerable influence on scores, the assessment role of tests is undermined. Moreover, when students employ several different strategies

fitted to different items, their scores and the test's validity might be influenced (French et al., 2024; Lipnevich et al., 2023; TUNÇ & Şenel, 2021).

Furthermore, posited that test-taking strategies include students' application of information, techniques, and methods to address test questions, in combination with their cognitive abilities, to attain success in examinations. Lewandowski et al. (2013) add that test-taking strategies have increased students' examination scores. Peng et al. (2014) argue that using test-taking strategies can help prevent students with disabilities from falling behind their peers because they lack these strategies. Fakhil and Sawai (2021) add that using test-taking strategies does not necessarily indicate a student's deficiency in course competence. However, it provides an opportunity to arrive at the correct answer for certain types of questions where guessing is possible. Wise (2017) update that guessing behaviour provides fast responses that cannot be based on a meaningful effort to solve a given task. According to McFadden and Finney (2023) and Wise and Kuhfeld (2020, 2021), students reduce their performance throughout a test, even when their responses do not reflect rapid guessing behaviour. Other studies suggest that guessing behaviour is highly correlated across different sections of a test in MT, FT and MI and that the test takers who switch at some point in the test to faster response behaviour tend to maintain this type of behaviour until the end of the test (Abu-Ghazalah et al., 2023; Berman et al., 2020; Lindner et al., 2019; Wise & Kong, 2009). However, a key limitation of previous studies is the failure to consider how response patterns and question scores impact students' academic performance.

Research Methodology
The study used a correlational research design to explain the relationship between two or more variables without attempting to influence them (Fraenkel & Wallen, 2006). According to Fraenkel and Wallen (2006), correlation research designs use statistical tests to measure the degree of association between variables. The study was conducted in the Dodoma region of Tanzania, the country's capital city. The study's participants were certificate, diploma, and bachelor's degree students from the selected institutions enrolled in the business administration, local government, education, procurement, and tourism programs. Higher learning institutions and students were randomly selected. A total of 121 participants were randomly sampled to participate in the study.

The data were collected using an online questionnaire. The questionnaire measures frequency of guessing in MC and TF formats, reasons for guessing, and perceived impact on test performance. Responses were measured in terms of strongly disagree, disagree, agree, and strongly agree. The information collected was coded and loaded into statistical packages, i.e., version 25 of Statistical Package for the Social Sciences (SPSS), for analysis. Descriptive statistics were calculated to offer summaries of data, e.g., measures of frequencies and percentages, which provided general descriptions of respondent demographics and guess behaviour. To identify differences in average scores on MC/TF questions based on various levels of guessing frequency among students, the Kruskal-Wallis H Test was used. The Mann-Whitney U Test was also used to identify differences in average scores on MC/TF questions between male and female students. Spearman's Rank-Order Correlation coefficient was also employed to examine if there was a relationship between student confidence in guessing and the perception that guessing improves one's performance in exams.

Ethical consideration
The researcher followed the research ethics by first obtaining clearance letters from relevant authorities. Second, participants were assured of confidentiality during and after the data collection and analysis period. Thirdly, students' registration numbers and the institutions they belong to remain anonymous during data presentation and analysis.

Results and Discussions
The study results are presented on sub-themes that reflect the study objectives, which investigated the prevalence of guesswork among Tertiary students in responding to multiple-choice, true-false, and matching item questions, and the extent to which guesswork influences their overall examination performance.

Variables descriptions
The sample comprised 121 respondents, with a relatively balanced gender distribution: 54.5% were female (n = 66) and 45.5% were male (n = 55) (see Table 1). This demographic breakdown provides a solid foundation for interpreting subsequent findings. In terms of guessing behaviour, as presented in Table 2, a substantial majority of respondents (76%) reported that they had guessed on multiple-choice or true-false questions during their end-of-semester exams. In contrast, only 24% indicated that they had never guessed. Moreover, when examining the frequency with which students engaged in guessing, 29.8% reported that they always answered based on their knowledge, 21.5% almost always answered based on their knowledge,

30.6% occasionally guessed when unsure, and 18.2% frequently resorted to guessing. These results underscore the variability in test-taking strategies among students as detailed in Tables 1 and 2.

Table 1: Demographics

Gender	Frequency	Percent (%)
Female	66	54.5
Male	55	45.5
Total	121	100

Prevalence of guesswork among Tertiary students in responding to objective questions

The tendency for tertiary students to guess when answering objective questions is widely recognised across all educational levels. The study revealed that students in higher education often resort to guessing on objective tests when they lack certainty about the correct answer, as summarised in Table 2.

Table 2: Guessing Behaviour

	Category	Frequency	Percent
Have you ever guessed on multiple-choice or true-false questions?	No	29	24
	Yes	92	76
How frequently do you guess answers?	Always answer based on knowledge	36	29.8
	Almost always answer based on knowledge	26	21.5
	Occasionally guess	37	30.6
	Frequently guess	22	18.2

Academic performance and the perceived impact of guessing on examination scores are summarised in Table 3. The findings indicate that (55.4%) of respondents achieved scores above 10/20%, while 34.7% scored between 5 and 10/20%, 8.3% obtained a perfect score of 20/20%, and only 1.7% scored below 5/20%. Notably, when asked whether guessing affects exam scores, 52.1% of respondents agreed and 18.2% strongly agreed, suggesting that over 70% of students perceive guessing as having a negative impact on their performance, as detailed in Table 3. These findings are consistent with the work of Rios et al. (2022), who conducted a meta-analysis on rapid guessing in low-stakes cognitive assessments and found that an average of 28.3% of examinees engaged in rapid guessing, negatively distorting aggregated test scores by 0.13 standard deviations.

Table 3: Performance and Scores

	Category	Frequency	Per cent
What is your average score in multiple-choice or True-False Questions?	Below 5/20%	2	1.7
	Between 5–10/20%	42	34.7
	Above 10/20%	67	55.4
	20/20%	10	8.3
Guessing affects exam scores	Strongly Disagree	8	6.6
	Disagree	28	23.1
	Agree	63	52.1
	Strongly Agree	22	18.2

On the other hand, the respondents were asked about their confidence levels when guessing. The result indicates that (40.5%) of respondents reported having no confidence in their guesses, 33.1% indicated having little confidence, and 25.6% expressed some confidence; only 0.8% felt quite confident. These findings point to a general lack of assurance in the outcomes of their guessing strategies as detailed in Table 4. These results are in line with Kleman (2020), who found that students often lack confidence in their guesses, with a majority reporting little to no confidence.

Table 4: Confidence Levels

	Category	Frequency	Per cent
How confident do you feel when guessing?	No confidence	49	40.5
	A little confidence	40	33.1
	Some confidence	31	25.6
	Quite confident	1	0.8

Likewise, the perception of respondents regarding guessing was measured as detailed in Table 5. The results show that the majority of respondents (67.8%) agreed that guessing can sometimes lead to correct answers, with an additional 11.6% strongly agreeing. In contrast, opinions on whether guessing is a sign of poor preparation were more varied, with 35.5% agreeing, 33.9% disagreeing, and 19.0% strongly disagreeing. This divergence suggests that while many students acknowledge a potential benefit of guessing under certain conditions, they remain divided on its implications for overall preparedness. As described by Betts et al. (2009), students scored higher and left fewer questions unanswered when there was no correction for guessing.

Table 5: Perceptions of Guessing

	Category	Frequency	Per cent
Guessing can sometimes lead to correct answers	Strongly Disagree	9	7.4
	Disagree	16	13.2
	Agree	82	67.8
	Strongly Agree	14	11.6
Guessing is a sign of poor preparation	Strongly Disagree	23	19
	Disagree	41	33.9
	Agree	43	35.5
	Strongly Agree	14	11.6

The study went further to measure the external factors influencing guessing behaviour among students, as summarised in Table 6. The results reveal that question difficulty plays a significant role, with 51.2% of respondents agreeing and 24.8% strongly agreeing that it influences their decision to guess. Similarly, time shortage was noted as a factor by 38.0% of respondents, with an additional 10.7% strongly agreeing. However, perceptions about the clarity of examination instructions were mixed; only 36.4% agreed that clear instruction reduces the need for guessing, while 41.3% disagreed and 14.9% strongly disagreed, indicating that the effectiveness of examination instructions in mitigating guessing may be inconsistent. These findings concur with Bansilal et al. (2019), who found that difficulty questions significantly impact guessing, with students more likely to guess on harder items.

Table 6: External Factors Influencing Guessing

	Category	Frequency	Per cent
Question difficulty influences guessing	Strongly Disagree	10	8.3
	Disagree	19	15.7
	Agree	62	51.2
	Strongly Agree	30	24.8
Time shortage influences guessing	Strongly Disagree	17	14
	Disagree	45	37.2
	Agree	46	38
	Strongly Agree	13	10.7
Instructions reduce the need for guessing	Strongly Disagree	18	14.9
	Disagree	50	41.3
	Agree	44	36.4
	Strongly Agree	9	7.4

Lastly, beliefs about guessing were measured, and the results indicate that the majority of respondents (76.0%) do not believe that guessing is an important skill in their field of study, with only 24.0% affirming its importance. However, the overall descriptive statistics provide a comprehensive overview of the sample's characteristics, guessing behaviours, performance outcomes, confidence levels, and perceptions regarding guessing. The findings show that while guessing is a prevalent test-taking strategy among students, there is considerable variation in the frequency of guessing and the associated confidence levels. Additionally, external factors such as question difficulty and time constraints appear to exert a significant influence on guessing behaviour, even though clear instructions do not consistently mitigate this tendency. These insights form the groundwork for subsequent inferential analyses aimed at exploring the relationships among these variables and their implications for educational assessment practices, as detailed in Table 7. These findings are contrary to Fraidan (2024), who found that guessing strategies differ based on language proficiency, with higher-proficiency students employing educated guessing using linguistic insights, while lower-proficiency students rely on simpler heuristics.

Table 7: Beliefs about Guessing

	Category	Frequency	Per cent
Do you believe that guessing is an important skill?	No	92	76
	Yes	29	24

Association between Gender and Guessing Behaviour

The study examined whether gender is associated with students' likelihood of guessing on multiple-choice or true-false exam questions; a chi-square test of independence was conducted. The crosstabulation results (see Table 8) show that among the 66 female respondents, 52 (78.8%) reported having guessed on an examination, while 14 (21.2%) indicated they had never guessed. Among the 55 male respondents, 40 (72.7%) reported having guessed, while 15 (27.3%) had not.

Table 8: Crosstabulation of gender and guessing behaviour

Gender	Have You Ever Guessed? (No)	Have You Ever Guessed? (Yes)	Total
Female	14 (21.2%)	52 (78.8%)	66
Male	15 (27.3%)	40 (72.7%)	55
Total	29 (24.0%)	92 (76.0%)	121

The chi-square test results (see Table 9) indicate that the relationship between gender and guessing behaviour was not statistically significant, $\chi^2(1, N =$

121) = 0.605, p = 0.437. Fisher's Exact Test (p = 0.523) and the likelihood ratio (p = 0.438) similarly suggest no significant association between these variables. Cramér's V and Phi coefficient values (both = 0.071, p = 0.437) indicate a very weak relationship between gender and guessing behaviour.

These results suggest that gender does not significantly influence whether a student engages in guessing on multiple-choice or true-false examination questions. Both male and female students report similar tendencies toward guessing, implying that other factors, such as test-taking strategies, examination difficulty, or time constraints, may play an important role in influencing guessing behaviour. Contrary to Fraidan (2024), who found gender differences in guessing behaviour where female students demonstrated more cautious approaches compared to the impulsive strategies of male students.

Table 9: Chi-Square Test Results

Test	Value	df	Sig. (p-value)
Pearson Chi-Square	0.605	1	0.437
Continuity Correction	0.318	1	0.573
Likelihood Ratio	0.603	1	0.438
Fisher's Exact Test	-	-	0.523
Cramér's V	.071	-	0.437

Comparison of Average Multiple-Choice and True-False Exam Scores by Sex

A Mann-Whitney U test was conducted to determine whether there were differences in average scores on multiple-choice or true-false (MC/TF) questions during end-semester exams between male and female students, based on a sample of 121 participants from higher learning institutions in Tanzania (66 females, 55 males). The results indicated that males had a higher mean rank (64.66) compared to females (57.95), with a Mann-Whitney U statistic of 1613.50 and a Wilcoxon W statistic of 3824.50. The test yielded a z-score of -1.182 and a two-tailed asymptotic significance of *p* = .237. This *p*-value exceeds the conventional alpha level of .05, indicating no statistically significant difference in average MC/TF scores between male and female students. The nonsignificance here means that sex does not make a significant impact on performance in these types of questions, so guessing behaviour, preparation, or test-taking style might have an equally influential impact on performance by gender. The finding is in line with the evidence suggesting external variables like difficulty of questions or time given can overpower demographic variability in MC/TF exam performance (Yazdi et al., 2021). However, the ordinal nature of the score data (e.g., "Below 5/20%," "Above 10/20%") and limited sample size might limit the test power

in detecting weak differences, making additional exploration worthwhile using more variables or a larger sample.

Association between Guessing Frequency and Confidence in Multiple-Choice and True-False End-of-Semester Examinations

A Spearman's rank-order correlation was conducted to establish the correlation between the frequency at which students guess on multiple-choice or true-false (MC/TF) questions on end-of-semester examinations and their level of confidence in their guesses using a sample of 121 students from Tanzania's institutions of higher learning. Based on Table 10, the analysis yielded a correlation coefficient of rs = 0.050 and a two-tailed significance value of p = 0.585. This result indicates a very weak positive correlation between frequency of guessing and confidence, which is not statistically significant at the conventional alpha level of.05. Thus, there is no evidence of a significant monotonic relationship between the frequency of guessing by students and their confidence in guessing, suggesting that these two variables do not systematically co-vary. This lack of correlation implies that students' guess options can be driven by motivations other than confidence, e.g., external pressures like time or question difficulty, as indicated in prior work (Yazdi et al., 2021). For instance, some students will guess more frequently under strategic choice or situational pressure than in confidence of accuracy in their guesses. In contrast, others will access knowledge independently of confidence levels. This finding aligns with the test-taking strategies theory (Dodeen, 2015), favouring diverse determinants of guessing behaviour over confidence, such as risk tolerance or familiarity with exam formats. The absence of a strong correlation indicates the necessity of further exploration of variables, including perceived difficulty or preparation, that can better explain guessing actions in this context.

Table 10: Spearman's Rank-Order Correlation between Guessing Frequency and Confidence

	How Confident Do You Feel?
How Frequently Do You Guess?	0.050
Sig. (2-tailed)	0.585
N	121

Relationship between Confidence in Guessing and Perceived Impact on Multiple-Choice and True-False Examination Scores

Spearman's rank-order correlation was conducted to examine whether or not the confidence of students in guessing on multiple-choice or true-false (MC/TF) questions is related to whether or not they think guessing affects their scores on these examinations, based on a sample of 121 students from Tanzanian tertiary learning institutions. The results exhibited a statistically

significant, weak negative correlation, rs = -0.281, p = 0.002 (two-tailed), which implies that when belief in guessing increases, the belief that guessing influences exam scores diminishes, and vice versa. This suggests that more confident guessers, perhaps due to test-taking technique or some acquaintance, are less likely to see guessing as something that will harm their performance, whereas less confident guessers may see it as a risk to their grades. The significance at the 0.01 level ($p < 0.01$) confirms the reliability of this relationship within the sample. However, the weak strength of the correlation (rs = -0.281) implies that other factors, such as question difficulty or preparation, may also influence perceptions of guessing's impact. This finding aligns with test-taking strategies theory (Dodeen, 2015), which posits that cognitive skills like confidence in guessing can shape students' exam experiences, and supports prior research noting the distinction between informed and blind guessing (Yazdi et al., 2021). However, the ordinal nature of the data limits causal inferences, and further multivariate analyses, such as regression, could clarify the broader context of these perceptions.

Differences in Multiple-Choice and True-False Exam Scores by Guessing Frequency
A Kruskal-Wallis H test was conducted to assess whether average scores on multiple-choice or true-false (MC/TF) questions during end-semester exams differed across four levels of guessing frequency among 121 students from higher learning institutions in Tanzania. The groups were defined by responses to "How frequently do you guess the answers in multiple-choice or true-false questions during an end-of-semester exam?": "I always answer based on my knowledge" (n = 36), "I almost always answer based on my knowledge" (n = 26), "I guess occasionally, when I am not sure of the answer" (n = 37), and "I frequently guess when I don't know the answer" (n = 22). The results revealed mean ranks of 75.79, 62.10, 51.05, and 52.23, respectively, with a Kruskal-Wallis H statistic of 13.682, *df* = 3, and an asymptotic significance of *p* = .003. This *p*-value, significant at the .05 level, indicates a statistically significant difference in average MC/TF scores across the guessing frequency groups. Specifically, students who "always answer based on knowledge" had the highest mean rank (75.79), suggesting better performance, while those who guess more often (e.g., "occasionally" or "frequently") had lower ranks (51.05 and 52.23), implying lower scores. This finding suggests that reliance on knowledge rather than guessing is associated with higher MC/TF performance, aligning with research indicating that guessing introduces random error and reduces score reliability (Soho, 2020). However, the similar mean ranks between "occasional" and "frequent" guessers suggest that the extent of guessing may not linearly degrade

performance beyond a certain point, possibly due to informed guessing strategies (Yazdi et al., 2021). Post-hoc pairwise comparisons could further clarify which specific group differences drive this effect.

Table 11: Mean Ranks and Kruskal-Wallis Test Statistics for Average Multiple-Choice and True-False Exam Scores by Guessing Frequency

Guessing Frequency	*N*	Mean Rank
I always answer based on my knowledge	36	75.79
I almost always answer based on my knowledge	26	62.10
I guess occasionally, when I am not sure of the answer	37	51.05
I frequently guess when I don't know the answer	22	52.23
Test Statistics		
Kruskal-Wallis *H*		13.682
df		3
p		.003

Note. N = 121.

The grouping variable is "How frequently do you guess the answers in multiple-choice or true-false questions during an end-semester exam?" *p* represents the asymptotic significance (2-tailed).

Conclusion

This study examined the prevalence and impact of guessing behaviour on students' academic performance in multiple-choice (MC), matching items (MI), and true-false (TF) examinations among higher learning institutions in Dodoma, Tanzania. The findings show the complexities of guessing strategies used by students and their subsequent effect on test performance. As detailed in the findings, the majority of students 76%, admit to having guessed on MC or TF questions at some point. This finding aligns with previous research showing the prevalence of guesswork in assessments, which can distort the true representation of a student's knowledge and competence. Although the correlation analysis indicated a very weak relationship between guessing frequency and the confidence students reported in their answers, external factors such as time pressure, question difficulty, and inadequate preparation may drive guessing behaviour more than self-perceived confidence contributes to that guessing. On the other hand, the Kruskal-Walli's test demonstrated statistically significant differences in average MC/TF scores among different guessing frequency groups showing that students who consistently answered questions based on knowledge outperformed those who relied on guessing, Interestingly, the analysis suggests that the impact of guessing on performance may not always

be linear; informed guessing strategies can moderate the adverse effects associated with random guessing.

Recommendations

The study recommends that educators design assessments that minimise ambiguity, incorporating a mix of question formats that require critical thinking. Lecturers should offer test preparation workshops to help students develop effective test-taking strategies. Additionally, educators should incorporate formative assessments alongside summative evaluations to enhance student understanding and reduce the reliance on guessing. Finally, higher education management should organise workshops for educators aimed at improving their ability to create high-quality and well-structured test items, which can significantly boost educational outcomes in institutions and increase students' confidence in their knowledge.

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Learning Environment for Visually Impaired Learners in Selected Inclusive Primary Schools in Tanzania

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Abstract
The study examined the learning environment for visually impaired (VI) learners in inclusive primary schools in Tanzania. The study employed a mixed-methods research approach and a concurrent mixed-methods design. The study involved a sample of 192 participants. Data were collected through questionnaires, interviews, focus group discussions and observations for triangulation and complementarity purposes. With the aid of SPSS version 26, quantitative data were analysed by using descriptive statistics (presented in the form of tables) and inferential statistics by using the Mann-Whitney U Test. Qualitative data were thematically analysed using MaxQDA 24 and presented through explanations and direct quotations. Findings suggest that the learning environment for VI learners in Tanzania is relatively poor. It is recommended that the Government should collaborate with education stakeholders such as non-governmental organisations, development partners, and civil society organisations to ensure the availability of resources and training of teachers on inclusive pedagogical practices in primary schools.

Keywords: *Inclusive education, VI learners, special schools, visual impairment*

Introduction

Tanzania is one of the countries that have practically complied with the international and national Education for All (EFA) policies stipulated by the Salamanca Statement and Framework for Action of 1994 by establishing inclusive schools in addition to special schools for individuals with disabilities. For instance, in 1998, Tanzania adopted the Salamanca Statement as a guide towards the establishment of an inclusive education system (Tungaraza, 2012). Initially, the educational approach to individuals with disabilities was the establishment of special schools for them. Recently, the special schools' approach has been challenged for its discriminatory nature

and failure to prepare learners with disabilities for community life (socialisation) after school (Bucholz & Sheffler, 2009). In this regard, an inclusive school's approach has been adopted as the best option to make people with disabilities feel accepted and improve their self-esteem (Katz & Mirenda, 2002).

UNESCO (2020) defines inclusive education as a system or practice of securing and guaranteeing the right of all children to access, presence, participation, and success in their local regular school. With this view of inclusive education, UNESCO calls upon neighbourhood schools to build their capacity to eliminate barriers to access, presence, participation, and achievement to be able to provide excellent educational experiences and outcomes for all children and young people (UNESCO, 2020). Inclusive education calls for transforming the existing school systems to suit learners with diverse needs while eliminating all forms of barriers and discrimination. Essentially, the transformation of policies, legislations, regulations, processes, structures, infrastructure, practices, and human resources is involved in the inclusive education approach to accommodate all learners to learn together wherever possible, regardless of their difficulties or differences.

According to UNESCO (2015), an inclusive environment is tailored to welcome, nurture, and educate all learners regardless of their gender, physical, intellectual, social, emotional, linguistic or any other characteristic. Similarly, the National Council for Special Education stipulates that accessible transport, buildings, materials, equipment, facilities, and activities must facilitate a welcoming and inclusive environment (NCSE, 2011). Learning environment is one of the crucial factors that influences the effectiveness and efficiency of children's learning. The classroom environment has the potential to either improve or impede students' ability to learn and feel safe and comfortable as members of the class (Bucholz & Sheffler, 2009). Research has shown that the environment around the learner is one of the barriers to the presence, participation, and learning for children with disabilities (Sharma & Samia, 2018). The nature and conditions of students usually determine the type of learning environment to be created. VI learners require a relatively different learning environment from the sighted ones. Bernas-Pierce and Miller (2005) note that each child with a visual impairment can learn differently and require teaching strategies, activities, and environments that support and encourage developmental progress. For instance, while at a glance, sighted learners learn by seeing colours, shapes, sizes, distances, facial expressions, and gestures; VI learners depend on touching and hearing to learn. A sighted child can learn several concepts in a

few seconds, but VI learners must be taught each concept specifically and individually to understand it (Bernas-Pierce & Miller, 2005).

The Context of the Study

Tanzania has consecutively developed three National Strategies for Inclusive Education (NSIE), and the most recent is that of 2021/2022-2025/2026, which builds on the achievements of the previous strategies, namely the 2009-2017 and 2018-2021. The 2021/2022-2025/2026 strategy, according to MoEST (2021), addresses explicitly five main issues that were identified as challenges in the NSIE 2018-2021. Such issues include ensuring that there is:

i)   explicitly inclusive supportive education policy, legislation, and guidelines
ii) inclusive education culture and practice, staff competencies, support mechanisms, accessibility, internal evaluation, and external quality assurance
iii) coordinated planning, collaboration, implementation, monitoring, and evaluation of inclusive education plans
iv) identification and intervention, protection, continuity of learning, participation and development support, counselling, and guidance, and
v)   proper human and material resources allocation and a supportive learning infrastructure.

Despite the Government's efforts to establish inclusive primary schools, much is still unknown as to whether the general physical and classroom environments of the inclusive schools have been designed to meet the educational demands of the diverse types of learners, particularly the VI learners. Similarly, a study by Moberg et al. (2019) on the attitude of teachers towards inclusive education in Finland and Japan suggests more research that investigates how inclusive education developments are understood and carried out in different settings. Based on this background, this study examined the learning environment for VI learners in inclusive primary schools in Tanzania. Since much is still unknown about inclusive education in Tanzania, this exploratory research examined the learning environment for students with visual impairment in detail.

Research Questions

The general purpose of this study was to examine the learning environment for VI learners in inclusive schools in Tanzania. Specifically, the study was guided by two research questions, namely:

i)   How does the general physical environment support learning of VI learners in inclusive schools?
ii) How does the classroom environment support teaching and learning of VI learners in inclusive schools?

Methodology
This section presents the research approach, design, participants, sampling techniques, data collection methods and data analysis procedures employed in this study. The ethical adherence of the research is also described in this section.

Research Approach
This study used a mixed-methods research approach in which qualitative and quantitative approaches were used for data collection, analysis, and presentation of findings. Leech and Onwuegbuzie (2009) point out that mixed methods research involves collecting, analysing, and interpreting quantitative and qualitative data in a single study or a series of studies investigating the same underlying phenomenon. Adopting a mixed methods research approach is based on the combination of qualitative and quantitative research approaches, providing a better understanding of a research problem or issue than either research approach alone (Creswell & Clark, 2024; Johnson & Christensen, 2020). According to Yin (2006), integrating quantitative and qualitative methods can occur at different stages in the research process, from the study conceptualisation to setting research questions, to data collection and analysis, and interpretation of the study findings. In that regard, a mixed-methods research approach was used to complement and triangulate the results. That is, comparing quantitative and qualitative research results, using qualitative research to help explain quantitative findings and augmenting quantitative data with qualitative data. Thus, using a mixed-methods approach helped gain deeper insights about the learning environment for learners with visual impairment in inclusive primary schools in Tanzania.

Research Design
Studies that employ mixed methods research approaches usually vary in terms of the way data are collected, analysed, and presented to show how qualitative and quantitative results complement each other and respond to the research objectives. This study employed a concurrent mixed methods research design, whereby both qualitative and quantitative data were collected simultaneously (Creswell & Creswell, 2023). The advantage of using this design is that it saves time because it allows the researcher to collect both qualitative and quantitative data quickly. For example, Likert scale items were combined with open-ended questions within one questionnaire.

Study Participants
This study was conducted in public primary schools with VI learners in four regions of the Tanzania Mainland. The regions were purposively selected

based on the presence of both inclusive primary schools. The regions included Tanga, Dodoma, Iringa, and Tabora. A total of 192 research participants were involved in the study, as indicated in Table 1.

Table 1: The Number of Research Participants by Region

Regions	Schools	Ward Education Officers	Parents or Guardians	SL	VIL	Teachers	Heads of school	Total
Dodoma	3	2	3	10	8	18	3	**47**
Iringa	3	3	3	10	9	18	3	**49**
Tabora	3	3	3	10	6	18	3	**45**
Tanga	3	2	3	10	12	18	3	**51**
Total	**12**	**9**	**12**	**40**	**35**	**72**	**12**	**192**

Note: SL (Sighted learners) and VIL (VI learners)

Sampling Techniques
The participants of this study were sampled by convenience sampling, purposive sampling, and simple random sampling techniques. Purposive sampling was used to select heads of school, parents/guardians, Ward education officers, and learners with visual impairment. Simple random sampling techniques were used to select teachers and sighted learners. Three inclusive schools were purposively selected from each of the selected regions. Therefore, schools with visually-impaired learners at the time the study was conducted were included in the sample.

Data Collection Methods
Data for this study were collected using three main methods: survey, interview and focus group discussions. Each of these methods is further described in the subsequent sections.

Survey
The questionnaire consisted of a four-point Likert Scale (bad =1, not sure =2, average =3, and good =4) and open-ended questions. The questionnaire was used to collect data from teachers and students. Before the questionnaire was administered to the target sample, it was piloted on a similar sample. Piloting the questionnaire, among other things, was to help see the relevance of the data collection tool and the clarity of the questionnaire items. Additionally, piloting helped to sequence questions and ensure a common interpretation of questions by respondents (Ruel et al., 2016). After piloting, the questionnaires were revised and administered to the target research participants. A total of 72 teachers responded to the questionnaire.

Interview

Interviews were conducted using interview guides. One-to-one semi-structured interviews were conducted with 76 participants, including 27 pupils (15 sighted and 12 VI learners), 9 Ward Education Officers (WEOs), 16 teachers, 12 head teachers, and 12 parents. It should also be noted that a few of the teachers who filled in questionnaires were selected for interviews. The average duration of an interview was about 30 minutes.

Focus Group Discussions

A guide for collecting data during the focus group discussions (FGDs) was developed. Learners who did not participate in interviews were involved in focus group discussions. A total of 25 sighted and 23 VI learners were involved in FGDs. The focus groups were formed by combining sighted and VI learners from the same class. Each focus group discussion was composed of 5 to 6 members. The focus group discussions lasted between 50 and 60 minutes.

Data Analysis

Data collected through questionnaires, interviews, and focus group discussions were analysed and presented in various ways. In terms of qualitative data, the audio-recorded interviews were transcribed verbatim and analysed thematically using MaxQDA 24. A thematic analysis was conducted to gather information related to the research objectives. The researchers first read and re-read the transcribed data to familiarise themselves with the collected data. Through this process, researchers were able to generate codes for emerging themes such as 'physical environment support' and 'classroom environment support'. The themes were further refined to suit the research questions. Qualitative data were presented through explanations and transcribed quotations from participants. Quantitative data were sorted out, coded, and finally analysed using SPSS 26. Quantitative results were presented through charts, tables, graphs, and explanations. Descriptive and inferential statistics were used for presentation and analysis of quantitative data.

Ethical Consideration

The researchers adhered to the research ethical principles by protecting the rights and freedom of the participants and ensuring confidentiality of the information provided and participants' identities. The four regions were anonymised using Arabic numbers 1 to 4, and the twelve schools were pseudo-named using letters A to L. The participants were informed in advance about the purpose of the study. They were assured of the confidentiality of the information they provided and that the information would be used solely for this study. The involvement of children with and

without visual impairments in the study was preceded by prior communication with parents or guardians who signed a consent form to show their willingness to allow their children to participate in the study.

Results
This study assessed the learning environment for learners with visual impairment in inclusive schools. Specific focus was on assessing and observing physical infrastructure and the nature of the classroom environment necessary for supporting the learning and social welfare of learners with visual impairment.

General Physical Environment and Support for VI Learners
The first research question assessed how the general physical environment supported teaching and learning of VI learners in inclusive schools. Special focus was on how the learning environment could diversely influence the effective learning of VI learners. This section reports views from VI learners, sighted learners, teachers, heads of school, Ward education officers, and parents. Quantitative and qualitative results have been presented together for complementarity and triangulation purposes. For qualitative results, only representative quotations have been used to illustrate a given theme.

VI Learners' Perceptions of General Physical Environment
Through interviews and focus group discussions, VI learners were requested to give their opinions regarding the learning environment in their schools. The majority of VI learners in primary schools believed that the physical learning environment was good. The following narrations from some VI learners from primary schools support this view:

> … I am satisfied with the physical learning environment because I love the school, the compound has places where you can sit and study well … and all other services, such as dormitories and food, are good. (Interview, VI learner in School F).
> … In my view, despite the presence of some challenges, the school environment is friendly. We are taught well. Similarly, teachers show great love to us. They help us when in need. (Interview, VI learner in School C).

However, some VI learners were unsatisfied with the physical learning environment. The interviewed VI learners showed dissatisfaction with the school environment in which they lived and studied. Some of the VI learners were dissatisfied with the physical conditions of the school. For example, they were uncomfortable with rough pathways, the absence of school fences, unhygienic toilets, and long distances from the hostels to the classrooms. The following quotes from some primary school students recorded during interviews provide evidence of the dissatisfaction:

… The roads here have holes all over. Larger areas of the school have trees and stones scattered everywhere. It is a problem. To get lost is a common phenomenon. The dormitories are also located far from the classrooms. This distance limits our freedom to do things in a hurry. (Interview, VI learner in School A)

… The environment is bad, and the roads are unfriendly because we have difficulty accessing classrooms, hostels, and toilets. (Interview, VI learner in School F)

… My former primary school was specifically designed for VI learners. I didn't use the walking stick. However, here I am forced to use it because the environment is not friendly. Without the walking stick, I will likely fall into the ditches and get hurt. (Interview, VI learner in School H)
…There are some challenges in our school. …For instance, we don't have adequate learning resources such as books written in braille format and audiotapes. (Interview, VI learner in School D).

… Some of our teachers are not skilled enough to teach in inclusive classrooms. For example, during teaching, they use diagrams or pictures, and sometimes we can hear our fellows laughing at the picture, but because we cannot see it, we cannot join the laughter, and the teacher does not explain what the picture is about. As a result, we are often left behind and our performance is not very good … (Interview, VI in School A)

The differences in how visually impaired students view the school environment may be due to the variations in the nature of their schools in terms of their leadership, location of the school, history of the school, and age of the school, to mention a few. The explanations from the learners with visual impairment regarding their dissatisfaction with the general physical environment indicate that there are pertinent issues that need to be addressed in inclusive primary schools, including improvement of support infrastructure, provision of adequate teaching and learning and training of teachers on special needs pedagogies.

Sighted Learners' Perceptions of General Physical Environment
During interviews and focus group discussions, sighted learners were also asked to describe the general physical environment in their schools and how it affected their peers with visual impairment. Although few sighted learners had no clear understanding of how the general physical environment affected visually impaired students, most of them could state the situation of their schools and how VI learners were affected by such a physical environment. The general impression from many sighted learners was that their schools had an unfriendly general physical environment for learners with visual impairment. This is evident from the testimonies provided by sighted learners:

> … Some classrooms and dormitories in our school have worn-out floors with
> holes, which are dangerous for the visually impaired pupils …. In addition,
> the toilets, which are meant for the visually impaired pupils, are not well
> cleaned…. (FGD, Sighted Learner in school B).

A school student narrated a story of his visually impaired friend who
complained about the behaviour of teachers:

> … I have a Form I visually impaired friend who kept complaining about
> some of their teachers …. He complained that some teachers do not know
> how to teach visually impaired students. They speak in a low voice when
> they teach or demonstrate something, and when they write, they assume all
> students can see what they are writing …. (FGD, Sighted Leaner in School
> A).

The two narratives from sighted learners imply that sighted learners
understand the suffering of their visually impaired peers, and they feel
uncomfortable about such a physical learning environment. From such a
situation, it can be argued that all learners in inclusive classrooms, regardless
of their conditions, are psychologically affected when some of their peers
face challenges. Therefore, creating a friendly physical learning environment
for learners with disabilities in inclusive classrooms is also psychologically
rewarding for learners without disabilities.

Teachers' Perceptions of General Physical Environment

The teachers in the selected inclusive schools were asked about their
perceptions regarding the physical learning environment and how it
supported learning for VI learners. The results are summarised in Table 2.

Table 2: Teachers' Perceptions on General Physical Environment Support for VI Learners

S.N	Statements	Level of Agreement in Percent		
		Disagree	Not Sure	Agree
1.	VI learners can learn well in inclusive classrooms	25	75	
2.	VI learners learn well in special schools	12	6	82
3.	VI learners can easily move around within the school compound	11	9	80
4.	School infrastructure has been designed to cater for the needs of VI learners	69	10	21

The teachers who responded to the general physical environment also had
varied perceptions. The quantitative data collected from teachers indicated
that none agreed that VI learners can learn well in inclusive primary schools.
It was also noted that most teachers perceived that VI learners learn well in
special schools. Moreover, in terms of the design of infrastructure in schools,

although the majority of teachers perceived the school's general physical environment as suitable for VI learners, many teachers disagreed on whether the infrastructure was designed for VI learners. Survey results were also supported by explanations provided by some teachers during interviews, as follows:

> … I don't know the situation in other schools, but the learning environment for VI learners in our school is good. Though the school was not initially meant for inclusive education, several modifications have been made to accommodate VI learners. (Interview, Teacher from School B).

> … The physical learning environment is friendly for VI learners. The stairs leading to the classrooms are easily passable. The Government is bringing the necessary learning materials for VI learners. So, the physical learning environment is satisfactory. (Interview, Teacher from School D).

> … In my view, the physical learning environment for VI learners in our school allows them to learn better, like their peers. … I think there is no serious problem. For example, in the dormitories, there are friendly staircases for VI learners (Interview, Teacher from School G).

However, according to researchers' observation, most of the visited inclusive schools had an unfriendly physical learning environment, and some of them were exceptionally critical. What was learnt from some teachers is that they knew their schools' weaknesses, but feared making negative remarks because they thought they were jeopardising their employment.

Apart from teachers who had a positive view of the physical learning environment, some teachers (11%) perceived the physical learning environment for VI learners as unfriendly. The dissatisfaction with the physical learning environment was also revealed during interviews with teachers, and the following remarks were made:

> … There are challenges about the physical learning environment of the visually impaired students in our schools. There are holes on the roads. Also, during the rainy season, this area is very slippery. (Interview, Teacher from School E).

> … All I can say is that the physical learning environment is not friendly. We don't have books that are specifically tailored for VI learners. Some teachers lack the pedagogical skills to deal with VI learners. (Interview, Teacher from School K)

The teachers' remarks indicated that there was still much to be done to improve the physical learning environment in inclusive schools to support effective learning for VI learners.

Head Teachers' Perception of the General Physical Environment

The heads of school also provided their views regarding the suitability of the learning environment for visually impaired children. Sixteen out of 20 (80%) of the interviewed heads of school were not satisfied with the physical learning environment for VI learners. One of the head teachers in Iringa made the following comments regarding the school environment:

> …The physical learning environment is not very friendly for inclusive education. The students with visual impairment are accommodated within the school, but the bedding materials, especially the mattresses and beds, are of poor quality. On the side of classrooms, the classrooms are well built and have good toilets specifically designed for them. However, the pathways are not well designed for children with disabilities. I think more must be done on creating a suitable learning environment. (Interview, Head of School D).

Another head of school added:
> … To a larger extent, the physical learning environment is not good. The school infrastructure needs repair to accommodate visually impaired students. Pathways are bad, and toilets have problems. In terms of the classrooms, there is no problem. Visually impaired students use the ground floor. (Interview, Head of School B)

Ward Education Officers' Perceptions of the General Physical Environment

The researchers were interested in knowing the contribution of the Government in implementing inclusive education, especially in supporting visually impaired learners in primary schools. The education officers were asked about their views regarding the Government's contribution to the inclusion of visually impaired children in inclusive schools. The majority of education officers reported that the Government, through the Ministry of Education, Science, and Technology, provides teaching and learning materials such as books and equipment. The Government also provides food for VI learners. In addition, one of the education officers had this to say:

> … Nationally, the Government provides support to schools with visually impaired children, amounting to 3.2 million Tzs every month. It also constructs infrastructure and supplies food. For instance, between 2015 and 2017, the Government provided 650 million TZS for infrastructure development in inclusive schools. The municipal councils also provide funding and recruit teachers specialising in special needs education. (Interview, Ward Education Officer).

Another education officer reported that:
> … Although the Government trains teachers for special needs, the training is still insufficient, providing equipment such as braille machines, papers, and other requirements for students with other disabilities. (Interview, Ward Education Officer)

Parents' Perception of General Physical Environment

The parents were asked to air out their perceptions regarding the physical learning environment of their visually impaired children. The majority of the parents interviewed were satisfied with the physical learning environment for VI learners. During an interview with one of the parents, he made this comment:

> …In my opinion, the teachers live well with our children, teach them well, love them and do not stigmatise them. (Interview, Parent)

When the parents were further asked if the children explained to them the nature of their learning environment, most of the parents admitted that the children reported their experiences at school. For instance, one of the parents interviewed reported that:

> My child cannot explain the school's physical environment because he cannot see. However, he talks about teachers and fellow students and how they help him and protect other children with disabilities. He talks about his good relationship with fellow students, especially in the classroom and dormitories. (Interview, Parent).

Classroom Environment

The second research question examined how the classroom environment supported the teaching and learning for VI learners in inclusive schools. This research question was directed to teachers, VI learners, and sighted learners who regularly interact in classrooms.

Teachers' Perceptions of Classroom Environment for VI Learners

Teachers were requested to give their perceptions about the classroom environment and how the environment supported the learning of VI learners. The teachers had varied perceptions on the issue in question, as shown in Table 3.

Table 3: *Teachers' perceptions of classroom environment for VI learners*

S.N	Statements	Level of Agreement in Percent		
		Disagree	Not Sure	Agree
1.	The classroom environment is suitable for VI learners	33	13	54
2.	VI learners use similar learning resources to those used by every student	18	10	72
3.	VI learners use special learning resources designed for them	12	6	82
4.	VI learners have the necessary study materials	55	21	24

The survey results revealed that 82% of the teachers perceived that the classroom environment was appropriate for VI learners because they used special learning resources designed for them, even though they were in inclusive classes. However, 72% of teachers indicated that visually impaired students used similar learning resources to those used by sighted learners in the classroom. The sharing of similar learning resources suggests that the VI learners are disadvantaged in using learning resources, particularly those with visual images.

The results also revealed that a significant number of teachers (55%) perceived the study materials for VI learners as inadequate, while 24% perceived the study materials as adequate. The findings imply that there are deficiencies in terms of study materials in some inclusive schools, which in one way or another affect the effective learning of VI learners. Equipping inclusive schools with enough learning resources based on the needs of learners would be a viable means of helping learners with disabilities, particularly the visually impaired ones, to benefit equally from classroom lessons.

Another concern was the suitability of the sitting arrangement in the classroom, for which 54% of the teachers perceived it as suitable, whereas 33% perceived it as unsuitable for VI learners to participate effectively in the learning process. Principally, the VI learners need to sit where interaction between the learner and the peers and between the learner and the teacher is easily maintained. However, during interviews with teachers, a large number of learners in the classroom emerged as a significant barrier to proper seating arrangements, consequently negatively affecting VI learners' participation in learning. To describe this situation further, one of the teachers from school C had this to say during the interview:

> … I think, to enable VI learners to get a good education, their classes need to have few students, if possible, not more than 20. (Interview, Teacher in School C)

In addition, a teacher from school A had the following remarks:
> …Classrooms are few and overcrowded, while a class with special needs ought to have few students so that they can be taught effectively. (Interview, Teacher in School A)

The results imply that implementing inclusive education requires reconsidering the class sizes and the teacher-learner ratios in the classroom. For teachers to be able to reach every learner and attend to each learner's learning needs, the class should have a manageable number of learners.

Using the Mann-Whitney U test, further analysis was carried out to determine if there were any significant differences in male and female teachers' perceptions about the general physical school environment and classroom environment in supporting the teaching and learning of VI learners. The overall results indicated that there were no statistically significant differences in perceptions by gender. Table 4 shows such a trend. This finding implies that female and male teachers had similar perceptions about the general physical school environment and the classroom environment.

Table 4: *Mann-Whitney U Test for Gender*

S/No.	Statement	Gender	Mean Rank	p value
1.	Visually challenged learners can learn well in inclusive classrooms	Female	102.58	.889
		Male	103.38	
2.	Visually challenged learners learn well in a special school	Female	108.42	.091
		Male	99.04	
3.	Visually challenged learners can easily move around within the school compound	Female	107.58	.302
		Male	101.65	
4.	The classroom arrangement is suitable for visually challenged learners	Female	110.21	.112
		Male	98.31	
5.	Visually challenged learners use similar learning resources to those used by every student	Female	106.04	.290
		Male	99.23	
6.	Visually challenged learners use special learning resources designed for them	Female	98.68	.900
		Male	99.29	
7.	Visually challenged learners have the necessary study materials	Female	103.82	.468
		Male	98.52	
8.	School infrastructure has been designed to cater for the needs of visually challenged learners	Female	106.00	.393
		Male	100.25	

Note Significance level was at .050.

VI Learners' Perception of the Classroom Environment

During interviews and focus group discussions, the VI learners were also asked to air their views regarding the classroom environment and how it supported their learning. Since the learners belonged to different schools with diverse environments, their responses to this issue also varied. Some visually impaired students viewed the classroom environment as supportive to their learning because their peers assisted them, and the teachers were very friendly to them during lessons. This is evident from the statement of one of the visually impaired students from school F during the focus group discussion:

> … Yes … the teachers are teaching us well; they take care of us and they are ready to support us when we have problems with learning… (FGD, VI learner in School F).

When they were asked about the availability of teaching and learning materials, one of the visually impaired learners from school B explained this during the focus group discussion:

> …Yes … our school has adequate teaching and learning materials and equipment such as braille machines, typing papers and printers. The problem we have is an inadequate number of teachers. (FGD, VI learner in School B)

Another visually impaired learner from school J was impressed by the collaboration and passion he received from peers while they were in the classroom. During the interview, this learner made the following remarks:

> … I am very happy to study in a mixed classroom because my friends who do not have a visual problem like mine always help me when I need their support, especially in doing assignments and other activities assigned by the teacher. … I do not face any discrimination. (Interview, VI learner in School J).

Although many VI learners had positive views about the classroom environment in relation to support for their learning, some learners felt that the classroom environment was not adequately supportive. For instance, during one of the focus group discussions, a VI learner in school K complained:

> … Some teachers come to class with diagrams or pictures, and they do not explain them well enough so that we who are visually impaired can also understand what the picture is about…. Worse still, the teacher asks the class about what the picture is about as if all of us can see… This is very disappointing. (FGD, VI learner in School K).

The complaint from the VI learner implies that some teachers lack the skills to teach VI learners. Therefore, teachers need regular training on how to teach in inclusive classrooms.

Sighted Learners' Perceptions of Classroom Environment

The sighted learners studying with visually impaired peers were asked to narrate their experiences regarding the supportiveness of the classroom environment for VI learners to learn effectively. This question was asked during the interview and focus group discussions, and there were mixed responses from the learners. While some sighted learners viewed the classroom environment as supportive to VI learners, others viewed the environment as very challenging. For instance, when asked how they felt studying in one class with VI learners, one of the sighted learners from school E had this to say during the interview:

… I feel good to study in one class with VI learners because we learn a lot from them, and we must love each other… (Interview, Sighted learner in School E)

In response to the same question, another sighted learner from school L had this to say during the interview:

… I am happy to study in one classroom with VI learners because I learn the way they write using braille machines and I help them too… (Interview, Sighted learner in School L)

Another question asked during the focus group discussion was on the classroom environment in terms of teaching and the challenges visually impaired students face in classrooms. In response to this question, some sighted learners were concerned about how some teachers teach a class with VI learners. During one of the focus group discussions, one of the sighted learners from school D had this comment:

… One of the challenges is that some teachers teach with a very low voice, and therefore, a visually impaired learner cannot hear the teacher and fails to understand what is being taught. Worse enough, these teachers often do not write well on the chalkboard and the learners with mild visual impairment cannot read. (FGD, Sighted learners in School D)

In the same focus group discussion, another sighted learner from school D added this comment about teaching:

… Sometimes, teachers use diagrams to teach in the class, and the VI learners cannot understand the drawings because they do not see. Even when they ask teachers to explain the diagrams, they cannot explain them clearly… (FGD, Sighted learner in School D)

Another sighted learner was concerned with the discrimination against VI learners in the classroom. During one of the focus groups in school H, one of the sighted learners had this story to tell:

… Some teachers tend to teach without involving VI learners, and they cannot even ask whether they have understood. They are being ignored. Moreover, some sighted learners are not willing to help the VI learners because they see it as a waste of their time … (FGD, Sighted learner in School H)

The overall impression of the sighted learners' experiences on the classroom environment and how it supports learning of VI learners shows that although there are positive efforts made by teachers and sighted learners to support VI learners to learn, there are still challenges that need to be addressed. For instance, teachers require continuous training on how to teach in inclusive

classes, including those with VI learners. In contrast, sighted learners need continuous education about how and why they should help their peers with visual impairment. Sighted learners need to be aware that loss of sight can happen to anybody at any time.

