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EDITORIAL

Navigating the Complexities of Educational Transformation: Insights from Tanzania and Beyond

The dynamic interplay between global educational trends and local challenges is at the heart of the research featured in this issue of the *Journal of Issues and Practice in Education*. Volume 16, Issue 2, presents a compelling array of studies focusing on Tanzania and beyond, where education systems grapple with the dual imperatives of innovation and equity. The articles herein delve into themes of technology integration, resource challenges, gender dynamics, community engagement, and pedagogical innovation, offering valuable insights for policymakers, educators, and researchers.

A recurring theme across several articles is the pivotal role of **digital technology** in education. In "The Effect of Digital Media in Improving Reading Skills Amongst Lower Primary School Pupils of Dodoma City in Tanzania," the authors examine the transformative potential of digital tools in enhancing foundational literacy skills. Complementing this, "Monitoring and Evaluation of ICT Integration in Secondary School Teaching and Learning in Tanzania" and "Framework for Full Integration of ICT in Assessment in Secondary Schools in Tanzania" provide critical analyses of the systemic integration of technology in teaching, learning, and assessment. These studies underscore the opportunities and challenges of adopting digital solutions, particularly in resource-constrained environments.

Gender and inclusivity emerge as vital considerations in the discourse on educational equity. The article "Gender and ICT Affability Amongst Students in Selected Public Secondary Schools of Nyamagana District in Tanzania" sheds light on the persistent gender disparities in access to and comfort with technology, urging stakeholders to prioritise gender-sensitive approaches to ICT training and deployment. Similarly, "Managing Early Childhood Education Data in Inclusive Public Schools in Temeke Municipality, Tanzania," highlights the complexities of catering to diverse learners in inclusive settings, emphasising the need for robust data management systems to support decision-making.

The **role of assessment** in shaping educational outcomes is another critical area explored in this issue. "Examining the Role of Authentic

Assessment Tools: Frequency and Their Influence on Pedagogical Competence Among Undergraduate Science Student-Teachers in Tanzania" highlights the importance of aligning assessment practices with pedagogical goals to foster deeper learning. This aligns with the broader conversation on how assessment frameworks can drive educational quality and equity.

Community and parental engagement are cornerstone strategies for addressing systemic educational challenges. Articles such as "The Influence of Parental Engagement on Ordinary-Level Public Secondary School Students' Learning Behaviour at Home: An Exploratory Factor Analysis" and "Community Members' Engagement in the Management System of the Collaborative Community Secondary Schools in the Coast Region of Tanzania" emphasise the need for holistic approaches that bridge school and community efforts to support student success.

The issue also tackles the **resource constraints** faced by educational institutions. "The Resource Challenges Facing Schools in Enhancing Quality of Education" and "Linking Salary Advance to Low-and Moderate-Income Salaried Workers: An Investigation of School Educators in Tanzania" draw attention to the financial and infrastructural hurdles undermining efforts to deliver quality education. These articles call for innovative financing models and resource optimisation strategies to mitigate these challenges.

Addressing **early childhood and primary education**, "Pre-Primary Teachers' Perceptions on Acquisition of Early Writing Skills of Alphabet Letters in Shinyanga Rural District, Tanzania" and "Reflection on the Implementation Hurdles of Local School Feeding Programmes in Tanzanian Public Primary Schools: A Phenomenological Inquiry" provide rich insights into the foundational stages of education. These studies underscore the need for targeted interventions to enhance early literacy and nutrition programmes, which are critical for long-term educational success.

Finally, this issue broadens its geographical scope with contributions such as "Assessing the Pro-Environmental Behaviour of Junior Secondary School Students in Dekina Local Government Area of Kogi State" and "Perceived Influence of Family Background on School-Based Social Problems Among Senior Secondary School Students in Epe Educational District, Lagos State." These studies offer comparative perspectives that

enrich the discourse on education's role in shaping societal and environmental outcomes.

In conclusion, Volume 16, Issue 2 of the *Journal of Issues and Practice in Education* offers a rich tapestry of research that underscores the multifaceted nature of educational transformation. As the articles collectively demonstrate, the journey toward equitable, high-quality education is both challenging and rewarding, requiring concerted efforts from all stakeholders. We hope this issue inspires continued dialogue and action toward achieving educational excellence in Tanzania and beyond.

Dr. Mohamed Salum Msoroka
Editor-in-Chief
Journal of Issues and Practice in Education

CONTENTS

Examining the Role of Authentic Assessment Tools: Frequency and Their Influence on Pedagogical Competence among Undergraduate Science Student-Teachers in Tanzania

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Abstract

Authentic assessment is an important area in the acquisition and demonstration of competencies. The study investigated authentic assessment tools in Higher Education Institutions in terms of frequency and relationship with pedagogical competence. The study employed a quantitative research approach with a descriptive survey design to describe the frequency and relationship between authentic assessment tools and pedagogical competence. The study involved 231 third-year undergraduate science student teachers who were selected by proportional stratified random sampling. The findings indicated that the frequency of using authentic assessment tools varied per tool, ranging from once per week for practical work and once per semester or year for teaching practice, portfolio, and project. Furthermore, findings indicated a significant relationship between authentic assessment tools and pedagogical competence. It was found that 66.2 per cent of the variations in pedagogical competence were explained by variations in the authentic assessment tools. The study concludes that the frequency of using authentic assessment tools determines the acquisition of competencies among students. Similarly, it is concluded that the usage of authentic assessment tools significantly relates to pedagogical competence. It is thus recommended that Higher Education Institutions formulate policies on the use of authentic assessment tools.

Keywords: *Authentic assessment, practical work, portfolios, project, pedagogical, competence*

Introduction

There is a growing consensus among scholars that authentic assessment plays a crucial role in developing and demonstrating teaching professional competencies (Dahlback et al., 2020; Koh et al., 2019; Mcarthur, 2020). Authentic assessment, defined as assessment methods reflecting real-life experiences (Vu & Dall'Alba, 2014), actively engages students in task performance, which is particularly beneficial for undergraduate science student-teachers in acquiring pedagogical competencies (De Prada et al., 2

022; Odumosu & Areelu, 2018). Moreover, it enables them to showcase these competencies effectively (Aliu & Aigbavboa, 2021; Çiçek & Taşpınar, 2021), thereby enhancing the learning process (Quansah et al., 2019; Tkatchov et al., 2022; Villarroel et al., 2018).

Despite the widespread use of authentic assessment in higher education institutions (HEIs), critiques persist regarding graduates' perceived inadequacies in competencies (Kafyulilo et al., 2013; Komba & Mwandaji, 2015; Quansah et al., 2019), articulated by both employers and graduates (Ashford-Rowe et al., 2014; Villarroel et al., 2018). While studies acknowledge the role of authentic assessment tools in measuring and enhancing learning and competencies (De Prada et al., 2022; McArthur, 2022), there remains a gap in understanding the frequency of tool usage and its correlation with pedagogical competence acquisition.

Pedagogical competence, crucial for effective teaching and student management (Cohen et al., 2010), necessitates active student engagement in task execution for competency acquisition. While some studies explore the frequency of authentic assessment usage (Nicol et al., 2019; Oudkerk Pool et al., 2020), and others examine the relationship between tool usage and teaching professional competencies (De Prada et al., 2022; Žerovnik & Nančovska Šerbec, 2021), a few address both aspects simultaneously. This paper addresses this gap by investigating the frequency of authentic assessment tool usage and its relationship with pedagogical competence among undergraduate science student-teachers in Tanzania.

This study was guided by the following research questions: What is the frequency of authentic assessment tool usage in HEIs? And, what is the relationship between authentic assessment tool usage and pedagogical competence? By addressing these questions, this study seeks to contribute to a deeper understanding of the role of authentic assessment in fostering teaching competencies and informing educational practices.

Authentic Assessment Tools in Higher Education Institutions
Authentic assessment tools encompass forms of assessment that simulate real-life situations, actively engaging students in tasks conducive to learning enhancement. While several scholars have extensively documented authentic assessment tools relevant to demonstrating or acquiring competencies among undergraduate science student-teachers (James & Casidy, 2018; Kinay & Bagceci, 2016; Olfos & Zulantay, 2007), there remains a notable gap in the literature regarding their specific application and effectiveness within higher education institutions.

For example, Ellis et al. (2020) explained the effectiveness of the use of authentic assessment tools in preventing cheating among students. They argued that authentic assessment tools involve real-life experiences and engage students actively in carrying out such tasks, making them less likely to commit cheating. Furthermore, Silveira et al. (2017) indicated the use of authentic assessment to enhance reflective competencies among students as they are actively engaged in carrying out the tasks. Likewise, Sewagegn and Diale (2020) commented on the great role of authentic assessment tools in promoting students' learning, leading to competency acquisition. This study sought to address this gap by examining four specific authentic assessment tools: portfolios, projects, teaching practice, and practical work, and their implications for enhancing pedagogical competencies among student-teachers.

Pedagogical Competence and the Role of Authentic Assessment Tools
Pedagogical competence, often defined as the capacity to facilitate learning among learners through various teaching methods and an understanding of learners and their characteristics, is crucial for effective teaching (Joanna et al., 2018; Shulman, 1987). Schneider and Plasman (2011) underscore its significance as a unique competence essential for teaching and the development of expertise, encompassing knowledge of learning principles, instructional strategies, and classroom management skills (Kitta, 2004). This competence extends to decision-making regarding the selection and application of teaching methods suitable for different contexts and student groups (Koludrovic & Ercegovac, 2017).

Effective pedagogical knowledge ensures that subject matter is effectively conveyed to learners, distinguishing competent teachers from those who may require further development in the profession (Anoh, 2021). It is not solely about possessing content knowledge but also about delivering it effectively to learners. Pedagogical knowledge equips teachers, including undergraduate science student-teachers, with the competencies necessary to organise and manage classrooms and select appropriate teaching methods (LeeShing et al., 2015).

Moreover, pedagogical competencies influence learner motivation and engagement, with instructors possessing strong pedagogical knowledge reinforcing learning through appropriate teaching approaches, positive reinforcement, and suitable teaching materials (Adamu & Mohammed, 2022). Kihwele and Mtandi (2020) further highlight a positive relationship between authentic assessment tools, particularly teaching practice and the acquisition of pedagogical competencies among prospective teachers. They argue that engagement in teaching practice enhances competencies such as the selection and utilisation of teaching and learning materials.

While some studies suggest a positive association between teaching practice and pedagogical competence (Amankwah et al., 2017; Kihwele & Mtandi, 2020), others, like Mungure (2016), indicate that teaching practice may not always effectively enhance pedagogical competence due to ineffective implementation. However, the specific relationship between authentic assessment tools and the acquisition of pedagogical competencies remains understudied. This study addresses this gap by investigating how pedagogical knowledge may be acquired through the use of authentic assessment among undergraduate science student-teachers. Additionally, it explores the relationship between authentic assessment tools and the development of pedagogical competencies, shedding light on their potential impact on teacher education and practice.

Methodological considerations

This study employed a quantitative research approach utilising a descriptive survey research design. The quantitative approach facilitated the collection of a substantial amount of data within a limited timeframe (Lodico et al., 2010)A descriptive survey research design was chosen to elucidate the frequency and relationships between authentic assessment tools, such as portfolios, projects, practical work, and teaching practices, and undergraduate science student-teachers pedagogical competencies.

The study's target population consisted of 650 third-year undergraduate science student-teachers specialising in Biology and Chemistry subjects at two universities in Tanzania. The sample for this study was drawn from third-year science student-teachers enrolled in a Bachelor of Science with an Education Degree program at two Higher Education Institutions (HEIs). These two HEIs were chosen based on their significant enrollment figures compared to other institutions offering BSC ED degree programmes in Tanzania (TCU, 2021). Third-year science student-teachers were selected as participants because they were expected to have encountered various assessment tasks throughout their three years of study. Participants were chosen through proportional stratified random sampling to ensure gender representation. A total of 231 respondents were selected as the sample from both institutions, as indicated in Table 1.

Table 1: Demographic characteristics of the science student-teachers (n= 231)

Institution	Gender	Number of Participants
A	Males	60
	Females	60
	Males	56
B	Females	55
	Total	**231**

The data were collected through questionnaires. Close-ended questionnaires were administered to undergraduate science student-teachers to collect data on the frequency and relationship between authentic assessment tools and pedagogical competencies. The questionnaires were designed by a researcher and conducted face-to-face, where respondents were provided with the instruments to fill out and later collected by the researcher. These questionnaires were structured in a Likert scale format. The Likert scale allowed respondents to indicate their level of agreement or disagreement with a series of statements. Typically, response options ranged from "Strongly Disagree" to "Strongly Agree," with various degrees of agreement in between. Questionnaires were selected due to their flexibility and capacity to gather objective information on the study variables (Johnson & Christensen, 2014; Singh, 2006). Personal administration was ensured to address potential issues related to low return rates associated with mailed or posted questionnaires.

To ensure the reliability of the research instruments, a pilot study was conducted using third-year undergraduate science student-teachers at a different HEI. The pilot study checked out the relevance, readability, suitability, and applicability of the items in the questionnaires. It provided helpful information that helped to modify the questionnaire by eliminating redundant questions. Likewise, the items that needed to be clarified to the respondents were modified for clarity. Furthermore, the pilot study helped establish the relevance of the suggested research instruments to the research questions. The Cronbach's coefficient alpha was calculated to ensure the reliability of the questionnaire in terms of internal consistency. This is because Cronbach's coefficient alpha is used to estimate reliability for questions with several possible answers (Gall et al., 2003). Cronbach's alpha was used as a measure of internal reliability.

Findings
The findings of the study are presented in terms of research questions hereunder.

The Frequency of Instructors Using Authentic Assessment Tools
The study examined the frequency of using authentic assessment tools, such as portfolios, projects, practical work, and teaching practice, among instructors in higher education institutions. The findings indicated the frequency of use of authentic assessment tools, as presented in the figures below.

Frequency of project usage by Instructors
Projects, as one of the authentic assessment tools, were utilised by instructors; however, the frequency of use varied per semester or per year.

For instance, as depicted in Figure 1, 30 per cent of the respondents indicated that projects were used once per semester, 20 per cent indicated projects were used once per year, and 50 per cent indicated that projects were not used at all. The frequency of using projects, as reported by respondents, fell between infrequent use and non-use entirely. This suggests that projects were not commonly employed, as illustrated in Figure 1, with their utilisation limited to once per semester or year. The aim was to ascertain the frequency with which instructors utilised projects, whether weekly, semesterly, or yearly.
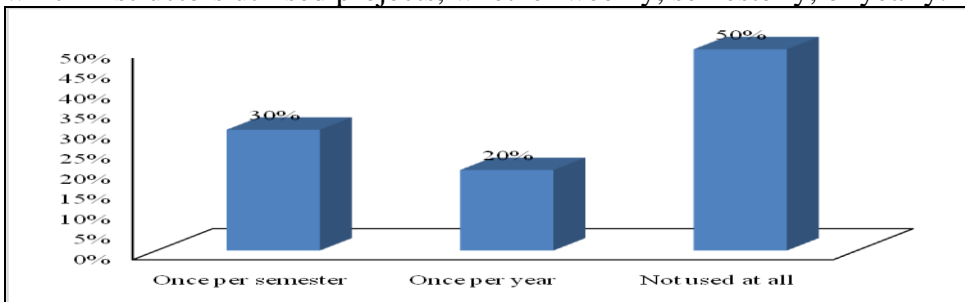
Figure 1: Frequency of using projects

Frequency of portfolio usage by Instructors
The study revealed that instructors employed portfolios, albeit at minimal rates. For instance, 18 per cent of the surveyed respondents (undergraduate science students) reported the use of portfolios once per semester, while 22 per cent reported usage once per year. Notably, 60 per cent of respondents indicated that portfolios were not used at all, as illustrated in Figure 2.

Interview findings from both instructors and undergraduate science students indicated a lack of portfolio utilisation across all courses in biology and chemistry subjects. Additionally, in educational courses, portfolios were only employed in select courses such as teaching methods and those related to curriculum and instruction. This underscores the infrequent usage of portfolios, even in courses where they were implemented, typically occurring either once per semester, per year, or not at all.
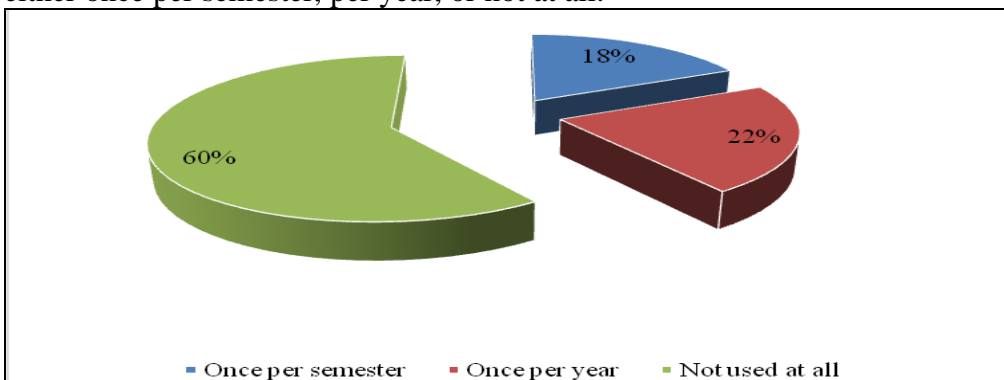
Figure 2: Frequency of portfolio usage

Frequency of practical work usage by Instructors

The research findings revealed that practical work was consistently conducted once weekly, with all respondents from Institution 'A' and 'B' reporting a 100 per cent utilisation rate. It was observed that practical work occurred weekly throughout the entire semester, resulting in multiple practical sessions being conducted per semester.

For instance, instructors indicated the regular conduct of practical work in both Biology and Chemistry courses. However, contrasting responses were noted from undergraduate science students, particularly regarding practical work in chemistry. While practical work in biology was conducted on a weekly basis, students reported that practical work in Chemistry occurred as a single course during the first year. Within this course, nine practical sessions were held covering various areas of Chemistry such as organic Chemistry, inorganic Chemistry, and Physical Chemistry. This suggests that different chemistry fields featured varying weekly practical sessions, unlike Biology.

Furthermore, the findings showed that practical work in Chemistry was concluded once conducted, indicating some summative aspects associated with these sessions.
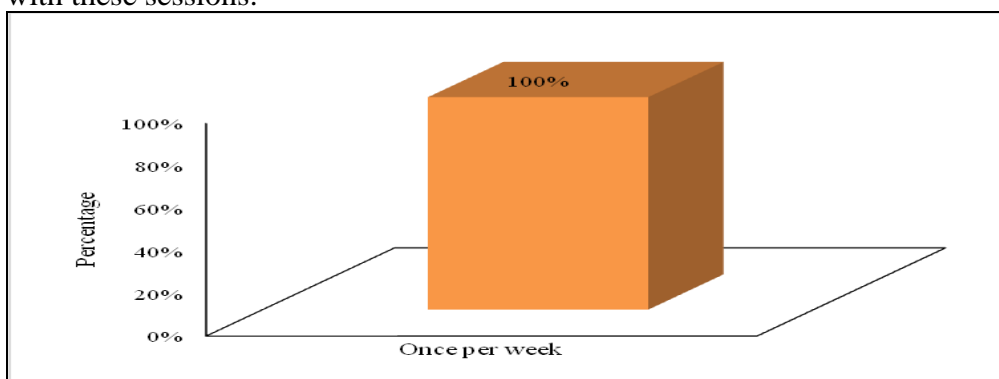
Figure 3: Frequency of practical work usage

Frequency of using teaching practice by Instructors

The findings indicated that 100 per cent of the respondents reported using teaching practices once per year. This suggests that in both higher education institutions, 'A' and 'B', teaching practice was conducted annually, as evidenced in Figure 4. Respondents indicated that teaching practice was carried out once per year after the conclusion of the second semester for first and second-year undergraduate science student-teachers. Both the questionnaire responses and interview data revealed that teaching practice was utilised once per year. Findings indicated a consensus among respondents regarding the frequency of teaching practice.
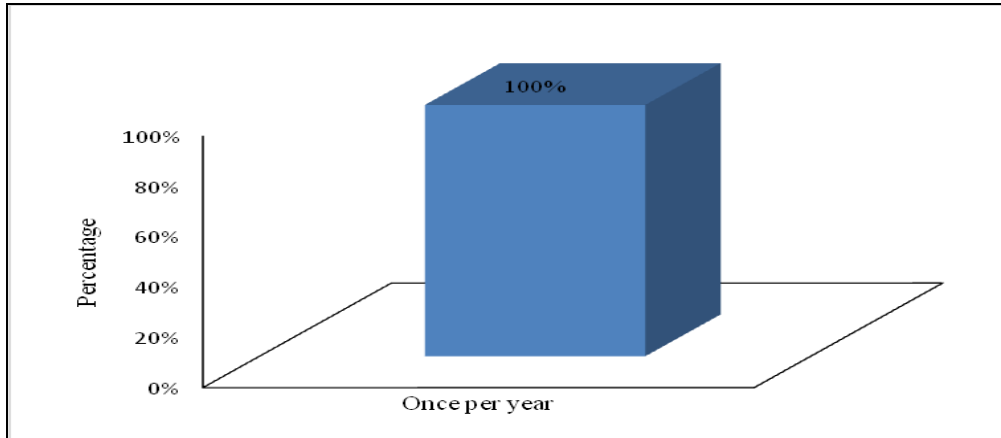
Figure 4: Frequency of using teaching practice

Relationship between authentic assessment tools and Pedagogical Competence

Linearity assumption

Linearity is the assumption of multiple regression, which specifies that the residuals should have a straight–line relationship with the predicted dependent variable score (Pallant, 2016). Linearity is an important assumption due to the fact that it gets rid of the biasness of estimations if is violated (Keith, 2019).
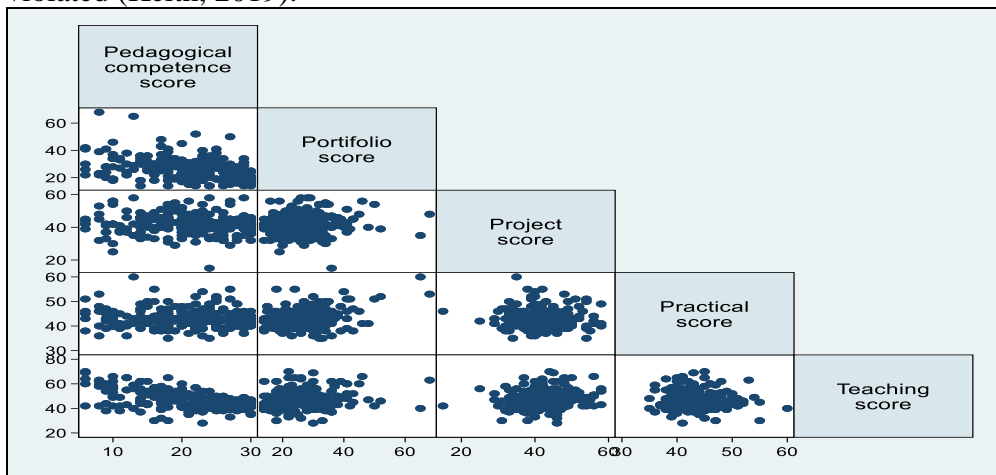
Figure 5: Scatter matrix for pedagogical competence

The scatter matrix was employed to test the linearity assumption. The scatter matrix indicates a linear association between pedagogical competence and tools of authentic assessment (i.e., independent variables) employed in the regression model since all points appearing in the first quadrate were increasingly positive for the relationship between pedagogical competence score and all the independent variables.
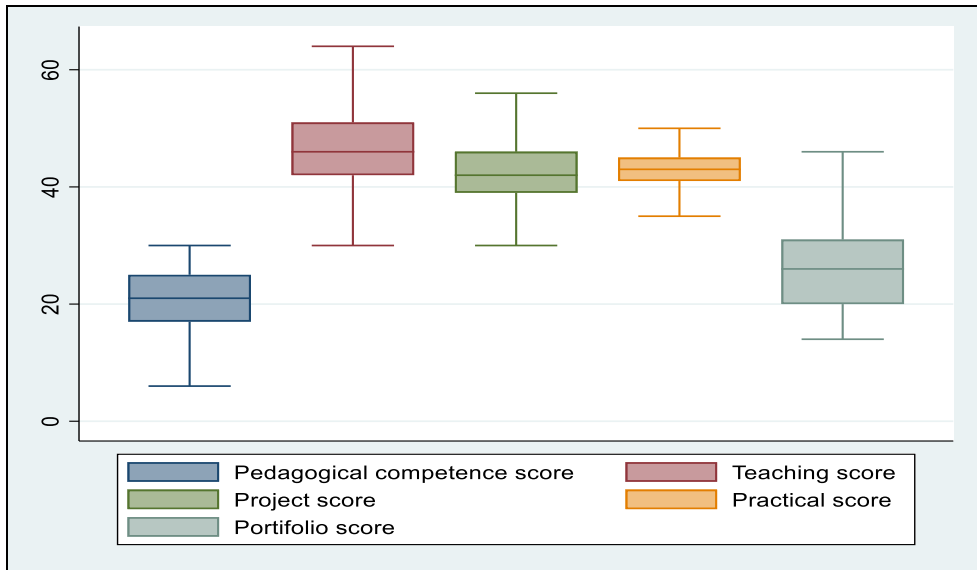
Figure 6: Box plot on tools of authentic assessment and pedagogical competence score

An outlier is a data point that is very high or very low from the rest of the observations in a statistical study. When conducting statistical analysis, an outlier might cause significant complications that may lead to a wrong inference of the results. The box plot indicates that there is no point which is below or above the lower whisker or the upper whisker of the box plot, as indicated in Figure 6. This implies that the pedagogical competence score, as well as the whole score for the tools of authentic assessment, do not have an outlier. Therefore, this means that the findings obtained in the model which involves these variables were not affected by outliers; hence, the findings are valid.

Normality assumption
The test for normality of content competence (dependent variable) was done by use of the Kolmogorov-Smirnov test. Given that H0 and H1, set $\alpha=0.05$, the rule is that reject H0 if P-value is less than α else fail to reject H0, where:
H0: The data is normal
H1: The data is not normal

Table 2: Test of normality

Variable	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual	4.139	231	0.056	5.947	231	0.2065

H_0=Data are normally distributed
H_1=Data are not normally distributed

By using the Kolmogorov-Smirnov test of normality, pedagogical competence data is normal since the P-value, 0.056, is above 0.05 and, thus, we fail to reject the null hypothesis (H0). This implies that the residual values obtained in the model were normally distributed and are purely random. The study, therefore, concluded that the pedagogical competence variable is normal in distribution, and hence, subsequent analysis could be carried out. The dependent variable should be normally distributed because the study was using a multiple linear regression model, where the condition of normality must be satisfied (Pallant, 2016).

Table 3: The Breusch pagan test of heteroscedasticity

Source	chi2	df	p
Heteroskedasticity	3.3	14	0.5378
Skewness	4.76	4	0.2582
Kurtosis	0.57	1	0.9939
Total	8.63	19	0.3962

H0: $\gamma = 0$ The residuals variance is constant (homoscedasticity)

H0: $\gamma > 0$ The residual variance is not constant

P value > 0.05 fails to reject the null hypothesis

There is no heteroscedasticity since the p-value is greater than 0.05. Therefore, this implies that the model is free from the heteroscedasticity problem and that the model is robust.

Table 4: Test of Multicollinearity (i.e., variance inflation factor)

Variable	VIF	1/VIF
Portfolio score	1.15	0.865953
Project score	1.11	0.897793
Practical score	1.06	0.942827
Teaching score	1.04	0.963874
Mean VIF	1.09	

Whenever multiple linear regression is employed, the multicollinearity test is employed to assess if the independent variables included in the model influence one independent variable or another independent variable. The rule of thumb is that there is always severe multicollinearity if the variance inflation factor (VIF) is above 10. VIF should be less than 10 to indicate a lack of multicollinearity (Pallant, 2016). There is no multicollinearity since the VIF for all independent variables was below 10, and the average of all VIFs was also below 10.

Table 5: Relationship between tools of authentic assessment and Pedagogical Competence

Pedagogical competence Score	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Portfolio score	0.221	0.042	5.28	0.000	0.004	1.139	***
Project score	0.027	0.055	0.50	0.620	-0.081	0.135	
Practical score	0.012	0.095	0.13	0.899	-0.174	0.198	
Teaching score	0.401	0.047	8.60	0.000	0.093	2.310	***
Constant	43.579	5.001	8.71	0.000	33.723	53.436	***
Mean dependent var		20.533	SD dependent var			6.190	
R-squared		0.662	Number of obs			227.000	
F-test		31.552	Prob > F			0.000	
Akaike crit. (AIC)		1378.607	Bayesian crit. (BIC)			1395.732	

*** p<.01, ** p<.05, * p<.1

Multiple linear regression was employed to investigate the relationship between tools of authentic assessment and content competence among undergraduate prospective science teachers. The results presented in Table 5 indicate that the independent variables included in the model served as good predictors of pedagogical competence among the undergraduate prospective science teachers. Approximately 66.2 per cent of the variance in pedagogical competence was accounted for by the variations in the explanatory variables incorporated into the model. Furthermore, the collective influence of the explanatory variables in the model significantly impacted pedagogical competence among the undergraduate prospective science teachers (F = 31.552, P < 0.001).

However, it was observed that the predictor variables, namely practical work score and project score, did not significantly influence pedagogical competence among the undergraduate prospective science teachers in the study area. Conversely, the predictor variables portfolio score and teaching score significantly influenced pedagogical competence among the undergraduate prospective science teachers.

Specifically, the teaching practice score demonstrated a significant influence (P < 0.001) on pedagogical competence among the undergraduate prospective science teachers, with a coefficient of 0.041. This indicates that for every one-unit increase in the teaching practice score, the pedagogical competence is expected to increase by 0.041 scores. Thus, a direct proportional relationship exists between teaching practice and pedagogical competence, suggesting that the application of teaching practice positively impacts pedagogical competence.

Similarly, the portfolio score was found to be significant at $P < 0.001$, with a coefficient of 0.221. This implies that for every one-point increase in the portfolio score, the pedagogical competence among undergraduate prospective science teachers would increase by 0.221 scores. Therefore, a positive relationship exists between portfolio utilisation and pedagogical competence, indicating that a higher application of portfolios leads to an increase in pedagogical competence among undergraduate prospective science teachers.

Discussions of the Findings

The findings reveal a diverse landscape regarding the of authentic assessment tools by instructors in higher education institutions (HEIs), with responses varying from weekly, semesterly, and yearly to not at all. Predominantly, the study focuses on four authentic assessment tools: portfolios, projects, practical work, and teaching practice. The analysis suggests a need for increased emphasis on project-based assessments, particularly in Bachelor of Science with Education programs, where competencies in designing teaching materials and research methodologies are pivotal for post-graduation teaching roles. While projects were utilised to some extent, the frequency fell short of optimal levels across various courses.

The observed infrequency, whether annually, semesterly, or non-existent, raises concerns regarding competency acquisition among learners. Particularly noteworthy is the minimal utilisation of projects in biology and chemistry courses, where traditional assessment methods prevail over authentic assessment tools. Even in pedagogical educational courses, where projects were employed for material design, their frequency remained suboptimal, potentially hindering desired competency outcomes. These findings echo existing critiques on graduate weaknesses (Quansah et al., 2019; Thambusamy et al., 2014). Corroborating prior research, the findings align with assertions by Baysura et al. (2016), Benzer and Şahin (2013), and Bhukuvhani et al. (2012), emphasising the sporadic use of projects and portfolios across educational contexts. Notably, portfolios were and underutilised in biology and chemistry courses, signalling a necessity for increased integration.

While collectively, authentic assessment tools significantly impacted pedagogical competencies, variations in their influence were observed. Practical work and project scores displayed minimal influence on pedagogical competence among undergraduate science student-teachers. Conversely, teaching practice and portfolio scores substantially positively influenced pedagogical competencies, indicating their importance in competency acquisition. The positive correlation between teaching practice

and pedagogical competencies aligns with findings by Amankwah et al. (2017) and Hagos et al. (2020), underscoring the role of active engagement in teaching methodologies. Similarly, Kihwele and Mtandi (2020) emphasise the link between teaching practice and pedagogical competence development among prospective teachers.

Portfolios, encompassing document preparation and design, were associated with enhanced pedagogical competencies, particularly in curriculum interpretation and teaching methodology. The observed relationship resonates with the findings by Oudkerk Pool et al. (2020), Iqbal et al. (2021), and Ndihokubwayo et al. (2020), highlighting the role of portfolios in fostering pedagogical competency through active engagement. In summary, while authentic assessment tools collectively contribute to pedagogical competency development, their varied utilisation underscores the need for targeted interventions, particularly in enhancing the frequency and integration of projects and portfolios across educational curricula.

Conclusions

The disparity in the utilisation of authentic assessment tools is apparent. Certain authentic assessment tools were seldom employed or utilised minimally, thereby impacting the acquisition of pedagogical competence among undergraduate science student-teachers. Practical work was administered once per week, while portfolios, projects, and teaching practice were implemented once per semester or year. Despite the correlation between authentic assessment tools and pedagogical competence, the significance of their frequency of use warrants acknowledgement.

Recommendations

Higher Education Institutions (HEIs) should consider formulating comprehensive, authentic assessment policies to offer clear guidance to both students and instructors regarding their implementation. Specifically, these policies should encompass detailed guidelines on the general conduct of authentic assessment and the utilisation of authentic assessment tools within HEIs. Moreover, there should be an emphasis on fostering academic inquiry into the efficacy and implementation of authentic assessment methodologies across diverse disciplines. This entails conducting longitudinal studies, comparative analyses, and qualitative investigations to deepen our understanding of how authentic assessment practices influence student learning outcomes.

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The Effect of Digital Media on Improving Reading Skills amongst Lower Primary School Pupils of Dodoma City in Tanzania

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Abstract
The study explored the effect of digital media (videos and digital games) in improving reading skills (basic sounds, word pronunciation) amongst the lower primary school pupils of Dodoma City in Tanzania. The hypothesis assumed a significant relationship between the use of digital media and the improvement of reading skills amongst lower primary school pupils. The study included 160 pupils (80 in the control and 80 in the experimental groups) from two public schools in Dodoma City. A stratified sampling technique was used to obtain a sample for the study by selecting pupils with F-grade scores from the continuous assessment. The study was guided by the cognitive theory of multimedia learning, which emphasises the importance of videos, digital games, and digital pictures in learning. The study also used a standardised test to collect data and the Multivariate General linear model for data analysis. The analysis indicated a statistically significant linear relationship between the use of digital media (videos, digital games) and reading skills (basic sounds, word pronunciation) amongst the lower primary school pupils of Dodoma City in Tanzania. Findings also showed a significant mean difference between the control and experimental groups, indicating higher test scores in the experimental group than in the control group. The study recommends that policymakers, curriculum developers, curriculum implementers such as teachers, and other education stakeholders consider videos and digital games when designing instructional tools to facilitate reading skills (basic sounds, word pronunciation) amongst lower primary school pupils.

Keywords: *Digital media, reading skills, lower primary school pupils.*

Introduction
Reading is a key to learning in school and throughout life as it allows everyone to connect prior knowledge with learning, thus ensuring various important ideas and practices are passed on to the next generation (Torres, 2019). According to Bana (2020), reading affords experience and enlarges horizons of knowledge, identifies, spreads, and increases awareness to a deeper understanding of oneself, other people, and the world. Sari (2017) also suggested that reading among pupils in the 21st century cannot be

underestimated because as pupils climb the educational ladder, reading becomes denser and more challenging. Despite the significance, there has been a reading difficulty in decoding basic sounds, word pronunciation, and comprehension among pupils worldwide (Oyshajo et al., 2020).

Various world reports indicate that reading problems, specifically in basic sounds, word pronunciation, and comprehension among lower primary school pupils, still exist (UNESCO, 2017). The World Literacy Foundation (2015) conveyed that more than 796 million pupils face this difficulty. UNESCO (2017) reported that more than 617 million pupils in lower primary schools around the world are not achieving minimum proficiency levels (MPLs) in reading skills (basic sounds, word pronunciation, and comprehension). In Sub-Saharan countries, (89%) of the pupils from Central Asia, (80%) from Southern Asia, and (64%) from Western Asia and Northern Africa lack proficiency in reading (basic sounds, word pronunciation, comprehension) (UNESCO,2017). The urgency of this problem cannot be overstated. Although Tanzania has made progress in access and equity in education, reading skills (basic sounds and word pronunciation) remain a challenge amongst Tanzanian pupils, where only 54% of pupils in the early grades can read with comprehension (USAID,2021). In Tanzania, reading competence among pupils enrolled in primary education in 2017 was reported to be three out of 10 (Uwezo, 2017; USAID, 2018).

The report (Uwezo, 2017) indicated that only 50 per cent of standard three pupils could read a standard two-story book in Kiswahili, and only 20 per cent could read a standard two-story book in English. This reading problem seemed to increase in central regions of Tanzania, where three out of ten of every pupil who completed standard seven in 2017 needed more basic skills in reading (basic sounds, word pronunciation, and comprehension) (Uwezo, 2019). The Tanzanian Government has undertaken various initiatives to elucidate this problem among them was the introduction of the Primary Education Reform Project (PERP) (2014), which aimed at improving teachers' competence in reading skills among the lower primary school pupils by training teachers on the proper reading techniques. Education Quality Improvement Program (EQIP) (2015) was introduced to increase learning outcomes in Primary schools by reforming an old curriculum for grades one and two through in-service training (Equip-t, 2015 and URT, 2014). USAID (2018) initiated a project to improve the quality of lower primary school pupils' reading skills by developing new teaching and learning materials like textbooks for grades one and two.

The government also introduced the use of ICT in Teachers' Training colleges to improve the teaching and learning process in pre-primary,

primary, and secondary schools (URT, 2005). However, there has been little effort in exploring the usefulness of ICT in improving learning outcomes among primary pupils (Oreku, 2022). Presently, reading can no longer be confined to print reading (Umeh, 2016). The scope of reading sources has changed drastically in the Internet revolution, including websites, web pages, e-mail, discussion boards, chatrooms, instant messaging, blogs, wikis, and other multimedia documents (Umeh, 2016). Studies show that electronic media, particularly television, mobile phones, computers and even the radio, are gradually taking over the relevance of books in society (Silva, 2015).

Higgins et al. (2012), Beschorner and Hutchison (2013), and Archer and Savage (2014) have highlighted the importance of digital media (videos, digital games) in enhancing learning outcomes for primary pupils. Their research confirmed that pupils improved performance when utilising digital media such as videos and digital games. Amosa and Ogunlade (2015), as well as Chinooneka and Mupa (2015), conducted a study comparing students using traditional lecture-based learning with those utilising digital media (video, digital games). They concluded that the digital media approach, incorporating songs, pictures, and games, resulted in significantly better performance than the lecture-based method, motivating pupils to learn. It is argued here that the growth of technology has automatically shifted most of the information to the digital world; thus, integrating digital media in the classroom context would help pupils grasp reading skills very quickly and in a broader way.

In Tanzania, the use of digital media for learning, including online textbooks, academic videos through television, literature books, and digital reference materials, increased its momentum during the COVID-19 pandemic because pupils were not allowed to attend physical classes. However, at the end of the lockdown, the digital media programmes lacked consistency (Oreku, 2022). The lack of consistence might be influenced by limited awareness to educational stakeholder on the significance of using digital media like videos and digital games in improving reading skills (basic sounds, word pronunciation) among pupils. This study explored the effect of digital media (videos and digital games) on improving reading skills (basic sounds, word pronunciation) among lower primary school pupils.

Effect of Digital Media: Theoretical framework
In trying to explore the effect of Digital Media on reading skills (basic sounds, word pronunciation) among lower primary school pupils, we employed the cognitive theory of multimedia learning (CTML) by Mayer and Moreno (2003). The theory asserts that people learn more deeply from words and pictures than words alone. This is referred to as the multimedia principle.

Multimedia researchers generally define multimedia as the combination of text and pictures. The words can be spoken or written, and the pictures can be any form of graphical imagery, including illustrations, photos, animation, or video. Multimedia instructional design attempts to use cognitive research to combine words and pictures in ways that maximise learning effectiveness (Sorden, 2013). The cognitive theory of multimedia learning provides a guideline to describe how the mind can make meaningful connections between words, sounds, and pictures. The theory has three basic principles: dual channels, limited capacity, and active processing (Mayer & Moreno, 2003). Dual channels assume that learners have different channels in their brains for processing visual and verbal material separately (Austin, 2009; Mayer & Moreno, 2003). Limited capacity means a limit to the amount of information each channel can process (Mayer & Moreno, 2003). Active processing is the learner's cognitive processing ability to select, organise, and integrate the information (verbal and visual) being presented (Mayer, 2008). Since pupils possess different channels of receiving information while learning, the dual channel would provide a guideline on how the brain processes visual and verbal information, thus being able to connect quickly the words and the sounds when reading. Active processes, however, could help pupils in selecting, organising, and integrating information that comes into the brain and is in a position to give a correct interpretation. Therefore, to improve reading skills (basic sounds and word pronunciation), pupils need digital media (videos, digital games) since it allows them to integrate written text and visualizations (Schmidt-Weigand et al., 2010).
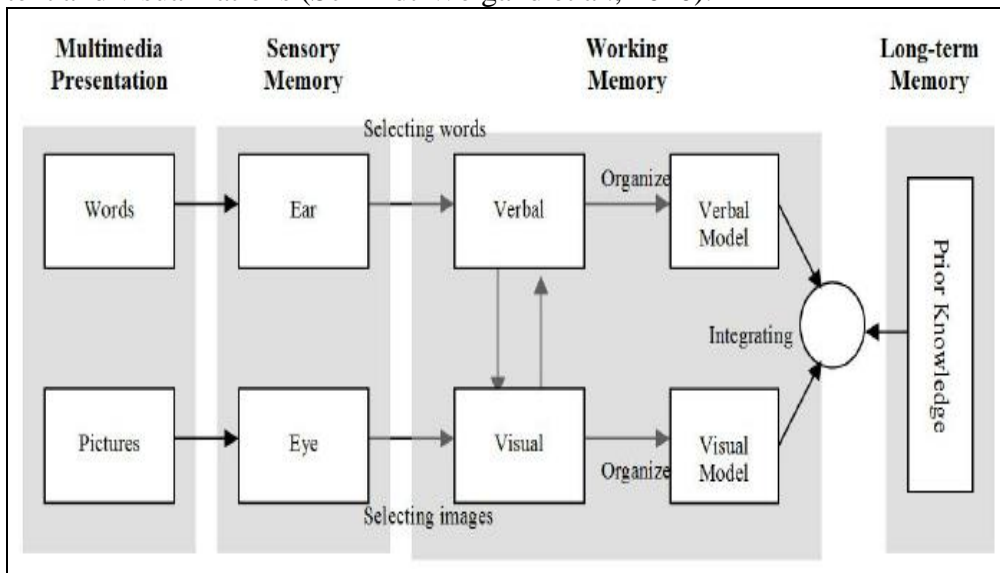
Figure 1:   A framework for the cognitive theory of multimedia learning drawn from Mayer (2001)

Note: *Active processes of selecting, organising, and integrating information that comes from words and pictures into the brain and is in a position to give a correct interpretation*

The present study

The study investigated the effect of digital media (videos and digital games) in improving reading skills (basic sounds, word pronunciation) to lower primary school pupils in Dodoma City, Tanzania. Past research indicated that videos and digital games could significantly develop the skills mentioned above by providing multiple information presentation approaches and facilitating deeper understanding (Mayer, 2009). For example, the cognitive theory of multimedia learning suggests that presenting information through verbal and visual channels improve a pupil's retention and comprehension ability (Mayer & Moreno, 2003).

In addition to that, studies have shown that educational games and videos motivate students and make learning more engaging (Gee, 2003; Prensky, 2001). The use of visual aids like videos, pictures, and digital games has also been found to help pupils better understand basic sound concepts through concrete visual representations (Arcavi, 2003). Furthermore, audio-visual materials can enhance learning by providing a richer sensory experience that helps in better encoding of information in memory (Fletcher & Tobias, 2005).

The current research was designed to explore how videos and digital games improve basic sounds and word pronunciation. To address this, the study was guided by an assumption that there is a significant relationship between the use of digital media (video and games) and the improvement in reading skills (basic sounds and word pronunciation) amongst Lower Primary School Pupils. The aim was to provide empirical evidence on the effectiveness of digital media (video and games) in improving reading skills (basic sounds and word pronunciation) among lower primary school pupils, thus contributing to the broader discourse on integrating technology in education.

Methodology
Participants

The study involved 160 respondents (80 in the control group and another 80 in the experimental group) from two public schools in Dodoma City. A convenient sampling technique was used to select the schools by considering the availability of digital devices like projectors and laptops. A stratified sampling technique was used to select a stratum of pupils with F-grade scores in continuous assessment, specifically in basic sounds and word pronunciation. These students were then divided into two groups, with 50% in the control group and the other 50% in the experimental group. The experimental group participated in an intervention using video and digital games in reading class, while the control group maintained a traditional chalk-and-talk method. In addition, out of 160 pupils who participated in the study, 80 were females, and 80 were males. Among the females, 40 were in

the control group, and another 40 were in the experimental group. Similarly, the males were divided into two groups, with 40 in the control group and 40 in the experimental group. Moreover, 36.25% (n=58) in the experimental group and 13.75% (n=22) in the control group were between 6-7 years old. 13.75% (n=22) in the experimental group and 36.25% (n=58) in the control group were 8-9 years old, making a total of 100% (n=160) of all pupil respondents. In terms of class level, 30% (n=48) in the experimental group and 20% (n=32) in the control group were in standard one, while 20% (n=32) in the experimental group and 30% (n=48) in the control group were in standard two. 50% (n=80) of the participants in the experimental group were selected from school A, and 50% (n=80) were from school B (see Table 1).

Data collection Procedures
Since the study was interventional, it was designed to explore the use of digital media (video and digital games) in improving basic sounds and word pronunciation amongst lower primary school pupils of Tanzania. The intervention was conducted for 10 weeks in different phases. In the first phase, by the first week of February 2023, a pre-test was administered to all pupils. The purpose of the pre-test was to evaluate pupils' previous knowledge of basic sounds and word pronunciation before using digital media (video and games). The pre-test encompassed ten questions; the first three tested basic sound skills, and the following seven tested word pronunciation. In the second phase, the researcher conducted a one-week training for ten standard one and standard two teachers to equip them with digital media (video and games) skills to facilitate basic sounds and word pronunciation skills. During the training, teachers were taught to download various video and digital games containing basic sounds and word pronunciation modules. Teachers were also taught various techniques on how to integrate videos and games into reading activities. The main digital devices that were available at school for the intervention included projectors and laptops, which were connected to the internet to display the video and games with basic sounds and word pronunciation. The third phase involved eight weeks of experimentation, during which teachers started using videos and games to teach pupils basic sounds and word pronunciation. The lessons were conducted in the classroom context for 40 minutes in one session every day, whereby teachers integrated the reading contents with video and games to comprehend basic sounds and word pronunciation. After the eight weeks of the experiment, the post-test was conducted on the last week of April 2023 to measure the effect of video and digital games on the improvement of basic sounds and word pronunciation amongst the lower primary school pupils in Tanzania.

Table 1: Demographic Characteristics by Condition

Characteristics	Category	Intervention		Control	
		n	%	n	%
Gender	Male	40	25%	40	25%
	Female	40	25%	40	25%
Age	6-7 years	58	36.25%	22	13.75%
	8-9 years	22	13.75%	58	36.25%
Class Level	Standard one	48	30%	32	20%
	Standard two	32	20%	48	30%
Schools	School A			80	50%
	School B	80	50%		

Measures
Basic sounds and word identification skills in Pupils
To evaluate pupils' basic sound skills and word pronunciation, we designed a standardised test based on the format of the review questions from the 2018 Standard One Pupil textbook published by the Tanzania Institute of Education (TIE). TIE, a Parastatal Organization under the Ministry of Education and Vocational Training (MoEVT), is responsible for ensuring education quality in Tanzania at the preschool, primary, secondary, and teacher training levels. Before the test was given to pupils, the researcher assessed its reliability to ensure its consistency.

Reliability Statistic
The alpha coefficient for the ten items was .953, suggesting that the items have relatively excellent consistency. Note that a reliability coefficient of .70 or higher is considered "acceptable" in most social science research situations.

Table 2: Cronbach's Alpha of the items

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Basic sounds	21.73	173.834	.571	.958
Basic sounds	21.98	165.652	.755	.950
Basic sounds	22.13	164.246	.790	.948
Word pronunciation	22.39	160.089	.883	.944
Word pronunciation	22.54	160.011	.896	.943
Word pronunciation	22.71	161.130	.895	.943
Word pronunciation	22.79	161.817	.894	.943
Word Pronunciation	23.03	171.291	.822	.947
Word Pronunciation	22.92	175.031	.676	.952
Word pronunciation	23.03	171.062	.830	.947

Note: The items have relatively excellent reliability with Cronbach's alpha α= .953

Statistical analysis

We used SPSS Statistics software version 26.0 to merge two data sets with the same variables into one file. A Multivariate General Linear Model was used to determine whether there was a statistically significant linear relationship between the use of digital media (video, digital games) and the improvement of basic sounds and word pronunciation skills amongst the lower primary school pupils. We chose this statistical test because our sample sizes were equal, ensuring a homogeneous population. After all, it is not recommended if the sample sizes for each group are unequal, as the p-value would not be reliable. Before conducting a Multivariate General Linear Model, we assessed whether the data met various requirements, such as the data's homogeneity assumption and the variables' linearity. To attain this, we tested the null hypothesis of Levene's test to prove the homogeneity assumption of the variance between the variables (see Table 4). Lastly, we used the multivariate test to assess the linearity of the variables (i.e., if the independent variable has a linear relationship with the dependent variable) (See Table 6).

Findings

Mean and Standard Deviation of Pupils' Arithmetic Score over time

The mean of the basic sounds in T1 was (*M*=7.3, *SD*=3.7) for the control group and (*M*=6.9, *SD*=4.1) for the experimental group. T2 (*M*=7.9, *SD*=3.9) in the control group and (*M*=8.1, *SD*=3.9) in the experimental group. For word pronunciation, the mean of T1 was (*10.5*, *SD*=7.4) in the control group and (*M*=17.2, *SD*=9.3) in the experimental group. For T2, the mean was (*M*=12.5.*SD*= 8.7) in the control group and (*M*=21, *SD*=9.1) in the experimental group (see Table 3, Figure 2 and Figure3).

Table 3: Mean and Standard Deviation of Pupils' Arithmetic Scores over time

Skills	Time	Condition	M	SD
Basic Sounds	Time 1	Control	7.2727	3.69849
		Experimental	6.9136	4.06632
	Time 2	Control	7.8845	3.85115
		Experimental	8.1194	3.90144
Word Pronunciation	Time 1	Control	10.5224	7.36763
		Experimental	17.2434	9.32694
	Time 2	Control	12.5073	8.74549
		Experimental	21.0256	9.05135
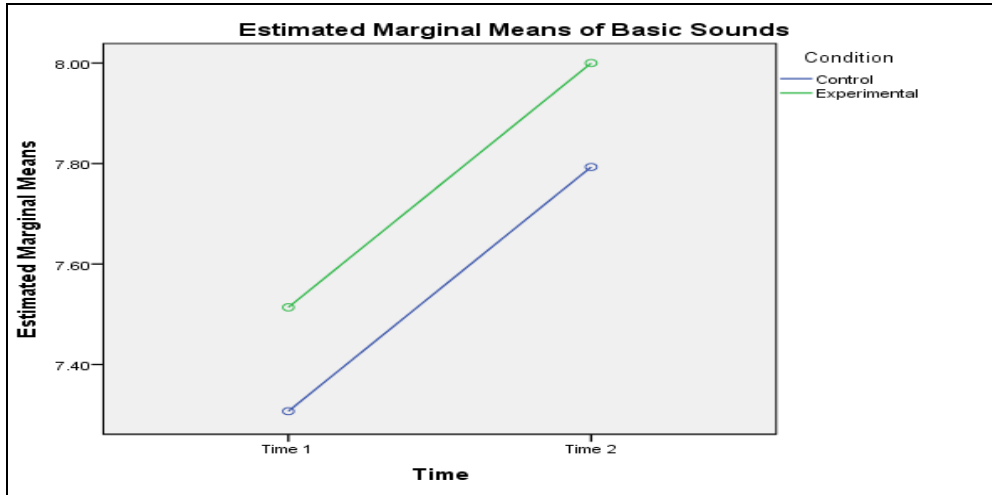
Figure 2: Means of Basic Sounds

Note: Pupil basic sound improvement for the experimental group and control group between T1 and T2
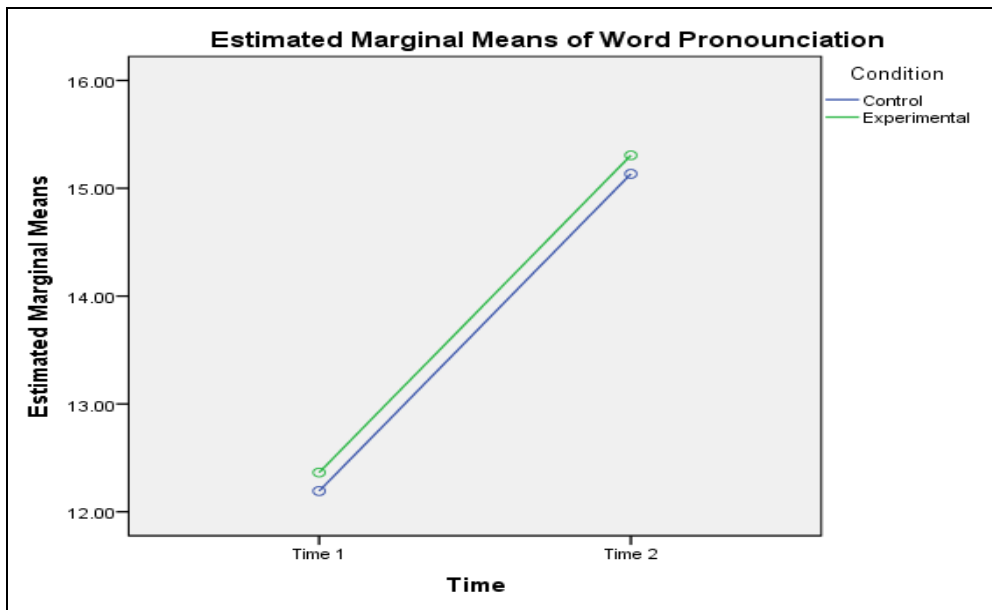
Figure 3: Means of Word Pronunciation

Note: Pupil word pronunciation improvement for the experimental group and control group between T1 and T2

Levene's Test of Equality of Error Variances
Levine's Test indicates that the null hypothesis was maintained, showing equal error variance between T1 and T2 for basic sounds $F(3,316) = .565$, $p = .639$ and word pronunciation $F(3,316) = .776$, $p = .508$. The *p*-values being

greater than, $p>.05$ means that the homogeneity assumption of the variance was met. (See Table 4).

Table 4: Levene's Test of Equality of Error Variances[a]

	F	df1	df2	Sig.
Basic Sounds	.565	3	316	.639
Word Pronunciation	.776	3	316	.508

Note: Levine's Tests suggested the null hypothesis that the error variance of the dependent variable is equal across groups was not statistically significant at $p>.05$; thus, the homogeneity assumption of the variance was met.

Correlations among Study Variables

Table 5 shows statistically significant correlations between pupils' age and the improvement of basic sounds r (160) =. -117, $p=.037$, and word pronunciation r (160) =.221, $p=.0001$. It was found that age has relationship with the use of digital media (videos and digital games) because most pupils at the specified age are motivated by the use of videos and digital games to learn basic sounds and word pronunciation (see Table 5). This study is consistent with Higgins et al. (2012), Beschorner and Hutchison (2013), and Archer and Savage (2014), who support that the use of digital media in learning among primary pupils helps them perform better due to stimulus found from the sounds, video and digital pictures.

Table 5: Correlations among Study Variables

	1	2	3
1. Gender			
2. Age	-.007		
	.899		
3. Class level	-.039	.075	
	.483	.178	
4. Basic Sounds	-.051	-.117[*]	.067
	.366	.037	.231
5. Word Pronunciation	-.081	.221[**]	.054
	.147	.000	.333

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

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

Multivariate General Linear Model

The Multivariate General Linear Model output displayed a statistically significant linear relationship between the use of digital media (videos and digital media) and pupils' (Participants) improvement of basic sounds [F (1,314) =86.4. $p=.0001$, partial η^2 =.216] and [F (1,314) =88.1, $p=0001$, partial η^2 =.219] for word pronunciation skills. The class level and school type showed non-statistical significance (see Table 6).

Table 6: Tests of Between-Subjects Effects

Source		Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
School Type	Basic Sounds	.558	1	.558	.048	.826	.000
	Word Pronunciation	25.928	1	25.928	.462	.497	.001
Class level	Basic Sounds	12.080	1	12.080	1.045	.307	.003
	Word Pronunciation	46.864	1	46.864	.835	.362	.003
Participants	Basic Sounds	998.501	1	998.501	86.380	.000	.216
	Word Pronunciation	4943.778	1	4943.778	88.068	.000	.219
Error	Basic Sounds	3629.658	314	11.559			
	Word Pronunciation	17626.604	314	56.136			

a. R Squared = .227 (Adjusted R Squared = .214)
b. R Squared = .364 (Adjusted R Squared = .353)

Discussion

Our research intervention found a statistically significant linear relationship between the use of digital media (videos, digital games) and improved reading skills (basic sounds, word pronunciation) amongst lower primary school pupils. The results proved that videos and digital games positively affect basic sounds and word pronunciation. Compared to existing literature, this study also revealed positive aspects of using videos and digital games in and outside the classroom to develop basic sounds and word pronunciation. Also, our research findings confirm a significant difference between the experimental group and the control group because the average performance of the experimental group demonstrated the greater effectiveness of videos and digital games compared to the control group. The results also align with the Cognitive Theory of Multimedia learning, as it describes how learners develop cognitive processing by selecting, organising, and integrating the information (verbal and visual) presented through videos and digital games (Mayer, 2008). This confirms the link between the use of digital media and the improvement of reading skills among the lower primary pupils. Today, pupils are more attracted to digital media such as audio, images, and video, which make reading more engaging than traditional printed books. Videos and digital games are especially beneficial in helping pupils learn new sounds and word pronunciation, as they offer additional features such as vocabulary and language elements. The findings correlate with studies by Amosa and Ogunlade (2015) and Chinooneka and Mupa (2015) who compared pupils using traditional learning methods with those using digital media (videos, digital games, pictures). Results showed significant relationship between videos, digital games, and reading skills (basic sounds and word pronunciation). The study is also in connection with Archer and Savage

(2014) who highlighted the importance of digital media such as audio, videos, pictures and digital games in enhancing learning outcomes for primary school pupils. It is suggested here that incorporating digital media in teaching, particularly through videos and digital games, can benefit lower primary school pupils by improving basic sound and word pronunciation development. Therefore, it is argued here that the Tanzanian government should take immediate and deliberate steps to support primary teachers with digital facilities and internet access to facilitate. This will ensure the use of videos and digital games in teaching reading skills and to show a solid commitment to the future of Tanzanian education.

Strength, Limitation, and Future Direction

This study differs from other studies conducted in Tanzania to address the effect of digital media (video and digital games), specifically in improving basic sounds and word pronunciation amongst Tanzanian lower primary school pupils in Dodoma City. These findings make the study distinctive from other literature regarding the effect of video and digital games in improving basic sounds and word pronunciation amongst Tanzanian lower primary school pupils. Therefore, the findings encourage education stakeholders to consider using digital media among Tanzania's lower primary school pupils. The study also opens the room for curriculum reformation in lower primary schools, which would allow the effective use of videos and digital games to facilitate basic sounds and word pronunciation. It may also attract donors to support digital facilities like computers, projectors, televisions, and tablets for running educational programmes. Since the study was experimental, more time was needed for intervention to implement digital media use effectively. Lack of competence and confidence in using digital media among primary school teachers was another challenge for the effective intervention process. A generalisation of the study could also be concrete if it involved a large sample, but generalisation was limited since it used a small sample.

As we consider the role of science and technology in primary education, it becomes clear that using videos and digital games to teach basic sounds and word pronunciation is not just beneficial but essential. Therefore, the Tanzanian government must immediately and deliberately support primary teachers with digital facilities and internet access. This will simplify the use of videos and digital games in teaching reading skills and demonstrate a solid commitment to the future of Tanzanian education.

Conclusion and Recommendations

This study highlights the general picture of the effect of digital media in improving reading skills amongst lower primary school pupils. It is

concluded here that videos and digital games improve reading skills (basic sounds and word pronunciation) amongst lower primary school pupils in Tanzania. It is therefore recommended that the policymakers, curriculum developers, curriculum implementers, teachers, and other education stakeholders consider using videos and digital games in instruction to improve basic sounds and word pronunciation amongst lower primary school pupils. Digital facilities should be considered as the compulsory teaching materials to be used in primary schools. The government budget should consider the presence of digital facilities like projectors, televisions, computers, and tablets in schools to enhance reading skills. The government should organise more capacity-building training for the in-serve and pre-service primary school teachers on using digital media to facilitate reading skills. The government should also encourage teachers to use it when facilitating classroom reading activities

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Framework for Full Integration of ICT in Assessment in Secondary Schools in Tanzania

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Abstract
In the rapidly evolving landscape of education, Information and Communication Technology (ICT) has emerged as a vital tool for enhancing teaching and learning processes. Various frameworks have been designed globally to integrate e-assessment in secondary schools. However, several studies indicate limited integration of ICT in assessment in secondary schools in Tanzania. Therefore, this study aimed to establish a framework for the full integration of ICT in assessment in secondary schools. The study adopted a qualitative research approach, and the data was collected through focus group discussion and interviews with 200 students and 50 teachers drawn from 10 secondary schools in Tanzania who were sampled through purposive sampling techniques. The study explores the content, purpose, use and effectiveness of the e-assessment using thematic coding analysis. The study established that e-assessment is beneficial and effective, yet it has not been fully integrated and adopted in secondary schools. Although some schools use ICT in teaching and learning and to some extent in the analysing of students' scores, the e-assessment which involves ICT in all assessment stages has not been realised. The study recommended that full adoption and use of e-assessment can be enhanced by the integration of e-learning in the secondary syllabus. Therefore, the government should ensure that e-assessment facilitating conditions are met.

Keywords: Assessment, e-assessment, Frameworks, Integration, Technology

Introduction
Teaching and learning processes cannot be completed without undertaking an assessment to determine the learner's achievement and instructional effectiveness (NECTA, 2021; Bashitialshaaer et al., 2021). Assessments in schools have been mainly pencil-paper based despite the call to fully

integrate Information Communication and Technology (ICT) or Education Technology (EduTech) in teaching and learning processes. However, during the outbreak of the Covid-19 pandemic, face-to-face learning programs were suspended in all schools, learning activities were halted and disrupted, and only e-learning could mediate the situation (Chakraborty et al., 2021; Das et al., 2022; Manyilizu, 2023a; Manyilizu, 2023b). Nevertheless, no learning institution was ready for a complete shift to e-learning because they could not apply ICT in all stages of learning (lesson preparation, presentation or delivery, and assessment), especially in assessment (Mchalo et al., 2021). Complete e-learning cannot be realized without e-assessment, which entails the use of technology to mediate any part of the assessment process, such as test items preparation, delivery, analysing and reporting (Burr et al., 2016). Therefore, e-assessment can be both computer-based assessment (CBA), in which technology is used to assess the learning process and computer-assisted assessment (CAA), in which the technology is used to help in the submission of coursework.

According to Swaffield (2011), e-assessment is the use of ICTs to modernize every aspect of assessment, from creating and distributing assignments to marking them (either automatically or with the aid of digital tools), reporting, storing the results and/or performing statistical analysis). Electronic assessment (e-assessment) was designed to solve and overcome challenges associated with traditional assessment (Huda & Siddiq, 2020). Some of the benefits of e-assessment over a pencil-and-paper include but are not limited to: First, openness and flexibility in which it does not need the physical presence of learners and teachers (Elsalem et al., 2021 & Yong et al., 2021). Second, it enables immediate, direct and specific feedback, auto-grading, and automated record-keeping, hence can serve a large number of students in a short period (Mate & Weidenhofer, 2022; Shakeel et al., 2021). Third, it enhances fairness by reducing human interference during the assessment process exams and shortening time spent in preparation and managing the assessment period (Elsalem et al., 2021; Yong et al., 2021 & Rayan et al., 2021). Generally, it is stated that e-assessment is more effective and efficient if appropriately applied (Ali et al., 2021; Iskandar et al., 2021; Mate & Weidenhofer, 2022).

Ngqondi et al. (2021) observed that, although blended learning has facilitated e-assessment in formative assessment in assignments distributions or project submission and quizzes, little progress has been made in adopting and using e-assessment in summative assessments (Apampa et al., 2010; Draaijer et al., 2018; UNESCO, 2020). The main challenge in adopting and using e-assessment has been reported to be academic fraud in terms of academic dishonesty and identity misrepresentation, which can easily jeopardise the

institutional integrity and the credibility of assessment (Barnes & Paris, 2013; McGee, 2013; Paullet et al., 2014).

The debate on academic fraud being more in e-assessment compared to traditional learning is because traditional pencil-paper based is done under the invigilator, while in e-assessment, students work independently with little or no formal invigilator (Barnes & Paris, 2013; King et al., 2009; McGee, 2013). In this regard, any institution offering e-learning with e-assessment should have the policy to ensure the integrity of the student's work and the credibility of qualifications, degrees and credits (Barnes & Paris, 2013; McGee, 2013). The US government policy requires that any learning institution with e-examination must implement measures for promoting academic honesty; otherwise, they risk revocation of their accreditation. Summative e-assessment is being used in universities and private sectors. Nevertheless, the e-assessment remains new and unknown in the European Union and Belgian universities being the earlier adopters (Draaijer et al., 2018). According to the literature reviewed so far, no country has conducted an e-summative national assessment for secondary schools, and little is known on this in terms of its adoption, implementation and evaluation; the literature is basically for tertiary-level education.

There are various e-assessment platforms which are in place, and some of them include Quizlet, Socrates, iSpring Suite, Google Forms, Microsoft Forms and Qorrect (Cavus & Mohammed, 2021; Grönlund et al., 2021; Kant et al., 2021 & Steindal et al., 2021). Additionally, some of the widely used activities in e-assessment are e-essay and computer-marked exams (Theresa et al., 2021). Nevertheless, the successful adoption and use of e-assessment has been challenging and minimal; many studies conducted on it have focused on learning management systems, leading to inadequate knowledge on how to adopt and use e-assessment (Ahmed & Mesonovich, 2019; Alturki, 2021; Cavus & Mohammed, 2021; Grönlund et al., 2021; Kant et al., 2021; Steindal et al., 2021). Some few studies were carried out on the adoption of e-assessment during Covid-19. They include the adoption of e-examination (Yong et al., 2021), transitioning to e-assessment (Mate & Weidenhofer, 2022), effective and authentic e-assessment tools (Butler-henderson & Crawford, 2020), propose e-examination adoption framework (Ngqondi et al., 2021), and student's attitudes towards e-examinations (Reedy et al., 2021).

The government of Tanzania and some organisations are making significant investments in ICT to be utilised in teaching and learning in secondary schools. This is carried out through policy formulation, implementation and initiatives, ICT infrastructural development and staff training to gain the

benefits that ICT offers (Banele, 2019; Manyilizu, 2023a; Manyilizu, 2023b). However, until recently, the e-assessment has not been fully integrated into the learning system in secondary schools in Tanzania; neither CBA nor CAA is in place, and no framework for e-assessment been established (Daudi & Nzilamo, 2019; Mchalo et al. 2021 & Kuboja, 2019). Therefore, this study establishes an e-assessment framework for Tanzanian secondary schools. To achieve the main objective, the study addressed the following three specific objectives;

i) To conduct situational analysis for e-assessment frameworks in relation to Tanzanian secondary schools.
ii) To determine factors for the e-assessment framework in the context of Tanzanian secondary schools.
iii) To devise a suitable framework for e-assessment in secondary schools in Tanzania.

This study provides significant contributions to educational technology and policymaking by supporting efforts to digitalize learning. Education technology supports the digital education environment, as witnessed during the COVID-19 pandemic when it facilitated continuous teaching and learning.

Electronic Assessment
Electronic assessment (e-assessment) is a systematic, continuous process of monitoring various learning pieces to evaluate learners' achievement and instructional effectiveness using ICT (Ally, 2024; NECTA, 2021). It also refers to electronic activities (e-activities) and programmes that are designed to measure learners' achievement from an instructional programme. This study focuses on the e-assessment for the evaluation of learner's achievement and instructional effectiveness as opposed to e-activities designed to measure the achievement and instructional effectiveness. There are three main types of e-assessment: diagnostic, formative and summative assessments (Ally, 2024; Huda & Siddiq, 2020). Diagnostic e-assessment is carried out prior to instruction, and it helps the teachers to know learners' individual strengths, weaknesses, and knowledge using ICT before a lesson or instruction. Formative e-assessment is conducted with ICT during the learning process to determine whether the learner can do what he or she could not do before learning. A summative e-assessment is conducted at the end of an educational activity using ICT to provide feedback that summarises the teaching and learning process at a particular level. In order to realise a full e-assessment, ICT should be fully integrated in all stages of assessment, from preparation of items, delivery, analysis and reporting of assessment (Ally, 2024; Elsalem et al., 2021).

Electronic Assessment Framework

A framework for electronic assessment (e-assessment) is expected to cover all the stages of assessment, such as preparation of test items, delivery of the tests, analysis or marking of the tests, and reporting or giving feedback (Langenfeld et al., 2022; Swaffield, 2011). The distinction between e-assessment, blended assessment and assessment frameworks is that e-assessment fully integrates the use of ICT in all the stages of assessment. Nevertheless, the barriers facing the full integration of ICT in the assessment include poor ICT infrastructure and readiness (Ally, 2024). Figure 1 below illustrates the summative e-assessment life cycle from preparation to the reporting stage.
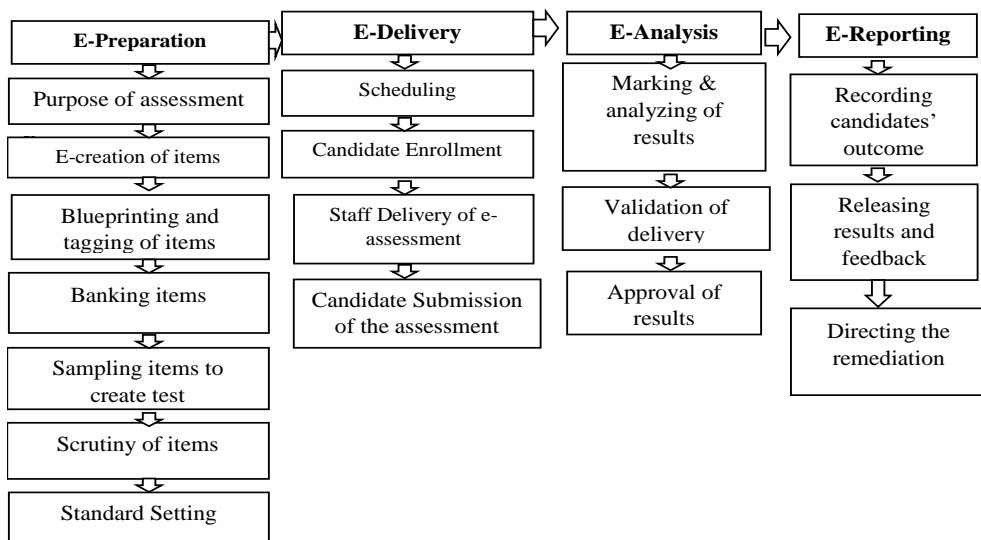
Figure 1: Summative e-assement life cycte as adopted from Burr et. (2016)

Figure 1 demonstrates the e-assessment life cycle that learners and teachers must follow while undertaking e-assessment. The cycle has four major stages: e-preparation, e-delivery, e-analysis, and e-reporting or e-relay of the feedback. The summative assessment in secondary schools in Tanzania by NECTA for (forms two, four, and six) has to follow the e-assessment cycle for it to be regarded as an e-assessment. Each phase in the e-assemenet cycle is detailed below:

E-Preparation or Assessment Generation stage

Teachers or test setters prepare tables of specification by considering learnt areas or content covered in the syllabus. From the specification table, test items or questions are constructed depending on their weight or time spent. The test items are then moderated and reviewed to make them more valid and reliable. The test items or e-assessment is then ready and stored or banked to

await delivery. During the e-preparation, the setter or examiner can fully adopt an ICT system- software program (e.g., Quizlet, Socrates, or iSpring Suite) with the syllabus, which can be automated to generate test specification tables and sample test items. The software can proofread the test items if the correct wording is used in line with the syllabus to ensure the validity and reliability of the test. The software should also be secured and free from threats and infiltration by unauthorized users.

Indeed, the advent of ICT/EduTech into assessment replaced human (human item writers) uses in constructing test items. The use of human item writers had many inaccuracies or errors in the assessment items. The use of ICT introduced the use of item engines (enhanced by artificial intelligence technologies) to construct and develop assessment items (PTC, 2002). The item engines (e.g., Computer-Adaptive Tests) are efficient in producing assessment items and help to ensure the consistency and quality of assessment items produced.

E-assessment Delivery Stage

The e-assessment delivery stage deals with the e-administration and e-delivery of CBA to the students who are to be assessed (PTC, 2002). Test items, exams or assessments are shared with the learners in order to make them give their responses. Currently, exams that NECTA sets are transported from the examination setting headquarters and delivered to the schools. On the examination date, students in their respective schools or examination centres are issued the examination papers by the invigilators, and they follow written instructions as answer they answer examination questions for various subjects. At the end of the examination, the answered scripts are taken back to the examination headquarters for pool marking. This process is tiresome and time-consuming, less secured and is likely to expose test items to unauthorised persons, hence encouraging examination leakage. There are various e-assessment delivery models that will be discussed such as computer adaptive tests. The component is developed on a web-based technology that involves communication between a central server and several remote computers connected to a computer network. It also involves the delivery of assessments using webpage interfaces (Van Vuuren et al., 2013). The system enables examiners and coordinators to assess the students regardless of location (PTC, 2002).

E-assessment Analysis Stage

This stage involves scoring and interpretation of the submitted assessment. The students' scripts are marked by the national markers, who count and record the marks in the scripts manually. The recorded marks or scores are keyed in the appropriate software for further analysis. The analysis takes

more time when not assisted by computers. To electronicize this stage, the e-assessment delivery model should be used, and the students' responses should be shared directly with the examiners with the help of a software program. Correspondingly, the scoring or marking can be automated, followed by auto-grading, and automated record-keeping. The pencil-paper-based method was time-consuming and error-prone, especially when complex calculations were involved (PTC, 2002). However, with the help of ICT, scoring and interpretation of the assessment are becoming instant. Software packages, such as pattern recognition software and Computer Based Test Interpretation (CBTI) software are examples of software packages that can be used for assessment scoring and interpretation, respectively, in a CBA (PTC, 2002; van Vuuren et al., 2013).

E-assessment Reporting stage

E-assessment reporting stage involves e-storage, e-retrieval and transmission, which involves relying on or giving the students feedback on their performance. NECTA normally gives the feedback to schools or examination centres, and the students can also access this remotely. With pure e-analysis of the students' results and auto-grading, quick feedback can be given to the examinees. In e-assessment, the system consists of a database management system (DBMS) used for storing, retrieving and transmitting data (PTC, 2002; van Vuuren et al., 2013). The data comprises assessment items that have been created, delivered, scored and interpreted by the other components of the CBA system. The DBMS required by e-assessment often depends on the amount of data set available to be stored. If a CBA system is designed to serve many students, then a commercial database management system, like Oracle or MySQL, may be required (PTC, 2002; van Vuuren et al., 2013).

E-assessment Delivery Models

There are different e-assessment delivery models that have been designed and implemented. This study only reviews three of them, from which an e-assessment framework will be used in the Tanzania context. The models are reviewed in respect to their use of adaptive algorithms, the size of the test administration units, and the nature and extent to which automated test assembly is used (Luecht & Sireci, 2011).

Computerised fixed-test or preassembled parallel

Computerised fixed-test or preassembled parallel is a reconstructed, intact test form that is administered by computer to large numbers of students. Different examinees may see different test forms, but all examinees administered the same form will see exactly the same items (Parshall et al., 2002). In the typical implementation of this model, several or many test forms of the same fixed length are available for administration, and one is

randomly selected for each examinee. The model is currently used by Microsoft and other IT certification exam agencies, Physical Therapist, and Physical Therapist Assistant licensure exams. The model's strength is that it allows a review of test forms before administration, and the examinees can skip and change answers to items, with no item selection algorithm needed. However, the limitation of the model is that there is no improvement in measurement efficiency. It has inefficient use of item pool and poor control of item exposure in case of few forms.

Computer-adaptive tests

Computer-Adaptive Tests (CAT) adapts or tailors the exam to each examinee (Davey & Pitoniak, 2006 & van der Linden, 2010). Under the purest form of CAT, this tailoring is done by keeping track of an examinee's performance on each test item and then selecting the following item to be administered (Wainer et al., 2000). Thus, CATs are sequentially developed item-by-item in real-time by the test-delivery software. The criteria for selecting the next item to be administered to an examinee can range from simply choosing items that maximise the reliability of each examinee's score to complex. The model is currently used by ACCUPLACER, ASVAB, GRE, Measures of Academic Progress, and Novell. The strength of CAT is its efficiency with respect to measurement precision and a number of items used. The limitation is its content constraints, and item exposure reduces efficiency. Moreover, it requires complex item selection. Test form QA is difficult to implement. Moreover, it requires large item banks. Poor use of the entire item pool, even with exposure controls.

Computer-adaptive multistage testing

Computer-adaptive Multistage Testing (ca-MST) is a framework for managing real-life test construction requirements for large-scale CBT applications (Luecht et al., 1996; Luecht, 2000; Melican et al., 2010; Zenisky et al., 2010). Functionally, ca-MST is a reconstructed, multistage adaptive test model (Luecht et al., 1996). The model uses a manufacturing-engineering paradigm that incorporates multistage adaptive technologies and automated test assembly (ATA) to allow test developers to maintain a greater degree of control over the quality of test forms and data. It can be used for adaptive or mastery testing applications (Breithaupt & Hare, 2007). The modern has been used by NBME (USMLE Field Tests), AICPA (Uniform CPA Examination), ETS (GRE), State of Oregon (ELPA), and Massachusetts Adult Proficiency Tests. The model's strength is due to its reconstructed content-balanced modules with targeted test information and built-in item or module exposure controls. Again, QA of tests is possible. It simplified real-time scoring and routing (score tables). Moreover, its adaptive component improves

measurement precision relative to fixed tests. Nevertheless, the model is less efficient in measurement precision than pure CAT.

The review of the e-assessment delivery models has considered their measurement efficiency, ability to ensure content balance and other test form quality aspects, risk considerations related to data management, item-pool usage, ease of implementation, and performance within large-scale and secure testing networks. In this regard, the choice of a model considers the aforementioned reviewed models have not addressed the whole cycle of e-assessment but only focused on the mode of the delivery of the assessment. As such, without the use of ICT in another stage in the cycle, then the assessment remains as Computer Assisted Assessment (CAA) as opposed to Computer-Based Assessment (CBA).

The Computer Assisted Assessment (CAA) is also undertaken in other countries at different levels. According to the study conducted by Abidin et al. (2019) in Indonesia, 577 grade 11 students from 6 high schools were assessed using Computer Adaptive Test (CAT). The technology adopted was CAT-PhysCriTS; a CAT programme was used to assess students, thinking in Physics via computer. The study from Indonesia established that the test was positive with high precision. Moreover, 98 grade 4 learners in Germany were assessed using a fixed-form test on mathematical competencies via tablets (Blumenthal & Blumenthal, 2020). The test mode was positive, and the test mode effect was negligible. Correspondingly, in the United Kingdom, 159 assessments ware were taken by at least 5,000 students as part of the UK's GCSEs, A Level equivalent. The test was negative with limited reliability, although the studied CATs showed fine results (Benton, 2021). In the cases of Indonesia, Germany, and the United Kingdom, the Computer Assisted Test is not free from challenges or weaknesses such as security threats. Moreover, no country has been established to have a complete e-assessment framework for all students at all levels of education. The majority of the countries have either computer-assisted assessments or pure pencil paper-based assessments.

According to the literature, the use of ICT for teaching and learning is viewed as having numerous advantages over the traditional method if it is optimized, and integrated in all stages of the teaching and learning process. However, the ICT has been minimally used in the assessment of the students, and no country has fully integrated it in the assessment of the students. Although many studies have revealed that ICT is minimally used in assessment in secondary schools and even in Tanzania, there is no established scale for evaluating e-assessment in schools in Tanzania. This is more challenging since e-learning cannot be completed without the e-assessment. Therefore,

the study fills the gap by establishing a scale for evaluating e-assessment in secondary schools in Tanzania.

Facilitating Conditions for E-assessment

Adoption and implementation of e-assessment requires enabling conditions, which other studies term as e-assessment system enablers. Having established a model for e-assessment, critical success factors that are needed include policies, processes, organizational structures, personality traits evaluation and promoting anti-academic fraud attitude, ICT infrastructures, and people's skills and competencies (Ballentine et al.,2019; Huygh et al., 2018).

The enabling factors of e-assessment can also be grounded on the theories, and this borrows from extended Technological, Organizational and Environmental (TOE) framework together with socio-technical theories. The TOE framework holds that in order to adopt and use e-assessment, technological, environmental and environmental factors should be considered. The technological factors include internet access, computing devices and ICT infrastructure. The organisational factor is the institutional support in the form of policies. The environmental factors are academic integrity and individual factors such as digital skills and user perceptions (Mahlangu & Makwasha, 2023). E-assessment cannot take place if the examiners and examinees do not have internet access, computing devices, or the digital skills to access and navigate e-assessment platforms. Examiners and examinees need at least a smartphone and a stable internet connection to access e-assessment platforms.

Moreover, the socio-technical theory posits that an information systems problem can be addressed by focusing on the social and technical sub-systems. This is so because the success of an information system or technical solution depends upon its social rather than technical implications (Ngqond et al., 2021). Accordingly, the theory champions that e-examination framework is composed of two modules; the technical sub-system which is composed of the authentication and continuous monitoring and social sub-system which is e-examination system enablers. The theory suggests that e-assessment frameworks should not only be at the conceptual stage or techno-centric but they should also consider the different social standing among examiners and examiners (Amigud et al., 2018*).*

Knowledge Gap

The review and analysis of the existing ICT frameworks for e-assessment are based on global best practices, the African regional context, and Tanzania situational analysis. According to the researchers, the level of adoption of e-

assessment in secondary schools globally has not taken shape as compared to higher education even though the adoption has been increasing after the COVID-19 pandemic (Margiene & Ramanauskaite, 2022; Vergonia & Mombas, 2022). In African countries, the implementation of e-assessment in secondary school is affected by limited infrastructure and inadequate access to technology. Although Tanzania has made positive steps in integrating ICT into education, a specific and concrete national-level ICT framework particularly dedicated to e-assessment has not been identified in the readily available information. Consequently, establishing a framework for the full integration of ICT in assessment in secondary schools is justified.

Methodology
The study used a qualitative approach, enabling the respondent to narrate and explain their views. The study used a descriptive research design to gain a comprehensive understanding of the phenomenon under study. Only public secondary schools with ICT were considered for the study since they could reflect the general situation of schools in Tanzania. The study was conducted in ten public secondary schools in Arusha city council in Tanzania. A total of 200 students, 20 from each school, were purposively sampled and took part in Focus Group Discussion (FGD). In contrast, 50 teachers, 5 from each school, were also sampled and interviewed. The primary data were collected from respondents using an interview as a data collection method. In contrast, secondary data was collected using documentary analysis of NECTA guidelines on the assessment procedure for secondary schools and professional levels and various frameworks for e-assessment. The primary data was analysed using thematic coding analysis. The frameworks were critically analyzed to gain more information on e-assessment and data was summarized, compared and appropriated to Tanzania context. The finding was important in establishing a framework for full integration of ICT in assessment in secondary schools. Research ethical consideration was met and upheld throughout the study; research permission was given from the authority, respondents' consent was sought, their confidentially was ensured, and they were not harmed. The findings were honest and appropriately reported.

Results and Discussions
The findings are from primary data collected from the focus group discussions, and interview while the secondary data are from documentary analysis as presented in the tables below:

Table 1: Thematic coding analysis for NECTA summative assessment in Tanzanian secondary schools

Verbatim Transcription	Themes	Codes
Our NECTA summative assessments in secondary schools are mainly manual, and ICT is minimally used; we can say the assessment is blended with some ICT. **FDG 1, FDG 3**	Nature of Assessment	NOA
Most of the activities are manually carried out in preparation for the NECTA summative assessment in secondary schools. It is more of paperwork. I wish ICT could be used in this hectic stage to reduce the workload. **I 6**	Assessment Preparations	AP
The assessment always takes a long time to be delivered from the NECTA headquarters to the students in the examination centres. This is too costly and can also compromise the security and integrity of the assessment by encouraging exam malpractices. E-delivery can address this challenge. **FDG 5, FDG 7**	Mode of Assessment Delivery	MAD
There are many students, and marking, scoring, and recording their scripts is tiresome and expensive. Imagine examiners have to travel from different regions of Tanzania to marking centres for this exercise. I wish this process could be fully computerized. It can be more effective and accurate. **I 13**	Assessment Analysis.	AA
The use of ICT has made us and our schools receive our NECTA exams very fast; immediately, the ministry releases results. We got the results from the NECTA portal. This is very nice. If all the learning processes were like this, we would enjoy it. **FDG 15**	Assessment Results Reporting	ARR
My take as a teacher, I would say that e-assessment is very effective and flexible. However, it is not currently practicable in Tanzania due to the lack of or inadequate facilitation of conditions such as ICT infrastructure, a supportive curriculum, and poor attitudes from some stakeholders. **I 28**	Barriers to E-assessment	BEA
We feel that the use of ICT in the examination will give way to the use of ICT in some stages of learning. This will make learning more flexible for most secondary school students. Therefore, barriers should be eliminated in order to use ICT in assessment fully. **FDG 19**	Merit of E-assessment	MEA

Table 1 above shows the thematic coding analysis from focus group discussions with students and teacher interviews. The results reveal that the assessment done in Tanzania secondary schools is majorly paper-based (FDG 1, FDG, 3). This is because most of the activities in stages of the assessment cycle use ICT at a minimal level (AP, I 16; MAD, FDG 5, FDG 7). However, the study established that the reporting of students' results is more computerised as compared to other assessment stages (ARR, FGD, 15). The respondents highlighted the benefits of e-assessment as being effective, flexible and more accurate than paper-based assessment (ARR, FGD, 15; MEA, FGD, 19; BEA, 28). The main factors impeding the full use of ICT in assessment were poor or lack of facilitating conditions such as ICT infrastructure, ICT integrated curriculum and stakeholder attitude (BEA, I 18). In this regard, the findings recommended that in order to have e-

assessment in secondary schools in Tanzania, the barriers should be eliminated, and e-learning should be encouraged (FDG, 19).

The findings provide significant insights into the existing assessment methods, difficulties, and prospects for ICT integration. The study indicates that NECTA summative assessments are primarily conducted manually, with limited integration of ICT, leading to a "blended" paradigm (FDG 1, FDG3). This signifies that although ICT is being implemented, its utilisation is still restricted. The findings concur with the study by Ramli et al. (2020) which noted that the use of electronic and paper-based assessment modes differs based on the stage of the assessment life cycle and the kind of assessment. The authors observed that a combination of electronic and paper-based modes is good although the electronic mode is better compared to the paper-based assessment. The combination of the two modes of assessments, paper-based and electronic, can take place in a similar stage of the assessment life cycle or in different stages.

Extensive integration could modernise the evaluation process, diminish inefficiencies, and improve overall efficacy. This concurs with Ally (2024), who reported that e-assessment is an inevitable and important part of the Tanzanian education system in the 21st century. The author observed that although e-assessment is urgently needed in schools, it is feasible for teacher education compared to secondary schools due to greater readiness in teacher training colleges. The feasibility of e-assessment is about 6.4% in secondary schools in Tanzania, specifically those that already teach computer science. Moreover, Ramli et al. (2020) observed that although examination question papers are important, their creation is very tedious, time-consuming and expensive; they are prepared with full focus, right formatting, and the right selection of questions. Consequently, the authors encourage and advocate the use of e-assessment.

Further, preparatory activities for NECTA examinations, including test scheduling and question paper management, are predominantly manual and reliant on paperwork (**I 6**). This imposes considerable burdens on educators and administrators. Therefore, incorporating ICT solutions, such as automated scheduling tools and digital logistics platforms, could optimise these operations and save time and resources.

Moreover, the delivery of assessments from NECTA headquarters to examination centres is slow, expensive, and susceptible to security threats and malpractice (FDG 5, FDG 7). Participants highlighted that digital delivery options could mitigate these problems, facilitating expedited, secure,

and economical exam distribution. Encrypted electronic delivery systems are a viable way to enhance the integrity and efficiency of the process.

The manual marking and scoring of student scripts is laborious, expensive, and susceptible to inaccuracies (**I 13**). Hence, implementing techniques such as optical character recognition (OCR) and automated scoring systems to computerise the marking process could enhance efficiency, accuracy, and uniformity, thereby addressing a particularly time-consuming phase of assessment. Although the e-scoring is effective, the finding of Gardner et al. (2021) reported that Automated essay scoring (AES) systems can assess technical aspects of writing but struggle to evaluate the creative and higher-order dimensions of writing. Moreover, the authors noted that computerised adaptive tests (CATs) dynamically adjust test item difficulty based on examinee responses in large-scale assessment data. However, its implementation on a large scale remains challenging.

Furthermore, for assessment results reporting, ICT has previously successfully exhibited its capability in result distribution. Educational institutions can now obtain NECTA exam results nearly instantaneously via the NECTA portal, demonstrating the efficacy of information and communication technology in this evaluation phase (**FDG 15**). Extending analogous ICT integration into the preparatory and delivery phases may produce more advantages.

Participants also acknowledged the capacity of ICT to enhance the flexibility, efficacy, and alignment of assessments with comprehensive learning processes (**FDG 19**). By removing current obstacles, ICT might significantly improve the education system and facilitate smooth incorporation into both instruction and learning.

Despite the advantages, numerous obstacles impede the comprehensive integration of ICT in assessments (Msambwa, 2024). These factors include insufficient ICT infrastructure, a curriculum that inadequately facilitates e-assessment, and opposition from stakeholders stemming from limited awareness or negative views (**I 28**). The findings correspond to Swai et al. (2024), who reported that although about 62% of teachers were trained in using ICT as a pedagogical, they did not use ICT in assessment, but they use it various teaching activities. Swai et al. believe that teachers did not use ICT for assessment due to inadequate equipment, lack of ICT skills, and unreliable internet and electric power issues. The authors suggested that all teachers should be trained in the use of ICT for both teaching and assessment, and the identified challenges should be addressed to enable effective integration of ICT in secondary education.

Addressing these obstacles necessitates strategic investments in infrastructure, revisions to the curriculum to correspond with digital assessment techniques, and extensive training initiatives to alter stakeholder views. The study highlights the revolutionary potential of ICT in upgrading secondary school evaluations in Tanzania. Policymakers must prioritise enhancing ICT infrastructure, revising curricula to facilitate digital assessment methods, and implementing awareness campaigns to mitigate stakeholder resistance. A phased deployment strategy, commencing with the automation of preparatory and assessment stages, may yield substantial advantages and promote wider acceptability. These initiatives will establish a safe, efficient, and adaptable assessment structure that accommodates the increasing requirements of Tanzania's education system. The Table 2 below is a summary of the findings.

Table 2: Summary of the findings from primary and secondary data on e-assessment in Tanzanian Secondary schools

| Stages/ Cycles | Secondary from Documentary Analysis | | | Primary Data from FGDs and Interview |
	Activities	Model/Technology	Facilitating Conditions	Application in Tanzania
E-Preparation	Construction of: • Test items specification table &Test items. • moderation of test items • Storage of test items	• -Test items engines with artificial intelligence technologies	• Suitable ICT infrastructure • Skills and knowledge on technology	• Test items are constructed using human item writer aided with Microsoft word. • It is pencil-paper based. No specific e-preparation model in schools More time is spent in the process and more leakage of test items. • Students & teachers are willing to shift to test item engine.
E-Delivery	-Sharing the assessment with the examinee. Communication.	• Web-based technology. • Computerized Fixed Test. • Computer Adaptive Test. • Computer-Adaptive multistage Testing	• Suitable ICT Infrastructure • Skills and Knowledge on Technology. • Institutional support. • TOE factors	• Manual delivery. • More time is spent • More assessment leakage. • No specific software to aid in delivery. • Students &Teachers are willing to shift to e-delivery model.
E-Analysis	• Marking/scoring • Recording • Interpretation /grading	• Pattern Recognition software • Computer Based Test Interpretation (CBTI)	• Suitable ICT Infrastructure • Skills and Knowledge on Technology. • Institutional support. • TOE factors	• Manual marking • Manual entry of scores in software. • Analysis is ICT assisted. • More time is spent & is prone to error. • No particular software is available • Students & teachers are willing to shift to e-analysis.
E-Reporting	• Storage • Retrieval • Transmission of feedback	• Data Based Management System (DBMS)like Oracle or MySQL	• Suitable ICT Infrastructure • Skills and Knowledge on Technology. • Institutional support. • TOE factors	• Storage is blended. • Retrieval is blended. • Transmission is blended. • Reporting is not instant. • No particular Data Based management System. • Students and teachers are willing to shift to e-reporting.

According to the findings in Table 2 above, the summative e-assessment process has four stages or cycles: e-preparation, e-delivery, e-analysis and e-reporting. The assessment is regarded as an e-assessment if all the stages and activities are computer-based. However, if the stages and activities are computer-assisted or blended with ICT, it is termed as Computer Assisted Assessment (CAA) and not an e-assessment. The literature has reviewed the various activities in every e-assessment stage, as summarised in the table. Moreover, the activities have different models or technology to support them. The findings also reveal the facilitating conditions to support the model.