Discussion Of The Findings
This study assessed the learning environment for VI learners in inclusive primary schools in Tanzania. Specifically, the study focused on answering two major research questions: How does the general physical environment support learning of VI learners in inclusive schools? How does the classroom environment support the teaching and learning of VI learners in inclusive schools? The discussion is based on the two research questions.

General Physical Environment
The first research question assessed how the general physical environment supported learning of VI learners in inclusive schools. Answers to this research question were sought from teachers, VI learners, sighted learners, head teachers, ward education officers, and parents. The findings related to the general physical environment of the schools and how it supported the learning of VI learners were of a mixed nature. For instance, while some VI learners perceived the general physical environment as friendly and supportive to their learning, others perceived it as unfriendly and unsupportive to their effective learning. The findings agree with the results of the study on disability and barriers to education conducted by Lamichhane (2013) in Nepal. This study revealed that people with visual and hearing impairments received inadequate support systems in schools. In contrast, participants with physical impairment largely encountered challenges related to physical barriers such as inaccessible buildings and a lack of safe and accessible roads. However, it is important to note that the differences in perceptions might be due to variations across schools; that is, some schools are more resourceful than others.

Sighted learners were dissatisfied with the general physical environment for VI learners, partly because of the limited qualifications of teachers to teach in inclusive schools. The need for teachers to have required qualifications and competencies to teach in inclusive schools is also cited in the literature. Davis and Hopwood (2002) argue that for teachers to facilitate learning for VI learners in inclusive schools, they need skills to promote the holistic development of learners and provide equal access to opportunities. This is also evident from the study by Miyauchi and Paul (2020), who found that inaccessible didactics used by teachers, such as rapid *chalk and talk* and visual materials such as movies without sufficient auditory explanations, posed challenges to VI learners.

From the perspectives of the VI learners and sighted learners, the findings suggest that the learning environments in many inclusive schools were relatively friendly to them. Some teachers' positive attitude towards inclusive education is likely to increase VI learners' satisfaction with the general physical environment. Matsie and Stofile (2021) and Saloviita and Schaffus (2016) argue that a positive attitude of teachers is essential for successful inclusive education. Additionally, for teachers to function well in the context of inclusive education, Pantić and Florian (2015) point out that they must build appropriate professional relations with learners and other stakeholders to accommodate the diverse needs of learners. If these conditions are not met, VI learners may not benefit from the learning environment.

The teachers also had varied views regarding the general physical environment and how it supported the learning of VI learners in inclusive primary schools. While none of the teachers were in favour of the idea that VI learners can learn well in inclusive schools, the majority of them perceived that VI learners learn well in special schools. This implies that the majority of teachers lack the necessary knowledge and skills to teach in inclusive settings and are probably unprepared to teach in such an environment. These findings are consistent with the study by Luque et al. (2018) and Omer (2015) who found that teachers had inadequate knowledge of inclusion and were unprepared to teach in inclusive schools
.
While some teachers perceived the physical environment as supportive to VI learners, others perceived it as unsuitable due to poor infrastructure, inadequate teaching and learning resources, and a shortage of teachers with pedagogical skills to teach in inclusive classes. These findings align with the study by Omer (2015) in which most teachers admitted that they had not taken enough pre-service and in-service training, which enabled them to teach VI learners effectively.

Interviews with heads of school revealed that although there were efforts by the Government to improve the facilities in inclusive schools, there is still a lot to be done to improve the situation. The classrooms, dormitories, and the general surroundings of the inclusive schools need improvement. The findings from heads of school suggest that the school environment needs to be improved so that they can benefit from schooling. This should include restructuring the learning environment so that VI children enjoy studying in inclusive schools just like sighted ones. Similar findings were reported by a study in Ghana, which indicated that the environment for most inclusive schools was poor and less accessible to learners with disability; consequently, to accommodate the diverse needs of learners, there was a need to modify

and redesign the schools' physical landscape (Ackah-Jnr & Danso, 2019). The arguments by heads of school also align with the findings of the study by Wilson (2016) on challenges facing children with VI in accessing inclusive primary education, in which she found a mismatch between the number of facilities and the total number of students.

The parents and ward education officers perceived the general physical environment as supportive of the VI learners. According to the parents, many were satisfied with how their children attended school. This perception of the parents may implicitly attract other parents with children with disabilities to send their children to school. However, an alternative interpretation could suggest that some parents were unaware of the optimal learning environment required for VI learners. Some parents regarded the enrolment of their children with disabilities in school as a major relief to them. Therefore, they do not bother very much about the condition of the school.

The Ward education Officers further acknowledged the efforts by the Government to improve the learning environment in inclusive schools. Responses from the education officers show that they are working hard to create a conducive learning environment for VI learners and other children with disabilities in inclusive schools. However, much is yet to be done to ensure that all children with disabilities, including the VI learners, can access and benefit from school learning.

The perceptions of parents and WEOs can partly be influenced by their limited involvement in daily school activities. The heads of school, teachers, and learners are more informed about the effect of the physical environment on the learning of VI learners than parents and WEOs.

Since Education officers know the real situation, an alternative interpretation can suggest that political reasons influenced their satisfaction with the learning environment because they work under the minister, who is a political appointee. Government support, among other things, in terms of financial support, is important for inclusive education. A study in the Netherlands revealed that a decrease in funding can lead to higher dropout rates and a decline in participation rates in special education (Gubbels et al., 2018).

Classroom Environment
The second research question examined how the classroom environment supported the teaching and learning of VI learners in inclusive schools. This question featured in the teachers' questionnaire was posed during interview and focus group discussions with VI and sighted learners. The teachers' questionnaire on classroom environment focused on four main items:

suitability of the classroom environment for VI learners, VI learners' use of similar learning resources with sighted learners, VI learners' use of specially designed learning resources, and the availability of necessary study materials for VI learners. Regarding the suitability of the classroom environment for VI learners, although more than half of the teachers perceived it as supportive to VI learners, a significant number of them perceived it as unsupportive. This finding suggests that teachers had diverse perspectives regarding the inclusion of VI learners in inclusive classrooms. The teachers who viewed inclusive classrooms as supportive to VI learners might have considered bridging the discrimination gap between children with disabilities and those without disabilities. Moreover, research has indicated that teachers who are more knowledgeable about inclusive education are more likely to be positive and prepared to implement inclusive education (Krischler et al., 2019). Additionally, Haug (2017) affirms that the quality of teaching greatly influences students' learning outcomes.

On the other hand, the teachers who viewed the inclusive classroom environment as unsupportive to VI learners might have also considered the time they need to spend with the VI learners during the lesson versus the completion of the syllabi. These findings are supported by a study by Asamoah et al. (2018), who found that many teachers believed that the VI learners would learn better in special schools compared to inclusive classrooms. In such a study, the teachers complained that VI learners, because of their slow learning pace, delayed completion of their syllabi, and the noise made by the braille machines disturbed their sighted counterparts.

Regarding VI learners' use of similar learning resources with sighted learners, most teachers agreed that VI learners shared similar learning resources with their sighted peers. Principally, VI learners should learn the same content as their peers without disabilities (Miyauchi & Paul, 2020). Teachers need to modify the content into accessible formats. This implies a shortage of teaching and learning resources for VI learners in many inclusive primary schools. It also implies that teachers do not provide proper support for VI learners in the classroom, a situation that may deter effective learning for them. The findings are concurrent with a study by Revelian (2022) who found that teachers in inclusive public primary schools preferred to use lecture, discussion, and question-and-answer methods due to insufficient teaching and learning resources. Essentially, teachers teaching in inclusive classes with VI learners must be able to choose, develop and/or apply teaching and learning resources that are suitable for them.

On VI learners' use of specially designed learning resources, most teachers agreed that the learners use the resources meant for them. This finding may

seem to contradict earlier findings, which showed that most of the teachers agreed that VI learners use similar resources with sighted learners. However, in this case, the teachers acknowledged that although VI learners shared some teaching and learning resources with their sighted peers, other resources were specifically meant for them, such as braille machines, papers, printers, and recorders, which were not shared with sighted learners. It should also be noted that VI learners will benefit from the general education if they use instructional materials that are appropriate for them. This is also argued by Acula et al. (2024) that for equal access to the core and specialized curricula, as well as to give them the best chance of competing with their peers in the classroom and, ultimately, in society, VI learners must have access to specialized services, books and materials with appropriate instructional resources such as Braille, specialized equipment and technology.

The response of teachers to the question whether the classrooms had the necessary study materials for VI learners indicated that more than half of the teachers disagreed. The findings imply that there is a shortage of teaching and learning materials for VI learners in many inclusive primary schools. These findings are similar to those of Revelian (2022), that revealed that many inclusive public primary schools in Karagwe, Tanzania, had insufficient teaching and learning resources for VI learners. Concurrently, a study by Negash and Gasa (2022) in Ethiopia, found that inclusive schools had inadequate teaching and learning resources, such as books in Braille, reading software, and audio-recorded materials for VI learners.

The visually impaired learners have also expressed concerns about the classroom environment in inclusive primary schools and how it supports their learning. Their responses during interviews and focus group discussions showed that they had different perspectives. Some VI learners viewed inclusive classrooms as supportive to their learning, as it enabled them to receive academic and social support from their sighted peers and teachers. These findings are consistent with the findings by Asamoah et al. (2018), who found that VI learners felt that by studying in one class with learners without disabilities, they could develop their potential as they measure their academic achievements with their counterparts. However, some VI learners viewed the classroom environment as unsupportive and hostile to them. This perception was partly contributed to by their teachers' lack of pedagogical knowledge and skills about teaching in inclusive classes, and lack of learning resources for VI learners. These findings are in line with the study by Miyauchi and Paul (2020), who found that due to a lack of teachers' knowledge of visual impairment, many VI learners in inclusive classrooms are excluded from participating in activities.

The sighted learners also showed differing perspectives regarding the inclusive classroom environment and how it supported learning for VI learners. During interviews and focus group discussions, some sighted learners argued that an inclusive learning environment supported VI learners because there was high collaboration among them and that sighted learners could learn from their VI counterparts. These findings align with the study by Asamoah et al. (2018) in which sighted learners felt that inclusion allowed them to help their VI peers catch up with their studies, who otherwise might have lagged in most subjects. However, some sighted learners perceived the classroom environment as unsupportive to VI learners. One of the main arguments was that the teachers were using teaching strategies and learning materials that were not friendly to VI learners. In addition, some sighted learners were unwilling to help VI learners because they considered it a waste of time. These findings are in line with the findings of a study by Asamoah et al. (2018), who found that some sighted learners were against the practice of inclusive education because the learning style of VI learners was different from theirs, and therefore, having them in their classes delayed learning and completion of the syllabus. Moreover, a study by Gariba and Awini (2023) in Ghana found no positive peer relationship between sighted learners and VI learners and that some sighted learners were hostile and discriminatory to VI learners. These findings imply that some learners without disabilities have not yet embraced inclusive education practices. Therefore, they need awareness-raising education in schools in order to develop a sense of acceptance and collaboration among students in inclusive classrooms.

Conclusion
This study focused on assessing the learning environment for VI learners in inclusive primary schools in Tanzania. Based on the findings from this study, it can be concluded that active learning for VI learners is far from being realised in Tanzania. The study's general findings reveal that inclusive learning environments face numerous challenges, including unfavourable general physical environment, inadequate teaching and learning resources for VI learners, lack of inclusive pedagogical knowledge and skills among teachers, and discriminatory tendencies against learners with disabilities. To ensure effective learning for VI learners within inclusive settings, there is a need to modify the general physical environments, improve teaching and learning resources, train teachers on inclusive pedagogies and raise awareness for learners without disabilities.

Recommendations for Improvement of Inclusive Schools
From the findings of this study, several recommendations are made to the Government, teachers, and other stakeholders.

Recommendations to the Government

Since the findings have revealed a shortage of learning resources for VI learners, it is the responsibility of the Government to increase such learning resources.

Similarly, fencing the school compounds is mandatory for the security of learners. In inclusive schools, there are learners such as people with albinism. Given the attitudes towards people with albinism in Tanzania, inclusive schools need to be secured not only with fences, but there should also be matrons, patrons, and guards to take care of these learners, particularly after school hours.

The current practice regarding inclusive education in Tanzania is that learners are taken to specifically designated schools as inclusive schools. In this case, VI learners are distanced from their environment, including parents, guardians, and siblings. In this regard, it is suggested that the Government should ensure that there are necessary facilities and teachers for VI learners within their vicinity. In this case, VI learners may not feel alienated from their environments.

Finally, the Government needs to ensure that inclusive schools are inclusive because currently, these schools seem not to be inclusive in terms of the physical infrastructure and qualified personnel to handle inclusive classrooms. There is a need to have friendly infrastructure and qualified teachers for VI learners.

Recommendations to Teachers

The Government alone cannot solve the problems related to VI learners. Teachers have roles to play, too. In terms of facilitating active learning in inclusive schools, teachers need to be more creative in classroom arrangements that foster interaction. The arrangements should be in such a way that learners can easily interact with each other as well as with the teachers.

Teachers must also be aware that it is their responsibility to teach in inclusive schools. They need to develop professionally so that they can teach well in inclusive schools. Finally, filling up identified pits within the school compound is the responsibility of the teachers. This does not need attention from the central Government.

Recommendations to Other Stakeholders

Other stakeholders, such as parents and non-governmental organisations, can support inclusive schools with the resources the Government has failed to

provide. Parents need to love and care for their children who are visually impaired. They should not perceive that it is a burden to have such children.

Area for Further Research
Further research can focus on intervention and longitudinal studies on teachers' training on inclusive pedagogies and how inclusive practices are being improved in Tanzania. This will likely give more insights into how inclusive education is being implemented in the country.

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The Feasibility of Flipped Classroom Approaches: Insights from Teachers and Students in the Selected Public Secondary Schools in Tanzania

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Abstract
This study explores the feasibility of implementing flipped classroom approaches in Tanzanian public secondary schools, focusing on teacher and student perceptions, existing practices, resource availability, and strategies for adoption. Guided by Rogers's Diffusion of Innovations theory (2003), a qualitative multiple-case design was employed across secondary schools in Dar es Salaam, Tanga, and Mbeya. Purposeful sampling guided the selection of schools and participants. Data were gathered through focus group discussions, semi-structured interviews, and non-participant observations to capture participants' experiences and views. Thematic analysis was used to identify key patterns across the data. Findings indicate a limited understanding of flipped learning, with many participants equating it with traditional homework. Despite resource challenges, such as insufficient textbooks and limited ICT infrastructure, teachers and students expressed openness to the approach, mainly when supported by printed materials, collaborative learning, and parental involvement. Concerns emerged about its suitability for mathematics, where students preferred more direct instruction. The study highlights the importance of teacher training, infrastructure support, and context-sensitive strategies in facilitating flipped learning in low-resource environments. The findings provide actionable insights for enhancing engagement and learning through innovative pedagogical practices.

Keywords: *Flipped classroom, ICT access, textbook, parental engagement,*
Innovative Pedagogy

Introduction
The flipped classroom is an instructional approach where students engage with interactive course content before attending class (Bishop & Verleger, 2013; Hwang et al., 2015). During class, the focus is on applying knowledge through discussions, problem solving, or collaborative activities (Enfield, 2013; Farag & Haroun, 2020). Students become active participants both before and during class time, while teachers play the role of facilitators to

guide learners through activities that reinforce and extend students' prior learning (Enfield, 2013; Hwang et al.,2015).

The flipped classroom approach has demonstrated success in improving student learning by fostering student-centred learning through increasing engagement, collaboration, and learning motivation, as well as improved grades (Fung et al., 2022; Howell, 2021; Hung, 2015; Jdaitawi, 2020; Kim, 2017). Unlike traditional pedagogical methods, where instruction occurs during class time, the flipped model requires students to engage with learning materials before the class, freeing up classroom time for active and collaborative activities that strengthen their understanding (Bishop & Verleger, 2013; Hwang et al.,2015). The pre-class learning materials have mainly been provided to students regarding video lectures (synchronous/ asynchronous) or readings.

Although recently, around the globe, there has been a growing recognition and movements to adopt innovative teaching methods like flipped approaches to enhance student learning (Baig & Yadegaridehkordi, 2023; Kim, 2017; Zhang et al.,2024); most countries, including developing countries, are struggling to ensure that they take advantage of this pedagogical innovation. In Tanzania, for instance, the ongoing educational changes insist on innovative teaching methodologies to foster students' active learning, competency mastery, and collaborative learning (Tanzania Education and Training Policy, 2014 (2023 Edition). According to the literature, these aspects are well reflected in a flipped classroom setting (Enfield, 2013; Farag & Haroun, 2020).

However, Rahman et al. (2020), who did a meta-analysis, reported that most accessed literature on flipped classroom approaches presents findings from well-resourced settings. For example, scholars like Yang and Chen (2020) reported on the adoption of flipped classroom approaches in China, while Shelly et al. (2015), Fung et al. (2022) reported the same in Australia, as well as Howell (2021) in the UK. On the other hand, there is a scarcity of empirical studies examining the feasibility of implementing the flipped approaches within the unique context where technological resources are constrained, like Tanzanian public secondary schools (Patrobas et al., 2023).

In Tanzania, public secondary schools often face significant infrastructural and technological challenges that limit the feasibility of adopting technology-dependent instructional models such as the flipped classroom. Studies by Joseph (2021), Kiwonde (2024), Kweka and Ndibalema (2018), Malekani (2018), Ndume et al. (2021), and Patrobas et al. (2023) have highlighted persistent issues, including limited access to computers, unreliable electricity

supply, poor internet connectivity, and insufficient teacher training in digital pedagogy. These resource constraints create significant barriers to the successful integration of flipped learning in Tanzanian classrooms.

Considering the benefits of flipped classroom approaches, it is imperative to assess the current levels of understanding and practices of flipped approaches (if any) among teachers and students and identify potential challenges and opportunities to include this teaching approach in secondary education.

Thus, this study presents information on the feasibility of flipped classroom approaches in Tanzanian public secondary schools regardless of the challenge of the digital divide. Addressing this information gap is crucial to informing policymakers, practitioners, and other education stakeholders about the feasibility of flipped classroom approaches in Tanzania's secondary education system. To achieve the stated aim, this study was guided by four research questions, which were:
 i)   How aware are teachers and students of flipped classroom approaches?
 ii) What current practices align with flipped classroom principles?
 iii) What infrastructure is available to support flipped classrooms?
 iv) What strategies can be used to encourage the adoption of flipped classrooms?

Along with those research questions, Rogers's Diffusion of Innovations (DOI) Theory has been used in this study to explain and understand how innovations are adopted, spread, and sustained within a social system. The theory has been relevant to examining the feasibility of flipped classroom approaches in Tanzanian public secondary schools since it offers insights into how teachers and students develop awareness, adopt practices, and adapt to infrastructure challenges while guiding strategies for effective implementation (Jdaitawi, 2019).

Not only that, but the aspect of compatibility and trialability, as per DOI theory, highlights the existing practices and opportunities for a flipped classroom approach. In addition, the relative advantage and complexity attributes of DOI have been used to explore how resources and infrastructure could impact the adoption of flipped classroom approaches in secondary schools in Tanzania (Fung et al., 2022). By addressing awareness, practices, resources, and implementation strategies, the DOI theory has been used to explain a comprehensive evaluation of feasibility (Fung et al.,2022; Hung, 2015; Rogers, 2003).

Methodology
This exploratory study used a qualitative approach to assess the feasibility of flipped classroom approaches in selected public secondary schools in

Tanzania. The method, as recommended by Creswell and Poth (2018), Flick (2014), and Yin (2016), was chosen to generate insights, explore concepts, and identify areas for future research. The population of this study consisted of teachers from five secondary schools (one in Mbeya, two in Tanga, and two in Dar es Salaam), as well as students from three schools: one in Tanga and two in Dar es Salaam. The total number of teachers from each school ranged from 30 to 50, resulting in a population of around 180 to 210. Similarly, the student population in O-level secondary schools was approximately 1,800 students.

Qualitative data were collected from 17 teachers from five Mbeya, Tanga, and Dar es Salaam secondary schools. These teachers were purposefully selected to represent key subject areas: Science/Mathematics, Language, and Social Sciences. The inclusion criteria required participants to be full-time public secondary school teachers actively teaching one of the three targeted subject areas and having at least two years of teaching experience. Teachers also needed to be willing to participate and available during the data collection period. Among the 17 participants, 10 were female and seven were male, aged between 29 and 55. Six held diploma qualifications (four of whom were pursuing bachelor's degrees), and 11 held bachelor's degrees.

As mentioned earlier, the other group of participants consisted of 33 students from three different secondary schools: one from Tanga and two from Dar es Salaam. The selection of schools was based on representatives from schools with computer labs that support the implementation of innovative teaching approaches, such as the flipped classroom, as well as their accessibility and willingness to participate in the study. Schools without ICT infrastructure were also included to represent that category, allowing for a comparison of their daily practices and exploring alternative ways to implement flipped pedagogy in a technology-challenged environment. The inclusion criteria for student participants required them to be enrolled in either Form One, as it is a transition level from primary education, Form Three to assess their adaptation to the school environment, and Form Four, as the candidates' class is preparing for the O-level final examination. Since the qualitative study does not require many participants, the study selected students from higher, middle, and lower performers, both girls and boys, to capture insights from all categories of students in terms of performance and gender. The final sample consisted of 10 students from Form One, 13 from Form Three, and 10 from Form Four, aged between 14 and 19 years, comprising 16 girls and 18 boys.

The descriptive research design involved no variable manipulation. Data collection tools included an observation checklist (for assessing school

infrastructure and the availability of teaching and learning materials), interview guides (for students), and focus group discussion (FGD) guides (for both teachers and students). Using individual interviews and focus group discussions (FGDs) with students was intentional and complementary to obtain rich data. Individual interviews provided a confidential space for students to share personal experiences, thoughts, or concerns they might hesitate to express in a group setting. Conversely, FGDs facilitated interactive discussions, encouraging students to collectively reflect on shared experiences and build upon each other's responses. This combination enriched the depth and breadth of student perspectives. All tools were developed using relevant literature, including Basal (2015), Li (2018), Paleczek et al. (2022), and Vajargah and Saadattlab (2014). Additionally, Rogers' Diffusion of Innovation theory attributes were used to ensure data validity and reliability (Sahin, 2006).

Researchers conducted five (5) teacher FGDs with 3–4 participants each (50 minutes). Apart from teachers, three (3) FGDs were also conducted with students. Each school had one session of FGD with about 7–10 participants, making a total of 27 students. Additionally, six (6) other students (class representatives) participated in individual face-to-face interviews. Discussions and interviews were conducted in Swahili, with occasional code-switching to English, and transcripts were translated into English.

Data were recorded, transcribed, and analysed to identify recurring themes. The researcher repeatedly read the transcript to familiarise themself with the data and developed the main and sub-themes that emerged. This has provided in-depth qualitative insights into the potential for implementing flipped classroom approaches in Tanzanian public secondary schools.

Results
This exploratory study aimed to establish the feasibility of flipped classroom approaches in Tanzanian public secondary schools. It focused on examining students' and teachers' understanding of flipped classrooms, their daily teaching and learning practices related to the approach, the available infrastructure to support flipped teaching, and possible strategies to encourage its adoption. After the analysis, some major themes emerged regarding the study's focus. These themes from the FGDs with teachers included homework practices and related constraints, limited understanding of flipped teaching, and positive perceptions of the approach. Other themes addressed the status of available resources, limited access to ICT and textbooks, and suggested strategies for implementing the flipped classroom approach. Below is a detailed explanation of each emerging theme; the first

part presents themes from teachers, and the second part presents themes from students.

Significant Themes that Emerged from FGDs with Teachers
Homework Practices and Constraints

This is one of the major themes that emerged, revealing the types and frequency of homework teachers provide students. Teachers confirmed they frequently assign past examination questions or tasks aligned with the completed lesson topics. Below is the verbatim from one of them, representing the similar responses from teachers, as he said, "*We use past papers... we give them in the evening and do corrections in the morning*" (Teacher, School 1, Tanga).

In addition, in all three regions, teachers reported that the homework completion rate is not satisfactory due to some challenges that students face in their home environment. These challenges are linked to limited learning resources, household responsibilities, and a lack of parental support. To support this, one of them said "…*They don't do it carefully because many don't have time at home….*(Teacher Dar es Salaam, school 2)". The other added that "*... some are busy with household chores when they get home and do not have time to study...*(Teacher, Mbeya)". Not only those, but the other teacher also said "*... some students just play around with no one to supervise them for homework at home; I think the parents or guardians they live with often lack time and enthusiasm to supervise them*" Teacher, school 1, Dar es Salaam). The other one also concluded by saying, "*... Parents are not supportive; they think school matters end at school...*" (Teacher school 1, Dar es Salaam).

Limited understanding and Perception of flipped classroom approaches

Apart from homework practices, the findings also show that teachers had a superficial understanding of flipped teaching, associating it with independent preparation by students. Some misinterpreted it as delegating learning to parents or entirely to students. The issue of limited understanding and implementation of flipped teaching has been revealed to all teachers in this study. Below is the verbatim supporting these explanations, as one of them said, "*...Sometimes, I give my students content to study on their own when I am busy... is it like that...?*" (Teacher school 1, Dar es Salaam). The other one also asked,"*... Is it the same as when we give them the lesson notice for the whole year?*" (Teacher school 2, Tanga).

However, apart from their limited understanding of flipped classroom approaches, after being briefed about the flipped approach, teachers showed to be positive and acknowledged that flipped teaching might potentially

foster student engagement, self-confidence, and learning. In support of this, one of them said. "*…This could encourage students to be more responsible and proactive because a student who comes with prior knowledge can participate much better in class than one who has none*" (Teacher school 2, Tanga). All teachers shared this impression in all regions.

Resource Availability and Limited Access to Resources
Teachers' understanding and perception of flipped classrooms alone were insufficient to explain the feasibility of adopting the approach. Thus, the researchers were also interested in knowing the status of the available teaching and learning materials in terms of quantity and mode, for example, textbooks in soft or hard copy, ICT facilities, etc. Teachers revealed that there was a shortage of textbooks, which led them to adopt the sharing mechanisms to widen students' access to textbooks. One of them said, "…for Form One (students), we only have five English books, so students have to share them" (Teacher, school 2, Tanga). The findings revealed that this was a practice in all regions.

On the other hand, teachers admitted to having personal digital devices but with limited or no support to meet internet costs. Upon observation, both schools in Dar es Salaam had computer labs, while in Tanga, one school had a computer lab, too. Two schools, one in Tanga and one in Mbeya, did not have computer labs. The observed labs had an average of eight (8) to ten (10) desktop computers with internet infrastructure, but not connected to the internet.

In comparison, resource constraints, especially in textbooks and ICT, were universally reported, although Dar es Salaam was revealed to have slightly better access to ICT tools. So, with the availability of teaching and learning materials, it is important to note that, although teachers were very optimistic about the benefits of flipped classroom approaches, they expressed concerns about the feasibility of the flipped approach to their schools due to resource constraints and student preparedness.

Strategies to implement the flipped approach
Despite the limited access to ICT and textbooks, teachers highlighted several strategies by which flipped classroom approaches could be adopted and adapted to improve students' learning. It is good to remember that these teachers were very positive about the benefits of the approach to students' learning. So, for their students also to benefit from the adoption of the approach, they proposed strategies like the use of printed materials for pre-class preparation, assigning group-based activities to encourage collaboration, provision of guiding questions for students to explore at home,

encouraging parental involvement, as well as ICT integration with the limited ICT facilities that existed. The following are some verbatim from teachers as one of them said, "*Since most of them do not have books, lesson notes in a printed format for them to read at home could help …*"(Teacher school 2, Dar es salaam), the other one also added, *"…we might create groups on social media…, as some parents have smartphones, so, we could share videos or notes; although on our side this also could mean extra cost…"*(Teacher school 2, Dar es salaam).

Major Themes Emerged from Students

On the other hand, themes emerged from the FGDs and interviews with students. These themes are related to those that emerged from teachers: homework and study practices, constraints in homework completion, and limited access to ICT facilities and other learning resources. In addition, other themes were limited understanding and positive perceptions of the benefits of flipped classroom approaches, although with an exception for some subjects, as well as the role of technology and home environment in learning. Under each of these themes, there are some sub-themes too. Below is the presentation of each of the emerging themes from students.

Homework and study Practices

The findings from students confirmed the findings from teachers on the type of homework that students have been given. It was revealed that students have also been given homework related to topics already covered in class, and not assignments/lesson notes to prepare for upcoming lessons. Students also reported relying on class notes and textbooks to complete their homework. Not only that, but they shared the impression that, in a situation where textbooks were scarce or unavailable, they would collaborate with peers, borrow learning materials, or use resources like computer labs (where available). As one of them said, *"…we use the notes we wrote in our exercise books to respond to the homework questions…"* (Form Four student Tanga). All students involved in this study shared this impression as a common practice.

Constraints in Homework Completion

As we may recall, teachers involved in this study complained that students mostly do not complete the provided homework assignments. Students had their reasons to explain the situation. One of the recurring constraints students mentioned was a textbook shortage, which gave them no access to the reading materials to respond to the questions. Most of these students depend on the textbooks provided by the school, which were limited to 5-10 copies for an entire subject across multiple streams and class levels. Although some students had their copies of textbooks, the number was relatively less

than half of the class, since this depends on the economic status of the family to bear the cost of buying. Students with limited access to textbooks admitted that they borrow or share with others. As we can read their words, they said, *"…we borrow and return after use; some of us live close to each other, so we share"* (Form three Student, Dar es Salaam).

It was also revealed that most students have domestic responsibilities after school, delaying homework completion until late at night. As one of them who represented most of them said, *"…I do house chores first, then schoolwork… sometimes I get tired"* (Female student, Form one Tanga)*.*

Limited access to ICT facilities and other learning resources
Despite the limited access to textbooks negatively impacting how students dealt with homework assignments, students also revealed that access to ICT facilities was another challenge to their learning. Although some schools had computer labs, their usage was often restricted, requiring teacher supervision. In addition, the availability of a few PCs made it even difficult to accommodate all students at once when in the computer lab for study. They also reported limited home access to personal devices like laptops or smartphones. It is good to note that even those confirmed to have access to digital devices depended on their parents' devices. Below is what they had to say regarding this issue:

One of them said, *"…we Google using phones or computers in the lab or ask senior students for help."* (Form four student, Tanga), the other one also added, *"…sometimes we go to the computer room and read saved books, but the computers are few to accommodate all of us…"*(Form three student Dar)*;* not only that, but the other one also said, *"… these computers most of the time do not have internet…"*(Form three student, Dar). The other ones also shared the issue of access to digital devices through parents, although they reported insufficient funds to meet the cost of the internet. One of them said, *"…some of us borrow our parents' phones, but data bundles are a problem."*(Form three, Mbeya) The other one also added*, "…my father downloaded e-books on his tablet, so I use that, but if he comes late at home, that means will not have access…"*(Form one student, Dar)*,* So looking at this situation, it is vivid that high data costs and restrictions on the access and device use at school and home increase the limited ICT use.

In addition to the digital access limitation, students in both regions reported limited textbook access. For example, in some cases, an entire school had only a few (like 10 copies) of textbooks per subject per class. Although teachers provide lesson notes as a supplement to textbooks, it takes time for students to copy those notes from the blackboard, which consumes a

significant amount of students' time for learning. Thus, the best way for students to get learning materials relies on sharing textbooks in small groups or borrowing from classmates.

Limited Understanding and Positive Perception of Flipped Teaching

Just like what was revealed by teachers, students also admitted to having a limited understanding of flipped learning; some confused it with the homework or lesson notes that had been provided to them for the whole year. One said, *"…oh, is it like the homework we are given…?"* (Form four student Dar). The other one also asked, *"… is it like the notes we are given at the beginning of a new grade, which we write for the whole year…?* (Form 1 student Tanga)"

However, after a brief introduction to flipped classroom approaches, students were very positive and ready to participate in implementing the approach. They appreciated that since flipped classroom approaches familiarise students with upcoming topics, they could be the best option to make lessons more engaging and easier to understand. The following are some verbatim from students, as one said, *"…I think it is good because if you know what you are expected to learn, you understand better when the teacher teaches"* (Form one, Mbeya). The other added, *"…that is very good; I think it will help us explain our ideas during the lesson in the classroom."* (Form three Tanga). Not only that, but the other one also concluded that "…*When the teacher tells us to research first and then teaches us, the material does not feel unfamiliar, and we will understand quickly"* (Form four Dar).

Subject-Specific Challenges

Although students were very optimistic about adopting flipped classroom approaches, they were concerned about subjects like Mathematics, which was frequently cited as a subject requiring teacher guidance, thus doubting if the flipped classroom approach would work. The following are some of their words regarding this: one said, "…*Mathematics is quite challenging, studying it on our own without being taught first, I am not sure if it would be possible."*(Form four Tanga). The other added that *"…there are subjects like mathematics, it is better to be taught first, but some subjects can be self-learned"* (Form three Dar).

Strategies to implement the flipped approach

Since students were optimistic about adopting flipped classroom approaches, they had some suggestions on how the approach could be implemented in their context. They mentioned strategies that could be used, such as providing notes in advance, promoting collaborative and peer-assisted learning, utilising ICT resources, and tailoring flipped approaches to subject

complexity, as ways that can enhance the effective use of the flipped approach in Tanzanian secondary schools. The following are some of their verbatim to support this as one said, "*… starting with self-study is good, especially if the learning environment is improved, for example if we can be given lesson notes…"*(Form three Student Mbeya)*,* another one added that "*…If the teacher prepares and prints notes for each of us to study in advance. ... that would be good.*"(Form three Dar)*,* another one also added, "*…if we are given notes beforehand, it will help us understand much better and participate during the class"* (Form one student Dar).

Discussion

This exploratory study sheds light on the feasibility of flipped classroom approaches in Tanzanian public secondary schools by highlighting key themes that reflect the students' and teachers' understanding, perceptions, challenges, and opportunities surrounding this pedagogical shift. The findings provide a comprehensive understanding of the constraints and possibilities for adopting flipped teaching in a resource-limited context like Tanzania.

Briefly, this study found that both students and teachers admitted to having a limited understanding of flipped classroom approaches and limited access to ICT facilities and other learning resources like textbooks. The findings also depicted the teaching and learning practices that have some elements of flipped classroom approaches, like the use of homework assignments provided to students after class sessions. However, despite the limited resources, both students and teachers proved to be very positive in adopting flipped classroom approaches with the hope that it is an alternative way to improve students' learning. Although students were concerned about the feasibility of the approach to mathematics learning, they were very positive that print-based flipped learning could be an alternative way to implement the approach.

As presented earlier, the present study has revealed a superficial understanding of flipped classroom approaches among teachers and students. Teachers equated it with independent study, while students confused it with conventional homework. This was not a surprising finding since flipped classroom approaches are new in Tanzania, and teachers and students need to understand them clearly. A similar situation also happened in some countries that had adopted the approach before Tanzania. For example, some literature has also reported confusion in the conception of flipped teaching from researchers, teachers, and students (Bishop & Verleger, 2013; Nederveld & Berge, 2015).

Despite the limited understanding of teachers and students on the flipped classroom approaches, after being briefly introduced to the concept, both groups were ready to adopt the approach as they displayed positive perceptions of its potential benefits, including enhanced engagement, confidence, and students' learning. As DOI theory insists, people are willing to participate in innovation after being informed of the innovations and benefits it brings (Abeysekera & Dawson, 2015; Dimitrakopoulou & Jimoyiannis, 2022; Hung, 2015; Jdaitawi, 2019; Rogers, 2003; Kim et al., 2014). For teachers and students to be ready for the adoption of flipped classroom approaches, there is a need for intensive teacher training through professional development programmes to enhance teachers' understanding and ability to implement flipped teaching effectively (Abeysekera & Dawson, 2015). Workshops and ongoing support are crucial for students as an orientation programme to prepare them for the flipped approach.

Although both groups of teachers and students were optimistic about adopting flipped classroom approaches, students in the present study showed some concern about the feasibility of the approaches in mathematics, which, according to them, requires direct teaching from teachers. Scholars like Clark and Mayer (2016) and those who reported that students often need direct teacher guidance for technical subjects like mathematics have shared a similar concern. However, Lo et al. (2017) and Zheng et al. (2020) reported that flipped classroom approaches have improved students' learning, even in mathematics subjects. In addition, Rahman et al. (2020) did a meta-analysis and found that flipped teaching improves students' engagement and learning in all subjects, including mathematics. All in all, this implies that there is a need to tailor flipped approaches to the nature of each subject to enable students to benefit from the approach in each subject.

The other issue which this study has highlighted is resource constraints, including shortages of ICT facilities and internet connectivity. Although Dar es Salaam schools exhibited relatively better access to ICT resources, the gap in infrastructure across regions is evident. A similar situation for secondary schools in Tanzania has also been reported by Joseph (2022), Kweka and Ndibalema (2018), Kiwonde (2024), Malekani (2018), Ndume et al. (2021), as well as Patrobas et al. (2023). Limited access to digital resources and functional computer laboratories is one of the challenges of implementing flipped classrooms (Bishop & Verleger, 2013; Fung et al., 2022; Hung, 2014; Jdaitawi, 2019).

In addition to the ICT facilities shortage were reported to be insufficient. Although this has been reported by Lee and Zuilkowski (2015), as well as UNESCO (2020), to be a known problem in developing countries, we cannot

deny the role of textbooks in facilitating students' learning (UNESCO, 2024). This suggests that to overcome the textbook shortage, teachers can use locally available materials, such as printed lesson notes, together with a collaboration and resource-sharing strategy, which they have used before. Similar strategies have also been used in Zambian primary schools to improve students' access to textbooks and other learning materials (Lee & Zuilkowski, 2015). This situation explains why teachers rely heavily on traditional homework practices, especially focusing more on assigning past examination questions in which students search for the correct answers independently, not necessarily referring to their textbooks.

Although homework has some benefits for students' learning, flipped classroom approaches provide more engagement and learning benefits learning (Bishop & Verleger, 2013). In addition, excessive traditional homework has been condemned for increasing the burden on students, which leads to students' inability to complete homework effectively (Kralovec & Buell, 2001). Although the problem of students completing their homework, as reported by Cooper et al. (2006), has been associated with an unsupported home environment due to household responsibilities, lack of parental support, and insufficient resources, students' learning motivation might be a contributing factor too. In another way, although an unsupported home environment could pose a challenge for implementing flipped classroom approaches, especially for day students, in a situation where students are motivated, this should not be the case. It has been well documented that flipped classroom approaches improve students' learning motivation (Campillo-Ferrer & Miralles-Martínez, 2021; Chou et al., 2021; Dan & Mohamed, 2023), which suggests that a motivated student will find a way to manage time as well as have alternative means to access learning materials.

However, apart from students' learning motivation, the role of the home environment in student learning cannot be denied (Escol & Alcopra, 2024). Thus, parental engagement is crucial to creating a supportive home learning environment (Geneta & Sarmiento, 2023; Gu & Zhang, 2023; Hoover-Dempsey et al., 2001; Pomerantz et al., 2007). Regardless of parents' busy schedules and inability to meet the cost of learning materials, research has shown that proper communication with parents has improved their engagement in helping their children to learn (Gu & Zhang, 2023).

As presented earlier in this study, despite the surrounding situation in the teaching and learning environment, teachers and students have demonstrated the willingness to adopt flipped classroom approaches. They proposed practical strategies to overcome the observed challenges of implementing flipped teaching, such as training on flipped classroom approaches, using

printed materials/lesson notes, group work, encouraging parental engagement, and integrating the few available ICT tools. These strategies have been reported to work in other places, as reported by scholars like Abeysekera and Dawson (2015), Bishop and Verleger (2013 Hoover-Dempsey et al. (2001), Kim (2017), and Lo et al. (2017). Looking at these strategies, collaborative approaches would facilitate the sharing of knowledge and learning resources, while printed lesson notes would increase students' access to learning materials; with the help of parents, the shortage of teaching and learning materials would be minimised.

Conclusion

Flipped teaching can potentially enhance student engagement and learning outcomes at different levels of education. Although its implementation in Tanzanian secondary schools is constrained by factors such as limited technological resources, lack of understanding of the approach, and disparities in access to digital tools, the positive perceptions among teachers and students indicate a foundation for gradual adoption. Its successful implementation requires addressing challenges related to resource access, teacher preparedness, and students' readiness for flipped learning.

To overcome these challenges, strategic interventions are necessary. For example, schools can expand the use of printed materials by allocating resources to print lesson notes and relevant textbook excerpts. Not only that, but organised group learning might also help foster collaboration and reduce individual dependency on ICT. Additionally, offline content distribution through USB drives or CDs might help to provide students with access to learning materials without requiring internet connectivity. In addition to that, teachers might use locally available resources, such as charts, maps, and physical objects, to create interactive learning experiences. By integrating these strategies, schools, policymakers, and educators can foster an inclusive and supportive environment for implementing flipped teaching in Tanzanian secondary schools.

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How Vulnerable Living Conditions Drive School Dropout in Tanzania: A Causal Analysis with Moderating Factors

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Abstract
Dropout rates in Tanzanian secondary education hinder students from progressing to higher grades or completing the education cycle. This challenge undermines the government's efforts to ensure high completion rates, despite policies aimed at improving secondary education access and quality. This study examines the impact of vulnerable living environments on early school leaving in secondary education in Tanzania. The study analyses time series data on dropout rates from 2019 to 2022, assessing the influence of students' persistence in vulnerable environments on dropout trends. Using Generalised Least Squares (GLS) regression with a random effects model, the findings reveal that students living in vulnerable environments are more likely to drop out of school early. The issue is particularly pronounced in rural schools, which often face socioeconomic disadvantages. Also, the study finds that the severity of the problem intensifies with advancing school years, partly due to the dynamic nature of regional demographics. Based on these findings, the study recommends policy interventions, including revising school establishment policies, restructuring the fee-free education policy, enhancing healthcare services for students living in vulnerable environments, and encouraging low-income families to participate in income-generating activities reflecting their contexts.

Keywords: *Vulnerable environments, living conditions, school dropout, students, Tanzania*

Introduction

Education is universally acknowledged as a transformative tool for individual empowerment and national development (Mondal, 2023). However, millions of children worldwide continue encountering significant barriers preventing them from completing their education (Odeh et al., 2024). In Tanzania, school dropout rates remain a pressing concern, especially among students living in vulnerable conditions (Kalamba & Mpiza, 2024; Rugimbana & Mwila, 2023). These dropouts are driven by the intricate interplay of socio-economic, environmental, and systemic factors, which together create formidable challenges for children, forcing them to abandon their education

prematurely. This issue has far-reaching implications beyond the individual level. At the personal level, dropping out of school limits children's opportunities for economic mobility, social advancement, and overall well-being. At the national level, high dropout rates undermine efforts to build a skilled workforce, reduce inequality, and achieve sustainable development goals (Okoh et al., 2020). The problem is particularly acute in Tanzania, where systemic inefficiencies, entrenched poverty, and environmental adversities compound the vulnerabilities of children in marginalised communities.

Living conditions are important because they influence educational outcomes, including learning achievement, social cohesion, and overall learning experiences (Hosein et al., 2023). Vulnerable environments, characterised by families with low incomes, students living near or passing through areas with wild animals, reliance on marine transport, poor health conditions, and social instability, often impose significant challenges on students (Luo & Chen, 2020). Families struggling with financial hardships may prioritise immediate survival over long-term investments like education, leading to practices such as child labour or other income-generating activities. Systemic challenges within the education sector exacerbate these problems (Huber, 2023). For instance, high student-teacher ratios hinder individualised attention, making it especially difficult for students from disadvantaged backgrounds to meet academic demands. Moreover, the geographic location of schools plays a critical role, particularly in rural and remote areas where access is impeded by long travel distances, inadequate infrastructure, and a shortage of qualified teachers (Rodriguez et al., 2023). As Naylor et al. (2019) observed in the examination of structural inequalities faced by students from refugee backgrounds, these barriers disproportionately affect students from vulnerable communities, perpetuating cycles of exclusion and inequality.

In Tanzania, these challenges are deeply embedded in the national socio-economic context and reflect broader regional trends across Sub-Saharan Africa. Despite significant policy interventions, such as the introduction of fee-free education following Education Circular No. 3 of 2016 and the Education and Training Policy (ETP) 2014, revised in 2023, aimed at improving access to education, a varied combination of factors continues to hinder progress.

Poverty remains a critical barrier, limiting families' ability to afford school-related costs, such as uniforms, textbooks, learning materials, and school supplies like pens, pencils, rulers, bags, and notebooks, even when tuition is officially waived (Mutisya et al., 2021). Systemic inefficiencies, such as under-resourced schools, inadequate teacher training, and outdated curricula,

further exacerbate the issue (Ochieng & Yeonsung, 2021). Additionally, location-based disparities play a pivotal role; children in rural and remote areas often face limited access to schools, inadequate infrastructure, and higher opportunity costs associated with education, such as contributing to household labour (Delesalle, 2018). The cumulative impact of these challenges is evident in persistently high dropout rates, particularly among girls, who are disproportionately affected by sociocultural norms, early marriages, and teenage pregnancies. Recent studies, including those by Mnyawami et al. (2022) and John et al. (2015), highlight the urgency of addressing these multifaceted issues through targeted, context-specific interventions. Addressing these challenges requires comprehensive measures that not only tackle poverty and systemic inefficiencies but also enhance educational infrastructure and ensure equitable opportunities for all students. By prioritising these efforts, Tanzania can make significant strides toward inclusivity and sustainability in achieving universal education goals.

This study, therefore, seeks to explore how vulnerable living conditions contribute to school dropout rates in Tanzania through a comprehensive causal analysis that integrates socio-economic, systemic, and geographical perspectives. Specifically, it will investigate the experiences of students living in vulnerable environments characterised by poverty, inadequate household resources, and social instability. The analysis will also assess critical factors such as student-teacher ratios, school location, and the regional per capita Gross Domestic Product (GDP) to provide a holistic understanding of the issue. Examining the interplay between these variables, the study aims to understand school dropout in Tanzania, focusing on the role of vulnerable living conditions and moderating factors (rurality and time), and shedding light on the structural inequalities that perpetuate educational disparities. Additionally, the study will consider how contextual differences between urban and rural areas exacerbate vulnerabilities, further influencing school dropouts. The ultimate objective is to generate actionable, evidence-based policy recommendations addressing the persistence of students living in vulnerable environments as a key cause of dropout rates.

These recommendations will focus on fostering equitable access to quality education, improving school infrastructure, optimising resource allocation, and implementing targeted interventions for marginalised communities. In doing so, the study aspires to contribute meaningfully to Tanzania's socio-economic progress by promoting inclusive education as a cornerstone of sustainable development.

The Drivers of School Dropout
Vulnerable living conditions play a significant role in driving school dropout rates in Tanzania, as highlighted by John et al. (2015) and Kalamba & Mpiza

(2024). This phenomenon stems from a complex interplay of socio-economic, systemic, and geographical factors (Ochieng & Yeonsung, 2021). To explore these dynamics and their impact on educational outcomes, this study employs a comprehensive causal analysis framework, as recommended by Chaudhary & Singh (2022). At the heart of this investigation are the experiences of students living in vulnerable environments. These environments are often characterised by pervasive poverty (Mutisya et al., 2021), insufficient household resources (Naylor et al., 2019), and social instability (Luo & Chen, 2020). These factors collectively undermine students' ability to engage fully in their education, leading to increased dropout rates. In addition to socio-economic challenges, critical systemic factors also provide a broad perspective on the issue. Among these, student-teacher ratios stand out as a significant determinant, with Égert et al. (2020) highlighting how overcrowded classrooms reduce the quality of instruction and individual attention, particularly in resource-constrained settings. The geographical location of schools further compounds the problem, as observed by Delesalle (2018) and Rodriguez et al. (2023), with rural areas often suffering from poor infrastructure, limited accessibility, and inadequate school facilities. Lastly, the regional per capita Gross Domestic Product (GDP) is another critical variable, as it influences both the availability of educational resources and the broader socio-economic environment (Dancaková et al., 2021).

The debate surrounding the impact of socio-economic conditions on education highlights two key perspectives. On one hand, proponents of structural reform argue that poverty (Mutisya et al., 2021) and resource inequities (Naylor et al., 2019) are the primary drivers of school dropouts. Mutisya et al. (2021) examined wealth inequalities in access to education within urbanising Sub-Saharan Africa, concluding that significant disparities exist in urban settings, where children from impoverished communities are disproportionately disadvantaged. They emphasise the urgent need for strategic interventions and robust policy frameworks to address these inequalities, ensuring that children from low-income families have equitable access to education. Similarly, Naylor et al. (2019) analysed resource inequities in Australia, finding that refugee students face horizontal and vertical inequalities in accessing higher education. They highlight the necessity of targeted investments to reduce these disparities. These points align with the arguments of Kreisman (2017) and Wang & Zheng (2024), who advocate for improving teacher training and implementing poverty alleviation programs as holistic solutions to these systemic challenges. On the other hand, critics emphasise behavioural and cultural factors as equally pivotal contributors to school dropout rates. Scholars such as Bal (2018) and Bal & Trainor (2016) underscore the undervaluation of education in specific

communities, where cultural norms, early marriages, and child labour perpetuate educational disadvantages. These critics advocate for community-based interventions that address localised socio-cultural barriers, fostering a greater appreciation of education within affected communities.

Geographical disparities significantly exacerbate educational challenges, adding complexity to the debate on school dropout rates (Delesalle, 2018; Rodriguez et al., 2023). Rural areas in Tanzania face acute and persistent obstacles, including a lack of schools within accessible distances, poor road infrastructure (Asantemungu & Anicet, 2019), and limited access to electricity and digital learning tools (Mwinyi, 2024). These challenges often result in higher opportunity costs for rural families, who may prioritise labour contributions over education due to the difficulty of accessing schools. In contrast, urban regions, while offering better infrastructure and facilities, face their own set of challenges. Overcrowded classrooms, high student-teacher ratios, and significant economic inequalities, according to West and Meier (2020) continue to hinder equitable access to quality education. For example, students from economically disadvantaged urban communities often lack the financial means to fully benefit from the relatively better resources available, such as private tutoring or advanced learning materials. Supianto et al. (2023) compare education fairness policies in remote areas of Indonesia and Malaysia and point out that these differences raise important questions about how fair and effective the policies are. Their findings suggest that one-size-fits-all approaches are insufficient to address the diverse educational needs of different regions. Instead, tailored strategies that consider localised challenges and resource constraints are necessary to promote inclusivity and reduce disparities.

The study explores how vulnerable living conditions and moderating factors contribute to school dropout in Tanzania by highlighting structural inequalities. For example, high student-teacher ratios in economically disadvantaged areas may worsen dropout rates by limiting individualised support for struggling students. Similarly, the regional GDP may influence the availability of resources and infrastructure, affecting both access to and the quality of education. Considering contextual differences between urban and rural areas, the study will shed light on how location-based disparities exacerbate vulnerabilities. The findings are expected to contribute to ongoing debates by providing empirical evidence that bridges the gap between structural and cultural explanations for school dropouts. Ultimately, the study will generate actionable recommendations that balance systemic reforms with localised interventions, offering a pathway toward equitable and sustainable educational outcomes in Tanzania.

Social Capital Theory and School Dropout

The concept of social capital theory was developed and refined by prominent scholars. Pierre Bourdieu (1980s) introduced the concept, emphasising its relationship to economic, cultural, and symbolic capital. Coleman (1988) expanded on this by highlighting the role of social capital in educational outcomes, particularly focusing on the networks, norms, and relationships that facilitate actions within families and communities. Meanwhile, Putnam (1990) focused on the decline of civic engagement and its implications for social cohesion, education, and other societal outcomes. These theorists contributed complementary perspectives: Bourdieu examined power and inequality, Coleman emphasised the functional aspects of networks, and Putnam addressed the societal and communal dimensions of social capital. Applied to school dropout, this theory offers a framework to understand how social resource availability (or lack) impacts educational outcomes.

This theory connects social capital to school dropout by emphasising *family social capital,* particularly parental involvement and household stability. Parents who actively engage with their child's education, such as assisting with homework and participating in school events, create a supportive environment that significantly reduces the likelihood of dropout. Additionally, households with strong internal relationships provide emotional and logistical support, enabling students to navigate challenges more effectively and remain committed to their education. These aspects of family social capital serve as protective factors against school dropout, particularly in vulnerable living conditions. However, Simons and Steele (2020) noted that economic hardships or family disintegration can weaken family social capital, leading to lower levels of parental encouragement and reduced oversight of children's education. *Community social capital*, defined as social networks within communities characterised by norms, trust, and collective efficacy, also influences educational outcomes. Supportive communities where education is highly valued can reduce dropout rates through collective efforts, such as offering scholarships or mentoring programs (Busagara et al., 2024). Positive peer networks encourage school attendance, while disengaged peer groups increase dropout risks (Mishra, 2020). Research demonstrates that strong teacher-student bonds enhance institutional social capital by boosting student motivation and engagement. Inclusive and trust-based school environments provide a safety net, reducing the likelihood of dropout (Toyon, 2024). However, Sudrajat (2021) argued that in vulnerable living conditions, overcrowded or under-resourced schools often fail to establish these positive teacher-student relationships, leading to student disengagement. Consequently, social capital theory suggests that dropout rates are significantly influenced by the quality and quantity of social resources available at the family, community, and institutional levels. In

vulnerable living conditions, weakened social capital exacerbates risks, while strengthening these networks offers a pathway to improved educational outcomes.

Methodology
Research Approach
The study used a quantitative research approach, specifically a time series cross-sectional design featuring panel data from four waves from 2019 to 2022. It is a predictive study, observing the proportion of students dropping out due to the prevalence of students living in vulnerable environments across multiple time units. The assumption is that some students in Tanzanian secondary education fail to reach higher successive grades partly due to difficulties encountered in accessing schools, causing them to drop out of the school system.

Sample Size
The study's sample size comprises 184 districts of mainland Tanzania. The study covered all districts of mainland Tanzania, as PO-RALG documents regional data on education across the same districts. Thus, data are disaggregated to the district level as the lowest level of analysis of education data, which makes it difficult to obtain data at the school level. As such, selecting a few districts would have resulted in a problem of bias due to the inclusion of a small sample size. Additionally, the analysis covered four years (2019 – 2022) due to a lack of data on the persistence of students living in vulnerable environments in monitoring and evaluation reports published prior to this period.

Data and Sources
The study uses secondary school statistics documented by the Ministry of the President's Office, Regional Administration, and Local Governments (PO-RALG). The ministry is empowered to manage formal and non-formal education in the country, among other responsibilities, to monitor and evaluate the performance of pre-primary, primary, secondary, adult, and non-formal education. As such, the ministry issues annual performance reports comprising various school records, such as the number of registered schools in different jurisdictions in local governments, including cities, municipalities, towns, and district councils. The reports also publish data on student flows, such as enrolments, dropouts, transitions, and repetitions, to inform decision-making. Moreover, the study uses national accounts statistics published by the National Bureau of Statistics (NBS). The National Bureau of Statistics (NBS) organises time series data from the 2015 base year and updates it annually to incorporate changes in socio-economic developments. The national accounts compile data from different surveys such as Household

Budget Surveys (HBS), Integrated Labour Force Surveys (ILFS) and National Economic Surveys (NES), which document statistics on social and economic profiles of different regions of Tanzania.

Empirical Models

The study adopted two empirical models to draw inferences about the effect of the persistence of students living in vulnerable environments on dropout rates in secondary schools. The first model assumes that the greater the persistence of students living in vulnerable environments, the higher the dropout rates in schools. As such, the model suggests that increases in the proportion of students living in vulnerable learning environments heighten the number of students dropping out of the school system. Consequently, the following empirical strategy aided the estimation of the results.

$$DR_{drt} = \square + \beta SVE_{drt} + \gamma RGDPcap_{rt} + \delta SD_{irt} + \mu_t + \varepsilon_{rt}$$

$$[1]$$

Where DR_{drt} denotes dropout rate in district d in region r in year t, SVE_{drt} represents the percentage of students living in vulnerable environments enrolled in schools in district d in region r in year t, and $\gamma RGDPcap_{rt}$ is the regional per capita Gross Domestic Product (GDP) of region r in year t. δS_{rt} represents district d school characteristics in region r in year t, μ_t are regions' random effects, ε_{rt} is an idiosyncratic error term, β, γ, and δ are coefficients, and $\square$ is the overall intercept. The second empirical model (equation 2) broadens the analysis to determine the heterogeneity effects of development in terms of urbanisation and changes in time. The predicted assumption is that the persistence of students living in vulnerable environments is moderated by districts' Socio-Economic Status (SES) due to being a city or municipal council. Moreover, the study assumes that the status of development in districts changes over time, resulting in a reduced number of students living in vulnerable environments due to advances in households' social and economic profiles. As such, the model incorporates the interaction term (UT) to capture the effect of districts' developments due to urbanisation across periods. The following empirical model aided the estimation of the results.

$$DR_{drt} = \square + \beta UT \bullet SVE_{drt} + \gamma RGDPcap_{rt} + \delta SD_{irt} + \mu_t + \varepsilon_{rt}$$

$$[2]$$

Where U denotes urbanisation and T is time in years, both interacting with the percentage of students enrolled in schools in a district. In this study, an urban area is either the city or municipal council, as they are mainly capital cities of the regions in Tanzania and tend to be more affluent than the district and town councils, with towns being their headquarters. The latter are also characterised by rurality, having a higher proportion of villages and rural

development challenges, characterised by higher incidences of poor living conditions that may hamper students' access to schooling. The rural-urban development gaps inform several aspects relating to living conditions, hence impacting students' learning environments.

Measurements

The study uses generalised least squares (GLS) regression analysis to estimate the causal influence of the persistence of students living in vulnerable environments on dropout rates in secondary schools. As such, the dropout rate is the dependent variable, and the percentage of students living in vulnerable environments is the independent variable. The study controls for the number of schools registered in the district, town, municipal or city councils, the student-qualified teacher ratio (SQTR) and the regional per capita GDP to account for district and regional characteristics. These proxies mediate the impact of the persistence of students living in vulnerable environments on dropout rates.

The dropout rate is the proportion of students enrolled in a given grade in a given school year who are no longer enrolled in the following school year. The authors adopted dropout metrics documented in secondary school statistics issued by PO-RALG from 2019 to 2022. Therefore, this measure clarifies the percentage of students who leave the school system without advancing to higher grades of secondary education in the country. The study postulates that the current status of dropout rates depends on various aspects, including the persistence of students living in vulnerable environments after controlling for region and district conditions.

Students living in vulnerable environments metrics – this is the proportion of enrolments of students living under different situations that might compromise their schooling. The data are published yearly by PO-RALG and are accessed through the public domain. They include situations such as families with poor income, students living or passing near wild animals, usage of marine transport to and from school, pupils being heads of households, as well as experiencing sickness for more than three months. This proxy uses enrolment data, disaggregating the number of students living in vulnerable environments as a share of total enrolments. The percentage of the disaggregated data of students living in situations identified above is thus an estimate of students living in vulnerable environments. The study considered this attribute an independent variable of the study, as increases in the number of students living in vulnerable environments contribute to increases in the number of dropouts. This will enlighten the magnitude of the effect to inform decisions on the schooling of students living in vulnerable environments.

Districts' school size – this proxy is given by the total number of schools registered in the district in a given school year. The assumption behind its use is that the government and private investors continue to establish schools in different areas of jurisdiction. This is critical towards navigating the reduced number of dropouts to account for situations relating to vulnerability, such as constructing schools in such areas. This controls the persistence of students living in vulnerable environments. This proxy is just the total number of government and non-government schools found in the area of jurisdiction, as documented in the education statistics published by PO-RALG.

Student Qualified Teacher Ratio (SQTR) is the proportion of trained teachers employed in a district in relation to the number of students enrolled in a school year in the same jurisdiction. This measure is included because the number of teachers available in a school helps reduce dropouts by providing specialised guidance to students living in vulnerable environments. PO-RALG uses this metric as one of the attributes to account for school inefficiency. This study adopts the same measure that is found in the yearly published school data for pre-primary, primary, secondary, adult, and non-formal education statistics released by PO-RALG.

Regional per capita GDP is a proxy for regional Socio-Economic Status (SES) to account for the average income earned by individuals living in a particular region in a given time. It is one of the development measures used to estimate individual spending levels; hence, it may reflect the poverty level of households in the country. Consequently, improved regional per capita GDP is significant for improving the living conditions of the inhabitants and the ability of households to spend on the schooling of students. The same also induces investments in education, as schools can be constructed closer to homesteads, reducing the risk of students moving long distances, which can lead to increased dropout rates. The National Bureau of Statistics (NBS) publishes this measurement.

Table 1: Variables, data sources, proxies and units of measurement

S/N	Variables	Proxy and unit of measurement	Source of data
1	Dropout Rate	Percentage of students dropping out in secondary education in districts	President's Office Regional Administration and Local Governments (PO-RALG) 2019-2022
2	Students living in vulnerable environments	Percentage of students living in vulnerable environments as a share of total enrolments in the district	President's Office Regional Administration and Local Governments (PO-RALG) 2019-2022
3	Districts' school size	Total number of registered secondary schools in the district	President's Office Regional Administration and Local Governments (PO-RALG) 2019-2022
4	Student Qualified Teacher Ratio (SQTR)	The ratio of registered qualified teachers to the number of students enrolled in the district	President's Office Regional Administration and Local Governments (PO-RALG) 2019-2022
5	Regional per capita GDP	An average amount of income earned (TZS in Millions) by individuals in the region in a given school year.	National Bureau of Statistics (Tanzania) 2017-2023.

Source: Authors' construction, 2025.

Robustness Checks

The study adopts time series analysis using random effects Generalised Least Squares (GLS) regression analysis to estimate the results based on both intuition and quantitative methods on the estimation of educational data. According to Theobald (2018), students' flow data varies over time partly due to changes in school variables such as enrolments, dropouts or transition from one grade to another. Thus, such variations narrow the probability of school data being independent. Additionally, the authors performed linearity tests using the Wald Chi-statistics, homoscedasticity checks by using robust standard errors, as well as random effects using Breusch and Pagan Lagrangian multiplier tests. Finally, the study adopts a random effects regression model because the dataset violates the condition of independence and satisfies the condition of being random through robustness analysis.

Results

The study investigated the causal relationship between students living in vulnerable environments and dropout rates within the school system across districts. It is hypothesised that the persistence of students living in vulnerable environments positively influences dropout rates in secondary

schools, with the effects varying based on levels of urbanisation over time. The findings, as summarised in Table 2, reveal several notable scenarios.

Table 2: The effect of students living in a vulnerable environment on dropout rate

Variables	1	2	3
SLVE	0.104***	0.0815**	0.0785**
	(0.038)	(0.038)	(0.031)
SLVExUrbanization		0.196	
		(0.135)	
Urbanisation (baseline)		-4.792***	
		(0.944)	
SLVEx2020			-0.00463
			(0.024)
2020 baseline			0.902***
			(0.292)
SLVEx2021			0.0231
			(0.035)
2021 baseline			0.978**
			(0.394)
SLVEx2022			-0.0004
			(0.052)
2022 baseline			1.226**
			(0.544)
N	736	736	736
R^2	0.16	0.23	0.2
rho	0.76	0.74	0.77

Note: SLVE = Students Living in Vulnerable Environments, N = Number of observations, R^2 = R-squared, rho = Composite Reliability. Robust standard errors are reported in parentheses.
* $p<0.10$, ** $p<0.05$, *** $p<0.01$

Table 2 presents the results on the influence of the persistence of students living in vulnerable environments on dropout rates in Tanzanian secondary schools. Column 1 shows that the persistence of students living in vulnerable environments increases the overall dropout rate by 0.1 points. Figure 1(a) illustrates that this effect is proportional for both rural and urban schools, as dropout rates rise with an increase in the number of students from vulnerable environments. However, rural schools experience significantly higher dropout rates than urban schools, as evidenced by the steeper slope for rural schools compared to urban schools.

This variation is confirmed by the heterogeneity effect of urbanisation presented in column 2, where the impact is more pronounced in rural schools, with an increase of 0.08 points in dropout rates. In contrast, the effect is ambiguous for urban schools. Additionally, the baseline results indicate that dropout rates decrease significantly by 4.8 points if a school is located in a municipal or city council area. This suggests that even without students from vulnerable environments, dropout rates are lower in urban localities, further

highlighting that rural schools bear a greater burden of dropouts. Figure 1(b) reveals that dropout rates increase as the proportion of students living in vulnerable environments exceeds 8%. The effect is particularly pronounced in rural schools, regardless of the percentage of such students, when accounting for the interaction between locality and the number of schools. Conversely, the impact in urban schools remains lower and is most evident between 6% and 8% of students living in vulnerable environments. Beyond this threshold, the effect becomes ambiguous. Overall, the findings suggest that rural schools are disproportionately affected by high dropout rates due to the persistence of students living in vulnerable environments. These localities appear to be characterised by conditions that exacerbate the challenges faced by such students.

The results indicate that the number of students dropping out of the school system increased over the years. As shown in Table 2 (column 3), the persistence of students living in vulnerable environments raised dropout rates by 0.08 points in 2019, though ambiguity is observed in subsequent school years. However, the positive slopes across all school years (see Figure 2) suggest that dropouts among students from vulnerable environments persisted throughout the period under review. The findings further reveal that dropout rates increased significantly as schools enrolled more students from vulnerable environments. This impact became more apparent in the years following 2019, indicating a worsening trend. The issue became particularly severe when schools enrolled more than 8% of students from vulnerable environments. As illustrated in Figure 2, the slope for 2021 is notably steeper than in other years, signifying higher dropout rates during that year, particularly among students living in vulnerable conditions. Despite this, the baseline coefficients remain positive across all school years, indicating an overall increase in dropout rates, even without accounting for the effect of students from vulnerable environments. Moreover, dropout rates rose progressively over the years (Table 2). These results suggest that dropout rates in Tanzanian secondary schools have persisted and worsened over time, irrespective of government initiatives to implement policies aimed at encouraging student retention. The findings underscore the need for more targeted interventions to address the underlying factors contributing to these trends.

Discussion of the Findings
The study examined the impact of students living in vulnerable environments on dropout rates in Tanzanian secondary schools. The findings indicate that as the number of students from such backgrounds increases, more students exit the school system prematurely. Similar trends have been observed in related studies, including John et al. (2015) and Kalamba and Mpiza (2024),

emphasising the persistence of this issue within Tanzania's secondary education system. In the Tanzanian context, vulnerable environments include factors such as low-income households, dependence on marine transport, proximity to wildlife-inhabited areas, chronic illness, or assuming household head responsibilities. These conditions often expose students to hardships, such as engaging in child labour, that increase the likelihood of school dropout (Huber, 2023). By applying social capital theory, we can understand these environments as devoid of the supportive networks and social resources commonly found in more stable communities. Social capital refers to the value derived from relationships and networks of trust and reciprocity within a community. Students in vulnerable environments often lack access to these networks, such as engaged parent groups, active school communities, and mentoring relationships, which could otherwise buffer against dropout risks. Despite government investments in social welfare, such as constructing schools and subsidising direct costs through the fee-free education policy, students in low-resource settings still face persistent barriers to completing secondary education. This is partly due to limited bonding and bridging social capital, which could otherwise connect students to opportunities and institutional support (Luo & Chen, 2020; Mutisya et al., 2021; Naylor et al., 2019).

Sustained illness, lasting more than three months, also contributes to school dropout. While Tanzania has introduced health initiatives such as Toto Afya Packages (TAPs) under the National Health Insurance Fund (NHIF), many families in vulnerable environments are unable to afford even marginally higher-standard packages. The lack of accessible healthcare further isolates these students. It deepens their vulnerability, again reflecting a lack of institutional and relational social capital to bridge the gap between policy and individual access. Additionally, students in remote or geographically challenging areas face accessibility issues, a point echoed in Luo and Chen (2020), who underscore how structural inequalities and residential backgrounds shape students' educational trajectories. These challenges are more acute in rural schools compared to urban ones. Rural areas experience higher dropout rates, driven by socio-economic disparities and limited school access. Rural communities often lack the bridging social capital found in urban centres, including institutional partnerships, active alumni networks, and parent-teacher associations, all of which help retain students in school. As Asantemungu and Anicet (2019) note, the absence of nearby schools makes families prioritise short-term economic survival over long-term education, especially through children's involvement in agriculture or fishing. Furthermore, persistent poverty in rural regions limits families' ability to meet even minimal school-related costs (Mwinyi, 2024; Supianto et al., 2023). Regional GDP differences mirror these economic disparities, with

better-developed regions providing more robust educational infrastructure (Delesalle, 2018; Rodriguez et al., 2023). Social capital theory underscores how resource-poor environments lack the institutional trust and community support systems necessary to sustain school engagement, reinforcing dropout patterns.

The findings further suggest that dropout rates increase over school years, partly due to demographic changes, such as rising numbers of students from vulnerable backgrounds. According to Pezzulo et al. (2022), factors like family size and parental education shift over time, contributing to higher enrollment rates and thereby increasing the strain on school systems. While policies like compulsory and fee-free education have succeeded in expanding access (Goldin et al., 2003), they have also brought more students from socially marginalised groups into the education system. Without corresponding growth in school-level support systems and social capital, such as mentoring programs, peer networks, and community-school partnerships, schools struggle to meet these students' needs, leading to inefficiencies and dropouts. Previous studies (Frostad et al., 2015; Schwab, 2018; Toyon, 2024) have shown that students from vulnerable environments are more likely to drop out due to a lack of supportive teacher-student relationships. Social capital theory explains this through the absence of bonding capital in school settings; students who feel disconnected or unsupported by peers and teachers are more likely to disengage. Under-resourced schools often lack the relational depth necessary to build trust and sustained engagement (Sudrajat, 2021), further contributing to dropout.

In summary, while economic, geographic, and health-related challenges clearly influence dropout rates, social capital theory reveals how the absence of supportive social structures, both within families and schools, amplifies these risks. Strengthening social networks and building trust-based relationships across school communities may serve as a critical pathway to mitigating dropout, especially for students in vulnerable environments. Addressing these deficits in social capital alongside material poverty is essential for reducing educational disparities and improving retention in Tanzanian secondary schools.

Conclusion and Recommendations

Students living in vulnerable environments in Tanzania contribute significantly to the high number of early school leavers. Rural schools and communities are disproportionately affected due to limited development, leading to students dropping out of secondary education before completion. This trend undermines government initiatives aimed at achieving a higher proportion of students completing the secondary education cycle, as

envisioned by the Sustainable Development Goals (SDGs), particularly SDG 4.3.1. The findings underscore the importance of investing in social capital through secondary education, as pervasive social, economic, and environmental challenges hinder students' ability to remain in school. Persistent vulnerabilities within communities weaken social capital development due to the scarcity of both the quality and quantity of social resources, as posited by social capital theory. Government efforts to strengthen secondary education provision have been commendable, including introducing the fee-free education policy and improving student healthcare services. However, students living in vulnerable environments remain disproportionately affected by dropouts and fail to fully benefit from these government subsidies, mainly due to pervasive poverty and the challenging conditions in which they live.

Therefore, this paper proposes several recommendations to improve retention rates for students living in vulnerable environments: First, the fee-free education policy should be revised to include provisions for covering maintenance costs, such as learning materials and other necessities, for students from low-income families. This would help alleviate financial burdens and support continued schooling. Second, sustained illnesses lasting more than three months significantly contribute to dropouts among students living in vulnerable environments. The Toto Healthcare Packages (TAPs) should be revised to offer zero-cost healthcare services for such students, ensuring better access to treatment and reducing the likelihood of absenteeism or dropouts. Third, a tracking system should be established to maintain a database of students living in vulnerable environments. This system would help identify students in need of healthcare subsidies and other targeted support, improving the effectiveness of interventions. Finally, many students face challenges accessing schools, particularly those relying on marine transport or travelling through areas with wild animals. School planning should account for such geographical and environmental diversities, ensuring that schools are constructed in locations that minimise these barriers and reduce dropout rates. Moreover, some students drop out due to the persistence of low-income families. Parents in low-income families should strive to participate in income-generating activities that reflect their contexts to minimise poverty levels. These efforts would help bridge educational gaps and contribute to achieving SDG 4, which aims to ensure inclusive and equitable quality education for all.

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Appendices

Figure 1: The overall and interaction effect of SLVE on dropout rate due to rurality
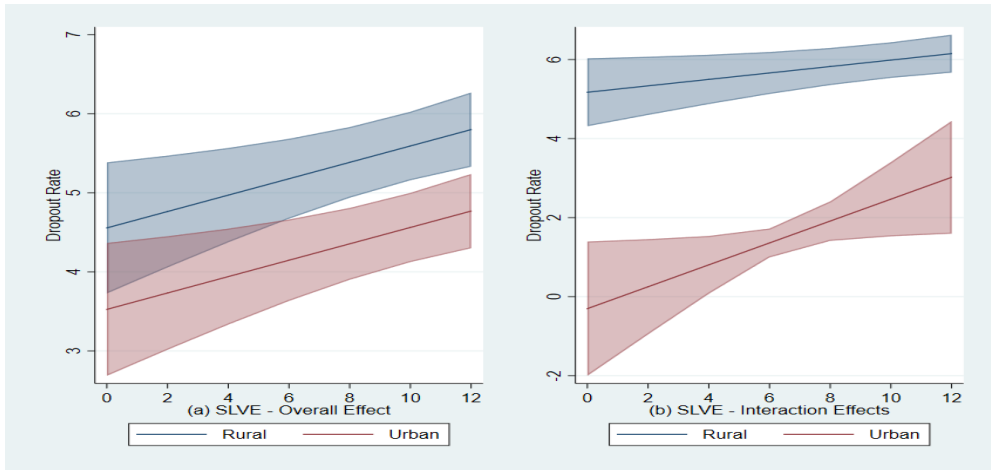
Note: SLVE = Students Living in Vulnerable Environment. All predictive margins = 95%
Source: Authors' construction

Figure 2: The interaction effect of SLVE on dropout rate due to school year
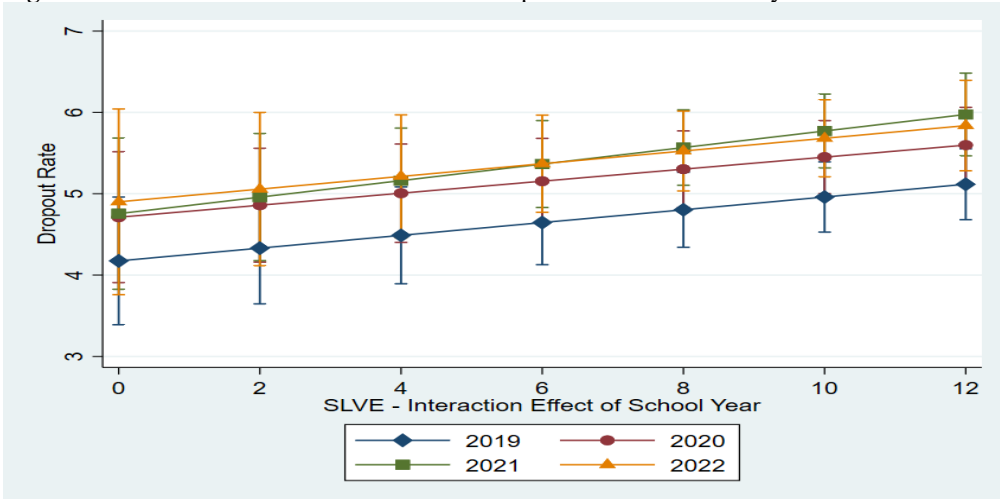
Note: SLVE = Students Living in Vulnerable Environment. All predictive margins = 95%
Source: Authors' construction

In-Service Education and Training and Teacher Performance in Ghanaian Senior High Schools

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Abstract

This study investigated the nature and types of In-Service Education and Training (INSET) programmes and teacher performance in some selected Ghanaian Senior High Schools (SHSs). A concurrent mixed methods design was employed as the research design for the study. A total of 102 respondents, comprising 97 teachers, 4 headmasters and a district training officer, participated in the study. Teachers were selected using a simple random sample; headteachers and district training officers were also chosen using purposive sampling techniques. Questionnaires and semi-structured interview guides were used to gather the data. Data was analysed using descriptive, inferential statistics (one-way ANOVA test) and thematic coding analysis. The study revealed that, though INSETs were not frequently organised in the district, the few INSETs took the nature of seminars, workshops, and refresher courses. Also, results indicated curriculum-related INSET was the most effective INSET type, and positively impacted teachers' performance. These impacts depend on the nature and mode of implementation of INSET types. The study concludes that targeted, well-structured, and subject-specific training is key to improving the effectiveness of teacher professional development and performance. The study recommends that the Ghana Education Service (GES) organises more frequent, curriculum-related INSETs for teachers, do periodic mandatory training, differentiated training and use practical-based INSET strategies like demonstration. Implications for policy and practice are discussed.

Keywords: *In-Service Education and Training (INSET) programmes, Professional Development, Public Senior High Schools, Teacher Performance.*

Introduction

To remain relevant and responsive, organisations need to engage in continuous human resource development (Nicole, 2015), of which In-Service Education and Training (INSET) programmes are a key component. A

teacher, just like any other employee, is developed from time to time through INSET (Adentwi, 2005). Medard (2017) explained INSET as all forms of education and training given to teachers and education administrators following initial professional training. INSET is also called continuous professional development, staff development, and professional development (Antwi et al., 2016; Ertürk, 2021; Osamwonyi, 2016). The Ghana Education Service (GES) owes its members an ongoing INSET. Adentwi (2005) posits that the preparation of teachers for their jobs does not end with their pre-service education at the college or university. It must be a career-long affair, hence the need for teacher INSET. According to Osamwonyi (2016), it is imperative to provide sound INSET for teachers to remain current to meet the demands of education in the global economy.

On the other hand, teachers' performance determines a person's level of success in a task and the factors that influence their success (Ertürk, 2021). In the educational system and many other occupational groups, teacher performance evaluation and function are assessed based on production results and customer satisfaction, which can give an idea about performance (Özgenel & Mert, 2019).

Globally, studies that have explored in-service training and teachers' performance in secondary schools have shown that successful in-service experiences impact teachers' work (Honore et al., 2022; Mahmood et al., 2022). Similarly, other studies revealed that in-service training and teachers' performance in secondary schools also showed that external courses and industrial experiences impacted teachers' work (Adika & Mung'ala, 2018; Antwi et al., 2016; Osamwonyi, 2016). In Ghana, findings on INSET and teachers' performance revealed that poor performance of teachers was due to a lack of frequent in-service training, lack of incentives and motivation, and improper supervision (Antwi et al., 2016; Asare et al., 2012).

Despite several Government of Ghana teacher training and development programmes, policies, and reforms aimed at improving teacher education, In-service teachers' performance remains low at the SHS level. Studies have bemoaned the disconnect between theory and practice, given the professional development programmes conducted for teachers and aimed at improving teachers' competencies in the classroom context (GES, 2007; Sims & Fletcher-Wood, 2021). In particular, at the SHS level (Antwi et al., 2016; Hervie & Winful, 2018) have argued for the provision of INSETs to provoke teachers' instructional practices to benefit the students. In addition, translating knowledge gained from such programmes into classroom practices has been

problematic. This is because planning and implementing INSET programmes remains a significant challenge in secondary schools (Honore et al., 2022).

Given the disconnect between teachers' performance in the classroom learning environment and students' learning outcomes at the SHS level, this study seeks to understand the impact of INSET on teacher effectiveness. Also, there is no specific study on the nature of INSETs on teachers' performance in public SHS in the Awutu-Senya District (ASWD). Further, the limited studies attributed the abysmal performance of educators to poor implementation of INSET (Antwi et al., 2016; Hervie & Winful, 2018). In response to this research gap, the current study sought to fill the void. Thus, this study investigated the nature and type of INSET programmes that affect teachers' performance in SHSs. To attain the study's purpose, these specific objectives were addressed:
i) To examine the nature of INSET programmes for public Senior High Schools teachers;
ii) To establish the types of INSET programmes conducted for public SHS teachers;
iii) To investigate the effectiveness of INSET programmes on teachers' performance.

This study significantly contributes to educational management and policymaking by supporting efforts in human resource development and management. Educational management supports the human resource development management to procure a quality workforce for the education enterprise.

Literature review
Theoretical framework
This study underpins the constructivism theory advanced by Vygotsky, Piaget, Dewey, Vico, Rorty, and Bruner (Kurt, 2021). The theory contends that knowledge is constructed as a group through interaction and knowledge-building. Thus, knowledge and practices built by teachers are intertwined with their own world experiences and those shared with their students. Becker (2002) argues that a theory of teaching and learning that addresses the issue of knowledge and the application of knowledge is the theory of constructivism, which can significantly improve INSET learning for teachers. Constructivism is a theory of knowledge-building based upon the pioneering work of Jean Piaget and Lev Vygotsky (Becker, 2002). Piaget's theory led to the conclusion that learning is not something that is "received" from someone (i.e., the teacher), but learning is "constructed" by the learner. Learning is

therefore achieved through active engagement by the learner. This active engagement depends on the learner's prior knowledge" (p. 2).

Constructivism informs INSET through contextual, collaborative, and experiential learning. School-Based INSET tackles real school challenges, while Cluster-Based INSET enables peer knowledge construction. Workshops and lesson studies promote hands-on, reflective participation. During INSET, teachers connect new strategies to prior practice, collaboratively solve classroom issues, and engage in iterative reflection, enhancing pedagogical skills, professional autonomy, and sustainable improvements that strengthen teaching effectiveness and student outcomes (Vygotsky, 1978; Avalos, 2011; Darling-Hammond et al., 2017). Thus, Constructivist theory was anchored on the potency to assist in the human resource development of GES staff, especially teachers, through INSETs to enhance their capacity, who in turn train or educate others.

Figure 1: Conceptual framework

INSET Programmes → **Teacher Performance** →

1. Effective lesson preparation &
2. delivery
3. Effective classroom management
4. Improved teachers' performance
5. High students' performance
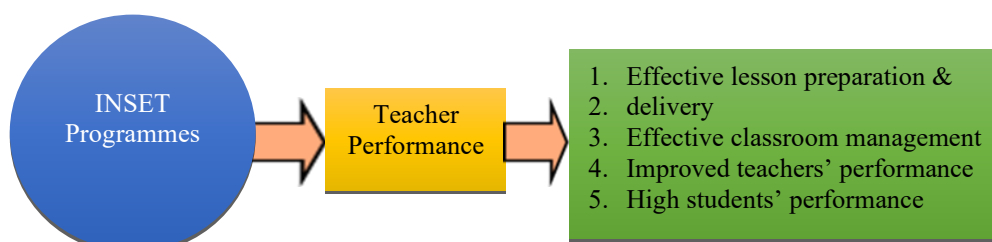
Authors' Construct (2020)

The conceptual framework depicts the assumption that there is a conceptual link between the natures of INSET programmes and teachers' performance in this study. It is assumed that the nature and type of INSETs impact teachers' performance (which results in effective lesson preparation & delivery, effective classroom management, improved teachers' performance, and high students' performance). Thus, the human capital of teachers is enhanced and reflected in the following by-products, as shown in the conceptual diagram. The Constructivism theory informs the study (Becker, 2002; Kurt, 2021).

Concept and nature of INSET programmes for teachers

Osamwonyi (2016) explained INSET as all the relevant courses and activities a serving teacher may engage in, be it formal or informal, to upgrade themselves personally, professionally and academically. INSET programmes, as described by Adentwi and Baafi-Frimpong (2010) and Osamwonyi (2016), encompass various professional development activities for teachers.

These include *courses,* which may be short or long, aimed at providing specific skills or enhancing knowledge. *Committees* involve five or more members collaboratively addressing complex problems beyond the capacity of the whole staff. *Conferences* are academic gatherings where invited speakers present on topical or controversial issues, encouraging participants to listen, question, and discuss both formally and informally. *Meetings* serve as platforms for critical discussions and investigations of current professional issues. *Professional reading* entails engaging with journals, magazines, and other educational resources for continuous learning. *Lectures, seminars, and symposia* update teachers on new concepts and practices, while *retreats* allow groups to withdraw to secluded environments to reflect and deliberate on key issues. Finally, *workshops* provide hands-on skill acquisition in moderate-sized groups, often guided by expert facilitators (Adentwi & Baafi-Frimpong, 2010; Osamwonyi, 2016).

Types of INSET programmes

INSET programmes can be categorised into several types based on their purpose and mode of delivery (Adentwi, 2005; GES, 2008). *INSET undertaken at the initiative of the individual learner* occurs when a practising teacher engages in self-directed learning, such as professional reading or research, to enhance their knowledge or solve job-related problems. *Short-lived formal INSET* includes workshops, seminars, lectures, conferences, refresher, and induction courses organised to update teachers' knowledge and skills, usually lasting a few days or weeks. These may or may not provide certificates or contribute to career advancement. *Award-bearing INSET* involves structured academic or professional training, either full-time or part-time, leading to certificates, diplomas, or degrees. *INSET for unqualified teachers* is designed to retrain newly recruited or sub-qualified teachers to meet basic professional standards.

Similarly, *INSET to upgrade teachers* focuses on advancing sub-qualified or pupil teachers to higher professional grades after additional training. *INSET for new roles* equips qualified teachers for specialised duties such as school administration, guidance and counselling, continuous assessment, or serving as trainers of trainers. Finally, *curriculum-related INSET* introduces teachers to new curricular innovations or supports the implementation of educational reforms, ensuring teachers are well-prepared to deliver updated learning experiences effectively (Adentwi, 2005).

School-Based INSET (SBI) is organised within schools to address critical needs or deficiencies identified by teachers, heads, or school support officers

(GES, 2008). *Cluster-Based INSET (CBI)* brings together two to five schools to share best practices and challenges under the guidance of school heads (Prempeh, 2011). *External INSETs* are offered by external bodies like the Canadian Teachers Federation, while *internal INSETs* occur at district or school levels (GES, 2008; MOE, 2010). *Computer-Based Training (CBT)* delivers interactive, computer-mediated instruction for skill-specific training, widely used in institutions with high success rates (Learning Media, 2010; Boye, 2010). INSETs are also classified by purpose: induction, foundation, on-the-job, refresher, and career development training or by content, ranging from basic awareness to skill proficiency and transfer to classroom practice (Banki, 2017; Gabriel-Wettey, 2015).

INSET programmes and teacher performance

INSET programmes not only improve teacher performance in secondary schools in terms of teaching expertise, but they also advance knowledge and upgrade the supply of information for educating students. INSET helps them maintain better classroom discipline while improving teacher confidence in their profession through methodology and student interaction (Hervie & Winful, 2018; Norwani et al., 2017). Medard (2020) opined that INSET for teachers plays a critical role in the education system because evidence shows that teacher training and education are essential. Research and reports have highlighted its roles in international organisations and governments.

On teachers' performance, Nayak (2011) considered it as the level of effort an individual teacher puts in an endeavour to complete a task successfully, by considering the quality and quantity of the service. The concept seeks to make known the teacher's work output as evidence of work done. According to Erturk (2021), assessing a teacher's performance determines a person's level of success in a task and the factors that influence their success. In the education system and many other occupational groups, teacher performance evaluation and function are assessed based on production results and customer satisfaction.

Stronge (2013) outlines a two-tiered framework for assessing teacher performance: performance standards and performance indicators. The seven standards include data-driven planning, instructional delivery, assessment, learning environment, communication, professionalism, and student achievement. Indicators focus on instructional planning, pedagogy, and classroom management. Additionally, the GES nationwide INSET programme on SBI/CBI Lesson Observation Chart (GES, 2008) identifies five performance rating levels: Poor, Needs Improvement, Satisfactory, Good, and Excellent, to evaluate teaching effectiveness in schools.

Michael (2017) highlights the importance of training in new skills and modern methodologies for effective teaching. Research by the UNESCO Institute for Statistics (2006) on Kuchinerla School for Girls in Andhra Pradesh, India, shows that in-service training positively impacts teachers' performance. Similarly, Egert et al. (2020) emphasise that teachers' effectiveness directly affects the quality of education. INSETs (in-service education and training) help teachers enhance their pedagogical strategies, classroom management, and teaching methods. Asomah et al. (2023) further demonstrate the effectiveness of INSETs in improving the pedagogical content knowledge (PCK) of in-service mathematics teachers (IMTs), noting significant improvements post-training despite initial challenges. Despite these positive outcomes, teacher performance remains low in certain districts, particularly in the ASWD. Hence, a need to examine the nature and implementation of INSETs in Ghana, as a link between effective training and improved teacher performance can be hypothesised.

Methodology
Research design
This study employed a mixed-methods research approach and a concurrent mixed methods design because the design generally uses separate quantitative and qualitative strategies to offset the inherent weaknesses in one method with the strengths of the other method (Creswell & Creswell, 2018). The researchers obtained different but complementary data on the nature of INSETs and teachers' performance in public SHS in the ASWD. The quantitative data offered a better understanding of the problem, while the qualitative data helped clarify the quantitative results obtained from the study data (Creswell & Creswell, 2018). The design was deemed fit for the study because it allowed for the simultaneous collection of quantitative and qualitative data, merged the data, and used the results to understand the research problem (Creswell & Creswell, 2018).

Population and sampling
The study was conducted in the ASWD, one of the district assemblies in the Central Region of Ghana. The population of 130 for this study comprised all district public-school teachers, headmasters and GES office staff. A total sample size of 102 respondents was used for the study. The quantitative part of the study, with 97 respondents, was selected using Krejcie and Morgan's (1970) criteria for selecting sample size using a simple random sampling technique from the total population (Cohen et al., 2007). Also, the qualitative part, 4 Headmaster/mistress (HM) and a District Training Officer (DTO), making 5, were purposively selected for the interview sessions. The criteria

for choosing 4 HM and a DTO were based on their years of experience (at least 10 years); be directly responsible for training and supervising teachers' work, and be 'information rich' (Creswell & Creswell, 2018).

Research instrument

A self-constructed structured questionnaire consisting of three parts was used to collect quantitative data. Section "A" consisted of biographic data, section "B" sought respondents' views on the nature of INSETs, section "C" on types of INSETs, and section "D" on the effectiveness of INSETs on teachers' performance, all containing 23 items. A five-point Likert scale (Very Low-1, Low-2, Average-3, High-4, Very High-5) was used in the study. Also, the qualitative phase entailed using semi-interviews (4 items) on 4 HM and a DTO to provide the researchers with their perspectives on the nature and type of INSETs and teachers' performance. The technique brings the researchers into direct interaction with the study participants to understand the nature and types of INSET and teachers' performance.

Validity and reliability of the instrument

Validity was addressed in the study as data were gathered by quantitative and qualitative means, achieving triangulation to improve study rigour. Reliability was attained through pilot testing of the instrument in a district with similar characteristics. The feedback helped to fine-tune the instrument for the actual study. For the qualitative part of the study, the researchers employed member checking to safeguard the credibility of the results (Creswell & Creswell, 2018).

Ethical and Data Collection Procedure

Questionnaires were distributed to the consenting teachers in the selected schools. Prior to collecting data, ethical approval was obtained from the Ghana Education Service, and participants gave informed consent. The researchers retrieved all the 95 completed questionnaires, which allowed the informants a two-week wait time. To garner qualitative data, the researchers conducted a 25-minute face-to-face interview with each of the 4 HM and the DTO. Interviews were audio-recorded and handwritten to prevent data loss. Also, pseudonyms were given to all interviewees to safeguard respondents' anonymity.

Data analysis

First, quantitative data were organised and analysed using SPSS 24.0. Frequencies and percentages were used to display biographic data and address research questions. A one-way ANOVA was conducted to determine the most effective INSET type on teachers' performance. Secondly,

qualitative data were coded and thematically analysed in relation to the research questions in the study. The researchers immersed themselves in the data through repeated reading of the documents and assigned codes to the data (4 SHS Headmasters/mistresses-HM1, HM2, HM3, HM4 & District Training Officer-DTO), identifying categories which are related to different codes, and describing codes under each of the categories in detail (Creswell & Creswell, 2018).

Results
Respondents' biographic data
The biographic information of the respondents showed that gender, highest professional qualification, and length of teaching experience, which is proof of their participation in INSETs, are relevant to determine whether INSET influences teachers' performance. Also, it indicates that of the 100 respondents, 62.1% of SHS teachers were males, and had attained their highest professional qualification (Bachelor's degree). Moreover, only two of the SHS teachers, 2.1% have HND certificates. Further, 23.2% of the participants have 'Master's degrees. Again, the bio data showed that the majority of teachers, 48.4%, have been teaching between 11 and 15 years.

Research Question 1: What is the nature of INSET programmes for public SHS teachers?

Table 1: Distribution of the nature of NSET programmes

Items	Frequency	Per cent (%)
Nature of INSET programmes		
Seminars & workshops	68	72.0
Refresher courses	15	16.0
Conferences	7	7.0
Further studies	5	5.0
Total	**95**	**100**
Other characteristics of INSET programmes		
External	10	10.5
Internal	22	23.2
School-based INSET (SBI)	56	58.9
Cluster-based INSET (CBI)	7	7.4
Total	**95**	**100**

Results from Table 1 revealed that most INSETs (72.0%) took the nature of seminars and workshops. The majority (58.9%) said INSET took the form of school-based (SBI) in the district. The qualitative data gathered through interviews aligns with the quantitative data above, as respondents shared that:

> The district education office conducts internal INSETs for teachers. This comes in the form of Cluster-Based INSET and School-Based INSET.

> External INSETs are occasionally organised in the district. These are usually organised in the form of workshops, seminars and induction services. …to either update the knowledge, skills and attitude of teachers. (HM2).

> Our INSETs usually are organised in the form of workshops, seminars, refresher courses and induction services. This is done to update teachers' knowledge, skills and introduce them to new trends in education, curriculum and methodologies in order to adjust and cope with the changing demands of their job (DTO).

Three of the HM2, HM3, HM4, and the DTO from the education office who took part in the interviews were unanimous on the nature of INSETs as internal and external. However, one HM shared a contrary view, which was apparent in the quote below:

> The district education office conducts only internal INSETs for teachers. This comes in the form of School-Based INSET and Cluster-Based INSET. Even though the internal INSETs are occasionally organised in the district and are mainly in the form of workshops and seminars (HM1).

The responses of HM1 indicated that teachers in the ASWD do not benefit from INSETs from the GES equally. Internal INSETs are those organised within the district for teachers. They may be SBI or CBI as posited by HM2. External INSETs are those organised by GES or bodies outside the district; such INSETs may come from national, regional, and other NGOs like MOE, JICA, and CFT.

Research Question 2: What are the types of INSET programmes conducted for public SHS teachers?

Table 2: Distribution of types of INSET programmes

	Frequency	Percent (%)
Types of INSET programmes are organized		
INSET for the unqualified teachers	6	6.3
INSET to upgrade teachers	25	26.3
INSET for new roles	6	6.3
Curriculum-related INSET	58	61.1
Total	**95**	**100**
Types of INSET programmes considered most effective		
INSET initiated by individual teachers	2	2.1
Short-lived formal INSET	17	17.9
Award-bearing INSET	5	5.3
Curriculum-related INSET	71	74.7
Total	**95**	**100**

Table 2 indicates the INSET types that exist and those that are mostly organised for teachers in the ASWD. The data indicated curriculum-related INSET type (61.1%) as the most organised INSET. Also, the majority (74.7%) of the respondents believed that the most effective INSET for SHS teachers was the curriculum-related INSET. About the qualitative data gathered through interviews with the four public SHS heads (HM1, HM2, HM3, HM4) and the DTO on types of INSETs used in the ASWD. The responses confirmed the facts stated in the qualitative analysis above. Again, whereas HM2, HM3, HM4, and the DTO agreed that curriculum-related INSETs are the most suitable INSETs for teachers to deepen their understanding of the curriculum, HM1, in answering the same question, however, remarked:

> There are many types of INSET programmes for different categories of teachers. However, professional teachers who already know the ins and outs of teaching and learning need INSET for new roles to enhance their administrative position beyond their teaching roles (HM1).