Teachers and students were interviewed about how activities are performed at every assessment stage in summative assessment in Tanzania, and their views were recorded. They were also asked about the weaknesses of the models used against the e-assessment models. Further, they were asked if, indeed, an e-assessment model or technology is being employed at every stage of the assessment. Finally, the respondents were questioned on their willingness and readiness to shift to e-assessment. The findings highlight the gaps and prospects across the different stages of the assessment cycle: preparation, delivery, analysis, and reporting. During the E-Preparation phase, tasks, including the formulation of test item specifications, the moderation of test items, and their secure storage, are presently conducted manually. Test item writers depend on fundamental tools such as Microsoft Word, resulting in a procedure that is paper-based, labour-intensive, and susceptible to security vulnerabilities, including test item leaking (LaFlair et al., 2022). Technologies like artificial intelligence-driven test item engines could automate this procedure, improving efficiency and security. Nonetheless, implementing such systems necessitates appropriate ICT infrastructure and specialised expertise. Notwithstanding the constraints, educators and learners are prepared to adopt these technologies, contingent upon requisite resources and training availability.

The E-Delivery phase, which entails distributing evaluations to examinees, is predominantly manual. This conventional method is sluggish, ineffective, and vulnerable to assessment leakage owing to the absence of specialised delivery software. Adopting web-based platforms, automated fixed assessments, or computer-adaptive multistage testing may resolve these challenges. Effective execution necessitates a resilient ICT infrastructure, institutional backing, and skilled individuals. Although these technologies are not presently implemented, stakeholders

demonstrate a robust inclination to adopt e-delivery solutions for enhanced efficiency and security.

During the e-analysis phase, tasks including marking, scoring, recording, and analysing results are predominantly manual, with minimal ICT support for score entry. This manual method is laborious, susceptible to errors, and ineffective (Gardner et al., 2021). Pattern recognition software and Computer-Based Test Interpretation (CBTI) systems have the potential to automate these procedures, thereby enhancing accuracy and alleviating workload. The absence of specialised e-analysis tools hinders advancement. Educators and learners are eager to embrace innovative technology, contingent upon the availability of requisite infrastructure, training, and support.

The E-Reporting phase encompasses the storage, retrieval, and transmission of feedback, utilising a combination of manual and ICT-assisted techniques. Reporting is not immediate, and there is no specialised database management system (DBMS) to facilitate efficient storage and retrieval. Comprehensive DBMS solutions such as Oracle or MySQL can optimise this phase, facilitating adequate storage, immediate retrieval, and automatic feedback delivery. Although there is limited ICT integration at this level, both instructors and students demonstrate a willingness to shift to a completely digital reporting approach, provided that sufficient equipment and training are available (Quraishi et al., 2024).

Prevalent obstacles throughout all phases encompass deficient ICT infrastructure, constrained skills and expertise, and inadequate institutional support (Swai et al., 2024). These obstacles must be resolved to facilitate the complete incorporation of e-assessment technologies. Moreover, maintaining confidentiality and integrity during the assessment process is essential for securing stakeholder trust (Owan et al., 2023).

Although Tanzanian secondary schools predominantly depend on manual assessment processes, students and instructors are generally enthusiastic about the adoption of e-assessment technology (Ally *et al.,* 2024). The effective implementation of e-assessment necessitates investments in ICT infrastructure, training initiatives for stakeholders, and robust institutional backing. Addressing these difficulties can boost the efficiency, accuracy, and security of e-assessment, thereby revolutionising the education system in Tanzania. Based on the information gathered, as demonstrated

in Table 1, a framework for summative e-assessment in secondary schools in Tanzania is proposed in Figure 1 below:

Proposed Framework for E-assessment in Tanzanian Secondary Schools

The framework for full integration of ICT in assessment in Tanzania secondary schools considers the assessment stages, activities, suitable models, facilitating conditions and the status of Tanzania, as demonstrated below in Figure 2
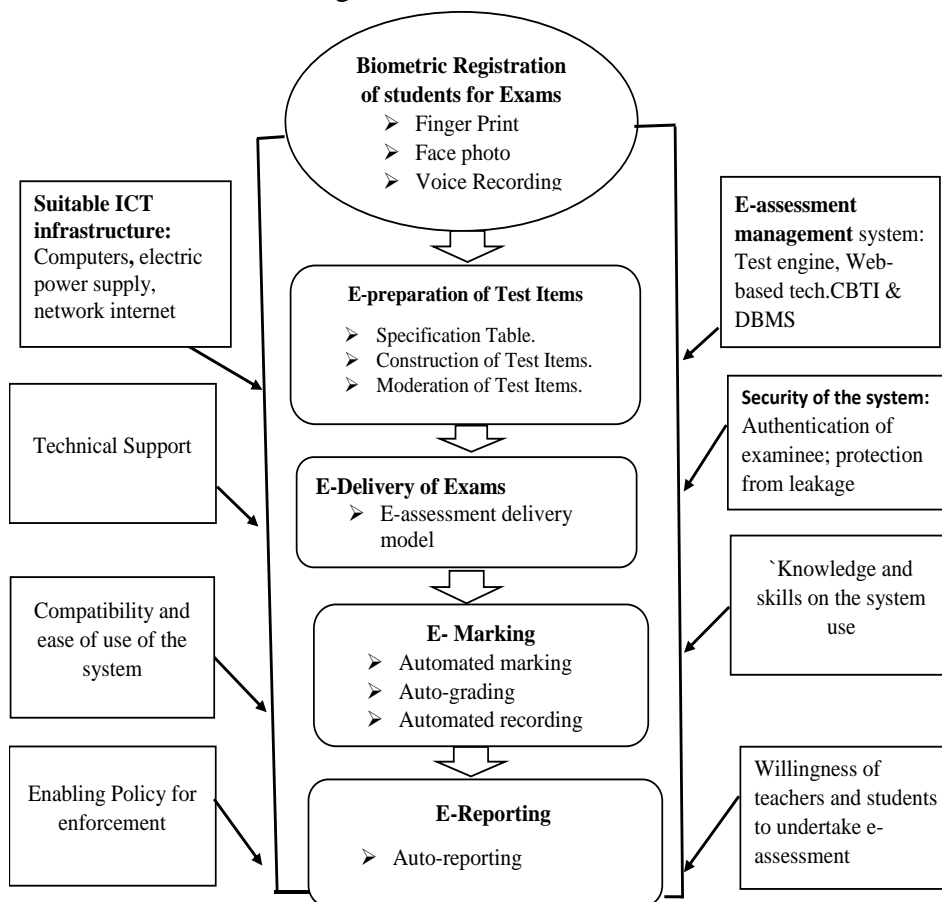
Figure 2: Framework for e-assessment in Tanzanian secondary schools

According to the framework in Figure 2, the students should be biometrically registered for exams in order to identify and authenticate them and avoid cases of impersonation. All the stages of assessment are executed or undertaken using technology or computerised until the end. The e-assessment system is also surrounded by facilitation conditions to

enable it operate. The NECTA can design the system and ensure that facilitation conditions are provided for the facilitation of the system.

Conclusion

The study has established e-assessment components and facilitating conditions, its usefulness and effectiveness in assessment and largely in the teaching and learning process. The current summative assessment in Tanzania secondary schools is generally pencil-paper based, with some computer-assisted activities. Moreover, e-assessment models are not available in schools even though teachers and students are willing and ready to shift from manual assessment to e-assessment in order to gain from its numerous benefits. The study recommends that full adoption and use of e-assessment can be enhanced by the integration of e-learning in the secondary syllabus. The government and other educational stakeholders should design policies that can provide and enforce e-assessment in secondary schools in Tanzania.

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Assessing the Pro-Environmental Behaviour of Junior Secondary School Students in Dekina Local Government Area of Kogi State

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Abstract
The study assessed the pro-environmental behaviour of junior secondary school students in Dekina local government area of Kogi State. The study set out to examine students' private sphere environmental behaviours and assess students' levels of environmental activism. Two research questions were raised to guide the study. The study employed a descriptive survey research design. The population for the study comprises all five thousand nine hundred and fifty-three (5,953) students from thirty-five (35) public secondary schools in Dekina local government area of Kogi State. The area of the study was selected using a simple random sampling procedure. Two hundred (200) junior secondary school students in the five selected public secondary schools were

selected using a convenience sampling procedure. The instrument used for this study was a questionnaire tagged "Pro-Environmental Behaviour Questionnaire (PEBQ)" (R = .80). Data were analysed using descriptive statistics of simple percentage, mean and standard deviation. The findings show a high disposition towards pro-environmental behaviour and a low level of environmental activism among the students. Based on the findings, it was recommended that schools make students pro-environmental activists as part of the criteria to appoint prefects in their schools. Students who are environmentally responsible should be rewarded with motivation by the school authority. Also, schools should provide more orientation for the students on responsible dispositions to their environment.

Keywords*: Pro-environmental behaviour, environmental behaviour, environmental attitudes, environment, behaviour.*

Introduction

Environmental problems characterised by citizen negative environmental behaviour within the country are getting worse each year. There have been continual releases of air pollution by the industries in our cities, deforestation within the forest zone of the country, soil erosion and, most importantly, land pollution occasioned by indiscriminate dumping of refuse along the roads in our cities (Wong et al., 2020; Soluade & Sofadekan, 2020). The natural stability of our environment is being tampered with on a daily basis due to the uncontrolled anti-environmental behaviours of the citizens in society (Simiyu et al., 2022).

The rate of environmental problems caused by human activities has made scholars focus more on individual environmental actions in recent times, which may either be environmentally friendly or not. Therefore, stakeholders are currently calling for environmental preservation and conservation campaigns to respond to the crises generated by the anti-environmental behaviours of citizens (Kim & Stepchenkova, 2020; Sousa et al., 2021). Environmental problems are mostly driven by human behaviour, which can be reduced through pro-environmental behaviours (Blankenberg & Alhusen, 2019). Simiyu et al. (2022) are of the opinion that social influence strongly impacts students' environmental knowledge and that social influence and environmental knowledge significantly predict environmental behaviours. The conclusion of Ogunjimi and Oniya (2016) supports the above assertion that religion, childhood, out-

of-door experience and membership in environmental organisations were the determinants of environmental attitudes and behaviour. This shows that human actions are very important in reducing environmental problems in our society. Also, pro-environmental activities are motivated by people's social groups, environmental knowledge and values system (Wong et al., 2021; Rampedi & Ifegbessan, 2022).

Observation within the Dekina Local Government of Kogi State shows that waste is disposed of at the roadside. Most of the waste comes from household domestic activities (Alozie et al., 2020). Appropriate waste management practices in schools constitute one of the major problems in achieving sustainable waste management in Nigeria. Observation within a few schools shows that waste paper, plastics, and nylon are waste most generated within the school compound. The most common waste disposal methods are dustbins and open burning, which attract odour, pest infestation and splurging (Ana et al., 2011; Adeniyi et al., 2023). One common waste disposal practice among the indigenous people that has spread to the school is that refuse is dumped without being properly packed. This has always exposed the staff and the students to air pollution and health challenges. The most common types of solid waste found in various schools in Anyigba include paper, sachets (water, biscuits, sweets and so on), sugar cane, maize and groundnut shells. Most schools have open grounds where refuse is dumped and later burnt which contaminates the land and constitutes a health hazard. Observation has shown poor waste handling practices and inadequate provision of solid waste management in schools within the Anyigba metropolis. An adequate level of solid waste management is essential in promoting the consciousness of sustainable environmental practices among students. Pro-environmental behaviour is essential in helping the students develop a good attitude towards solid waste management. Most students lack awareness and concern about the consequences of improper handling of solid waste within the school compound and in society (Miller et al., 2022). Ifegbesan (2010) identifies a relationship between age, gender, educational level, occupation and location and solid waste handling and disposal within the community and school settings. Studies have shown improper disposal of waste in Nigeria, and most of the waste is disposed of by the roadsides, streets and waterways (Agwu, 2012; Lawal 2014; Soluade & Sofadekan, 2020). Improper solid waste management within the metropolis by the inhabitants of which the students are part raises the concern of the researcher to assess the disposition of students to pro-

environmental behaviour in Dekina Local Government area of Kogi State, Nigeria.

Pro-environmental behaviour refers to all behaviours undertaken by individuals or groups of people that cause positive environmental impact (Stern, 2000; Blankenberg & Alhusen, 2019). Also, Kollmuss and Agyeman (2002) conceptualise pro-environmental behaviour as behaviour that consciously seeks to minimise the negative impact of individual action on the natural environment and improve environmental sustainability. The focus here is on human actions that lead to environmental sustainability. In addition, Wong et al. (2021) define pro-environmental behaviour as behaviour that deliberately seeks to minimise the adverse effects of one's activities on ecological systems. In other words, Hawcroft and Milfont (2010) see a pro-environmental attitude as an individual concern for the natural environment and an opinion towards the ecological environment (Hawcroft & Milfont, 2010). Lange and Dewitte (2019) stress that pro-environmental behaviour is carrying out acts that benefit the environment and omitting acts that harm it. Lange et al. (2019) further stress that pro-environmental behaviour includes people's choice to conserve the environment and reduce consumption and destruction of natural resources. However, Wyss, Knoch and Bergers (2022) suggested that self-control is the most crucial trait for protecting people's long-term pro-environmental goals.

Environmental damage is caused by unrestricted human activities such as unsustainable natural resource consumption and increased generation of hazardous water, air and water pollution. Environmentally unfriendly activities are one of the root causes of environmental damage. There is a need to raise pro-environmental consciousness in order to reduce levels of environmental damage and achieve sustainable environmental development (Rampedi & Ifegbesan, 2022). In other parts of the world, campaigns aimed at creating awareness about pro-environmental attitudes have contributed to public understanding and raised the consciousness of citizens about the relationship between their environmental attitude and environmental sustainability. Many policies in advanced countries within Europe and America have emphasised intervention campaigns that focus on shaping pro-environmental attitudes and raising awareness about the adverse effects of negative environmental behaviour (Abrahamse et al., 2005). However, the students' disposition towards environmental

sustainability within Dekina local government area of Nigeria is still questionable. This is one of the reasons for this study.

Hidayah and Agustin (2017) assessed high school students' pro-environmental behaviour in West Bandung, Indonesia, under six domains: recycling, waste avoidance, consumerism, energy conservation, mobility and transportation and vicarious conservation behaviour. The study also revealed that science can potentially improve students' pro-environmental behaviour. Tian et al. (2020) assessed the relationship between pro-environmental attitudes and employee green behaviour, focusing on motivational states and green work climate perception in Beijing, China. The findings showed that pro-environmental attitude positively predicted required employee green behaviour and voluntary employee green behaviour and that controlled and autonomous motivations mediated the relationships. The results also show that the positive role of pro-environmental attitude in controlled motivation and autonomous motivation was moderated by green work climate perception. Wyss, Knoch, and Berger (2022) provide an insight into the motivational, dispositional and structural factors underlying pro-environmental behaviour. The result show that pro-environmental attitudes are more than productive of pro-environmental behaviour when costs are low or environmental benefits are high. Evert, Coetzee and Nell (2022) explore the environmental attitudes of undergraduates at a South African University. The result indicated that students' environmental attitudes lean more towards utilisation, which is a mostly anti-environmental preservation factor.

Combating this problem created by citizen anti-environmental behaviour will require public participation and the creation of awareness among the populace to prevent a more critical situation, as concept waste within society can lead to communicable diseases like cholera. Therefore, assessing the pro-environmental behaviour of the students at the junior secondary school level in Nigeria becomes important, as this will help to determine students' environmental behaviour and suggest appropriate solutions towards reducing waste in our society and promote their environmental behaviour. Rampedi and Ifegbesan (2022) concluded that increasing pro-environmental behaviour among citizens would require introducing and supporting development programmes that enhance access to more educational awareness across all populations and groups. This study had the following two research objectives:

i)   To examine students' private sphere environmental behaviours.
ii)   To assess the levels of student environmental activism.

Methodology

The study employed a descriptive survey research design to assess the pro-environmental behaviour of junior secondary school students in Dekina Local Government area of Kogi State. The population for the study comprised all five thousand nine hundred and fifty-three (5,953) students from thirty-five (35) public secondary schools in the Dekina local government area of Kogi State. Two hundred (200) junior secondary school students in the five selected public secondary schools were selected as a sample for the current study. The schools were selected using a simple random sampling technique, while the respondents were selected using a convenience sampling procedure. Data were collected through "Pro-Environmental Behaviour Questionnaire (PEBQ)" questionnaires. The content and face validity of the questionnaires were established by presenting a copy of the draft questionnaires to two experts in the field of test and measurement for further scrutiny and modification. This was to ascertain the instrument's suitability in terms of language, presentation, clarity and applicability. Based on their comments, the necessary modifications were made. Also, a pilot study was carried out on randomly selected students in Iddah district of Kogi State. Cronbach Alpha was used to determine the reliability coefficient of the instrument, which was found to be 0.80.

The researcher personally submitted the questionnaires to the respondents. The activity lasted for four weeks. Before the data collection, the permission from school authority, the students, and their parents was secured. The respondents were assured of the confidentiality of their responses. The data were coded, processes using Statistical Package for Social Science (SPSS) and analysed using descriptive statistics of mean and standard deviation.

Results

Objective 1: Examine students' private sphere environmental behaviours

Table 1: **Distributions of student's private sphere environmental behaviours**

Waste	Roadside	Flowing river	waste bin	Drainage	Dump site
Pure water nylon	24(12.0%)	10(5.0%)	154(77.0%)	12(6.0%)	0(0.0%)
Bottle water	30(15.0%)	14(7.0%)	112(56.0%)	4(2.0%)	40(20.0%)
Soft drinks bottle	34(17.0%)	12(6.0%)	114(57.0%)	10(5.0%)	30(15.0%)
Sweet/Chewing gum	56(28.0%)	4(2.0%)	114(57.0%)	8(4.0%)	18(9.0%)
Paper	24(12.0%)	8(4.0%)	148(74.0%)	2(1.0%)	16(8.0%)
Fruit peals	22(11.0%)	10(5.0%)	120(60.0%)	4(4.0%)	40(2.0%)
Total	190 (15.83%)	58(4.84%)	762(63.52%)	44(3.67%)	104(12.14%)

Table 1 above shows the students' private sphere pro-environmental behaviour in public secondary schools in Dekina local government area of Kogi state. The most common waste management the students adopt is disposing of their waste inside the waste bin. The grand total shows that the students dropped their waste mostly inside the waste bin provided by their schools and the community 662(63.52%); this is followed by disposing of waste by the roadside 190(15.83%), dump site 104(12.14%), flowing river 58(4.84%) and inside drainage 44(3.67%). Adding the percentage of pro and anti-environmental behaviour together shows that students disposing of their waste inside water bins and dump sites recorded 886(75.66%) and roadside, flowing river and inside drainage recorded 292(24.34%), this shows that students' pro-environmental behaviour is high among the junior secondary school students in Dekina local government area of Kogi state.

Objective 2: Assess levels of students' environmental activism

Table 2: Distributions on student's level of environmental activism

SN	Items	N	Mean	SD
1	I encourage my mates to be environmentally friendly	200	2.60	.585
2	I promote environmentally friendly behaviour among my mates	200	2.44	.623
3	I persuade others to keep the drainages on the street clean	200	2.25	.755
4	I join others to perform environmental actions within the society	200	2.21	.713
5	I participate in environmentally friendly events sponsored by my school	200	2.23	.800
6	I encourage my friendly products	200	2.39	.693
7	I suggest to my mates how to reduce the disposable materials	200	2.23	.692
8	I join others to plant trees within the environment	200	1.97	.769
9	I encourage my mates always to sweep their surroundings Before coming to school	200	2.63	.644
10	I join others to keep the school compound clean	200	2.53	.672
11	I talk to my mates when they drop papers in the school Compound	200	2.08	.732
12	I talk to my family and friends about what they can do to solve an environmental problem	200	2.39	.721
13	I oppose any environmental regulations that would restrict my way of life	200	2.42	.792
	Grand Average Total		2.34	.378

Table 2 above shows the student's levels of environmental activism. Item 9, which stated that I encourage my mates to always sweep their surroundings before coming to school, recorded the highest item on the distributions with the mean of (X = 2.63, SD = .644). This was followed by item 1, which stated that I encourage my mates to be environmentally friendly with the mean score of X = 2.60, SD= .585 and item 9, which also stated that I join others to keep the school compound clean (X=2.53, SD = .672). The item with the lowest mean score is item 8, which stated that I joined others to plant trees within the environment (X=1.97, SD = .769). The total average mean score of the distribution shows (X = 2.34, SD = .378). This implies that students' level of environmental activism is still low.

Discussion of Findings
This study assessed junior secondary school students' pro-environmental behaviour in Dekina local government areas of Kogi state. The findings in relation to objective one of the study show that junior secondary school students' pro-environmental behaviour in the Dekina local government area of Kogi state is high. This supported the findings of Akil and Ho

(2014) and Tian et al. (2020), who have found positive levels of disposition and public participation of students in waste management in their study. This, however, is in contrast with the findings of Eneji et al. (2017) and Soluade and Sofadekan (2020), who found negative attitudes of students toward waste management. The positive environmental disposition found here could be the result of the student's school disposition towards waste management as schools are fond of pasting messages like "Keep the School Clean and Green", which promotes pro-environmental behaviour in the school compound. This suggested that schools can enhance the students' skills of promoting good environmental sustainability when students are made to practice what they have learnt in social studies and civic education classes.

In addition, finding in reference to objective two of the study on the levels of environmental activism, the students engaged in shows that students' level of environmental activism is still low. This is supported by the findings of Eneji et al. (2017), who also found low levels of students of pro-environmental disposition in their study. This finding might be contributed by students having only participated in activities that lead to pro-environmental behaviour while within the school compound but display a nonchalant attitude to environmental activities outside the school. This finding suggested that schools, and the government has not improved students' environmental activism skills. To achieve this, therefore, the school needs to move beyond only promoting pro-environmental behaviour on the student at a personal level to encouraging the students to speak out and participate against individuals and communities that are not conscious of their environment.

Conclusion and Recommendation
The study assessed the pro-environmental behaviour of secondary school students in Dekina local government area of Kogi state. Based on the findings, this study concludes that students handle their waste very well, although some still engage in anti-environmental behaviour. This suggests that the institution's disposition to waste disposal has an impact on the students' mode of waste disposal. The study also concludes that students' level of environmental activism is still low. This suggests that although the schools are making the students environmentally responsible, students have not internalised these lessons, which would have helped them to move towards environmental activism.

Based on the available data, the study recommends that schools should continue to improve the pro-environmental behaviour of their students by rewarding students who show a high level of environmental consciousness and contribute to the environmental sustainability of the school and the society. To promote environmental activism in the students, it is recommended that schools should make students pro-environmental activism as part of the criteria to appoint prefects in their schools. Schools should provide more orientation to students on responsible disposition to their environment. The environment friendly clubs should carry out this. Programmes such as social responsibility days, which will enhance students' levels of environmental activities, should be introduced in the school programme.

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Gender and ICT affability amongst Students in Selected Public Secondary schools of Nyamagana District in Tanzania

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Abstract
The current study investigated whether gender has an influence on the use of ICTs among secondary school students in Nyamagana district, located in the Mwanza region of Tanzania. The specific objectives of this study were (i) to establish if there are gender differences in ICT sociability among secondary school students and (ii) to determine the extent to which students use ICT to facilitate learning activities. The research employed a random sampling technique to select four schools, and a total of 121 students participated in the study. Questionnaires were administered to collect information from students, and t-tests and descriptive statistical analyses were conducted using the SPSS software version 20.0. The results revealed that male students showed a higher level of interest in using ICT devices compared to their female counterparts. This was evident from the calculated t-values and p-values, which exceeded the critical values of 1.96 and 0.05, respectively (i.e., $t > 1.96$, $p > 0.05$). With regard to accessibility, the study observed that male students had better access compared to female students. The results revealed that 56.1% of female students reported having no access to ICT facilities, while male students accounted for 43.9%. The results show that female students faced challenges in terms of accessibility and usability of ICT compared to their male peers during their learning activities. In light of these findings, the study suggests the formulation of policies that promote equal utilisation of ICT devices for students of all genders.

Keywords: Gender, ICT affability, ICT, public secondary schools

Introduction and Background
The significance of information and communication technologies (ICTs) within the educational landscape is increasingly undeniable. Teachers and students rely on technology for various educational activities. For students, ICT enhances learning by promoting higher-order thinking skills, facilitating subject learning, and encouraging peer collaboration

(Sánchez & Alemán, 2011). It allows students to access information efficiently, engage in self-directed learning, and develop critical thinking skills through interactive and creative learning environments (Sánchez & Alemán, 2011). Moreover, ICT in education supports personalised learning, motivates students, and improves engagement and knowledge retention, ultimately leading to better academic performance and preparation for the demands of 21st-century society and workforce (Aqsha & Pei, 2009; Sánchez & Alemán, 2011). Although ICTs offer various advantages, there exists a gender disparity in their utilisation among students, where female students encounter barriers in accessing and utilising ICT resources compared to male students (Drabowicz, 2014; Siddiq & Scherer, 2019). These disparities can lead to unequal opportunities for skill development, academic achievement, and future career prospects. For instance, a study by the Organisation for Economic Co-operation and Development (OECD) in 2018 indicated that men are four times more likely than women to be ICT specialists. Furthermore, statistics indicate that, on average, only 0.5% of girls aspire to become ICT professionals, in contrast to 5% of boys at age 15 (OECD, 2018).

Tanzania is not exempted from gender disparities in ICTs. According to the data provided by the Tanzania Communication Regulatory Authority (TCRA), internet users in Tanzania were 31.1 million, of whom only 18% were women (TCRA, 2023). This shows that women still lag behind in the access and use of ICT facilities. In trying to resolve this disparity, a number of initiatives have been undertaken by both the government and other stakeholders outside of the government. For instance, the government has taken steps to incorporate ICTs as a compulsory subject at the primary school level, whereas the same practice is not consistently applied in secondary schools. Despite the effort, ICT is still taught in relatively few urban public and private primary schools, widening the problem of inequalities (Mpapalika, 2023). In 2023, the government of Tanzania developed an ICT policy emphasising gender equality in ICT (URT, 2023), recognising basic ICT skills as important qualifications in public service recruitment (URT, 2022).

Despite government efforts, gender disparities in ICT among students remain a concern. Globally, there have been several studies carried out to investigate aspects related to ICT within the teaching and learning process. Studies such as those conducted by Albugami and Ahmed (2015) and Delen and Bulut (2011) focused on how ICT enhance performance, collaboration, learning experiences, and outcomes for teachers and

students. Other studies focused on aspects such as ICT device ownership and access (Zhang, 2014; Delen & Bulut, 2011) and gender disparities in digital competencies (Maon et al., 2021; Ünal et al., 2022). Others focused on opportunities created by ICT-enabled environments for reducing gender gaps (Aqsha & Pei, 2009; Rizal et al., 2019; Liang, 2022) and gender and ICT literacy among students (Apriani et al., 2022).

Within Tanzania, the existing studies focused on ICT integration in classrooms (Kihoa et al., 2016), the impact of digitalisation on teaching and education (Manyengo, 2021), enhancing education quality through ICT resources (Peter, 2022), and investigating ICT competencies in teacher education (Lubuva et al., 2022). However, a noticeable gap exists in studies concerning gender and ICT affability among secondary school students, warranting further exploration. This research addressed this gap in the context of selected public secondary schools in Nyamagana District, Tanzania, guided by the following specific objectives:

  i)   To establish gender differences in ICT sociability among
       secondary school students
  ii) To determine the extent to which students use ICTs to facilitate
       learning activities

Gender and Technology Theory

The study follows the gender and technology framework, linking gender (socially constructed roles) and technology (practical application). According to Nagoshi et al. (2012), this theoretical framework seeks to explore how gender shapes the design, utilisation, and impact of technology while also examining how technology, in turn, influences and reinforces gender norms and inequalities.

In the context of gender and technology theory, gender influences how people use and access technology (Kube et al., 2022). Scholars have observed historically that there are gender differences in access to technology, which means that some groups face barriers to using it and become digitally excluded (Wolfram & Kienesberger, 2023; Grint & Gill, 1995). As such, this theory offers an understanding of how gender influences secondary schools' affection for ICT and the use of digital technology. This idea clarifies the relationship between gender and technology, which is helpful in this study. It also offers a framework for comprehending how gender affects secondary school pupils' ICT affability. Additionally, the gender and technology framework can help determine students' capacity to access and utilise ICT within their

learning activities. Understanding how gender and technology interact can help to enhance the use of technology in classrooms in a more inclusive and equitable way.

Gender and ICT Affability in Education

Gender and ICT affability refers to the degree of accessibility with which individuals of different genders can access and engage with information and communication technology (ICT) resources and opportunities (Saadu et al., 2022). The relationship between gender and ICT affability has far-reaching implications for social and economic development, as technology plays an increasingly central role in education provision. ICTs are used as resources for teaching and learning at different levels of education. However, a study conducted in India highlighted that women's engagement in digital technology and the Internet remains lower than men's, even when women are educated (Anjana, 2023). Similarly, Islam and Manchanda (2022) analysed 735 responses from Indian men and women between the ages of 18 and 25. The survey found that women, particularly in rural areas, are less likely than men to exclusively own smartphones. On the other hand, Anjana's survey revealed that gender disparity in digital affability is more acute in rural areas (Anjana, 2023).

Contrary to this, Islam and Manchanda (2022) observed that women have access to household phones, which are normally shared with other family members. Therefore, it is incontestable to accept that the gender gap in digital technology is undeniably a complicated and multifaceted subject. Access to ICT resources, including computers, internet connectivity, and digital devices, is an important aspect of ICT affability (Tondeur et al., 2016).

Numerous studies such as those by Qazi, Hasan, Abayomi-Alli, Hardaker, Scherer, Sarker, and Maitama (2022), have shown gender disparities, with males typically having better access to ICT infrastructure than females. Factors such as economic resources, household dynamics, and cultural norms contribute to these differences, resulting in a digital divide that can perpetuate gender inequalities in technology use (Daffé & Diallo, 2020). Likewise, Tondeur et al. (2016) examined the relationship between gender, computer access, attitudes, and uses in both learning and everyday activities for university students in Flanders (Belgium). The findings revealed that women generally have a less positive attitude towards computers; however, their attitude towards computers for educational purposes does not differ from that of men (Tondeur et al., 2016).

Research shows that male students often have better access to computers, internet connectivity, and digital devices compared to their female counterparts (Daffé & Diallo, 2020; Tam et al., 2020; Bolaji, 2022; Qazi et al., 2022). However, there are factors that determine gender disparities in ICT accessibility, such as the availability of basic infrastructure and the cost of access to technology (Daffé & Diallo, 2020). Therefore, limited access to ICT infrastructure can create a digital gap, further exacerbating gender inequalities in technology usage and skill development (Bolaji, 2022; Qazi et al., 2022; Islam & Manchanda, 2022; (Mhlanga et al., 2022).

Accessibility and Usability of ICTs in Education
Information and communication technology (ICT) holds a crucial position in contemporary life, drawing considerable attention across various sectors, including education (Qazi et al., 2022). Nonetheless, its application reveals notable individual differences in usage patterns and relevant skills (Heiman et al., 2017). Over the last decade, incorporating ICT into education has emerged as a highly transformative process, shaping academic standards (Nketiah-Amponsah et al., 2017). As articulated by Heiman et al. (2017), the impact of ICT on education is closely linked to students' access to and utilisation of digital devices. Despite the widespread integration of ICT in educational institutions, several studies (Maon et al., 2021; Liang, 2022) feature a gender disparity in both its usage and skill development.

Heiman et al. (2017) compared Canadian and Israeli students' familiarity with and access to ICT in traditional post-secondary education. Israeli students reported higher ICT usage and better accessibility than Canadian students, with factors such as individual competencies, gender, and technology affordability influencing usage. Similar findings were supported by other researchers like Nketiah-Amponsah et al. (2017) and Mhlanga, Denhere, and Moloi (2022), emphasising the role of ICT competence, gender, and economic feasibility in students' access to and utilisation of ICTs.

Qazi et al. (2022) reviewed 42 empirical publications and conference proceedings from 2006 to 2020 to probe into this issue. Their small-scale meta-analysis aimed to quantify potential gender differences in ICT use and skills. Using a random-effects model, the analysis revealed a small yet statistically insignificant effect size favouring boys ($g = 0.17$, 95% CI

[−0.01, 0.36]). Furthermore, their research indicated no association between gender-based differences in skills and the utilisation of ICT for educational purposes (Qazi et al., 2022).

In the Netherlands, Volman et al. (2005) examined the utilisation of various ICT applications in education across seven schools. The findings indicated relatively minor gender-based disparities in primary education. However, a notable difference emerged in secondary education, with girls appearing to be less enthusiastic about ICT compared to boys. The study also observed differences in how girls and boys engaged with ICT tasks, influenced by their previous experiences and exposure to ICT resources.

The impact of ICT on education is significant, enhancing the teaching and learning process by improving the accessibility and usability of ICT tools (Mhlanga et al., 2022; Onwuagboke, 2023). Additionally, ICT can aid in identifying individual students' learning needs, thus promoting equal educational opportunities (Mhlanga et al., 2022). The National Policy on Education (Mhlanga et al., 2022) reinforced the importance of integrating ICT to enhance teaching and learning, thereby improving educational outcomes. Notably, the extent of technology integration into classrooms can profoundly impact a country's educational quality.

Based on the above discussion, prioritising students' interests, especially improving the usability and accessibility of ICT for female students, is important. This involves implementing strategies to bridge the gender gap in ICT usage, ensuring equal opportunities for engagement and benefit from digital resources. Initiatives such as targeted training programs, user-friendly interfaces, and fostering an inclusive learning environment are crucial for achieving this goal.

Methodology
Participants
The participants in this study were form four secondary school students who were involved voluntarily. They were selected based on two specific criteria: firstly, because they were most likely to have greater exposure to ICT; and second, they were under pressure to prepare for their final national exams, which probably increased their interest in using ICT to access extra learning resources. The sample size comprised of 121 students, chosen randomly. Gender distribution within the sample was also considered, with 50 males and 71 females. The number of females participating in this study was higher than males, occupying 58.7% of the

whole sample population, while only 41.3% were males, as shown in Table 1.

Table 7: Socio-demographic Characteristics

Variable	Frequency	Percentage (%)
Male	50	41.3
Female	71	58.7
Total	121	100

The participants in this study were selected using a random sampling technique. For a purpose of gathering the best information, the sample was chosen from form four classes due to their familiarity and experience in the use of ICT.

Instruments
The questionnaires utilised in this study comprised 15 items designed to explore the relationship between gender and ICT affability among secondary school students. These items were divided into two distinct groups. The first group consisted of 10 items aimed at assessing the usability of ICT tools in facilitating learning activities. Participants rated their agreement with statements on a five-point Likert scale ranging from "Very Large extent" to "Very little Extent." Conversely, the second group comprised five (5) items focused on identifying the challenges students encounter regarding access to and usage of ICTs for learning activities, eliciting simple YES/NO responses. All items were adapted from the Gender and Information and Communication Technologies survey toolkit developed by FHI 360, ensuring their relevance and reliability for the study's objectives.

Procedures
The procedure for data collection involved distributing questionnaires to the participants. The questionnaires, designed according to FHI 360's survey toolkit, were distributed to Form Four secondary school students to collect data. Each participant was allotted a time frame of 30 minutes to respond to the questions. Following the completion of the allotted time, the questionnaires were collected promptly. Upon collection, the received questionnaires were thoroughly sorted and organised to ensure systematic handling of the data. Subsequently, a coding system was implemented to categorise and label the responses effectively, facilitating the process of data analysis. The coded data were then entered into SPSS version 20 for further analysis and interpretation. This careful procedure was

implemented to ensure accuracy and reliability in capturing the data necessary for the study's objectives.

Data Analysis

Before processing the results, the normality test was applied. The purpose of conducting a normality test was to assess whether the data follows a normal distribution. Descriptive and inferential tests were applied. The first objective aimed to establish gender differences in ICT sociability among female and male students. To achieve this, an independent sample t-test was employed. This statistical analysis was conducted to determine whether significant differences existed between male and female students in terms of their sociability to ICT resources. For the second objective, which focused on identifying and analysing the challenges faced by students in accessing and utilising ICTs, descriptive statistics were employed. This involved examining the frequency and percentage of challenges encountered by students. Through frequency counts and percentages, the study aimed to illuminate the common obstacles hindering students' access to and use of ICTs. This approach provided valuable insights into the prevalent challenges faced by students, thereby informing potential interventions to address these issues effectively.

Variables

In this study, two key variables were identified: gender, which served as the independent variable, and ICT sociability, which was designated as the dependent variable. Gender, as the independent variable, refers to the characteristics being observed to determine its effect on the dependent variable, ICT sociability. This variable represents the participants' gender identities, typically categorised as male or female and serves as the primary factor under investigation to understand its influence on ICT sociability. On the other hand, ICT sociability, the dependent variable, is the outcome or response variable measured in the study.

Findings and Discussion
Normality Testing

The purpose of conducting a normality test was to assess whether the data followed a normal distribution. Fig.1 below shows that the data were normally distributed, thus warranting parametric tests, which in this case were independent sample t-tests.
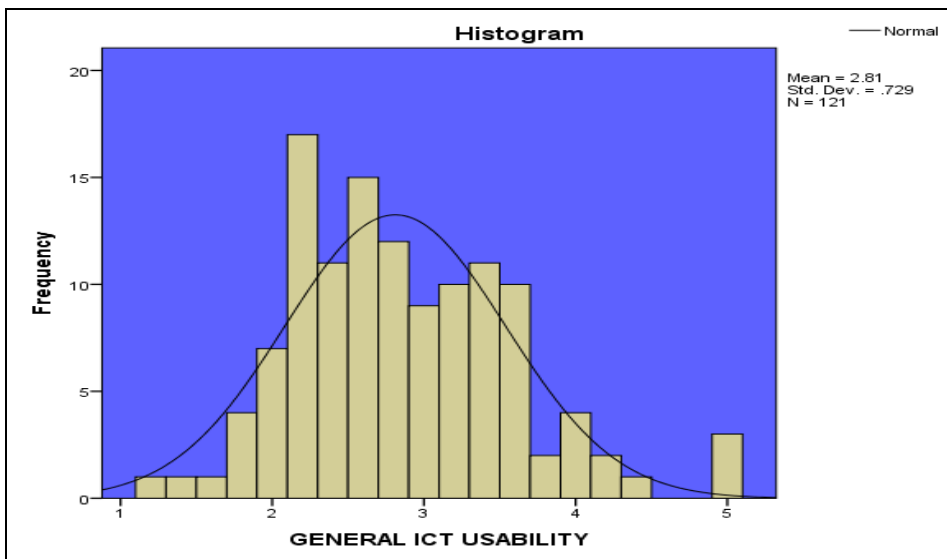
Figure 1: Normality Testing

Gender Differences in ICTs Sociability among Secondary School Students

The study set out to explore gender differences in ICT sociability among secondary school students. Following a descriptive analysis, the results are presented in Table 2 below.

Table 8: Descriptive statistics of Gender ICTs Sociability

	Gender	N	Mean	SD
Gender ICTs	Male	50	2.94	.685
Sociability	Female	71	2.72	.749

A comparison of the mean reveals that male students reported a higher score (Mean = 2.94) on ICT sociability compared to female students (Mean = 2.72). The results imply differences in ICT sociability among male and female students. That means males appear to have more interest in ICTs, access, and usability for learning purposes.

Independent Samples Test of Gender and ICT Sociability

In order to make statistical inferences, an independent sample t-test was used to measure statistical differences between the means of two groups (male and female groups) on ICT sociability. Following the analysis, the results are displayed in Table 3 below.

Table 9: Independent Samples Test of Gender and ICT Sociability

	Male		Female				
	M	SD	M	SD	t	df	P
Gender ICTs Sociability	2.94	.685	2.72	.749	1.702	120	0.091

Table 3 depicts an independent-sample t-test among genders on ICT sociability. The findings indicate a significant gender difference in ICT sociability between male and female students. This was evident from the calculated t-values and p-values (t= 1.702, p= 0.091), both of which exceeded the critical values of 1.96 and 0.05, respectively (i.e., t > 1.96, p > 0.05). Male students appeared more interested (M=2.94, SD= .685) than females (M=2.72, SD= .749) in ICT sociability.

These findings indicate that Female students lag behind in using ICT for sociability. These findings concur with that of Heiman et al. (2017), Mhlanga et al. (2022), and Volman et al. (2005). According to Volman et al. (2005), engagement in ICTs differs in terms of gender, as both males and females tackle technology with diverse interests and intentions. On the contrary, Mhlanga et al. (2022) support the current findings that the high scores of males in ICT sociability against female students is an indicator that females are less exposed to technology and lag behind in ICT affability. Heiman et al. (2017) and Mhlanga et.al. (2022), on the other hand, emphasise that ICT sociability is determined by factors such as levels of competence, gender and affordability of technological resources. Furthermore, Anjana (2023) insists that engagement with technology depends on socio-cultural norms and accessibility of technological devices. Therefore, the gender gap in association with technology is created by the unequal distribution of resources and cultural practices. Additionally, it is important to note that the accessibility and usability of ICTs may be influenced by individual differences depending on their exposure and experiences (Jadhav et al., 2022; Ulioyo, 2022; Qazi et al., 2022).

Students' Accessibility and Usability of ICTs to Facilitate Learning Activities

The second objective was to determine the extent to which students access and use ICTs to facilitate learning activities. The results, following descriptive statistics, are portrayed in Table 4 below.

Table 10: Students' Accessibility and Usability of ICTs

ICT Access and Use Statements	Gender		Total
	Male	Female	
My parents have no funds to buy ICT gadget	39	43	82
My friends do not like to share with me ICT gadgets	14	13	27
I don't find the necessity of using ICT gadgets	6	11	17
My parent restricts me to use ICT gadgets	25	32	57
I do not have time to use ICT gadgets	10	21	31
Total Responses	**94(43.9%)**	**120(56.1%)**	**214(100%)**

The results indicate a significant difference in students' access and usability to ICT facilities. The findings reveal that 43.1% of male students lack access and usability to ICT, and a higher percentage, 56.1%, of female students, also face challenges in accessing and usability of ICTs. The findings show that females lag behind in accessibility and usability of ICTs compared to male counterparts in their learning activities. Lack of accessibility and usability results from parental restrictions to abandon technology, particularly for girls, who also seem to have limited time to access and use technology. These findings are similar to Daffé and Diallo (2020), Bolaji, (2022), and Qazi, et.al. (2022) as they highlighted factors such as economic constraints and cultural beliefs hinder females from accessing and using of ICTs effectively.

The results from the current study indicate the need for females to be exposed to technology for competence development to bridge the gender gap in the use of ICT. Mhlanga et.al. (2022) reiterate the significance of recognizing and addressing these gender differences in access and use of technology to promote inclusivity in education.

Contribution of the Study and Limitations
The present research explores the theoretical and practical aspects of gender differences in the usability and accessibility of information and communication technology (ICT) in educational settings. By addressing these aspects, the research highlights the potential disparities, challenges, and opportunities of improving ICT affability among students participating in educational activities. If these disparities are not addressed, as stressed in Mhlanga, Denhere and Moloi (2022), the gap between male and female students may amplify. This indicates how important it is to address gender disparities in ICT use in order to promote inclusivity and fair educational opportunities. This study contributes to the body of knowledge by illuminating the multifaceted interaction between gender dynamics and ICT education. Significantly, it informs

targeted interventions and policies aimed at promoting gender equity and inclusivity in ICT education, ultimately contributing to the empowerment and success of female students in the digital age.

The adoption of gender and technology theory provides a framework for understanding the multifaceted relationship between gender dynamics and ICT education. This theoretical lens reveals how societal norms, power dynamics, and cultural expectations influence students' experiences with ICT. The study highlights the specific challenges encountered by female students, who not only face barriers to accessing ICT resources but also struggle to manipulate them effectively for learning purposes. Consequently, targeted interventions, such as the development and implementation of gender-sensitive policies and programmes, are imperative. These interventions aim to enhance both access to ICT infrastructure and the digital literacy skills of female students. Moreover, addressing gender-specific challenges and inequalities in ICT utilisation is crucial for promoting inclusivity and equitable opportunities in education.

While this study offers valuable insights into gender differences in ICT accessibility and usability within educational contexts, several limitations warrant acknowledgement. Firstly, the research focuses solely on selected public secondary schools in Nyamagana District, Tanzania, which may limit the generalizability of the findings to other educational settings or regions. Additionally, the study primarily relies on data from students using the questionnaire survey, which may introduce response bias. Moreover, the examination of gender disparities in ICT affability does not encompass intersecting factors such as socioeconomic status, cultural background, or geographical location, which could further expose the complexities of ICT engagement.

Based on the identified limitations, future research could explore comparative studies to investigate the influence of varying contexts on gender disparities in ICT accessibility and usability. For example, expanding beyond Nyamagana District to include a broader range of educational settings, such as urban and rural areas, and different regions within Tanzania, would enrich our understanding. Moreover, employing a mixed-methods approach that combines quantitative data from surveys with qualitative insights from interviews or observational tools can offer a more comprehensive understanding of gender dynamics in ICT education.

Conclusion and Recommendations

The study's findings emphasise the fundamental role of gender in shaping the sociability and engagement of secondary school students with information and communication technologies (ICT). Evident within the data are pronounced gender disparities in the accessibility and usability of ICT resources, outlining a significant divide in how male and female students interact with technology. These distinctions extend beyond accessibility to socialisation and the educational utilisation of ICT. While technology presents various opportunities for educational enrichment, its integration necessitates a vigilant approach to ensure alignment with pedagogical objectives. In light of these findings, the study recommends that educational institutions, policymakers, stakeholders, and communities should collectively address gender discrepancies in ICT engagement. Through collective efforts, inclusive practices can be fostered, thereby paving the way for equitable opportunities for all students within the educational setting.

Furthermore, the study advocates for educational institutions and policymakers to prioritise developing and implementing gender-sensitive policies. These policies should be formed to promote equitable access to ICT resources and opportunities among all students. Specifically, interventions are needed to address the specific needs and challenges encountered by female students in their access to and utilisation of ICTs for learning activities. By acknowledging and addressing these gender-specific barriers, educational institutions can create an inclusive learning environment where all students, regardless of gender, have equal opportunities to harness the potential of ICTs for academic growth and success.

In conclusion, this study advocates for the gender disparities present in ICT accessibility and usability within educational settings. It emphasises the significance of addressing these differences to avoid worsening existing issues and widening the gap between male and female students. To promote inclusivity and equitable opportunities in education, prioritising initiatives to overcome gender-specific barriers to ICT access and utilisation is essential. The recommendations outlined in this study offer a pathway for educational institutions, policymakers, and stakeholders to collectively address these challenges and create a more inclusive and equitable learning environment for all students.