HM1, however, thinks INSETs for new roles are the most appropriate for professional teachers.

Research Question 3: How effective have INSET types been on the performance of public SHS teachers?

Table 3: Ratings of the effectiveness of INSET types on teachers' performance in the district

Effectiveness' of INSETs on Teachers' Performance	Very Low (1) N (%)	Low (2) N (%)	Average (3) N (%)	High (4) N (%)	Very High (5) N (%)
INSET for the unqualified teacher	12(12.6)	40(42.6)	7(7.4)	21(22.1)	15(15.8)
INSET to upgrade teachers	2(2.1)	12(12.6)	4(4.2)	40(42.1)	37(38.9)
INSET for new roles	7(7.4)	15(15.8)	5(5.3)	52(54.7)	16(16.8)
Curriculum-related INSET	2(2.1)	3(3.2)	2(2.1)	51(53.7)	38(44.2)
INSET initiated by individual teachers	9(9.5)	14(14.7)	3(3.2)	34(35.8)	35(36.8)
Short-lived formal INSET	14(14.7)	16(16.8)	2(2.1)	40(42.1)	23(24.2)
Award-bearing INSET	7(7.4)	6(6.3)	7(7.4)	37(38.9)	37(38.9)

ANOVA analysis of the effectiveness of INSET types on teacher performance

The purpose of the ANOVA test was to determine whether the different types of INSET programmes significantly differ in their effectiveness in improving public Senior High School teachers' performance.

Table 4: ANOVA test

Source of Variation	Sum of Squares (SS)	Degrees of Freedom (df)	Mean Square (MS)	F-Statistic	P-Value
Between Groups	120.798	6	20.133	13.93	5.98×10−155.98 \times 10^{-15}5.98×10−15
Within Groups	951.052	658	1.445	-	-
Total	**1071.850**	**664**	**-**	**-**	**-**

The results from Table 4 of the ANOVA test show that significant differences exist. The F-Statistic = 13.93 and the P-Value = 5.98×10−155.98 \times 10^ {-15} 5.98×10−15 indicate a Statistically Significant Difference in the effectiveness of different INSET types. This suggests that not all INSET programmes are equally effective in enhancing teachers' performance. Also, the Sum of Squares Between Groups (SSB) = 120.798 shows that the different INSET types explain a considerable amount of variance in teacher performance. Further, the Sum of Squares Within Groups (SSW) = 951.052 still accounts for substantial variability within individual INSET types, suggesting that other factors (e.g., teaching experience, motivation) influence teacher performance. Also, following the Tukey Post Hoc Test, pairwise comparisons among the seven INSET types revealed statistically significant differences (p < 0.05). The results showed that Curriculum-related INSET, INSET to upgrade teachers, and Award-bearing INSET were rated significantly more effective than INSET for the unqualified teacher, which was the least effective. These findings suggest that professional development efforts should prioritise the more impactful INSET types. Figure 2 below presents a visual summary of the effectiveness ratings, reinforcing the need to enhance effective INSETs and reconsider less impactful ones.

Figure 2: Visual summary of the effectiveness ratings for each INSET type
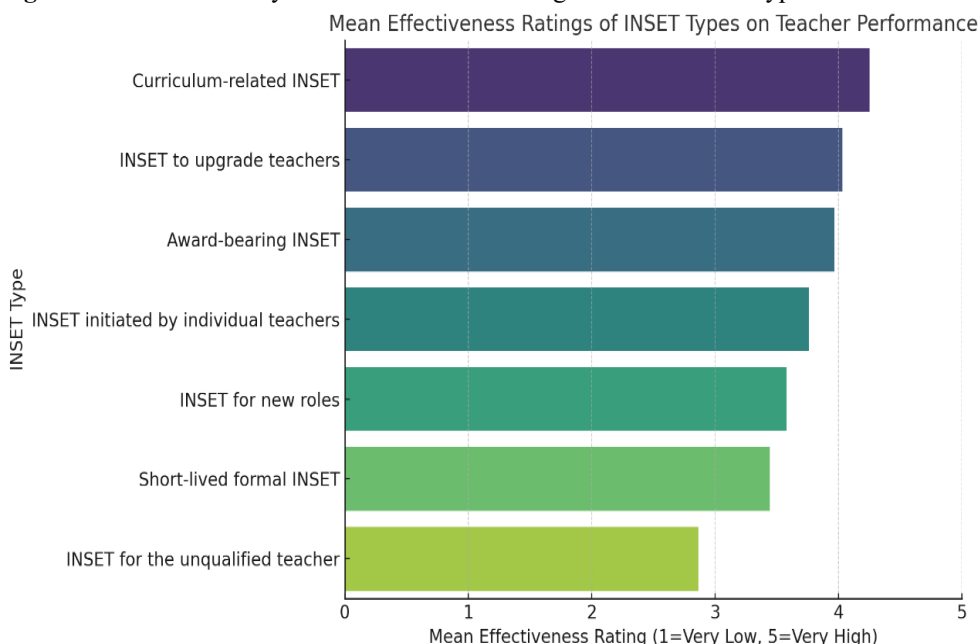
Figure 2 presents the mean effectiveness ratings of INSET types based on teacher responses in the Awutu-Senya West District. Curriculum-related INSET received the highest rating, followed by INSET to upgrade teachers, Award-bearing INSET, and INSET for new roles. INSET initiated by individual teachers and Short-lived formal INSET showed moderate effectiveness. INSET for the unqualified teacher received the lowest rating. These findings support the Tukey post hoc results, highlighting the need to prioritise high-impact INSETs and reconsider those with limited effectiveness.

Also, the qualitative data gathered through interviews aligned with the quantitative data on how effective INSET types are on teachers' performance, as expressed below:

> INSET programmes are an integral part of teacher preparation and development. For this reason, the influence of INSET on the work of a teacher cannot be overemphasised. INSETs help to upgrade the knowledge, skills and attitude of teachers. Secondly, it helps to improve teachers' methodology and sharpen the competences of teachers, which help them perform their job effectively (HM2).

> I think that updating teachers' knowledge, skills and attitudes INSET is very vital. Also, to introduce teachers to new trends in education, curriculum, and methodologies, INSETs are necessary. Again, for teachers to adjust and cope

with the changing demands of their job, INSETs are needed. These are why I think INSETs influence the performance of teachers (DTO).

Table 5: Effectiveness of INSET programmes on teacher performance in the ASWD

		Types of INSET programmes are mostly organised for teachers in the district	Types of INSET programmes considered most effective for SHS teachers	How often are external or internal INSETs organised for SHS teachers in the Awutu-Senya West district
N	Valid	95	95	95
	Missing	0	0	0
Mean		3.28	3.53	1.54
Std. Deviation		.930	.861	1.060

Table 5 above shows the Mean (M) and Standard Deviation (SD) of the effectiveness of INSET programmes on the performance of public SHS teachers. Data from the table indicated M (3.28), SD (0.930) for types of INSETs, mainly organised for teachers in the district. These show that the mean is high while the SD is low. Also, concerning the type of INSETs considered most effective for public SHS teachers, Table 5 portrays M as (3.53) and the SD as (0.861). Again, the M (1.54) and SD (1.060) indicated that the external or internal INSETs are often organised for public SHS teachers on a low scale in the district.

Discussion
Nature of INSETs
This study investigated the nature and type of INSET programmes on teachers' performance in some selected SHSs in Ghana. Results from the survey revealed that most INSETs in the district took the form of seminars and workshops. This finding corroborates earlier studies that reported that methods used for teacher INSETs to help teachers update their knowledge and skills in teaching include seminars, conferences, refresher courses, formal lectures, and workshops (Adentwi, 2005; Asomah et al., 2023; Osamwonyi, 2016). Also, most respondents cited methods of teaching as the most effective area for INSET. This is consistent with Egert et al. (2020), who state that teachers' effectiveness directly impacts the education standard delivered to students. Further, the majority selected refreshment needs of teachers as most frequently used INSET. Refreshment needs are one of the four professional teacher needs. INSET in this area is given to teachers with emphasis placed on updating teachers' knowledge and skills learnt in the past (Asomah et al., 2023). Moreover, teachers who vacated teaching should be reinvigorated to perform to expectations (Adentwi, 2005).

The qualitative data gathered through interviews confirm the above assertion, indicating that INSETs exist in the district and come in the form of SBI and CBI. These training formats are grounded in principles of collaborative learning, idea sharing, self-help, and teamwork among staff to solve teaching and learning challenges, as corroborated by MoE (2010) and Prempeh (2011). This aligns with constructivist theories by Becker (2002) and Kurt (2021), who argue that knowledge is socially constructed through interactive group engagement, such as SBI sessions, where collective problem-solving enhances professional learning. Most respondents identified the refreshment of teachers' knowledge and skills as a common objective of INSETs in the district. Prempeh (2011), citing Morant (1981), explains that INSETs should begin with the professional needs of teachers, which are diverse and numerous. Interviews confirmed the existence of both internal and external INSETs in the Asutifi South West District (ASWD). Three heads (HM2, HM3, and HM4), along with the District Training Officer (DTO), agreed on the nature and purpose of INSETs. Internal INSETs, such as SBI and CBI, are organised locally within the district to address school-specific or cluster-level challenges. External INSETs, on the other hand, are conducted by the Ghana Education Service (GES), NGOs, or national and regional bodies and may take the form of workshops or seminars. However, HM1 presented a contrasting view, indicating that not all teachers in the ASWD benefit equally from GES-facilitated INSETs. The DTO added that SBI and CBI are coordinated by the district and fall under internal INSETs, often tailored to meet the needs of local teachers. Additionally, the GES Circuit Supervisors' Handbook (2002) notes that SBI is often conducted for teachers within the same school, encouraging staff to identify and resolve specific teaching-learning needs collaboratively. Overall, findings confirm that teachers learn effectively in group-based settings and that both SBI and CBI provide platforms for co-operation and professional growth. This collaborative, context-driven model of INSET is well-supported by constructivist theory, which emphasises the importance of shared experiences and group knowledge-building in teacher development (Becker, 2002; Kurt, 2021).

Additionally, the result indicated that the curriculum-related INSET type was the most organised INSET. Two important points can be inferred from the above data. First, respondents admit knowledge of all the INSET types in the district, which is good for education delivery. Second, curriculum-related INSET will help to equip teachers with curriculum knowledge and skills for effective teaching (Adentwi, 2005). Also, most respondents believe that the most effective INSET for SHS teachers was the curriculum-related INSET. The data indicated that they have experience from both internal and external

INSETs. Curriculum-related INSET was rated as the most frequently organised and most effective, respectively, for SHS teachers in the district. Such INSETs are designed to introduce teachers to innovations taking place in schools' curriculum or to help implement education reforms. In support of the above points, Michael (2017) asserts that if teachers' performance is effective and efficient, training in new skills and modern methodology must be prioritised. Therefore, a teacher's performance is indicative of their knowledge in pedagogy. This can be enhanced by organising INSETs for teachers. Hence, curriculum-related INSETs are crucial as they impact knowledge, skills and attitudes; and introduce teachers to new trends in education, curriculum and methodologies, thus improving teachers' performance (Egert et al., 2020).

The findings indicate that not all INSET programmes equally enhance teacher performance. Consistent with prior research (Adentwi, 2005; Hervie & Winful, 2018), curriculum-focused INSETs prove most effective in improving instructional delivery, emphasising the value of targeted training in addressing pedagogical gaps and fostering professional growth (Osamwonyi, 2016). The results also support constructivist learning theories (Becker, 2002), advocating for interactive, problem-solving-oriented training linked to real classroom practice. Conversely, INSETs for unqualified teachers were the least effective, suggesting that generic programmes lack the impact of specialised, skill-based approaches. Interestingly, the minimal difference between curriculum-related and short-lived formal INSETs suggests that short-term programmes, if well-structured with clear objectives, can be equally effective. Therefore, curriculum-related INSETs should be prioritised and expanded for sustained improvement in instructional quality. Meanwhile, less effective programmes, especially those for unqualified teachers, should be restructured to emphasise hands-on training. ANOVA and Post Hoc results confirm that INSET type significantly influences teacher performance, with curriculum-related and upgrading INSETs offering the most significant benefits.

Again, HM2, HM3, HM4, and the DTO agreed that curriculum-related INSET is the most appropriate for professional teachers, as it deepens their understanding of the school curriculum. In contrast, HM1 believed that INSET for new roles is more suitable for professional teachers. Curriculum-related INSET is designed to introduce teachers to innovations in the school curriculum and assist in implementing educational reforms (Adentwi, 2005). It can therefore be inferred that such INSETs are tailored for professional and practising teachers, aiming to enrich curriculum implementation and reform

processes. The DTO concurred with SHS heads on suitable INSET types for SHS teachers, including award-bearing INSET, INSET for unqualified teachers, INSET for new roles, INSET to upgrade teachers, curriculum-related INSET, and short-lived formal INSET. Additionally, the DTO introduced School-Based INSET (SBI) and Cluster-Based INSET (CBI), supported by GES (2008) and MOE (2010), which define SBI as INSET organised at the school level to address specific professional gaps identified by teachers, headteachers, and circuit supervisors. From the discussions, it is evident that curriculum-related INSET, INSET to upgrade teachers, CBI, and SBI are widely regarded as the most suitable for professional teachers. Participants emphasised that professional teachers, already grounded in educational fundamentals, require INSETs that enhance efficiency and productivity. These types of INSETs are believed to broaden teachers' knowledge, skills, and expertise, aligning with previous studies that highlight the value of structured in-service training in promoting continuous academic and professional development. Quantitative data (Table 3) confirmed these findings, identifying curriculum-related INSET as the most effective for SHS teacher performance.

Qualitative data from interviews with four SHS heads (HM1–HM4) and the Training Officer (TO) confirmed that curriculum-related INSET is the most effective in enhancing SHS teacher performance in the district. The responses suggest that the type of INSET significantly impacts teacher performance and that continuous sensitisation through targeted INSETs is essential. Teacher preparation and development emerged as an ongoing process rather than a one-time event. INSETs were found to update teachers' knowledge, attitudes, and methodological skills, equipping them with the confidence and competence to deliver quality instruction. HM3 emphasised that continuous INSET participation improves performance and keeps teachers informed about current educational policies and curriculum changes. This aligns with the GES Circuit Handbook (2002), which highlights INSET's role in introducing new ideas and practices. Triangulation of qualitative (interviews) and quantitative (questionnaires) data shows strong agreement that curriculum-related INSETs play a vital role in boosting teachers' professional growth and effectiveness.

Effectiveness of INSET
On the effectiveness of INSET programmes on teachers' performance in the AWSD, data from Table 5 indicated M (3.28), SD (0.930) for types of INSETs mostly organised for teachers in the district. These show that the mean is high while the SD is low. This implies that the type of INSETs

mainly organised for public SHS teachers has a high impact: M (3.28) on teachers' performance in the district. Also, concerning the type of INSETs considered most effective for public SHS teachers, Table 5 portrays M as (3.53) and SD as (0.861). This means many INSETs are considered most effective for SHS teachers in the district, with a few deviations. Further, the M (1.54) and SD (1.060) indicated that the external or internal INSETs are often organised for public SHS teachers on a low scale in the district. This implies that external or internal INSETs are not often organised for public SHS teachers in the district. A mean of 1.54 and an SD of 1.060 show almost equal measures of importance placed on both external and internal INSETs for teachers in the district.

Theoretical Implications
Constructivist-informed INSET promotes collaborative, reflective, and problem-based learning. Teachers co-create solutions, reflect on practice, and address real classroom issues, leading to context-specific pedagogical skills, professional autonomy, and sustainable improvements embedded in their practice, enhancing both teaching effectiveness and student outcomes (Darling-Hammond et al., 2017; Avalos, 2011).

Conclusion and Recommendations
The study results revealed that most INSETs in the district took the nature of seminars, workshops and SBI. Also, the results of the study showed that INSET programmes significantly impact the performance of public SHS teachers. Also, the results of the ANOVA analysis confirm that INSET type significantly impacts teacher performance, with curriculum-related and upgrading INSETs being the most impactful. Furthermore, the use of the same type of INSETs for organising training for all categories of teachers does not bring out the best in teachers, hence teachers' underperformance and apathy towards INSETs in the district. These findings suggest that targeted, well-structured, and subject-specific training is key to improving the effectiveness of teacher professional development in Ghana's public SHS system.

The study recommends that the Ghana Education Service (GES) organise more frequent Curriculum-related INSETs for teachers, prioritising needs assessment and frequency of INSETs for teachers. Also, since Curriculum-Related INSETs were rated the most effective, education policymakers should focus on expanding them, ensuring periodic mandatory training, differentiated training, and making sure they are practical and tailored to teachers' subject areas. Additionally, GES should establish teacher resource

centres and use practical-based INSET strategies like demonstration. Further, since teachers highly rated INSET for upgrading their skills. Finally, school heads should endeavour to do school-based INSET for their teachers to build their capacity.

Implications for Policy and Practice
The curriculum-related INSET had the highest effectiveness ratings, meaning that teachers find INSET programmes focusing on curriculum enhancement the most beneficial. This suggests that professional development programmes designed to adequately address their needs, improve teachers' skills, particularly through upskilling and modern methodologies, play a critical role in enhancing performance. These programmes likely contribute to skill development, but their impact may depend on factors like duration, content relevance, and practical application in the classroom. The results provide valuable insights for policymakers and educational institutions in designing and implementing INSET programmes that yield maximum impact on teacher effectiveness.

Limitations and areas for further studies
The study was restricted to only teachers from public SHSs in the ASWD. Hence, the deficit in the generalisation of the findings of this research across all SHS. Further studies should be conducted to predict teacher characteristics that unearth detailed areas of interest that provoke their willingness to translate what they learn during INSETs to the classroom context.

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Challenges of the Form One Orientation Programme in Tanzania: Experiences from Selected Community Secondary Schools in Moshi District Council

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Abstract
The study objective was to identify the specific challenges of the Form One Orientation Programme (FOP) in community secondary schools within Moshi District Council. A qualitative research approach with a case study design was adopted. Two secondary schools were selected, with a total of 5 participants, including 2 Heads of Schools (HOS), 1 District Secondary Education Officer (DSEO), and two 2 Schools Quality Assurers (SQA). Data were gathered through semi-structured interviews and unstructured observations. Findings show that the majority of schools struggle to implement the FOP due to institutional barriers such as transferring of Form One students while the FOP is in progress, managing overcrowded classrooms, late reporting of students, and a lack of training for heads of schools in supervising the FOP. The study recommended future studies that could adopt a quantitative or mixed approach, using larger samples to assess the challenges of the FOP, to generalise the findings and examine strategies for unlocking the barriers to successful FOP.

Keywords: Form One Orientation Programme, English language proficiency, and students.

Introduction
The Form One Orientation Programme (FOP) in education is a global practice. It plays a vital role in helping students adapt to their new academic environments and minimising the challenges associated with this transition. In Germany, the FOP is an important milestone to ensure students' successful transition from primary to secondary school, focusing on academic and social integration (Griebel & Berwanger, 2006). The FOP is not the same worldwide; its focus differs depending on the educational system of a given country.

In South Africa, the Form One Orientation Programme (FOP) offers psychological and motivational support to learners, helping them build

confidence in adapting to their new educational environment (De Wit et al., 2010). In Kenya, the orientation programme focuses on familiarising students with school rules and routines while guiding potential career pathways (Sigei, 2013). These variations display how different educational contexts influence the design and objectives of FOPs to address the unique needs of students in each country. This demonstrates that for each country, FOPs are modified based on specific cultures, backgrounds, and educational contexts.

In Tanzania, the FOP was launched to address the English language barrier faced by secondary school students. Designed explicitly for Form One students, the FOP aims to improve their English language proficiency, thereby ensuring that they can fully engage with the curriculum and resulting in better learning outcomes (TIE, 2014). The FOP is intended to offer intensive language training, familiarise students with academic English terms, and provide ongoing support to boost their confidence in English usage. This focus on language skills in form one class helps reduce learning difficulties and smooth the transition to secondary schooling.

According to the Education and Training Policy, the language of instruction in secondary schools is English (URT, 2024). As the FOP serves as a foundation to bridge the gap between primary and secondary education, significant challenges hinder its effectiveness in some schools (Murasi, 2013). This study aims to identify the specific challenges faced in secondary schools within Moshi District Council (DC). Understanding these challenges is crucial for improving the implementation of the FOP, ensuring that students make a successful transition to secondary schooling and maximise their learning potential.

The current study aims to identify the challenges hindering the effective implementation of the FOP in Moshi District Council and assess their impact on students' English language proficiency in secondary education. Without such a study, these challenges may remain unaddressed, potentially affecting students' academic achievement. Handling these issues is crucial for improving student outcomes in English-medium classrooms and ensuring students are better prepared for future academic success. An effective FOP should address the setbacks that may hinder its successful implementation and support students' adjustment throughout the transition.

Theoretical Framework
This study is grounded in Social Cognitive Theory (SCT), developed by Albert Bandura, which explores how individuals' behaviour is shaped by cognitive and environmental factors (Bandura, 1986). Central to SCT are the concepts of self-efficacy, self-regulation and observational learning, which

are crucial in the FOP context. The school leaders with high self-efficacy are more likely to feel confident in their ability to overcome challenges hindering the FOP. The self-regulation process is self-monitoring, ensuring that the programme is effectively delivered, even when faced with challenges.

The concept of observational learning could be realised particularly through collaboration and mentoring. Observing and learning from more experienced heads of schools can improve their strategies for supervising the FOP implementation. Additionally, environmental factors such as administrative support and available resources are critical to understanding how these elements either facilitate or hinder the FOP. Together, these components of SCT provide a comprehensive framework.

Literature Review
Studies highlight several challenges in implementing the FOP in secondary schools. One key issue is the variation in the timing and duration of the FOP across schools. Additionally, schools face challenges such as inadequate materials, overcrowded classrooms, teachers' limited skills in teaching the FOP, and difficulties managing the programme due to high student enrollment (Murasi, 2013).

Lyimo & Mapunda (2016) further emphasise that the absence of teacher guidebooks contributes to these challenges. Teachers, especially those who are novice or inexperienced, need these resources to facilitate FOP lessons confidently. Moreover, the varying language backgrounds of both learners and teachers, coupled with the lack of teacher training on how to implement the FOP effectively, create additional barriers. The challenge of teaching English as a second language remains significant, as many teachers struggle to teach in English.

Johanes (2017) underscores the impact of limited English competence among teachers on the success of the FOP. Teachers often resort to poor teaching strategies such as code-switching and code-mixing, which hinder students' language development. Johanes argues that these practices lead to students' failure to learn English, lower their confidence in speaking the language, reduce practice opportunities, and ultimately impede their ability to master English. Overall, the short duration allocated for the FOP is insufficient for students to achieve the desired language proficiency, compounding these challenges.

Studies also highlight a mismatch between the FOP's objectives and available resources in many schools. Murasi (2013) points out that insufficient funding, inadequate teacher training, and a lack of materials like

textbooks and teacher guidebooks limit the programme's effectiveness. Overcrowded classrooms compound these challenges by reducing the individual attention teachers can give students, especially those struggling with English. These issues hinder the successful implementation of the FOP and its ability to support students' transition to English-medium education, emphasising the need for better resource allocation and targeted interventions.

In their study, Yohana and Mwila (2022) pointed out that students in Kinondoni Municipality, Tanzania, encounter several challenges during the FOP, such as struggling with limited English language proficiency, which affects their comprehension of course content and restricts their participation in discussions. Approximately 61% of students reported feeling uncomfortable using English in class, leading to passive involvement. The lack of confidence in speaking English is coupled with negative attitudes toward the language and the FOP. These challenges create barriers that would undermine the effectiveness of the FOP in enhancing students' English language proficiency.

While studies such as Murasi (2013) in Dodoma have explored the challenges of implementing the Form One Orientation Programme (FOP) in secondary schools, there remains a significant gap in research focusing on the specific challenges faced by schools in Moshi, Tanzania. The dynamics of FOP implementation in Moshi may differ due to local factors such as student demographics, administrative support, school management, and varying levels of resource allocation. These context-specific challenges could further hinder the FOP's success in the district, highlighting the need for research on Moshi's unique educational setting.

Although previous studies in Tanzania identified challenges of the FOP, they might manifest differently in Moshi due to regional variations. The specific contexts of Moshi could result in unique barriers and experiences which may not be present in other places. The need to understand these differences was a crucial motive for undertaking the study in Moshi.

Methodology
This study adopted a qualitative research approach and a case study design. The research was conducted in Moshi District Council, in Kilimanjaro Region of Tanzania. A total of 5 participants in the study, including 2 Heads of Schools, 2 School Quality Assurance Officers, and 1 District Education Officer. Semi-structured interviews and unstructured observations were used in data collection, which yielded in-depth insights into the challenges of the FOP. The interview responses were complemented by observations conducted

in naturalistic settings, enhancing the validity of findings through triangulation. Observations specifically focused on classroom infrastructure and the interactions between teachers and pupils during FOP. Data were thematically analysed, which involved coding and identifying key themes to uncover patterns related to the challenges of the FOP. The study ensured ethical adherence through asking for permission from authorities, participants' informed consent, anonymity and confidentiality (Creswell & Creswell, 2018).

A purposive sampling technique was employed to select participants directly involved in monitoring and supervising the implementation of FOP in secondary schools. Kombo and Tromp (2006) suggest selecting individuals who could provide detailed and relevant information based on their experiences in the supervision of the FOP. Miles and Huberman (1994) emphasise the importance of ensuring the sample contains relevant data, permits the transferability of results, and considers the potential for effective analysis. A small sample was selected from two low-performing schools to allow for a deep and detailed exploration of the phenomenon under investigation. Qualitative studies typically use small samples due to constraints related to time and resources (Cohen, Manion, & Morrison, 2000). Patton (1990) argues that in qualitative research, the number of respondents is less important than the quality of the selected participants. He further suggests that even a single informant can provide sufficient and reliable data to generate valid findings.

Results and Discussion
The present study's following themes provide a detailed discussion of these findings.

Form One Students' Transfers to Other Schools
The study found that many students could not fully attend the Form One Orientation Programme (FOP) in its entirety due to the complex process of transferring to other schools. Due to the geographical challenges and administrative issues surrounding school placement, parents often request transfers to schools closer to their homes. These transfer requests are sometimes made before the FOP concludes, resulting in students missing out on the entire programme. In an interview, SQA1 explained this situation:

> ...reallocation of students causes disturbance and difficulties in implementing the FOP... selection of students should be based on the distance from home... (SQA 1).

Explaining this challenge, the DEO said:

> All students have to attend the FOP. Nevertheless, parents have the right to choose schools for their children; hence, they are allowed to transfer their children if they think that joining the school will cause them a lot of inconvenience... (DEO).

The finding above discloses that the authorities responsible for the placement of students in different secondary schools did not consider geographical distance. Considering the geographical location of students would reduce the need for transfers while the FOP is progressing. This, in turn, would prevent students from missing out on the entire duration of the FOP.

Overcrowding Classrooms

Through the interview and observation, the study revealed that overcrowded classrooms were a hurdle to implementing the FOP. Overcrowded classes in schools A and B showed a challenge to the implementation of the FOP. The classroom environments were not friendly enough to facilitate interaction between teachers and students. Expressing the challenge of classroom congestion in secondary schools, the SQA 2 said in the interview:

> ...lack of sufficient classrooms is a big problem for many schools. This results in overcrowded classes and consequently, poor teaching of the FOP... (SQA 2).

The findings from classroom observations in Schools A and B showed overcrowded conditions. The challenge of inadequate infrastructure made approximately four students share a desk. Students in the classrooms were closely packed together, leaving little space for teachers to move or interact. The overcrowding caused discomfort for both students and teachers, making running the FOP difficult as teachers struggled to manage the large number of students. The conditions observed establish that overcrowded classrooms in both schools challenge the effectiveness of the FOP. Thus, a lack of sufficient classroom space creates difficulty for the FOP to be taught successfully.

These findings correspond with Maganga's (2016) study, which found that many schools in the Ilala Municipality experienced classroom congestion, creating challenges for teaching and learning. In such an environment, it is unrealistic to expect effective learning, as both teacher-student and student-student interactions are limited. Additionally, Murasi (2013) highlighted that overcrowded classrooms were a barrier to implementing the FOP. The researcher found that classes were too large for teachers to manage effectively. Overcrowding results in reduced interaction between teachers and students, making it difficult to facilitate the FOP. Additionally, SCT acknowledge that environmental factors such as administrative support and

other resources can address the overcrowded classroom that impairs FOP (Bandura, 1986).

Late Reporting of Students

The study observed that some students reported late, either in the middle of or after the FOP had started. In some cases, students did not report until the FOP six-week period had ended, while it must be conducted soon after the school calendar begins. Some of these students missed the FOP or were only able to participate partially in the FOP. This created challenges for implementing the FOP, as student selection and posting were not managed within the school's administrative boundaries. Students who partially participated or missed the FOP entirely experienced inconsistencies in acquiring English language proficiency. As HoS B explained:

> ...some students report late. The time for the FOP is to be extended to three months, or the selection of students is made early. There must be a time limit for students to report. Sanctions to latecomers can help... (HoS B).

The above statement shows that students who joined the FOP mid-way or after it had started would be deprived of the opportunity to acquire English proficiency within the intended period. It requires students to complete the FOP for six weeks of attendance. Regarding the reporting time, HoS A said:

> Student reporting times vary considerably. Some arrive in the morning, others in the afternoon. While some are punctual, many are late, with some arriving as much as two weeks after the school's opening date (HoS A).

Therefore, it would be beneficial if the concerned authorities selected Form One students earlier. They should also set a clear deadline for all students to report, for instance, a few days before the school term, to ensure that all students attend the FOP on time. The study found that the late reporting of students was caused, among other factors, by the transfer of students from one school to another. Many students preferred to study in schools closer to their homes, but were selected to attend more distant schools. As a result, parents spend a considerable time arranging transfers for their children.

Lack of Heads of Schools and Teacher Training

The study found that teachers lacked experience in teaching and managing the FOP, which suggests that both teachers and Hos need training to effectively implement the programme. When asked about the challenges in supervising the FOP's implementation, the head of Secondary School B responded:

> ... HOS need to be oriented; first on how to monitor the FOP and secondly, on coaching teachers who are the main implementers of the FOP ... (HoS B).

Based on the above findings, it is evident that school heads must be properly oriented to effectively guide the teachers they supervise, ensuring better practices rather than relying on the traditional, routine approach to running the FOP. Previous studies have highlighted the need for teacher training in implementing the FOP in Tanzania (Faustin, 2014; Murasi, 2013). The district SQA also confirmed that training is a professional requirement. In response to the interview question about the challenges encountered in supervising the FOP in secondary schools, SQA 1 stated:

> ...Many schools conduct the FOP based on experience, but almost everything has changed today. Therefore, HOS should adopt new practices in implementing the FOP. This can be achieved by organising training for their teachers... (SQA 1).

Based on the view above, both teachers and school heads require regular training to update and broaden their understanding. Running the FOP is not solely a matter of experience, as students' needs and learning methods evolve. Training helps HoS and teachers update their skills and equips them with the necessary tools to facilitate students' learning effectively. A study conducted by Murasi (2013) in Dodoma, Tanzania, supports these findings, stressing challenges in FOP, including limited teacher facilitation skills. While insufficient English proficiency contributes to ineffective teaching strategies (Lyimo & Mapunda, 2016; Johanes, 2017).

Nevertheless, the SCT suggest that HoS and other administrators should learn from other schools to ensure that FOP challenges are solved. Learning from more experienced and successful HoS can improve their strategies in running the FOP (Bandura, 1986). For example, establishing internal staff updating training, experienced staff collaborating to mentor inexperienced staff, might work well.

The study by Yohana and Mwila (2022) highlights that the lack of seminars and training on proper FOP implementation has been identified as a significant challenge. Additionally, these challenges extend to teachers and students' negative attitudes toward the programme. If these challenges are not addressed, the FOP's intended objectives will unlikely be achieved. Studies suggest pre-service and in-service teachers should be oriented to the challenges associated with the language of instruction in secondary schools (Lyimo & Mapunda, 2016).

Apart from fore-identified challenges, the study by Yohana and Mwila (2022) identified key strategies in the FOP that can be used to enhance English language proficiency among students, including peer tutoring, which fostered collaboration and confidence, and positive teacher-student interactions that encouraged active participation. Additionally, student support through extra resources helped address individual learning challenges. These strategies emphasise the importance of collaboration in effective language acquisition during the FOP.

Conclusion

The study concluded that challenges in running the FOP in secondary schools in Moshi, such as overcrowded classrooms, lack of teachers' training, late student reporting and frequent transfers while the FOP was in progress, deprived some students of fully participating in the FOP. The study further concluded that certain challenges, such as late student reporting and frequent transfers to other schools that disrupted the smooth implementation of the FOP, stemmed from factors outside the administrative control of schools.

Recommendations

The findings of this study lead to two recommendations. Initially, future research could adopt a quantitative or mixed-methods approach to assess the challenges of the FOP in different regions for a broader generalisation of findings. Furthermore, it is recommended that studies be conducted, examining strategies for unlocking the barriers to successful FOP to ensure that it is given due importance as an essential element of students' academic development in Tanzania's unique secondary schooling. Finally, the study suggests establishing a policy on form one students' transfer timelines, mandating FOP-specific in-service teacher training and infrastructure investment guidelines to reduce overcrowding.

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Factors influencing teachers' adoption of digital technologies in Tanzanian special needs classrooms

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Abstract
In the 21st century, teaching increasingly emphasises the use of digital technologies (DT) to enhance learning and equip students with digital skills. However, in developing countries like Tanzania, the adoption and competence of special needs (SN) teachers in DT integration remain limited. This study investigated the factors influencing the integration of DT in SN classrooms, focusing on both adoption and teacher competencies. A total of 80 pre-service and 7 in-service SN teachers in Dodoma, Tanzania, participated in a survey using an adapted questionnaire based on the Technological Pedagogical Content Knowledge (TPACK) and the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) frameworks. Findings indicated that SN teachers held positive attitudes and demonstrated high competencies in using DT. Technological Content Knowledge (TCK) significantly predicted actual technology use (β = .430, p < .001), while Technological Pedagogical Knowledge (TPK) strongly predicted behavioural intention to use DT (β = .802, p < .001). Despite this, challenges such as limited access to digital tools, a lack of authentic training, and a shortage of SN education technology experts were identified. The study recommends embedding technology-focused training into teacher education programs and providing practical, hands-on experiences to strengthen adoption. By combining TPACK and UTAUT2, this study offers a comprehensive understanding of DT integration among SN teachers in Tanzania. It contributes valuable insights to the field of inclusive education and teacher preparation in low-resource contexts.

Keywords: *TPACK, UTAUT 2, in-service, pre-service, digital tech knowledge, special needs, attitudes*

Introduction
Digital technologies (DT) have the potential to enhance learning outcomes for learners with special needs, particularly those with intellectual, developmental, and learning disabilities (IDLD), in Tanzanian inclusive classrooms. However, their adoption by teachers remains limited by several challenges. In special needs education (SNE), DT can enhance personalised

and interactive learning, encouraging participation, creativity, and autonomous learning for different learners (Badr & Asmar, 2020; Fielding & Murcia, 2022). However, effective integration of DT requires teachers to have suitable digital competencies, positive attitudes, and access to appropriate resources, which are often lacking in Tanzania's resource-constrained educational system (Kafyulilo et al., 2016).

Tanzanian SNE teachers face significant challenges in the use of DT, including limited infrastructure, unavailability of assistive technologies, and limited training on technological pedagogical content knowledge (TPACK; Huang et al., 2020; Lameras & Moumoutzis, 2021). Across African contexts, the challenges such as expensive internet, unavailability of IT hardware, and socio-cultural factors, for example, negative attitudes towards technology, are the same challenges that hinder DT integration, with Tanzania facing some additional limitations due to poor awareness and SNE support (Chikopela et al., 2022; Njoroge et al., 2022). These challenges are most evident in inclusive primary schools, where teachers have to meet multiple learner needs with minimal resources, underscoring the necessity of understanding adoption barriers in this context.

The Tanzanian policies, such as the Persons with Disabilities Act (2010) and the National Strategy for Inclusive Education (2021/22–2025/26), mandate accessible education and teacher training in digital skills to promote equal opportunities for students with disabilities (MoEST, 2021; URT, 2010). However, policy gaps, in terms of poor policy frameworks, scarcity of resources, and low awareness, limit the effectiveness of these mandates in SNE settings (Kisalam & Kafyulilo, 2012). Teachers' digital competencies—encompassing skills to support students' ICT use, design technology-mediated learning environments, and adopt inclusive and creative approaches—are critical for overcoming these barriers and aligning with policy goals (Howard et al., 2021; Lameras & Moumoutzis, 2021).

This study examines Tanzanian SNE teachers' DT adoption determinants, including their technological knowledge, attitudinal preparedness, and behavioural intention in inclusive classrooms for IDLD students. By exploring both in-service and pre-service teachers' experiences, the research aims to provide actionable insights into overcoming adoption barriers, such as limited TPACK and infrastructure constraints, through a pragmatic mixed-methods approach (Venable et al., 2016). The findings seek to inform targeted training programs and policy implementation strategies to enhance

DT integration, ensuring equitable and effective education for students with special needs in Tanzania's resource-scarce context.

Literature Review
Special Education and Special Education Teachers' Training in Tanzania
The Tanzanian government has put forward multiple efforts in the provision of education for learners with disabilities, such as the establishment of inclusive and special schools and integrated units, enhancement of teacher training through the establishment of special needs teachers' colleges, such as Patandi, undergraduate special needs education degree programs in public universities, and provision of some disability assistive devices, such as hearing aids and braille machines (Possi & Milinga, 2017).

However, Tanzania still faces challenges in disability education, such as a lack of professionals and teaching and learning resources (Ndibalema, 2019; Possi & Milinga, 2017). Among the increasing number of learners with disabilities is the intellectually disabled group (MoEST, 2018, 2019). The National ICT Policy for Basic Education highlights several objectives, including facilitating the development and use of ICT as a pedagogical tool in teaching and learning, and for the professional development of teachers, administrators, and managers. However, it also highlights several challenges, including inadequate training and capacity development, resulting in the underutilization of ICT facilities (URT, 2007).

Theoretical background
Koehler and Mishra (2009) suggest that technology needs to be added to pedagogy and content while teaching today. They further clarified that the active technology is in the form of DT. This means that computers and computer software have now come into play. While other frameworks, such as the European DigCompEdu, exist for assessing teachers' digital competencies, this study adapted the TPACK framework to evaluate both in-service and pre-service teachers' ability to integrate digital technology, ensuring broader applicability. The TPACK framework is formed when pedagogy, content, and technology intersect. The traditional double component that has existed and is persistent among teachers is pedagogical content knowledge (PCK) (Koehler & Mishra, 2009). PCK is the knowledge of better teaching strategies based on the content. Technological content knowledge (TCK) is the knowledge of the technology used for specific content, such as physical, practical simulations. Technological pedagogical knowledge (TPK) is the knowledge of pedagogically suitable technology, such as Web 2.0 tools, presentation software, and game-based software for

teaching. The intersection of all three forms the TPCK, which is the knowledge of the content with its appropriate technological and pedagogical tools. TPCK was later named TPACK. Figure 1 shows the TPACK knowledge intersections.

Figure 1. TPACK knowledge adapted from (Koehler & Mishra, 2009)
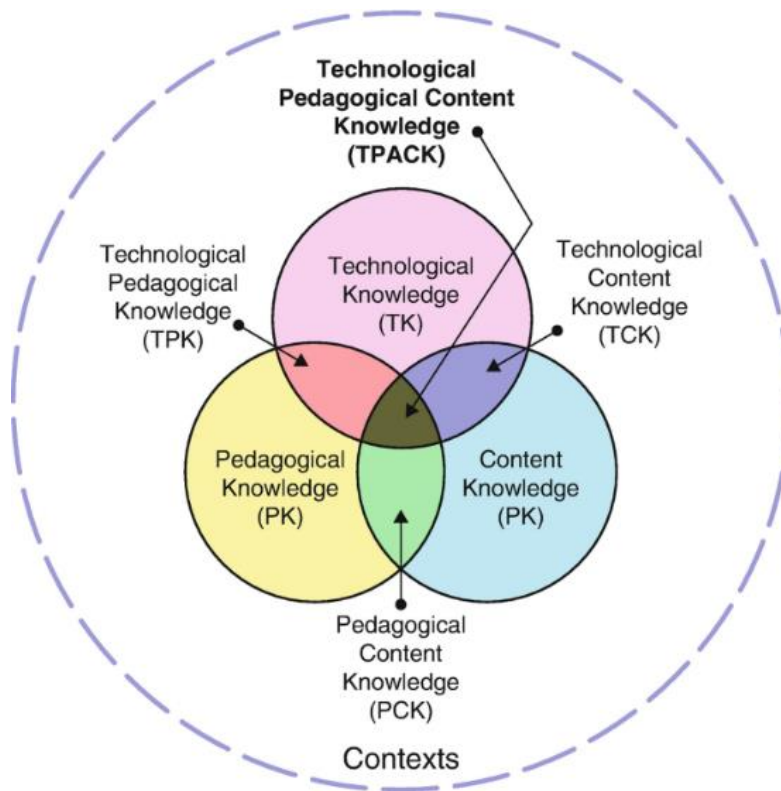
The UTAUT 2 was used because it contains a comprehensive list of technology adoption and use factors from various other technology acceptance models. The model suits the study goal to identify attitudinal, expectations, social and environmental factors influencing technology use by SN teachers (Venkatesh et al., 2012). The UTAUT 2 model has seven factors that determine an individual's intention to use technology. These are performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), hedonic motivation (HM), price value (PV), and habit (H). The behavioural intention (BI) determines the use behaviour (UB). These factors were moderated by age, gender and experience. Figure 2 represents the UTAUT 2 model.

Figure 2. The UTAUT 2 model adapted from (Venkatesh, Thong, & Xu, 2012b)
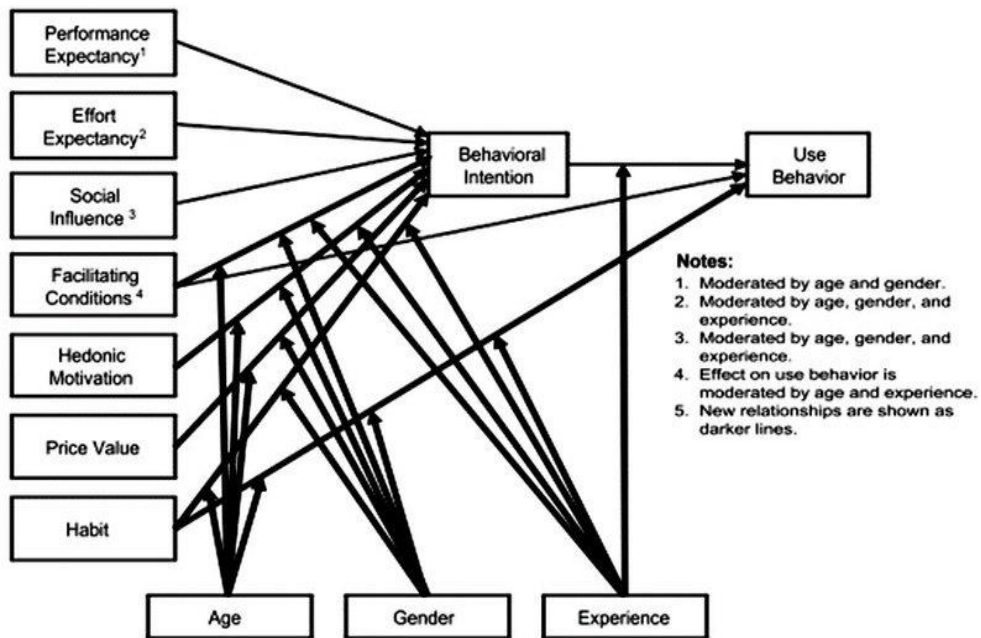
TPACK and UTAUT studies

The integration of DT in teaching and learning requires teachers to have competencies in the use of technologies for subject matter and contexts (Koehler & Mishra, 2009). Pre-service teachers obtain such competencies in their training, while for in-service teachers, various ways, including professional development and self-motivation, can be considered to impart competencies.

Although pre-service teachers' TPACK correlates well with other basic and integrated knowledge domains, technological knowledge (TK) alone does not lead to technology integration in teaching and learning, especially in science subjects (Kartal & Dilek, 2021). Kartal and Dilek (2021) found that TK and TCK did not improve after a technology-based class for pre-service science teachers. They argue that simply introducing instructional technologies and practices into technological integration activities does not necessarily lead to TCK knowledge acquisition. Such knowledge requires the exploration of specific technological tools for a specific subject.

It was observed that SN pre-service teachers in Kuwait had high attitudes toward technology use and understood the potential of using technology in SNE, but needed TPACK knowledge (Alawadh et al., 2019). Alawadh et al.

(2019) assert that pre-service teachers' frequent use of DT did not reflect their self-efficacy in TPACK knowledge integration.

It is a norm that teachers' CK, PK and PCK will be high because they are obtained from the teachers' education programs. Huang, Chen, and Jang (2020b) studied TPACK knowledge among in-service teachers of students with visual impairments in China and Taiwan. It confirmed that the teachers' TPK and TCK were low. This was attributed to limited access to and use of assistive devices, and a shortage of knowledge and skills to use such devices.

With more female teachers in special education in Indonesia, gender is not an issue in TPACK knowledge (Cahyani et al., 2021). This is because all teachers must improve their professions. In contrast, Huang et al. (2020b) found high TK, TPK, and TCK levels among male in-service teachers in China and Taiwan. The study identified that older teachers were more acquainted with CK and PK but needed to improve technology integration than younger in-service teachers.

On the other hand, DT adoption in Tanzania is affected by various factors. Kafyulilo et al. (2012, 2013, 2016) studied ICT integration among pre-service and in-service Science and Mathematics teachers. They identified various factors leading to inefficient teacher preparation and a lack of continual ICT integration. Such factors include limited access to ICTs, a shortage of ICT knowledge among teacher educators, limited use of available ICTs for teacher preparation programs, and personal and institutional factors for continual use of ICTs among Science and Mathematics teachers.

Several attitudinal, competence and environmental factors have been highlighted from the above studies. It has been confirmed that efficacy in basic TPACK knowledge (TK, CK, PK) by teachers' training does not guarantee the integration of technology in classrooms (Kaplon-Schilis & Lyublinskaya, 2019). While it is essential to use technology for disability learning (Lejeune & Lemons, 2021; Shahid et al., 2022), TPACK knowledge among SN teachers seem not sufficient. Little has been reported on TPACK knowledge and DT adoption among K-12 SNE teachers in Tanzania. The study sought to answer the following questions:

i) What are SN teachers' competencies and perceptions of adopting DT in classrooms of students with IDLD in Tanzania?
ii) What TPACK (competence) factors influence the use of DT by SN teachers of students with IDLD in Tanzania?

iii) How can the competencies and adoption of DT by Tanzanian SN teachers of students with IDLD be improved?

The study hypotheses are:
H1: TPACK knowledge influences behavioural intentions to use DT.
H2: TPACK knowledge influences DT use.

Methodology
Study Method
This study employed a quantitative approach to investigate the adoption and digital competencies of pre-service and in-service teachers. Data were collected through a questionnaire. The questionnaire featured a 5-point Likert scale and an open-ended question to assess teacher competencies and adoption factors.

Research Instrument
This study used the adopted TPACK and UTAUT questionnaires to assess digital technology use and competence factors. The TPACK items are adopted from Schmidt, Baran, and Thompson (2009), Koh and Chai (2014a) and Valtonen et al. (2017). Most items in the questionnaire were adopted from Koh and Chai (2014b), a few from Schmidt et al. (2009) and the latest TPACK constructs were extracted from the study by Valtonen et al. (2017). The UTAUT items are adopted from Venkatesh, Morris, Davis, and Davis (2003) and Venkatesh et al. (2012a). The questionnaire contained 41 items in 16 categories of both the TPACK and UTAUT2. It was a 5-point Likert scale. Table 1 shows each item's origin.

Table 1. The instrument items and their origin

SN	Construct	Sample Construct items	Adopted from	No, 0f items
1	Content Knowledge (CK)	I have sufficient content knowledge about Kiswahili teaching.	(Koh & Chai, 2014)	2
2	Pedagogical Knowledge (PK)	I know how to assess a student with intellectual and developmental impairment performance in a classroom. I can assess students with intellectual and developmental impairments learning in multiple ways.	(Schmidt et al., 2009)	5
3	Technological Knowledge (TK)	I know how to solve my technical problems when using digital technologies. I keep up with important new technologies. I can use social media	(Schmidt et al., 2009)	6
4	Pedagogical Content Knowledge (PCK)	Without using technology, I know how to select effective teaching approaches to guide students with intellectual and developmental impairment in thinking and learning Kiswahili subject matter	(Koh & Chai, 2014)	2
5	Technological Content Knowledge (TCK)	I know ICT applications which I can use to better understand the contents of the Kiswahili subject.	(Valtonen et al., 2017)	2
6	Technological Pedagogical Knowledge (TPK)	I can choose technologies that enhance students with intellectual and developmental impairments' learning for a Kiswahili lesson. I am thinking critically about how to use technology in my classroom.	(Schmidt et al., 2009)	7
7	Technological, Pedagogical and Content Knowledge (TPACK)	I can structure activities to help students construct different representations of the content knowledge using appropriate ICT tools.	(Koh & Chai, 2014)	2

SN	Construct	Sample Construct items	Adopted from	No, 0f items
8	Models of TPACK (MTPACK)	My lecturers outside of education appropriately model combining content, technologies and teaching approaches in their teaching.	(Schmidt et al., 2009)	3
9	Performance Expectancy (PE)	Using digital technologies (e.g. mobile phones, laptops, desktops, digital cameras, software, apps, etc.) increases my productivity in teaching.	(Venkatesh et al., 2003, 2012)	2
10	Effort Expectancy (EE)	I find digital technologies easy to use.	(Venkatesh et al., 2003, 2012)	2
11	Social Influence (SI)	People who influence my behaviour think that I should use digital technologies.	(Venkatesh et al., 2003, 2012)	3
12	Facilitating Conditions (FC)	Digital technologies are compatible with other technologies I use.	(Venkatesh et al., 2003, 2012)	2
13	Hedonic Motivation (HM)	Using digital technologies is enjoyable.	(Venkatesh et al., 2003, 2012)	2
14	Price Value (PV)	Digital technologies are a good value for money.	(Venkatesh et al., 2003, 2012)	2
15	Behavioural Intentions (BI)	I intend to continue using digital technologies in the future.	(Venkatesh et al., 2003, 2012)	2
16	Actual Use (U)	Frequent use of Kiswahili learning software, computer applications, printers, photocopiers, interactive whiteboards etc.	(Venkatesh et al., 2003, 2012)	5

The items in the questionnaire were reworded to add the teaching subject (Kiswahili reading) for TPACK constructs and available digital technologies devices for UTAUT constructs. The questionnaire was also contextually modified to reflect the Tanzanian education settings, for example, the use of lecturers in the MTPACK construct. Moreover, some questions about some constructs were left out before the tool reliability check since they were not relevant, for example, the CK construct. The same questionnaire was used for the qualitative part of the study with an open-ended question. The qualitative single open-ended question was constructed from the study question 3 in section 2 above. The questionnaire was later piloted with 24 respondents. The reliability of the questionnaire items was established using Cronbach's alpha and computed using SPSS version 20 to be 0.924. To maintain the high reliability of the questionnaire, some items of the scale and constructs were deleted, such as Habit (H). The items' Cronbach's alphas are shown in Table 2.

Table 2. Questionnaire reliability

Likert Scale	No. of items	Cronbach's alpha
CK	2	.80
PK	5	.76
TK	6	.83
PCK	2	.72
TCK	2	.90
TPK	7	.88
TPACK	2	.89
MTPACK	3	.82
PE	2	.81
EE	2	.85
SI	3	.85
FC	2	.90
HM	2	.80
PV	2	.72
BI	2	.78
U	5	.71

Participants
There are six SNE schools operating in the form of mainstream classes and special-needs units. The participants in this study were in-service teachers from special-needs units in primary schools in Dodoma City, Tanzania. Therefore, special-needs teachers were purposefully selected from these units. Each school unit had at least two special-needs teachers.

The other group of participants was pre-service teachers at the University of Dodoma, College of Education (COED). These participants take a bachelor's

degree in Special Needs Education, aiming to work in either primary or secondary schools' special needs units. The pre-service teachers were third-year second-semester students. The group has also done two teaching practices in Tanzanian public schools for at least two months. Therefore, they are expected to have pedagogical interaction with their respective students. Such a group is conveniently chosen because it has at least a comprehensive coverage of its bachelor's program, and the program is only available at the university. The program admits around 120-150 student teachers yearly. The sample was chosen to construct a ratio of a minimum of 5:1 by Rahman (2013) which is calculated as 14*5, giving a minimum of 70 participants.

Data analysis
The data were loaded into SPSS version 20, and means were computed. The obtained means summarise teachers' competencies and perceptions as per question 1. Data was also analysed for correlation and regression. The correlation was done first to find out which teacher DT adoption factors relate to teachers' TPACK factors. Multiple regressions were also computed to assess the contribution of each factor toward the BI and the use of DT. Correlation and multiple regression provide answers to question 2. Content analysis was performed on unstructured questions to provide insights for question 3. The unstructured question in the questionnaire was analysed using the following steps: familiarisation with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and reporting (Vaismoradi et al., 2013).

RESULTS
Demographic information
The participants were divided into SN in-service and pre-service teacher groups. SN in-service teachers have teaching experience, whereas most SN pre-service teachers have none, as shown in Table 3 (Liana et al., 2022 Special needs teachers TPACK and UTAUT2 Data, Open Science Framework). Perceptions and attitudes have been found to vary with age, gender and experience as per the UTAUT framework. Nevertheless, the degree programs of in-service teachers show their pedagogical and content competence levels.

Table 3. Participants' demographic information

	In-service	**Pre-service**
Age		
18-25		72
26-33		11
34-41	3	2
42-49	3	2
50+	1	
Gender		
Female	5	49
Male	2	38
Degree Program		
BED-SPEN		80
MPA	1	
BAED	5	
Diploma in Education	1	
Teaching experience (Years)		
13	1	
14	1	
17	2	
19	1	
20	1	
26	1	
Teaching Subject		
Kiswahili	3	35
Others	4	52

4SN pre-service and in-service TPACK competencies and adoption relationships

TPACK Variables

SN pre-and in-service teachers rated that they have component TPACK knowledge (CK, PK, TK, PCK, TCK, TPK, and TPACK) with minor deviations from the mean for most constructs. While it is common for teachers to have pedagogical content knowledge (PCK, mean=4.00, SD=0.95), SN in-service teachers rate more knowledge compared to pre-service teachers.

SN in- and pre-service teachers also consistently rated to have TK; however, SN pre-service teachers have more TK, Figure 3. SN pre- and in-service teachers have a slight difference in TPK, with in-service teachers having more TPK. SN pre-service teachers have more TCK as compared to SN in-service teachers. Ironically, these SN pre-service teachers seem to have more TPK as compared to TCK. Meanwhile, SN in-service teachers have neutral or medium TPACK, while SN pre-service teachers approach a good level of TPACK. However, both SN teachers agree that their academic role model (MTPACK) influence is neutral.

Figure 3. SN pre- and in-service TPACK component knowledge means and standard deviations
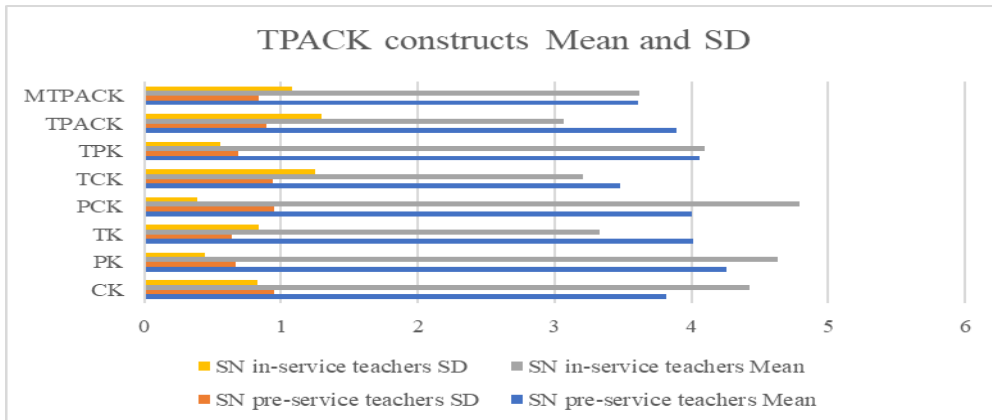
UTAUT Variables

Both SN pre-and in-service teachers' expectations of technological adoption in the classroom approach a reasonable level. They are both motivated to use such technologies (HM, mean=4.29, SD_{pre}=.93, SD_{in}=1.50), as seen in Figure 4. However, they both agree to use such technologies rarely. Most SN in-service teachers' UTAUT constructs have greater variability. While both SN pre-and in-service teachers' behavioural intentions to use DT are above a reasonable level, SN in-service teachers have more intentions to use DT in classrooms, Figure 4. Peculiarly, SN in-service teachers are unsure of the effort expectations in using DT in classrooms, while their counterparts' pre-service teachers rate the use of DT slightly higher, Figure 4.

Figure 4. SN pre- and in-service UTAUT component knowledge means and standard deviations.
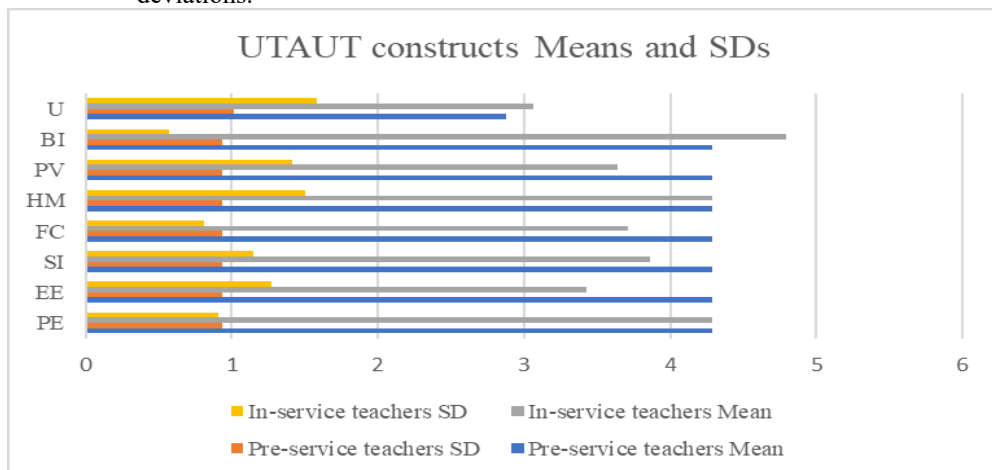
Relationships between pre-service Teachers' Competencies and technology adoption

Pre-service SN teachers' TPACK component knowledge had significantly low to moderate correlations with other TPACK components of knowledge, as seen in Table 4. Technology adoption factors correlate very highly with each other; for example, performance expectancy is highly correlated with effort expectancy (r (87) =1, p< 0.01), similar to all other adoption factors. However, there is no relationship between DT perceptions of pre-service SN teachers and actual use; for example, hedonic motivation towards DT is very low compared to their actual use (r (87) =.121, p>0.01), similar to all other adoption factors. The actual use of DT by pre-service SN teachers correlates low to moderate with some of their TPACK knowledge. For example, DT use correlated moderately with TK (r (87) =.36, p<0.01), TCK (r (87) =.37, p< 0.01), TPK (r (87) =.33, p<0.01), and MTPACK (r (87) = .33, p<0.01).

Meanwhile, pre-service teachers' behavioural intention to use DT is strongly correlated with other DT adoption factors. For example, the behavioural intention to use DT by pre-service SN teachers strongly correlates with their performance, effort expectancy, social influence, facilitating conditions, hedonic motivation, and price value, with r (87) =1, p<0.01. Moreover, the behavioural intention to use DT significantly correlates moderately with some TPACK knowledge of pre-service SN teachers. For example, behavioural intention to use DT was correlated with pedagogical knowledge (r (87) =.493, p<0.01), technological knowledge (r (87) =.36, p<0.01), technological pedagogical knowledge (r (87) =.48, p<0.01), and TPACK (r (87) =.30, p<0.01; Table 4). However, their behavioural intention to use DT did not correlate with the actual use of DT.

Nevertheless, TPACK knowledge correlated well with CK, TK, PK, PCK, TPK, TCK, and MTPACK. Moreover, it can be observed that TPACK knowledge significantly correlates moderately with pre-service SN teachers' DT adoption factors, with r (87) =.303, p<0.01. However, TPK correlated significantly more with pre-service SN teachers' DT adoption factors than TPACK knowledge (r (87) =.479, p <0.01). This means that TPK drives pre-service SN teachers' perceptions of DT adoption. However, there were no significant correlations between in-service SN teachers' DT adoption factors and their TPACK knowledge. This may be because of the small sample size.

Table 4. Correlation matrix for pre-service teachers

	CK	PK	TK	PCK	TCK	TPK	TPACK	MTPACK	PE	EE	SI	FC	HM	PV	BI	U
CK	1															
PK	.263*	1														
TK	.272*	.469**	1													
PCK	.439**	.413**	.291**	1												
TCK	.418**	.348**	.419**	.451**	1											
TPK	.419**	.606**	.571**	.522**	.581**	1										
TPACK	.102	.482**	.433**	.346**	.392**	.629**	1									
MTPACK	.180	.357**	.488**	.243*	.513**	.525**	.515**	1								
PE	.196	.493**	.364**	.263*	.071	.479**	.303**	.243*	1							
EE	.196	.493**	.364**	.263*	.071	.479**	.303**	.243*	1**	1						
SI	.196	.493**	.364**	.263*	.071	.479**	.303**	.243*	1**	1**	1					
FC	.196	.493**	.364**	.263*	.071	.479**	.303**	.243*	1**	1**	1**	1				
HM	.196	.493**	.364**	.263*	.071	.479**	.303**	.243*	1**	1**	1**	1**	1			
PV	.196	.493**	.364**	.263*	.071	.479**	.303**	.243*	1**	1**	1**	1**	1**	1		
BI	.196	.493**	.364**	.263*	.071	.479**	.303**	.243*	1**	1**	1**	1**	1**	1**	1	
U	.191	.111	.362**	.266*	.374**	.329**	.243*	.333**	.121	.121	.121	.121	.121	.121	.121	1

Correlation is significant at the 0.05 level (2-tailed)
Correlation is significant at the 0.01 level (2-tailed)

Pre-service SN teachers' competences influence on DT adoption

This study sought to establish a relationship between pre-service teachers' competence and DT adoption in teaching and learning for learners with intellectual and developmental impairments. The following hypotheses were proposed:

H1: TPACK knowledge predicts behavioural intentions to use DT.

H2: TPACK knowledge predicts DT use

The dependent variable, technology use, was regressed with pre-service SN teachers' technological, technological content knowledge, technological pedagogical knowledge, and models of TPACK using the enter method stepwise. The analysis showed a moderate model fit, with $F (1, 85) = 15.988$, $p < .001$, $R^2 = .158$, and Adj $R^2 = .15$. The analysis showed that pre-service SN teachers' TCK had a significant effect on the use of DT ($\beta = .430$, $t = 3.998$, CI$ = .216$, $.643$, $p < .001$). Moreover, the dependent variable, behavioural intention to use, was regressed with pre-service SN teachers' pedagogical, technological, technological pedagogical, and TPACK knowledge using the enter method. This analysis also showed a moderate model fit, with $F (1, 85) = 46.443$, $p < .001$, $R^2 = .353$, and Adj $R^2 = .346$. Technological pedagogical knowledge had a significant effect on behavioural intention to use DT ($\beta = .802$, $t = 6.815$, CI$ = .568$, 1.036, $p < .001$). Gender and age were checked for moderating effects and found to have none. Therefore, the hypotheses hold that there is a relationship between TPACK knowledge and DT use or behavioural intention to use among pre-service SN teachers of learners with intellectual and developmental disabilities. Therefore, Hypotheses H1 and H2 hold for pre-service teachers.

Findings from Open-ended Question

The study included an open-ended question on how to improve teaching and learning using DT among individuals with intellectual and developmental disabilities. Content analysis produced codes and themes, as shown in Table 5.

Table 5. Codes and themes on in- and pre-service teachers' opinions

No	Code	Code Frequency	Theme
1	Policy	2	Policy
2	Government support	10	Provision of DT
3	Provision of digital tools	19	
4	Experts availability	11	Quality SNE
5	Training	27	Training
6	Syllabus/curriculum	6	Quality SNE
7	Accessibility of DT	10	Provision of DT
8	Awareness	5	Training
9	DT use	12	Provision of DT
10	ICT course for student teachers	9	Training
11	Research on teaching with DT	1	Quality SNE
12	Quality special needs education	6	

The most prominent opinion was training. Teachers have suggested training in the form of workshops, a course in degree programs, or a short course on the use of DT for special-needs education. In line with the training, the provision of DT in schools is also a prominent opinion. Teachers pointed out that such devices are not present in schools.

Teachers also suggest that for a quality SNE, expertise, research, syllabi, and curriculum are essential. They argued that experts who can mentor learners with intellectual and developmental impairments should be available. At the same time, experts on DT should also be distributed in schools. Teachers also suggest that university curricula should include a course on DT/ICT for teaching and learning. They further pinpointed that syllabuses should also include DT used in classrooms. Other suggestions were that DT help learners perform better, enable effective teaching and learning, motivate learners, and help with intellectual and developmental learners' memories.

Discussion

This study aimed to identify and explore the relationships between the TPACK knowledge of pre- and in-service SN teachers and their adoption of DT in the classrooms, as a step toward integrating computer-assisted instruction. Means and standard deviations were used to assess teachers' competencies and perception levels, while Spearman's correlation measured the linear correlations between their TPACK knowledge and perceptions of DT adoption. Additionally, regression analysis was conducted on highly correlated variables to determine their predictive capacity.

Both pre-and in-service SN teachers reported strong levels of TPACK knowledge regarding DT despite the limited availability of technology in Tanzanian schools. This contrasts with Weidlich and Kalz (2023), who found low self-assessment of technological knowledge (TK, TCK, TPK, TPCK) among German pre-service teachers as their study progressed. On the other hand, Valtonen et al. (2019) observed increasing technological knowledge (TK, TCK, TPK, TPCK) throughout pre-service teacher training in Finland. In their study, SN teachers demonstrated greater TPK compared to TCK. Consistent with Valtonen et al.'s (2019) study, Tanzanian SN pre-service teachers were found to approach a good level of TPACK. However, the self-assessment differences highlighted in previous studies suggest that Tanzanian SN teachers, who are at an intermediate stage of TPACK acquisition, might overestimate their competencies. On the negative side, that former statement might imply that Tanzanian teachers' TPACK might be low. Therefore, enhancing teacher training curricula and ensuring access to digital learning tools are important steps towards fostering teacher training in Tanzania. Consequently, these SN pre-service teachers should be trained in technology use by including technological content and pedagogical instructional courses with field experiences in teacher training programs.

Unlike in Finland (Valtonen et al., 2019), the models of TPACK in Tanzania seem to have less impact on both pre-and in-service SN teachers. As DT adoption in the Tanzanian education system is still in its early stages, even teacher trainers may lack sufficient knowledge of integrating DT into teaching and learning. This suggests a need for professional development programs focused on training both teachers and teacher trainers in using DT effectively, especially for SNE.

The correlation analysis revealed relationships between SN pre-service teachers' competencies, their intentions to adopt DT and their actual use of it in classrooms. However, this could not be assumed for the smaller group of in-service SN teachers. Although SN pre-service teachers' TPACK knowledge relates significantly to their expectations and perceptions of adopting DT, as in Mohammad-Salehi and Tabrizi (2021), their TPK relates more to their actual use of DT in classrooms. This suggests that teachers' use of DT for teaching and learning, especially among SN students, goes hand in hand with their technological pedagogical capabilities. However, awareness of DT's usefulness does not necessarily translate into effective integration or use, as noted by Wah and Hashim (2021). Limited teaching experience may also contribute to pre-service teachers' low DT use.

Despite their relatively high technological knowledge, SN teachers expressed a need for more DT training to implement it in classrooms effectively. This indicates a lack of confidence in their ability to apply technology in pedagogical and content-related contexts. SN pre-service teachers pinpoint that practical training on some technologies, such as learning applications, devices such as tablets, PCs and whiteboards and their utility would be essential to them. They also emphasised the importance of training in the pedagogical uses of these technologies. Previous studies by Aktas and Ozmen(2021); Alawadh (2019) and Valtonen et al. (2019) similarly, stressed the need for training to enhance teachers' TCK and TPK, which would improve their perceptions and attitudes toward DT use. Tondeur et al. (2020) Recommended pre-service teachers' training includes the synthesis of qualitative evidence (SQD) model strategies, such as role models' influence, reflection on the use of technology in education, inclusion of technology instructional practices in the curriculum, collaboration with peers, authentic experiences of teaching with technology and feedback provision to be essential in enhancing these teachers' perceptions. Authentic learning, as suggested by Strydom, Wessels and Anley (2021), would also benefit Tanzanian SN teachers by aligning training with real-world teaching challenges. This also implies that teacher trainers should lead by example and provide authentic experiences to empower these future educators.

Pre-service SN teachers' TCK predicted 16% of the use of DT in classrooms. This suggests that pre-service SN teachers occasionally use technological subject matter content, similar to the use of actual devices. Valtonen et al. (2019) contended that TCK is challenging to develop as content-specific technologies are rarely used. It can be further contemplated that pre-service SN teachers are not aware of such technological content examples, applications, and simulations; their encounter with DT for such content is also minimal. This is also confirmed by qualitative data – the provision of digital tools is an emerging theme/suggestion. These teachers recommended that the government provide such tools to teachers and schools for their use. Furthermore, pre-service SN teachers' behavioural intention to use was predicted by their TPK.

While Tanzania's DT adoption and competence levels may be comparable to those of other East African countries, such as Kenya and Uganda, similar efforts to enhance DT use among SN pre-and in-service teachers could yield comparable results. However, in countries like South Africa, DT integration in classrooms is more advanced (Strydom et al., 2021), with teachers focusing on improving DT use and addressing the digital divide (Gudmundsdottir, 2010).

Conclusion

This study reveals that Tanzanian teachers' adoption of DT for inclusive classes of students with IDLD is shaped by moderate to high TPACK, particularly in technological pedagogical knowledge, but limited by inadequate infrastructure, insufficient training, and socio-cultural barriers. Pre-service teachers show stronger adoption intentions influenced by their competencies, while in-service teachers face greater variability in perceptions and resource constraints. The findings highlight the need for targeted TPACK-focused training, provision of digital tools, and stronger policy implementation to overcome these barriers. Though the small sample size limits generalizability, suggesting future research with larger samples and longitudinal training evaluations.

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What Drives Effective Tablet Use in Education? A Study of Teaching and Learning Practices in Singida Municipality, in Tanzania

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Abstract
The use of Information and Communication Technology (ICT) in education has become a global strategy for transformation, particularly through mobile devices like tablets, which are being used to enhance both teaching and learning. In Tanzania, this effort has been supported by government initiatives such as the Secondary Education Quality Improvement Program (SEQUIP), which targets the enhancement of education in public secondary schools. Despite substantial investment, there remains a lack of comprehensive data on the impact of tablet use on teaching, particularly in settings with limited resources. This study evaluated how effectively mobile tablets are being utilised to improve teaching methods among public secondary school teachers in Singida Municipality, Tanzania. It specifically explored how tablet usage affects teacher engagement, professional development, technological and pedagogical knowledge, and collaborative teaching strategies. The research used a cross-sectional mixed-methods approach, involving 60 teachers selected through cluster and stratified random sampling. Data were gathered using semi-structured interviews, classroom observations, and document analysis. Principal Component Analysis (PCA) was applied to create a tablet effectiveness index, and both univariate and multivariate regression analyses were used to determine key influencing factors. Results showed that effective tablet use was strongly linked to increased teacher motivation and engagement (Adjusted Coefficient: 0.7, 95% CI: 0.47–0.90), as well as more frequent tablet use in everyday teaching (Adjusted Coefficient: 0.4, 95% CI: 0.26–0.55). Although age and educational background had significant effects in simpler analyses, they were not impactful in more complex models. Teachers' comfort with technology and ability to troubleshoot also contributed positively, though less strongly. The research highlights the need for focused teacher training, better technical support, and supportive policies to encourage collaboration in teaching. These findings are valuable for decision-makers and education professionals seeking to enhance the use of digital technology in Tanzanian schools and contribute to the growing body of research on ICT in education

in developing regions. The study recommends the establishment of a structured and continuous professional development program that integrates both technical training on tablet uses and collaborative teaching strategies, ensuring teachers are equipped, motivated, and supported to effectively incorporate tablets into innovative and interactive classroom practices.

Keywords: *ICT in education, digital learning, TPACK, self-determination theory, teacher collaboration, digital pedagogy.*

Introduction

The integration of Information and Communication Technology (ICT) in education has gained global momentum as a tool to enhance teaching and learning processes (UNESCO, 2023; Voogt et al., 2015). Mobile tablets, in particular, have been widely adopted to improve access to digital learning resources, increase student engagement, and promote innovative pedagogical practices (Aspiranti & Larwin, 2021; Major et al., 2021). Mobile tablets are portable touchscreen devices that support internet connectivity and educational functions, such as document processing and app usage (Sung et al., 2016). In this study, Android tablets provided by the government to teachers aim to improve teaching through affordable and user-friendly technology that supports various learning applications.

In many parts of Latin America, Europe, and Asia, governments and non-governmental organisations have initiated large-scale tablet programs with varying degrees of success, revealing that contextual adaptation and teacher readiness are key to achieving educational goals (Major et al., 2017). Across Africa, the value of digital learning tools is gaining increasing recognition, especially in regions with limited resources. Tablets, in particular, are proving useful in addressing shortages in textbooks and teaching staff. In Tanzania, the government has made ICT integration a key part of its education reform agenda. Policies like the Education Sector Development Plan (2016–2021), the 2018 National ICT Policy, and the Digital Tanzania Project underscore the push toward digital transformation in education. Through programmes such as the Secondary Education Quality Improvement Program (SEQUIP), tablets have been distributed to public secondary schools to boost educational quality and outcomes.

Singida Municipality is one of the areas that received tablets as part of this initiative between 2022 and 2023. These programs typically include both tablet distribution and teacher training. This study focuses on how such

initiatives are being implemented in public secondary schools, aiming to improve teaching quality and expand access to learning materials.

Initial feedback from schools suggests better classroom teaching, increased student engagement, and improved performance in NECTA exams. However, there is limited concrete evidence on how effectively tablets are improving teaching practices, supporting professional development, or fostering collaboration among educators. Therefore, this study specifically aimed to investigate how tablets influence teacher participation and professional growth. Examine the importance of technological and pedagogical expertise in using tablets effectively, and analyse the impact of collaboration among teachers on tablet use and teaching quality.

Problem Statement

Despite notable investments in Information and Communication Technology (ICT) and teacher support, effective use of tablets in Tanzanian classrooms remains a significant challenge. Tanzania's government implements policies such as the Education Sector Development Plan (2016–2021), the 2018 National ICT Policy, and the Digital Tanzania Project. These policies have a focus on pushing digital transformation in education by making ICT integration a key part of its education reform agenda. Through programmes such as the Secondary Education Quality Improvement Program (SEQUIP), tablets have been distributed to public secondary schools to boost educational quality and outcomes.

While research consistently highlights the potential of tablets to revolutionise teaching and learning through enhanced student engagement, motivation, and academic performance (Milman et al., 2015; Wilson & Friedrich, 2013), there is a critical gap in empirical evidence definitively supporting these claims within the specific context of secondary education in low-resource settings like Singida Municipal.

Existing research on tablet integration in education largely focuses on wealthier countries with robust educational infrastructures, often overlooking the unique difficulties faced in regions like Tanzania. Studies indicate that many Tanzanian educators struggle with tablet utilisation due to limited digital skills, a lack of relevant training, and insufficient institutional support (e.g., inadequate internet connectivity, technical assistance, and access to quality educational content) (Manyengo, 2021; ILO, 2024). Furthermore, while a 2024 study on primary school teachers in Tanzania by Prosper and Nderego (2024), found a moderate level of competence and identified

challenges in incorporating tablets, it also highlighted opportunities for innovative teaching and professional growth. However, there remains a dearth of research specifically addressing the nuanced impact of these initiatives on secondary school teachers in low-resource environments, particularly concerning their pedagogical practices, technological skills, and the potential for professional isolation or collaboration.

Therefore, there is a clear and pressing need for local research to understand the personal, institutional, and technical factors that truly affect tablet use in Tanzanian public secondary schools. Thus, this study aims to bridge this existing knowledge gap by exploring the effectiveness of mobile tablet initiatives in public secondary schools in Singida Municipality. The study delves into how tablets have specifically impacted teacher practices, teacher experiences, and overall learning outcomes, while also examining the challenges and opportunities associated with their integration.

Theoretical Framework
Self-Determination Theory (SDT)
Developed by Ryan and Deci in 2018, SDT focuses on three core psychological needs that drive motivation: autonomy, competence, and relatedness. In the context of educational technology, tablets can help teachers gain more autonomy in planning lessons, build their competence through training, and foster collaboration that enhances their sense of community. These elements collectively boost teacher motivation and support professional development, making SDT a fitting framework for assessing the impact of tablet initiatives on teaching practices.

Empirical Literature Review
Perceived Impacts of Mobile Tablets on Teacher Engagement and Professional Development
Studies show that mobile devices (tablets) enhance teacher engagement and teaching practices by fostering interactive, student-centred learning (Chang &Chang, 2021). Tablets support collaborative problem-solving, multimedia-rich presentations, and flexible instruction (Choi et al., 2018; Herodotou & Muirhead, Aristeidou, Hole, J., Kelley, ., Scanlon, ., & Duffy, 2018). Research suggests that tablets positively influence teacher efficacy and confidence when integrated with professional development(García-Rico et al., 2021; Zhu et al., 2020). Furthermore, tablets encourage the adoption of innovative teaching methods, thus enhancing student learning.

### *Technological Skills and Pedagogical Knowledge for Effective Tablet Use*

One of the key challenges in mobile device integration is teachers' limited digital skills, which can be addressed through frameworks like Technological Pedagogical Content Knowledge (TPACK) (Koehler et al., 2013). The effective mobile (tablet) use requires both technical and pedagogical training(Kim et al., 2021). Several research studies suggest that continuous professional development is essential for teachers to fully leverage tablets in the classroom(Mishra & Koehler, 2006a; Tschannen-Moran & McMaster, 2009)**.**

Strategies to Foster Teacher Collaboration

The use of mobile devices like tablets facilitates collaborative teaching practices by offering cloud-based platforms that support resource sharing, joint lesson planning, and real-time communication. A study by Carpenter and Munshower (2020) highlights how such technologies promote the development of collaborative learning environments, enhancing engagement and interaction among educators. Similarly, Xu et al. (2020) and a study by He et al. (2020) emphasise the role of tablets in fostering virtual professional learning communities, where teachers connect remotely to exchange best practices and co-develop instructional strategies. Studies by Fisher et al. (2013) further demonstrate how tablets like iPads enable shared digital workspaces, enhancing group-based instructional models. These tools not only reduce teacher isolation but also contribute to improved teaching effectiveness through ongoing professional collaboration (Carpenter & Munshower, 2020).

Conceptual Framework

The study adopts a conceptual framework that focuses on three key factors influencing the effectiveness of mobile tablet initiatives: teacher engagement and professional development, teacher technological skills and pedagogical knowledge, and collaborative practices. These factors impact the integration of technology into teaching and the promotion of collaborative teaching models.
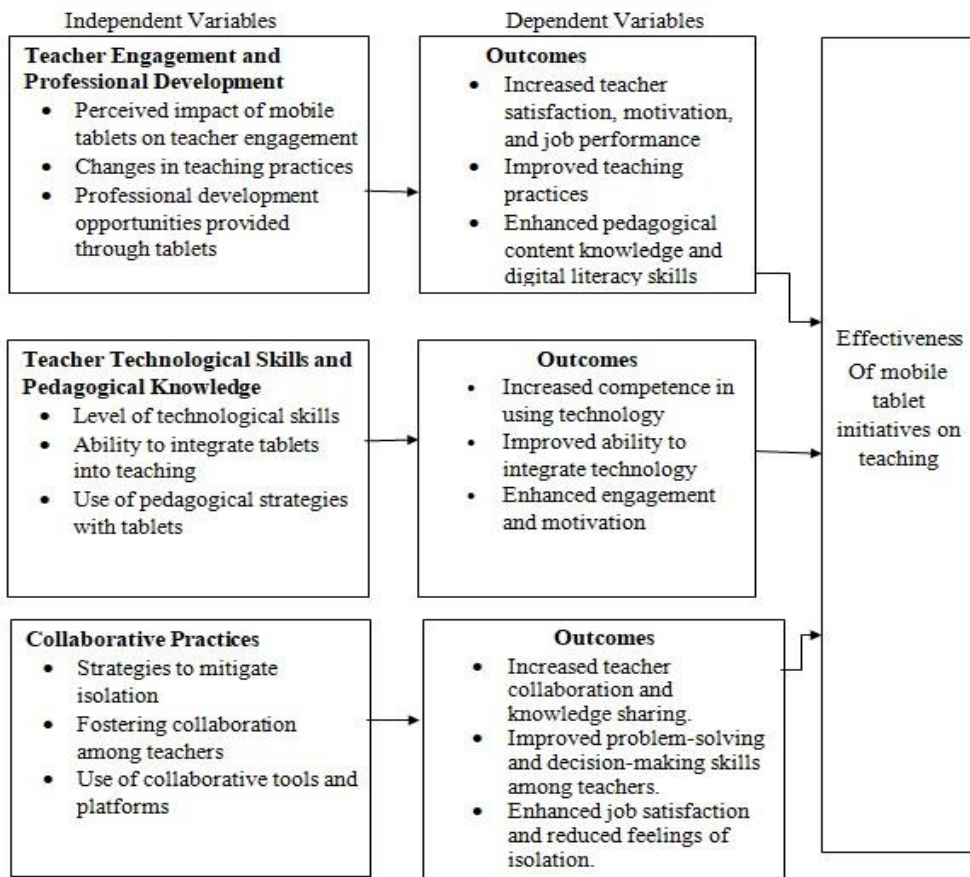
Methodology

Research Design

This study employed a cross-sectional design, collecting data at a single point in time. This approach was selected due to its suitability for meeting the study's objectives within the constraints of time and resources.

Study Area

The research was conducted in Singida Municipality, Tanzania (Fig. 1). The study area was selected because it is one of the early beneficiaries of the national initiative to distribute mobile tablets to secondary school teachers. The area was purposefully selected to capture early experiences and challenges related to integrating mobile tablets into teaching practices.

Figure 1: Map of Singida Municipality
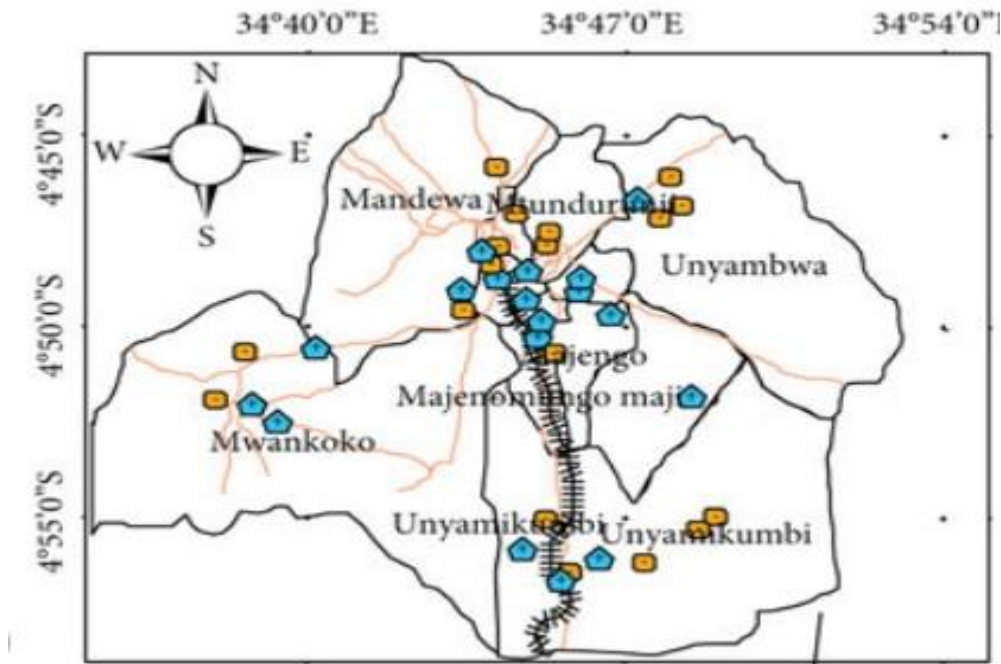
Source: The Singida Municipal Council Website (https://singidamc.go.tz/)
Singida Municipal, an urban hub with a diverse population, is strategically located and undergoing socioeconomic transformation, making it a suitable setting for exploring educational technology initiatives.

Sampling and sample size
The study targeted public secondary school teachers in Singida Municipality. Out of a total population of 415 teachers across 20 public secondary schools, a sample of 60 respondents was determined using Slovin's formula to ensure representativeness while accounting for the available resources. A two-stage sampling technique was employed. In the first stage, cluster sampling was used to group the schools and randomly select a subset of them. In the second stage, stratified random sampling was conducted to select teachers from the chosen schools, ensuring proportional representation based on their positions within the schools.

Data Collection Methods
A mixed-methods approach was employed to ensure comprehensive data collection, integrating both qualitative and quantitative strategies. Primary data were collected through semi-structured interviews. These interviews explored in depth the integration of technology into teaching, associated challenges, training received, and perceived pedagogical impacts.

Furthermore, classroom observations were carried out to directly assess how mobile tablets were utilised in daily teaching practices and how their use influenced student engagement and learning outcomes. Secondary data were sourced from school reports, policy documents, and relevant literature, including studies on educational technology implementation in similar contexts.

Variables and Measurement
Outcome (Dependent) Variable
The outcome variable is "Effectiveness of Mobile Tablets in Enhancing Teaching and Learning." This is an index of the following variables: The extent to which the introduction of tablets increased overall motivation and engagement in teaching. The daily use of tablets in teaching practices. The impact of tablet use on the variety of teaching methods. Participation in professional development programmes on effectively utilising tablets, utilisation of mobile tablets to collaborate with other teachers, and the feeling that your current pedagogical knowledge and skills equipped you to integrate tablets. The index was constructed using principal component analysis and left on a linear scale.

Table 1. Predictors (Independent) Variables

Domain	Variables
Demographics	Sex, Age, Marital Status, Education level
Tablet Usage	How often do you use tablets in teaching, and do you integrate tablets into lesson plans
Tech Skills	Rate your comfort level with using the basic function of the mobile tablet, and how confident were you in troubleshooting minor technical difficulties?
Collaboration & Isolation	Do you utilise mobile tablets to collaborate with other teachers? How effective are the existing structures in facilitating collaboration and knowledge sharing? Do you feel comfortable reaching out to colleagues for help or advice on using mobile tablets for teaching? How had mobile tablets impacted your ability to collaborate on lesson planning and curriculum development?
Teaching Innovation	Has the use of tablets impacted the variety of teaching methods? (Qn8), Used tablets for lesson planning?

Data Analysis
Stata software was utilised for data analysis. The process began with descriptive statistics to outline the demographic and contextual profiles of the participants. Next, univariate logistic regression was used to explore the relationship between each independent variable and the outcome of the effectiveness of mobile tablets in enhancing teaching and learning. Variables that showed statistical significance in the univariate analysis were further

assessed using multivariate logistic regression to identify key predictors while accounting for possible confounding factors. Visual tools like charts and graphs were employed to present the results in an easily understandable format.

Validity and Reliability: To verify construct validity, the Variance Inflation Factor (VIF) was used to detect multicollinearity, especially among predictors that contributed to the outcome variable.
Reliability was reinforced through the use of standardised instruments and preliminary pilot testing.

Ethical Considerations
The researcher complied with established ethical guidelines. Participants gave informed consent after being fully briefed on the study's purpose and their rights. Ethical approval was secured from the Open University. Measures were taken to safeguard data confidentiality and ensure participant anonymity, with access restricted to authorised individuals. Throughout the study, participants were treated with respect and integrity.

RESULTS
Descriptive statistics
The study involved 60 respondents, with a majority being male (60%) and females comprising 40%. Most participants were aged between 31 and 40 years (41.7%), followed by those aged 21 to 30 years (38.3%), and a smaller portion aged above 41 years (20%). In terms of marital status, 51.7% were married, 41.7% single, and 6.7% divorced or widowed, as shown in Table 2.

Table 2: Background statistics

Variable	Frequency	Percent
Sex of Respondent		
Female	24	40.0
Male	36	60.0
Age of Respondent		
21 - 30 yrs	23	38.3
31 - 40 yrs	25	41.7
41+ yrs	12	20.0
Marital Status		
Single	25	41.7
Married	31	51.7
Divorced / Widow	4	6.7
Years of experience		
Less 5 yrs	17	28.3
5 - 10 yrs	25	41.7
10+ yrs	18	30.0
Education level		
Certificate	1	1.7
Diploma	14	23.3
Bachelor	40	66.7
Masters	5	8.3
Current position		
Ordinary Teacher	22	36.7
Classroom Teacher	22	36.7
Academic Teacher	9	15.0
Discipline Teacher	5	8.3
School Head Teacher	2	3.3
Total	**60**	**100.0**

Regarding teaching experience, the largest group had between 5 and 10 years of experience (41.7%), followed by those with over 10 years (30%), and the least had less than 5 years (28.3%). Educationally, the majority held a Bachelor's degree (66.7%), with fewer having Diplomas (23.3%), Master's degrees (8.3%), and only one with a Certificate (1.7%). Participants held various positions, with ordinary and classroom teachers each representing 36.7% of the sample, followed by academic teachers (15%), discipline teachers (8.3%), and head teachers (3.3%).

Collaborative Practices

The impact of mobile tablets on collaboration in lesson planning and curriculum development revealed varied outcomes among teachers, as in Table 3. While a notable 40% of teachers reported a general increase in collaborative activities, the perceived effectiveness of existing school structures in facilitating this collaboration was mixed. Only 13.75% rated the existing structures as "very effective", and 32.50% found them "effective." Conversely, a significant portion, 40.00%, perceived these structures as only "moderate," while 12.50% found them "ineffective" and 1.25% considered them "very ineffective". These findings suggest that while mobile tablets hold potential for fostering teamwork and curriculum development, there is a clear need for additional support and training to ensure that all teachers can effectively leverage these devices for collaborative practices.

Table 3: Collaborative Practices

Institutional Collaboration	Responses	Frequency	%
Discussion of experiences and challenges using mobile tablets with other teachers			
Always	Always	8	13.75
Often	Often	28	46.25
Rarely	Rarely	20	33.75
Never	Never	4	6.25
Total	Total	60	100.00
Summary of collaborative structures			
Formal Structures	Formal Structures	2	13.33
Online Communication Platforms	Online Communication Platforms	6	40.00
Academic Groups	Academic Groups	3	20.00
Support for Infrastructure	Support for Infrastructure	4	26.66
Total	Total	15	100.00
Effectiveness of existing structures at school in facilitating collaboration and knowledge sharing about using mobile tablets for teaching			
Very effective	Very effective	8	13.75
Effective	Effective	20	32.50
Moderate	Moderate	24	40.00
Ineffective	Ineffective	7	12.50
Very ineffective	Very ineffective	1	1.25
Total	Total	60	100.00

Bivariate Analysis

The bivariate analysis indicates that a number of variables are linked to higher levels of effective tablet use. Although males had scores that were 0.4 points higher than females, this difference wasn't statistically significant. Additionally, age showed a negative correlation with effective tablet use (Coefficient: -0.8, 95% CI: -1.3 to -0.5), suggesting that younger teachers generally achieve better scores. Education level was positively associated

(Coeff: 1.2, 95% CI: 0.5 to 2.0), suggesting that higher education correlates with better tablet use; see Table 4.

Table 4: Bivariate and Multivariate Regression for predictors of effective tablet usage

Variable	Coeff [95% CI]	Adj. Coeff [95% CI]
Sex of respondent		
Female	Reference	
Male	0.4 [-0.6 - 1.3]	0.1 [-0.13 - 0.33]
Age of respondent	-0.8 [-1.3 - -0.5] *	-0.1 [-0.38 - 0.20]
Education level	1.2 [0.5 - 2.0] **	-0.2 [-0.45 - 0.01]
Extent of increase of Motivation & Engagement	1.9 [1.6 - 2.3] ***	0.7 [0.47 - 0.90] ***
The frequency of tablet usage in daily teaching practices	1.2 [1.0 - 1.5] ***	0.4 [0.26 - 0.55] ***
Do you integrate tablets in lesson plans?		
No	Reference	
Yes	2.2 [1.5 - 3.0] ***	0.1 [-0.25 - 0.47]
Level of comfort using mobile tablet	1.5 [1.1 - 1.9] ***	0.2 [-0.10 - 0.41]
Level of confident to troubleshoot minor technical difficulties	1.1 [0.8 - 1.5] ***	0.2 [-0.01 - 0.33]
Do you utilize mobile tablets to collaborate with other teachers		
No	Reference	
Yes	2.4 [1.7 - 3.2] ***	0.7 [0.37 - 1.02] ***
Level of effectiveness in facilitating collaboration & Knowledge sharing	0.9 [0.5 - 1.4] ***	0.01 [-0.13 - 0.16]
Ability level to collaborate on lesson planning	1.6 [1.1 - 2.1] ***	0.07 [-0.18 - 0.32]
Level of comfortability reaching out colleagues for help or advice	1.3 [0.9 - 1.7] ***	0.07 [-0.16 - 0.30]
Level of Improved varied of teaching methods	1.6 [1.3 - 2.0] ***	0.7 [0.49 - 0.83] ***
Using tablets for lesson planning		
No	Reference	
Yes	1.8 [0.9 - 2.6] ***	0.1 [-0.17 - 0.44]

Increased motivation and engagement had a strong positive effect (Coeff: 1.9, 95% CI: 1.6 to 2.3), as did the frequency of tablet use in daily teaching (Coeff: 1.2, 95% CI: 1.0 to 1.5). Teachers who integrated tablets into lesson plans scored significantly higher (Coeff: 2.2, 95% CI: 1.5 to 3.0), and those comfortable using devices and troubleshooting technical issues also scored higher (Coeffs: 1.5 and 1.1, respectively), Table 3. Collaboration aspects were also significant: using tablets to collaborate, facilitating collaboration and knowledge sharing, and collaborating on lesson planning all had significant positive associations. Lastly, there was a significant correlation between improving teaching methods and using tablets for lesson planning and higher scores.

The finding shows that simply possessing the tablets, or even a teacher's age or educational background, were not the most significant independent factors. Instead, the active engagement and practical application of tablets emerged as the key drivers.

Teacher motivation and frequent use were found to be crucial. A one-unit increase in a teacher's motivation and engagement was linked to a notable 0.7-point increase in tablet effectiveness. Similarly, a one-unit increase in how frequently teachers used tablets in daily teaching led to a 0.4-point increase in effectiveness. This highlights that if teachers are enthusiastic and consistently integrate tablets into their daily lessons, they become considerably more proficient and impactful with the technology.

Beyond individual use, collaboration among teachers and the ability to diversify teaching methods with tablets also significantly boosted their effectiveness. Teachers who actively used tablets to collaborate with colleagues had their effectiveness increased by 0.7 points compared to those who didn't. Likewise, a one-unit improvement in the variety of teaching methods due to tablet use was associated with another 0.7-point increase in effectiveness. This indicates that tablets are most beneficial when they foster teamwork and encourage teachers to explore new, creative pedagogical approaches.