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Managing Early Childhood Education Data in Inclusive Public Schools in Temeke Municipality, Tanzania

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Abstract
Investment in Early Childhood Education (ECE) necessitates effective data management, as it plays a crucial role in the development of pupils in inclusive public schools. This paper explores the management of ECE data in inclusive public schools in Temeke Municipality, Tanzania, focusing on data collection processes, utilization practices, and the challenges encountered. The study is informed by an interpretative paradigm and employs a qualitative methodology, utilizing a multiple case study design. Participants included classroom teachers, head teachers, and administrators from ECE and inclusive public schools, with a sample size of 22, selected through purposive and snowball sampling strategies. Data were collected through semi-structured interviews and documentary reviews and analysed using content analysis with the support of ATLAS.ti software. Findings indicate that the majority of participants reported that ECE data were collected through annual censuses, field visits by teachers and local government authorities, interviews with parents and guardians, and documentary reviews, while a few participants were unaware of these practices. Regarding data utilisation practices, the majority of participants stated that the collected data informed decisions related to enrollment, attendance, infrastructure, and the enhancement of teaching and learning in inclusive schools, while a few participants were unaware. Additionally, most participants identified challenges in ECE data management, including a lack of cooperation during the data collection process, poor data storage, and low community awareness, whereas only a few participants were not aware of these issues. The study concludes that, despite increasing policy expectations for research-based practices and data-driven decision-making in ECE, there is limited research on the types of data collected by ECE educators and their impact on enhancing practice and informing decisions. Therefore, effective ECE data collection and utilization are essential for making informed decisions regarding children in inclusive schools. The study recommends that government and educational stakeholders prioritise the collection and storage of quality ECE data to facilitate informed decision-making in inclusive educational settings.

Introduction

Globally, the rising prominence of Early Childhood Education (ECE) has created an increasing demand for internationally comparable data (Raikes et al., 2023). This demand aligns with the United Nations' Sustainable Development Goal (SDG) 4, which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (Folayan et al., 2024). Despite the critical role of ECE in reducing social inequality, there is a limited understanding of the relationship between ECE expansion and access disparities in early childhood care and education (ECCE) within low- and middle-income countries (Yang, 2024). Furthermore, over 53 million children worldwide under five years old with developmental disabilities require effective interventions for their health and well-being. Yet, barriers related to data accessibility continue to impede these efforts, particularly in low-income and middle-income regions (Smythe et al., 2024). Reliable ECE data are essential for resource planning and decision-making, significantly impacting primary education outcomes. While the collection and uses of data for decision-making in education are not new (Agasisti & Bowers, 2017), effective population-level monitoring of early childhood development (ECD) can guide national policy and enhance ECCE data systems (Halpin et al., 2024). When well-monitored, these processes can yield valuable insights into child development, subsequently informing decision-making.

Moreover, education systems worldwide have initiated data use strategies to improve ECE (Ratnasingham & Hebert, 2007). However, successful implementation of such initiatives requires robust early childhood systems that prioritise the collection, use, and integration of quality data (Child Care Technical Assistance, 2022). Data-driven decision-making has emerged as a central focus in educational reform (Gullo, 2013). Yet, many countries still do not routinely collect data on access to high-quality ECE, resulting in limited information on equitable access and the quality of provision (Raikes et al., 2023). This shortfall contradicts international agreements and conventions aimed at safeguarding the rights of young children, such as the UN Convention on the Rights of the Child (UNCRC), the African Charter on the Rights and Welfare of the Child, the World Declaration on Education for All (EFA), the Millennium Development Goals (MDGs), and the SDGs, particularly Goal 4 (Education International & Tanzania Teachers' Union, 2017). Effective data management including the types of data collected and their

applications can yield positive impacts if other external factors remain stable.

Data collection and usage are widely recognized as fundamental educational practices (Sandall et al., 2004). This is driven by growing interest in quality programming and demand for information on early childhood programs in developing countries (Sirinides & Fink, 2014). Data are vital for policy planning that promotes gender, equality, equity, and inclusion (GEEI) in ECE. Population-level data, which represent the demographics of children in specific areas, are crucial for assessing the coverage and impact of national policies and programs aimed at enhancing ECE (Raikes et al., 2023). Without adequate data, children from low-income families and minority groups are less likely to access quality ECE compared to their more advantaged peers (Lu et al., 2020). However, current ECE data remain largely aggregate and centralized within Education Management Information Systems (EMIS) in many countries, including Tanzania. This situation creates a critical gap in data systems and their utilization, particularly at the local level, limiting ECE access for children in rural areas compared to their urban counterparts (Shukia & Marobo, 2022).

Accurate early childhood education (ECE) data is crucial for informing policy actions aimed at enhancing access to and the quality of education in both developed and developing nations (Raikes et al., 2023). Historically regarded as a best practice, early childhood educators are increasingly encouraged, and often mandated, to collect and utilisedata to inform their instructional practices (DeMonsabert et al., 2022). Data on child learning and development provide insights into the effectiveness of ECE policies, highlighting that a lack of such data can negatively affect children's readiness for upper primary education. "Effective management of Early Childhood Education (ECE) data plays a crucial role in promoting gender equity and equality in primary education (GEEI) (Mwita & Nyerere, 2020). However, GEEI concerns are often underrepresented in key government documents, as seen in Tanzania (United Republic of Tanzania, 2022). Even when addressed, ineffective utilization of these documents can diminish their impact on fostering GEEI within inclusive educational settings (Temu & Shayo, 2022). In 2015, 160 governments globally adopted specific targets for ECE as part of the post-2015 Sustainable Development Goals (SDGs), particularly Goal 4.2, which aims to ensure that, by 2030, "all girls and boys have access to quality early childhood development, care, and pre-primary education so that they are ready for primary education" (Education

International & Tanzania Teachers' Union, 2017). The use of data in decision-making has emerged as a critical strategy for improving public schools (Coburn & Turner, 2012). When ECE data are available, they enable administrators and planners to allocate resources effectively, ensuring that children are adequately prepared for primary education in alignment with SDG 4.

Recent global initiatives have increased investment and access to ECE, particularly in low- and middle-income countries (Davis et al., 2021). Nonetheless, the challenge remains to leverage data effectively to demonstrate program effectiveness, inform decision-making, and support implementation in early childhood service settings (Barton & Akin, 2022). Despite the expansion of ECE services, data availability is often limited, hindering the development of data-driven policies and programs that adequately address the needs of older children (Global Partnership for Education, 2019). This issue is further complicated by the diverse range of programs and sectors involved in ECE for young children and their families (Raikes et al., 2023). Vulnerable groups, such as children living in marginalised, remote, or impoverished areas, often lack access to ECE and quality learning opportunities (Shukia & Marobo, 2022). The absence of comprehensive ECE data for these populations limits the capacity for effective program development and implementation. While progress has been made in various areas, significant challenges remain to ensure that all children receive quality education (Glaser & Pediatric, n.d.). Data-driven decision-making is increasingly recognized as essential across all educational levels, receiving considerable policy and financial support (Mandinach, 2012). Educational institutions are adopting digital database technologies that serve as new policy instruments (Williamson, 2016).

The rapid expansion of data usage in early childhood education (ECE) has led to the centralization of governance structures, potentially exacerbating power imbalances and limiting local autonomy (Ozga, 2009; Williamson & Piattoeva, 2021). While data-driven tools have facilitated greater accountability and provided more user-friendly interfaces for stakeholders, persistent challenges related to data storage, management, and privacy particularly in low-resource settings—can undermine the effectiveness of ECE systems and hinder equitable access to educational opportunities (Gove & Coudouel, 2020; Murnane & Steele, 2017). Several factors influence the effective use of data in ECE, including the quality and accuracy of the data, timely access for staff, the ability to disaggregate data, and the use of data for collaborative decision-making

based on clearly defined questions. Leadership structures that foster a culture of data utilisationare also essential to promoting the effective use of data in educational settings (Bryk et al., 2015). Since the 1990s, there has been increasing recognition of the importance of quantitative data for decision-making and institutional assessment among school principals, teachers, parents, and policymakers (Agasisti & Bowers, 2017). However, schools continue to face significant challenges in meeting data mandates, largely due to the complexities of data storage, accessibility, and integration (Mandinach & Gummer, 2016). There is also limited evidence on effective training for educators regarding data use in instructional practices (DeMonsabert et al., 2022). These issues collectively contribute to inaccuracies in assessing access to quality ECE, undermining informed policymaking (Raikes et al., 2023). Moreover, the methods and abilities surrounding ongoing data collection and usage among educators remain largely unexplored (DeMonsabert et al., 2022). Addressing these challenges requires political will from various stakeholders, including planners and policymakers in ECE.

In developing countries like Tanzania, shortcomings in Early Childhood Education (ECE) data disproportionately affect children in rural and marginalized regions. Research highlights the critical role of reliable data in addressing these disparities, as it is essential for ensuring that the needs of vulnerable children are met (Smith, 2024). Advocacy for robust ECE data is vital to inform policy and practice, as accurate data can form the foundation for advancing gender equity and equality in education (Jones & Brown, 2024). By improving data collection and utilisation, Tanzania can foster more inclusive and equitable educational outcomes for all children, particularly those in disadvantaged areas (Miller, 2024).For instance, a child in an urban area in Tanzania has more than double the chance of attending school compared to a child in a rural area, with enrollment rates of nearly 60% and only 25%, respectively (Shukia & Marobo, 2022). These access barriers further impede data utilization at the classroom level, hindering effective instruction (Wayman, 2005). The early childhood period is critical for development; gaps during this time can have lifelong repercussions, limiting children's potential (Education International & Tanzania Teachers' Union, 2017). Effective data management from collection to application can accelerate resource planning for quality ECE and readiness for primary education. Education stakeholders have a broad consensus that early childhood education lays the groundwork for children's development and future achievements (Ndijuye et al., 2020). While much has been discussed regarding ECE data globally, there remains a significant gap in Tanzania concerning the

effective management of ECE data, particularly in terms of collection methodologies and usage practices.

In Tanzania, ECE encompasses the period from birth to eight years old, yet significant efforts are required at all levels to adequately prepare young children for formal primary education (Bakuza, 2024). There is a notable lack of data on the determinants of early child development in low-income countries, particularly in rural sub-Saharan Africa (Miah et al., 2024). In Tanzania, enrollment in ECE classes for children aged 5-6 remains markedly lower than in primary education (Bakuza, 2024), indicating that vulnerable children from marginalized families are disproportionately affected by a lack of accessible data, hindering progress towards achieving SDG 4. Therefore, evidence-based interventions are essential to enhancing inclusivity and developing sustainable strategies to address these challenges (Miah et al., 2024). This study investigates the management of ECE data, focusing on the types of data collected, their uses, associated challenges, and prospects.

Methodology

This study utilized an interpretive paradigm and employed a qualitative research methodology, specifically through a multiple case study design. The research was conducted in Temeke Municipality, targeting teachers and administrators from early childhood education (ECE) in 13 inclusive public schools. A sample of 22 participants was selected using purposive and snowball sampling strategies. A purposive sampling also employed to get 13 inclusive public schools. Data collection methods included semi-structured interviews and documentary reviews, with the researcher conducting face-to-face interviews with officers and teachers from the participating inclusive schools. Data analysis was performed using content analysis to derive meaningful insights from the collected information. Ethical considerations were prioritized throughout the study, beginning with acquiring a research clearance letter from the Directorate of Research and Publications at the Open University of Tanzania, which facilitated introductions to subsequent levels of the research process. Additionally, the study ensured anonymity and confidentiality for participants during data collection and when reporting the research findings, thereby maintaining the integrity of the research process.

Results

This study investigated the management of Early Childhood Education (ECE) data in inclusive schools in Temeke Municipality, Tanzania. The study focused on several key areas: **methods of ECE data collection,**

types and uses of ECE data, challenges encountered in managing ECE data, and future prospects for ECE data management. Findings revealed that out of the 22 participants, 20 (90.9%) were knowledgeable about the various methods used for collecting ECE data in inclusive schools. The methods identified include annual censuses conducted at the ward level, field visits by teachers and local government authorities, interviews conducted with parents and guardians of children, and **documentary reviews** of school records. The findings indicate that only a few participants reported being unaware of these data collection methods, suggesting a minor gap in knowledge or communication within the school system.

Regarding the use of ECE data, the majority of participants confirmed that the data collected were used to inform key decisions in inclusive schools. The primary use of data was said to be enrolment management, which ensures accurate records for student numbers. Others are **attendance tracking** whereby there was monitoring student participation and attendance trends; infrastructure **development** that involved utilizing data to make decisions about facility improvements; **enhancement of teaching and learning** by data-driven strategies for improving the quality of education. On the other hand, a few participants were unaware of how the ECE data were being used, indicating potential issues with transparency or awareness about data-driven decision-making processes.

As far as **challenges in managing** ECE **data is concerned,** many participants highlighted significant challenges in the management of ECE data in inclusive schools. These include a **lack of cooperation**, difficulties in securing cooperation from various stakeholders during data collection, **poor storage of data**, and inadequate systems for safely storing and maintaining collected data, which can lead to data loss or inefficiency. Others are **low community awareness** and limited understanding among the local community about the importance of data collection and its role in improving education. However, a few participants were unaware of these challenges, potentially reflecting different levels of engagement or experience in data management.

Ways of Collecting ECE Data in Inclusive Schools
The results showed that the majority of participants reported that ECE data were collected using the following methods: annual censuses conducted by local government authorities, field visits by teachers and local officials, interviews with parents and guardians, and documentary reviews of school records. However, a few participants were unaware of

these data collection methods. One head teacher, during a semi-structured interview, highlighted the role of the local government in data collection, stating: "*We usually gather data on children through a census conducted by the local government for enrolment purposes."*(Semi-structured interview, Head Teacher, School A, August 2024).

Another respondent commented:

> *We collect data for these pupils from various sources where we have shared our information. For example, we receive data through the Tanzania Association for the Blind, and from TAMISEMI and other education officials who manage special education across all regions.* (Classroom Teacher, School F, August 2024)

Another participant commented as follows:

> *To collect data, the ministry requires us to call out the pupils' names in the morning and the afternoon to track their attendance. We record attendance figures twice daily, once in the morning and again in the afternoon, through this name-calling process. This system provides accurate attendance numbers for the day, as a designated class teacher is responsible for this task each day. Additionally, we rely on the teacher on duty for weekly attendance data. We also gather information from local kindergartens and daycare centres. If those sources are insufficient, we obtain data directly from parents* who *bring their children to school. During these inquiries, we ask parents for information such as their children's names, addresses, birthplaces, and ethnic backgrounds.* (Semi-structured interview, Head Teacher, School A, August 2024)

In alignment with this perspective, one participant shared:

> *We usually obtain pupil data from their parents. First, we inquire about the child's age to ensure it aligns with the requirements set by the education policy. Children should start kindergarten at ages four to five; by age six or six and a half, they begin Class One. Additionally, we sometimes gather data by conducting street censuses coordinated by local officials. This data is then used during the registration process. (Semi-structured interview, Head Teacher, School C, August 2024).*

On the same topic, a teacher from School D stated:

> *We always follow a specific procedure to register these children. When they arrive, we collect information from the parents regarding the child's birth details and residential address. We also inquire about the child's relationship with their guardian and the distance from home to school.*(Interview with Classroom Teacher, School D, August 2024).

Another participant emphasized the importance of data collection:

The data we gather includes information about where the children come from, their challenges, their ages, academic progress, and the kindergartens they currently attend. When children begin primary education, we collaborate with the local government to facilitate enrollment. The local government typically conducts a census of children who have reached the age of five. Those who are five years old are required to join kindergarten for one year, after which they can enroll in Class One at age six. We also collect data on children enrolled in kindergartens, both within and outside the respective schools, including those in private facilities.(Semi-structured interview, Head of School E, August 2024).

On the same topic, another participant explained:

We receive children from various kindergartens and daycare centers. When a child is identified as blind, they are brought to our unit in Toangoma. Upon arrival, they undergo testing at the hospital to confirm their blindness. We accommodate children from Class One to Class Seven, teaching Braille up to Class Four. At that point, they are integrated into regular classes to study alongside their peers. Currently, we have seven children in Class Four, who come from different schools, some having transferred here while others are newcomers from home.(Semi-structured interview, Head Teacher, School G, August 2024).

Additional insights from another participant:

We gather data on these pupils through our efforts, as well as from various schools. For instance, a child studying at a different school may be brought here if they become blind. Our outreach efforts extend beyond Dar es Salaam to the southern regions, such as Mtwara and Lindi, due to our spread advertisements. In Dar es Salaam, very few attend independent schools; most come from the south, brought in by their parents. If a child is found to have a vision problem, they are often referred to our school through parent meetings and local government advertisements. (Semi-structured interview, Head Teacher, School G, August 2024).

Building on this issue, another participant noted:

We enroll children in kindergarten and Class One primarily through their parents, but we also accept those born with challenges that guardians or good Samaritans may bring in. We announce our enrollment drives during parent meetings and display notices in local government offices as the enrollment period approaches. We inquire about their age, health status, and residential distance. If a child lives far away, we recommend they attend the nearest school. Our data is

> *stored using various programs, such as Excel. The school has one laptop and one desktop dedicated to data storage.* (Interview with the Head Teacher, School G, August 2024).

Thus, the responses gathered from participants indicate that several methods are employed to obtain Early Childhood Education (ECE) data in inclusive schools. These methods include targeted advertisements and announcements directed towards organizations such as the Tanzania Association for the Blind and TAMISEMI, as well as outreach to regional education administrators and managers. Additionally, ECE data are systematically collected through the review of attendance registers, where the names of pupilsare called and recorded twice daily and on a weekly basis. Interviews with parents and guardians also play a crucial role in data collection, providing vital information regarding the child's name, the relationship between the child and the parent or guardian, and the distance from home to school. Moreover, collaboration with local government entities and the conduct of censuses further enhance the data collection process. To corroborate the findings obtained through interviews, the author reviewed 15 documents from 13 visited schools, including attendance registers, as well as four documents from the municipal office, confirming the validity of the collected data.

Uses of ECE Data in Inclusive Schools

The researcher inquired about utilising Early Childhood Education (ECE) data in inclusive schools. To achieve this objective, data were collected from 22 participants, including 11 head teachers, seven classroom teachers, and four education officers at the ward and municipal levels, through semi-structured interviews. Participants were specifically asked how ECE data were being utilized in inclusive schools. Regarding using ECE data, 19(86.3%) out of 22(100%) participants indicated that the collected data were employed to make informed decisions related to enrollment, attendance, infrastructure, and the enhancement of teaching and learning processes within inclusive schools. Conversely, 3(13.6%) participants were unaware of how the data were used. One participant emphasized this point, stating:

> *We first determine the number of children to assess their needs, including the required quantity and types of food. Although the government provides food, the amount delivered is contingent upon the number of pupils. For instance, we currently have 33 children enrolled, 18 boys and 15 girls, all boarding pupils who return home during the holidays. This data is crucial for student enrollment through government systems, and we also have COBET*

(Complementary Basic Education) classes for those registered above the age of seven. The data we collect assists us in grading the pupils we receive from their respective classes. (Interview with the Classroom Teacher, School F, August 2024).

Building on this perspective, the Head Teacher of School A elaborated on the broader implications of data collection:

We utilize the data not only for enrollment but also for planning physical resources, such as determining the number of classrooms, staffing needs, and essential resources for pupils. This information is instrumental in formulating our plans and allows us to observe trends in school statistics. By analyzing these figures, we can project future needs, enabling us to anticipate adding two or three classes based on our projections. Resources like books and desks are acquired from the government or other stakeholders according to the number of pupils. If discrepancies arise, such as a parent providing false information, we require them to obtain the child's birth certificate before we correct the data in our system. (Semi-structured interview with the Head Teacher, School A, August 2024).

Further emphasizing the importance of data for effective resource allocation, the Head Teacher of School B stated,

We leverage the data to determine the necessary manpower for each class, specifically the number of teachers required. Understanding pupil enrollment helps us plan our workforce effectively. Additionally, we track down those students after calling the roll and identifying absentees. We often use mobile phones to contact parents, as we collect their contact numbers during enrollment. It is the class teacher's responsibility to communicate with parents to ascertain the reasons for a child's absence. Teachers may send peers to check on pupils with minor absenteeism issues. In cases where we identify a child exceeding the required age during admission, we refer them to COBET classes designed for older pupils, which is beneficial as my school encompasses three distinct programs: standard education, special needs education, and COBET. (Semi-structured interview with the Head Teacher of School B, August 2024).

Complementing this discussion, the Head Teacher of School C highlighted the regulatory framework guiding their practices:

The data we collect are instrumental in identifying which children qualify to begin kindergarten and Class One. We ascertain their age using birth certificates, which is mandatory for registration. Once we compile the age statistics, these figures guide our decisions regarding the initiation of primary education. According to the law, a child cannot be registered before the age of five; they must be six years old

> *for girls and six and a half years old for boys. During the registration process, we emphasise the importance of parents informing us about their child's health, as some critical information may not be disclosed in certificates. Parents often have insights into their child's health status that may not be documented. In the past, children with health issues were marked with a red label during enrollment, but we no longer do this as it was perceived as a form of segregation. (Semi-structured interview with the Head Teacher of School C, August 2024).*

About addressing individual challenges faced by pupils, a Classroom Teacher from School D remarked,

> *"After receiving information about a child with specific challenges, we assess the situation and explore methods to support their learning. Some children require special attention due to the nature of their challenges. For instance, those scheduled to leave at 5:30 PM must complete all tasks beforehand; however, we recognize that certain children may struggle with learning, necessitating additional time. In such cases, we request that parents allow us to keep their children for at least an extra half-hour." (Interview with the Classroom Teacher, School D, August 2024).*

The extracts reveal that ECE data are utilized to make informed decisions regarding enrollment, attendance, infrastructure, and improvements in teaching and learning within inclusive schools. Participants emphasized that the collected data play a crucial role in projecting future requirements, enabling schools to plan effectively for the needs of their students.

3.3 Challenges Associated with ECE Data in Inclusive Schools

Through semi-structured interviews, the researcher explored the challenges associated with ECE data in inclusive schools by collecting data from 22 participants, including 11 head teachers, seven (7) classroom teachers, and four (4) education officers at the ward and municipal levels. The findings revealed that the majority of participants identified several challenges related to ECE data, including a lack of cooperation during the data collection process, poor storage of collected data, and low community awareness. Conversely, a few participants were unaware of these issues. One participant emphasized, "The challenge we face with data is the authenticity of parents, as they often provide misleading information when asked." (Semi-structured interview with Head Teacher of School A, August 2024). In relation to this issue, the challenges related to ECE data in inclusive schools were emphasisedby several participants. One head teacher expressed frustration with parental cooperation, stating,

> *The most significant challenge I face is obtaining cooperation from parents. When they drop off their children at school, they often feel their responsibility ends there. You rarely see them again, which leaves us to manage all the responsibilities and issues that the parents could address. For instance, when a child becomes ill or is absent from school, attempts to contact the parents often go unanswered. This lack of engagement is particularly pronounced among families in uswahilini (slum) areas—densely populated neighbourhoods with unique socio-economic challenges. One street is particularly problematic, as many parents are preoccupied with brewing local alcohol and seem indifferent to their children's education.* (Semi-structured interview, Headteacher, School G. August 2024).

In a similar vein, another educator noted,

> *While parents may bring their children to school, they often neglect other aspects of their child's development." The school employs information technology specialists, but we face challenges in collecting and managing data after registration. Teachers send information via mobile phones, yet there is a severe shortage of storage equipment. If each classroom had a computer, it would significantly improve our data management. Currently, I only have one computer, which I managed to acquire with external assistance.* (Semi-structured interview with the Head Teacher of School B, August 2024).

Further emphasizing this issue, another head teacher remarked,

> *Some parents withhold crucial information regarding their children's health." This lack of transparency often leads to teachers discovering health issues only after they arise in class. When we reach out to parents for clarification, they sometimes explain that they were unaware of the child's problems, such as epilepsy or other conditions. Additionally, many children are raised by their grandmothers while their parents are away, often leaving the grandmothers uninformed about the child's health history. This disconnect can lead to significant challenges in addressing the child's needs effectively.* (Semi-structured interview with the Head Teacher of School C, August 2024).

Another teacher from School D pointed out,

> *We often face difficulties when parents bring children who have been living with someone else, such as a relative. These guardians may not fully understand the child's background or health issues. This leads to gaps in communication, especially when we attempt to gather vital information. Moreover, we often encounter problems with contact information; the phone numbers provided on the first day of school*

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frequently become inactive, making it challenging to obtain timely information from parents. (Interview with the classroom teacher in School D, August 2024).

One classroom teacher elaborated on this, stating,

The challenges we encounter in data collection stem from the reliability of the sources providing information about the pupils." Many guardians do not know the child's age or specific health problems. We maintain records of medical history, but retrieving accurate information about whether a student was born with a condition or developed it later can be challenging. Consequently, we often find ourselves dealing with unreliable information. Furthermore, our current data storage relies on outdated paper systems, hindering our efficiency. (Classroom Teacher, School F, August 2024).

Another head teacher highlighted,

The primary issue we face is the storage of data, compounded by the risk of parents providing incorrect information to secure advantages for their children. Many parents lack essential documents, such as birth certificates, particularly when enrolling children in kindergarten or first grade. Additionally, there are frequent discrepancies with names; for instance, parents may initially register a child under a grandparent's name and later wish to change it. The lack of technological resources is also a concern; despite having 65 teachers, our school is equipped with only three (3) laptops and two (2) desktops. (Interview with the Head Teacher of School G, August 2024).

Generally, the participants highlighted significant challenges related to parental cooperation in the context of early childhood education (ECE) data collection in inclusive schools. Participants expressed frustration with parents who, after enrolling their children, often neglect their ongoing responsibilities. The challenges faced by families in slum areas include economic hardship, poor living conditions, health risks, social inequality, and limited educational awareness—collectively contribute to a neglect of critical aspects of parenting and schooling. These factors create a cycle of disengagement from education, where children's academic success is compromised by their socio-economic environment. Addressing these issues requires a multi-faceted approach that considers the improvement of educational access and the broader socio-economic conditions that impact the well-being and educational aspirations of families in slum areas. This detachment becomes particularly problematic when children face health issues or frequent absences, as parents are often unresponsive when approached for assistance or information. In addition

to parental involvement, participants noted information accuracy and data storage issues. Some parents fail to disclose important health information about their children, leading to delays in identifying and addressing specific needs. Furthermore, many children are raised by relatives who may not be fully aware of their health history, complicating accurate data collection. The lack of reliable contact information further exacerbates this issue, as phone numbers provided during registration are often inactive when schools attempt to reach parents for follow-ups. Participants also emphasized the inadequacy of current data storage systems, which primarily rely on outdated paper records. Many parents do not possess essential documentation, such as birth certificates, resulting in difficulties during enrollment. Additionally, the limited technological resources available in schools hinder effective data management, with some schools having only a few computers to support many teachers. This combination of factors creates significant barriers to gathering and maintaining accurate ECE data necessary for improving educational outcomes in inclusive settings.

Discussion
Ways of Collecting ECE Data
The findings indicate that early childhood education (ECE) data in inclusive schools are collected through various methods, including household surveys, local government census, interviews with parents and guardians, and documentary reviews. This diverse approach suggests that multiple sources are utilized to ensure comprehensive data collection, as noted by the participants. Specifically, advertisements to local government entities and associations for individuals with disabilities are crucial in disseminating information about data collection efforts. Participants emphasized that attendance data collection aligns with educational policies, which mandate calling out students' names twice daily. This data collection method aligns with Olmsted's (2002) study, which identifies three primary types of data collection in early childhood services: program questionnaires, household surveys, and specialized studies of programs and children.

Additionally, the findings highlight that data collection is a collaborative effort involving teachers, head teachers, parents, and local government officials. Many of the data are sourced from kindergartens and daycare centres, allowing for the identification of children's locations, ages, and familial relationships. When thoroughly examined, the strategies employed to gather data can significantly enhance data quality. Collaboration with local governments is particularly beneficial, as it often

includes a census to identify children of appropriate age for pre-primary education. This observation aligns with Little et al. (2019), who noted that pre-kindergartens operate within data-rich environments and frequently collect informal data through developmental screening tools and formative assessment systems. Household surveys can effectively represent the broader population of families with preschool-aged children when executed with a carefully selected sample.

The Uses of ECE Data
The findings reveal that ECE data serve several critical purposes, including making informed decisions regarding enrollment, attendance, infrastructure and enhancing teaching and learning in inclusive schools. Participants confirmed that these data are integral to ECE practices, supporting effective resource allocation and planning. This aligns with the findings of Zweig et al. (2015), which noted that participating preschools utilize ongoing performance-based assessments of early learning outcomes and collect attendance data for compliance and analysis of learning outcomes. Specifically, ECE data are instrumental in planning the physical resources needed, such as the number of classrooms, teachers, desks, and other essential materials for students. This ability to track statistical trends allows schools to make data-informed decisions regarding resource utilisation.

Furthermore, the availability of data equips ECE administrators with insight into existing resources and future needs. Participants expressed that ECE data aid in projecting resource requirements, allowing schools to plan staffing and infrastructure more effectively. The ability to monitor truancy trends further illustrates the critical role of data in decision-making processes. Barton and Akin (2022) underscore the necessity of leveraging data to demonstrate program effectiveness and support decision-making, particularly in early childhood service settings, thereby emphasizing the significance of data-driven practices in educational planning.

Challenges Associated with Collection and Using ECE Data
Despite the advantages of ECE data collection and utilisation, several challenges persist. The findings identify key obstacles, including a lack of cooperation from parents during data collection, inadequate data storage solutions, and low community awareness regarding the importance of data. These challenges significantly impact the quality and quantity of resources available in schools. This observation is consistent with Zweig et al. (2015), who highlighted difficulties in using child data to inform

program decisions, citing the time required to consolidate multiple data sources and interpret observed trends. Participants indicated that parental disengagement poses a substantial hurdle, with many parents treating school enrollment as a final step in their responsibilities, thereby leaving teachers to manage the complexities of child development and data collection.

Additionally, issues surrounding the transparency of child health information were reported, with some parents concealing vital details that could affect educational outcomes. This lack of communication often results in teachers discovering health issues only after enrollment, complicating their ability to provide adequate support. The participants also noted challenges related to data storage, citing a shortage of storage equipment as a barrier to effective data management. This inadequacy hinders access to data for decision-making and resource planning, echoing the findings of Zweig (2015), which revealed that many states do not systematically collect information on how early childhood education programs gather and utilize data. These insights provide valuable information for early childhood administrators striving to improve data collection and usage in ECE settings.

Conclusion and Recommendation
This study concludes that while considerable efforts are being made to collect and utilise ECE data in inclusive schools in Temeke, several significant challenges persist that impede effective data management. Addressing these challenges is essential for enhancing the quality of early childhood education and facilitating informed decision-making within schools. Notably, there is a lack of research regarding the specific types of data that preschool educators gather and how this data is used to enhance practices and inform decisions. Therefore, robust data collection and utilization are crucial for making informed decisions about children in inclusive educational settings.

To enhance the quality of Early Childhood Education (ECE) data collection, it is crucial to prioritize high-quality data. The government and educational stakeholders must strengthen partnerships between the public and private sectors to address resource shortages. Additionally, communication and training initiatives for all stakeholders involved in ECE data management should be improved to support informed decision-making in inclusive school. Schools should adopt more efficient data storage systems to ensure the longevity and accessibility of collected data, while increasing community engagement and awareness to foster a

collaborative environment. Additionally, investing in digital infrastructure will improve data handling capabilities and streamline the data collection process, further enhancing cooperation strategies with local communities and stakeholders.

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Community members' engagement in the management system of the collaborative community secondary schools in the Coast region of Tanzania

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Abstract
This study investigates community members' engagement in the management system of the collaborative community secondary schools in the coastal region of Tanzania. It aims to explore the value placed by local community members on their engagement in the school management system and assess their awareness of their representation in school decision-making bodies. Data were collected through a mixed-methods approach, combining surveys and in-depth interviews involving general community members. The findings reveal that there is a recognized value and positive perception among local school community members regarding their engagement in the school management system. However, the study also uncovers significant barriers such as limited decision-making power, inadequate communication channels, and lack of true community representation and functionality. The study calls for targeted policy interventions and capacity-building initiatives to empower community members and facilitate their meaningful participation. Efforts should be made to enhance school-community partnerships to achieve the desired level of collaboration and impact on school affairs. This could involve creating more structured opportunities for community engagement, improving communication channels, and fostering a more inclusive environment that encourages active participation from all community members. Thus, supportive policies and frameworks should be in place.

Keywords: School management, community involvement, community participation, collaborative community secondary school

Introduction

Active community participation in overseeing educational institutions, especially collaborative community secondary schools, plays a pivotal role in nurturing an enriching learning atmosphere and promoting the comprehensive growth of students. This becomes particularly crucial in

developing nations, where resources are often scarce and educational facilities encounter various obstacles, amplifying the importance of community members' perspectives on their engagement in school management. Sumra (1993) argues that one of the reasons for the Tanzania government's decision to encourage community involvement in education is to pass on an increasing share of the cost of education to the parents and the local community. Adelman and Tylor (2008) suggest that working together between schools, homes, and communities promotes inclusive and quality education in schools. There are high chances of success in secondary education provision if communities are actively involved in establishing and managing schools compared to schools where communities are passively involved. A study conducted by Stein (2009) in the US concluded that, among other things, school councils were generally not viewed as an effective vehicle for school improvement due to a lack of parent and community involvement.

Several education researchers have noted the importance of involving community members in school matters, for example, Ishumi (1981), Galabawa (1997), UNESCO (2000), Miller-Grandvaux and Yoder (2002), NEA (2023), UNICEF (2004), Sharma (2008), Nishimura (2017), and Ngonge (2020). Sidhu and Taylor (2007) maintain that there is mutual interdependence between school and community.

Wangai (2014) argues that community participation helps to improve accountability and transparency and ensure the sustainability of development initiatives. Wright and Dolores's (2009) study reveals that teachers recognize the worth of community involvement for several reasons that result in students' academic success, garnering parent support in discipline and college attendance and generally fostering parent-school cooperation. Deslandes (2001), on his side, suggests the involvement of community members through the exchange of information between parents of pupils and local school community members. Epstein et al. (2018) reveal that collaboration and shared responsibility between schools, families, and communities yield more positive student education results. On their side, Njobvu and Simuyaba (2020) maintain that strong school-community partnerships are one of the best weapons for fighting against students' indiscipline behaviours.

Most secondary school students in Tanzania reside in rural areas and attend community schools. Therefore, community involvement in managing these schools is crucial. However, when examining the

academic achievements, physical infrastructure, and overall goal attainment of community secondary schools in Tanzania, it is evident that community involvement strategies need enhancement.

This study examined the community members' perceptions about their involvement in the school management system. In this study, collaborative community secondary school means a school which has been built through community financing in collaboration with the Local Government Administration, and after establishment, the government takes full charge of running this school. Making reference to Wiliams (1994), the model of establishment and running of community schools (ward secondary) in Tanzania is termed the *collaborative* model, in which the community plays a supportive role in the government provision of education.

to be able to effectively and efficiently involve community members in the school management system, it is important to contextually understand what they perceive about their involvement in school management. Kania and Kramer (2011) reveal that community members' perceptions of their participation in school management matters are influenced by their contributions' perceived impact and efficacy. Henderson and Mapp (2002) suggested that community members' perceptions of their involvement in school management affairs vary depending on factors such as communication, inclusivity, and the impact of their contributions. Positive perceptions are often associated with opportunities for meaningful participation, clear channels of communication, and a sense of empowerment in decision-making processes. Bryk (2010) stresses that open and transparent communication between schools and community members is indispensable for building trust and fostering meaningful engagement. On the other hand, a lack of open and transparent communication can deter the effectiveness of community involvement efforts.

Despite the benefits of involving the community in school management matters, research conducted in Tanzania has indicated low or limited participation of the community members in school decision-making. For example, Kibona (2013) found out that the involvement of community leaders was limited to the preliminary stages of school planning, such as mobilization for the direct voluntary and obligatory contribution of funds, teaching and learning materials, teaching and non-teaching staff as well as donation and allocation of construction sites. In the same context, Ngonge

(2020) observed that the involvement of local school communities appeared to revolve predominantly around the provision of material resources rather than active participation in school management decisions. Studies by Uvambe (2021) and Uvambe and Msoroka (2022) revealed that the introduction of fee-free education policy in Tanzania resulted in a significant reduction in parental participation in school activities. In this regard, community members are not satisfactorily involved in school management decisions; in Tanzania, little is known about the perceptions of community members regarding their engagement in school management affairs. that with this regard, a study on how community members perceive their participation in the management of community secondary schools gains importance. Moreover, the study was motivated by different strategies and approaches from various local authorities and school heads to initiate and sustain community members' efforts in improving community secondary schools.

This paper was guided by the following two main research questions:
a) What value do local community members place on participating in school management decisions?
b) Do local community members feel adequately represented in the decision-making bodies of the school?

Method And Materials
Research Design
The study employed a convergent parallel mixed-methods design, combining quantitative and qualitative data collection, analysis and interpretation techniques. However, qualitative study design dominated the study. The exploratory qualitative design allowed an in-depth explanation of the qualitative information and enhances the richness of data by explaining why certain phenomena are occurring. The quantitative data provided statistical trends and generalizability. Triangulation of data sources facilitated a more robust interpretation of results and increased the study's validity. Overall, the concurrent mixed method design was chosen for its convenience in enhancing quantitative and qualitative data collection, analysis and interpretation. Questionnaires were used under this design, and information obtained was easily interpreted as they emanated from standardized questions given to respondents.

Study area, population, and sampling techniques
This study was conducted in two districts of the coast region in Tanzania Mainland. The districts of Mkuranga and Kibaha were selected to represent

the other seven districts of the coast region because they have all the required characteristics of the rest parts of the region. Moreover, the justification for conducting a study in the two districts was motivated by several reasons. First like other districts of the region and country, there was enough community secondary schools in both districts. In 2023, Tanzania mainland had a total number of 5926 secondary schools, out of which 4578 (77%) were established in collaboration between communities and local government (collaborative community schools-ward secondary schools). Coast region had 246 secondary schools, of which 162 (66%) were collaborative community secondary schools. The districts of Kibaha and Mkuranga were randomly selected because there were enough community schools (Kibaha with 12 and Mkuranga with 34 community schools) and community members who were enough to provide a general representation of the Coastal Region community members' perceptions. The population for this study was all community members in the Coast region of Tanzania who were 18 years old and above; these were estimated to be 56.5% (1,144,096) of the total population (URT,2022). Israel (1992) argues that when a population is too large, typically over 100,000, a sample size of 385 is enough. Moreover, this study was dominated by a qualitative approach. When dealing with a large population, the qualitative-dominant mixed-method approach doesn't typically require proportionally larger samples. As noted by Patton (2002), "*The validity, meaningfulness, and insights generated from qualitative inquiry have more to do with the information richness of the cases selected than with the sample size*" (p. 245). Thus, a sample size of 150 respondents responded to the questionnaire where convenient, and snowballing sampling techniques were used to reach 150 respondents and 17 participants in the interview. The sample size for interviews was reached after reaching a saturation point. As argued by Mason (2010), in the collection of data using the interview method, the sample size is reached when a saturation point is reached.

A convenient sampling technique was used because of easiness of getting respondents and keeping research costs low and the researcher wanted a bit of input to make a decision. Snowballing was chosen because it was easy to collect data, but again all people aged 18 years and above were the target population.

Data collection methods and analysis
Data was collected through questionnaires and interviews. The respondents completed the questionnaires in face-to-face sessions with the researcher; likewise, the interview sessions were held face-to-face

with the researcher, and a smartphone was used to record the conversations. Descriptive statistics from quantitative data were sorted and analysed using Microsoft Excel. The qualitative data from the interviews were coded, followed by thematic analysis.

Results and Discussion

The first main research question was: What value do local community members place on participating in school management decisions? To address this research question, four statements to be rated using Likert scale were formulated as follows.

  i) It is important for me to get involved in community school decision-making organs
 ii) There is a benefit for the general community members to get involved in school management
 iii) There is no need to involve community members because they are not trained to manage schools
 iv) Participation of parents and neighbours in the ward school meetings helps to make good decisions

a) Value placed by local community members on involvement in school management decision

When asked whether it is important for them to get involved in the ward school decision-making organs or not, the results are as indicated in Table 1.

Table 1: Perception of community members on the importance of involvement in school decision-making bodies

S/N	Extent of acceptance	Frequency	Percentage
1	Disagree	2	1.3
2	Neutral	2	1.3
3	Agree	146	97.4
	Total	**150**	**100**

Most respondents (97.4 %) agreed that it is important for them to get involved in community school decision-making. In the same scenario, when asked if there were any benefits for them to get involved in school management matters, 96% (Figure 1) agreed that there are benefits for them to get involved in school management matters.

The data in Figure 1 below indicated similar responses as it was in Table 1
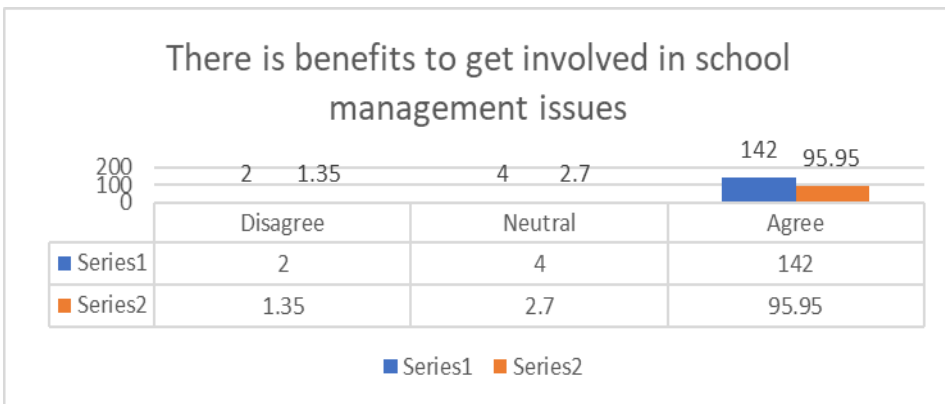
Figure 1: **There are Benefits for the General Community Members to Get Involved in School Management**

When asked if there is a need for them to get involved in school management matters while they are not trained, the majority (58.7 %) disagreed with the statement (Figure 2) emphasising that they are to be involved in school matters even though they are not trained in matters of school management. This item was included to crosscheck the consistency of the responses.
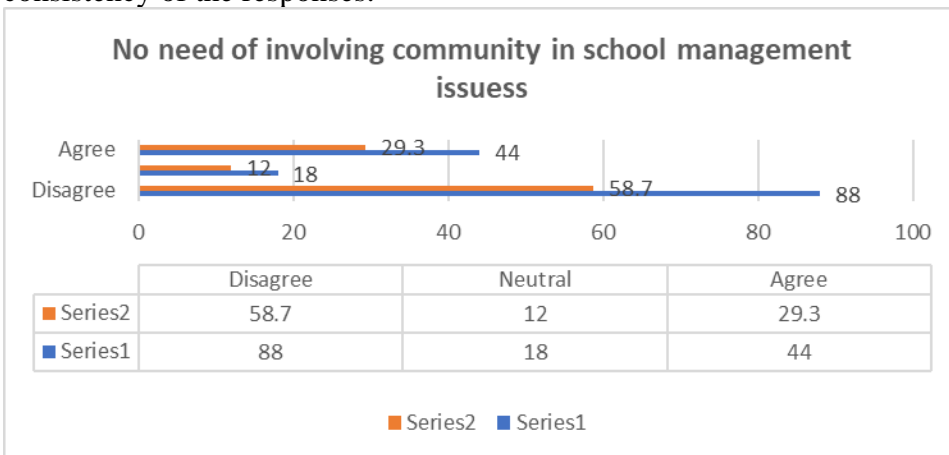
Figure 2: **Need to Involve Community Members Because they are Not Trained to Manage Schools**

When responding to the statement *"participation of parents and neighbours in the ward school meetings helps to make good decisions"* in school matters
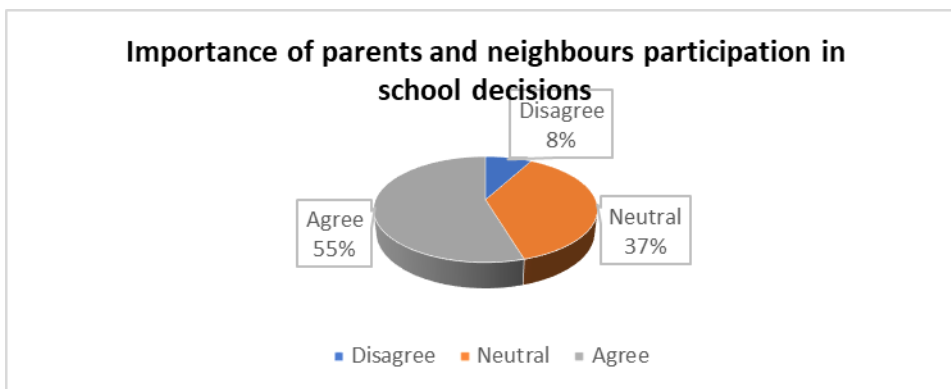
Figure 3: **Importance of Parents and Neighbours' Participation in School Decisions**

Results in Figure 3 indicate that 55% agreed, 37% were neutral, and 8% disagreed on the importance of the participation of parents and neighbours in school decisions. Irrespective of the twisting of the statement, the majority (55%) kept feeling that it is important for them to get involved in school management matters.

When community members were asked during interviews whether it was important or not for them to get involved in school management matters, most said it was important, and they went further by giving reasons. Better follow-up of students' academic progress and school revenues and expenditures, including collaborative measures for stopping undesirable behaviours among students.

When asked to explain if it is important for the school's local community members to get involved in school management matters, one school local community member, who also seemed to represent the views of others, had the following to say;

> It is important for us to get involved in school management matters because students are ours all; they do not belong to families but to society……. the school in our ward was established and built out of our energy and plans; therefore, why not get involved in the management of this school? We should sit down with the school administration and discuss the issues of nurturing our children. There are a lot of problems with this generation of "dot.com" teachers alone cannot control all students' bad behaviours like unwanted pregnancies, smoking of 'bhangi', drunkenness, getting involved in bad groups like "Panya road", use of abusive languages and many more other bad behaviours….. without considering whether you have a child in school or not….. we have been required to contribute materials and money for these schools, such contributions should be supervised and controlled not only by

parents and teachers but also by some trustworthy members from our community.

In another scenario, a community member who is also a parent with a student at the school had the following to say when asked if it is important for the community to be involved in school management matters;

> … Community involvement in school management matters is very important. The government does not have enough funds to meet all the school's needs. For instance, parents, as part of the community members contribute maize flour and money for their children's porridge. It's essential to have a common understanding of how many buckets of maize and kilograms of sugar each student consumes per term, as well as the wages for cooks. Without our involvement, how could these activities be managed? Parents and community members have recently been required to help clear bushes and level the school playground. Without our participation, how would these tasks be easily accomplished? Moreover, the community benefits from the school, using the grounds for social and political meetings and the hall for social functions. The school relies on us for supplies, materials, energy, and financial contributions, while the community enjoys the presence of some school facilities.