Multivariate Analysis
In the multivariate model, after adjusting for all other factors, only a few variables remained significantly associated with effective tablet usage. Sex, age, and education level lost significance, indicating that their initial effects were likely confounded by other variables.

Figure 2: Multivariate regression coefficients for predictors of effective tablet usage
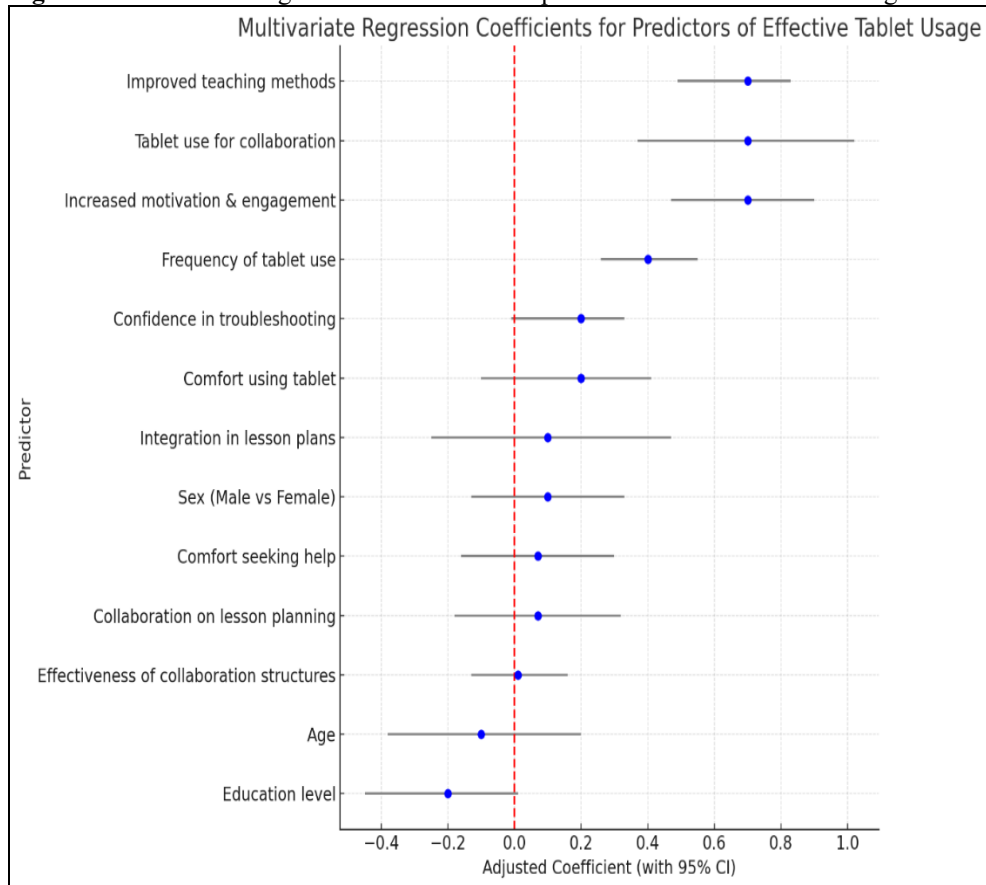
The extent of increased motivation and engagement remained a strong predictor (Adj. Coeff: 0.7, 95% CI: 0.47 to 0.90), as did the frequency of tablet use in daily teaching (Adj. Coeff: 0.4, 95% CI: 0.26 to 0.55). Using tablets for collaboration with other teachers also remained significant (Adj. Coeff: 0.7, 95% CI: 0.37 to 1.02). Likewise, improved variety in teaching methods stood out as a robust predictor (Adj. Coeff: 0.7, 95% CI: 0.49 to 0.83). Other factors, including comfort and confidence in using tablets or integrating them into lesson plans, were not statistically significant in the adjusted model; see Figure 2.

Discussion

This study explored the effectiveness of mobile tablets in enhancing teaching and learning among public secondary school teachers in Singida Municipality. The analysis uncovered valuable insights into how contextual elements affect the successful use of tablets in rural educational environments.

Demographic Characteristics and the Effectiveness of Tablet Use

The descriptive statistics indicated that the teaching workforce was generally young and fairly experienced, with most educators between the ages of 31 and 40 and possessing 5 to 10 years of teaching experience. Initial bivariate analysis showed that younger teachers and those with higher educational qualifications tended to use tablets more effectively. However, these links were not significant in the multivariate analysis. This implies that while demographic factors may shape early perceptions or abilities, their influence weakens when actual usage behaviours and the surrounding context are considered. These results are consistent with the findings of Sung et al. (2016), who concluded in a meta-analysis that once pedagogical strategies and integration of technology are accounted for, age and gender have minimal direct impact on digital learning outcomes.

Motivation, Frequency of Use, and Teaching Integration

Effective use of tablets in classrooms is largely influenced by teachers' motivation and behaviour. Teachers who felt more motivated and engaged when using tablets achieved better outcomes. Regular use of tablets in daily teaching also strongly correlated with success. These patterns support Chang's (2022) review, which stressed that sustained motivation and routine use of mobile devices are essential for meaningful educational results. Although integrating tablets into lesson plans initially seemed important, it lost impact in a more detailed analysis, implying that actual usage and enthusiasm are more crucial than planning alone. This finding is supported by Ertmer et al. (2012), who emphasised that effective digital integration depends more on teachers' continued involvement than on curriculum alignment. These insights are consistent with meta-analyses like that of Sung et al. (2016), which found that mobile technology enhances learning when paired with strong pedagogy and collaborative activities.

Collaboration and Changes in Teaching Practices

Collaboration among peers was a key factor in successful tablet use. Teachers who used tablets to collaborate or to share knowledge reported better outcomes. Obonyo (2023) similarly found that digital tools enhance teaching through collaborative practices. Additionally, the use of tablets was associated with a wider variety of teaching strategies, suggesting that these devices can foster more innovative and student-focused approaches. Teachers who diversified their teaching methods using tablets scored higher, supporting findings from Kim et al. (2020) and Yakar et al. (2020), which showed mobile technologies promote active, constructivist learning. Hwang

and Tsai (2011) also reminded us that it takes thoughtful planning and preparation to optimise mobile learning.

Conclusion

This research examined how mobile tablet programs affect teaching practices and teacher experiences in Singida Municipality's public secondary schools. It is found that higher motivation, more frequent use, greater teaching variety, and collaborative practices were key to effective tablet use. Although demographic factors like age or education had some influence at first, they became less important when practical teaching practices were considered, highlighting the central role of active tablet integration over background characteristics.

Study Implications

i) Effective use of tablets can significantly increase teacher motivation and engagement, and this can lead to more innovative teaching methods and enriching student learning experiences.

ii) Specialised and ongoing professional development for teachers is essential to improve teachers' tech skills and teaching expertise, and by doing so, it maximises the benefits of digital tools in the classroom.

iii) Encouraging and promoting collaborative teaching practices through tablets leads to better instructional interactions and a supportive educator community, and improves teaching outcomes.

iv) A need to address infrastructure challenges calls for policymakers to ensure the availability of adequate resources and support systems, including technical assistance, to overcome barriers to effective tablet integration in education

Recommendations

To enhance the usage of technology like tablets in education, policymakers should promote their regular integration into daily teaching to build confidence and effectiveness. Professional development must focus on boosting motivation and engagement through interactive methods. Encouraging teacher collaboration via tablets is key, as it strongly predicts effective use of technology in teaching. Continuous training and technical support, including peer mentoring, are essential. Expanding research beyond Singida will help validate findings across different contexts.

Acknowledgement

Conflict of Interest
The authors declare no conflict of interest or ethical concerns

Authors' contributions
Mallya Stephen designed the study, contributed to data collection, and drafted the manuscript. Harrieth Mtae performed the analysis, supervised the manuscript and wrote the discussion, conclusion, and recommendations.

Data Availability Statement
Additional information, such as data used for analysis, can be obtained by sending an email request to the corresponding author.

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Teaching Numeracy Skills in Early Childhood Education in Mkuranga District, Tanzania: Teachers' Practices and Challenges

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Abstract
The significance of the early years in shaping children's cognitive, emotional, language, and social development is widely recognised. This study investigated the numeracy teaching practices and challenges in pre-primary schools. This qualitative study was conducted in Mkuranga District, using a phenomenology design; nine (9) public schools were purposely selected for the study. The participants involved were pre-primary education class teachers who were also purposely selected. This was carried out after defining the study purpose and developing the inclusion criteria. The sample was homogeneous, as the recruited participants had similar characteristics and experiences. Participants were visited in their schools. Thematic data analysis was employed, where patterns (themes) were identified, analysed and interpreted. It was found that teachers focused on teaching children how to count numbers, addition, and subtraction. The findings revealed that teachers were not conversant with teaching numeracy skills to pre-primary children. Several challenges in relation to numeracy skills teaching, such as a lack of qualified teachers, overcrowded classrooms, changing curricula, and children's absenteeism, were also found. The study, therefore, concludes that numeracy remains a key domain of learning, which is essential for success at school, providing a bridge to further study and work, and preparing children for future economic and social prosperity. Thus, teaching numeracy in pre-primary schools should be well structured to meet the intended goal.

Keywords*: Pedagogy, numeracy, early childhood education, teaching practices, basic education*

Introduction

Early childhood is critical for cognitive, emotional, language, and social development. Children acquire numerical skills throughout their daily activities, such as playing number games, building blocks, singing number songs, rhymes, and poems, reading mathematics books, having family talk about numbers and all other daily activities that involve numbers (Gunderson & Levine, 2021). Substantial research has supported early childhood education, indicating that preschool children experience notable advantages in developing numeracy and literacy skills. In many academic and public policy contexts, numeracy is widely seen as a crucial skill that individuals must possess to navigate both educational and non-educational aspects of their lives effectively (World Bank, 2022). Nevertheless, the extent of acquiring such knowledge can be enhanced by efficient instruction.

Clements et al. (2021) propose that the definition of numeracy, albeit not clearly defined, has progressively broadened over time to include basic arithmetic skills and other fundamental mathematical skills and emotional attributes such as attitudes and confidence. Numeracy is defined as more than just the ability to utilise numbers. It encompasses the skills, confidence, and willingness to apply mathematics in all aspects of life, including education, home, work, community, and civic engagement. However, numeracy skills refer to understanding, interpreting, and working with numbers and mathematical concepts in various contexts (UNESCO, 2020). These skills enable individuals to perform basic arithmetic operations, analyse data, solve problems and apply mathematical reasoning in everyday life. The term 'numeracy' in this study, therefore, refers to the knowledge of numbers and their operations that involve number concept and counting skills children learn during early childhood education.

Numeracy is a fundamental skill necessary for active and prosperous engagement in the social and economic spheres of developing nations (UNESCO, 2021); hence, a good foundation for youngsters is critical. Numeracy skills development starts in the early stages of human development. Early childhood is widely recognised as the period from birth to eight years of age, aligning with foundational stages in children's cognitive development (National Research Council, 2009). This period is essential for laying the foundation for mathematical understanding and fostering early numeracy. Cognitive development theories have informed the design of early childhood education programmes and instructional strategies to enhance learning (Clements et al., 2021).

Several studies on early childhood education (ECE) acknowledge the importance of early numeracy in learning. This is because early childhood education is regarded as a good indicator of initial and later success in formal learning (Gunderson & Levine, 2021). The interaction of children with a numerical environment and early involvement in counting activities is an important factor in promoting children's literacy skills development (Aunio & Rasanen, 2019).

On the other hand, there is extensive evidence of gaps in teacher knowledge in low-income countries. Concerns have been raised about the limited capacity and relevant experience in the early years of teacher education and the lack of opportunities to develop "mathematics knowledge for teaching" (UNESCO, 2021). The impact of instructors' attributes on children's accomplishments is multifaceted, and the outcomes might be counterintuitive. Effective teaching of early numeracy relies on child-centred, interactive strategies. Tandika (2017) emphasises the importance of using concrete, age-appropriate, and culturally relevant materials, such as sticks, bottle tops, and pictures, to foster understanding through hands-on experience. Moreover, the use of play, songs, and storytelling is widely encouraged to promote numeracy among young learners in Tanzania. However, a study by Mligo (2016) found that in many Tanzanian pre-primary settings, teaching methods remain largely teacher-centred, involving rote memorisation and recitation rather than exploration or problem-solving. This mismatch between curriculum goals and classroom practices undermines the development of early numeracy skills. Additionally, UNESCO (2016) emphasises the importance of integrating local games and cultural practices into mathematics teaching to make content more relatable and engaging for children.

In Tanzania specifically, the study by UWEZO on children's learning in primary schools in 38 districts of Tanzania revealed that school children are not learning the basic skills of Reading, Writing and Arithmetic (3Rs); that the skills are poorly achieved in early primary classes (UWEZO, 2017). In addition, various studies on children's learning conducted by UWEZO (2015; 2017) in Tanzania show that children have poor mastery of numerical skills. Furthermore, the Standard IV National Assessment results of 2014 showed that among 1,001,423 pupils who were examined for mathematics, 456,838 (45.6%) passed, whereas 54.4% failed (NECTA, 2014). This provides some evidence that there is a challenge in basic numeracy skills and knowledge.

UNESCO's Policy Paper 7 (2021) on Addressing the Crisis in Early Grade Teaching emphasises teachers' significant role in children's education. The policy document highlights the inadequately trained instructors in lower grades in several countries, resulting in a considerable number of kids completing elementary school without acquiring fundamental knowledge. An important differentiation that has been emphasised as particularly significant in early childhood education numeracy instruction is the requirement for both knowledge of the subject matter and understanding of how to teach that subject matter (Ball & Forzani, 2021). Studies in South Africa and other sub-Saharan African countries reveal that challenges in early numeracy teaching are less about the absence of mathematics knowledge and more about the lack of pedagogical content knowledge (Neuman & Powers, 2021). Several African critics argue that focusing too much on topic knowledge and not enough on pedagogical content knowledge in teacher preparation can be risky.

Neuman and Powers (2021) observed that infrastructure and teacher recruitment were prioritised in sub-Saharan Africa above developing teacher skills. Multiple supplementary studies highlight the necessity for enhanced pedagogical content knowledge among teachers in teacher preparation programmes (Barnett, 2004). This refers to proficiency in teaching the fundamental principles of numeracy rather than solely focusing on learning the subject matter.

Despite its importance, little is known about how numeracy is effectively taught in low-income contexts like Tanzania. However, it is essential not to overlook the challenges of teaching and mastering numeracy skills in schools. This study is important as, in particular, it is during the early years that the foundations of numeracy are laid through the experiences of children at home with parents and other adults (Yoshikawa et al., 2018). The quality and quantity of children's interactions with adults through conversations, songs, games, and play are important for developing basic knowledge of numeracy terms and processes. Based on these facts, this paper intends to examine teachers' practices and challenges while teaching numeracy in pre-primary classes from a developing country's perspective. Although numeracy is a broad concept that can be cultivated both in and outside of school, this study explicitly examines the teaching of numeracy skills in the classroom.

Early Childhood Education in Tanzania
Early childhood education serves as the foundation upon which subsequent stages of education are built. The level of education directly influences the

nature and extent of future intervention measures, along with their associated costs and advantages (Mtahabwa & Rao, 2009). Early childhood education in Tanzania refers to the formal education provided to children aged three to five. The initial stage in the 1-10-2-3+ education system includes pre-primary education, primary and ordinary secondary education (basic education), advanced secondary education, and tertiary/higher education. According to the Education and Training Policy document (Ministry of Education and Vocational Training, 2014, revised in 2023), every primary school must provide a class or unit for early childhood education (pre-primary).

Notwithstanding the government's extensive endeavours to foster early childhood education, it is evident that the current state of education for young children is quite unsatisfactory. A significant number of pupils have been completing their education up to standard seven and other levels without attaining proficiency in numeracy skills (UWEZO, 2017). In addition, certain literature indicates that the availability of early childhood education is limited due to a scarcity of adequately prepared and qualified instructors in pre-primary schools, a shortage of teaching and learning resources, and classrooms that are excessively packed. Other challenges are related to early childhood development (ECD) policy and coordination of Early Childhood Education, new syllabus, and budget allocation (Haki Elimu, 2017).

Theoretical Perspective
Education throughout the early years, like in any other age or stage of life, is typically seen as an intricate process that cannot be easily explained by a single theory or viewpoint (Dunphy, 2012). Therefore, this study was informed by socio-cultural theories. Sociocultural theories highlight the interconnectedness of social and cultural factors in understanding the learning process. The use of sociocultural theories in early childhood education to explain young children's learning is growing in prominence (National Council for Curriculum and Assessment-NCCA, 2009).

This study was informed by Vygotsky's (1978) sociocultural theory. The theory emphasises the importance of social interactions between adults and children in children's learning. Social interactions and culturally organised activities significantly impact an individual's cognitive and non-cognitive development. The theory posits that the environment plays a crucial role in the development of children, highlighting the importance of socially appropriate interactions and instructions. Teachers are essential in children's social and cognitive development and are highly valued in sociocultural theory. Specifically, the theory puts it forward that:

...any function in the child's cultural development appears twice or on two planes. First, it appears on the social plane and then on the psychological plane. Social relations or relations among people genetically underlie all high functions and their relationships (Vygotsky, 1981 p. 163).

This suggests that children in their early years may learn and internalise higher psychological functions, such as counting, through their interactions with peers and adults. The theory was deemed applicable to the proposed study because of its ability to elucidate the interplay between individual cognitive processes and the cultural, institutional, and social milieu. The position taken here is that learning is the outcome of a dynamic interplay of individuals, other individuals, and cultural objects, all of which contribute to the social development of an individual's mind (Liu et al., 2024). Therefore, the child's learning process occurs inside a social environment, where interaction plays a crucial role, and social and cultural practices influence learning

During the early stages of learning, children create their symbols and representations to express their understanding of numbers. These numerical graphics may encompass various elements such as scribbles, sketches, devised symbols, and possibly numerals and letters. Significantly, these establish the fundamental principles for applying conventional formats of written mathematics (Bernard, 2025). Perry et al. (2020) propose that children initially construct their symbol systems, which they utilise until they can adopt a more conventional system. Interactions with those who possess more excellent knowledge are crucial because they facilitate discussions about the significance of marks and symbols, both personal and conventional. These discussions help children understand the meaning and functions of numerical symbols.

Consequently, the youngster utilises language to construct cognitive tools such as numbers, which they can consciously manipulate. Conversely, under this perspective, the instructor plays a crucial role by communicating the connection between the sign and its meaning. Vygotsky defined the Zone of Proximal Development as the gap between a learner's current developmental level (when solving issues independently) and their prospective developmental level (when working with guidance from an adult). In this zone, the adult assumes the role of the "tool holder," meaning they consciously control the concept for the kid until the youngster can internalise external knowledge. The term used to describe this process is scaffolding, as coined by Vygotsky in 1978 and 1986.

Methodology

This study employed a qualitative research approach. According to Creswell (2014), this approach allows a researcher to explore participants' views as they perceive the problem to gain a clear understanding of their knowledge, experiences, and feelings. The case study design was adopted to explore numeracy teaching practices in depth and within a small, manageable area and sample. The design was helpful because it allowed the researcher to focus on 'why' and 'how' questions regarding numeracy teaching practices in early childhood education. The study was conducted in Mkuranga District, where nine (9) public schools were purposely selected to participate. The selection of nine schools was due to the fact that the schools' environments in the study area were homogeneous. The area was selected due to its unique cultural, social, and environmental conditions, which make it particularly suited for the study. The uniqueness of Mkuranga District lies in its rich Swahili-Zaramo culture, strong Islamic traditions, coastal and forest ecosystems, and rural socio-economic dynamics. At the same time, it faces typical challenges of development and environmental sustainability that make it a focal area for both governmental and non-governmental interventions. It represents areas along the coastal regions that have their own ways of livelihood.

A small sample size was selected to prioritise depth over breadth, enabling the researcher to collect rich, detailed data and thoroughly explore the participants' experiences, perspectives, and behaviours. In addition, the focus was context-specific understanding rather than generalizability, making a smaller sample appropriate for capturing unique insights. The selection of public schools was meant to reflect most of the teaching and learning practices in the Pwani region.

Pre-primary class teachers were involved in this study. They were purposely selected to participate in the study because they would provide relevant information concerning teaching numeracy skills in pre-primary children. Thus, each class teacher in the nine sampled schools was involved in the study, making a sample of nine participants. In addition, pre-primary class teachers are engaged in teaching, and they are assumed to have a complete understanding of the syllabus content and the teaching methods to be used. The tool used in this study was a semi-structured interview (SSI) guide.

The SSI guide was developed by the researcher in English and reviewed for its content validity by experts from the fields of early childhood education at the Open University of Tanzania. Thereafter, the tool was refined to ascertain

relevance, coverage, and consistency before being administered to participants. For further data validation, the tool was tested in two schools out of the sample to assess their appropriateness and protocol in a context similar to the study area. Upon completion of the pilot, the researcher had an opportunity to revise the tools and protocols based on the findings of the pilot study. Observations were taken on board and used during data collection.

The current study observed inherent potential risks for all participants. The important thing was to take measures at every step to ensure the privacy, anonymity, and confidentiality of the participants. The researcher personally met with each participant at the onset of the study to explain the purpose of the study and ask for consent.

A thematic analysis approach was employed. After reading and re-reading each interview data, the researcher highlighted interesting observations, contexts, and points relevant to the research questions in the margin. Writing a summary was a beneficial strategy for the researcher to get into the data without any specific coding categories in mind because he was interested in more open-ended and naturally emerging themes to analyse the data. The analysis of interviews proceeded through the following three main steps: preparing and organising data, creating categories/themes, coding, presentation, and interpretation.

Data preparation: Data preparation and organisation for analysis commenced during data collection in the field. This entailed carefully listening to every recorded interview. This approach allowed the researcher to become acquainted with the data and gain a general understanding of it. Subsequently, an exact reproduction of the interview sessions was provided.

Theme Development: The study used an inductive methodology to extract themes and identify unexpected themes that arose from the dataset. Additionally, this approach helped to assess the extent to which the field data substantiated the themes.

Coding, Presentation, and Interpretation: Once the themes were established, the transcripts were reread for coding purposes. This process involved identifying textual components. In addition, all the encoded data extracts for each theme were examined to ascertain if they constituted a consistent pattern. This allowed the researcher to refine the themes and associated excerpts.

During data analysis, the researcher's bias was controlled deductively by a structured coding process, using a clear code book with predefined codes and definitions to ensure consistency. Additionally, some colleagues were engaged in discussing the data and emerging themes to challenge the assumptions and interpretations, and their inputs were used to uncover alternative explanations or overlooked aspects. However, the design of interview guides was neutral and avoided the language that could steer participants towards specific responses.

Data trustworthiness and credibility were also observed in this study through member checks. A few transcripts of the interviews were shared with the participants for feedback, to correct the interpretation, and to challenge what they perceived to be 'wrong' interpretations. However, there were no significant changes reported from members after member checks. Audit trail was employed to attain dependability and confirmability: providing a complete set of notes on decisions made during the research process, sampling, research materials adopted, and information about the data management. For transferability of the findings, the researcher provided a rich account of descriptive data, such as the context in which the research was carried out, its setting, behaviour, and experiences of participants, their demographic and socio-economic characteristics, as well as interview procedure and topics.

Results and Discussion
Basic numeracy skills taught in early childhood classes
The study first sought to investigate numeracy skills taught to children in early childhood education in the study area. The findings indicate that pre-primary school teachers focused on teaching children to count from 1 to 100. Teachers reported concentrating on teaching children to add and subtract, whereas they would have gone further to assist children in recognising, identifying and understanding numbers correctly, for instance, 1-10. This aligns with the findings of the Council of Australian Governments (COAG, 2008) reports, which indicate a growing consensus that the mathematical content knowledge needed for teaching is linked to teaching specific content. Furthermore, these reports suggest that the way teachers possess knowledge may be more significant than the amount of knowledge they possess. This statement highlights the significance of a deep understanding of pedagogical topics, specifically in numerical subjects, for effective teaching. It emphasises the crucial role of teacher professional development in cultivating this specialised knowledge (Baroody, 2022; OECD, 2021).

It is noted that young children are natural mathematicians (National Research Council, 2009) and capable of developing some complex arithmetic ideas (e.g., addition) and strategies (e.g., sorting by multiple attributes to analyse data). However, they do not become skilled in numeracy without intentional and high-quality instruction (Perry et al., 2020).

Findings showed that other aspects of numeracy skills that are important in building number bases for children, such as spatial measurements, matching numbers with objects and shapes, classifying things that are alike, and groups of specific traits, were left aside. This situation suggests that a convenient number of pre-primary school teachers lack specialised training and skills in teaching numeracy skills to early childhood classes, as it was reported during the interview with one of the participants:

> Our teachers lack specialised training in teaching numeracy skills to the younger children. In-service training and short courses for capacity building on how to teach numeracy skills are also missing, and this is due to a shortage of funds, but we are planning to have seminars and short courses soon (Class Teacher, class B).

The participants' views suggest that pre-primary school teachers do not have specialised training for teaching younger children. Therefore, they are not conversant with teaching numeracy skills to pre-primary school children, as well as the pedagogical content knowledge necessary for effective learning of numeracy skills. The findings align with those reported in the study by Baker (2002), who observed that a lack of specialised training in teaching numeracy skills resulted in negative implications and ineffective teaching of numeracy skills. These issues remain relevant today, with recent studies highlighting ongoing deficits in teacher preparation for early numeracy education in sub-Saharan Africa (UNESCO, 2023; Mtika & Gates, 2021).

Interviews further indicated that every pre-primary school teacher taught numeracy skills in different ways depending on their level of understanding due to insufficient pre-primary books and syllabi to guide their teaching and learning processes. For example, some interviewed teachers confirmed that they had not received any copies of the pre-primary syllabus and books from the government. They, therefore, used their experiences and knowledge of teaching mathematics in primary classes using standard one mathematics books, as substantiated by one class teacher:

> It is hard to understand. Most of us teach based on our experience from higher classes. We have not received clear guidance on how to deal with these classes. Some schools have teachers who attended seminars, but for

those without teachers like ours here, we only teach using our own experience (Class teacher, school C).

Multiple studies argue that resource provision is being prioritised in various educational contexts based on evidence from numerous contexts that show a correlation between enhanced availability of individual textbooks/workbooks and increased learner performance (Baker, 2002). South Africa implemented a nationwide initiative that provided learner workbooks aligned with their national curriculum. As part of the previous 'Foundations for Learning' policy, resources for early number learning, such as structured bead strings and abaci, were distributed (Van der Berg et al., 2019).

In addition to the content and pedagogical knowledge of pre-primary school teachers, the study also examined teachers' classroom interaction process. This was especially the teacher-children, children-children, children-materials, teachers' ability to use various teaching and learning materials, as well as the evaluation of numeracy skills at the end of the lessons. It was found that many such interactions were dominated by teacher-centred teaching methods, which do not allow children to participate fully in the learning process, leaving them passive. Asked about the reasons behind such acts, one teacher said:

> .....it is not easy for all teachers to follow what we now call student-centred approaches. New things require training to become familiar with them. A few of us were called to attend those trainings, not me, but my colleagues. So, things are not good as some who attended cannot transfer the same to those who did not attend (Class teacher, school D).

These findings are partially corroborated by Mtahabwa and Rao (2009) in their research on the examination of preprimary education in Tanzania. The study identified several characteristics that influenced teacher/pupil interactions, such as the lesson duration, the class size, and the level of adult authority. Teachers with longer lessons had more time available to speak. Furthermore, more than 80 students in a single class were required to participate in numerous discussions to instruct them on appropriate social conduct (Mtahabwa & Rio, 2009; Kimaro & Machumu, 2023).

Challenges faced by teachers while teaching numeracy to early childhood classes

The field of early childhood numeracy is expanding and has received global recognition. This can be evidenced in the increased funding for initiatives like curriculum development, improving teacher quality, and studying young children's ability to engage in mathematical thinking (Organisation for

Economic Co-operation and Development- OECD, 2021). In addition, educational institutions have emphasised the significance of early childhood mathematics in fostering young children's cognitive growth. Research has found that a child's proficiency in mathematics at the age of three or four can be used to predict their success in both mathematics and reading when they enter kindergarten and continue their education (Sarama & Clements, 2020).

This study interviewed teachers about the challenges of teaching numeracy skills to early childhood classes. All teachers interviewed admitted that teaching and learning numeracy had several challenges. The challenges included an inadequate number of qualified numeracy-affiliated pre-primary teachers, a lack of teaching and learning materials to support their teaching, overcrowded classrooms, and a lack of in-service training, such as short courses. Others are a shortage of seminars and workshops for capacity building, parents' level of education, lack of school feeding programmes, changing curricula, and absenteeism due to long distances from home to school, to mention a few.

For qualified teachers, the question of teacher knowledge and understanding is an issue when considering teachers' early numeracy pedagogy. There is a lack of qualified early childhood education teachers, especially in teaching. Numeracy was one of the most reported challenges by the participants that contributed to poor numeracy teaching. According to Clements, Sarama and DiBiase (2022) and Linder et al. (2018), analysis of patterns of numeracy-related interactions between reception-aged children and their teachers revealed that more knowledge supports dynamic interactive discussion during teaching and learning. The analysis further revealed that where such knowledge was limited, teachers placed a greater emphasis on facts, relied more on workbooks and worksheets, and placed greater emphasis on individual work by children. The following extract validates the contention related to poor teachers' qualifications to teach early classes:

> Most of us have enough knowledge of numeracy content. Still, we lack instructional knowledge of how to present numeracy content to children so that they can master numeracy skills as required. This is caused by a lack of specialised training in early childhood education because we taught primary school classes before being appointed to teach pre-primary classes. (Class teacher, school D).

Some African critics argue that there is a risk of placing too much importance on topic knowledge and not paying enough attention to pedagogical content knowledge in teacher education. Several studies emphasise the necessity of

enhancing teacher pedagogical subject knowledge in teacher training, specifically in instructing the fundamental principles of numeracy rather than solely focusing on content acquisition. Moon (2014) and Aluko (2020) suggested that there is an excessive reliance on material, neglecting the importance of pedagogical content understanding. In the Kenyan context, Bold et al. (2019) wrote that instructors in low-performing schools may need to enhance their pedagogical abilities in order to transition their lectures towards more learner-centred methods.

The existing research on teacher education emphasises the crucial requirement for in-service support and teacher development for numeracy teachers in the early years, particularly in low-income countries. This is supported by studies conducted by UNESCO (2021), RTI International (2022), and other organisations. The reasons for these allegations stem from the expedited promotion of teachers, which has resulted in their inadequate preparation. Teachers in underdeveloped countries, where there are large numbers of children with weak language and literacy skills, sometimes lack adequate preparation for teaching. Courses often prioritise mathematical knowledge without adequately addressing how to teach this knowledge effectively.

Inadequate teaching and learning materials were also reported as another big challenge for teaching numeracy in early childhood classes. Literature shows that for effective numeracy teaching, a teacher must prepare and use various teaching and learning materials to simplify the teaching process and help children easily conceptualise and understand number concepts (OECD, 2021; UNESCO, 2021). Most of the time, children learn by doing, and the only way to make them active participants in the teaching and learning process is through teaching and learning materials. For example, one participant claimed:

> We don't have enough teaching and learning materials for teaching numeracy skills, especially in pre-primary school. Books and syllabi that will guide us on what content to teach and the teaching methods to teach numeracy skills are also missing. (Class teacher, School A).

Another participant from a different school also had the following to say about learning and teaching materials.

> As you can see, the walls of this class are empty, neither painted nor charted and card numbers are displayed to support teaching and learning numeracy skills. This is because we don't have funds to buy materials to prepare local

or ready-made materials for teaching numeracy skills to children. (Class teacher, School B).

Expanding upon the discoveries made by previous researchers about teaching and learning materials, French (2013) asserted that *"Early childhood educators must establish connections and build upon the diverse array of numeracy experiences that children encounter in both their homes and early childhood environments"* (p. 42). Moyer (2001) also observed that relying just on worksheets and colouring activities does not accurately assess an individual child's level of development. Additionally, it does not effectively inspire individuals to cultivate their inclination for utilising numerical skills in their everyday lives, which may be facilitated by incorporating the child's real-world experiences. Recent studies continue to affirm this, noting that integrating culturally relevant, play-based, and context-driven numeracy tasks greatly enhances early mathematical understanding and engagement (Baroody, 2022; Perry et al., 2020; UNESCO, 2023).

Overcrowded classrooms were also reported to affect teaching in pre-primary education. The government of Tanzania has recently made tremendous efforts to make sure that children are enrolled in schools. This has not gone parallel with the improvement of infrastructure like classrooms; thus, classes are overcrowded. Some participants reported this during the interviews as one of the challenges in numeracy teaching and learning processes. This challenge is not unique to Tanzania, as various sub-Saharan African countries face similar constraints where universal access policies have outpaced classroom construction and teacher recruitment, leading to diminished learning outcomes in early childhood education (UNICEF, 2023; Kimaro & Machumu, 2023; Mtika & Gates, 2021). One of the participants reported that:

> Due to the large number of children in this class, demonstration questions and answer methods are mainly used. As you can see, I have more than one hundred (100) children in a class, so it's hard to use participatory methods in teaching. (Class teacher-school F).

Further findings showed that most early childhood classes had large numbers of children (more than a hundred), and some learned outside classrooms under trees due to a lack of space. Again, this requires ongoing in-service teacher support to retain and help teachers cope with teaching under limited resources and large class sizes. Graven's (2014) study of teachers working in disadvantaged contexts in South Africa showed that mathematics teachers who had planned to exit the profession due to educational challenges, including large class sizes, chose to stay when provided with the

opportunities to learn within a supportive teaching community and to participate in a range of activities offered by professional associations, such as teacher conferences and other educational events.

One of the problems for teaching in early childhood classes and other levels is the problem of frequently changing curricula, which was also identified in the study region. Additional research indicates that teachers, particularly in economically disadvantaged nations, are often assigned to implement novel curricula despite having minimal input (Graven, 2014). Moreover, they face formidable obstacles, including pervasive poverty, high rates of student absenteeism, limited resources, inadequate in-service training, and insufficient support. According to Graven (2014), the emphasis on teacher transformation might be problematic when a clear distinction is made between 'old' and 'new' practices, with the 'old' practices being seen as terrible and the 'new' practices as beneficial. Advocating for a total overhaul of teaching methods, where the traditional approach is entirely substituted with a new approach, and assuming that the learning process is finished once this transition occurs, presents difficulties.

Implications of the Study

The study's main objective was to examine the practices and challenges teachers face while teaching numeracy in pre-primary classes from a developing country's perspective. The findings have shown that early years' experiences are critical for developing numeracy in young children. In particular, quality preschool experiences assist the development of numeracy in the early years, lay a good foundation for future development and help narrow the gap between students from low-income backgrounds and the rest of the population. Educational planning for developing numeracy in the context of low-income countries should involve the provision of quality pre-school education, particularly for the most disadvantaged students.

The findings further imply that there is no specific and direct way of developing numeracy skills among children. Numeracy skills are developed through various means, including child-centred teaching approaches, incorporating numeracy into everyday activities, early exposure to numeracy concepts, and teacher training support. Teachers were found to insist on counting numbers, and one reason for this could be that numeracy skills are not examined and scored like academic subjects. Teaching strategies used for counting numbers were solely meant for academic purposes, but also served to develop numeracy skills simultaneously.

Conclusion

Numeracy remains one of the critical learning domains essential for success at school. It provides a bridge to study further and work, and ensures children are well-prepared for future economic and social prosperity. The results of this study show that early childhood teachers lacked awareness and understanding of basic numeracy skills that are required to be taught in pre-primary schools. In one way or another, this affected how numeracy skills were taught to preschool children. This is partly because most of them lacked specialised training in early childhood education teaching methods, resulting in poor teaching. This training involves pedagogical knowledge as well as content knowledge for the effective teaching of numeracy skills. This is supported by different studies that show that children were not effectively taught basic numeracy skills because most pre-primary school teachers were not as well-trained as expected. The numeracy teaching situation was challenged by inappropriate teaching methods, inadequate teaching and learning materials, changing curricula, and overcrowded classrooms. These results underscore the notion that the teachers and the nature of instruction in early numeracy matter and can significantly impact mathematics learning. Teachers can make a difference for their students who need quality teaching and learning experiences in numeracy. They can do so by making numeracy equitably accessible to all and by empowering all students to succeed. These findings also show a natural connection between teaching approaches and the development of numeracy skills, as highlighted by the Sociocultural Theory. The theory considers learning in all areas as a social process being facilitated by exposure to numeracy-rich materials and practices. The current study portrays that it is through interactions with others and exposure to different activities that young children develop numeracy skills with the support of their teachers.

Recommendations

Based on the findings, the study recommends the following:

i) Provide teacher training and professional development, especially in numeracy pedagogy, including how to use hands-on activities, games, and storytelling to teach numeracy concepts.

ii) Foster play-based learning approaches, such as incorporating play in the lessons using games, puzzles, and role-playing to teach numbers, shapes, and basic mathematical operations; encourage activities like sorting objects, counting steps, or arranging items in patterns to make learning interactive and meaningful.

iii) Strengthen parental and community involvement, like engaging local leaders so as to promote the importance of numeracy and mobilise resources for Early Childhood Education programs

iv) Promote a positive attitude towards numeracy by overcoming cultural barriers and encouraging confidence among children in using numbers in real-life situations

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Applying Children's Songs in the Mother Tongue in Early Childhood Education in Tanzania: Educational Implications

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Abstract
This qualitative study investigated how songs can reflect cultural values to enhance children's participation in learning in early childhood education (ECE) in Tanzania. The focus of this study was to examine the application of mother tongue songs for children and teachers in the learning process as a vital component of their holistic development. To accomplish this goal, the study employed purposive sampling to select 18 respondents, strategically targeting individuals who could provide rich and relevant insights. A case study design was adopted to enable an in-depth exploration of the research context. Data collection methods included classroom observations, semi-structured interviews, and document analysis, which together offered a comprehensive view of the pedagogical practices under investigation. Anchored in Social Learning Theory, the study examined how songs can facilitate learning by enabling students to observe and imitate behaviours aligned with specific instructional goals. The data were meticulously coded and organised into coherent patterns, categories, and themes, allowing for a nuanced interpretation of the findings within the theoretical framework. The findings revealed that the use of songs in the mother tongue language is the most effective tool for children's increased participation in classroom interaction in early childhood education (ECE). Songs offer numerous opportunities for children to acquire language skills and express their ideas and feelings, enabling them to communicate effectively with others. The study recommends that professional development for preprimary teachers should focus on the provision of effective music skills, and this should be conducted regularly to prepare them with appropriate knowledge and skills. Exploring the use of children's songs will allow teachers to provide effective feedback, which will, in turn, boost children's learning and enhance performance in ECE.

Keywords: *Songs, mother tongue, learning, early childhood education*

Introduction

Songs are part of children's growth and development. Studies show that children enjoy songs and can participate in musical activities on many levels of education (Gruenhagen, 2012; Juaristi et al, 2024; Jennings & Delamont, 2025). Children learn songs through the process of enculturation and

socialisation. Enculturation is a process by which an individual acquires cultural understanding that occurs in both informal and formal settings. In contrast, socialisation is a deliberate process by which an individual learns and adapts acceptable societal norms, values, and roles (Juaristi et al., 2024).

Enculturation in early childhood is a crucial process that enables a child to construct their cultural identity and adopt a set of cultural traits that reflect the social reality of their society. Children start to learn songs in the culture in which they are born, although the process of enculturation and socialisation is undertaken at home and later at school. Parents use songs in their home language when rearing and working with children from the earliest age, not only to stimulate musical skills but also to create mutual communication between them and their children (Selmani, 2024).

Children's singing within their cultural songs has been found among children speaking different mother tongues. This is because some of the song words and phrases used by them have a greater influence of their mother tongue, with content integrated into their early education and environment. Songs have always been an indispensable part of learning and education. Therefore, Futonge is right when he says that song education in a mother is as old as music itself (Futonge, 2005). Learning cultural practices through songs has been recognised as a key indigenous method of training in traditional African communities, particularly in early childhood education.

Ruokonen et al (2021) assert that a song is a piece of music with words that is sung in a communal wellbeing integrated in a creative activity (Marsh, 2017) where children are gathered together to sing in a tuned language, which produces joy and strengthens their learning self-confidence. This suggests that songs possess a rich language package that reflects a culture's shared values, responsibility, and specific features of spoken language with other language skills. Thus, songs can form the basis for many lessons (Futonge, 2005), and through the process of socialisation, cultural knowledge and skills can be transmitted to children.

Singing is a social practice that children acquire through parents' interaction (Damsgaard et al, 2025). Early interaction with songs through the mother tongue has been positively affecting the quality of all areas of children's lives and learning (Esimone, 2012). This is because children's exposure to songs during the early years enhances the learning process upon which language learning is built. When children sing songs in their mother tongue, they also learn various issues such as language skills, traditional games and exploring the real world.

Some scholars show that once children go to school, they acquire knowledge through a new language that is built on what has already been learned (Shaw, 2016; Saka, 2025). However, the mother tongue is the first language accepted by most children. Therefore, the use of mother tongue songs in early childhood education should not be ignored, as they are the songs that preschool children are most familiar with and apply. Such songs are fun and can add to a child's vocabulary and abilities to communicate.

Songs are products of cultural practices (Kramer, 2012), and as a cultural communication together with language (Kalinde & Vermeulen, 2016). In education, traditional songs are often introduced to children in order to help them develop certain knowledge from their original culture. For example, through singing songs, children may learn cultural content and language. According to Shaw (2016), songs provide knowledge that serves as a bridge between their life experiences within and outside the classroom. Therefore, learning through songs in a language that children are not familiar with has been debated amongst scholars as contributing to the obstacle of learning among children (Diop, 2000). Although some scholars accept that learning does not always involve a familiar language, it is through a familiar language that most of the considered ideas are shown and expressed (Bodrova & Leong, 2007).

When an unfamiliar language is used in the instructional process, children struggle to assimilate the meaning of new words with what they already know (Diop, 2000). This situation appears to have a negative impact on successful children, hindering the implementation of changes in their early childhood education. Most importantly, the analysis reveals that using languages other than one's mother tongue may have a negative impact on globalisation, potentially eroding cultural values. However, it is unclear whether children have been involved in using songs in learning across different cultures.

Benson (2005) argues against the notion that using mother tongue songs in education facilitates effective interaction between teachers and children. According to her, this approach does not necessarily eliminate the need for teachers to translate pedagogical content, nor does it guarantee that children will easily associate the meanings of the themes with the content they are learning. Songs serve as a tool that helps children learn easily. More specifically, songs are believed to be able to motivate students during the learning process. This is because songs are affective, cognitive and linguistic resources. When children sing songs, they indirectly or directly learn something. Children enjoy singing songs in their mother tongues. Using these

songs can create a meaningful shift from the routine of using the first language to instructional language. In classroom interactions, songs are highly effective motivators for both teachers and children and can play a significant role in the development of learning. However, songs may be applied quite ineffectively, and their potential for language learning might not be realised.

There is abundant evidence which proposes that songs are a product of cultural practices that influence children's overall learning in childhood (Kramer, 2012; Shaw, 2016; Selmani, 2024). However, little has been done about the application of songs in the mother tongue and how these songs influence children's learning in early childhood education in Tanzania. Therefore, this study investigates the potential of children's songs in their mother tongue as a pedagogical tool in early childhood education.

Theoretical framework

The study regarded social learning theory as significant for explaining how songs can be useful in the teaching and learning process. Bandura (1986) proposes in his theory of social learning that there are several types of learning, rather than just one single way; imitation is one of them. Bandura also explains that songs may be a privileged coordinator of cognitive processes, especially among children, as singing creates interaction and communication with others who provide a modelling construction. In this way, knowledge, skills and behaviours develop through modelling. Bandura's theory provides teachers with guidance on how to use songs in teaching and learning. The theory shows that children are naturally motivated to learn songs from one another. This is achieved through observation learning, a process that involves watching others, imitating their performed songs, and later modelling the observed songs. Songs can be used to facilitate knowledge among children in classroom interaction and around the world where children live. The theory, through content analysis, further helps to show how children's songs in the mother tongue can reflect culture and increase learners' overall participation through observing, imitating, and modelling in the process of learning. The songs were further categorised, for example, interpreted and explained to give answers on how children's songs in the mother tongue are used in the classroom.

Songs are an essential factor because they carry language themes in imparting the curriculum content (Shin, 2017). It is through songs that children communicate with their teachers, a process that facilitates meaningful interaction. While it is true that songs vary in terms of cultural diversity, the only factor that should be considered when selecting these

songs is whether they are developmentally appropriate to children and relevant to their learning development.

Methodology

This study used a qualitative approach to examine teachers' perceptions of their use of songs in enhancing children's development in all early childhood education topics. This approach was beneficial due to its ability to allow the researcher to understand and interpret children's songs in their mother tongue, and because it involves data typically collected in participants' natural settings (Creswell & Creswell, 2018).

The study was conducted in Mara region at two schools, namely, Mazami Primary School and Butiama Primary School. The district was chosen for this study because it is a primarily rural society consisting of numerous ethnic groups (Massamba, 1986). Until recently, early childhood socialisation was primarily managed through community-based song structures, which have a long history of engaging multilingual children. The study involved a total of 18 participants. Two purposively sampled preschools were selected, with one being drawn from an urban setting (Butiama) and another from a rural setting in the Butiama district. Purposive sampling was used to select 8 preschool teachers who participated in the study, with 4 teachers per school. Again, 8 children, with 4 teachers per school and 2 parents, were involved in the study. Teachers and children were the key research participants in enabling communication and were thus considered to be able to inform about the application of children's songs in their mother tongue. Participants were purposively chosen due to the role they usually play in enabling children to use songs in their mother tongues for learning.

Data were collected through interviews and observation, using both written information and oral voice recordings, as well as field notes extracted from teachers and children. Literature suggests that interviews offer an opportunity to uncover previously unknown information, such as local customs and informants' perspectives on the topic under investigation (Kim & Riley, 2014). This study employed interviews and observations as primary data collection methods. Children's interactions were recorded using audio devices, and the resulting data were analysed using thematic analysis. This facilitated the process of classifying and analysing themes extracted from the collected data. Interviews with pre-primary teachers and children were conducted to collect their opinions about the application of mother tongue songs to children's acquisition of knowledge. Informal and formal observations were conducted to capture the performed songs. Interviews and

observation were conducted at the classes to ensure the participants' freedom and to share their experiences without fear of being heard by others.

Findings and Discussion

In this section, the findings from the field on how children's songs in the mother tongue can be applied in early childhood education in Tanzania are presented, analysed, and discussed. However, it was observed that there were many occasions when learning could take place through songs. These include enhancing the children's play, thereby making songs a powerful learning tool in their developmental lives. Children's songs in their mother tongue provide an integral part of learning opportunities. Shin (2017) notes that songs aid body movement in much of their singing. Jiřičková et al (2025) further observe that songs and movement in African settings are interrelated. Hasanah (2024) adds that learning songs through movement is very important as it enables children between 2 and 5 years to exercise the necessary motor control required for dancing. Consequently, children get exploratory and self-directed movement experiences as they grow up. This informed the present study, particularly regarding the songs that utilise appropriate mother tongue songs for children at different developmental stages. This situation provides a basis for the use of songs as a means of learning in early childhood education. Similarly, this study focused on how songs are helpful for pre-primary education. In that context, this section presents the findings of the study based on the sub-themes.