Research findings from both quantitative and qualitative data sources indicate that local school community members perceived that there were good reasons for them to get involved in the management of school affairs. Quantitative data sources indicated positive understanding among local school community members about their involvement in school management affairs and went further to give reasons for their involvement. Reasons for their involvement included Monitoring of their material and money contributions, proper implementation of the school plans, students' discipline keeping, enjoyment of some school facilities and academic improvement and more importantly having a say on a school which is claimed to be theirs. The reasons given for their involvement are very similar to the observation by Epstein et al. (2018) that collaboration and shared responsibility between schools, families, and communities yield more positive results. The research findings also align with other researchers' observations. For example, Bryk et al. (2010) noted that open and transparent communication between schools and community members is indispensable for building trust and fostering meaningful community engagement. Findings strongly suggest that community members have the feeling of getting involved in managing the collaborative community secondary schools in Tanzania. Study findings suggest a recognized value and positive perception among local school

community members regarding their involvement in the school management system.

b) Awareness of local community members about their representation in school decision-making bodies

The second main research question was, "Do members of the local community feel adequately represented in the decision-making bodies of the school?" To be able to address this research question, four statements that were rated by use of Likert's scale were formulated as follows:

  i) The community is involved in the issues of our ward school
  ii) Some people from our community are representing us in school management organs
  iii) Community has no significant influence in plans and decisions made by community school management organs
  iv) Village meetings usually include an agenda for discussing our ward school issues

Following were responses to the statement, "community is involved in the issues of our ward school."
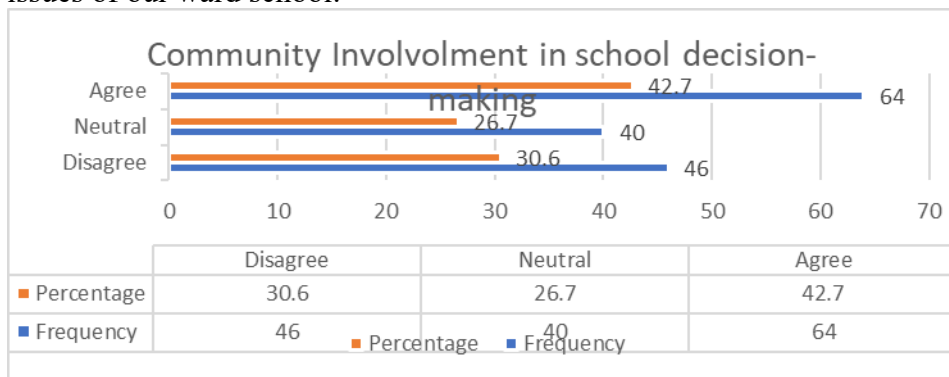
Figure 4: Community is Involved in School Issues

Figure 4 illustrates diverse sentiments regarding the involvement of community members in school issues, with less than half (42.7%) expressing agreement, while 29.4% remained neutral, and 30.6% disagreed. These findings suggest dissatisfaction among community members regarding their involvement in school matters.

Responses to the statement 'some people from our community are representing us in school management organs' were as indicated in Figure 5. This title is loaded and may lose meaning.
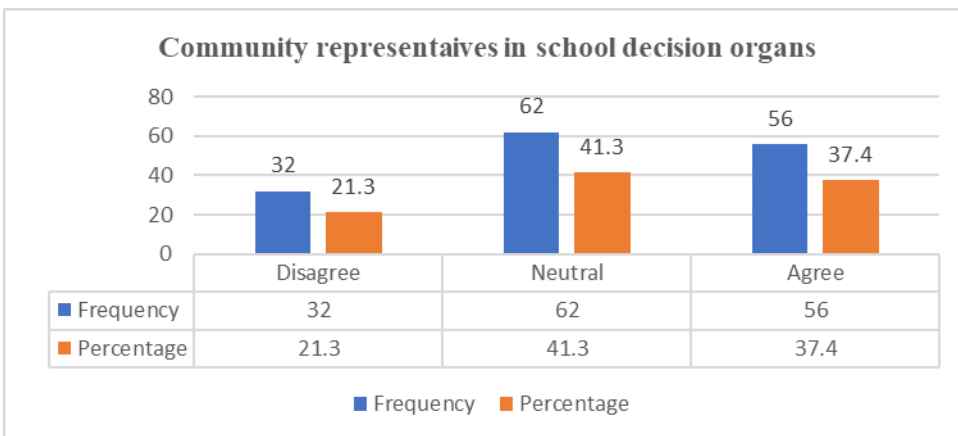
Figure 5: Some People from our Community are Representing us in School Management Organs

The results show that 21.3% disagreed, 41.3% were neutral, and 37.4% agreed they were being represented in the school management organs. These findings suggest that a minority acknowledged the presence of representatives, while the majority (62.6%) either did not recognize or were unaware of any representatives in the school management organs.

When responding to the statement, "I do not know who is planning and making decisions of the ward secondary school," Figure 6 illustrates responses
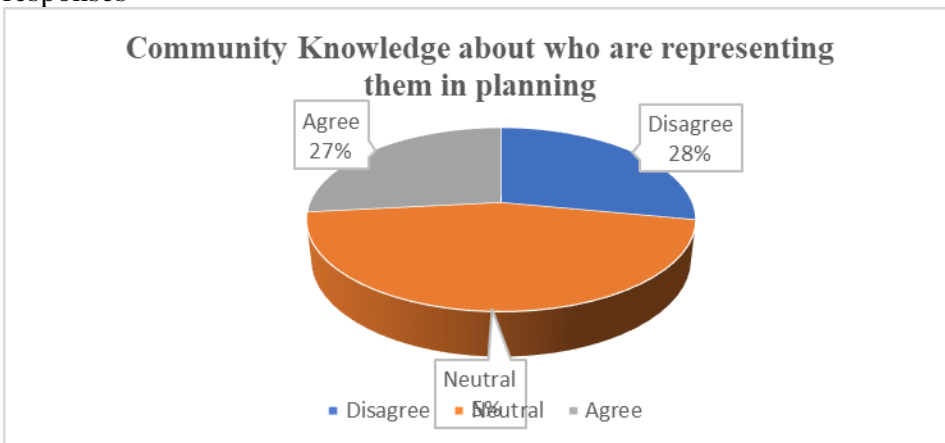
Figure 6: Community Knowledge about who is representing them in planning and making decisions of the community secondary school

The data in Figure 6 indicates mixed sentiments: 28% expressed a lack of knowledge about who represents them in planning and decision-making,

27% claimed this knowledge, and a relatively more significant percentage (45%) remained neutral. These findings suggest that a minority (27%) know their representatives, while the majority (73%) do not know who represents them in the school's decision-making organs.

Figure 7 below indicates results when community members responded to the statement, "Community has no significant influence in plans and decisions made by community school management organs."
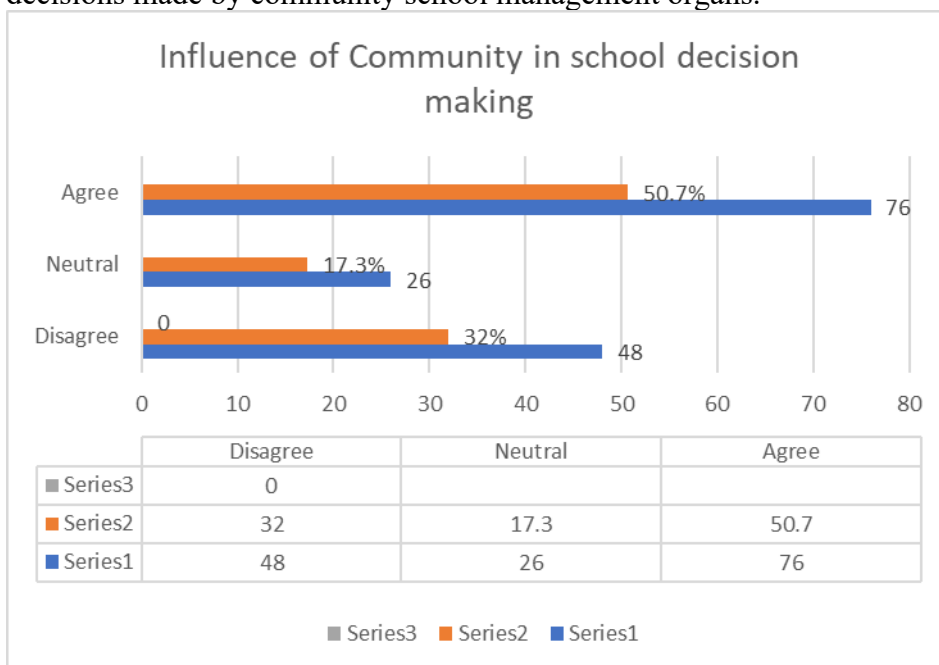
Figure 7: Influence of Community on School Decision-Making Organs

Data in Figure 7 reveals that a relative majority (50.7%) agreed that the community does not wield significant influence over the plans and decisions made by community school management bodies. Additionally, 32% disagreed, asserting that community members do impact these decisions, while 17.3% remained neutral. The findings suggest that many respondents perceived that the community does not influence what is decided by the school management

c) **Inclusion of the Agenda of community secondary school matters in the village meetings**
When responding to the item on whether village meetings have the agenda of community secondary school management matters, the responses were as presented in Figure 8 below.
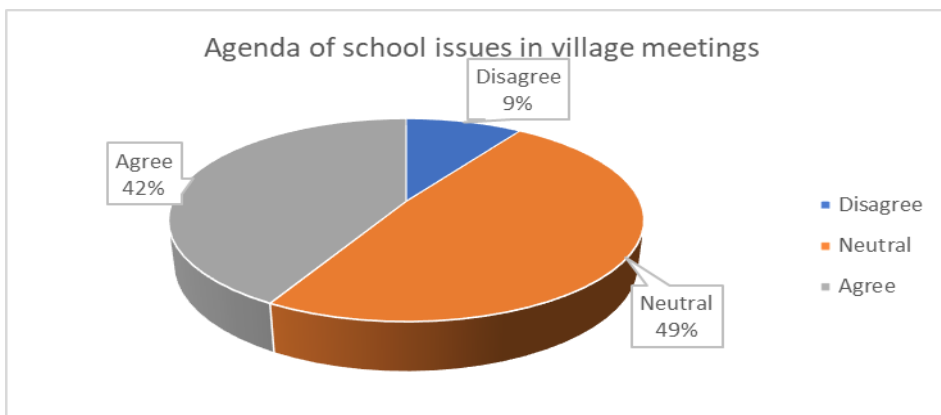
Figure 8: **Agenda of Community Secondary School Management Matters in the Village Meetings**

Figure 8 shows that 42% of respondents agreed, 9% disagreed, and 49% were neutral when asked if village meetings typically include agendas for discussing community school management issues. This data suggests that school matters are either unsatisfactorily discussed in village meetings or usually not discussed. Ideally, these gatherings would have been the right platforms for the community members to express their views on school matters.

d) Easiness of communication between community members and school management organs

When asked about how it was easy to receive and send information to the ward school management organs, responses were as presented in Figure 9 below
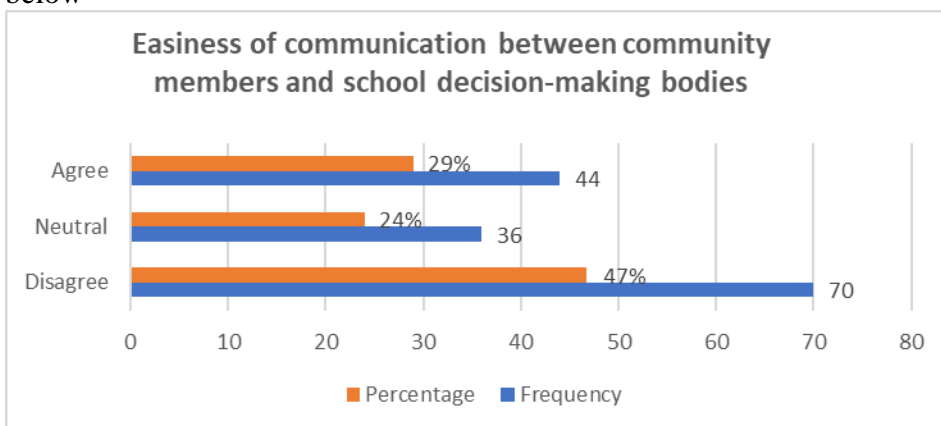
Figure 9: Easiness of communication between community members and school decision-making bodies

Figure 9 reveals mixed sentiments regarding communication with school management. While 29% of respondents found it easy to receive and send information, 24% remained neutral, and 47% disagreed. These results suggest that effective communication between community members and school decision-making bodies is lacking.

In order to get more insights into community perceptions about their representation in school management organs, the same statements rated by Likert scale were converted into interview guide questions. Constructed interview guide questions were as follows:
  i)   Do you think community members are involved in managing the ward secondary school?
  ii)   Do individuals from your community represent you in school management bodies?
  iii) Does the community significantly influence the plans and decisions made by school management bodies?
  iv)   If you have something important to communicate with the school management, how do you do it?

Findings revealed that community members were not regularly involved in school decision-making, except for material and financial contributions. Additionally, their supposed representatives were not easily accessible, making communication between community members and the school difficult and resulting in a lack of a clear platform for dialogue. Furthermore, the community had little meaningful influence on the decisions made. One local school community member, who also seems to represent others' ideas, when interviewed, had these to say;

> …. general community members are not regularly involved in school matters. We only get involved when there is an order from the government, especially when required to contribute materials and money for classroom construction and other school businesses …about our representation, I think we are not represented in the management of our ward secondary school. When the school was established in 2006, some community members were involved; these were school building committee members, but they have been excluded these days. …we hear that some people represent us in school decision-making bodies, but they are unknown to us as no one has introduced them. I believe we have little influence on the plans and decisions made by the school management bodies, school decisions are most time made by teachers and rarely with students' parents, for example, if it is about tea and food contributions… if I have a personal issue like booking hall for a wedding, I go straight to the school but things which are general to our community I share them with my neighbours and friends for support and wait for village or ward

> meeting….as I mentioned earlier, the people who are said to represent us are not known to me; probably they are known to parents with kids at school

Another research participant, when asked about community involvement, representation, influence, and means of communication with school management regarding school matters, had the following to say;

> I have a student in that school and attend some school, village, and ward meetings. Through these meetings, we get involved in school matters. While there are representatives appointed as required by the government, we mainly represent ourselves during these meetings. We share our ideas during village and ward meetings, but the benefits are limited, as most of our concerns are not addressed. They just tell us this, and that is what decisions are made by the government and sent us through them. We remain with of many questions in our heads, such as why the government is not giving us time to discuss and decide by ourselves.

Findings from collected qualitative data support previous findings from quantitative data that community members are not adequately involved in school management matters.

Findings from both quantitative and qualitative data sources indicate that although a kind of school-parent partnership exists, still it was not as strong as people's expectations. Research findings have also shown that parents with children at school were only partially involved in some management aspects of the school, for example, budgeting for students' tea and luncheons.

Despite the fact that some school board members were originally part of the school construction committee and selected from the local area, they were not regarded as representatives by the general community members. The government's plan for community representation on school boards contradicts the community's view that these board members do not effectively represent them. The findings suggest that in an attempt to involve the local school community, we should have the right representatives in the school committees and boards who are truly representing the community. To ensure effective community involvement in school management, representatives of parents and community organisations should be carefully scrutinised. Henderson and Mapp (2002) insist that community members' perceptions of their involvement in school management affairs vary depending on factors such as communication, inclusivity, and the impact of their contributions. The findings from this study are also similar to that of Stein (2009), who found that, among other

things, school councils were generally not viewed as an effective vehicle for school improvement due to a lack of parent and community involvement. Likewise, in this study school, local community members generally did not view the school board as an effective vehicle since it lacked true representation and functionality.

The results suggest that the existing school boards were shaped by the government and, therefore, could not set the expected gateway for community involvement in the management of community secondary school affairs. An observation that is supported by Miller-Grandvaux and Yoder (2002) is that developing local democratic organizations, such as school management committees and boards, is one of the prerequisites for community involvement. Any intervention aimed at strengthening participation of community members in the management of school affairs should begin with the formulation of democratic school management committees or boards.

Conclusion

Based on the findings, it can be concluded that there is a recognized value and positive perception among local school community members regarding their involvement in school management matters. However, while a school-parent partnership does exist, it does not meet the community's expectations in terms of strength and effectiveness. Findings indicated unsatisfactory responses regarding community members' alertness about their representation and influence in school decision-making bodies. Furthermore, findings suggest there are a lot of community potentialities which, when integrated into school management matters, appreciable improvement in the management of community secondary schools can be realised. Therefore, efforts should be made to enhance school-community partnerships to achieve the desired level of collaboration and impact on school affairs. This could involve creating more structured opportunities for community engagement, improving communication channels, and fostering a more inclusive environment that encourages active participation from all community members.

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Monitoring and Evaluation of ICT Integration in Secondary School Teaching and Learning in Tanzania

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Abstract

This study explores the monitoring and evaluation (M&E) of Information and Communication Technology (ICT) integration in teaching and learning in secondary schools across Tanzania. The study reviewed existing literature on ICT integration in secondary school education with data collected qualitatively from 15 participants comprising five (5) teachers and ten (10) students from one secondary school in Arusha City Council in Tanzania. The results showed that the monitoring and evaluation of ICT integration in teaching and learning do focus on ICT infrastructure, ICT in the school curriculum, and ICT in the school culture, which are the key factors that influence the full integration of ICT in teaching and learning. The study recommends the monitoring and evaluation matrix for ICT integration to establish the effectiveness and efficiency of ICT in teaching and learning.

Keywords: *Monitoring, Evaluation, Assessment, secondary education, ICT integration*

Introduction

The use of Information, Communication and Technology (ICT) is rapidly changing global operations in production, business and education due to its efficiency and effectiveness in improving service delivery (Alam, 2018). Subsequently, governments, states, and education institutions are expending enormous sums of money on ICT integration in teaching and learning in order to take advantage of the benefits it offers (Osang & Mbarika, 2019; Alqahtani, 2017). The benefits of ICT in teaching and learning include but are not limited to enabling quick dissemination of

knowledge and skills to students (Osang & Mbarika, 2019; Osang et al., 2015); mediating teaching and learning in the eventuality that schools are closed down like in times of Covid-19 (Pozo et al., 2021 & Manyilizu, 2023a and b); increasing students' engagement in class activities hence, improves knowledge retention (Goldhaber et al., 2021; Huang & Chan, 2021; Manyilizu, 2023a); creating conducive environment which enhances subject content mastery, wide-ranging information and variety of content delivery methods (Waruingi et al., 2021; Machamu et al., 2018 & Manyilizu, 2023a and b).

Nonetheless, in order to maximally benefit from integration of ICT in teaching and learning, the integration of ICT needs to be well monitored and evaluated for its efficiency and effectiveness (Romrell et al., 2014; Kihoza et al. 2016). The integration of ICT in teaching and learning involves a computerized process in facilitating learning (Alkhawaldeh & Menchaca, 2014; Adamu et al., 2022). The integration of ICT in the teaching and learning process ensures that all learning activities are undertaken by using a computer that is a computer-based learning as opposed to computer-assisted learning (Burr et al., 2016). The teaching and learning activities include lesson planning or preparation, lesson presentation or delivery, and assessment (Mchalo et al., 2021).

Research on ICT integration in education identifies multiple levels, from emerging to transforming stages, reflecting varying levels of technology adoption in teaching and learning. Tondeur et al. (2008) emphasize on systemic integration, requiring both teacher-level efforts and institutional support. Baylor and Ritchie (2002) highlight the importance of effective planning, while Fishman and Zhang (2003) stress alignment between school strategies and national policies. Valverde-Berrocoso (2012) argues for autonomous school ICT policies to complement broader frameworks. UNESCO provides a global perspective, underscoring the need for continuous monitoring, professional development, and infrastructure investments to sustain ICT-driven educational transformation. Therefore, the study aimed to investigate monitoring and evaluation of ICT integration in teaching and learning in secondary education.

Literature Review
Information, Communication and Technology
Information Communication and Technology (ICT) has been defined as electronic devices that facilitates creation, process, storage, management, exchange, and dissemination of information to the intended users (UNESCO, 2020; Pargaonkar et al., 2019; Shamim & Abu Raihan, 2016;

Noor-Ul-Amin, 2013). In teaching and learning, ICT is understood as a set of electronic devices and technologies that are used to facilitate teaching and learning. The ICTs is composed of ICT hardware, software, the network, telecommunications, applications and tangible ICT resources and human infrastructure which formulate knowledge and skills required to manage ICT resources (Duncan, 1995; Schalken *et al.*, 2005). Some of the ICT tools used in teaching and learning in schools, particularly secondary schools, include software applications, the internet, local network infrastructure like video conferencing, and hardware such as computers and other devices. In Tanzania, the most commonly used ICTs in teaching and learning in secondary schools include computer/laptop/mobile devices (e.g. mobile), the internet, power point projector, e-mail, school portal (website), Google Docs, Smart Board/Interactive Board, CD ROM/DVDs, Radio, TV, Drop Box, Note Share, Digital/video Camera, photocopy, scanner, printer and ICT experts (Lubega et al., 2014 & BEST, 2022). Therefore, the study considers the integration of the ICT in teaching and learning in terms of ICT infrastructure, ICT in curriculum, and school ICT culture.

ICT Integration in Teaching and Learning

Teaching is a process of imparting desirable skills, knowledge and attitude to a learner while learning is the process of acquiring desirable knowledge, skills and attitude through teaching, studying or experience (Munna &, Kalam, 2021; Gross,2022). The teaching process in education comprises of four key activities: lesson planning and preparation, lesson presentation or delivery, assessment, and feedback (Mchalo et al., 2021). These stages are interdependent and form a continuous cycle aimed at enhancing teaching effectiveness and learning outcomes.

Lesson planning and preparation serve as the foundation, involving the development of learning objectives, instructional strategies, and teaching materials (Tondeur et al., 2008). Effective planning ensures that teachers are equipped to address diverse learner needs and challenges, particularly when integrating ICT resources (Chen, 2023). The lesson presentation or delivery phase translates the planned content into practice, using instructional techniques such as lectures, discussions, and multimedia presentations (Baylor & Ritchie, 2002). Student-centered approaches, such as collaborative projects and technology-enhanced learning, have been shown to increase engagement and promote deeper understanding (Valverde-Berrocoso, 2012).

Assessment plays a crucial role in measuring student progress, incorporating both formative (e.g., quizzes) and summative methods (e.g., exams) to inform instructional adjustments (Fishman & Zhang, 2003). This stage ensures that teachers can address knowledge gaps effectively and align teaching with student needs.

Lastly, feedback and reflection provide students with constructive insights into their performance while also guiding teachers in refining their instructional practices (Tondeur et al., 2008). The feedback loop fosters continuous improvement, ensuring that future lessons are better aligned with learning goals. Together, these four activities form an iterative process, emphasizing planning, delivery, evaluation, and improvement, thereby promoting effective teaching practices and enhanced student learning outcomes.

The teaching activities can be executed by different methods such as; pencil-paper based or pure traditional method, the blended method or pure computer-based method (Burr et al. 2016). The traditional teaching method involves no use of ICT, the blended teaching mode is ICT assisted in which ICT assists some of the activities, and the computer-based teaching is fully computerized; all the activities are done through computer; it is e-teaching. Integration of ICT in teaching and learning is the usage of technology in preparation, delivery assessment of curriculum content and students also using the technology to transact curricular content

Monitoring and Evaluation of ICT Integration in Teaching and Learning
Monitoring is a continuous assessment to determine if progress is made in achieving expected results, while evaluation is an assessment process to determine the effectiveness and efficiency of a programme. Monitoring the ICT integration involves observing, measuring and recording the performance of ICT in teaching and learning. There are different levels of integration of ICT in teaching and learning and various measuring indicators used to gauge them, such as ICT infrastructure, ICT in the curriculum and ICT in school culture (Njagi & Oboko, 2013; Luger, 2007; Marshall, 2007; Adam, 2007; Balanskat et al., 2006).

Context, Input, Process and Product Model
The Context, Input, Process and Product (CIPP) model was developed by New Partnership for Africa's Development (NEPAD), which championed the integration of ICT in schools through the NEPAD e-schools project

(Sergis & Sampson, 2014). The model was for comprehensive monitoring of the e-schools projects. Each aspect of the CIPP model is used to monitor and evaluate related issues in integrating ICT in e-schools.

The context aspect requires collecting and analysing needs to determine objectives, set priorities and establish expected outcomes in line with the prevailing context. The Input aspect in the model is related to the resources which are required to meet the required goals and objectives. The Process helps to determine how well the project is being implemented, the challenges or issues encountered and how best to make. Finally, the Product is related to the outcome, and needs are grouped into parts to determine whether they are being achieved. The model is good at performing compressive analysis of e-school projects but lacks a specific focus on teaching and learning.

The CIPP model is relevant to this study since its aspects: Context, Input, Process and Products are factored in the integration of ICT in teaching and learning. Therefore, these aspects are also considered in the monitoring and evaluation of ICT integration.

Pedagogical Approaches for ICT Integration Framework
The Pedagogical Approaches for ICT Integration Framework has evolved through contributions from multiple educational researchers, organizations, and institutions that focus on integrating ICT into education. These organizations include the ICT Competency Framework for Teachers (ICT-CFT) established by UNESCO (2000), TPACK Framework established by Punya Mishra and Matthew J. Koehler (2006), and ISTE Standards established by The International Society for Technology in Education (ISTE) (1998). The framework has been used in Singapore for the integration of ICT in teaching English and Mathematics in primary schools and monitoring and evaluating ICTs in teaching and learning (Lim et al., 2012). The framework focuses on the level of production, which involves pupils' creation of the digital work, and the collaboration level in which pupils learn with or from ICTs. The model posits that more passive behaviors, such as listening and reading, are associated with learning from ICTs, while more active behaviors, such as writing, creating and updating, are associated with learning with ICTs. In addition, the model acknowledges that learning from computers is done through various forms, such as computer-assisted instruction, computer-based instruction and intelligent learning systems, among others. With respect to learning from computers, a computer is seen as a tutor. The model is relevant to this study because it is used to evaluate and monitor

ICT integration at the production level, like the creation of digital work and collaboration level in which students learn with or from ICT. However, it fails in the sense that it is not able to determine moderating factors in the implementation of the learning process.

Technological, Pedagogical and Content Knowledge Framework

The **Technological, Pedagogical and Content Knowledge** (TPACK) framework was designed by Mishra and Koehler (2006) and it posits that teachers' expertise with respect to integration of ICTs into learning and teaching activities. It is based on the assumption that teachers need to integrate three sources of knowledge: Pedagogical Content Knowledge, Technological Content Knowledge and Technological Pedagogical Knowledge. The framework is relevant to the current study since it focuses on the sources of knowledge that teachers need to know in the integration of ICT in teaching and learning, which are the same concepts that this study investigates. Nonetheless, the framework fails to take into consideration students or pupils who should be the target population in the learning and teaching process.

InfoDev Monitoring and Evaluation Framework

The InfoDev Monitoring and Evaluation (M&E) Framework, developed by the World Bank, assesses how ICT pilot projects contribute to development goals (World Bank, 2005). It integrates formative and summative assessments, offering continuous feedback during project implementation and evaluating outcomes post-project to inform future initiatives. A key feature is its focus on "proof of concept" evaluations, determining if successful pilots can be scaled effectively in other contexts. The framework aligns project evaluations with broader objectives like poverty reduction and improved education, particularly in line with the Millennium Development Goals (MDGs) (World Bank, 2005).

The framework adopts a mixed-methods approach, using baseline studies, surveys, and participatory evaluations to generate evidence for ICT investments. The framework helps ensure projects align with regional and national development priorities by combining real-time operational feedback with long-term impact assessments. Ultimately, it offers insights for policymakers, donors, and managers, supporting accountability and scalability for sustainable development. The InfoDev framework considers a variety of broad development or context issues related to ICTs for educational development (Wagner et al., 2005).

The framework specifies a plan to determine implementation fidelity for ICT integration into education and specifies what is supposed to be achieved. Second, measures that determine the required outcomes are also put in place in order to establish whether the implementation process will be able to attain the required objectives. Lastly, the framework requires measurable indicators and acceptable methodologies to be in place that should be used to determine the impact of ICTs in education.

The measurable indicators in the framework include input (ICT equipment and software), outcome indicators (impacts on the teachers and pupils or students), and cost indicators to determine the worthiness of the integration. The framework is of significance to the study since its indicators are also factors or measuring matrices considered in monitoring and evaluating ICT integration in teaching and learning in schools. The framework, therefore, helps to determine the effectiveness and efficiency of the ICT integration in education in terms of its outcomes and is relevant in monitoring and evaluation of ICT in teaching and learning. Nevertheless, the framework is complicated to understand, and its measurable indicators focus on the implementation, outcome and measuring indicators with little regard on the cultural and individual aspects and perceptions, which may influence the integration of ICT in teaching and learning in schools.

Electronic Maturity
E-maturity is when schools make strategic and effective use of ICT to improve teaching and learning outcomes (BECTA, 2008). However, in order to achieve e-maturity in teaching and learning, the school has to go through different stages and levels in the implementation of ICT: ICT in the curriculum, ICT infrastructure and school culture, culture school organization and management, teaching processes (Fornell & Vivancos, 2009). The stages have different descriptions, which are indicators of the level of integration. For instance, in infrastructure, students and teachers have broadband access, ICT equipment, and the availability of digital resources, as well as evidence of use and technical support. E-maturity can be equated with the integration of ICT. The levels of e-maturity are initial, e-enabled, e-confident, and e- mature.

In comparing all levels in ICT infrastructure (Livingstone, 2012 & Valverde Berrocoso, 2015), Initial level schools have a basic ICT infrastructure and have started to use digital resources in teaching and learning, but there is little reflection on ICT use. However, e-enabled schools have a better ICT infrastructure than at the previous level and

have started to develop ICT strategic action planning. Teachers integrate ICT into the curriculum and use digital resources more frequently. E-Confident Schools have classrooms with projectors or interactive whiteboards (IWB), a reliable broadband or cable network and resources available throughout the school and remotely. Finally, in e-Mature, all e-confident level features are reinforced, and ICT is embedded in all the school activities. All stakeholders share the ICT vision. All teachers are confident in their ICT and use ICT in their daily performance. The level of e-maturity can be replicated to monitor and evaluate the integration of ICT in teaching and learning.

According to the reviewed frameworks and models, the integration of ICT in teaching and learning can be at different levels or stages depending on how ICT is used in the teaching and learning process. The models have different indicators or performance matrices used to monitor and evaluate the integration of ICT in teaching and learning. Every reviewed framework has strengths and weaknesses, and they are applicable in a specific context. Some have generally focused on the adoption and use of ICT and the components of integration of ICT that should be considered, such as context, input, process, and product, but have not addressed other areas of integration. The frameworks are relevant to the current study since they have some indicators and concepts of integration that can guide the study. However, since they have not completely addressed the Tanzanian context, there is a need for the establishment of a framework for monitoring and evaluation the integration of ICT in teaching and learning in the Tanzania context.

In addition to the framework and models reviewed to guide the study, both system and program theories were also used. The system theory was championed by Ludwig Bertalanffy (Bertalanffy, 1968). The theory focuses on the relationship between parts and their connection to the whole (Chikere & Nwoka, 2014). Thus, components of the system can be clearly understood if their relationships and their contextual connections are examined instead of looking at the components in isolation. These components include system-environment boundary, input, output, processes, and external stakeholders. Systems theory attempts to solve problems by looking at the whole rather than the specific elements. Systems theory thus examines entities at various levels in terms of organizations, processes, and relations which cause them to stand together as recognizable entities (Lai & Lin, 2017; Chikere & Nwoka, 2014; Mele et al., 2010). The theory is applicable in monitoring and evaluation of the system since it looks at every part of the system.

The program's theory consists of descriptions to explain why and how programs perform (Sharpe & Bay, 2011). The theory considers stakeholders, scientific and integrative perspectives, and it has three components: inputs or program activities, output and the processes (Rogers, 2008). For instance, the inputs are responsible for defining the program and in monitoring and evaluation of the system, inputs such as ICT infrastructure will determine the amount of effort that is required to produce an outcome (Rosenberg & Jones, 2018). The theory activities ensure that the system achieves its aim like skills training and capacity building. The output is what gives the outcome that the system requires, while the outcome is the expected results that benefit the stakeholders. The impact will benefit the stakeholders and the community. The two theories are applicable to the study since they are able to monitor and evaluate the integration of ICT systems according to the functions and activities that they perform.

The five frameworks and two theories reviewed have provided adequate concepts and information on integrating ICT in teaching and learning in schools. They have established the level or stages and areas of integration of ICT in teaching and learning in schools. Moreover, they have revealed various indicators or performance matrices that are used to monitor and evaluate the integration of ICT in teaching and learning. Despite the strength and relevance of every model to this study, none comprehensively addressed all the levels and areas of integration of ICT in teaching and learning in the Tanzanian context. The system theory has addressed the limitation of most of the models that focused only on the integration of ICT in some stages of teaching and learning as opposed to looking at it as a system or a whole. Correspondingly, the program theory also explains why and how programs integrally perform, such as why and how ICT integration performs in teaching and learning. Although the frameworks and theories are relevant to study in terms of indicators of integration, which are commonly shared, none of them is designed for schools or focuses on Tanzania's situation. Consequently, the current study establishes a framework for monitoring and evaluating the integration of ICT in teaching and learning in the Tanzania context.

Methodology
The study used a descriptive research design to gain a comprehensive understanding of the phenomenon under study. The study used a qualitative approach, which enabled the respondent to narrate and explain their views. The study was conducted in one public secondary school in Arusha city council in Tanzania. A total of 15 respondents were sampled

using purposive sampling techniques: 10 were students while 5 were teachers. The primary data were collected from respondents using an interview as a data collection method, while secondary data was collected from the literature review. The researcher reviewed five frameworks for monitoring and evaluation of ICT integration in teaching and learning, which highlighted the ICT integration components and its assessment criteria. The monitoring and evaluation models helped gather and gain more information on ICT integration, its use, and criteria for monitoring and evaluating teaching and learning in secondary schools. Moreover, two theories, system and programme theories, were reviewed in order to shed light on the factors to consider in conducting an assessment of the ICT integration process in schools. The collected data were summarised and compared to the context of Tanzania and used to propose a framework for monitoring and evaluation of integration of ICT in teaching and learning according to the study's objective.

Results and Discussion
The study's findings are based on the literature review and data collected from the respondents. Table 1 is the summary of the findings:

Table 1: ICT integration level in teaching and learning

		Initial	e-enabled	e-confident	e-matured
ICT INFRASTRUCTURE	**Planning for acquisition of resources**	Basic level of planning for purchasing ICT equipment exists.	Some level of ICT purchase planning takes place, including standardisation of ICT equipment, use of laser printers, and purchasing with warranty	Procurement planning and standardisation of ICT equipment takes place. Older computers are disposed of with necessary precautions against environmental pollution.	There is an integrated approach to procurement which considers full operating costs of ICT equipment and technical support provision.
	LAN & Broadband Access	Network exists in some areas of the school. School is connected to the Schools Broadband Programme. Internet access is distributed through the Local Area Network.	Most rooms and computers are connected to the school network, facilitating access to online and network resources.	A high-speed and reliable network extends to all areas of the school. All computers are connected to the network, facilitating access to online and locally based server resources.	Resources are accessible from a central server. All teachers and students have secure access to server space and their e-portfolio from within the school and remotely.
	Technical Support	Technical support is carried out using mainly voluntary assistance. Occasionally a technician is paid to carry out urgent work.	Technical Support is provided by an external company on a call-out basis as required. No technical support contract is in place.	Technical support is factored into procurement planning, all equipment is procured with an appropriate warranty. Formal technical support contract with Service Level Agreement (SLA) is in place with an external provider.	Technical support is planned and integrated with ICT procurement planning and takes into account full ICT operating costs.
	Software & Digital Content.	Limited digital content is available. TIE digital content is used regularly. Central licensing agreements are availed of.	The school has a range of appropriate digital content resources to support learning at all levels.	There is easy access to appropriate digital content that teachers have catalogued by subject/ curriculum area.	The school creates its own customized digital content which is accessible from home and school by all stakeholders.
		Some classrooms have	Some rooms have digital	All learning areas have access to	All learning areas have access

		Initial	e-enabled	e-confident	e-matured
		desktop computers. A laptop and portable projector, printer, digital camera, drop down screen whiteboard... are available as shared resources.	projectors and computers. Peripherals, such as digital cameras and scanners are used for ICT integration activities.	a range of ICT equipment including digital projectors and wirelessly enabled tablet PC's. Laptop trollies are used to improve access to resources.	to a range of ICT equipment. Provision is made for the incorporation of students' mobile devices.
	Licensing	It is unclear whether all software in use in the school is properly licensed.	The school is developing a software licensing programme for the applications installed on the school's equipment.	The school has a log of all licenses for software and applications in use throughout the school.	The school ensures that all new installations of hardware and software meet the required licensing standards.
ICT IN THE CURRICULUM	Teacher Underst	Teachers have a general understanding of how ICT integration can improve teaching and learning.	A few of teachers understand methodologies to integrate ICT into the curriculum	Most teachers understand how ICT integration can be used in the curriculum to improve student learning	Teachers have determined their own methodologies for integrating ICT into the curriculum.
	Planning	There is little planning for ICT integration, with ICT activities focused on students' acquisition of ICT skills, e.g. word processing	There is some planning for ICT integration, with the focus mainly on teacher preparation, whole class teaching, group and individual work	Teachers plan in a structured way through timetable and scheduling of ICT integration in their lessons and classroom activities	The school devotes time to exploring new approaches to using ICT integration to improve student learning.
	Teacher Use	Teachers use computers primarily in isolation from regular classroom learning activity.	Teachers use ICT for lesson planning and as a teaching tool.	Teachers use ICT to provide learning opportunities that support cross-curricular, subject-based and constructivist learning approaches.	Teachers have embedded ICT into their practice to facilitate student directed learning. There is consistent evidence of collaborative, discovery-based and authentic ICT activities throughout the school.

		Initial	e-enabled	e-confident	e-matured
SCHOOL ICT CULTURE	**Student Experience**	Students occasionally use ICT as part of the learning process.	Students experience ICT activities regularly.	Students experience ICT activities regularly and use ICT to collaborate on curriculum activities both within the school and with other schools.	Students are facilitated to use ICT to support and assess their learning, e.g. creating digital content and electronic - portfolios
	Inclusive Education	Teachers are aware that ICT can enhance the learning opportunities of students with Special Educational Needs (SEN).	Teacher's use of ICT focuses on the development of literacy and numeracy for students with special educational needs.	Teachers use ICT diagnostic tools, assistive technologies and ICT resources to address curriculum objectives with students with special Educational needs.	ICT is integral to all aspects of SEN teaching and learning as well as in the development of IEPs. ICT resources and assistive technologies are incorporated into all levels of school planning
	Access	Teachers and students have limited access to ICT resources.	Teachers and students have regular access to ICT resources.	ICT resources are readily available to staff and all students throughout the school.	ICT resources are available to staff, students and the wider school community outside of school time
	Evidence of Use	There is little visible evidence of ICT use	There is visible evidence of use of ICT use, e.g. displays of project work.	Evidence of ICT use is visible in all areas throughout the school.	The school disseminates and shares examples of good practice beyond their own school community.
	Website/Online Presence	School has or is actively planning an online presence, e.g. a blog or basic website.	School has an active and up-to-date website.	School has an active and up-to-date website.	Schools uses a Content Management System (CMS) to create a communicative space where the school community publishes content and which conforms to accessibility guidelines.

		Initial	e-enabled	e-confident	e-matured
	Projects	Some teachers engage in school-based ICT project work.	School is involved in projects that integrate ICT (national and/or international), e.g. e-Twinning	School has experience of integrating ICT in interdisciplinary and large-scale project work.	Students and teachers regularly develop small-scale projects for external collaboration, e.g. through the use of a Virtual Learning Environment or wikis
	Organization & Communication		There is some communication between school, home and the Department of Education & Science via e-mail or text messaging.	School makes regular use of ICT to communicate with teachers, parents, Board of Management and the wider community. School has an e-mail newsletter.	School encourages parents and the wider community to use ICT to communicate with the school. Teachers, students and parents have online access to student records and timetable.

Source: Adapted from Departamento de Educación del Gobierno Vasco (2011), Fornell & Vivancos (2009), National Centre for Technology Education (2008) and Solar, Sabattin, & Parada (2013) and field data from one school in Arusha, Tanzania.

Table 1 above demonstrates the level of ICT integration in teaching and learning in secondary schools. The lowest level of ICT integration, according to the illustrations, is initial, followed by e-enabled, and e-confident. In contrast, the fullest level of integration is e-matured. Most schools in Tanzania are in the initial stage, with only a few at the e-enabled level. This rating on the integration of ICT in teaching and learning in either initial or e-enabled is caused by inadequate and outdated ICT infrastructure, inadequate ICT knowledge, skills and competency, lack of proper enforcing policies, and poor monitoring and evaluation of ICT integration. Moreover, only a few of the teachers understand methodologies to integrate ICT into the curriculum. Correspondingly, only a few schools are involved in projects that integrate ICT (national and/or international), such as e-Twinning. Similarly, technical support is provided by an external company on a call-out basis as required since no technical support contract is in place. The schools have limited digital content available, and digital TIE digital content is used regularly. Besides, it is unclear whether all software in most of the schools are properly licensed, while some schools at e--enabled are developing a software licensing programme for the applications installed on the school's equipment. The findings concur with the findings from the study by Burr et al. (2016), which reported that the mode of teaching in secondary is paper-pencil based. The authors emphasized that the use of ICT is minimal and not highly integrated.

The fullest level of integration, e-matured, involves an integrated approach to procurement, which considers full operating costs of ICT equipment and technical support provision. Additionally, resources are accessible from a central server. All teachers and students have secure access to server space and their e-portfolio from within the school and remotely. Correspondingly, technical support is planned and integrated with ICT procurement planning and takes into account full ICT operating costs. In addition, teachers have embedded ICT into their practice to facilitate student-directed learning. Consistent evidence of collaborative, discovery-based and authentic ICT activities throughout the school exists. Likewise, students are facilitated to use ICT to support and assess their learning, e.g., creating digital content and electronic – portfolios. Finally,

ICT is integral to all aspects of SEN teaching and learning as well as in the development of IEPs. ICT resources and assistive technologies are incorporated into all levels of school planning.

The fullest integration of ICT in teaching and learning can be in the stages of teaching, as identified by Mchala et al. (2024). The full integration of ICT in lesson planning and preparation, presentation or delivery and assessment ensures full integration. Effective teaching and learning activities can only be if an efficient and effective mode is used (Munna & Kalam, 2021). The integration of ICT in teaching and learning enables teachers and students to effectively acquire the skills and knowledge needed (Gross, 2022). Correspondingly, the use of ICT enables adequate lesson planning and preparing ensures that teachers are well-equipped to address diverse learning needs (Chen, 2023)

To monitor and evaluate the level of integration of ICT in teaching and learning, the integration and performance of ICT are gauged with the integration indicators or matrix at every level, as demonstrated in Table 1 above. The presence of ICT infrastructure and its use, the incorporation of ICT in the school curriculum, and the school culture indicate the level of integration.

Conclusion

The study revealed the need for monitoring and evaluation of the ICT integration in order to determine its effectiveness and efficiency. The proposed framework for monitoring and evaluation of ICT integration in teaching and learning in secondary schools in Tanzania is intended to enable schools to gauge the integration of ICT in schools. The framework is focused more on ICT infrastructure and its use, the incorporation of ICT in the school curriculum and the school culture as significant areas of ICT integration in schools. This framework can be applied to all levels of education, such as primary, secondary and tertiary levels of education, although it is designed for secondary schools. Moreover, it can be used to monitor and evaluate ICT integration in all stages of learning, such as e-assessment. In this regard, ICT integration is evident in ICT infrastructure, in the curriculum, and the general ICT culture in school. Due to the benefits of ICT integration in teaching and learning, the study recommends that this framework be used for continuous assessment of ICT integration in secondary schools.

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Pre-Primary Teachers' Perceptions on Acquisition of Early Writing Skills of Alphabet Letters in Shinyanga Rural District, Tanzania

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Abstract
Individual letter formation is an essential aspect of early writing proficiency. This study investigated teachers' perceptions of the factors influencing pre-primary children's acquisition of alphabet letter writing skills. Specifically, the study sought to determine how teachers perceive child-level and home-environment aspects influencing children's acquisition of early alphabet letter writing skills. Bronfenbrenner's bioecological paradigm, the Process-Person-Context-Time model, guided the research. The research was conducted in the district council of Shinyanga in the Shinyanga Region. The investigation included 103 pre-primary education teachers who instruct preschool classes. A structured questionnaire was used to capture information, then analysed using SPSS version 23. Descriptive analysis for mean and standard deviation computations and variable correlations was performed using the Pearson Product-moment Correlation Coefficient. The study found that the child-level factors had higher mean scores than the child's family environment, indicating that the child-level factors significantly impact the early acquisition of alphabet letter writing for pre-primary children. The increase of within-child factors increases the child's home environment. The findings indicate that child-level factors and the child's home environment interact, consistent with the model used. Further research is needed on how home literacy activities improve alphabet letter writing for pre-primary children.

Keywords: *Letter writing skill, Pre-primary classes. Alphabet letters, Pre-primary Teacher*

Introduction
Early writing refers to children's first representations of spoken language via written symbols and letters (Puranik et al., 2014). Early alphabet letter-writing skills involve printing individual letters, whether uppercase or lowercase (Puranik & Lonigan, 2011; Ritchey, 2008; Puranik et al., 2013). Letter writing is one of the emergent literacy productive skills

children gain as they grow from non-readers and writers to autonomous readers and writers (Stern et al., 2018). It is about forming individual letters in preschool activities (Diamond et al., 2008; Levin et al., 2005). Letter-writing skill is the ability and knowledge a child acquires by attempting to retrieve the visual shape and names of alphabet letters (Puranic et al., 2011). Developing letter-writing abilities is a primary objective of early education (Puranik & Lonigan, 2014). Children with more of this talent in preschool learn to read quickly and better than children with fewer skills (Lonigan et al., 2008; Puranik & Lonigan, 2014). Additionally, children's ability to write alphabet letters represents their emerging orthographic knowledge (Ritchey, 2008). It strongly predicts writing fluency, spelling and compositional skills in the primary grades (Pruranic & Al Otaiba, 2012). Moreover, according to Torrance et al. (2020), most children enter primary school with a well-developed capacity to articulate their thoughts in speech but not in writing. Much progress has been made in research on the importance of early reading development and the consequences of failing to acquire early reading skills (Lonigan & Shanahan, 2009). Still, less is known about writing, particularly the early stages of writing development for preschool children. Less is known about factors influencing the acquisition of alphabet letter writing than the development of letter names and sounds (Puranik et al., 2014). The current study aims to assess factors influencing the acquisition of early letter-writing skills for public pre-primary children.

Guo (2018) investigated preschool children's letter-writing abilities and the link between early literacy skills in southwestern Ohio. Letter-writing abilities were substantially related to children's ages. Levin and Bus (2003), Puranik and Lonigan (2011), Worden and Boettcher (1990), and Puranik et al. (2013) all found results comparable to Guo's (2013). Worden and Boettcher (1990) further found that the type of alphabet letter influenced letter writing, as they used name printing and found children performing better on uppercase than lowercase letters. Pavelko, Lieberman, Schwarz, and Hans-Vaughn (2017) investigated the contribution of letter writing to children with language impairment. Language impairment was an element that affected the children's learning of early letter writing. The study is similar to Prunty and Barnett's (2020) study, where the Developmental Coordination Disorder (DCD) group had more errors in their letter forms than the Typical Disorder peers. Additionally, authors also found letter-writing production to be less consistent between tasks.

Puranik, Al Otaiba, Sidler, and Greulich (2014) conducted an exploratory investigation to examine the nature of writing instruction in kindergarten classrooms. The study found that letter-writing acquisition was influenced by kindergarten instructors' writing time, children's writing time, and classroom writing instruction. Also, the shape-copying of alphabet letters rather than through dictation by children varies according to influence or letter-writing accuracy (Marr & Cermak, 2002). Dhanya and Alameru (2019) found that conducive classroom environments, positive learners, teacher relationships, positive feedback, and constant motivation influence the acquisition of writing skills.

Further, Guo, Puranik, Kelce, Dinnesen, and Breit-Smith (2020) conducted questionnaire-based correlational research to investigate the association between reading and writing-related home behaviours and children's writing development. The study included 282 kindergarten children and their parents from the United States, South and Midwest. Each child did an identical direct writing assessment to acquire the necessary information, while parents filled out questionnaires on home literacy activities. According to the study, independent reading substantially influenced children's home letter writing. Adams, Soto-Calvo, Francis, Patel, Hartley, Giofre, and Simmons (2021) examined the home concerning children's writing skills at school. Ritchey (2008) declares that preschool home literacy environments are unrelated to higher-level translation and text production writing skills. In Tanzania, Mmasa and Anney (2016) found that standard one and two teachers had inadequate professional skills for teaching literacy. Other factors found by authors include pupils who do not have textbooks and were not following the teacher appropriately larger teacher-pupil ratio. Kigobe (2019), in Dar es Salaam, found weak associations between parental literacy support activities and children's literacy development. Furthermore, Ngussa and Mjema (2017) established that school administrative support, teaching methodologies and teacher and learner-related factors significantly influence pupils' mastery of the 3Rs. The three previous studies were conducted at the pre-primary education level, unlike the present work, which was conducted at the primary education level.

Previous research on early writing skills of alphabet letters has been examined in different contexts and populations. Issues related to letter-writing skills were captured and discussed, including the instruction used in developing letter-writing skills, language impairment and disorder, parents' role, and the factors influencing the early writing of alphabet

letters as related to the present study. However, little has been done in Tanzania and outside on the factors influencing letter writing to pre-primary teachers and their relationship. The present study aims to assess the within-child factors and child-home environment factors and how the two factors relate to the acquisition of early writing skills of alphabet letters in children.

Early Writing in Pre-primary Children in Tanzania

In Tanzania, early writing of alphabet letters is under the "Language, Communication and Literacy development" area, which is among six learning areas indicated in the pre-primary education curriculum (Ministry of Education Science and Technology, Curriculum and Syllabus for Pre-primary Education, 2016). The learning area enables the child to develop competencies in communication, which lays a foundation for early literacy skills that include mastering pre-reading and pre-writing. The mastering of pre-writing skills in children is through practising activities that build motor skills, practice using drawing and writing materials, practising pre-writing, constructing vowel and consonant shapes, tracing vowels and consonant shapes, writing vowels and consonant step by step in lowercase (Ministry of Education Science and Technology, Curriculum and Syllabus for Pre-primary Education, 2016). According to the Tanzanian pre-primary syllabus, lowercase is introduced at the pre-primary education level, while uppercase is raised when a child enters grade one. The issue of concern for the present study addresses factors that influence a child's acquisition of early writing skills in alphabet letters.

Theoretical Framework

A study adapted Bronfenbrenner's bioecological model, a theory of educational psychology that examines human development over time (Bronfenbrenner, 2005). The present study sought to determine the relationship between the environment and human development. It is founded on the understanding that child development is an interactive process between the individual child's characteristics and environment over time. Bronfenbrenner created the Process-Person-Context-Time (PPCT) paradigm in 1995, which serves as the theoretical foundation for this research study. Bronfenbrenner believed that development resulted from the interaction between the individual and the environment. This study used the Process-Person-Context-Time model to investigate the acquisition of early writing skills for alphabet letters by evaluating the child's characteristics and home environment.

The process

In theory, the process is the engine of development. Processes are daily interactions a child has between themselves and the environment (Bronfenbrenner & Morris, 2006). According to Trudge, Morova, Hatfield, and Karnic (2009), the process can result in either a struggle for the child in the environment or the advancement of the skills. In this study, the process involves a child whose characteristics of early literacy interact with their home environment to acquire alphabet letter writing.

Personal: The child

According to Bronfenbrenner's (1995) PPCT model, a person's perspective and beliefs are essential and influential in determining behaviour and development. In this regard, it involves the characteristics of a child, such as age, gender, and disability, which are involved in the child's development. Added factors regarding the present study include the child's knowledge of alphabet letter names, understanding of the alphabet, genetics, and the parents' abilities. Others are the giftedness and talent of a child, an initial alphabet letter in a child's name, and alphabet letters found in a child's name.

Contextual: The home

The home is a crucial aspect of children's emergent literacy abilities since it is where children first meet academic-related events, attitudes, and resources (Roberts et al., 2005). The family setting can lay the groundwork for future literacy growth and development. DeBaryshe, Binder, and Buell (2000) concluded that the home environment provides many positive literacy experiences that can impact future growth. The authors commented that a child becomes familiar with literacy materials, observes the literacy activities of others at home, and independently explores literate behaviours. Also, a child participates in collaborative reading and writing activities at home and benefits from the teaching strategies that family members use when engaging children in literacy tasks. This study, therefore, integrates contextual and personal variables to comprehend how these two factors influence the early acquisition of alphabet letter writing skills in children.

Present Study

This study was conducted in Shinyanga district, Shinyanga region, Tanzania. The purpose of the quantitative analysis was to investigate the acquisition of early writing skills for alphabet letters by children in public pre-primary schools. According to UWEZO (2017), between 2011 and 2015, the Shinyanga region was reported to be among the seven areas

showing low performance (32% in Kiswahili). However, district-wise, Shinyanga district (44%) has been doing poorly in literacy for children aged 3–9 years. The present study involved pre-primary teachers who teach children between the ages of 4 and 5 (URT, 2016). A survey by Gabas, Wood, and Cabell shows that teachers primarily focus on spelling and composition and less on handwriting. In addition, less is known about the factors contributing to acquiring alphabet letter-writing skills than about developing letter names and sounds (Puranik et al., 2016). Based on the significance of alphabet letter writing, the study sought to evaluate the perceptions of pre-primary teachers regarding the factors that influence the acquisition of early writing skills in alphabet letters. The investigation was guided by Bronfenbrenner's bioecological model, which encompasses the Process-Person-Context-Time model (PPCT). Further, the paper assessed the relationship between the perceived factors in acquiring early writing skills for alphabet letters by pre-primary children. The following null hypothesis guided the study:

There is no relationship between child-level factors and the home literacy environment factors in acquiring alphabet letter writing to pre-primary children.

Methodology
Participants
As shown in Table 1, 94 pre-primary teachers, 48 (51.1%) males and 46 (48.9%), were involved in the study.

Table 1: Demographic Characteristics of Participants in the Study

Variables	Categories of the Variable	N	%
Gender	Male	48	51.1
	Female	46	48.9
Total		**94**	**100**
Professionalism in early childhood	Certificate	1	1.1
	No professionalism	93	98.9
Total		**94**	**100**
Have you ever attended any seminar or workshop regarding teaching pre-primary classes	Yes	35	37.2
	No	59	62.8
Total		**94**	**100**

Field Data (2021)

Table 1 also presents pre-primary teachers' status regarding teaching and learning. The table shows that the pre-primary teachers in Shinyanga

District Council teach without having basic knowledge of pre-primary children.

Procedures

The present study used a quantitative method with descriptive and correlational designs. The study used purposive sampling to select in-service public pre-primary teachers from public primary schools as they are the ones who instruct the pre-primary classes in the primary schools on the required competencies. To recruit pre-primary teachers for the study, they were selected from 136 primary schools (BEST, 2020) through a random sampling process. Random sampling was employed to increase the likelihood of including all districts (26) and primary schools (136) in the Shinyanga District Council, where pre-primary classes are located in the investigation. According to the DEO in Shinyanga district (2021), each primary school (136) has one pre-primary class and one pre-primary teacher.

Consequently, the total number of pre-primary teachers is N = 136. If a designated teacher is absent, another teacher assumes responsibility for the class. According to Krejcie and Morgan's (1970) table of sample size for a finite population, the sample size for N = 136 is 103 involved in the study.

Measures

The participants in this quantitative research filled out questionnaires. The closed-ended questionnaire included demographic data about pre-primary teachers and children in the Shinyanga study district and factors influencing early alphabet letter writing development. The study used child-level elements from Puranik et al. (2014) for the questionnaire. The section discussing the influence of home environment factors on letter-writing skills was constructed following a comprehensive review of pertinent literature. The bioecological development model matches the factors (Bronfenbrenner & Morris, 2007). Nine of the 103 questionnaire recipients did not respond. Ninety-four questionnaires were returned; 48 (51.1%) were male, and 46 (48.9%) were female. Pre-primary teachers responded to statements on factors affecting children's alphabet letter writing on a five-point Likert scale. The scale intervals include: 5 means "strongly agree," 4 indicates "agree," 3 suggests "don't know," 2 shows "disagree," and 1 indicates "strongly disagree." Table 1 uses a 5-point Likert scale for criteria.

Table 1: Scoring Criteria Values of 5 Points Likert Scale

Scale	Value	Range
Strongly Disagree	1	1.00-1.80
Disagree	2	1.81-2.60
Not Agree	3	2.61-3.40
Agree	4	3.41-4.20
Strongly Agree	5	4.21-5.00

Adopted from Sözen & Ufuk (2019)

Analysis And Presentation of the Findings

The analysis was conducted using SPSS version 23. Descriptive analysis was carried out by computing the means and standard deviations of the statements for each variable**. The Pearson product-moment correlation coefficient was used to assess the strength and direction of the linear relationship between two variables. The correlation coefficient was employed to ascertain** the level of relationship between *within-child factors and home factors* and the directions of teachers' perceptions.

This section begins by describing the characteristics of pre-primary children, as reported by the pre-primary teacher.

Table 2: Characteristics of Children in the class and tribes reported

Statements on the characteristics	Values	Response	
		N	%
Number of children Sukuma by a tribe in the pre-primary class	10-20	2	2.1
	21-30	1	1.1
	31-40	2	2.1
	41-50	1	1.1
	51-60	6	6.4
	61-70	2	2.1
	71-80	1	1.1
	81-90	2	2.1
	91+	2	2.1
	All are Sukuma	75	79.8
TOTAL		**94**	**100**
Number of children in a single pre-primary class	10-20	6	6.4
	21-30	5	5.3
	31-40	6	6.4
	41-50	7	7.4
	51-60	20	21.3
	61-70	6	6.4
	71-80	7	7.4
	81-90	11	11.7
	91-100	6	6.4
	100+	20	21.3
TOTAL		**94**	**100**

Source: field data (2021).

Pre-primary teachers reported the demographic characteristics of the children they teach, presented in Table 2. Most 75 (79.8%) pre-primary teachers said most children in their classes are Sukuma by tribe. Sukuma is their mother tongue, and Kiswahili is their second language. Children, therefore, must gain alphabet letter writing skills in their second language rather than their first language. Furthermore, most 20 (21.3%) pre-primary school teachers had 51 to 60 children in a single class, while the remaining 20 (21.3%) were noted to have more than 100 children in a single class. It is recommended that teacher-student ratios in pre-primary schools in Tanzania should be 1:25 (URT 2014; 2016). The study suggests that a pre-primary teacher teaching a large class of children cannot manage the class and teach effectively.

Table 3. **Child level factor**

Child-level Factors	N	M	SD
Child-level Factors			
Age of a child	94	4.18	1.32
Gender of a child	94	4.19	1.32
Knowledge of alphabet letter Name	94	4.24	1.26
Knowledge of alphabet	94	4.24	1.29
Genetics and parents' abilities	94	4.25	1.21
Knowledge of alphabet order	94	4.26	1.24
Language impairment of a child	94	4.27	1.24
The Gifted or the Talent of a Child	94	4.32	1.14
An initial alphabet letter in a child's name	94	4.48	1.01
Alphabet letters in a child's name	94	4.81	.58

Source: Field data (2021);
Scale: 5-Strongly Agree, 4-Agree, 3- I don't know, 2- Disagree, 1 – Strongly Disagree

Table 3 shows the within-child factors that influence the acquisition of early letter-writing skills for alphabet letters in children with the mean scores M=4.18, SD=1.32 to M=4.81, SD=.58. The pre-primary teachers agreed only on two factors' age *of a child'* (M=4.18, SD=1.32) and '*gender of a child'* (M=4.19, SD=1.32) in influencing acquisition of early alphabet letter writing. The statement "the gifts and talents of the child" had a higher mean score (M = 4.32, SD = 1.14). The mean scores for "*alphabet letter in a child's name*" (M = 4.81, S.D. =.58) and "An *initial alphabet letter in a child's name*" (M = 4.48, SD =1.01) had higher mean scores. The findings imply that gifted and talented children have a greater influence on acquiring alphabet letter writing skills than normal children. Also, the acquisition of early writing of the alphabet is influenced if the alphabet letters are present in their name. Moreover, the gender and age

of a child did not have a greater impact on the acquisition of alphabet letter writing in children.

Table 5: Home Environment Surrounding a Child

Statements of the home environment surrounding a child	N	M	SD
The home environment surrounding a child factor			
Social Economic Status of Children's Family	94	4.64	.82
The language used at home	94	4.72	.67
Children experience a rich language environment with a lot of books and written materials at home	94	4.72	.72
Parent alphabet letter activities, support, and instruction in children's early years at home	94	4.74	.62

Source: Field data (2021);
Scale: 5-Strongly Agree, 4-Agree, 3- I don't know, 2- Disagree, 1 – Strongly Disagree

Table 4 indicates that the mean scores of a child's home environment varied from M = 4.64, S.D. =.82, to M = 4.74, S.D. =.62. The findings demonstrate that pre-primary teachers strongly agreed on all claims that had a significant influence on children's acquisition of alphabet letter writing. Parental support (M = 4.74, S.D. =.62) is essential for acquiring early writing skills for alphabet letters.

Table 6: Correlations of the variables, means, and standard deviations of study variables.

	1	2
Within - child factor		
The home environment surrounding a child	.451**	.
M	43.18	18.84
SD	9.02	2.55
Cronbach's alpha	.92	.91
N		94

Note. ** p < .01   Pearson correlations were calculated between all variables.

Table 5 shows the strength and direction of factors influencing the acquisition of early writing skills for alphabet letters. The table reveals a statistically significant positive correlation between factors influencing the acquisition of early writing skills for alphabet letters, so the null hypothesis was rejected. Child-level factors have a moderate magnitude (r (92) =.451**, p < .01) relationship with the home environment surrounding a child. It implies that changes in child-level factors relate to the same changes in the home environment surrounding a child. Furthermore, the table shows the mean scores of the factors influencing the acquisition of early writing skills for alphabet letters. The child-level factors (M = 43.28, SD = 9.02) had higher mean scores than the home

environment surrounding a child (M = 18.84, SD = 2.55). The findings imply that the pre-primary teachers strongly agree on within-child factors as the most critical factor influencing the acquisition of early alphabet letters.

Discussion of the Findings

The findings of this study highlight the significant role that child-level factors play in shaping the early development of alphabet letter writing skills among children. The findings of the present study align with previous research by Cameron et al. (2012), Puranik et al. (2014), Puranik and Lonigan (2012), Carlson et al. (2013), and Puranik et al. (2018), of whom underscored the importance of child-specific factors in fostering proficiency in letter-writing skills during early childhood. In contrast to the focus of this study on child-level factors influencing alphabet letter writing, other studies have identified additional influential factors. For instance, research by Carlson et al. (2013) and Cameron et al. (2012) has highlighted the role of fine motor skills, which are crucial for the physical act of writing letters. Axelsson et al. (2020) have also emphasised the significance of children's initiative in engaging with writing activities, suggesting that self-directed participation in writing tasks contributes to skill development. Furthermore, beyond letter-writing skills, child-level factors have been found to impact other aspects of emergent literacy, such as alphabet knowledge (Drouin et al., 2012; Heilmann et al., 2018). The two studies indicate that older children generally exhibit greater proficiency in alphabet knowledge than younger children, indicating a developmental progression in foundational literacy skills. Together, these findings underscore the multifaceted nature of early literacy development and highlight the complex interplay between child-level characteristics, environmental influences, and specific skill domains within the broader context of emergent literacy. The current study contrasts with the perspectives of Guo et al. (2020), Farver et al. (2013), and Kim et al. (2015), who view home literacy practices as a comprehensive framework encompassing all literacy-related experiences. Farry-Thorm and Treiman (2020) highlight that parents often emphasise letter writing in their interactions with children at home. They assist in learning activities by gauging what children can accomplish independently and what requires their guidance, a concept central to Vygotsky's Zone of Proximal Development. In contrast to the findings of this study, Kigobe (2019) discovered weak links between parental literacy support activities and children's literacy outcomes.

Theoretical contribution to the study.
The current study aligns with Bronfenbrenner's bioecological model, specifically the Process-Person-Context-Time framework. This model illustrates interactions between child-level factors and contextual influences, particularly those within the home environment. The study demonstrates that improvements in child-specific factors correspond with enhancements in the home environment. It emphasises the interconnectedness between a child's literacy-related characteristics and home context, moving away from viewing the child and context as separate entities (Trudge et al., 2009). Burwell (2021) asserts that parent-child relationships are crucial in shaping children's development and learning. Parents, their children's primary educators, actively support literacy development at home (Tompkins, 2003).

Conclusion

This research significantly enhances our understanding of the factors influencing early acquisition of alphabet letter writing skills among preschool-aged children. The study underscores the critical role of child-specific factors in acquiring these foundational writing skills during the pre-primary years. Specifically, it highlights a positive correlation between child-level attributes and the quality of the home environment, both of which play pivotal roles in fostering early alphabet letter-writing abilities. Moreover, the study identifies demographic variables such as class size and mother tongue as influential factors affecting children's proficiency in alphabet letter writing. These findings suggest that the number of peers in a classroom and the primary language spoken at home can significantly shape a child's proficiency in alphabet letter writing skills.

Recommendations

*The study recommends better ways to acquire early alphabet letter writing in pre-primary education educational stakeholders. P*eople in a child's immediate environment, such as parents or guardians and relatives, are responsible for encouraging and inspiring children to engage in literacy-related activities. Pre-primary teachers and parents should work hand in hand to make sure that emergent literacy skills, particularly the acquisition of early writing skills for alphabet letters, are enhanced through positive interaction. There should be a follow-up on the child's home environment that promotes literacy development and aligns with Tanzania's pre-primary curriculum 2016. Furthermore, the study also recommends further studies; firstly, research needs to be carried out on

how home literacy activities improve alphabet letter writing for children. Secondly, further research on available home literacy resources that influence early letter-writing skills is needed. Third, further research needs to be carried out on parents' role in enhancing pre-primary children's emergent literacy skills.

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The Influences of Information and Communication Technology on Teaching and Learning in Public Secondary Schools in Bagamoyo District, Tanzania

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Abstract

The study examined the impact of information and communication technology (ICT) on teaching and learning in public secondary schools in Bagamoyo District, Tanzania. The study took place in Bagamoyo District, involving seven secondary schools. Three specific objectives guided the study: examining the context of ICT policy integration in the teaching process, exploring teachers' perspectives on ICT application in public secondary schools, and identifying challenges that hinder ICT use in teaching public secondary schools in Bagamoyo District. The study included 83 respondents from various levels, such as secondary school teachers, school academic officers, ward education officers, and district education officers. The study employed a mixed-methods research approach. Moreover, the study employed a convergent parallel design. The sampling strategies were purposive and simple random sampling. Data collection methods were questionnaires, semi-structured interviews, and documentary reviews. As a mixed-methods study, the researcher analysed quantitative data using descriptive statistics and subjected qualitative data to content analysis. The findings suggest that integrating ICT policy into teaching requires a thorough understanding of its use. It also revealed that teachers had positive perceptions regarding ICT policy integration teaching. The study highlighted the challenges affecting ICT integration in teaching: lack of ICT skills among teachers, ICT unsupportive infrastructures, and unstable power supply. Lastly, the study concluded that the perception of teachers in the ICT integration process is positive. It thus recommends that the government should ensure the availability of electrical power to support teaching using ICT. Also, the government should invest in teachers' training, as most of them have little knowledge of ICT use.

Keywords: *Information and Communication Technology, Teaching and learning process, public secondary schools*

Introduction

Globally, modernisation of the teaching and learning process heavily depends on the use of information and communication technology (ICT) in classrooms (Minga & Ghosh, 2024). Nadhif et al. (2024) have established that the incorporation of ICT in teaching and learning is crucial in enabling teachers to replace traditional methods in the classroom. The maturity of new educational results and the modelling of educational systems that allow the use of ICT in teaching and learning determine the quality of education (Musokhonovna, 2021). Furthermore, a pilot study involving ten respondents evaluated the constructs prior to the primary data collection. We examined the acquired field data, conducted discussions on their validity and reliability, and made modifications to ensure the constructs accurately measured their intended variables. The reason is that communication and technology have a significant association with effective teaching and learning in the classroom (Nadhif et al., 2024). The use of ICT can improve teaching and learning in schools, but understanding the contexts in which it is intended to be integrated for its effectiveness is limited (Ngodu et al., 2024). However, in developing countries, the education systems face several challenges that hinder the effective administration of ICT in secondary schools. These challenges include a lack of ICT facilities, unstable power supply, high cost of ICT facilities, poor implementation of two government policies, poor network and coverage services, and low ICT literacy (Roshid & Haider, 2024). Tiba and Condy (2021) argue that there are substantial benefits to using ICT in the teaching and learning process if teachers understand the relationship between ICT use and the overall curriculum.

Educational systems are embracing new techniques and incorporating ICT into the teaching and learning processes. This assists in preparing students for the skills and information required in the twenty-first century. It is impossible to imagine a world without the Internet and other high-tech services and products that have revolutionised civilisation. These include the internet, increased bandwidth, robust web-based apps, wireless handhelds, quick tablets, and powerful desktops (Almalki, 2016). Torres (2021) emphasises that various ICTs do provide some beneficial contributions to various aspects of educational growth and effective learning by increasing access, encouraging efficiency, improving learning quality, enhancing quality teaching, and improving management systems. According to Ezeodo and Aroh (2024), there is limited availability and utilisation of ICT devices in senior secondary schools in developing countries. This situation contributes to low academic performance and

hinders effective teaching and learning, while little is known about how teachers' ICT skill deficiencies can be addressed (Adu & Zondo, 2024). In Tanzania, understanding students' perceptions about the integration of ICT in their education is essential for the implementation and enhancement of educational approaches (Minga & Ghosh, 2024).

On the other hand, Ngodu et al. (2024) identified a lack of ICT facilities, limited ICT training opportunities, and digital content as context-relevant challenges for ICT integration in teaching and learning. Bebbington (2018) asserts that teachers can utilise computers and the internet to enhance their basic skills and subject mastery, access resources for use in the classroom, and gain familiarity with specific instructional approaches (Bhattacharjee, 2016). ICT aims to enhance education by bolstering more effective pedagogy to provide learners with knowledge and by enhancing communication, thereby fostering learning. Furthermore, the increasing prevalence of ICT leads to the integration of computer-based equipment into all aspects of school operations, thereby influencing students' performance. Several researchers, including De Aldama et al. (2017), argue that using ICT in teaching and learning can help students become more knowledgeable. In addition to initiatives to increase learning using ICT, the advent of the knowledge economy has resulted in a considerably higher emphasis on education (Enu, 2019).

In most developed countries, such as the UK, schools have embedded ICT in teaching and learning into the curriculum and demonstrate a high level of effective and appropriate use to support teaching and learning (OECD, 2004). The use of information and communication technology (ICT) in education and training has been a priority in most Western and European countries during the last decade. However, progress has been uneven (Stuckey, 2016). In the U.S., public schools now provide at least one computer for every five students (Santos et al., 2019). In a recent study of 3,667 science teachers, nearly all (98.6%) of the respondents indicated that they currently use digital media to support science instruction (Stuckey, 2016). On the contrary, many developing countries live in a world of technical insufficiency, that is, lack of internet-based knowledge (OECD, 2006). Furthermore, suppose Africa is to properly prepare its inhabitants for the challenges of the twenty-first century. In that case, it must promote comprehensive ICT integration to harness its fresh, appealing, promising, and diverse potential. Recognising the vital opportunities ICT provides for service delivery as well as teaching and learning, the governments of several African countries have invested heavily in the necessary ICT infrastructure throughout the years. Roopa

and Rani (2022) argue that technologies may play a key role in enabling students to gain skills and information in the teaching and learning processes.

The use of ICT in the teaching and learning process in secondary schools in Sub-Saharan Africa is dependent on access to ICT resources such as hardware, software, and communications infrastructure. Hennessy, Harrison, and Wamakote (2010) identified key barriers to the use of ICT in secondary schools, including lack of funding, inadequate ICT facilities, low confidence levels, and pedagogical expertise in technology use. In Tanzania, Chirwa (2018) revealed that the benefits of using ICT tools include immediate access to information, access to a variety of learning resources, access to courses, individual topics, and performance support resources that can be accessed anytime from the office, at home, or while travelling. Additionally, the use of ICT tools reduces associated costs such as transport costs, provides multiple communication channels such as e-mails, chat, forums, and bogs, promotes collaborative learning, facilitates contact and information exchange, alters the learning process and learning outcome, and increases flexibility

Additionally, Kira and Mahumbwe (2015) posited that the effective teaching and learning process benefits greatly from the implementation of ICT, as it enhances the knowledge and skills of both teachers and students, enhances the effectiveness of lessons, fosters student-centred and self-directed learning, creates a conducive teaching and learning environment, and enhances the critical thinking abilities of both students and teachers. This implies that ICT improves learners' motivation and concentration span, allows them to interact more effectively while helping them with concept understanding, and reduces barriers to learning (Hafifah, 2020). Teachers exhibit positive attitudes towards the use of ICT as a pedagogical tool, yet they often fail to effectively integrate it into their teaching due to a lack of knowledge (Ali, 2018). Chrirwa (2018) disclosed that ICT infrastructures (unavailability of tools and poor power supply), language and content (mistrust of their information content), a lack of skills to use the tools (teachers with ICT skills), high costs of accessing and using ICT tools, change management, a lack of adequate access, and leadership are all factors that pose challenges in using ICT tools in distance education. However, Mazoya (2015) added that one of the most difficult challenges in using ICT in education is reconciling instructional goals with economic realities.

In Tanzania, ICT use in secondary schools is not a new phenomenon. In the late 1960s and early 1970s, the Ministry of Education provided radios to secondary schools, enabling pupils to listen to educational programs (UNESCO, 2015). Previously, the Tanzanian government sought to reintroduce ICT into Tanzania's education sector. The first phase of ICT adoption in secondary schools began in 2005 as a cooperative initiative between MoEVT and SIDA (Hare, 2007). The MoEVT began using ICT in fewer secondary schools as a pilot program of 400 schools across the country, with the goal of reaching all secondary schools by 2015 (URT, 2007). The 2007 ICT and educational policy stresses the use of ICT facilities in secondary schools for curriculum, content, training, capacity building, planning, procurement, and administration. It also considers management, support, and sustainability, as well as monitoring and evaluation (Hare, 2007). The policy recommends teaching ICT as a subject and using it as a pedagogical tool in other subjects in secondary schools (URT, 2007). Pima (2019) discovered that the most prevalent uses of ICT for teaching among Tanzanian teachers included creating lesson notes, teaching and learning resources, and tests. As a result, the use of ICT in the teaching-learning process became mandatory in secondary schools. This is because its adoption and implementation in secondary schools improves the effectiveness of teaching and learning. Mutisya (2020) asserts that the integration of various ICTs, such as computers, the internet, video, television, compact discs (CDs), digital video discs (DVDs), video players, and so on, into education can enhance teaching and learning methods. Despite the government of Tanzania's efforts in ICT adoption and use in teaching and learning, there are inadequate ICT facilities, a lack of ICT training for teachers, a lack of internet access, and power fluctuations (Ndibalema, 2014). This situation prevents teachers from using ICT as a pedagogical instrument in education and learning. Research indicates that secondary schools are not effectively integrating ICT as a pedagogical tool to transform teaching and learning practices (Ngeze, 2017).

Like any other developing country, Tanzania has been insisting on integrating ICT into teaching and learning processes. However, the efforts have not produced the required results. The government has made significant efforts to insist on integrating ICT in instruction provision and learning. This approach offers significant benefits, including lesson preparation, knowledge dissemination, assessment, and evaluation. However, some setbacks face these contributions. Despite all the efforts the government and other stakeholders have been making towards integration of ICT in the teaching and learning process (such as the

establishment of the ICT policy and provision of gadgets, tablets, and computers and the promotion of the policy in designing curriculum), the integration and use of the ICT are still low. Mutisya (2016) asserts that Tanzania embraces the contributions of ICT in teaching and learning, but these contributions suffer from limitations in technological knowledge, infrastructure, and attitudes.

Currently, numerous secondary schools in Tanzania use ICT in teaching and learning. Nevertheless, Ali (2018) disclosed that most teachers lacked the pedagogical skills required to integrate ICT resources into classroom instruction and improve learner-centred learning. Tanzania's aspirations to incorporate ICT into education persist, as evidenced by the allocation of all gadgets (Tablets) to all public secondary school teachers following the 2020 population census, aimed at enhancing teaching and learning. Currently, more than 498 gadgets are in the hands of all teachers working in public secondary schools in Bagamoyo (Daily News, 2022). Despite this, the use of ICT in secondary schools in Tanzania, particularly in Bagamoyo, remains relatively low. Despite equipping all teachers with ICT-supporting devices, the significance of incorporating ICT into teaching and learning and student performance remains a matter of concern. Therefore, the purpose of this study was to assess teachers' adoption of ICT to improve teaching and learning in government secondary schools in the Bagamoyo district

Methodology
The philosophy of pragmatism guided the methodology of this study. The study utilised a mixed methodology approach and a sequential explanatory design. The study was conducted in the Pwani region, focusing on seven public secondary schools. This study collected data through closed-ended questionnaires from 60 respondents and semi-structured interviews with 21 respondents. Purposive and simple random sampling techniques were employed to select the respondents. The questionnaire items are based on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Furthermore, we evaluated the constructs in a pilot study involving ten (10) respondents prior to the primary data collection. The acquired field data were examined, discussions on their validity and reliability were conducted, and modifications were made to ensure the constructs accurately measured their intended variables. The researcher requested and received a clearance letter from the vice chancellor of the Open University of Tanzania. The district authority then received the clearance and introduced the researcher to the public secondary school administrations. The researcher sought respondents'

consent before engaging them in the data collection exercise. The Statistical Package for Social Science version 21 computer software assisted in the descriptive analysis of the quantitative data. Qualitative data were analysed through content analysis, considering these three stages: assembling, coding, and assigning. The researcher compiled all the data collected from each research method during the data analysis process. During the coding stage, the researcher categorised the data received from each study method based on its themes (thematic analysis). The first, second, and third objectives employed thematic analysis. The findings were given in the form of summarised and presentable tables.

Results

Results were presented based on three objectives: to identify the context under which ICT policy is integrated into teaching and learning processes; to examine teachers' perceptions on the application of ICT in teaching and learning processes in public secondary schools in Bagamoyo; and to examine the challenges affecting the use of ICT in teaching and learning processes in public secondary schools in Bagamoyo.

Context under which ICT Policy is integrated in Teaching and Learning Processes

This subsection concerns the first objective of the study, which aimed to identify the context under which ICT policy was integrated in teaching and learning processes. Data for this object were collected using a questionnaire covering 60 randomly selected participants. The results obtained were presented as follows.

Good Understanding about ICT

The respondents were asked to give their opinion as to whether teachers in public secondary schools had a good understanding of ICT in teaching and learning. Their responses are shown in Table 1.

Table 1: Good Understanding of ICT

Good Understanding of ICT	Frequency	Percent
Strongly agree	12	20.0
Agreed	21	35.0
Undecided	9	15.0
Disagree	18	30.0
Total	60	100.0

Source: Field Data (2024)

The results in Table 3.1 above indicate that 21 (35.0%) respondents involved in the study agreed with the above contention that there was a good understanding of ICT in teaching and learning amongst teachers in public secondary schools. On the other hand, 18 (30.0%) respondents simply disagreed, while 12 (20.0%) strongly agreed that public secondary school teachers understood ICT in teaching and learning. Finally, yet importantly, 9 (15.0%) respondents involved in the study were undecided.

Availability of ICT Policy fostering teaching and learning process
The respondents were asked to give their opinions on whether teachers were aware of the availability of ICT policies fostering teaching and learning in public secondary schools. Their responses shown in Table 2.

Table 2: Availability of ICT Policy fostering teaching and learning process

Responses	Frequency	Percent
Strongly agree	21	35.0
Agree	9	15.0
Undecided	15	25.0
Disagree	12	20.0
Strongly disagree	3	5.0
Total	60	100.0

Source: Field Data (2024)

According to the study results in Table 3.2, 21 (35.0%) of the respondents strongly agreed that teachers were aware of the availability of an ICT policy that was fostering teaching and learning processes in public secondary schools. Furthermore, 15 (25.0%) respondents were undecided, and 12 (20.0%) disagreed with the contention above. On the other hand, 9 (15.0%) respondents agreed, and 3 (5.0%) strongly disagreed.

Available infrastructures supporting the policy
Furthermore, the respondents were asked their opinions on whether there were available infrastructures supporting policy integration practices in public secondary schools.

Table 3: Available Infrastructures Supporting the Policy

Responses	Frequency	Percent
Strongly agree	9	15.0
Agree	6	10.0
Undecided	6	10.0
Disagree	30	50.0
Strongly disagree	9	15.0
Total	60	100.0

Source: Field Data (2024)

Table 3.3 above indicates that 30 (50.0%) respondents in the study disagreed that there were no available infrastructures supporting policy integration practices in public secondary schools. Moreover, 9 (15.0%) respondents strongly disagreed with the above contention, while 9 (15.0%) respondents involved in the study strongly agreed that there were available infrastructures supporting policy integration practices in public secondary schools. On the other hand, 6(10.0%) respondents agreed, and the remaining 6 (10.0%) were uncertain about their opinions by being neutral.

Adequate Infrastructures in supporting ICT policy
Respondents were asked to give their opinion on whether the available infrastructures were adequate in supporting ICT policy in the teaching and learning processes. The results are shown in Table 4.

Table 4: Adequate Infrastructures in supporting ICT policy

Adequate Infrastructures in supporting ICT policy	Frequency	Percent
Strongly agree	9	15.0
Agree	12	20.0
Undecided	18	30.0
Disagree	18	30.0
Strongly disagree	3	5.0
Total	60	100.0

Source: Field Data (2024)

Table 3.4 above indicates that 18 (30.0%) respondents involved in the study were undecided on the available infrastructures and whether they were adequate in supporting ICT policy in the teaching and learning processes. On the other hand, 18 (30.0%) respondents simply disagreed that there were no adequate infrastructures to support ICT policy. Furthermore, 12(20.0%) participants agreed with the contention that the available infrastructures were adequate in supporting ICT policy in the teaching and learning processes, and 9 (15.0%) participants strongly agreed. Finally, 3(5.0%) strongly disagreed with the contention above.

Teachers effectively use ICT available Infrastructure
It was assumed that teachers' effective use of available ICT infrastructure would influence the teaching and learning process. On this, the respondents were asked to share their opinions on whether teachers effectively used the available ICT infrastructure in implementing teaching and learning processes. The results of this are presented in Table 5.

Table 5: Teachers effectively use ICT's available Infrastructure

Responses	Frequency	Percent
Strongly agree	6	10.0
Agree	6	10.0
Undecided	18	30.0
Disagree	27	45.0
Strongly disagree	3	5.0
Total	60	100.0

Source: Field Data (2024)

The findings in Table 3.5 indicate that 27 (45.0%) simply disagreed that teachers did not effectively use the available infrastructures. On the other hand, 18 (30.0%) respondents were undecided while 6 (10.0%) respondents agreed that teachers used the available infrastructures effectively. In addition, 6 (10.0%) respondents strongly agreed, while 3 (5.0%) strongly disagreed that teachers were not effectively using the available ICT infrastructure.

Teachers are well Conversant with the use of ICT
The respondents were asked to give their opinion as to whether teachers were well conversant with the use of ICT in the teaching and learning process. Their responses are shown in Table 6.

Table 6: Teachers are well Conversant with the use of ICT

Responses	Frequency	Percent
Strongly agree	3	5.0
Agree	12	20.0
Undecided	15	25.0
Disagree	27	45.0
Strongly disagree	3	5.0
Total	60	100.0

Source: Field Data (2024).

As the findings reveal, out of the 60 respondents involved in the study, 27 (45.0%) of them disagreed that teachers were conversant with the use of ICT in the teaching and learning process. Moreover, 15 (25.0%) respondents were undecided, and 12 (20.0%) of them simply agreed that teachers were conversant with the use of ICT in the teaching and learning process. Furthermore, 3 (5.0%) respondents strongly agreed to be conversant, and 3 (5.0%) strongly disagreed.

Strong Emphasis from the School Administration
The study results as to whether there was a strong emphasis from the school administration encouraging teachers to use ICT in the teaching and learning processes are shown in Table 7.

Table 7: Strong Emphasis from the School Administration

Responses	Frequency	Percent
Strongly agree	24	40.0
Agree	21	35.0
Undecided	9	15.0
Disagree	6	10.0
Strongly disagree	0	0.00
Total	60	100.0

Source: Field Data (2024)

As revealed in Table 7 the findings show that 24 (40. %) respondents strongly agreed that there was strong emphasis from school administration encouraging teachers to use ICT in the teaching and learning processes. Furthermore, 21 (35.0%) respondents agreed and 9 (15.0%) of them were undecided. Moreover, 6 (10.0%) respondents involved in the study simply disagreed with the contention that there was strong emphasis from the school administration encouraging teachers to use ICT in the teaching and learning process. Last and least, 0 (0.00%) respondents strongly disagreed with the contention above.

Teachers' perceptions of the application of ICT in the teaching and learning processes

This subsection presents results based on the second objective of the study, which aimed at examining teachers' perceptions of the application of ICT in the teaching and learning process in public secondary schools in Bagamoyo. Data regarding teachers' perception on the application of ICT in the teaching and learning process were gathered using the semi-structured interview schedule. The interviews were conducted with heads of schools, district educational officers, ward educational officers, and academic heads of departments. The results were as follows.

The first interview question aimed to determine whether the policy was being implemented in public secondary schools. The question was asked with the assumption that all education stakeholders were well informed about the Government's ICT policy. How would you describe the country's ICT policy with regard to teaching and learning?

The responses to the questions were as follows

> The perception of teachers is positive in the use of ICT in the teaching and learning processes. ICT use helps teachers to prepare teaching and learning materials. It also gives students room to explore more materials and information sources. (Semi-structured interview with the Academic Head of Department (AHD), A.19th of January, 2024)

Another participant in School B had this to say,

> "…Teachers view ICT as the helping hand towards dissemination of materials in a much better way to their students.". (Semi-structured interview, AHD, B.19th January 2024).

Furthermore, the Ward Education Officer (WEOs) was asked the same question and their responses were as follows:

> Teachers perceive ICT integration positively since it enhances the quality of the teaching-learning process . Most teachers consider it to have a significant correlation between teachers' technological pedagogical and content knowledge (TPACK) and their technological competencies (semi-structured interview with the WEO A, 22 January 2024).

On the same issue, another respondent had these to say:

> Teachers perceive that, effective integration of ICT helps in meeting the learners' educational needs by providing creative solutions to different types of learning inquiries. (Semi-structured interview conducted with Head of School (HOS) A, 23rd January 2024).

Again, another HOS B said the following:

> ICT integration is essential to students since there is a significant relationship between technology usage in educational practices and students' academic achievement. However, that is not enough because ICT enhances students' creative thinking and academic performance in the most effective possible way (Semi-structured interview with the HOS B, 23rd of January 2024).

Another positive perception was evidenced by the District Education Officer (DEO), who had these to say:

> The application of ICT in classrooms provides a motivating environment for students and keeps them engaged in educational activities. The utilisation of ICT for teaching-learning purposes enables teachers and students to stay connected and facilitates learners irrespective of their location and time (Semi-structured interview with the DEO, 26th of January, 2024).

Challenges affecting the use of ICT in the Teaching and Learning Processes

This subsection presents the findings based on the third objective of the study, which aimed to examine challenges affecting the use of ICT in the teaching and learning process in public secondary schools in Bagamoyo. Data for this objective were collected using questionnaires covering 60 randomly selected participants. The obtained results were as follows.

Unavailability of ICT Infrastructures

The respondents were asked to respond to whether the unavailability of ICT infrastructures and tools and poor power supply were slowing ICT

integration in public secondary schools. The findings are presented in Table 8 below.

Table 8: Unavailability of ICT Infrastructures

Responses	Frequency	Percent
Strongly agree	42	70.0
Agree	3	5.0
Undecided	3	5.0
Disagree	6	10.0
Strongly disagree	6	10.0
Total	60	100.0

Source: Field Data (2024)

Table 8 above shows that, out of 60 respondents involved in the study, 42 (70.0%) respondents strongly agreed, while 6 (10.0%) respondents strongly disagreed that the unavailability of ICT infrastructures and tools and poor power supply was slowing the ICT integration in public secondary schools. On the other hand, 6 (10.0%) respondents disagreed, and 3 (5.0%) of the respondents simply agreed, while the other 3(5.0%) respondents were undecided. The findings above indicate that most respondents considered that the unavailability of ICT infrastructures and tools and poor power supply were slowing the ICT integration in public secondary schools.

Lack of Knowledge on the Use of ICT
Furthermore, the respondents were asked to give their opinions on whether a lack of knowledge on the use of ICT Teachers was hindering the use of ICT in teaching and learning. Regarding this, the responses were as follows:

Table 9: Lack of Knowledge on the Use of ICT

Responses	Frequency	Percent
Strongly agree	27	45.0
Agree	21	35.0
Undecided	3	5.0
Disagree	9	15.0
Strongly disagree	0	0.00
Total	60	100.0

Source: Field Data (2024)

Table 9 indicates that 27 (45.0%) respondents strongly agreed that lack of knowledge on the use of ICT Teachers as pedagogical tools was hindering the use of ICT in teaching and learning. In addition to that, 21(35.0%) respondents agreed, while 9 (15.0%) respondents disagreed with the

contention above. Furthermore, 3(5.0%) respondents involved in the study were undecided or with no opinions. Last, but not least, 0(00%) respondents strongly disagreed with the contention above. The findings indicate that the majority of the respondents considered a lack of knowledge with the use of ICT Teachers as a pedagogical tool that was hindering the use of ICT in teaching and learning.

Critical Condition of ICT as an Educational Tool among Teachers
The respondents' opinions on whether the usage of ICT as an educational tool appeared to be a serious problem among teachers are shown in Table 10 below

Table 10: Seriousness of the Problem of Not Using ICT as an Educational Tool among Teachers

Responses	Frequency	Percent
Strongly agree	30	50.0
Agree	9	15.0
Undecided	9	15.0
Disagree	12	20.0
Strongly disagree	0	0.00
Total	60	100.0

Source: Field Data (2024)

Table 10 shows that 30 (50.0%) respondents strongly agreed with the claim that not using ICT as an educational tool was a serious problem among teachers. On the other hand, 12 (20.0%) respondents disagreed with the above contention, and 9 (15.0%) respondents were undecided. Furthermore, 9 (15.0%) respondents agreed, while no respondent strongly disagreed, shown by 0 (00%) of all respondents involved in the study. According to the study results, most respondents considered the lack of using ICT as an educational tool was a serious problem among teachers.

Public Secondary School Teachers Lack of Skills
The respondents' opinions on whether the majority of public secondary school teachers lacked skills in using the tools affected the integration process, as shown in Table 11.

Table 11: Public Secondary School Teachers Lack of Skills

Responses	Frequency	Percent
Strongly agree	33	55.0
Agree	27	45.0
Undecided	0	00.0
Disagree	0	00.0
Strongly disagree	0	00.0
Total	60	100.0

Source: Field Data (2024)

Out of 60 respondents involved in the study,33 (55.0%) respondents strongly agreed with the contention above that the majority of the public secondary school teachers' lack of skills on how to use ICT tools was affecting its integration process. Furthermore, 27 (45.0%) respondents involved in the study agreed. These findings indicate that all the 60 respondents involved in this objective considered that the majority of the public secondary school teachers' lack of skills to use ICT was affecting its integration process.

High Costs of Accessing and Using ICT Tools
Another assumption was that the integration of ICT in the teaching and learning processes was being affected by the high costs of accessing and using ICT tools. The results of this are shown in Table 11.

Table 11: High Costs of Accessing and Using ICT Tools

Responses	Frequency	Percent
Strongly agree	42	70.0
Agree	12	20.0
Undecided	6	10.0
Disagree	0	00.0
Strongly disagree	0	00.0
Total	60	100.0

Source: Field Data (2024)

The results in Table 11 indicate that 42 (70.0%) respondents strongly agreed with the assumption above that the integration of ICT in the teaching and learning process was affected by the high costs of accessing and using ICT tools. On the other hand, 12 (20.0%) respondents agreed, while 6 (10.0%) were undecided. The fewest respondents, 0 (00.0%), disagreed, and 0 (00.0%) strongly disagreed. The results indicate that the majority of the respondents involved in the study considered the high cost of accessing and using ICT tools to be a challenge hindering the integration of ICT in teaching and learning processes.

Public Secondary Schools Lack Basic ICT Facilities
Another challenge was that most public secondary schools lacked basic ICT facilities, making it impossible to incorporate ICT into teaching and learning activities. The analysis of this challenge is shown in Table 12.

Table 12: Public Secondary Schools Lack Basic ICT Facilities

Responses	Frequency	Percent
Strongly agree	42	70.0
Agree	6	10.0
Undecided	9	15.0
Disagree	3	5.0
Strongly disagree	0	00.0
Total	60	100.0

Source: Field Data (2024)

According to the study results, 42 (70.0%) respondents strongly agreed that most public secondary schools lacked basic ICT facilities, thus making it impossible to incorporate ICT into teaching and learning activities. On the other hand, nine respondents (15.0%) in the study had a neutral opinion, while six (10.0%) agreed. Furthermore, 3 (5.0%) respondents disagreed, while 0(00.0%) strongly disagreed that public secondary schools did not lack basic ICT facilities.

3.3.7 Unavailability of Educational Programmes or Internet Access
The respondents were asked to give their opinions as to whether the unavailability of educational programmes or internet access was hindering the integration of ICT in the teaching and learning process in public secondary schools. The responses are presented in Table 13.

Table 13: Unavailability of Educational Programmes or Internet Access

Responses	Frequency	Percent
Strongly agree	45	75.0
Agree	12	20.0
Undecided	3	5.0
Disagree	0	00.0
Strongly disagree	0	00.0
Total	60	100.0

Source: Field Data (2024)

Out of the 60 respondents involved in the study, 45 (75.0%) strongly agreed with the contention that the unavailability of educational programmes or internet access was hindering the integration of ICT in the teaching and learning process in public secondary schools. Moreover, 12 (20.0%) respondents simply agreed and 3 (5.0%) respondents had neutral opinions. On the other hand, 0 (00.0%) respondents disagreed, and the

other 0 (00.0%) strongly disagreed. According to the study findings, most respondents believed that lack of educational programmes or internet access hindered the integration of ICT in the teaching and learning process in public secondary schools.

Shortage of Power Supply
The respondents' opinions on whether the shortage of power supply was necessary to facilitate the installation and operation facilities are shown in Table 14.