Songs as Pedagogical Tools

Based on oral interviews, the researcher gathered the following information: the participants expressed their concerns that songs in early childhood classrooms could be used to improve children's communication skills, as this motivates them to be expressive and helps them understand lessons during the teaching and learning process. Furthermore, through songs, children discover how the songs express some facts in society and how they arouse greater human values, bringing refreshment and beauty to the lives of the children. Concerning this, one of the teachers said:

> Songs have influence and meaning that go beyond words. They have the ability to share knowledge with children and provide the best learning experiences in their early childhood. For example, singing a lullaby while shaking a baby stimulates early language development and supports body movement in space (Interview with the teacher)

The quotation above reveals that songs are highly motivational and can have a relaxing effect on the children and participants. Thus, enjoying success-oriented song activities makes children feel better about themselves in the

learning process. The researcher aimed to investigate whether singing songs in the mother tongue could provide opportunities for parents at home and teachers at school to significantly contribute to helping children feel good about themselves and their learning processes. Regarding this, some participants indicated that:

Student 1
> I am not good at singing English songs. But I know how to sing Kiswahili songs, and I can teach my friends how to sing them easily and learn a new song in front of others in a class, or with my friend in public (Interview with the student 1)

Teacher 2
> I have no music background, and that is why I mostly share CDs with my fellow teacher. All we do is to understand the meaning of a given song and translate it for children's learning for our class through performing actions. I have been teaching children for more than 20 years. So I understand what children want to enjoy through songs. Possibly, we need in-service training seminars to be able to use music in our teaching and learning processes! (Interview with student 2)

The quotations above indicate that, although preschool teachers regularly use songs in their daily practice, this study found that many lacked formal music training. This was evident in their limited proficiency in essential musical skills. As an alternative, these teachers were observed to use story songs, children's songs in their mother tongue, because they had limited skills in music. Moreover, they were using recorded songs to support them in presenting selected themes to children in the lessons. Such a pedagogical process revealed their teaching experience.

The results also add evidence to Jiang (2024)'s findings, which revealed that teachers' instruction is affected not only by music skills brought through professional training courses and music skills brought through experience in the child's pre-school setting, but also by the connections between these two settings. It means that teachers' experience during teaching practice promotes children's learning and building self-efficacy. Social Learning theory suggests that vicarious experience of observing a teacher like a model can also have a strong influence on building self-efficacy. Hasanah (2024) suggests that locomotor skills, such as singing, jumping, throwing and catching objects, can lay the groundwork for effective teaching.

Songs Demonstrate Mastery of Early Language Skills
This theme examined the extent to which songs supported the development of early language skills. The findings indicated that the song words were

rooted in specific languages, thereby fostering both linguistic development and the transmission of cultural values. Thus, melodies, harmonies and rhythms do help children to learn phrases, recognise rhyming patterns, and understand context. This study observed further that children sang melodies about body parts, for example:

Urwembo	*Title of the Song (English Translation)*
Gwata umwutwe gwazo	Touch your head
Taza hase	Stamp down
Luta zengebho	Pull your clothes
Tema amabhoko	Clap your hands
Kita otagamba	Shut up your mouth

The song above suggests that songs influence children's language as well as physical and motor development skills. A similar observation was made by Fisher (2001), who argued that both cultural and musical practices influence a child's learning. Songs as part of music help children to remember and understand language vocabulary more effectively. Additionally, singing songs can help children develop pronunciation with natural intonation skills. In this way, children's songs through their mother tongue make learning very fun, therefore, building their language abilities.

As observed, the syllabus for preschool education requires teachers to teach children specific competencies in listening, conversing, reading, writing, and communicating in various contexts. This observation particularly supports the arguments of Shin (2017) that songs have been shown to improve language skills and are considered a vital part of teaching and learning in early childhood education. By teaching children through songs, teachers can use participatory communication, thus imparting new knowledge to children.

Songs on Listening Skills
During interviews and observations with primary school teachers from Butiama and Mazami, it was found that children enjoyed reciting songs because the content helped them grasp the meanings of new words or phrases in context. It was reported that songs had content relevant to the teachers' intended curriculum. For example, the following song, "Nana amanji", that the study observed children singing, was translated and then discussed for its role in children's learning:

Nana amanji	*Give me water (English Translation)*
Nana amanji, niteke ubhusara	Give water, I want to cook porridge
Obhusara bhwani, bhunogere kisi	My porridge is prepared well

| Nana amanji, nombake amagina | Give me water, I want to prepare bricks |
| Amagina gani, gombakile inyumba | My bricks have built a house |

The song above implies that teachers use songs whose content talks about sanitation, about food and the importance of accommodation. This song's content suggests the positive perceptions held by teachers of children not only in delivering curriculum content, but also in supporting them in language learning. Thus, pre-listening, while-listening and post-listening to a song are effective classroom activities in vocabulary building in language development.

During observation, various aspects of listening comprehension through songs were identified as aiding in developing accurate content based on the teacher's selection of coherent lesson plans. However, choosing suitable songs depended on the learning objectives as well as the relevance and flexibility of the selected texts. This indicates that careful listening exercises, from the simplest to the most complex songs, anticipate key skills when designing a lesson focused on listening ability. It was also observed that songs effectively engaged children because they are a natural and enjoyable part of their everyday lives. Children listen to songs or sing along with teachers or other children. There were songs with themes emphasising the importance of social context, singing with family and family friends through pretend play. For example, the following song, "Ninatembea", reveals this theme.

Nasimeza (Nimetembea)	***I have walked (English Translation)***
Nasimeza mpaka mmahoru	I have walked up to the bushes
Nakolalaga ha sagala ×2	I slept without eating ×2
Nale na nke wane na bhana bhane	I am with my wife and children
Tokolalaga bila kolya ×2	We slept without eating ×2
Mzazi wangu kama hunipendi	My parent, if you don't like me
Sipendi uniseme ×2	I don't like you to talk against me ×2
Nale na nke wane na bhana bhane	I am with my wife and children
Tokolalaga bila kolya ×2	We slept without eating ×2

The above song "Nasimeza" was observed to have been commonly used by some teachers at Mazami and Butiama. This song was observed to allow children to listen to some selected pedagogical content related to their lesson. For example, children were observed to listen to and repeat certain words from the song lyrics after the singer or teacher repeated them multiple times until they learned something. Esimone (2012) considers that songs

complement listening instruction because language, especially that of children, has words, rhythm and melody.

This popular song *"Nasimeza"* in the mother tongue suggests that songs help to improve the listening skills of children because they are delivered with listening skills in the form of intonation and rhythm. When translated into English, the song can evoke strong emotional responses. According to Bandura (1986), in his theory of social learning, songs act as a reinforcement component that can lead to the children's retention of what has been learned and increase lesson concentration. Some teachers believe that songs in the form of call and response have a profound impact on children's brains, as singing children's songs in their mother tongue effectively works in their memory and serves as a pedagogical tool to reinforce classroom interaction.

Songs on Speaking Skills
Data collected through observation revealed that children were frequently required to learn how to create intonation sounds that needed continuous practice. Teachers in Mazami and Butiama pre-primary schools were observed using group drills. However, this type of movement was rarely interesting for the children, as another teacher-respondent confidently stated that they had used one of their captured songs adapted from a children's tune. The song "Nana amanji" that teachers were using in their teaching was adapted from popular songs in the mother tongue. The song could be used effectively to teach Swahili rhythm and stress. The English adaptation of this popular children's song helps build children's confidence in singing. Its familiar rhythm encourages participation and supports accurate pronunciation by reinforcing natural stress patterns in English. For example, the following narration directs the use of the mother tongue:
Student 3

> I am not very confident in singing songs to get the ability to pronounce words and understand the meaning of a sentence, as I have not heard that before in this class. I had never had much exposure to many songs sung before this class activity. (Interview with student 3)

The quotation above suggests that some teachers emphasised the use of mother tongues in their teaching. Teachers claimed that applying continuous practice in singing the song's words repeatedly would bring pleasure to the children compared to the usual boring drills they used to do previously. According to social learning theory, children can learn in multiple ways. Similar findings indicate that consistent practice in singing, just like any other skill, is fundamental in enhancing speaking skills (Bandura & Hall, 2018). Therefore, modelling a song repeatedly could be applied by teachers

to increase learners' attention, thus creating competence in speaking skills with others.

Songs on Writing Skills
This study found that the expressive elements of songs encouraged activities that actively engaged children in singing and vocabulary development. Children not only participated enthusiastically in singing but also used rich narratives to express ideas related to their curriculum topics through writing. A typical comment was noted: *"I sing and narrate songs of our different words which we learn here and write them"*. Based on these observations, certain songs were found to help children learn and accurately identify parts of the body, both verbally and in writing. An example of such a song is titled "Umutwe Mboloze"

Umutwe Mboloze	**I have seen your head (English Translation)**
Ubhusyo mboloze, wilole umwene	I have seen your face, see yourself
Ameso ngaloze wilole, umwene	I have seen your eyes, see yourself
zinzwele nzeloze wilole, umwene	I have seen your hair, see yourself
Amantwe ngaloze wilole, umwene	I have seen your head, see yourself
Ameno ngaloze, wilole umwene	I have seen your teeth, see yourself

This selected children's song in the mother tongue was sought to provide the opportunity for vocabulary practice for both the mother language and the language of instruction. These songs were constructed from the song's theme, which can provide contextual learning on vocabulary. The song, "Umutwe mboloze", for example, could be used to review children's hygiene if health is the subject's topic. This implies that "I have seen your head" or "Umutwe mbolize" might be a useful song for reminding children to care for their face, eyes, ears, and teeth. Thus, their acquisition of writing skills developed. This finding is consistent with a previous study supporting that songs have an impact on students ' writing skills (Haris & Siswana, 2024). Children's songs improve the development of language skills such as writing, as children learn how to listen to words, pronounce letters, and their articulation comes more easily. These findings imply that songs not only engage children in learning but also enhance students' writing skills. Thus, before a child writes a text, they can develop reading and singing skills.

Songs on Reading Skills
This study revealed that song-based learning activities had a significant impact on the development of children's language and reading skills. Teachers reported reading song lyrics to better align their instruction with the

children's learning needs and subject content. They also referred to the children's syllabus to identify key topics and determine the appropriate content to teach. Using songs as a reading tool was seen as an effective way to introduce and reinforce topic content, making it more accessible and easier for children to understand. In this regard, one teacher revealed:

> I also use songs, which I sometimes compose, depending on the topic of my lesson. Some songs that we sing teach children counting, doing certain reading activities and their sounds (Interview with a teacher).

Based on the collected data, this was the song:

Najua Kuhesabu Namba	***I know how to count numbers (English Translation)***
Najua kuhesabu namba moja, mbili. Tatu, nne, tano, sita, saba, nane, tisa, kumi. Vidole vya miguu yangu jumla yake kumi, huku tano na huku tano jumla yake kumi.	I know how to count numbers one, two, three, four, five, six, seven, eight, nine, ten. Total fingers on my leg are ten, this side five and this side five, total is ten.

On the use of songs to teach children, another pre-primary teacher commented:

> I use written songs and order children to read all the time! We can use songs when introducing a particular topic, and we can use songs for counting numbers. Again, when showing body parts like legs, hands, and toes. We can also use songs to read the vowels in language, for instance, a, e, i, o, u. (Interview with a teacher)

Based on these findings, the songs served as activities that involved children in reading, singing, and exploring language principles. In this context, another teacher highlighted this point with her comment, making it very clear:

> Parents want children to learn and sing Kiswahili and English songs. If they want, they can sing songs in their mother tongue. But sometimes, children get uncontrollable, so we limit the singing activities (Interview with a teacher)

The narration above from the teacher suggests that through singing and composing songs, children can fragment sounds, create blended words and form different sentences. Adapting songs as a teaching tool for reading skills, the teacher can select a particular vocabulary feature and incorporate it into the song. These results support Damsgaard et al.'s (2025) findings, which assert that songs contain a comprehensive language package, including

speaking, listening, writing, culture, grammar, and a host of other language skills, all packed into just a few verses.

Build self-confidence and self-efficacy

Data from interviews and observation on students' reflective singing revealed the presence of building self-confidence and self-efficacy. Consistent with Bandura's argument that modelling is the most influential source of confidence and self-efficacy, the results showed that singing in front of others strongly boosted confidence, and repeatedly singing the songs was the most significant source of self-efficacy among many children.

One teacher from Butiama pre-primary commented: "*I also, from time to time, use popular songs sung by children, depending on my subject topic. Some songs that I use to teach them vowels, shapes, birds and their sounds, such as*":

Swahili song	**English Translation**
/a/ ina mkia mfupi	/a/ has a little tail
Mabata wanaogelea	Ducks are swimming in water
Najua kuhesabu namba	I know how to count numbers

The interview quotation above highlights that children often develop greater confidence when singing familiar local songs, particularly when these are integrated into the learning process. These songs resonate with children's perceived learning abilities due to their relatable themes. Musical activities such as singing, dancing, and drumming further encourage children to express themselves and use their voices with confidence. Where teachers might not always succeed, songs bridge the gap, serving as an excellent way to communicate with children with different abilities. Singing helps children of all needs to develop, communicate, and build confidence.

It was also reported that songs contained content relevant to the teachers' intended curriculum. For example, teachers used songs whose content discussed livelihood activities. For instance, the song content below reflects an increase in self-confidence and the ability to perform something. Perceived confidence thus serves as another effective source of self-efficacy.

Tukawinde	**To hunt (English Translation)**
Twende tukawinde leo (tukawinde vipepeo ×2) aina (vipepeo ×2)	Let's go to hunt flies today (to hunt butterfly ×2), which type (butterfly ×2)

This study revealed that all children had great confidence when singing songs. Phrases such as "Let's go" and "to hunt" were cited by the participants as reducing their anxiety in front of others. During the interview, student 4 provided one comment that was documented in the building self-confidence: *When the teacher selected me to conduct a song in the class, then when I participated as a soloist in our traditional song, I got interested in singing independently*. (Interview with Student 4). The quote above evidently shows that songs in the mother tongue were perceived as the most vital influencing factor for children's participation in the early childhood education classroom. The data also indicated that all teachers were using songs in their curriculum orientation. In this regard, one teacher clarified that:

> During my teacher training course in Early Childhood Education, music was among the subjects, and the practical curriculum was emphasised. (Interview with the teacher)

The quote above implies that songs promote social commitment, improve mood, and help to build self-efficacy and self-esteem. From the findings, besides their roles, teachers thought that students experienced less fear and anxiety, and that children's motivation increased. This is because they had song records supporting them. Other studies indicate that music integration is related to teachers perceived musical ability and self-efficacy in teaching music (Bandura,1997; Jiang, 2024). This suggests that educators who demonstrate a strong sense of self-efficacy would use songs effectively and introduce new educational practices as well.

Songs Encourage Teamwork

This subsection presents the way songs encourage teamwork through communication and cooperation with other children. Based on the study's findings, it was observed that when children sing together, they naturally start to work together, learn and achieve a shared content. Songs are among the classroom activities that influence teamwork learning through the use of melodic lines and phrasing, typically practised through rounds of singing. Song ensembles often involve small groups of friends who sing together and occasionally play instruments. On this, one of the child respondents commented:

Student 2
> I am not very comfortable singing alone in front of others in class. However, I can sing songs in front of others with my friends, and I feel better about doing it. Some friends used to intimidate us when singing alone, but sometimes, when singing songs in my mother tongue confidently to show my ability, I did not care whether I was a good singer or not. (Interview with Student 2)

Furthermore, one teacher chose to offer a self-reflection on her practice, and she commented that:

> When I want to find out what the children already know, I form groups to see whether they are listening. Moreover, I use a range of repertoire to allow children to sing solo or play the instruments of their interest to identify their abilities. (Interview with a teacher)

These reflections indicate that songs naturally serve as a form of self-expression for children. However, the key challenge is to make songs meaningful and integrate them effectively into lesson development. Everyone needs to connect with songs at some point, aligning with their sense of belonging. Through singing participation, we can foster children's self-efficacy and self-expression. Engaging in group work, singing performances, and active participation helps children overcome fear, build confidence and reduce anxiety. Without doubt, singing in teamwork exposes children to the incomparable (Esimone, 2007; Jiang, 2024). Jiang (2024) supports that songs have an impact on students' psychological development, with a mediating role of building self-efficacy and self-esteem. Teamwork musical activities, such as singing, reciting poetry, and drumming in circles, improve both verbal and non-verbal communication skills. According to Esimone (2007), music in early childhood education develops expression skills, enhances listening abilities, and increases confidence, leading to stronger teamwork and learning.

Implications for Policy Makers
The findings of this study confirmed the important role of applying children's songs in mother tongues for early childhood education in Tanzania. Therefore, curriculum developers need to assess the effectiveness of using multicultural music in preschools by conducting a national-level study. This can be achieved by conducting regular reviews of the curriculum to assess the effectiveness of music and movement instruction for both pre-primary teachers and those in training. During the study, it was observed that differences between the pre-primary schools visited could be attributed to the schools' administrators. This suggests that head teachers should take deliberate initiatives to support the resources used by pre-primary teachers in music. This can be achieved by purchasing audio cassettes and CD players to support pre-primary teachers' work.

The study found that teachers effectively conveyed many preschool topics in early childhood education through the use of songs, movement, and language-based activities. When pre-primary teachers incorporate musical

and movement activities into their lesson planning, they present valuable opportunities to enhance children's learning. These activities encourage children to express themselves, engage in conversations through songs, and learn from a variety of sources. From the children's perspective, the use of songs in their mother tongue played a vital role in language learning and vocabulary development. This enabled them to communicate pedagogical content more effectively, enjoy the emotional and cognitive benefits of music, internalise ethical values, and apply knowledge in meaningful ways. The effectiveness of these songs in early childhood education is closely linked to their content, the richness of vocabulary they offer, parental support, and the intentional use of music by teachers within the learning process.

Conclusion

This study has demonstrated that children's songs are powerful pedagogical tools with significant educational implications, particularly in early childhood learning contexts. This is because children feel motivated when learning with this resource material. Additionally, children's use of songs in the classroom motivates them to attend lessons and pay attention. Songs are socially constructed through observation and imitation, and are reinforced in classroom learning. They are also deeply rooted in cultural practices, reflecting shared values, social responsibilities, love, traditions, customs, and the unique characteristics of spoken language.

Children's songs serve as a useful and helpful pedagogical tool in teaching and learning, as they enable children to grasp language, knowledge, and culture easily. Using the mother tongue songs can help children in the pre-primary schools improve their curriculum content. One of the greatest applications of songs in the classroom is that they are pleasurable and entertaining. Generally, using children's songs in their mother tongue as part of classroom activities may serve as an effective method for transferring knowledge across different areas of pedagogical content. It is one of the strategies that pre-primary teachers can employ to enhance their teaching, offering more opportunities to integrate music meaningfully into their instructional practices.

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Strategies for Addressing Teachers' Workload under Fee-Free Basic Education in Tanzania: Special Focus on Students' Social Development

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Abstract
This study investigated the strategies for addressing the increased teachers' workload to promote students' social development after the introduction of fee-free education in Tanzania. The government of Tanzania's vow to expand school places in secondary schools in 2015 increased the burden on teachers, as the expansion of enrolment was not supported by a corresponding recruitment of teachers. The objectives of the study were to explore school management's interpretation of teachers' workload for students' social development and to investigate the strategies adopted to address the increased teachers' workload in relation to the social lives of students. Using the ethnographic design of a qualitative research approach, the study employed in-depth interviews with four heads of secondary schools, four academic unit heads and four discipline unit heads forming a school management team. Data were analysed using Roper and Shapira's (2000) five stages of thematic analysis. The results presented the participants' perspective, defining teachers' role in students' social lives as crucial and irreplaceable, irrespective of the class size. Further, the study established that the strategies for addressing teachers' workload for students' social aspects included enhancement of school and community-based strategies aimed at reinvigorating the students' social development rather than relieving teachers of their natural role. It is concluded that the student's social growth is not yet addressed properly due to the absence of objective standards for measuring attainment of social competencies as is the case with academics. The study therefore recommends the establishment of assessment criteria for ascertaining the fidelity of implementing social aspects.

Keywords: *Students' social development, teachers' workload, Fee-free basic education, Secondary education*

Introduction

The global commitment to providing quality education for all, irrespective of economic status, has made fee-free education a pivotal agenda in educational policy and practice in Tanzania (Marwa, 2019; Shukia, 2020). While international declarations and conventions underscore the right to free access to education (UNESCO, 2015), the implementation of fee-free education policy decisions has varied across nations, with Tanzania being one such country that has adopted and implemented such initiatives (Haidari, 2021; Lazaro & Loisulie, 2022; Tarimo, 2020). However, the introduction of fee-free education, particularly in sub-Saharan Africa, has posed challenges for educators and school administrators, affecting teachers' workload and school management practices (Asim *et al*., 2019; Lucumay & Matete, 2024). In Tanzania, the introduction of the fee-free basic education initiative in 2015 aimed to increase access to primary and secondary school students by waiving registration and examination fees (Shukia, 2020, United Republic of Tanzania [URT], 2015). While this policy decision has led to a surge in student enrollment, it has also placed significant strain on teachers and school administrators, exacerbating challenges related to workload management and resource allocation (Lucumay & Matete, 2024; Magesa & Mtebe, 2022; Shukia, 2020). As such, students' social development has tended to be one of the aspects overlooked mainly by those fee-free initiatives, as the focus seems to be on academic performance. This has been a common error of omission in education.

The introduction of fee-free education in 2015 implied that teachers attended to the needs of a larger number of students than was the case hitherto. For the school management teams and teachers, the pressure of managing large classes and maintaining academic performance can adversely affect students' social, health, and well-being unless great care is taken. This overcrowding diminishes opportunities for meaningful teacher-student interactions and hinders the development of essential social skills such as communication and teamwork. This suggests that the expanded enrolment necessitates the need to seek strategies to ensure smooth curriculum implementation among teachers. This study focused on the strategies for addressing teachers' workload under fee-free basic education in Tanzania, with a special emphasis on students' social development. It sought to provide insights into how secondary school management teams can effectively manage teachers' workload and promote students' social development within the context of fee-free education. The study was deemed relevant as researchers sought to establish whether the increased teachers' workload altered their role of nurturing and fostering students' social development, taking the perspective of the school management teams. The main assumption underlying the study was that

while teachers have the role of facilitating students' learning, they tend to focus on the promotion of students' intellectual development more than social development.

Theoretical Foundations and Literature Review
The attachment theory, which emphasises that secure attachment is necessary for students' success (Bergin & Bergin, 2009; Bowlby, 1982) places the role of social development of students in schools to teachers, who are required to serve as parent figures as opposed to mere academicians (URT, 2023; Feeney *et al*., 2019). Hence, teachers have a moral obligation of fostering positive social relationships among students while serving as moral leaders as well as setting themselves examples of moral character (Herndon, 2021; Klaassen, 2012; Orr & Lavy, 2024). As such, secondary education plays a crucial role in nurturing holistic student development, encompassing academic, physical, social, and emotional dimensions rather than stressing any of these aspects at the expense of others.

The increased workload faced by teachers and school administrators have raised concerns about the effective implementation of social development activities in Tanzanian secondary schools. While studies on fee-free education in Tanzania focus on its implementation (Haidari, 2021), its freeness (Lazaro & Loisulie, 2022), community understanding of fee-free education (Tarimo, 2020), challenges facing its implementation (Lazaro & Matiku, 2022; Lucumay & Matete, 2024), little is known regarding strategies towards students' social development in the context of fee-free education. It is not well established how members of the school management teams link the increased teacher workload with teachers' role of nurturing students' social development, and what strategies are in place to ensure that students' social development is not left behind. The study follows the claims that while the ideal teachers need to be highly competent in their subject matter and social skills (Ciechanowska, 2010), the contemporary educational trends are geared towards economic globalisation (Cairns *et al*., 2001; Ball, 2008, 2004). Such trends tend to sideline the social development of students in favour of the labour market demands.

The implementation of fee-free basic education policy decisions in low-income countries like Tanzania has led to a significant increase in student enrollment in public secondary schools (Magesa & Mtebe, 2022). However, this surge in enrollment has posed several challenges, particularly in the domain of students' social development. Overcrowded classrooms have become a common occurrence, affecting both the physical learning environment and the social dynamics within classrooms (Magesa & Mtebe,

2022). This overcrowding diminishes opportunities for meaningful teacher-student interactions, hindering the development of essential social skills such as communication and teamwork (Opstoel *et al.*, 2020). Additionally, resource constraints limit the availability of extracurricular activities that promote social development, further exacerbating the challenges faced by students. Moreover, the pressure of coping with overcrowded classrooms and academic performance can adversely affect students' social, health and well-being, impeding their social development (Baidoo-anu & Acquah, 2021).

Methodology
This research employed a qualitative approach to explore the school management teams' interpretation of teachers' workload in relation to students' social development as well as investigating the strategies for addressing teachers' workload on the same. A qualitative research approach was chosen due to its suitability for investigating human behaviour, feelings, perspectives, attitudes, and experiences (Merriam & Tisdell, 2016). Additionally, the study adopted an ethnographic design to seek the experience of the study informants in their natural workplaces and culture. Ethnographic inquiries enable researchers to understand the informants' perspectives of the realities they face (De Fina, 2019; Rinaldo & Guhin, 2022). Those inquiries involve direct and sustained contact with stakeholders in the context of their routine activities and culture, producing a rich written account of their experience (Feixa *et al.*, 2020). As such, the study on school management perspectives of students' social development after the introduction of fee-free educational initiatives suits well with the ethnographic design as it involves a deep immersion into the lives of those researched. It also requires building professional relationships, thus allowing open sharing of views that ultimately enable researchers to interpret the social world of those researched (De Fina, 2019; Rinaldo & Guhin, 2022).

Sample and Sampling Procedure
The study sample included twelve (12) informants, including four heads of secondary schools, four teachers heading the discipline units, and four teachers heading the academic units, respectively. Those informants formed the school management teams in four secondary schools involved and worked cooperatively to ensure, among other roles, proper allocation of roles to teachers. It was assumed that their daily routine provided them with sufficient experience of working with teachers, hence understanding and feeling the workload of teachers in their respective schools. Hence, they provided their understanding of teachers' promotion of students' social development in the context of fee-free education. A purposive sampling procedure was used to select those participants as they possessed relevant and

in-depth knowledge of teachers' increased workload in the context of fee-free basic education. Participants were selected based on their direct involvement in the implementation of fee-free educational initiatives and their expertise in educational management and teaching practices. Ethnographic studies prefer a small sample to allow ample time for researchers' familiarisation with the informants, research processes and the context (De Fina, 2019; Sangasubana, 2011).

Tools for Data Collection
The study employed ethnographic interviewing method. This method involves immersion into the lives of the study informants and making conversations with them while observing their working environment as well as making sense of their feelings to be able to link what is said with the naturally occurring events (De Fina, 2019; Sangasubana, 2011). The face-to-face in-depth interviews were used and each informant was interviewed at least twice at different school contexts for the sake of ensuring rigor of the study. The interviewing processes occurred after an adequate rapport had been made, when the researchers had introduced their identity as professional teachers, which was an important step towards professional relationship building aimed at enhancing trust among the participants.

Data Analysis
The analysis of data for the study drew from the interviews with the heads of schools, the heads of discipline, and the academic units. The study adopted Roper and Shapira's (2000) framework, consisting of five steps. The first step, coding for descriptive labels, involved searching and grouping transcribed words into descriptive labels, such as social development, workload impact, student population, soft and life skills, attitudinal dispositions, harmonious relationships, social interactions, school clubs, etc. The second step, which involves sorting for patterns, involved assembling the coded labels into themes, hence establishing relationships among the coded labels. The emerging themes included social development as indispensable, nurturing sociability through competence-based teaching, school-based social development strategies, and community engagement strategies as presented in Table 1. The third stage involved identifying outliers, implying sorting out the coded words that were unrelated to the rest of the findings, including aspects such as academic performance, leadership roles, intellectual development, etc. The fourth stage involved generalising constructs and theories, in which the patterns relate to theories. The study informants' constructions of the reality of the fee-free education in relation to teachers' workload linked with the social constructivism theory as propounded by Lev Vygotsky (Akpan *et al*., 2020). Those constructs involved the influence of

the expanded enrolment emanating from the fee-free education initiative on students' social development. The fifth stage involved memoing with reflective remarks, which is useful in keeping track of the assumptions, biases and opinions throughout the whole research process (Sangasubana, 2011). The credibility of the data was enhanced through method, data, investigator and environmental triangulation (Stahl & King, 2020) as well as member checking (Candela, 2019; McKim, 2023; Thomas, 2017), as researchers shared the analyzed data with the informants, providing them room to add, discard or correct the interpretations the researchers had made. Further, dependability was ensured through peer reviews where the research tools were checked by faculty members to ensure their alignment with the study objectives.

Ethical Considerations

Formal permissions were obtained from relevant authorities, including the Vice-Chancellor of the University of Dodoma, administrative authorities at regional and district levels, and the Kongwa Town Executive Director. Informed consent was acquired from each participant, and confidentiality measures were implemented. The study adhered to the University of Dodoma's ethical guidelines to ensure integrity and respect for participants' rights. Confidentiality measures were also implemented.

Findings

Table 1: Findings in a nutshell

Category	Theme	Sample of participants' voices
Teacher's workload vs. Students' social development	Social development is indispensable	*Students' social development has nothing to do with the workload, as it could for academics; it cannot be apportioned. It does not relate to the class size but to the teacher's commitment towards students' social lives* (SDH 1).
	Nurturing sociability through competence-based teaching	*… the teachers' workload of nurturing students' social development is nowadays emphasised alongside competence-based curriculum implementation, which integrates cognitive, psychomotor and affective dimensions* (AH SCH '1', (HOS 3).
	School-based strategies	*Following the realisation of the falling social and moral decadences, the government circular was issued that directed schools to pay more attention to students' social grooming through clubs and other social roles* HOS 1).
	Community-based strategies	*Students' social development requires school-community collaboration. Neither of those two sides can successfully accomplish this role alone* (AHSC 2).

Source: Field data

The results of the study focused on participants' interpretation of teachers' roles in nurturing social development as well as strategies employed to fulfil the role. Overall, the findings revealed that the school management teams had observed teachers' increased workload due to expanded enrolment as requiring intervention of some sort. Nonetheless, the views presented fell under four thematic areas as presented in Table 1.

Social development plays an indispensable role
The study participants maintained that teachers' workload in the social lives of students cannot be condensed in the same way as academic and physical activities, as it occurs in a manner that is difficult to apportion. Hence, the school management perspective was that while there were fresh initiatives in schools for addressing students' social development that coincided with the fee-free education, they were not meant to relieve teachers of their natural role of nurturing students' social development. Instead, they posited that those strategies only concurred with the government's attempt to address the negative influence of globalisation. To this aspect, it was claimed that globalisation had negatively affected the cultural traditions, thus exposing children and youths to foreign culture, risking the values and traditions that define Tanzanian society. The informants further admitted that the social development of students had been underrated in the education sphere in spite of its role in shaping students towards responsible citizenry.

Furthermore, those study participants were critical of the long-held assumption that schools are the sole authorities responsible for students' social development, maintaining that it is a shared responsibility. Hence, they identified strategies for promoting students' social development to include both school-based and community-based. The school-based strategies cited ranged from fostering school social climate, use of extracurricular activities, to transformative teaching and learning in the classrooms. The community-based strategies included mechanisms to draw the community closer for promoting participation in the social development of students. Findings, therefore, revealed that the different strategies were not meant to relieve teachers of their roles to nurture students' social development due to expanded enrolment, but instead supplemented them.

During the interview, one of the Heads of School described the teachers' roles with respect to students' social development, noting that:

> The fee-free initiative and its resulting expanded enrolment have nothing to do with the teachers' workload of promoting students' social development. Teachers are naturally caregivers and moral exemplars. This role, as opposed to knowledge and skills delivery, does not depend on student populations. A

teacher may have a multitude of students to care for and nurture each one's social values better than a teacher with only a few students. It all depends on one's understanding. (HOS '1', 25th July, 2023).

The Head of School's description was supported by a counterpart, whose narrative extended to the understanding of the role of nurturing social development, saying:

> A teacher's role includes teaching of academic subjects, guiding and supervising physical activity in schools, as well as caring, serving as a moral guide, and a parent figure. Teachers' social roles form part of their lives both in schools and in the community. It is difficult to apportion their role of nurturing social development (HOS '3', 29th July, 2023).

A further clarification on the teachers' role towards the students' social development came from the interviewed heads of discipline matters, who referred to the guidelines that assign teachers the social role towards the students under their jurisdiction. One of the heads of the discipline unit remarked that:

> Teachers' role towards students' social development is not quantifiable. It is all about the quality of interactions that occur when the teachers teach their lessons, supervise students' extracurricular works, and when they fulfil their roles of caring as guided. Hence, the workload questions may not apply in social aspects as such (SDH '1', 28th July, 2023).

Social development under a competence-based curriculum
The heads of academic units noted that teachers' workload for students' social development has been given an impetus by the guidelines underscoring a paradigm shift from content to competence-based that characterises Tanzanian curriculum implementation for the past two decades of the 21st century. They maintained that the contemporary paradigm favours the learner and transformative pedagogy by which the social dimensions form an integral part of the teacher's teaching roles. For instance, the head of the academic unit noted that:

> … the teachers' workload of nurturing students' social development has been made simple nowadays because their teaching involves competence development, which calls them to pay attention to intellectual, psychomotor and affective dimensions equally (AH SCH '1', 26th July, 2023).

Considering the school management voices, findings view teachers' workload for students' social development as a phenomenon that is well emphasised but not as a means for addressing teachers' workload. Those

views dismiss the assumption that teachers' workload on students' social development can be narrowed.

School-based social development strategies
The study sought to understand more about strategies adopted by the school management teams in promoting students' social development in relation to teachers' workload. Results revealed that while teachers' workload arising from the expanded enrolment was apparent, the social dimensions were not directly affected. The study participants defined social development roles to involve, among others, maintaining students' discipline, emphasis on resilience, personal and interpersonal relationships, personal hygiene, respect and mutual relationships with others, life and soft skills, and positive attitudinal dispositions. The identified strategies for enhancing those social values included the school management's promotion of the whole school climate, emphasis on extracurricular activities, pedagogical strategies that promote social values and community engagement. It was established that those strategies largely involved the school management teams and teachers, which suggests that teachers' roles towards students' social development were shared rather than exclusive teacher roles. This further suggests that teachers' workload for students' social development differs significantly from their supervision of intellectual and physical roles. The school management perspective on strategies for promoting students' social development, as described by heads of schools, heads of discipline and academic units, varied as each provided scenarios related to their areas of jurisdiction. For example, while the heads of schools emphasised the maintenance of the school climate, heads of discipline units underscored the importance of extracurricular activities in fostering social and discipline matters, while heads of academics linked their descriptions with teaching and learning processes.

One of the heads of schools was quoted as saying that social development permeates the whole school life, saying:

> The best practice for students' social development is to create a school environment that fosters harmonious relationships so that everyone feels part of the school community. We achieve this by emphasising effective communication, open and participatory leadership, and close relationships with all members of the school community (HOS '2', 29th July, 2023).

The head of the discipline unit's perspective was that:

> … following the emphasis by the Ministry of Education on students' social development in schools, we have responded by strengthening student empowerment that was not active previously. The school clubs serve as good examples of extracurricular strategies for students' social development. These

clubs have little teacher or school intervention but are helpful in student social development (SDH '1', 28th July, 2023).

Similar views were echoed by another head of discipline unit:

> Sometimes it is just a matter of giving students freedom to choose what social actions they think are suitable for themselves, the school and the society. They are able to do the right social actions and live them (SDH '2', 29th July, 2023).

The previously mentioned descriptions sound as a way to curtail teachers' workload on students' social development though there was no admission to the fact that such was the school objective.

The experience of the heads of academic unit revealed that teachers' workload related to social development of students is embedded in their daily routine of teaching in a way that they do not feel it as a burden. One informant said:

> The competence-based teaching that we are required to adopt consists of knowledge, skills and social overtones. Hence, effective teachers' pedagogical strategies result in transforming students' social values alongside knowledge and skills (AH SCH '1', 26th July, 2023).

The other head of the academic unit presented a rather contrary idea that depicts the reality of teachers' promotion of students' social development, saying:

> In theory, teachers have the role to nurture students' social development. In practice, some do it consciously while others pay lip service to this grand role. Since there are no clear mechanisms in place to determine the extent to which a teacher nurtures students' social development, the results are inconsistent. Hence, teacher workload on this matter is not measurable (AH SCH '2', 28th July, 2023).

Community engagement strategy
Regarding the community involvement and support, results established that the introduction of fee-free education had largely necessitated involvement and support of the community through the school boards. The heads of school, for example, noted that since students lived in the family circles as day scholars, it was important to involve the community, as most social behaviours were nurtured at the family rather than the school level. Hence, the community involvement and support were a necessary condition for students' social development. An interviewed Head of School '1' remarked that students' social development is a shared responsibility because those social values have their background in the family, such that there is a great

risk for not involving the community in nurturing the social development of students. These views were shared by the head of school '4', who viewed community involvement as a significant factor in enriching the educational experience and supporting teachers, saying, 'community involvement not only improves the educational experience for students but also provides valuable support for teachers. Similarly, the head of academics from school '4' emphasised the benefits of community involvement in social development:

> We have witnessed firsthand how community involvement positively impacts both students and teachers. By creating a network of support that extends beyond the classroom, we empower students with a broader array of resources and opportunities (AH SCH '4', interview, 28th July, 2023).

Generally, the results of the study established that the phenomenon of teachers' workload is practicable in teachers' activities such as the knowledge provision and supervision of the physical activities in schools but not applicable in the promotion of students' social development. This follows that those issues are so pervasive that they form part of the teaching processes be it knowledge dispensing, supervision of various activities in classroom and outdoor activities. As for strategies for addressing students' social development, findings revealed that those strategies are inseparable with other teachers' roles.

Discussion
The study reported that the increased enrolment arising from fee-free education had no link with processes of addressing teachers' workload for students' social development, emphasizing that the teachers' determination towards students' social development has nothing to do with increased enrolment. In the context of the self-determination theory (Legault, 2020; Reeve, 2011) motivated teachers would demonstrate higher moral courage to nurture students' moral development irrespective of the class size. This explains that teachers' levels of motivation and henceforth commitment towards students' social wellbeing, self and social regulation varies significantly. While some teachers have extended professionalism, others have restricted professionalism (Klaassen, 2012). Furthermore, while some teachers have moral courage to serve students placed under their care, others lack it (Klaassen, 2010). Presumably, teachers' roles towards students' social development raises an important reflective question namely whom they are in the lives of students (Feeney *et al*., 2019). Hence, the view that the students' social development does not link well with workload arrangements as academic subject or supervision of physical tasks seem to be relevant.

The study findings claimed that teachers' roles with respect to students' social development is guided. This view might have been referring to the code of professional conduct for teachers that defines the roles of Tanzanian teachers in relation to children, the community, the profession, the employer and the state. Towards the child, the code assigns teachers the role of nurturing children's intellectual, physical, social and spiritual development (United Republic of Tanzania [URT], 2002). However, the general trend indicates that the role of teachers towards social development tends to be neglected as the main thrust is placed on intellectual development through academic subjects and standard tests (Ball, 2021; Kohn, 2000; Popham, 2016). This seems to be the case for Tanzanian basic education, considering that the guidelines available for measuring students' learning achievement are cognitive-based (URT, 2021). As such, there are no indicators in place for ascertaining students' acquisition of life and soft skills, self-regulation, improvement in character, effort, commitment, moral and ethical reflection, or attitudinal changes arising from the years they spend in schools (Kohn, 2000; Spann & Kaufman, 2015). This might explain why the teachers' workload for students' social development is difficult to distribute even after the introduction of fee-free education.

Among the strategies for enhancing students' social development in the context of fee-free education is the promotion of schools' social climate. School management teams stated that they made efforts to make students feel part of the school community. This view is in connection with several studies (Bradshaw et al., 2021; Coker et al., 2018; Green & Falecki, 2021; McCallum, 2021; Thapa et al., 2023). Literature indicates that the social climate in schools serves as a means to foster students' feelings of belonging such that they develop elements of positive education (Allen et al., 2021; Arguis-Rey, 2021; Green & Falecki, 2021; Martinez et al., 2016; McCallum, 2021). Positive education implies students' affirmative feelings in the course of interactions with the teachers and among themselves, as well as valuing school life. They see the meaning of what they learn in real life and the relationships they enter into. Hence, they link well the school and home life. Arguably, these aspects of students' social development require a holistic approach and whole-school engagement rather than allocating them to specific school members through workload allocation.

The heads of the discipline units highlighted the school's extracurricular activities as an important avenue for advancing students' social development, citing examples such as clubs, where students are empowered to form voluntary groups for advancing healthy and positive causes. Studies have provided various evidence suggesting that clubs in schools foster social

values such as self-discipline, environmental awareness and care, gender sensitivity, self-responsibility, human rights, interpersonal relationships, etc. For instance, studies by Mahmud and Manda (2016) and Nureva and Tohir (2020) establish that scout' clubs are among the effective means for implementing character education and student' discipline in schools. Studies by Mhando, Shukia and Mkumbo (2015) noted that the extracurricular clubs, namely 'Tuseme Clubs', that is, students' groupings for advocating openness and freedom for students to air their voices against improper teacher and students' behaviours in the schools, were useful in forging a safe and peaceful school environment. It is apparent, therefore, that students' social development derives from several sources.

The heads of the academic units had their descriptions based on the teaching processes that culminate in students' social development. They linked the potential of students' social development with the curriculum renewals that emphasise competence-based teaching processes that integrate knowledge, skills and social disposition. Such claims reverberate the directives by the national curriculum framework for basic and teacher education (URT, 2019) on competence teaching and assessment, as well as the United Nations Educational, Scientific and Cultural Organisation-International Institute for Capacity Building in Africa [UNESCO-IICBA] (2017) on transformative pedagogy. Both the national curriculum framework and the UNESCO-IICBA (2017) guidelines oblige teachers to serve as facilitators with disposition skills, knowledge and commitment to support students' social development. Nevertheless, there are doubts whether the guidelines on students' social development are implemented, considering that the fee-free education has tended to focus on quantitative expansion of school places with little or no emphasis on competence-based teaching and its assessment (Drisko, 2014; Losioki, 2018; Nkya et al., 2021). Furthermore, the objective criteria for measuring the attainment of social values seem to be lacking.

The view on community involvement strategy after the introduction of the fee-free education revealed that community support and engagement are increasingly becoming important in the efforts to advance students' social development. Literature relates community engagement with increased students' social responsibility, social accountability, social and emotional learning competencies and service-learning attitudes (Jumanne, 2023; Vidyarini & Sari, 2018). In the context of Epstein's (1992) overlapping spheres model, the relationship between parents and teachers is emphasised as both parties have shared responsibilities in the social development of students. This is particularly the case when considering that after the introduction of fee-free education in Tanzania, secondary school students

from family backgrounds largely outnumber those in boarding schools (Nyamohanga, 2024). As such, the education circular No. 6 of 2022 requires teachers and parents to initiate forums for monitoring students' social development (URT, 2022).

Conclusion and Recommendations

Considering the findings of the study, it is apparent that the school management teams agreed that fee-free education had intensified teachers' burden of teaching subject matter, noting, however, that this did not affect their moral role of fostering values among students. This study concludes that despite involvement of multiple stakeholders, students' social growth remains teachers' primary responsibility, as students spend more time during the day with teachers at school than with their families. The parents, other caregivers, peers and the community at large have their roles, too, but teachers' role of cultivating students' social growth cannot be overemphasised. Hence, the strategies for enhancing students' social development can be fruitful when they assign teachers the leading role. The study recommends the need for the government to strike a balance between the academic and social aspects of schooling by devising mechanisms for ensuring that those dimensions proceed in tandem. As claimed earlier, economic globalisation tends to sideline the social dimensions of education, which is a risky business. It is further recommended that the current developments require the formulation of objective measures for determining teachers' accountability that are measured not only on the basis of students' academic achievement, but also their social progress and well-being. This remains one of the contemporary challenges for the 21st century education.

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Instructional Modes and Manipulative Skills of Pre-Primary School Children in Ibadan, Nigeria

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Abstract
Manipulative skills are needed to equip children with competence in different areas, especially for learning and living. They form a solid foundation for children's comprehensive development in the early years. Activities such as grasping, cutting, producing, designing, building, assembling, and folding, among others, are necessary for children to develop these skills. Evidence revealed that these activities are missing in the pre-primary school classrooms because teachers are not intentional about the development of the skills. Most of the time, the learning strategy adopted for teaching and learning activities does not give room for such activities. Hence, this study investigated the impact of instructional modes, specifically video-assisted and illustration-based strategies, on the development of manipulative skills among preprimary school children in Ibadan South-West Local Government Area. The study selected six public and private pre-primary schools through purposive random sampling. Participants, comprising 61 children, were assigned to experimental (VB and DB) and control groups over six weeks. Two research questions were answered, and seven hypotheses were tested. A pre-test-post-test control group quasi-experimental design was used, and data were analysed with Analysis of Covariance (ANCOVA). Results showed a significant effect of treatment on manipulative skills ($F(2,48) = 33.71$; $p<0.05$; Partial $\eta^2 = 0.58$), and a significant main effect of school type ($F(1,48) = 4.85$; $p<0.05$; Partial $\eta^2 = 0.09$)on the acquisition of manipulative skills. The study highlights the effectiveness of innovative instructional modes in enhancing manipulative skills and recommends their adoption in early childhood education settings.

Keywords: *Instructional modes, manipulative skills, pre-primary school children.*

Introduction

During the early years, especially at the infant stage, children do naturally engage in activities such as grasping, releasing. As they grow, they graduate to more complex activities which include throwing, catching, hitting, pulling, pushing, kicking, dragging, assembling, threading, building, among others. These activities are referred to as manipulative skills. Manipulative skills are a major area of development which contributes immensely to children's holistic development. The skills cover physical activities which involve the use of legs, hands and fingers and sometimes the movement of the whole body. They serve as building blocks for a wide range of academic, daily living, and recreational activities. It helps to strengthen the muscles of the hands and enhance eye-hand coordination. Beyond physical benefits, manipulative skills contribute significantly to children's cognitive development, problem-solving abilities, and creative expression.

Manipulation skills, as described by Nohj (2014), involved the handling and controlling of objects with precision and coordination. It involves any motor skill that usually involves an object. Ardha, Yang, Adhe, Khory, Harianto, and Putra (2017) also describe manipulative skills as those skills needed for the control of an object such as a ball, beanbag, hoop, rope, ribbon and frisbee. These skills cover a wide range of activities such as pattern creation, object manipulation, and construction activities that foster spatial awareness, attention to detail, planning abilities, cutting with scissors, drawing, moulding clay, buttoning clothes, and assembling objects. The skills are a critical component of motor skills, which include gross and fine motor development in early childhood.

Fine motor skills have long been recognised as an essential part of manipulative skills. This skill encompasses the control and coordination of the distal musculature of the hands and fingers (Gidion, 2020). Fine motor skills are thought to be essential for early learning. Regular daily activities such as colouring, copying, cutting, and drawing, dressing, feeding, and playing involve fine motor skills (Pitchford et. al., 2016; Gaul & Issartel, 2016). Fine motor skills activities involve manual dexterity and often require coordinating the movement of the hands and fingers with the eyes, which is known as hand-eye coordination. Components of fine motor skills include being able to grip and manipulate objects, use both hands for a task, and use

just the thumb and one finger to pick something up rather than the whole hand.

It has been reported that, as children advance in age, the manipulative activities they engage in are limited to writing and sometimes colouring. Some early childhood education classrooms fail to deliver teaching and learning activities in ways that involve physical movement. Many children suffer from a lack of daily interactive moments because their daily routines follow tightly scheduled timetables created by educators (Nyland, 2009; Smith, 2002). Fadzil and Saat (2017) assert that manipulative skills are generally given the least attention in the course of academic instruction. There is also limited interaction with objects or educational resources that can encourage children to engage in manipulative activities (Majebi et al., 2020). These might hurt children's holistic development, especially in the acquisition of skills needed for later years.

Although some manipulative skills are naturally acquired, there are certain skills that require practice and instruction for children to gain mastery of them. Ardha et al. (2017) express that manipulative skills such as passing, dribbling, and kicking do not develop automatically; opportunities for instruction and practice are to be provided for children to acquire them. However, Hidayah and Rohaida (2017) reported that manipulative skills are given less attention in the course of academic instruction.