Table 14: Shortage of Power Supply Facilities Affects the Integration Process

Responses	Frequency	Percent
Strongly agree	51	85.0
Agree	3	5.0
Undecided	3	5.0
Disagree	3	5.0
Total	**60**	**100.0**

Source: Field Data (2024)

The results show that 51 (85.0%) respondents strongly agreed that the shortage of power supply affected the integration process, and 3 (5.0%) respondents agreed. On the other hand, 3 (5.0%) respondents disagreed, while 3 (5.0%) were undecided. Thus, the findings indicated that the majority of the respondents believed that the lack of power supply affected the integration process.

Discussion
Currently, numerous secondary schools in Tanzania are using ICT in the teaching and learning processes. This paper assessed teachers' adoption of ICT to improve teaching and learning in government secondary schools in Bagamoyo District. ICT is potential to play a significant role in improving teaching and learning in schools, as well as training students to gain skills, knowledge, and competences that will allow them to participate in the rising global 'knowledge' economy. The data gathered in this study will hopefully be utilised to inform various educational stakeholders that ICT integration in schools holds enormous promise in developing economies such as Tanzania. The findings could also assist the Ministry of Education and Vocational Training (MOEVT) in developing policies and initiatives to improve academic standards in our schools. The study may also yield recommendations for boosting the use of ICTs in improving teaching and learning processes. The findings were obtained by questionnaires filled by 60 teachers and 21 respondents involved in the interviews including, DEO, WEO, Heads of Schools and

Heads of the Academic Department. The respondents had the working experience of 6 and above years and with the degree level of education. The data that were collected through questionnaires were systematically coded and then transferred to a computer sheet prepared by using a Statistical Package for Social Sciences (SPSS) version 21, and were analysed based on frequency and percentages.

The Context under which ICT Policy is Integrated into Teaching and Learning Processes
The findings indicated that there was a good understanding of ICT in teaching and learning among teachers in public secondary schools. It also indicated that teachers considered ICT an important aspect of improving teaching and learning. However, the question of integration will remain to be discussed in other sections to follow. The findings are supported by the study of Chirwa (2018), who postulates that teachers most often use ICTs for 'routine tasks' (record keeping, lesson plan development, information presentation, basic information searches on the Internet). Teachers with greater ICT knowledge used computer-assisted instruction more frequently than their less-exposed counterparts. Additionally, over 50% of respondents indicated that teachers were aware of the ICT Policy designed to enhance the teaching and learning process in public secondary schools.The results further signify that, regardless of the challenges teachers might face, they acknowledged the importance of integrating ICT in teaching and learning.

Regarding with the availability of infrastructures supporting policy integration practices in public secondary schools, the study showed the following: the majority of the respondents were of the opinion that there were no available infrastructures supporting the policy integration practices in public secondary schools. This indicates that regardless of the well-stipulated policy, vision and mission of the government, the integration would stumble. It also implies that the available infrastructures are not supportive. Therefore, the policy was deemed to fail unless there was improvement in the areas of infrastructures necessary for the integration process. The findings further showed that teachers did not effectively use ICT's available Infrastructure. This was raised under the assumption that if the limited infrastructure available were utilised, the integration could have been easy. However, this is contrary to the findings, as it was found that the majority of the respondents perceived that ICT infrastructure was not effectively utilised. This study signifies that, regardless of the limited infrastructure available,

teachers still not making use of them. It also implies that there is a lot to be done before the ICT policy can be fully integrated. The study by Enu and Nkum (2019) suggests that despite the teachers' ambitions to use ICT in teaching and learning, the major barriers were a lack of genuine software, inadequate computers in the classroom, and low-speed internet. Others are the lack of motivation from both teachers and students to use ICT, lack of proper training skills, unavailability of the latest ICT equipment, lack of expert technical staff, poor administrative support and poor course training.

Furthermore, the findings indicate that teachers were not well conversant with the use of ICT. This resounds with the literature by Almalki (2018), who found a significant relationship between teachers' perceptions of ICT integration in the teaching-learning processes and their actual use of ICT. The results also indicate that little effort has been made by the government to establish the ICT policy, and the limited infrastructures would hold no water if the main implementers of the policy were left behind. It also indicates that the policy would move nowhere unless teachers were being given priority. Finally, the study indicated that there was a strong emphasis from school administration encouraging teachers to use ICT in the teaching and learning processes. The findings align with Chirwa (2018), who suggests that teachers primarily use ICTs for 'routine tasks' such as record keeping, lesson plan development, information presentation, and basic Internet searches.

Teachers' perceptions on the application of ICT in the teaching and learning process

Teachers perceived that ICT was important in teaching and learning processes in the public secondary schools in Bagamoyo. It was found that teachers considered ICT important since it helped them in the preparation of teaching and learning materials and gave students a room to explore more sources of materials and information. The findings also show that ICT integration is important as it helps teachers in the dissemination of materials in a much better way to their students. ICT integration is important as it helps teachers in the dissemination of materials in a much better way to their students, which is effective. The findings above are in connection with Agbo (2015), who postulates that ICT Technology is important in the teaching-learning process, and the perception of teachers about ICT usage was very positively.

Also, teachers believed that the use of ICT enhanced the quality of the teaching-learning process; most teachers considered it to have a

significant correlation between teachers' technological, pedagogical, and content knowledge (TPACK) and their technological competencies. Another interesting finding is that, teachers perceived that ICT integration in teaching and learning was an effective since it enabled students to acquire the educational needs by providing them with creative solutions to different types of learning inquiries. These findings are linked to the study of Ali (2018), who is of the view that there is a significant relationship between teachers' perception towards ICT integration into the teaching-learning process and the factors that encourage ICT usage. This indicates that the teachers' perception towards ICT integration into the teaching-learning process increases if ICT usage is encouraged, and vice versa is also true.

The findings also show that ICT integration is essential as it helps improve creative thinking and academic performance in the most effective possible way. The integration was found to be positive by teachers since it provided a motivating environment for students and keeping them engaged in educational activities. According to the UNDP's (2001) statistics, almost 80% of the teachers in developing countries felt that they were not prepared to use the technology. Thus, integrating information and communication technologies into the curriculum is a crucial process in ensuring the quality of education (Hue & Jalil, 2013). However, the presence of technology alone may not stimulate significant changes in a school. Teachers are an important ingredient in the implementation of ICT in education. This indicates that the teachers' productiveness is realised if ICT is integrated to the course they teach. However, majority of the teachers pointed out that one of the barriers to technology implementation was lack of teachers' technical knowledge and shortage of resources. The study findings are linked to the study of Almalki (2018), who reported a significant relationship between the perception of teachers towards the integration of ICT in teaching-learning process and the use of ICT. They are also connected to the findings of Bebbington and Unerman (2018), who maintain that the association is motivated by several other factors in schools such as staff motivation, willingness to use ICTs and availability of resources

Challenges affecting the use of ICT in the Teaching and Learning Process
With a focus on the challenges, the findings showed that one among the challenges facing the public secondary school ICT integration was the unavailability of ICT Infrastructures. The study also indicates that the unavailability of ICT infrastructures, the unavailability of tools, and the

poor power supply were slowing the integration of ICT in public secondary schools. This implies that, regardless of of teacher's willingness and positive perception towards using ICT, their hands were tight to implement the policy. Furthermore, the study showed that most of the respondents involved agreed that lack of knowledge in the use of ICT was a challenge amongst many challenges. These findings indicate that, teachers' technology know how was a challenge towards the implementation of the policy. It also implies that the majority of the teachers had little knowledge regarding ICT. It can also be argued that the government has put effort into the infrastructures but little attention to the policy implementers. Moreover, the study findings showed that all the respondents involved in the study agreed that the majority of public secondary school teachers lacked skills on how to use the ICT tools, thus affecting the integration process. This finding suggests that most teachers did not know how to use the ICT devices, which also implies that it was rarely being used or being used or was being used by very few teachers. The results above resound the findings of Hakim's (2021) study, which posits that installing ICT devices like laptops, tablets, and routers for internet connections, Internet fibres, and ICT laboratories can be costly for both the government and individuals. They need a lot of investment, which the majority of the tutors find challenging to commit to. It also concurs with Kawulich (2018) who argued that the cost of installing ICT in public secondary schools in most developing countries is high. As a result, most schools end up with only a few devices, which they use individually for office work.

The study findings indicate that the high cost of accessing the ICT tool was another challenge hindering the integration process in the teaching and learning in public secondary schools in the Bagamoyo district. This result indicates that most teachers were not capable of purchasing the ICT devices necessary for the teaching and learning process. It also implies that the devices were expensive compared to what teachers were earning, and thus, it is the government's responsibility to cater for this need. The findings of the study are linked with the study of another challenge that most of the public secondary schools lack basic ICT facilities, thus making it impossible to incorporate ICT into teaching and learning activities. This study is linked to the previous result, where it was evident that the cost of establishing the ICT infrastructures was high compared to individual (teachers) and institutional capacity. Another challenge identified in the study was the unavailability of Educational Programmes or Internet Access. The study responses showed that the majority of the respondents involved in the study agreed that the unavailability of

educational programmes or internet access was hindering the integration of ICT in the teaching and learning process in public secondary schools.

It was also found out that the shortage of power supply was affecting the integration of ICT in the teaching and learning process in public secondary schools. This was shown by more than ninety percent of all the respondents involved in the study. This finding signifies that most of the public secondary schools did not have assurance of power supply. It also signifies that most challenges were heavily linked or associated with the power supply problems. These results support Almalki (2016), who postulates that, in the absence of a stable power supply, the use of ICT remains delusion. This is because of where they are; all ICT tools require constant supply regardless of the size and place of where they will be used. Hakim (2021) suggested that ICT devices such as Laptops, Tablets and Routers for internet connection, Internet cables, and ICT laboratories are costly for both the government and individuals to install. They need of investment, which the majority of the tutors find hard to commit to. In the same regard, Kawulich (2018) argues that the cost of installing ICT in public secondary schools in most developing countries is high. As a result, most of the schools end up having only a few devices, which are literally for office work and being used individually. The study findings are supported by the study of Kisirkoi (2018), who argues that the unavailability of educational programmes or internet access hinders the integration of ICT in public schools.

Conclusions and Recommendations

Considering the findings above, ICT in the teaching and learning process is known, but it is seldom used in school. Based on this study, most teachers were aware of the policy since it was being emphasised at the school level by the school administration. However, it was rarely implemented in practice, so very few teachers integrated it into the teaching and learning processes. Moreover, considering the findings of this study, it is evident that teachers had a positive perception of the integration of ICT in the teaching and learning process. They perceived that ICT integration was helping in the preparation of teaching and learning tools. It was reported that students were benefiting from ICT since it helped them reach so many various sources of information easily compared to the conventional approach. The use of ICT was perceived to have a positive and effective impact on both teachers and students since it created a friendly and interesting environment for learning. Furthermore, even though the integration of ICT in teaching and learning had a positive perception amongst teachers, it was still facing a lot of challenges, which

included a shortage of power supply, unsupportive ICT infrastructures, and the unavailability of ICT tools. Another challenge identified was the technical know-how, where most teachers were found to have little knowledge of the use of ICT tools in teaching and learning processes. Therefore, based on these findings, this paper recommends that teachers need to be given the necessary training so that they master the use of ICT, more specifically in the teaching and learning process. This training can be on-the-job training, so it does not affect the year calendar. Once teachers are well conversant with the use of ICT, it would be easy for the government to inject a budget into the proper supply of ICT facilities in schools. Additionally, the government should invest in ICT facilities such that they are adequate and relevant for the teaching and learning processes. Moreover, the government should build enough ICT laboratories and provide schools with enough ICT gears.

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Reflection on the Implementation Hurdles of Local School Feeding Programmes in Tanzanian Public Primary Schools: A Phenomenological Inquiry

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Abstract
This study explored the implementation hurdles of locally initiated School Feeding Programs (LSFPs) in public primary schools in Tanzania, with a particular focus on the Karatu District. The study employed a qualitative phenomenological approach to gain an in-depth understanding of the challenges faced in implementing LSFPs. The study's population comprised key stakeholders involved in LSFPs, including head teachers, local government officials, chairpersons of the school's meal committee, chairpersons of the school's committee, and parents. Purposive and convenient sampling techniques were utilised to select participants based on their roles and involvement in LSFPs. Data was collected through semi-structured interviews and focus group discussions, allowing for a comprehensive exploration of the participants' perspectives, experiences and perceptions. The selected schools that provide LSFPs were identified through a snowball sampling technique with assistance from local authority officials. Additionally, the document review method was employed to gather supplementary information by examining guidelines for food provision, minutes of parent meetings, records of meal rates received from parents and minutes of the school committee and school meals committee. Collected data were analysed inductively to generate themes. The findings indicate that there are variety of challenges threatening the sustainability of the school feeding programme. The challenges are grouped into three categories, which are climatic conditions such as shortage of rainfall, problems of governance like poor involvement of the communities, and integrity issues like mismanagement of LSFP by unethical individuals. The study recommends that increased funding, streamlined logistical assistance, increased actors' involvement and strong monitoring and evaluation systems are pivotal.

Keywords: *School feeding programmes, implementation hurdles, qualitative research, phenomenological study.*

Introduction

School feeding programs have gained recognition as effective interventions to address child malnutrition and enhance educational outcomes worldwide (World Bank, 2020; UNICEF, 2020). In Tanzania, local school feeding programs have been implemented to provide nutritious meals to students in public primary schools, aiming to improve their well-being and academic performance (Roothaert et al., 2021). However, various constraints often hinder the successful implementation of these programs (Shafii, 2021). Food represents a fundamental necessity for every human being, crucial for sustaining the proper functioning of the human body (Nemes, 2018). Ensuring access to food is of utmost importance due to its vital role in supporting human well-being. According to the World Food Programme reports published in 2017 and 2020, numerous countries worldwide have recognized the significance of providing school meals to students across different educational levels, including preschool, primary and secondary education.

School Feeding Programmes (SFPs) exhibit considerable variations in terms of their origins, institutional procedures, distribution methods, costs and management structures (World Food Programme, 2017). Furthermore, the goals of these Programmes differ depending on the country and region in which they are implemented. While some programs aim to address social needs and serve as a safety net for students, others strive to enhance child development by improving their education, health and nutrition (World Food Programme, 2020a). Research findings indicate that the provision of food and nutritional services to students within the school setting can yield a range of positive outcomes. These include improved academic engagement, reduced absenteeism, enhanced access to quality education for all, increased learning capacity, the mitigation of hunger-related challenges and a decline in child mortality rates (Santos et al., 2022). Typically, students spend a considerable portion of their day, approximately nine hours, at school, making it essential to provide food during break times to alleviate hunger. Adequate nutrition plays a crucial role in promoting good health and preventing malnutrition-related issues, particularly those resulting from poor dietary habits. Thus, providing food within schools becomes pivotal in addressing the nutritional needs of these students (Santos et al., 2022).

Nevertheless, it is important to note that School Feeding Programs (SFPs) cannot single-handedly generate all of these desired effects. As stated by the World Food Programme (WFP, 2020b), the impact of SFPs on the health and overall development of children and young individuals is significantly influenced by a multitude of factors. These factors include the quality of teaching, the learning environment, as well as other nutrition and social strategies implemented for both the mother and child. The effectiveness of SFPs in achieving positive outcomes relies heavily on the chosen philosophy and strategy for school feeding, the nutritional quality of the provided meals and the implementation of complementary measures within the broader context of school feeding initiatives (Shrestha et al., 2020). According to Bundy (2017), the purpose of school feeding programs in any given country is influenced by its specific requirements, available resources and policies. The primary objective is to address and alleviate hunger among school children aged six to seventeen years, ensuring that it does not hinder their overall development (Iro, 2020). Consequently, further research has been conducted to explore sustainable approaches for implementing school feeding programs in developing countries to reach all hungry school children in need (Mwendwa & Gori, 2019; Sitali, 2021).

The World Bank and World Food Programme have recently shifted their focus towards long-term and sustainable solutions, emphasising local resources, capacity building and community participation (WFP, 2020c). The concept of Home-grown school feeding, which links school feeding programs to local agricultural production as a means of promoting sustainability, has emerged as a strategy to transfer ownership of the programs to the national level (Bundy, 2017; Iro, 2020; Karisa & Orodho, 2014; Sitali, 2021). In Tanzania, localised and effective home-feeding programs have been successfully implemented in various regions of Tanzania since 2003 (Roothaert et al., 2021). This was made possible through the introduction of the Home-Grown School Feeding Program (HGSFP) by the New Partnership for African Development (NEPAD) in collaboration with the World Food Program and other international organisations (WFP, 2017). The primary objective of the HGSFP is to establish a cost-effective school feeding program that utilises locally sourced food from small-scale farmers.

While in general, School Feeding Programs (SFPs) have demonstrated positive academic and health outcomes for students (Nemes, 2018), there are concerns about the long-term sustainability of locally initiated programs in Tanzanian primary public schools, particularly in terms of

ensuring an adequate supply of food and effective organisation (Shafi, 2021). Additionally, limited information is available regarding the hurdlers to sustainability and implementation of such programs. This backdrop calls for a research study to investigate the hurdles encountered in implementing the HGFP in an attempt to show the real problem as well as suggesting the way forward towards addressing it. This study, therefore, intended to fill this research gap.

The Home-Grown School Feeding Program (HGSFP) Theory
The Home-Grown School Feeding Program (HGSFP) theory developed by Bundy et al. (2009) provides a relevant theoretical framework for understanding the implementation challenges of local school feeding programs in Tanzanian public primary schools. Tanzania, like many other countries, has recognised the potential of sourcing food locally to support school feeding initiatives (Shafi, 2021; Roothaert et al., 2021). The HGSFP theory emphasises the utilisation of locally produced food resources as a sustainable approach to school feeding to promote local economic development, enhance food security and nutrition, and foster community engagement. This theory consists of two programs, namely agricultural development and school feeding. This means that HGSFP theory focuses on the two-fold objectives of agriculture development and education in order to ensure sustainability in SFP. Despite its shortcomings related to entire dependence on small-scale farmers who are struggling in technology and markets, among others, HGSFP theory is still a useful framework for understanding the context of the LHGSFP.

The HGSFP theory holds particular significance in the Tanzanian context due to its alignment with national policies and initiatives. The Tanzanian government has prioritised the promotion of home-grown school feeding programs as part of its efforts to address child malnutrition and stimulate agricultural development (Felix, 2017; Nemes, 2018). By sourcing food locally, the program aims to support local farmers and suppliers, improve food availability and accessibility, and strengthen community participation in ensuring schoolchildren's well-being and educational outcomes.

Examining the implementation hurdles of local school feeding programs through the lens of the HGSFP theory allows for a comprehensive understanding of the specific challenges and opportunities associated with adopting this approach in Tanzanian public primary schools. The theory directs attention to various factors that may affect the successful

implementation of home-grown school feeding programs, including the availability and quality of local food resources, the capacity of local farmers and suppliers to meet the demand, the establishment of effective supply chains and logistics, and community engagement and ownership (Roothaert et al., 2021).

Furthermore, contextualising the study within the HGSFP theory enables an exploration of the potential benefits and limitations of the local sourcing approach. It allows for an examination of how effectively local school feeding programs in Tanzanian public primary schools have integrated the principles of the HGSFP theory and how these programs have navigated the specific challenges associated with sourcing food locally. The findings of the study can contribute to a deeper understanding of the implementation dynamics, identify areas of improvement, and provide evidence-based recommendations to enhance the effectiveness and sustainability of home-grown school feeding programs in Tanzania.

Empirical Literature Review

Several studies have highlighted the challenges faced when implementing school feeding programs in diverse contexts. For instance, Tanika and Jayaraman (2016) emphasised the importance of addressing logistical obstacles such as supply chain management and food distribution to ensure efficient program operations in India. Additionally, Mwendwa and Gori (2019) found that limited funding and resources hindered the sustained provision of nutritious meals, impacting the effectiveness and reach of the school feeding programs in Kenya.

Sibanyoni, Tshabalala, and Tabit (2016) revealed that a significant proportion (91.4%) of NSNP food preparation facilities lacked a hazard analysis and critical control points (HACCP) Program. Additionally, a large majority (93.2%) of food handlers were unaware of HACCP practices. Moreover, a notable percentage (60%) of food handlers demonstrated a lack of awareness regarding the proper procedure for cleaning cutting boards after use. Furthermore, a significant portion (95.5%) of food handlers reported never sanitising utensils and cutting surfaces after handling raw meat. Moreover, a study conducted by Roothaert et al. (2021) revealed that Tanzania lacked a clear school feeding policy, no established standards for the quality of school meals, and participation in school feeding programs is voluntary, leading to many students being left out and experiencing hunger. Additionally,

students in private schools generally receive better quality and more consistent school meals than public school students.

On the other hand, Phiri and Chisala (2017) asserted that social and cultural factors also influence the success of school feeding programs. They identified dietary preferences and food taboos as key factors affecting program acceptance and utilisation. This observation is supported by Roberts (2019), who emphasized the significance of considering local cultural practices and perceptions of program benefits to enhance community engagement and participation. Effective coordination and collaboration among various stakeholders are also identified by scholars to play a vital role in overcoming implementation hurdles. Nemes (2018) emphasised the importance of strong partnerships between government agencies, NGOs, schools, and communities to ensure successful program implementation. Similarly, Shafi (2021) highlighted the need for clear communication channels and collaborative decision-making processes among stakeholders to address challenges and promote program sustainability.

Despite the existing literature on school feeding programs (Roothaert, et al., 2021; Shafi, 2021; Felix, 2017; Nemes, 2018), there is a limited body of research specifically addressing the implementation hurdles faced by local school feeding programs in Tanzanian public primary schools. While previous studies have identified challenges related to funding (Felix, 2017), logistics (Nemes, 2018) and social factors (Shafi, 2021), there is still a dire need for more comprehensive studies to examine the specific and unique contexts in the country in order to find out if there are similarities and differences in implementing the HGSFP. This study focused on the specific context of Karatu district in Arusha Region, a mixed farming location. Furthermore, few studies have explored the implications of these challenges on the sustainability and effectiveness of local school feeding programs in addressing child malnutrition and improving educational outcomes. Therefore, to address these concerns, this study aimed to identify and analyse the specific challenges and barriers encountered in the implementation of locally initiated SFPs in public primary schools in the Arusha region of Tanzania, guided by the following research question: What are the key challenges and barriers faced in the implementation of locally initiated School Feeding Programs (SFPs) in public primary schools in the Arusha region of Tanzania?

Methodology

This study employed a qualitative approach to examine the challenges faced during the implementation of local school feeding programs in Tanzanian public primary schools. This research approach was apt for capturing the intricate contextual details and perspectives (Dawadi & Giri, 2021) of stakeholders involved in program execution. It offered a profound understanding of the encountered obstacles. The study's design was phenomenological, aiming to delve into participants' subjective sentiments, views, experiences, and convictions. This aided in grasping the essence of the investigated phenomenon (Creswell, 2014).

Conducted in the Karatu District of the Arusha Region in Tanzania, this research spotlighted a region previously targeted by a World Food Programme pilot initiative in 2000. This initiative focused on School Feeding Program (SFP) zones across fifteen districts prone to famine due to recurrent dry periods (Chaula, 2015). The Arusha region, encompassing the Karatu district, was selected for the pilot, making it the focal point of this study due to limited information about the sustainability of SFP initiatives in this area.

Sampling involved key stakeholders related to SFP implementation in Karatu district's selected schools. These included five head teachers, five school meal coordinators, five local government officials, five school meal committee chairpersons, and five school committee chairpersons, and 25 parents. These participants were purposively chosen based on their roles in SFPs.

Data were collected through semi-structured interviews, focus group discussions, and document analysis (Hancock & Algozzine, 2006). Semi-structured interviews were conducted with individual participants like head teachers, school meal coordinators, committee chairpersons, and government officials. Focus group discussions, comprising five parents each, facilitated insights into parental perspectives on SFP challenges. These discussions, lasted around one hour, enriched the understanding of hurdles faced in implementing SFPs. Alongside interviews and discussions, a document review was employed to supplement insights (Creswell, 2014). Guidelines for food provision, records of parent meetings, documentation of monthly/yearly meal contributions, school committee, and meal committee minutes were scrutinised. This document analysis furnished a holistic comprehension of SFP operations, challenges, and decision-making processes.

The data were analysed thematically as outlined by Longhurst (2010). Initially, transcripts and pertinent documents were meticulously coded, ensuring each piece of information was appropriately categorised. These codes were then systematically organised into coherent themes and sub-themes, a process which involved scrutinising the data for patterns, recurring issues, and underlying interconnections.

The derivation of themes primarily followed an inductive approach, allowing themes to emerge naturally from the data rather than being imposed by preconceived notions or theoretical frameworks. This iterative process involved constant refinement and restructuring of themes to ensure they accurately captured the nuances and complexities inherent in the data.

Several methods were employed to enhance the trustworthiness of the study, including member checking. The accuracy and interpretations of the collected data were verified by seeking feedback and validation from the participants themselves. Data triangulation was employed to strengthen the credibility and reliability of the findings (Creswell & Poth, 2018). Multiple data sources, including interviews, focus group discussions, and documentary reviews, were utilised. This approach enabled the corroboration of information from various perspectives and sources, thus reinforcing the overall trustworthiness of the study. To establish dependability, the research process was thoroughly documented. Detailed descriptions of the research procedures, data collection methods, and analysis techniques were recorded (Lewis-Beck et al., 2004). This documentation ensures transparency and enables other researchers to replicate the study, thereby verifying its consistency and dependability. Lastly, an external review through peer debriefing was conducted to further enhance the study's trustworthiness (Stake, 1998). Colleagues and experts in the field were invited to review the research design, data collection, and analysis processes. Their input and feedback strengthened the study's overall validity and trustworthiness.

Findings
This section presents the study's findings from Karatu District, Arusha, Tanzania. Drawing from qualitative data collected via interviews, focus groups, and observations, overarching themes were identified through an inductive thematic analysis. The key arguments and significant statements were quoted verbatim after translation from Kiswahili to English.

Limited Public Awareness of the Importance of Contributing to School Food Programs

One of the prominent findings that emerged from the data analysis is the limited public awareness of the importance of contributing to School Food Programs (SFPs). Despite the significant impact of these programs on students' academic engagement and nutritional well-being, many parents and community members exhibited a lack of understanding regarding the significance of their contributions. During the focus group discussions with parents, it was evident that a considerable number of participants were unaware of the direct benefits of their contributions to the SFPs. For instance, one parent remarked,

> …I didn't know that my small contribution could make such a difference in the school feeding program. It would be helpful to have more information on how our contributions are being used… (FGD, Parent, June 2023)

Similarly, another parent expressed,

> …I thought the school feeding program was fully funded by the government, so I didn't see the need to contribute. Now I understand that our support is crucial to sustaining the program… (FGD, Parent, June 2023)

This lack of awareness resulted in reduced participation and passion among parents, leading to potential challenges in sustaining the programs. As one focus group participant noted,

> …If more parents were aware of the positive impact of their contributions, I believe more of them would be willing to support the school feeding program… (FGD, Parent, June 2023)

Moreover, the documentary review of minutes from parent meetings revealed that discussions on the importance of their contributions to the SFPs were rarely addressed. The focus of these meetings often revolved around other school-related matters, with limited attention given to the significance of their involvement in ensuring the success and continuity of the feeding programs. To address this issue, it is crucial to implement targeted educational initiatives and awareness campaigns to emphasise the positive impact of parents' contributions to SFPs. As one local government official highlighted,

> …We need to actively engage parents and the community in awareness programs that highlight the importance of their involvement. This can foster a sense of ownership and encourage more active support for the school feeding programs… (FGD, Parent, June 2023)

Raising awareness among parents and the broader community about the importance of their involvement can create a sense of responsibility and commitment to sustaining the programs. Providing clear information on how their contributions are utilised and showcasing the tangible benefits of the programs can significantly enhance public awareness and support.

Lack of Clean and Reliable Water Supply in the Schools
Another significant finding that emerged from the data analysis is the lack of clean and reliable water supply in the schools providing School Food Programs (SFPs). Access to clean water is essential for food preparation, hygiene, and overall program sustainability. However, school staff and participants reported several challenges related to water availability and quality. During the interviews with head teachers, concerns were raised about the irregular water supply to the school premises. One head teacher stated,

> …We often face water shortages, especially during the dry season. This affects our ability to cook meals for the students regularly… (Interviews, Head TeacherParents, June 2023)

Additionally, focus group discussions with parents highlighted their worries about the water quality used in meal preparation. A parent expressed,

> …We worry about the cleanliness of the water used to prepare meals for our children. Sometimes, the water looks muddy, and we are not sure if it's safe… (FGD, Parents, June 2023)

The lack of a clean and reliable water supply poses challenges to the effective implementation of the SFPs. Without a consistent water source and assurance of water quality, the school's ability to provide nutritious and safe meals to the students is compromised.

Furthermore, documentary reviews of school committee minutes revealed discussions about seeking assistance from the local government to address water supply issues. These records indicated the efforts made by school committees to improve water availability in the schools and its direct impact on the sustainability of the SFPs. To address this challenge, relevant authorities need to prioritise water infrastructure development in schools implementing SFPs. As one local government official emphasised,

> …We need to work together to ensure that schools have access to clean and reliable water sources. It is crucial for the success of school feeding programs and the health of the students… (Interview, DEO, June 2023)

Moreover, the involvement of the community in addressing water supply issues can be instrumental in finding sustainable solutions. Engaging parents and community members in water infrastructure projects and raising awareness about water conservation can contribute to improved water availability in schools.

Limited Rainfalls in Karatu Promoting Food Shortages
Another crucial theme that emerged during the study was the impact of limited rains in the Karatu district, leading to food shortages and challenges in implementing School Food Programs (SFPs). The region's reliance on rain-fed agriculture makes it particularly susceptible to food scarcity during periods of inadequate rainfall. Interviews with local government officials revealed their concerns about the region's vulnerability to food shortages. One official remarked,

> …Karatu district relies heavily on agriculture for food production. When rains are insufficient, it affects crop yields, and this, in turn, leads to food scarcity among the community and schools… (Interview, WEO, June 2023)

The impact of limited rains on the availability and quality of food was also evident in focus group discussions with parents. Parents expressed worry about the reduced availability of locally sourced food items for school meals. A parent shared,

> …During dry seasons, it becomes challenging to get fresh produce for the school feeding program. Sometimes, we have to rely on food supplies from other areas, which may not be as nutritious or affordable… (FGD, Parent, June 2023)

The limited availability of locally sourced food items directly affects the nutritional quality of meals provided through the SFPs. The dependency on external food supplies during food shortages can increase costs and potential challenges in sustaining the program.

A documentary review of records from the school's meal committee minutes further highlighted the impact of limited rains on food availability and the committee's efforts to find alternative solutions. Discussions in these minutes emphasised the need to explore strategies to address food shortages during dry seasons and ensure the continuous provision of meals to students.

To mitigate the impact of limited rains and food shortages, stakeholders must adopt strategies that enhance the resilience of the SFPs. One possible approach is to promote climate-smart agriculture practices and support the cultivation of drought-resistant crops. Engaging local farmers in the SFPs and encouraging them to grow food items suitable for dry conditions can help improve food availability even during periods of limited rains. Moreover, exploring partnerships with food banks and other food assistance programs can provide a safety net during food shortages. These collaborations can ensure a steady supply of nutritious food items to schools, promoting the sustainability of the SFPs throughout the year.

The Presence of Unethical School Meals Supervisors
The presence of unethical school meal supervisors emerged as a significant theme in the study, raising concerns about the implementation and sustainability of School Food Programs (SFPs). School meal supervisors play a crucial role in overseeing the preparation and distribution of meals to students. However, the presence of unethical practices among some supervisors poses challenges to the successful operation of the programs. Interviews with head teachers and school committee members shed light on the unethical behaviours displayed by a few school meal supervisors. Reports of mismanagement of food supplies, diversion of resources, and favouritism in meal distribution were evident in these accounts. One head teacher shared,

> …Some supervisors show favouritism in meal distribution, giving more food to certain students while neglecting others. This creates discontent among students and parents… (Interview, Head Teacher, June 2023)

The presence of unethical practices not only undermines the trust and confidence of stakeholders but also impacts the overall effectiveness of the SFPs. It may lead to food wastage, unequal distribution of meals, and compromised nutritional support to students, ultimately affecting their well-being and academic performance.

Focus group discussions with parents further corroborated the concerns about unethical practices among school meal supervisors. Parents expressed dissatisfaction with the lack of transparency in meal distribution and called for stricter oversight and accountability of supervisors. A parent voiced their concern, saying,

> …We need supervisors who are fair and transparent in their roles. They should prioritise the well-being of all students and ensure that meals are distributed equally… (FGD, Parent, June 2023)

To address this issue, it is imperative to establish clear guidelines and standards for school meal supervisors, emphasising ethical conduct and fair distribution practices. Regular training and capacity-building programs can help reinforce ethical values and promote professionalism among supervisors. In addition, promoting community involvement in monitoring and oversight mechanisms can safeguard against unethical behaviours. Parents and school committees can play an active role in monitoring meal distribution and reporting any incidents of misconduct to relevant authorities. By addressing the challenges associated with unethical school meal supervisors, stakeholders can ensure the integrity and efficiency of School Food Programs. Fostering an environment of transparency, accountability, and ethical conduct among supervisors is essential to uphold the community's trust and maintain the SFPs' positive impact on students' well-being and academic progress.

Contradiction of Fee-Free Education and Parental Involvement in School Feeding Programs

A significant theme that surfaced during the study is the contradiction between the implementation of fee-free education in Tanzania and parental involvement in School Feeding Programs (SFPs). The introduction of fee-free education policies aimed to increase access to quality education for all students, but it unintentionally led to a perception among parents that they have no role to play in supporting the SFPs. Implementing fee-free education was intended to alleviate financial burdens on parents, enabling more children to attend school. However, interviews with parents revealed that the policy created a misconception that the responsibility for providing meals at school entirely rested with the government. As a result, some parents felt they were absolved of their role in supporting the school feeding programs.

One parent expressed this sentiment during a focus group discussion, stating,

> …With fee-free education, we assumed that the government takes care of everything, including meals. We didn't know that our involvement was still crucial… (FGD, Parent, June 2023)

Another parent added,

> …When the government introduced fee-free education, we thought they would take care of the meals too. We didn't realise that parents still needed to contribute to support the feeding programs… (FGD, Parent, June 2023)

This perception directly impacted the level of parental involvement in the SFPs. Many parents assumed that the provision of meals was entirely the

government's responsibility, leading to reduced engagement and support for the programmes.

Moreover, the documentary review of records from parent meetings highlighted a lack of discussions about parental contributions to the SFPs. These meetings primarily focused on academic matters, with limited attention given to the importance of parental involvement in sustaining the feeding programs. To address this issue, there is a need for increased awareness and communication about the shared responsibility between the government and parents in supporting the SFPs. Implementing awareness campaigns and educational initiatives that emphasise the partnership between parents and the government in ensuring the success of the programs can help dispel the misconception and encourage active involvement.

Furthermore, school authorities and local government officials can play a crucial role in fostering parental engagement by actively communicating with parents about their essential role in contributing to the school feeding programs. Collaborative efforts can help create a conducive environment that promotes parental participation and support for the well-being and academic performance of the students. By addressing the contradiction between fee-free education and limited parental involvement in School Food Programs, stakeholders can work towards creating a more holistic and sustainable approach to ensuring the nutritional needs of students are met, leading to improved learning outcomes and overall educational success.

Lack of Conducive Resources: Example Kitchen Buildings and Utensils

The theme of "Lack of Conducive Resources" emerged prominently during the study, highlighting the challenges schools face in providing School Food Programs (SFPs) due to inadequate infrastructure and essential resources. Insufficient kitchen buildings and utensils were identified as significant barriers impacting the efficient implementation and sustainability of the feeding programs. Interviews with head teachers and school committee members revealed concerns about the lack of proper kitchen facilities in some schools. One head teacher remarked,

> …Our school lacks a suitable kitchen building to prepare meals for the students. During inclement weather, it becomes even more challenging to cook meals in an open area… (Interview, Head Teacher, June 2023)

The absence of proper kitchen buildings not only hampers meal preparation but also poses health and safety risks to food handlers and students. The cooking process may be hindered, resulting in meal delays and reduced meal quality. Furthermore, focus group discussions with parents highlighted the insufficiency of utensils for meal preparation in some schools. Parents expressed their worries about the limited availability of cooking utensils, affecting the school's capacity to prepare meals for a considerable number of students.

A parent expressed concern, saying,

> …The school faces challenges in providing meals to all students due to a lack of enough cooking utensils. It slows the meal preparation process, and sometimes, not all students get a full meal… *(FGD, Parent, June 2023)*

The limited availability of cooking utensils can impede the efficiency of feeding programs and lead to unequal meal distribution, impacting the nutritional support provided to students. To address these resource constraints, relevant authorities and stakeholders must invest in improving infrastructure and providing necessary resources for schools implementing SFPs. Constructing proper kitchen buildings and equipping them with the required cooking facilities can enhance the meal preparation and ensure food safety and quality.

Additionally, providing adequate and functional cooking utensils can streamline meal preparation, allowing schools to cater to the nutritional needs of all students efficiently. Collaborative efforts between the government, local communities, and non-governmental organisations can help mobilise resources to support the school feeding programs and create an enabling environment for their success.

Discussion of the Findings
The first significant finding that emerged from the findings of this study is the limited public awareness of the importance of contributing to School Food Programs (SFPs). Despite the positive impact of SFPs on students' academic engagement, attendance, and nutritional well-being, the study revealed a lack of awareness among the public, particularly parents, about their role in supporting these programs. The results of this study align with previous research on school feeding programs, both nationally and internationally, which often highlight challenges related to community engagement and support (UNESCO, 2019; Awuor, 2016). Insufficient awareness about the significance of parental contributions to

the SFPs can hinder the sustainability and effectiveness of these programs, as active parental involvement is vital for the success of such initiatives. The limited awareness is particularly evident in parents' perceptions that the government's implementation of fee-free education meant the full responsibility for providing meals rested with the state. This misunderstanding has led to a decreased sense of ownership and contribution from parents, hindering the holistic approach required for the success of SFPs (Langinger, 2011). Consequently, this lack of active engagement may lead to a reduction in parental contributions, negatively impacting the students' overall quality and availability of meals.

One possible explanation for this limited awareness could be the lack of targeted information campaigns and educational initiatives to highlight the importance of parental involvement in SFPs. Government authorities and educational institutions should take proactive measures to promote community awareness through targeted campaigns, workshops, and community meetings. By fostering a shared understanding of the roles and responsibilities of all stakeholders in supporting SFPs, including parents, the programs can better achieve their intended goals (Buttenheim et al., 2019). Furthermore, partnerships with local NGOs, community-based organisations, and civil society groups can play a pivotal role in raising awareness and mobilising support for SFPs (Roothaert et al., 2021). Collaborative efforts can increase community participation and contributions, ensuring a steady and sustainable supply of nutritious meals for students.

The second prominent finding that emerged from the findings of this study is the lack of clean and reliable water supply in schools, which poses significant challenges to the implementation of School Food Programs (SFPs). The availability of clean water is essential for proper meal preparation, food safety, and overall hygiene in school kitchens. The findings of this study align with previous research on school feeding programs, which have also highlighted the importance of access to clean water in ensuring the success and sustainability of the programmes. (Jomaa et al., 2011; Sekiyama et al., 2018). Insufficient access to clean water not only affects the quality and safety of the meals prepared but also hampers the overall efficiency of the feeding programs. Participants in the study, including food handlers and school committee members, consistently pointed out the challenges they faced in obtaining a reliable water supply. In some schools, inadequate water infrastructure resulted in limited access to clean water for cooking and cleaning purposes. It is

argued here that the lack of proper water facilities not only delays meal preparation but also poses health risks, as it compromises food safety and hygiene standards (Shafi, 2021). The limited availability of clean water is exacerbated during periods of water scarcity, such as prolonged dry seasons, which are common in the study area. The inadequate supply of water during these periods not only affects meal preparation but also impacts overall school sanitation and hygiene practices.

To address this challenge, the relevant authorities must invest in improving water infrastructure in schools. The construction of proper water facilities, such as boreholes, water tanks, and rainwater harvesting systems, can ensure a consistent and reliable water supply throughout the year (Sitali, 2021). Moreover, training food handlers and school staff in proper water management and hygiene practices can further enhance food safety and kitchen sanitation. Collaboration between the education sector and water resource management agencies is essential in developing sustainable solutions to the water supply challenge. By pooling resources and expertise, these stakeholders can work together to address water scarcity and ensure that schools have access to clean water for educational and food preparation purposes. Additionally, educational institutions can leverage partnerships with local communities and NGOs to support school water provision projects. Engaging the community in water supply initiatives can foster a sense of ownership and commitment, leading to the long-term sustainability of the water facilities.

The third significant finding that emerged from the findings of this study is the impact of limited rains in the Karatu region, which promotes food shortages and adversely affects the implementation of School Food Programmes (SFPs). The study revealed that the region's agricultural productivity heavily relies on rainfall, and variations in precipitation patterns can lead to food insecurity and challenges in sustaining the feeding programs. The findings of this study are consistent with previous research on the impact of climate variability on food security in sub-Saharan African regions (Agbozo et al., 2017; Cupertino et al., 2022). Prolonged dry spells, erratic rainfall, and other climate-related factors threaten agricultural production, affecting food availability and affordability for communities in the study area. During focus group discussions with parents, concerns were raised about the reduced agricultural output during periods of inadequate rainfall. A parent shared their experience: "When the rains are not enough, we face challenges in growing crops for our families. It becomes difficult to contribute to the school feeding programs during such times." Food shortages resulting

from limited rains can directly impact the provision of meals in schools. With reduced agricultural yields, parents may struggle to provide the necessary food contributions to support the feeding programs (WFP, 2016). This challenge is further compounded by increased food prices during times of scarcity, making it difficult for families to afford the necessary food items for their children and contribute to the school feeding initiatives.

To address the challenge of food shortages caused by limited rains, there is a need for diversified and climate-resilient agricultural practices. Implementing sustainable agricultural techniques, such as rainwater harvesting, drought-resistant crop varieties, and conservation agriculture, can enhance food production and improve resilience to climate variability (Wineman et al., 2022). Moreover, educational institutions can play a role in promoting climate-smart agriculture practices among parents and local communities. Providing training and extension services on climate-resilient farming techniques can empower communities to mitigate the impact of climate change on food production and contribute to the sustainability of SFPs (Awuor, 2016). Additionally, collaboration between local governments and NGOs can facilitate the establishment of food banks and emergency food reserves to support communities during food scarcity. These initiatives can act as a safety net to ensure continuous access to food for vulnerable families and support the provision of meals in schools even during challenging times.

The fourth significant finding that emerged from the findings of this study is the presence of unethical school meal supervisors, which poses challenges to the implementation and sustainability of School Food Programs (SFPs). School meal supervisors play a crucial role in overseeing the meal preparation process and ensuring adherence to food safety and quality standards. However, the study revealed instances of unethical behaviour among some supervisors, which has detrimental effects on the feeding programs. The findings of the current study shed light on an often overlooked aspect of SFPs, where the conduct of supervisors can directly influence the program's success (Atta & Jacob, 2015). Unethical behaviour among school meal supervisors includes mismanagement of food resources, embezzlement of meal funds, and favouritism in meal distribution, among other issues. During interviews with school committee members and parents, concerns were raised about the improper conduct of some school meal supervisors. One school committee member expressed their frustration, stating, "Some supervisors prioritise their interests over the well-being of the students. They divert

food meant for school meals and show favouritism towards certain students. "Such unethical practices can lead to unequal distribution of meals among students, affecting the nutritional support provided to those in need. It can also erode trust and confidence in the feeding programs among parents and the wider community, potentially leading to decreased contributions and support for the initiatives.

Addressing the issue of unethical school meal supervisors requires a strong emphasis on transparency and accountability. Proper monitoring mechanisms and regular audits can help detect and prevent unethical practices. Schools can involve parent representatives and community members in oversight committees to enhance transparency and community engagement in program management. Additionally, training and capacity building for school meal supervisors are essential to ensure their understanding of their responsibilities and the importance of adhering to ethical standards. Emphasising the significance of their role in providing nutritious meals to students can foster a sense of commitment to the well-being of the students and the success of the feeding programs. Furthermore, promoting a culture of integrity and accountability within the school environment can positively impact the behaviour of supervisors. Schools can encourage a climate of openness and whistle-blowing, where concerns about unethical behaviour can be reported without fear of reprisals.

The current study also found there is a lack of conducive resources, particularly the absence of adequate kitchen buildings and utensils, which poses significant challenges to the implementation of School Food Programs (SFPs). The study revealed that a lack of essential infrastructure and equipment hampers the efficiency and effectiveness of the feeding programs in the Karatu region. The findings of this study are consistent with existing research on the importance of infrastructure and resources in the successful implementation of SFPs (Afoakwa, 2005; Roothaert et al., 2021). Adequate kitchen facilities and utensils are crucial for safe and hygienic food preparation, as well as for meeting the nutritional needs of the students.

During interviews with food handlers and school committee members, the lack of proper kitchen buildings and utensils emerged as a prominent concern. Many regional schools operate without dedicated kitchen facilities, forcing food handlers to prepare meals in makeshift settings, such as open-air spaces or poorly equipped rooms. This compromises

food safety and hygiene standards, increasing the risk of food contamination and related health issues. A food handler shared their experience: "We lack proper kitchen buildings with proper ventilation and storage facilities. It becomes challenging to ensure food safety in such conditions. "Inadequate kitchen utensils and equipment further exacerbate the challenges food handlers face. The lack of essential tools hinders efficient food preparation and leads to time-consuming processes. As a result, food handlers may struggle to meet the required meal preparation schedule, affecting the timely provision of meals to students.

To address the issue of inadequate infrastructure and resources, there is a need for substantial investment in school kitchen facilities. Constructing dedicated kitchen buildings equipped with proper ventilation, storage facilities, and sanitation amenities is essential to ensure safe and hygienic food preparation. Additionally, providing schools with the necessary kitchen utensils and equipment can enhance the efficiency of food preparation and improve the overall quality of meals. This includes supplying cooking stoves, cooking pots, cutting boards, and other essential items required for meal preparation. Furthermore, capacity building and training for food handlers are essential to ensure proper utilisation of available resources and adherence to food safety standards. Educating food handlers on proper hygiene practices, meal planning, and nutrition can enhance their skills and knowledge, contributing to the overall success of the feeding programs.

Conclusion and Implications

The analysis, results, and discussion presented in this study have illuminated crucial dimensions of the challenges faced in implementing local school feeding programmes (SFPs) in Tanzanian public primary schools, specifically in the Karatu district. Through rigorous qualitative exploration, several themes have emerged, underscoring the multifaceted nature of the hurdles that impact the sustainability and effectiveness of these programs. The findings reveal that fostering parental engagement through awareness campaigns is pivotal for securing the financial sustainability of SFPs. The significance of transparent communication between schools and parents, highlighting the role of contributions, echoes the necessity of a harmonious partnership to ensure the continuity of these programs.

Moreover, the hurdles posed by limited access to clean water have come to the forefront. The intricate relationship between water availability and the hygienic preparation of school meals unveils a critical requirement for infrastructure investment and reliable water supply within educational institutions. The implications of climate variability on food shortages, compounded by limited rainfall in the Karatu district, signal the necessity for adaptive measures. This underscores the urgency of integrating climate-resilient strategies into SFPs, guaranteeing food security despite environmental challenges.