An increase in the need to give more attention to the development of manipulative skills, especially the fine motor skills in children, by scholars is due to its connection to success in other areas of learning, which have been established in the literature. Akin (2019) and Becker et al (2014) connected the development of fine motor skills with legible handwriting. Lindel et al. (2013) affirm that fine motor skills play an important role in sustaining people's daily lives. Cameron et al. (2012) and Dinehart and Manfra (2013) attested to the fact that fine motor skills do predict later academic achievement, especially in reading, mathematics, and higher academic achievement. Also, Pitchford et. al (2016) confirm that fine motor skills may underlie the acquisition of quantitative and spatial concepts. In the same vein, Gaul and Issartel (2016) assert that poor fine motor skills can cause increased anxiety, distress in academic achievement and poor self-esteem.

Given the foundational roles that manipulative skills play in the overall development of young children, conscious efforts are required to get children engaged in activities that might improve their fine motor skills. There is a

pressing need for early childhood educators to adopt teaching strategies that actively promote these skills within the learning environment.

Research underscores the importance of structured interventions to enhance manipulative skills during the pre-primary years, a period marked by rapid neurological and physical development. Setyawan, Susanto, Sulistiantoro and Setiawan (2024) adopted game activities to develop manipulative motion skills in elementary school students; Pereira, Souza de Paiva Palhares, and Pelizaro (2022) exposed children from ages 4 to 6 years old to exploring sensorial cubes to determine the manipulative actions and games of children. Akin (2019) investigated the effect of physical education intervention on children's fine motor skills; Purnomo, Tomoliyus and Burhaein (2018) used learning activities, playing a ball on a goal, to improve manipulative skills for lower-class students. Ardha et al. (2017) adopted soccer as part of physical education to develop manipulative skills in age six kindergarten children. The aforementioned studies and many others that were not reviewed have contributed to the development of manipulative skills in children across the globe. However, providing materials and engaging children in activities such as cutting, pasting, sticking and producing materials were not the focus of the studies in developing manipulative skills in children. Since the use of fine motor skills occupies a significant part of manipulative skills, and children learn from observation, the need arises to adopt instructional modes that will guide children about what they can do with their fingers on materials provided while learning.

Instructional modes are various methods, strategies and approaches employed by educators to deliver content to learners in order to achieve meaningful and impactful learning. They are adopted to address diverse learners, contextual realities and teaching objectives. The modes are many; however, the video-assisted and illustration-based learning are considered in this study for their ability to provide clear, structured, and engaging guidance on exposing children to real-life learning.

Video-assisted learning represents a pedagogical innovation that leverages the multimedia capacity of video content to enrich the teaching and learning process, particularly in early childhood classrooms. It offers children dynamic, real-world visuals that promote engagement and comprehension through contextual representation (Kay et al., 2018). Video is the technology of electronically capturing, recording, storing, transmitting and reconstructing a sequence of images representing scenes in motion (Balasubramanian et al., 2018). Videos are particularly effective in early learning settings as they can

simulate experiences, illustrate abstract ideas, and demonstrate sequential tasks that young children may struggle to grasp through verbal explanations alone (Guo et al., 2014). It is considered an effective method of education that links theory with practice (Devi et al., 2019).

This approach aligns with the cognitive theory of multimedia learning, which posits that learners better understand content when it is delivered through a combination of visual and auditory channels (Mayer, 2020). For preschoolers, whose cognitive and sensory systems are still developing, videos serve as a bridge between concrete experiences and symbolic understanding. They allow repeated exposure to modelled behaviours or concepts, which is essential for skill acquisition and retention in the early years (Brame, 2015).

In practical terms, video-assisted instruction can present learning scenarios that might be logistically challenging to demonstrate live in the classroom. For example, the step-by-step process of constructing an object or manipulating a tool can be paused, replayed, and discussed, facilitating not just passive watching, but interactive learning. Kamal, Ibrahim, Amin, and Ahmed (2021) affirm that the video teaching method improves learning because it uses sight, sound, and motion to present simple clarification of complex topics and issues. Also, it can present information in a manner that verbal descriptions or talking alone cannot convey and act as a bridge to educational barriers.

The potentials embedded in video-assisted teaching, as revealed in literature, attracted the current study to adopt it in developing manipulative skills, especially the fine motor coordination domains, which are crucial in pre-primary education. Hence, the adoption of video-assisted instruction to examine how it can support the development of manipulative skills among young learners in Nigerian classrooms.

Illustration-based learning strategy, which was the second strategy adopted in this study, is rooted in the constructivist approach to teaching. Aditi (2022) describes an illustration as a decoration, interpretation or visual explanation of a text, concept or process, designed for integration in print and digital published media, such as posters, flyers, magazines, books, teaching materials, animations, video games and films. According to Luo and Lin (2017), illustration is always used as an example to make the written text or the utterance more straightforward. It is used to convey more information by means of a chart, photo, map and so forth. Alley (1994) puts illustrations into

six major types: photographs, drawings or line art, realia or authentic documents from the target culture, graphs and diagrams, maps and reproductions of works of art.

Hence, the illustration-based learning strategy, in this context, is described as the adoption of visual presentation and description of objects to help the children understand the procedure involved in the production process of such objects. It gives learners the opportunity to build understanding by observing guided physical representations or modelled actions. This strategy leverages visual, tactile, and procedural cues to help learners internalise step-by-step processes. Illustration, according to Sultangubieva and Adiletova (2024), increases students' engagement and understanding in teaching and learning activities. Unlike a conventional strategy that may place the teacher at the centre, illustration-based instruction often emphasises learner interaction with real objects, manipulatives, and pictorial steps to reinforce skill development, particularly manipulative skills in early learners.

Research has shown that the use of illustrations improves comprehension, vocabulary acquisition, information retention and overall student engagement (Cheng & Mix, 2014; Sultangubieva & Adiletova, 2024). Illustrations can clarify abstract concepts, break complex materials into manageable chunks, and spark interest and critical thinking, leading to deeper understanding and knowledge creation. It can help learners ask questions about what they see (Sultangubieva & Adiletova, 2024).

Illustration-based strategy allows children to visualise concepts through tangible representations, such as a sample of what to do and materials needed to manipulate. It helps break down abstract or complex tasks into manageable visual segments, which children can imitate and gradually master. Sultangubieva and Adiletova (2024) found that using illustration in English lessons is beneficial for students of all ages. Luo and Lin (2017) claim that employment of illustrations in the EFL classroom can prompt learners' understanding as well as memory, and hence facilitate students' learning ability in an effective way.

The relevance of illustration-based instruction for skill acquisition is underscored by its emphasis on "learning by seeing and doing." Unlike verbal explanations or screen-based visuals, it provides hands-on support that resonates with young learners' developmental needs. It promotes sequencing, spatial awareness, and the coordination required for tasks such as folding, sorting, stacking, and manipulating learning tools.

While much of the existing literature has focused on using illustration for language, arts, reading and science instruction (Sultangubieva & Adiletova, 2024; Alali & Al-Barakat, 2023; Luo & Lin, 2017; Raiyn, 2016; Hannus & Hyona, 1999), limited studies have examined its role in nurturing children's manipulative skill, a gap this study examined.

Gender and school type were also considered as factors that can influence the development of manipulative skills in pre-primary school children. The findings of past studies on gender-related variables regarding the acquisition of specific skills are also worth considering in research of this nature. Ardha et al. (2017) reported that males significantly performed better in the post-test of passing, dribbling and shooting than females after exposing them to physical education to develop manipulative skills in soccer. Ogunmade, Saibu and Ogunmade (2024), in a study carried out on the impact of laboratory practical approach on students' manipulative skills, reported that a statistically significant difference was not found for gender in manipulative skills and achievement of students in science. The analyses of the study carried out by Kersey, Braham, Csumitta, Libertus, and Cantlon (2018) consistently revealed that boys and girls do not differ in early quantitative and mathematical ability. Obijiofor, Ugwele, and Onyenwe (2024) reported that gender moderated the relationship between play-based learning and literacy skill, though not the connection between literacy interest and skill. Hence, the consideration of gender in this study.

School type, public and private, was also considered significant when assessing children's performance in skills development. Majebi and Oduolowu (2021) and Umar and Samuel (2019) described school type in terms of school ownership. They include schools owned by the government (public schools) and those owned by an individual/religious organisation (private schools). Better facilities, smaller class sizes and more consistent academic outcomes were ascribed to private schools. Different scholars have reported that children or learners from the privately owned schools do perform better than their counterparts from public schools. One of the main functions of the school, whether public or private, is to play a very crucial role in imparting knowledge, skills, attitudes and values to children to have all-around development (Majebi & Oduolowu, 2021). Given to this vital role of the school, this study examined the advantages of children's type of school in terms of manipulative skills acquisition.

This study is anchored in David Kolb's experiential learning theory, which posits that meaningful learning arises from the transformation of lived experience into actionable Knowledge. Kolb's experiential learning theory underscores the importance of engaging learners in active participation, reflection, and practice (Kolb, 1984). Making it particularly relevant for skill-based activities, such as the development of manipulative abilities. According to the theory, learning is not merely about information but about constructing understanding. As such, interventions that integrate experiential and visual methods are highly recommended for fostering manipulative skills effectively. The theory states that "Learning is the process whereby knowledge is created through the transformation of experience". Kolb states that learning involves the acquisition of abstract concepts that can be applied flexibly in a range of situations. In Kolb's theory, the impetus for the development of new concepts is provided by new experiences, "beginning with experience that is processed through an intentional learning format and transformed into a workable, useful knowledge".

Research Questions
The following research questions guided the study
i) What is the main gain in Fine-motor skills exposed to the Video-assisted learning Strategy?
ii) What is the main gain in Fine-motor skills exposed to the Illustration learning Strategy?

Hypotheses
The following null hypotheses were tested in this study at a 0.05 level of significance.

H01: There is no significant main effect of treatment on children's fine motor skills development

H02: There is no significant main effect of gender on children's fine motor skills development

H03: There is no significant main effect of school type on children's fine motor skills development.

H04: There is no significant interaction effect of treatment and gender on children's and fine motor skills development.

H05: There is no significant interaction effect of treatment and school type on children's fine motor skills development.

H06: There is no significant interaction effect of school type and gender on children's fine motor skills development.

H07: There is no significant interaction effect of treatment, school type and gender on children's fine motor skills development.

Methodology

The study involved six pre-primary schools randomly selected from urban and semi-urban areas of Ibadan South-West Local Government Area of Oyo State. The schools were assigned to the experimental groups of VB and DB, as well as the control group. 61 pre-primary school children participated in the study, which lasted a period of 6 weeks. Two self-developed research instruments were used to collect data for this study.

The content taught during the experiment was selected under the theme Pre-Basic Science/Pre-Basic Technology, which was adapted from the One-Year Pre-Primary School Education Curriculum in Nigeria. The activities done include:
i)   Make simple objects (Human Skeleton craft)
ii) Experimentation (Magnifying glass)
iii) Designing skills (Paper Bag)

This study employed a quasi-experimental design featuring a pretest, posttest, and control group structure. Participants were divided into three groups: two experimental and one control group. Each experimental group was assigned to video-assisted and illustration-based strategies, respectively. Children in the video-assisted strategy group viewed video clips of teachings on the step-by-step descriptions of the steps involved in manipulative activities, while those in the illustration strategy group observed live, step-by-step graphic representations of the materials to be created. A pre-test was administered to evaluate the children's level of manipulation skills development prior to the intervention. The intervention activities were carefully designed to suit the developmental level of five-year-old children. The intervention included constructing a human skeleton using cotton buds, conducting a basic science experiment by creating a magnifying glass from recycled plastic bottles and engaging in simple design tasks such as crafting bags from cardboard or stiff paper. After the intervention, a posttest was conducted to measure the impact of the instructional strategies on the development of manipulative skills. This design allowed for the comparison of learning outcomes across the three groups and provided insight into the effectiveness of each teaching approach.

Results
Answering the Research Questions
RQ1: What is the mean gain in Manipulative skills of children exposed to a video-based learning strategy?

Table 1: Mean Gain in Manipulative Skills Development

Strategy	Manipulative Skills			
	Pre-mean	Pre-mean	Post- mean	Mean gain
Illustration	25.889 (4.458)	21.889 (3.324)	36.667 (6.954)	14.778
Video-Assisted	23.611 (4.104)	21.722 (5.432)	36.500 (7.808)	14.722

Note: Standard deviation in parentheses

RQ1: What is the mean gain in fine-motor skills of children exposed to a video-assisted learning strategy?
Table 4.1 shows that the post-motor skills mean score (36.67) is higher than the pre-motor skills mean score (21.89). The mean gain is 14.78.

RQ2: What is the mean gain in fine-motor skills of children exposed to an illustration-based learning strategy?

Table 4.1 shows that the post-motor skills mean score (36.50) of learners exposed to video-based learning is higher than the pre-motor skills mean score (21.72). The mean gain is 14.72.

Section 2: Testing the Null Hypotheses
$H_0 1a$: There is no significant main effect of treatment on children's fine-motor skills development.

Table 2: Summary of Analysis of Covariance on Manipulative Skills
Tests of Between-Subjects Effects

Dependent Variable: Post-Motor Skill

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	8472.623[a]	12	706.052	24.169	.000	.858
Intercept	972.070	1	972.070	33.275	.000	.409
PreMotorskl	29.885	1	29.885	1.023	.317	.021
Treatment	1969.603	2	984.802	33.711	.000	.584
Gender	49.165	1	49.165	1.683	.201	.034
Schltyp	141.618	1	141.618	4.848	.033	.092
treatment * gender	52.526	2	26.263	.899	.414	.036
treatment * schltyp	163.126	2	81.563	2.792	.071	.104
gender * schltyp	46.831	1	46.831	1.603	.212	.032
treatment * gender * schltyp	19.078	2	9.539	.327	.723	.013
Error	1402.229	48	29.213			
Total	54506.000	61				
Corrected Total	9874.852	60				

a. R Squared = .858 (Adjusted R Squared = .822)

Table 3: Estimated Marginal Means on Manipulative Skills

Variable	Mean	Std.D
Intercept		
Pre-Manipulation	17.853	-
Post Manipulation	28.832	.727
Treatment		
Control	14.626	1.694
Illustration	35.819	1.602
Video-assisted	36.052	1.532
Gender		
Male	29.770	1.057
Female	27.895	.991
School Type		
Public	30.436	1.063
Private	27.229	.993

Table 4: Summary of Scheffe's Post-hoc Analysis on Manipulative Skills

	Control	Demon.	Video
Control		*	*
illustr.	*		
Video-Assissted	*		

Table 1 shows a significant main effect of treatment (video-assisted and illustration-based strategies) on manipulative skills of the pre-primary children ($F_{(2;48)} = 33.71$; $p<0.05$; Partial $\eta^2 = 0.58$). Estimated marginal mean scores show that children exposed to the video-assisted strategy achieved the highest mean score (M=36.05), followed closely by those exposed to illustration (M = 35.82), while those in the control group recorded the lowest (14.63). To know the source of the significant effect, Table 4 presents Scheffe's post hoc pairwise comparison. However, there was no significant difference between the video-assisted and illustration-based strategies.

Table 3 revealed that there was no significant main effect of gender, $F_{(1;48)} = 1.68$; $p>0.05$; Partial $\eta^2 = 0.03$, indicating that boys and girls performed comparably on manipulative tasks. A significant main effect of school type on fine-motor skills development of the pre-primary children was found ($F_{(1;48)} = 4.85$; $p<0.05$; Partial $\eta^2 = 0.09$), with pre-primary children in the public schools outperformed (30.44) their counterparts in private schools (27. 23). None of the interaction effects were statistically significant. These findings suggest that while the instructional strategy and school type significantly influenced manipulative skill acquisition, gender and interaction effects did not.

Discussion

The first finding from the study shows that there is a significant main effect of treatment (video-assisted and illustration-based strategies) on the manipulative skills of the pupils. It shows that pupils exposed to the video-assisted strategy had the highest mean score, followed by those exposed to the illustration-based strategy, while those in the control group had the lowest. A study of O'loughlin et al. (2012) supported this finding by indicating that using digital video for feedback and assessment in Physical Education has shown to enhance children's motivation and improve their skill performance. Yousef, Chatti and Schroeder (2014) also submitted that video-based learning is a rich and powerful model used in TEL to improve learning outcomes and learners' satisfaction.

Although the video-assisted learning strategy has a significant effect on the manipulation of pre-primary school children, there is no significant difference between video-assisted and illustration-based strategies. This implies that the illustration-based strategy was equally good in enhancing the two skills (creativity and manipulative) measured in this study. The studies carried out by Sari (2024), Ehiwario, Aghamie, and Azagbaekwue (2019), Omwirhiren and Khalil (2016), Okoko (2014), Daluba (2013), and Ameh and Dantani (2012) revealed the potential in the illustration strategy to yield high academic achievement in different subject areas.

The study also revealed that there is no significant main effect of gender on the development of manipulative skills of the children. This implies that the two strategies employed in this study were more effective than gender. Both males and females can acquire manipulative skills if video-assisted and illustration-based strategies are engaged to teach them. This finding corroborates the findings of the study by Pahlevanian and Ahmadizadeh (2014), which showed that at the preschool stage, girls had higher performance compared to boys in fine motor skills, and boys had significantly higher performance compared to girls in gross motor skills. The findings of Ameh and Dantani (2012), Omwirhiren and Khalil (2016), and Ehiwario, Aghamie, and Azagbaekwue (2019) also reported no significant difference in the post-test mean achievement score between males and females. The review also highlights that girls are outperforming not only at the school and college levels, but also in higher education. However, the conclusion is subject to further verification from experts.

The study revealed a significant main effect of school type on manipulative skills (fine motor skills) among the pre-primary school children. The children

in the public schools performed better than their counterparts in private schools in the mean score related to manipulative skills. This could be as a result of instructional expectation and classroom structure; the children in public schools appeared to have less academic pressure, which allowed them more time to engage in experimental activity. The finding of this study was contrary to what Ogunsipe and Oladipo (2019) found, that private school learners had significantly higher scores in English literacy assessments compared to their public-school counterparts. While Adeyemi and Nwachukwu (2018) reported that private schools' pupils significantly outperformed public school pupils in standardised numeracy assessment. However, Emeka and Ajayi (2022) found that public preschool attendees showed higher scores on peer interaction and self-regulation indices. Adekola & Amusan (2022) demonstrated that differences in learning outcomes between public and private varied significantly depending on the domain or nature of the skill being assessed, as well as other related factors such as teacher quality, curriculum flexibility, among others.

Conclusion

Video-assisted and illustration-based learning strategies are effective in engaging pre-primary school children in manipulative skills. Although a video-assisted strategy showed a slight edge, this suggests that either of the two can be employed to engage children in manipulative activities, depending on the materials made available and the learning goals to be achieved. Gender was not a viable factor in learning creative concepts; this implies that equal opportunities should be provided to both genders to undertake learning tasks. Studies have proven beyond all reasonable doubt that gender is of no significant influence in developing manipulation skills. The performance of public schools' pre-primary school children can improve if appropriate strategies are employed to engage them in teaching and learning activities.

Recommendations

Based on the findings of the study, the following recommendations are made:
i) Video-assisted and illustration-based learning strategies should be considered in teaching and learning activities, especially in enhancing manipulative skills.
ii) Learning or educational learning materials should be available for the preschool children and their teachers to achieve effective learning.
iii) The pre-school timetable should be reorganised in such a way as to give room for manipulative activity.

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Psychological Correlates of Social Adjustment among Students with Hearing Impairment in a Tertiary Institution in Oyo State, Nigeria

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Abstract
Issues with social adjustment among students in the College of Education with hearing impairment can significantly impact their interpersonal functioning. The study investigated emotional intelligence and self-esteem as key factors in the social adjustment of students with hearing impairment at the Special Federal College of Education (Special), Oyo. The research design employed was a descriptive correlational study, with a sample of 402 male and female students with hearing impairments in years 1, 2, and 3. Data were collected using the Social Adjustment Scale, the Schutte Emotional Intelligence Scale, and the Rosenberg Self-Esteem Scale. Pearson's product-moment correlation analysis was used to test the hypotheses. The results revealed a significantly high positive relationship between emotional intelligence and social adjustment (r = 0.838) among students with hearing impairments at the Special Federal College of

Education. It was also established that a positive relationship exists between emotional intelligence and social adjustment among students with hearing impairments (r = 0.789). The study highlights the urgent need for counselling psychologists to implement regular interventions to enhance the emotional intelligence and self-esteem of students with hearing impairments, thereby improving their social adjustment.

Keywords: *Emotional intelligence, self-esteem, social adjustment, students with hearing impairment*

Introduction

In a society where sounds are carefully calibrated, the silence experienced by students with hearing impairment presents a unique set of psychological and social dynamics that demand immediate attention. These students must navigate academic hurdles and an environment designed primarily for their hearing peers. Social adjustment is a vital aspect of life, requiring individuals to interact competently while pursuing their goals. Anxiety, depression, social support, and resilience are just a few of the many psychological variables that are intertwined with social adjustment in students with hearing impairments. These components play a pivotal role in shaping the academic and social development of these students within the campus community. Hearing impairment among students can be categorised into two dimensions: deafness, where the individual is entirely incapable of receiving sound, and hard of hearing, where the person can still receive sound with the help of a hearing aid. Both deafness and hearing impairment can be either congenital or acquired. Regardless of the case, students with hearing impairments (deaf or hard of hearing) face unique challenges in developing a sense of identity related to their incapability, and social adjustment becomes problematic.

In this context, social adjustment refers to how students with hearing impairments learn to adapt to and navigate the social norms, expectations, and interactions within their academic setting. The ability to function harmoniously with people, society, and the community is referred to as adjustment, although social adjustment encompasses emotional, physical, and social dimensions (Mazaheri et al., 2006). A well-adjusted individual is emotionally and physically balanced, and such a person becomes eligible when society's customs, rules, and values are strictly followed. The way these exceptional students are perceived by society has a significant impact on their social adjustment. It is worth noting that the acceptance and support of society are crucial for the emotional and physical stability of students with hearing impairments. Every individual or member of a particular community

has the right to live and act by a specific set of rules and regulations, and it is the responsibility of society to ensure that these rules and regulations are inclusive and supportive of all individuals, including those with hearing impairments.

Healthy interpersonal relationships require people to behave in a manner that is not harmful to others, either socially or psychologically. A student, individual, or person who is hearing impaired has a deficit or shortfall that indicates something is inaccurate, making the person less than whole. Everyday social interactions depend heavily on hearing, and hearing impairment can cause severe emotions of loneliness, guilt, and shame, as well as crisis and grief reactions (Lindsy et al., 2019). Apart from social stigmatisation or harsh treatment due to prevailing hearing issues among students who are impaired in the auditory sense, these students themselves could have self-stigma. They could, on their own, decide to exclude individuals from their social circle who are hard to hear. The deaf culture, which often causes persons with hearing impairments to relate more frequently with their peers, may hinder their social adjustment. Some individuals with hearing impairment observably relate and even marry people with the same disability. They isolate themselves, seemingly due to feelings of inadequacy or the perception that their peers may treat them unequally. This deaf culture is responsible for the practice of students with hearing impairment to always be in the midst of only one person with hearing impairment for study, social gatherings and marriage. The ear is an important sense organ and the gateway to learning for humanity; the inability to hear or hearing impairment negatively affects emotional well-being and comprehension. Communicating, reasoning, and conceptualising depend on the ear to thrive. Most importantly, among the five senses God creates, the auditory sense is essential; it is the primary way we interact and relate to the linguistic world (Moon, 2011). The National Association of the Deaf (2015) defines hearing impairment as a condition affecting individuals with limited hearing, and deafness is referred to as the audiological condition of not being able to hear. In addition, hearing impairment is considered a generic, audiological term that encompasses all levels related to hearing difficulty and total deafness, including various degrees of hearing loss (Olusanya et al., 2019). A deaf person has hearing damage that will likely limit their relationship because of real and perceived inadequacy. Hearing loss may bring about feeling less of a person psychologically, adding to the physical damage caused by the predicament. In other words, hearing loss occurs when any part of the ears is damaged in a person who is deaf or hard of hearing, which may affect behaviour (Mathers et al., 2010).

In this study, the two psychological correlates that determine the social adjustment of deaf and hard-of-hearing students are emotional intelligence and self-esteem. Self-esteem is crucial and germane in all facets of life; how you perceive yourself and the value you put on yourself determines how you will relate with people and how people relate to you. Self-esteem refers to a person's self-perception and self-assessment. Self-esteem emphasises human needs, particularly the demand for self-evaluation, which is positively oriented (Neff, 2012). Individuals with high self-esteem are more likely to exhibit self-acceptance and identity formation, and as a result, they are more likely to be accepted by others (Trzesniewski et al., 2013). Self-esteem connotes "self-respect". The "self" part of self-esteem refers to an individual's sense of their own identity and personality. It relates to the values and characters that influence one, while 'esteem' symbolises 'regard' and how one values oneself (Theunissen et al., 2014).

Additionally, self-esteem is paramount; hence, its absence might render an individual valueless.

Emotional intelligence, on the other hand (EI), refers to the ability to perceive, comprehend, manage, and utilise emotions successfully in oneself and other people (Salovey & Mayer, 1990). Individuals with hearing impairments can face challenges in developing and applying emotional intelligence. Thus, students with hearing impairments need to develop high self-esteem and substantial emotional intelligence to adjust socially among their peers and within society. Self-esteem and emotional intelligence are crucial for solving problems, overcoming difficulties, adapting to new social environments, and developing practical compensatory skills to address hearing impairment. Consequently, students with hearing impairments and the psychological challenges they encounter require further exploration. There is a need to research the psychological correlates of social adjustment among students with hearing impairments in a college of education that caters to individuals with special needs, specifically those with hearing impairments.

Emotional intelligence
Daniel Goleman popularised emotional intelligence in 1995, but the concept has roots in earlier theories. Salovey and Mayer (1990) were among the first to comprehensively define emotional intelligence, describing it as a set of skills related to the accurate appraisal and expression of emotions, the regulation of emotions, and the use of feelings to motivate, plan, and achieve. Furthermore, Salovey and Mayer (1990) suggested that emotional

intelligence is a construct essential for all facets of life. Academic credentials, distinctions, high test scores, classwork, and homework are not considered indicators of emotional intelligence. Still, they are indicators that reflect our level of understanding in academics. The adaptability and how human beings handle life challenges, which require a distinctive kind of intelligence across the board, have been discussed (Mayer et al., 2015**).** The emotional intelligence of deaf students and students with hearing impairment is impaired and distorted as a result of the challenges they are exposed to. Szymanski, Brice, Lam, and Hotto (2012) bolstered that emotional intelligence in students with hearing impairment is the primary reason for their deprivation, which repeatedly made them incapable of intermingling with peers as well as contemporaries, and their emotional adjustment and social skills are difficult. Evidence from the literature (Schutte et al., 2002) suggests that Emotional Intelligence (EI) is a critical predictor of various outcomes, including workplace performance (Cherniss, 2001), mental health, and academic achievement.

The importance of emotional intelligence in society cannot be overstated, as it is relevant to all aspects of life. Wijayati, Kautsar and Karwanto (2020) reported that emotional intelligence is vital in personal dedication to work and academic efficacy. Its significance in social adjustment is inevitable, especially from the perspective of students with hearing impairment who cannot relate to peers. The barriers faced by deaf students and students with hearing impairment contributed to unfavourable consequences on social adjustment and psychological development. Therefore, this contributes to adverse effects on emotional and psychological development. Jacks, Marsh, and Massey (2000) noted that students with impairments face difficulties adjusting and struggle to understand social communication. This has implications for social adjustment and the emotional and cognitive development of individuals with hearing impairments. McAbee, Drasgow, and Lowrey (2017) indicated that the social adjustment and quality of life of deaf students and those with hearing impairments tend to be lower than those of students with normal hearing. This suggests that emotional intelligence is indispensable for the social adjustment of individuals, including students and people with hearing impairments.

Self-esteem
Self-esteem is an individual's overall sense of self-worth or personal value. It reflects how much a person appreciates and respects themselves. It is the extent to which individuals value and appreciate their abilities (Bowker, 2006). Coopersmith, cited by Acak (2012), considered self-esteem as an

individual's evaluation of their attitudes towards themselves, their personality traits, their behaviour, and the self-assessment and attitudes they hold towards themselves and the people around them. A person with a positive sense of self has an uplifting outlook on occasion, acknowledges themselves as they are, has an objective point of view, and has reasonable self-evaluations. Conversely, a person with a pessimistic self-perception tends to worry about societal dissatisfaction, scrutiny, and disagreement. Similarly, such an individual might struggle to find success in clarifying the negative implications of low self-esteem. (Ozkan cited by Acak, 2012).

Oduola and Adediran (2023) noted that self-esteem is a significant concept in psychology and a key aspect of social psychology. An individual with low self-esteem tends to suffer from self-doubt and a lack of self-confidence. Self-esteem is a crucial psychological factor that influences various aspects of an individual's life. In individuals who are deaf or hard of hearing, self-esteem plays a crucial role in their social, emotional, and cognitive development. Leary and MacDonald (2003) posited that self-esteem is a significant construct associated with various positive psychological outcomes, including psychological adjustment, positive attitudes, and prosocial behaviour.

Self-Esteem and Social Adjustment
Deaf students with hearing impairments tend to have lower self-esteem due to differences in the audience regarding social development, physical appearance, and relational abilities (Sulaiman et al.; Lee, 2020). Self-esteem is a significant tool in promoting adjustment and self-development. Consequently, the self-esteem of deaf students needs to be enhanced to enable them to function effectively in society. Fruitful communication skills are not generally combined with excellent living standards. Thus, teachers, experts, and clinicians working with students with hearing impairments need recognition, mentoring, and external counselling for these students to thrive and develop a robust sense of esteem (Warner-Czyz et al., 2015). Specific strategies such as positive reinforcement, peer support groups, and individual counselling can be effective in enhancing self-esteem and emotional intelligence in deaf students.

High self-esteem enhances social adjustment in individuals. A study by Orth, Robins, and Widaman (2012) supported the notion that high self-esteem is related to improved social relationships, which in turn strengthens self-esteem, implying a reciprocal relationship. Leary (1999) explored the relationship between self-esteem and stable social adjustment, finding that self-esteem helps mitigate the adverse effects of social exclusion. Self-

esteem emphasises how much you value yourself; therefore, deaf students and students with hearing impairment need self-esteem to navigate the hurdles of impairment (Carter & Mireles, 2016). Studies have reported that hearing aids, family communication, and group identification can reinforce the self-confidence of deaf and hard-of-hearing individuals (Acak & Kaya, 2016). Research has shown that self-esteem can be lowered in individuals with hearing conditions who are hard of hearing as they begin to make social comparisons and realise that what makes an "ordinary individual" differs from their abilities (Jerome et al., 2002).

Research on poor self-esteem suggests that individuals with poor self-esteem may struggle to adjust well in society or perform complex tasks, such as examinations and peer relationships (Anierobi et al., 2018). However, the self-esteem of students with hearing impairment and their hearing peers does not align with this position. Hintermair (2008) also studied the social-emotional issues of deaf students with hearing impairments, as well as the insights of young people and their parents. The findings demonstrated that deaf and hard-of-hearing individuals experience more significant levels of social and emotional adjustment compared to their hearing contemporaries. Self-esteem and social adjustment have been found to evolve across the lifespan. At adolescence, self-esteem is crucial for future social and emotional well-being. Trzesniewski, Donnellan, Moffitt, Robins, Poulton, and Caspi (2006) buttressed the notion that adolescent self-esteem strongly predicts social and emotional adjustment in adulthood.

Emotional Intelligence and Social Adjustment
Emotional intelligence is the ability to perceive, understand, manage, and express emotions in oneself and others. The skills embedded in EI are emotional awareness, the ability to harness emotions to facilitate various cognitive activities, and the ability to manage emotions in oneself and one's relationships. Emotional intelligence is essential and considered crucial. These are self-management (the capability to control one's feelings, as well as regulating impulses, inspiring oneself, setting and prioritising goals) and self-awareness (the ability to spot one's emotions to have a sense of self-confidence). Others are self-efficacy (the level of belief of an individual in their ability to perform a duty or face a challenge), and social awareness, which is showing compassion and appreciating others' viewpoints, as well as showing courtesy to others (Conners-Burrow et al., 2017).

 A study by Petrides, Sangareau, Furnham, and Frederickson (2006) reported that high emotional intelligence is associated with better social integration

and reduced social deviance in school settings. This implies that deaf or hard-of-hearing individuals with high emotional intelligence were better at managing their emotions and understanding the emotions of others, which resulted in more positive social interactions and fewer behavioural problems. Studies performed in schools and universities showed that students with high emotional intelligence obtained higher academic achievement than those with a lower level of emotional intelligence (Gatto et al., 2016)

Hearing impairment presents its own set of challenging issues; hence, an individual with low emotional intelligence and impaired hearing may struggle with social adjustment due to the absence of empathy and increased distrust, among other issues. The study by Holman, Hornsby, Bess, and Naylor (2021) suggested that the emotional intelligence of deaf and hard-of-hearing individuals was lower compared to their hearing peers in terms of emotional perception and management. It was observed that early intervention and emotional training programmes are needed to boost the emotional intelligence of individuals in this category (Holman et al., 2021).

The research by Zand and Pierce (2021) showed the connection between emotional intelligence and social adjustment and functioning in deaf students. The study found that individuals with higher levels of emotional intelligence were more effective in social integration and peer relationships. In another study by Batten, Oakes, and Alexander (2021), emotional intelligence was found to be a psychological correlate of academic performance and adjustment among college students with hearing impairments. It is further discussed that students with greater emotional intelligence can grasp academic concepts and maintain higher grades (Battens et al., 2021). These studies highlighted the crucial role of emotional intelligence in various life domains for individuals with hearing impairments, including social interactions, social adjustment, and academic performance. They underscored the importance of supportive environments and targeted interventions to enhance emotional intelligence in the population.

Social Adjustment and Hearing-Impairment
Social adjustment refers to how individuals adapt to social environments and establish fulfilling social interactions and relationships. Social adjustments of individuals with hearing impairment can be challenging due to social isolation, potential stigmatisation, and communication barriers. Hearing impairment among individuals with a disability may be caused by deafness or being hard of hearing. Studies by Netten, Rieffe, Theunissen, Soede, Briaire, Dirks and Briaire (2015) checked the proper use of parenthetical and

narrative citations. They observed that one of the primary obstacles to social integration and adjustment among deaf and hard-of-hearing adolescents is the communication barrier that hinders conversation and participation in group activities.

Deaf and hard-of-hearing individuals appear to frequently experience social isolation, which in turn affects their adjustment. In this respect, a study by Heintermair (2007) added that difficulties in communication and a lack of understanding among peers trigger social isolation and adjustment, which ultimately leads to mental health issues and low self-esteem. A study on the social adjustment of deaf and hard-of-hearing children and adolescents revealed that these categories of people are less likely to engage and function maximally in social activities because a reasonable number of them do not belong to social organisations (Ostadian et al., 2017).

The study by Bittencourt, Francozo, Monteiro, and Francisco (2011) also emphasised that social relationships with students who have hearing impairments are usually less mature compared to those of normal-hearing students. In this same vein, it affects their social adjustment. However, poor social adjustment in children and adolescents with hearing impairments can be traced to their deficiency in processing information. This set of the populace thus causes disturbance to others as a result of erroneous self-assertion, as well as failure to negotiate and converse with others (Abdollahi et al., 2010). In addition, Abdollahi et al. (2010) noted that poor social adjustment in deaf students and those with hearing impairments often results in misinterpretation and hostility towards others, and that the absence of social skills can lead to low tolerance and frustration, which may hinder their adaptability to the social environment**.**

Objectives of the Study
i) To investigate the relationship between emotional intelligence and social adjustment among students with hearing impairments at the Federal College of Education (Special), Oyo.
ii) To investigate the relationship between self-esteem and social adjustment among students with hearing impairments at the Federal College of Education (Special), Oyo.

Hypotheses
H_01: There is no significant relationship between emotional intelligence and social adjustment of students with hearing impairment.

H_02: There is no significant relationship between self-esteem and social adjustment of students with hearing impairment

Methodology
Research Design
This study employed a descriptive correlational research design. Descriptive research is a widely used method that accurately portrays characteristics, behaviours, and trends within a specific population, phenomenon, or situation. The study examined the relationship between the dependent variable, social adjustment, and the independent variables of emotional intelligence and self-esteem.

Population
The population of this study consisted of 450 male and female students with hearing impairment at the Federal College of Education (Special), Oyo. The population of students with hearing impairments in the college comprises 200 males and 250 females, making a total of 450 students with hearing impairments. Only students with hearing impairment were included in the study, while students with hearing ability were excluded.

Sample and Sampling Technique
The sample for this study was selected using intact sampling across the entire N.C.E. (I, II, and III) students with hearing impairment at the Federal College of Education (Special), Oyo State. The eventual sample consisted of 402 male and female students with hearing impairment. The sample of college of education students with hearing impairments was selected because the study sought to examine relationships among the variables of interest as they occur among students with hearing impairments. Issues of social adjustment among students with hearing impairment about their emotional intelligence and self-esteem present a challenge. This challenge may impact social integration, academic engagement, and the college's overall academic outcomes, as well as future career aspirations, spousal choices, and other aspects of life. Primary data were collected directly from students with hearing impairments at the Federal College of Education (Special), Oyo.

Research Instruments
Social Adjustment Scale
The social adjustment scale-self-report (.714) was adapted to measure the social adjustment of college students with hearing impairment. The scale was initially developed to obtain self-reports regarding social functioning and adjustment (Weissman, 1999). It evaluates how individuals adjust to their

school, family, and friendships. The 20-item self-report assessment used in the measure focuses on common social adaptations. Participants assessed themselves on the items on a five-point scale.

Emotional Intelligence Scale
The original emotional intelligence model, proposed by Salovey and Mayer, serves as the foundation for the Schutte Emotional Intelligence Scale (SEIS), also known as the Self-Report Emotional Intelligence Test. According to this concept, emotional intelligence involves evaluating one's own and others' emotions, expressing those emotions, controlling one's own and others' emotions, and utilising emotions to help resolve issues (Schutte et al., 1998). In this study, the 33-item self-report survey (.761) focusing on typical emotional intelligence was adopted. Participants ranked themselves on the items on a five-point scale.

Rosenberg Self-Esteem Scale
The 10-item Rosenberg Self-Esteem Scale (1965) measures overall self-esteem. Responses are rated on a four-point Likert scale, ranging from "strongly agree" to "disagree strongly." The RSES uses both positively and negatively phrased items. Items with negative wordings are reverse-coded, and item scores are added to determine the overall score. In this study, the scale ($\alpha = .789$) was adopted to measure the self-esteem of students with hearing impairments.

Method of Data Analysis
The Pearson product-moment correlation and multiple regression analyses were employed in data analyses at a 0.05 significance level to test the formulated hypotheses. Questionnaires were administered to the students in the various lecture rooms after their classes. Different days were chosen for different levels of students. Some questionnaires were retrieved on the spot, while others were collected after some hours on the following day. Explanations were given to the students with the assistance of two sign language interpreters, who also served as research assistants. After the administration, viable questionnaires were collated, coded, and analysed.

Results
H_01: There will be no significant relationship between emotional intelligence and social adjustment of students with hearing impairment.

Table 1: Correlation statistics illustrating the relationship between emotional intelligence and social adjustment in students with hearing impairments

		Social adjustment	Emotional scale
Social adjustment	Pearson Correlation	1	.838*
	Sig. (2-tailed)		.000
	N	402	402
Emotional scale	Pearson Correlation	.838*	1
	Sig. (2-tailed)	.000	
	N	402	402

*

Correlation is significant at the 0.05 level

Table 1 shows a significant relationship between emotional intelligence and social adjustment in students with hearing impairment ($P = 0.000$), with a p-value of less than 0.05, indicating statistical significance at an alpha level of 0.05. Hence, it can be inferred that there is a relationship between emotional intelligence and social adjustment in students with hearing impairments. The null hypothesis, which stated that no significant relationship exists between emotional intelligence and social adjustment of students with hearing impairment, is thus rejected.

$H_0 2$: There will be no significant relationship between self-esteem and social adjustment of students with hearing impairment.

Table 2: Correlation statistics showing the relationship between self-esteem and social adjustment of students with hearing impairment

		Social adjustment	Self-esteem
Social adjustment	Pearson Correlation	1	.789*
	Sig. (2-tailed)		.000
	N	402	402
Self-esteem	Pearson Correlation	.789*	1
	Sig. (2-tailed)	.000	
	N	402	402

Correlation is significant at the $p < 0.05$ level.

Table 2 reveals a significant relationship between self-esteem and social adjustment of students with hearing impairments ($P = 0.000$), which is less than the 0.05 level of significance at an alpha level of 0.05. Hence, it can be deduced that a relationship exists between self-esteem and social adjustment of students with hearing impairment. Therefore, the null hypothesis that there is no significant relationship between self-esteem and social adjustment of students with hearing impairment is rejected.

Discussion

This study investigated the psychological correlates of social adjustment among students with hearing impairments in the Federal College of

Education, Special, Oyo, Oyo State, Nigeria. The results indicate that the psychological correlates (Emotional intelligence and Self-esteem) are significantly correlated with the criterion variable of social adjustment. Consequently, the first hypothesis, which posited no significant relationship between emotional intelligence and social adjustment among students with hearing impairment, is rejected. A strong correlation was found between emotional intelligence and social adjustment, suggesting that the social adjustment of deaf students and those with hearing impairment can be enhanced if their emotional intelligence is high. The probable reason for this finding is that emotional intelligence is a construct that serves both intrapersonal and interpersonal relationships, enabling individuals to self-regulate and socially integrate. Emotional intelligence is a continuum of emotional awareness, emotional regulation and higher-order emotional intelligence.

Students with hearing impairments may often be more self-absorbed, providing an opportunity for in-depth observation of their emotions and those of others. This may result in a higher level of social adjustment. Furthermore, emotional intelligence can be integrated into their professional training, alongside social adjustment tips, to address their specific challenges. This finding corroborates the work of Petrides, Sangareau, Furnham, and Frederickson (2006), who observed that deaf and hard-of-hearing individuals with high emotional intelligence were better at managing their emotions and understanding the feelings of others, which resulted in more positive social interactions and fewer behavioural problems.

Research by Zand and Pierce (2021) also highlighted the connection between emotional intelligence and social adjustment among deaf students and those with hearing impairment. Furthermore, it was established that individuals with higher emotional intelligence tend to excel in social integration and peer relationships.

The study by Batten, Oakes, and Alexander (2021) supported these findings, affirming the outcome of this study that emotional intelligence is psychologically correlated with academic performance and adjustment among college students with hearing impairments. Thus, emotional intelligence can significantly influence the social adjustment of deaf students and those with hearing impairment. These findings further support the multidimensional nature of emotional intelligence and its impact on various aspects of students' lives, particularly those with hearing impairments. Emotional intelligence is observed to be linked with self-mastery, social

motivation, creativity, academic prowess and engagement. No doubt, a construct as broad as this will be significantly linked to social adjustment.

The findings related to the second hypothesis indicated a significant relationship between self-esteem and social adjustment among students with hearing impairment; therefore, the null hypothesis, which stated that there is no significant relationship between self-esteem and social adjustment, is also rejected. The results suggest that the higher the level of self-esteem among students with hearing impairments, the higher their level of social adjustment. This also means that students project their sense of worth and value to their dealings in the social environment. Self-esteem plays a significant role in evaluating an individual on both personal and social levels. Thus, self-perception regarding one's worth could significantly influence social functioning and balance in the social environment.

The probable reason for this finding is that a positive self-evaluation may positively influence a sense of balance, adaptation, and goal achievement, thereby favouring social adjustment. Healthy or high self-esteem would lead to social adaptation and high functioning. When individuals have a strong sense of self-worth, they tend to relate well to themselves and others. Intra and interpersonal relationships thrive when some factors are in place. Thus, self-esteem will be correlated with social adjustment among students with hearing impairment because self-esteem makes people confident and objective.

The finding of the test of the second hypothesis in this study suggests that self-esteem is a predictor of social adjustment in adulthood, as confirmed by Trzesniewski et al. (2006). The finding aligns with the study of Orth, Robins and Widaman (2012), which reported that self-esteem enhances social adjustment in individuals. The implication is that self-esteem plays a crucial role in strengthening social adjustment. Additionally, Leary (1999) supported these findings, indicating that self-esteem helps mitigate the adverse effects of social exclusion, thereby serving as a buffer to social adjustment.

Conclusion
The study examined the psychological correlates, including emotional intelligence and self-esteem, of social adjustment among students with hearing impairments at the Federal College of Education (Special), Oyo, Oyo State, Nigeria. The study serves as a testament to the fact that the psychological well-being and social adjustment of the deaf and hard-of-hearing are crucial to psychologists. The results indicate that emotional

intelligence and self-esteem significantly contribute to the criterion variable, specifically the social adjustment of students with hearing impairments. This implies that emotional intelligence and self-esteem will significantly contribute to the social adjustment of students with hearing impairment. Additionally, as their emotional intelligence and self-esteem improve, they become more socially adjusted. Any programme targeted at improving the social adjustment of students, especially those with hearing impairments, must consider emotional intelligence and self-esteem, as they are proven protective factors for social adjustment.

Recommendations

It has been established from the study that psychological correlates (emotional intelligence and self-esteem) contribute significantly to the social adjustment of college education students who have a hearing impairment; therefore, based on the study's findings, the following are recommended:

i) Professional counsellors, psychologists, and special or health educators should develop and implement programs to promote emotional intelligence among deaf students and students with hearing impairments. Programmes should be organised that teach workshop skills such as social awareness, empathy, and emotional regulation.

ii) Students with hearing impairments should have access to counselling and psychological services that focus on building psychological capital, which will enhance their sense of self-worth.

iii) Teachers, caregivers, peers, custodians, and family members of individuals with hearing impairments should provide positive reinforcement to boost their morale.

iv) The government and other key stakeholders in education must develop policies that promote the development and implementation of inclusive education practices, ensuring that students with hearing impairments receive the necessary support.

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Manuscript Preparation - JIPE

Page format
Page set-up of the manuscripts should be on A4 or 8.5" x 11 "paper, typed double-spaced (24-26 lines per page), with margins of top 25mm, bottom 25mm left 40mm and right 20mm.

Font
The font size of main text shall be 12 in Times New Roman

Manuscripts should be arranged in the order of: title page, abstract (structured summary) including up to five keywords, main text, acknowledgements (if applicable), references, tables, and figure.

Title Page
This page must include the following information:
- The title of the manuscript which should be concise, specific, informative, and clear.
- Should be in bold, using font 14.
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Abstract
The first page following the title page should contain an abstract. Abstract should contain up to 250 words mainly of the object and main findings of the paper. Three to five keywords representing concepts of the paper may be written at the end of the abstract. The Abstract shall be in *italics.*

Main Text
In the main text:

Introduction: Should describe the objective of the reported work and provide relevant background information.

Methodology (Where the study/research dictates): This part should identify the paradigms/approach, population, area of study, procedures employed and any other relevant input to the realization of the study.

Findings: This section should explain all the important findings and provide information about the reliability of the results. Here, the use

of tables and figures is allowed, but the use of text to emphasize important points is encouraged.

Discussion: It should describe the implications of the findings and any conclusions based on the findings. Abbreviations in the body of the paper should be used after having been initially explained. If statistical analysis is applicable, it is important that the procedure is carried out following appropriate methods.

Tables and Figures
Tables and figures should be as close as possible to the text explaining the concept. Tables should be numbered in the order in which they are mentioned in the text. A Table caption must be presented in upper case at the top and Figure caption should be typed in bold immediately below the Figure. Explain in footnotes all non-standard abbreviations used in each table.

Pagination
The page numbers should appear at the Centre of the bottom edge of the page.

Reference style
All references should adhere to the latest version of APA format.

Footnotes
They should be kept to a minimum. Two or more consecutive references to the same source should, where possible, be grouped in the same note; the reader should be able to follow the article without referring to the notes.