Ethical considerations surrounding the behaviour of school meal supervisors unveil the importance of maintaining integrity within the feeding programs. Transparency, oversight, and accountability mechanisms are crucial to ensuring equitable distribution and upholding the ethical standards of program implementation. Furthermore, the absence of conducive resources, including well-equipped kitchen buildings and utensils, underscores the fundamental infrastructure requirements for efficient food preparation and safe consumption.

In sum, the synergy of these themes portrays a comprehensive picture of the intricacies surrounding the successful execution of SFPs. The implications for policy and practice are manifold. Advocating for parental involvement, investing in water infrastructure, embracing climate resilience, fostering ethical conduct, and ensuring appropriate resources can collectively enhance the efficacy and longevity of SFPs.

It is essential to recognize the limitations of this study, including its regional focus and specific context. As such, this research serves as a stepping stone for further exploration, encouraging broader investigations into the implementation challenges of SFPs across diverse contexts.
Ultimately, this study contributes to the ongoing discourse on enhancing educational and nutritional outcomes through SFPs. The findings offer valuable insights for policymakers, educators, and stakeholders invested in fortifying the foundation of accessible and sustainable school feeding initiatives.

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Linking Salary Advance to Low-and Moderate-Income Salaried Workers: An Investigation of School Educators in Tanzania

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Abstract
The study investigated the relationship between salary advances and low—to moderate-income salaried workers, focusing on school educators in Tanzania. It explored why educators take salary advances before payday, assessed the benefits and costs of this practice, and examined how salary advance-taking relates to low-to-moderate-income earners. The study employed a quantitative approach with a cross-sectional design to collect data from 68 educators who returned self-report questionnaires from Dodoma City. The study used cluster and simple random sampling methods to select schools and educators. The collected data underwent thorough coding and entry into the Statistical Package for Social Science (SPSS) version 25 for statistical analysis. Descriptive statistics, including frequencies and percentiles, one-sample t-tests and paired sample t-tests, were employed to explore the correlation between low-moderate income and salary advance uptake. Findings indicate that while salary advances can promptly address urgent financial needs and expenses, there are costs of falling into a cycle of debt and financial instability. Recommendations include employers being prepared for emergencies requiring salary advances and establishing clear guidelines for granting such advances to mitigate financial costs for educators.

Keywords: *Salary advance, low- mid-income, costs, benefits, educators*

Introduction
Educators in sub-Saharan Africa with low to moderate incomes face challenges in managing finances. This is often due to inadequate financial planning, insufficient compensation, and the rising cost of living. As a result, many educators find themselves in a perpetual cycle of financial strain and rely on salary advances to meet their basic needs. Research indicates that workers experience financial stress due to stagnant income and household earnings (Baker, 2017; Baker & Kumar, 2018; Kappel, 2022; Rawat, 2022)With rising expenses caused by events such as the COVID-19 outbreak, world economic inflation, and the Ukraine war,

low—and mid-income workers face difficulty managing their salaries to pay monthly bills. Baker and Kumar (2018), Mckean et al. (2005), and Singh (2021) argue that small financial shocks can significantly affect low-income workers, leading them to take salary advances before earning their pay. Salary advances are private loan agreements between employees and employers (DeVito, 2010; Thomas-Bryant, 2022; Varghese, 2022; Kappel, 2022). Employees often request salary advances to cover emergencies or urgent cash needs. The purpose of salary advances is to help employees overcome temporary setbacks without having to take out a bank loan (Herrity, 2023; Thomas-Bryant, 2022). Other studies note that salary advances are only granted to employees with no other means of securing money to solve emergencies or difficulties (Rawat, 2022; Umah, 2019). Employers' policies on salary advance duration vary greatly, with some requiring repayment in 3 to 6 months and others prescribing repayment periods of 12 months. The bank guideline for salary advance repayment in Tanzania is one month (CRDB Bank PLC, 2018; NMB BANK, 2018c).

In the United States, for example, over 50 million low-income working families experience financial stress, with 60% unable to cover a $400 emergency expense without going into debt (Baker & Kumar, 2018; Maready, 2022). In India, 80% of employees live paycheck to paycheck, with no savings left for emergencies by the time their next payday arrives (Rawat, 2022). According to a study by Evans et al. (2020), workers in Sub-Saharan Africa experience an increase in absolute earnings as GDP per capita rises. However, this increase does not translate to an increase in earnings as a percentage of GDP per capita. Teachers' monthly earnings in 7 out of 15 countries are statistically lower than comparable wage workers (Evans et al., 2020). Lyimo (2014) notes that teachers in Tanzania, for example, receive low payments, with an average monthly salary of $150 to $265 for primary school teachers and $300 to $500 for secondary school teachers. These salaries are also subject to taxation, such as pay-as-you-earn and social security funds. Baker (2017) reports that low-salaried workers often struggle to obtain reasonably priced and structured small loans to cover essential expenses like urgent medical care or auto expenses. Thus, providing such loans could alleviate their financial stress, reducing their reliance on costly financial products like payday loans, salary advances, and bank overdrafts for liquidity and credit support.

The debate on whether salary advances are a good or bad option for employees continues. Some believe that low- and mid-income salaried

employees cannot wait for their monthly salary and must take salary advances to cover unexpected expenses like medical emergencies or financial setbacks (Bojac, 2022; Cholteeva, 2022; Cristea, 2021; Seboldt, 2022; Varghese, 2022). Others argue that taking a salary advance can lead to financial troubles (Chioma, 2019; Willis, 2022). In addition, Willis (2022) reports that 64% of employees in the UK run out of money before payday. The protocols surrounding salary advances for employees can vary depending on the institution. Extensive research has indicated that each institution has its guidelines for providing salary advances to its staff members (Alemu, 2018; Baker & Kumar, 2018; Mckean et al., 2005). These policies typically involve a verification process to determine the employee's need for additional funds. Numerous respected institutions have implemented policies governing the payment of salaries or wages outside of standard payroll schedules. These include prestigious universities like Stanford and the University of Bath and organisations like the United Nations Development Program. However, while such practices are permitted in certain circumstances, educational institutions rarely encourage them. It is generally advisable for employees to follow the established payroll schedule for salary and wage payments. In rare and exceptional cases, employees may require a salary advance for personal reasons (Hawkins, 2020; Rohr-Locaste, 2021; Umah, 2019).

According to Rohr-Locaste (2021), institutions should be prepared for emergencies requiring a salary advance and establish clear guidelines outlining the limited circumstances under which such advances may be granted. These unforeseen events could be anything from the death of an immediate family member to extraordinary medical expenses not covered by insurance or any other event that could have a significant adverse impact on the employee if an advance were not approved (Rohr-Locaste, 2021; Smith, 2005; UNDP, 2023). Smith (2005) suggests that the HR department should follow specific steps before approving an employee's salary advance. These include reviewing the request based on the employee's payroll status, determining if the employee is eligible for an advance exceeding 70% of their salary, and verifying that the employee has completed at least six (6) months of continuous full-time service. If the request is approved, the Payroll Division will forward the completed request to the treasurer's office for processing and notify the employee of the outcome. The amount advanced is usually deducted from the employee's salary for the current month, and the repayment terms must be agreed upon with the payroll section before payment is made (Ghosal, 2023; International Labour Organisation, 2022; Kappel, 2022).

Institutional policies may establish a maximum range for the amount an employee can receive during financial hardship, such as $1,000-10,000 or 70-80% of the employee's monthly net pay within a month, without fees or interest (Cristea, 2021; Ghosal, 2023; Kappel, 2022; SEHA, 2014).

In Tanzania, obtaining a salary advance can be difficult due to the lack of policies in educational institutions and other organisations. The banks regulate the process in advance; NMB and CRBD Plc require workers to channel their salary through their bank accounts. Section 42-(2) of the Bank of Tanzania's regulations states that banks cannot grant salary advances that exceed the borrower's annual remuneration. Banks have established terms for salary advances to comply with these guidelines, including mobile banking apps like NMB Mkononi and CRDB Simu Banking App. The eligibility conditions include having a signed agreement with the bank for a salaried worker's loan scheme, receiving salary through a specific account, no outstanding balance on salary advance or loan arrears, not being on the loan blacklist, and having a personal account. Using these mobile apps, Tanzanian employees can request a salary advance with no fees or interest (CRDB Bank PLC, 2018; NMB BANK, 2018a). The current study addressed the following objectives:

   i)   To investigate why school educators, take monthly salary advances before the payday.
   ii) To assess the benefits and costs associated with taking monthly salary advances among school educators.
   iii) To examine the relationship between salary advance-taking and low-to-moderate-income salaried school educators.

Theoretical Underpinning
This research is centred on prospect theory and financial strain theory. First, prospect theory was developed by Kahneman and Tversky (1979); it provides details on how people make rational decisions in uncertain situations. It suggests that individuals evaluate potential outcomes based on their sense of gains and losses; they are more likely to take costs to avoid losses than to achieve gains (Kahneman & Tversky, 1979). This theory is valuable to the current study because teachers may request a salary advance before payday if they perceive a potential loss of not having immediate access to money in case of emergencies. If teachers perceive no immediate danger, they may not see a need or potential benefit in requesting a salary advance before payday. Second, the strain

theory, which was proposed in 1938 by Robert King Merto, explains how social structure, values, financial strain and goals can lead to deviant behaviours (Merto, 1938). Other researchers have suggested similar ideas. For instance, Pearlin et al. (1990) hold that financial stress can affect an individual's well-being, performance, and job satisfaction. Low and mid-salaried teachers may resort to taking salary advances to cope with their financial obligations, as failing to meet these obligations can lead to anxiety, depression, and other psychological stress. Pearlin and colleagues argue that taking a salary advance before payday can provide temporary relief, help alleviate emergency pressures, and reduce financial strain by enabling individuals to meet some of their financial obligations. However, borrowing money from an employer in advance of a salary payment can lead to financial stress and make it harder to manage finances in the long term (Pearlin et al., 1990)This can also negatively impact physical and mental health, self-esteem, and feelings of empowerment. Pearlin et al. underscores the need to promote employee well-being, as it is essential to implement comprehensive strategies that address workers' underlying financial challenges.

Research Methodology
This study investigated the relationship between salary advances and low-to moderate-income salaried educators in Tanzania's school system. A quantitative research approach was employed, supported by a cross-sectional design, to investigate the relationship between salary advances and low-to-moderate-income salaried school educators in Tanzania. This research approach and design allowed for simultaneous data collection from many individuals and a comprehensive analysis of the research problem. Using a quantitative approach, the study increased validity and reliability of the results and reduced study bias (Creswell, 2014; Johnson & Christensen, 2014). The research was conducted in Dodoma City, Tanzania's capital, covering two government primary and two government secondary school teachers. Dodoma was selected due to the diversity of teachers deployed and the government's recent shift away from the business city of Dar-es-salaam. Random sampling was conducted to obtain respondents for this study. As explained by Bhatt (2020) and Hossan et al. (2023). The quantitative research approach ensures that groups of equal size in the population have an equal chance of being chosen. Using this approach, schools were selected from a list available at the office of the District Primary Education Officer and District Secondary Education Officer. Slovin's (1960) formula was used to calculate the sample size to ensure easy statistical analysis.

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

Where 'n' is the sample size, 'N' is the accessible population, and 'e' is the marginal error or significance level at 0.1 (90%) for this study's population. The formula was used to calculate sample sizes from students. The population N = 213

$$n = \frac{213}{1 + 213(0.1^2)} = 68$$

Therefore, the sample size was 68 respondents.

Data Collection and Analysis Procedures
The study used a cross-sectional design to investigate the relationship between teacher salary and the number of salary advances taken before payday. This research approach involves collecting data from a diverse group of participants at a specific time, which provides a snapshot of the characteristics, behaviours, attitudes, or opinions of a particular population or sample within a defined timeframe.

The researchers used a cluster and simple random sampling procedure, selecting four schools - 2 primary and two secondary schools and 68 teachers from those schools. The data were collected through a rigorous process and were then subjected to meticulous coding and entry into the Statistical Package for Social Science (SPSS) version 25 computer software for statistical analysis. The study used descriptive statistics with frequencies and percentiles, one sample t-tests and the paired sample t-tests to examine the relationship between low-moderate income and salary advance taking.

The running of the descriptive statistics in the SPSS involved clicking on the analyse menu bar, dropping down to the descriptive statistics set, choosing the frequency set, and selecting the variables for analysis. The data were collected to investigate why school educators prefer taking salary advances before one-sample t-tests analysed payday to determine if the mean reasons behind workers taking salary advances before payday were greater than or equal to 1.

Therefore, the study developed the null hypothesis, H_0: μreasons behind school educators taking salary advances before payday ≥ 1 and the alternative hypothesis, H1: μreasons behind school educators taking salary advances before payday ≤ 1. Where μ is the mean reason workers

took salary advances before payday that the 68 low-moderate income workers had. The second step involved determining if this is a one-tailed or a two-tailed test. Because the hypothesis involves the phrase "greater than" or "equal to", this is a two-tailed test. The α level was specified at α = 1. The command for a one-sample t-test was done by clicking analyse, then compare means, then one-sample t-test. The output was the one-sample statistics box and the one-sample test. Based on the data collected, two samples were involved: reasons behind workers taking salary advances before payday and the benefits and costs associated with salary advances taken to workers. The values for each sample were collected from the same individuals who were low-moderate-income salaried workers, meaning that each individual gave two values, one for each of the two groups. A paired-sample t-test was an appropriate statistic to determine if the two means differed when the two samples that the means were based on were taken from the matched individuals or the same individuals. The study thus developed null and alternative hypotheses on some of the selected study questions.

1. H_0: μ unexpected emergencies or urgent financial needs $=$ μ addressing urgent financial needs or emergencies promptly

   H_1: μ unexpected emergencies or urgent financial needs $\neq$ μ addressing urgent financial needs or emergencies promptly

2. H_0: μ to cover essential living expenses $=$ μ ability to cover essential living expenses without delay

   H_1: μ to cover essential living expenses $\neq$ μ ability to cover essential living expenses without delay

3. H_0: μ paying off existing debts or bills $=$ μ timely payment of bills and existing debts

   H_1: μ paying off existing debts or bills $\neq$ μ timely payment of bills and existing debts

4. H_0: μ Insufficient saving or lack of emergency fund $=$ μ Risk of falling into a cycle of debt and financial instability

   H_1: μ Insufficient saving or lack of emergency fund $\neq$ μ Risk of falling into a cycle of debt and financial instability

5. H_0: μ Family or personal financial obligations $=$ μ Increase stress and anxiety due to ongoing financial pressure

   H_1: μ Family or personal financial obligations $\neq$ μ Increase stress and anxiety due to ongoing financial pressure

It is a two-tailed test that determines if the test is one-tailed or two-tailed since the hypothesis involves the phrase "different", and no ordering of the means is specified. The α level is specified at α = .05. The command for the paired samples t-tests is done through analysis, then compare

means, and then paired-samples t-test. The output is the paired sample statistics and the paired sample test boxes with data described as findings in the following section.

Findings and Discussion
This part presents the demographic profile of the school educators who serve as the respondents of this study. It also discusses why school educators take monthly salary advances before payday, the benefits and costs associated with taking monthly salary advances among school educators, and the relationship between salary advance-taking and low-to-moderate-income salaried school educators.

The demographic data and awareness issues involved inquiries into the respondent's gender, which was categorized as male or female, their monthly salary range in Tanzanian shillings, divided into three categories, and whether they took a salary advance each month. Additionally, the survey asked about the respondent's level of agreement with the association between taking a salary advance and low worker salary, with response options including strong agreement, disagreement, somewhat agreement, and disagreement. The results are presented in Table 1, showing the frequencies and percentage values of the responses.

Table 1: Findings on the demography and awareness of salary advance-taking

Item	sex		Salary range in x10^5 TZS			Taking salary advance each month		Agreement with the association between salary advance taking and low salary among workers			
Category	Male	Female	2-7	7-1,4	1,4 And above	Yes	No	Strong Agree	Agree	Disagree	Strong Disagree
Frequency	28	40	33	29	6	13	55	30	22	10	6
Parentage value	41.2	58.8	48.6	42.6	8.8	19.1	80.9	44.1	32.4	14.7	8.8

Findings show that 58.8% of female respondents were covered by the study than males, and the majority, 48.6%, were low-income workers with salaries ranging from 200,000 to 700,000 thousand Tanzanian shillings payee per month. Further, findings indicate that a minority of 19.1% of the respondents take salary advance before payday. The majority group, 44.1% and 32.4 of the respondents, strongly agreed to agree that there is an association between salary advance taking and low salary among workers. In addition, a one-sample t-test was run based on some reasons the respondents gave for why low-moderate income workers take salary advances before payday. The output of the t-test is a one-sample statistics box showing the descriptive statistics for the test in Table 2.

Table 2: A one-sample statistics box with descriptive statistics for the test

One-Sample Statistics				
Variables	N	Mean	Std. Deviation	Std. Error Mean
Unexpected emergencies or urgent financial needs	68	1.54	.502	.061
Insufficient savings or lack of emergency fund	68	1.74	.444	.054
To cover essential living expenses	68	1.69	.465	.056
Paying off existing debts or bills	68	1.85	.357	.043
Family or personal financial obligations	68	1.85	.357	.043

Table 2 shows 68 observations (N) for each case of reasons. The mean numbers varied, with unexpected emergencies or urgent financial needs having a mean of 1.54, the lowest mean observed. In comparison, paying off existing debts or bills and family or personal financial obligations tied with a mean of 1.85, the highest mean number observed. The standard deviation of the reasons ranges from 0.357, the minimum for paying off existing debts or bills and family or personal financial obligations, to 0.502, the maximum for unexpected emergencies or urgent financial needs reasons. The standard error of the mean ranges from 0.061 at the maximum to 0.043 at the minimum. Table 2 clarifies the descriptive statistics for the test based on each reason for advance salary taking among the low-salaried income educators in Tanzania, as reported by the study respondents. Further, from the one-sample t-test on the reasons for salary advance taking among low-moderate income workers, the one-sample test box was produced to give the information needed to answer the research questions, as presented in Table 3.

Table 3: **A one-sample test box giving the information needed to answer the research questions**

	One-Sample Test					
	Test Value = 1					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Unexpected emergencies or urgent financial needs	8.942	68	.000	.544	.42	.67
Insufficient savings or lack of emergency fund	13.642	68	.000	.735	.63	.84
To cover essential living expenses	12.246	68	.000	.691	.58	.80
Paying off existing debts or bills	19.713	68	.000	.853	.77	.94
Family or personal financial obligations	19.713	68	.000	.853	.77	.94

Table 3 gives the predetermined test value as 1. The t-statistic result varies for each variable, as shown. The degrees of freedom are 68 for all variables. The significance value, p value, for each variable is 0.000. The difference between the observed sample means and the expected mean is given for each variable, as shown.

Taking the first case of unexpected emergencies or urgent financial needs as the reason workers take salary advances before payday, the output, t $_{\text{unexpected emergencies or urgent financial needs}}$ = 8.942 with 68 degrees of freedom.
p-value = Sig.(2-tailed) ÷ 2 = 0.000 ÷ 2 = 0.000

The study rejected the null hypothesis since the p-value was 0.000 < 1 = α. At the α = 1 level of significance, there is enough evidence to conclude that unexpected emergencies or urgent financial needs were the excellent reasons behind workers taking salary advances before payday, with the confidence interval of (0.67-0.42) = 0.25. All the hypothesised reasons behind workers taking salary advances before payday had p-values = 0.000, which is less than the pre-determined significance level of 1. Therefore, the study rejected the null hypotheses for all variables tested and concluded that the variables tested were excellent reasons low—and moderate-income salaried workers take salary advances before payday.

Research has revealed that unforeseen emergencies or pressing financial demands are valid reasons for educators to request an advance on their salary. This aligns with the findings of previous studies that suggest

teachers may seek early access to their pay in anticipation of potential financial strain during emergencies (Bohrer, 2022; Rohr-Locaste, 2021; Tucker et al., 2020; Zagala, 2020).

Based on the results, there is a significant difference in the mean salary advance taking among low-to-moderate-income salaried educators, unexpected emergencies or urgent financial needs, insufficient savings or lack of emergency funds to cover essential living expenses, paying off existing debts or bills, and family or personal financial obligations. In response to the second objective, the study developed descriptive statistics showing frequencies and percentage values of responses on the benefits and costs associated with salary advance talking to educators. Table 4 elaborates on the findings.

Table 4: Responses on the benefits and costs associated with salary advance taking to workers

S/N	Benefits and costs associated with salary advance taking to workers	Response category			
		Yes		No	
		Frequency	Per cent	Frequency	Per cent
1.	Addressing urgent financial needs or emergencies promptly	17	25.0	51	75.0
2.	Ability to cover essential living expenses without delay	24	35.3	44	64.7
3.	Timely payment of bills and existing debts	11	16.2	57	83.8
4.	Risk of falling into a cycle of debt and financial instability	20	29.4	48	70.6
5.	Increase stress and anxiety due to ongoing financial pressure	9	13.2	59	86.8

The data in Table 4 suggests that workers benefit from salary advances in multiple ways. Specifically, 25% of respondents reported that salary advances helped them promptly address urgent financial needs or emergencies, while 35.3% said they could cover essential living expenses without delay. Additionally, 16.2% of respondents noted that salary advances enabled them to make timely payments on bills and existing debts, although they noted that salary advances have associated risks. 29.4% of respondents complained about the possibility of falling into a cycle of debt and financial instability, while 13.2% reported an increase in stress and anxiety due to ongoing financial pressure. This suggests that many educators may not be aware of or interested in this option. Willis

(2022) similarly found that only a few employees engage in salary advance-taking and that those often face significant financial challenges.

The third objective of this study examined the correlation between salary advance-taking and low to moderate-income salaried workers. To address this objective, a comparative means paired t-test analysis was conducted. The results are outlined in paired sample statistics Table 5, which provides descriptive statistics for the two groups defined by the pair of variables.

Table 5: The sample statistics for descriptive statistics

Paired Samples Statistics		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Unexpected emergencies or urgent financial needs	1.54	68	.502	.061
	Addressing urgent financial needs or emergencies promptly	1.75	68	.436	.053
Pair 2	To cover essential living expenses	1.69	68	.465	.056
	Ability to cover essential living expenses without delay	1.65	68	.481	.058
Pair 3	Paying off existing debts or bills	1.85	68	.357	.043
	Timely payment of bills and existing debts	1.84	68	.371	.045
Pair 4	Insufficient savings or lack of emergency fund	1.74	68	.444	.054
	Risk of falling into a cycle of debt and financial instability	1.71	68	.459	.056
Pair 5	Family or personal financial obligations	1.85	68	.357	.043
	Increased stress and anxiety due to ongoing financial pressure.	1.87	68	.341	.041

Based on the data in Table 5, there is a range of means across pairs 1 to 5. A total of 68 individuals responded to questions related to the benefits and costs of taking an advance salary before payday, with standard deviations ranging from 0.502 (the maximum for pair 1) to 0.341 (the minimum for pair 5). Additionally, Table 5 displays the standard error means for both variables. The study presents Table 6, which includes inferential statistics to explore this topic further.

Table 6: Showing the paired samples test for inferential statistics

		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
				Paired Samples Test					
				Paired Differences					
					95% Confidence Interval of the Difference				
Pair 1	unexpected emergencies or urgent financial needs - addressing urgent financial needs or emergencies promptly	-.206	.534	.065	-.335	-.077	-3.178	68	.002
Pair 2	to cover essential living expenses - the ability to cover essential living expenses without delay	.044	.584	.071	-.097	.186	.623	68	.003
Pair 3	paying off existing debts or bills - timely payment of bills and existing debts	.015	.366	.044	-.074	.103	.331	68	.000
Pair 4	insufficient savings or lack of emergency funds - the costs of falling into a cycle of debt and financial instability	.029	.598	.072	-.115	.174	.406	68	.068
Pair 5	family or personal financial obligations - increase stress and anxiety due to ongoing financial pressure	-.015	.440	.053	-.121	.092	-.275	68	.007

In pair 1, there is a significant difference of 206 between the two means, with a standard deviation of 0.534 for the difference between the variables. The observed t-value for pair 1 is 3.178, with a df of 68 and a Sig. (2-tailed) of 0.002. The decision rule to reject H_0 is if $p \leq \alpha$. Here, the p-value of 0.002 for pair 1 is less than and not equal to 0.05, leading to the rejection of H_0. This p-value provides sufficient evidence to conclude that there are reliable statistical differences between the means for reasons for unexpected emergencies or urgent financial needs and the benefits of addressing such needs promptly.

Consider pair two as an example. The decision rule is established to reject the null hypothesis (H_0): If the p-value is less than or equal to the significance level (α), then H_0 is rejected. Here, the p-value for pair 2 is 0.003, which is less than 0.05. Thus, the study concludes that there is ample evidence to support the claim that there are statistically significant differences between the means of the reasons for covering essential living expenses and the means for the ability to cover essential living expenses without delay. In pair 3, the decision rule for rejecting H0 is: If $p \leq \alpha$, then H_0 is rejected. Here, the p-value of 0.000 is less than, but not equal, 0.05. Therefore, the study rejected H_0 and concluded there are reliable statistical differences between the means for timely payment of bills and existing debts. This statistical difference provides sufficient evidence to support paying off debts or bills. In pair 4, to reject H_0, the decision rule is given: If $p \leq \alpha$, then reject H_0. In pair 4, the calculated p-value of 0.068 exceeds the threshold of 0.05, thereby leading to the failure of the study to reject the null hypothesis. This threshold of 0.05 suggests that the available evidence is inadequate to confirm any significant statistical variances between the means of insufficient saving or lack of emergency funds and the risk of falling into a debt and financial instability cycle.

Last, in pair 5, the decision to reject H_0 is determined by the following rule: If $p \leq \alpha$, then H_0 is rejected. In pair 5, the p-value of 0.007 is less than, but not equal, 0.05. The study has rejected H0. This indicates enough evidence to support the conclusion that the means for family or personal financial obligations have statistically significant differences compared to the means for increased stress and anxiety caused by ongoing financial pressure.

Conclusion
The study on salary advances and low- to moderate-income school educators in Tanzania revealed significant statistical differences between

the reasons for taking salary advances and the associated benefits and costs. The findings suggest that salary advances often address urgent financial needs, cover essential living expenses, and make timely payments on bills and debts. However, there are concerns about the costs of falling into a cycle of debt and financial instability, as well as increased stress and anxiety. Overall, the study highlights the complex relationship between salary advances and financial well-being among educators.

Recommendations

Respondents reported various reasons for requesting salary advances before payday, and some reasons are reported to put educators at the cost of falling into a cycle of debt and financial instability. To avoid this, the study recommends the following:

- Implement financial literacy programmes for educators to help them better manage their finances, understand the implications of taking salary advances, and make informed decisions about their financial well-being.
- Encourage schools and educational institutions to establish emergency fund policies that provide alternative solutions to salary advances for employees facing financial emergencies. This can help reduce the reliance on salary advances and promote long-term financial stability among educators.

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The Resource Challenges Facing Schools in Enhancing Quality of Education

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Abstract
This study examined resource-related challenges facing registered secondary schools in enhancing the quality of education in Kilosa District. The study employed a mixed-methods research approach and descriptive research design. The data were collected through interviews and questionnaires from 120 respondents. The findings revealed that some schools have adequate infrastructure and sufficient teaching and learning materials. In contrast, others experienced a shortage of school infrastructure and teaching and learning facilities, which affected the quality of education. It is suggested that the government needs to maintain rules and regulations for registering schools to preserve education standards. The government should involve school owners and other education stakeholders in maintaining the standards of schools as per the schools' registration rules and regulations.

Keywords: Registered school, quality education, secondary education, resource, resource challenge

Introduction

The school registration procedures are pivotal for enhancing the quality of education in Tanzania and worldwide. The procedures reflect how the quality of education is organised and provided in a given school. The study conducted by Mbele and Katabaro (2003) suggests that school registration issues must observe the availability of educational infrastructure and resources in schools. These are among the factors which determine the registration for a school. This study assumed that registered schools should possess all necessary teaching and learning resources. The availability of school facilities enhances educational standards and academic performance since students learn in a better environment full of learning and teaching facilities. However, there are still some challenges facing the fulfilment of quality education, irrespective of the school registration and its establishment in Tanzania.

For example, some schools survive with a shortage of classrooms, teaching and learning facilities, leading to poor education provision. Nevertheless, some private schools are established for a profit-making target and, therefore, survive with the required resources, while the vast majority of public schools are non–profit institutions and run with scarce resources (Davis, 1999). Such a habit of surviving with limited resources may result in graduate students who are incompetent, who cannot progress in education, and or who cannot apply their education to solve real-life challenges in society. Moreover, schools with scarce resources, whether registered or not registered, and private or public schools may fail their students during the national examination sessions. Hence, this study examined registered schools' resource challenges in enhancing the quality of secondary education in Kilosa District. The study is relevant to education stakeholders such as school owners and managers, school boards, District Educational Officers, Ward Executive Coordinators and Non-governmental Organizations (NGOs). They are expected to be enlightened on the important role of abiding by rules and regulations on school registration and monitoring school standards for improving teaching and learning resources and services to both teachers and students.

School Registration Procedures

The process of school registration entails ensuring that the school has all the necessities for education provision and that educational standards are maintained. Hence, before the school registration process starts, school quality assurance officers frequently visit a school site to check the fulfilment of the school requirements. The Education Act No. 25 of 1978 (United Republic of Tanzania, 1978) subsection 19, states that:

> …...the Minister may direct a register of public schools in which there shall be entered in respect of every public-school following particular-
> (a) the name of the school;
> (b) its address, including the region in which it is situated,
> (c) the person or body of persons responsible for its management and administration;
> (d) the date of establishment…...."

The general aspects of school registration are considered key factors in enhancing the development of education standards at the school level. In fact, the availability of teaching and learning materials, Information and

Communication Technology (ICT) resources, a library and a conducive teaching and learning environment facilitate the provision of quality education in schools. Jidamva (2012) argues that school registration procedures are set out to enable organisations to comply with the laws of the country. Schools, as it could be to any other business, need to follow directives from the central government without any deviations which impair standards. According to Jidamva, the school is ready to operate after completing all procedures as stipulated in the Education Act No. 25 of 1978 (United Republic of Tanzania, 1978).

Registration procedures are very crucial for the smooth operations of the school. This means the school will put all necessary resources in place before actual operations. Failure to observe school registration conditions may lead to the closure of a school. However, some registered schools have a shortage of classrooms and teaching and learning facilities (Jidamva, 2012; Masue, 2011). Nevertheless, some schools, particularly private ones, operate without registration and cause inconvenience to students as they cannot do their national examinations in those schools. Arguably, the challenges cause poor provision of education services.

Constructivism Theory
This study was guided by constructivism theory developed by Vygotsky, Piaget, Dewey, Vico, Rorty and Bruner (Kurt, 2021). This theory assumes that learning is an active, related process of constructing knowledge rather than acquiring it. Each person has a different interpretation and process of constructing knowledge. The main idea under constructivism is that instructors should never tell students anything directly but should always allow them to construct knowledge for themselves. Therefore, schools should be equipped with the required teaching and learning resources to facilitate educational provision embedded in constructivist perspectives. The act of resourcing schools seems to be an important factor to consider during schools' registration procedures. Thus, the challenges facing schools that operate without the required resources would act as barricades towards the essence of constructivism in the learning processes.

Challenges Facing Registered Schools
The study conducted by Mbele and Katabaro (2003) suggests that school registration issues must observe the availability of educational materials such as textbooks, libraries and laboratories in schools. These factors determine the requirements of school registration and are imperative for

the delivery of quality education. Michubu (2013) posited that insufficient textbooks and other learning materials were the challenges facing schools in the process of teaching and learning in Tanzania. Correspondingly, they discovered that students who learn in an environment with textbooks of all subjects tend to perform better than students who learn without textbooks.

Michubu (2013) reveals that school-level registration for the full mandate of providing education positively influences quality education and students' academic performance. Hence, schools need to follow registration procedures and conditions so that education provision is of the required standards. In some cases, parents and the community are involved in furnishing the schools with teaching and learning resources, i.e. through a decentralisation system. An effective set decentralisation system would enhance the quality of education provision (Healey & Crouch, 2012). The process of involving parents in children's education and the financial materials and support they provide to schools and students tend to influence the development of quality education (Michubu, 2013). However, the economic status of the family community may influence their participation in the provision of teaching and learning resources in schools. Under decentralisation, schools operating with poor assistance from the community would face a shortage of important resources, albeit registered.

School PVH (2022) posited that there are three stages of school registration procedures that greatly impact the provision of quality education. Stage one involves applying for permission to build a school by the Ministry. The application is made by a client to the Commissioner of Education under the flying seal of the District Executive Director and the Region Administrative Secretary requesting a permit to build a school. The owner(s) must be given a permit from the Ministry to build the school. This is accompanied by visiting the area where the school is intended to be constructed to verify the area and environment in general. Stage two requires the approval of the owner and Manager of a school. This stage is only for schools which have completed stage one. It entails filling out forms number RS.6 and RS.7 to the Ministry seeking approval from the school's owner and the school's manager, respectively. This is carried out after all necessary requirements, such as buildings and other infrastructure, have been completed to at least 75% and above. Stage three is the school registration. This stage is only for schools that have already completed the initial two stages. Application by a client is made

to the Ministry to seek out registration for their school or institution. This is carried out after the owner has put in place all necessary physical infrastructures, furniture, teaching and learning facilities or materials and has adequate teachers. The client has to fill in form number RS8, which must be approved by the Zonal Director of Quality Assurance.

Education Procedures for Education Standards

Haule (2015) did a study on the effects of SEDP I on the quality of education in Musoma Municipal Council. He revealed that school infrastructure and resources in relation to the number of students were necessary for the acquisition of school registration and quality education. However, the availability of library, laboratory, toilet blocks, desks and chair ratio, and number of classrooms in relation to the number of students have been inconsistently observed in most public secondary schools. This is due to the fact that sometimes the government enrols students in public schools without considering the available infrastructure and other important teaching and learning resources. In most cases, this leads to overcrowded classrooms compromising educational standards, albeit the schools being registered. Jidanva (2012) posited that many (registered) schools (i.e. public and private) with their respective teachers received no in-service training, seminars, workshops and panel discussions on the guidelines for school registration. This has resulted in a poor learning environment and a shortage of infrastructure resources like laboratories and their associated equipment.

The Ministry of Education, Science and Technology (URT, 2016) reported that quality assurers, District Education Officers, teachers and education stakeholders have made great contributions to school registration procedures. This is due to their views and experiences about education matters. According to this report, inspectors must monitor and recognise ghost teachers in the system to ensure that there are only qualified and professional teachers in schools. Several managerial offices are involved in the process of school registration. These are 'Quality Assurers', District Education Personnel, District Civil Engineers and District Health officials. Other managerial officers are Village Government Officials, Ward Officials, Zonal Chief Inspector of schools, the Local Authority and Regional Administrations, Chief Education Officers and Minister of Education (URT, 2016). Thus, quality assurance should convince school owners to prepare workshops and seminars for teachers on teaching and learning processes. Such seminars include the utilisation of teaching and learning aids and mainstreaming of ICT

equipment for Competent teaching in order to enhance the quality of secondary education. The literature reviewed (e.g. Musoa, 2019 & Matias, 2020) show that there are numerous challenges in the school registration procedures of secondary schools. Therefore, the current study concentrated on the resource challenges of the prerequisites in enhancing education standards in registered schools.
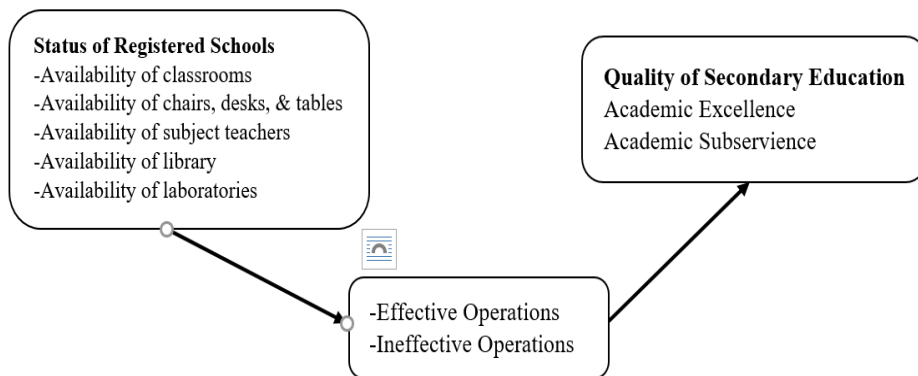
Figure 1: Conceptual Framework
Source: Researcher Constructs (2022).

The conceptual framework shows how school registration procedures – client project proposal, copy of school site plan, copies of building, and certified of evidence ownership of land – have a great contribution to the quality education (i.e. academic excellence) through enhancement of good furniture, physical infrastructure, qualified teachers et cetera. Quality Assurers, District education personnel, District Civil Engineers and District Health Officials are directly responsible for the registration process of secondary schools. If intermediate variables follow the registration procedures, they can lead to the quality of secondary education. All officers have a collective central role to play in certifying the preparedness of the client to establish the school safety and health of the learning environment. For the part of a public school, the owner is the school registration regulator and, therefore, ensures all prerequisites are in place before the school is registered.

Methodology
This study employed a mixed-methods research approach and a descriptive research design. The study was conducted in Kilosa District in Morogoro Region. The data were collected through questionnaires and interviews from 120 respondents. Purposive and random sampling techniques were employed to select the respondents. The questionnaires and interview items were constructed based on the independent (i.e.

quality assurance procedures) and dependent (quality of secondary education) variables. The questionnaire items were constructed based on a Likert scale ranging from 1 = Strongly Disagree to 4 = Strongly Agree. The items were tested in three secondary schools ahead of the actual data collection stage (note that the schools were not part of the main study). In this study, there were two types of data: qualitative and quantitative data. The quantitative data collected through questionnaires from the field were systematically coded and recorded in a computer sheet in order to be subjected to a Statistical Package for Social Sciences (SPSS) version 20 descriptive analyses. The questionnaires were pretested in 2 schools that were not part of the main study. The data were discussed to ensure validity and reliability. They were accordingly modified to make the constructs measure what they were expected to measure. The interview guide was also pre-tested and modified accordingly. The researcher ensured the respondents' informed consent and included a clarification of the purpose of the study.

Findings And Discussion

In this study, interviews were conducted with District Education Officer (n= 1), Ward Education Officer (n= 5), School Heads (n= 4) and Quality Assurers (n= 4). The data were analysed through content analysis (Table 2). The data were collected through teacher questionnaires (Table 1) and analysed through content analysis (Table 2).

Table 1: The Status of Resources Available in the Registered Schools

S/N	Statement	Public Schools		Private Schools	
		Mean	Std. Dev	Mean	Std. Dev
1.	My school has enough classrooms in such a way that there is no overcrowding of students.	2.48	1.37	2.38	1.42
2.	My school has enough chairs, desks and tables, implying that students use them for study.	2.38	1.25	2.19	1.10
3.	My school has enough subject teachers.	2.14	1.20	2.15	1.22
4.	My school has a library and laboratories with enough furniture and equipment.	1.68	1.00	2.27	1.15

Source: Field Data (2022).

Generally, the findings revealed that the majority of respondents who participated in filling in questionnaires disagreed that the resources

available were inadequate, as reflected in the Mean below average (see Table 2). For instance, regarding whether the school had enough classrooms to cater to the available number of students, the results revealed a mean of 2.48 and 2.38 for public and private schools, respectively. The results indicated that public schools had relatively more chairs, desks, and tables than private schools. The findings on whether the schools had enough subject teachers indicated a mean score of 2.14 for public secondary schools and a mean score of 2.15 for privately owned schools. Regarding the inquiry that focuses on learning about the availability of libraries and laboratories with enough furniture and equipment, the private secondary schools had a mean score of 2.27 compared to the 1.68 mean score for public secondary schools. Moreover, the findings from quantitative inquiry (data collected through questionnaires) promoted the qualitative inquiry (i.e. data collected through interviews) (Table 2) on the resource challenges that face registered schools.

Table 2: **Challenges of Registered Schools**

S/N	Categories	Themes	Findings Overview
1.	School Facilities	-scarcity of teaching and learning materials -shortage of classrooms, library and laboratory	-The scarcity of teaching and learning facilities hindered the effectiveness of teaching and learning.
2.	School Environment	-shortage of classrooms.	-overcrowded students in the classrooms.
3.	Owners' faithfulness	-Shortage of qualified teachers. -Failure to abide by registration procedures.	-skip one process of school registration, e.g. employing unqualified teachers without critical investigation from the Ministry of Education and Vocational Training.

Source: Field Data (2022).

The findings from Table 2 revealed that schools faced challenges ranging from a scarcity of teaching and learning materials to a shortage of classrooms, libraries, and laboratories. The findings signified that the owners of private schools seemed unfaithful in abiding by the registration procedures (Table 2).

During interview sessions (ref. findings from Table 2), the Head of the public school responded that:

> This school, we experience a shortage of classrooms, a library and a laboratory. Teaching and learning processes have been compromised, as it is hard for teachers to work in overcrowded classes. Moreover, students can't learn and interact well in such an environment. This has been one of

the factors that caused the failure to provide the required standard of secondary education. This is due to the fact that students are missing important knowledge and skills in their learning processes while they need to learn more in a practical and interactive manner.

The findings thus revealed a shortage of teaching and learning resources. This suggests that the registered schools with insufficient resources work against the conditions of registration procedures (Mbele & Katabaro, 2003). The inadequacy of resources jeopardises educational standards as teachers and pupils perform poorly in schools. This study's findings also indicate that some of the registered schools had overcrowded classrooms, which suggests a shortage of classrooms and teaching and learning resources such as laboratories and laboratory equipment. This hinders the provision of quality education.

Another head of public school revealed that:
> The scarcity of teaching and learning materials hinders the provision of quality education in a given secondary school. Teaching facilities like books have a great impact on the quality of secondary education because they guide students on what to study according to the demands of that particular time.

Moreover, a District Education Officer commented that:
> A shortage of teachers hinders the provision of quality secondary education in schools. This is due to the fact that the available teachers work under heavy workloads, and consequently, students may fail to get the required learning content and educational standards.

The findings on the scarcity of teaching and learning facilities are in line with a study by Musoa (2019), who revealed that skipping one procedure of school registration, such as employing unqualified teachers, would degrade educational standards. Moreover, there should be a critical investigation by educational authorities from the Ministry of Education so as to mitigate the negative effect of the lack of teaching and learning resources. Musoa (2019) posited that, in order to enhance quality education, all registration procedures must be followed and implemented by the school owners and managers. Failure to follow the rules and regulations for registering schools would lead to school discontinuation by the Ministry of Education, Science and Technology. The Quality Assurance Officer revealed that:
> When the school owner skips one procedure during school registration, it may lead us to ask the owner to stop delivering the educational services as he fails to provide the required parameters of education standards.

Literature suggests that students' enrolment should be in accordance with the available infrastructures/facilities of the school as well as sufficient qualified teachers for all subjects. Also, teachers should receive professional training through seminars, workshops and panel discussions (Jidanva, 2012). In this study, the majority of studied schools had poor learning infrastructures like laboratories and important teaching and learning equipment, and some (private schools) had unqualified teachers. This study corresponds with Masue (2011), who found that a shortage of classrooms, books and laboratories hindered schools from being registered because it could not reflect the provision of quality education in secondary schools. Jidamva (2012) reported that a shortage of classrooms, inadequate professional teachers, and school laboratories hinder the school registration process. According to him, quality education goes hand in hand with the availability of qualified teachers. Thus, if teachers are not qualified, they will not deliver quality education to students. The current study emphasises that enough classrooms enable students to learn in a comfortable class environment. Furthermore, the availability of qualified teachers with morale and commitment leads to the provision of quality secondary education. Moreover, a school with poor classrooms, a shortage of books and unqualified teachers should not be registered.

Conclusions and Recommendations

Maintaining rules and regulations on school registration procedures is solely important in setting premises to education standards in a given context. This should be a concern of all stakeholders (e.g., parents, community, government, donors) to ensure that the registered schools are upgraded in terms of resources so that teachers work at their optimal level to enable students to obtain quality education. Since the world is ever-changing, it poses new educational needs in society. This necessitates changes in the education sector as schools exist to serve society. The changes, however, may challenge the school resources and quality of education. The availability of teaching and learning facilities has a great role in the provision of quality secondary education. Importantly, ensuring that the school is resourced during its registration is vital. School registration procedures should be adhered to, to maintain good standards for the students' well-being and quality of education. The government should ensure that education stakeholders, such as donors, parents, and community members, take their views on improving academic performance into consideration. This will create a sense of trust in each other. By so doing, the government can get new approaches to be employed in the improvement of school registration procedures,

accommodating new changes, resourcing the schools from time to time and enhancing the quality of secondary education.

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Head Teachers' Leadership Strategies for Conflict Resolution in Primary Schools at Kondoa District

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Abstract

This study assessed the strategies used by head teachers to resolve conflicts in primary schools within Kondoa district. The research examined two issues: the strategies used by the head teachers in conflict resolution and the identification of sources of conflict. Data were collected through in-depth interviews, survey questionnaires and documentary reviews. The participants were education officers, head teachers, teachers, and school committee members. Data were analyzed through regression analysis, and revealed that while communication skills did not significantly affect conflict resolution, collaborative and problem-solving skills showed significant positive associations. Problem-solving skills had a stronger impact (β = 0.544) than collaborative skills (β = 0.216), emphasizing their importance in resolving conflicts. Also, results showed that most of the head teachers lacked the necessary leadership skills to effectively handle conflicts, highlighting the importance of providing training and professional development opportunities focused on conflict resolution and management strategies. The sources of conflicts identified included conflicts of interest, shortage of teaching resources, and unequal distribution of power. The most common negotiations strategies used for conflict resolution were meetings, negotiations, and the use of older staff members. The study concluded that a significant number of head teachers in primary schools within Kondoa district lack the necessary leadership skills for effective conflict resolution. Hence, it is recommended that there should be leadership training, promotion of collaborative approaches, continuous professional development for head teachers, and diversification of conflict resolution and management strategies.

Keywords: Assessment, head teachers, leadership skills, strategies, conflict resolution

Introduction

In this era of globalisation, conflict resolution has become a contentious topic of discussion among scholars. Mostly, conflicts are rooted in disagreements among individuals or groups within an organisation and arise due to differing perceptions, beliefs, and goals (Calora, 2020). Conflict represents a clash between parties with conflicting objectives and viewpoints, where they perceive each other as hindrances to their goals as they face resource limitations in the workplace. Alabu, Kembo and Otara (2020) and Ahmad et al. (2021) affirmed that there has been a dramatic increase in assessing leadership skills employed to resolve conflicts in organisations. Researchers argue that there are no ways conflicts can be avoided between employers and/or employees in an organisation.

Within the school organisation structure, managers, particularly head teachers, play a pivotal role in maintaining stability and achieving organisational goals (Shonubi, 2012). Moreover, the head teacher is identified as a key cornerstone in the arch of school management, holding the steering wheel and influencing the overall functioning of the educational institution. However, research by Ignace (2014) and Nguvumali (2016) shows that head teachers in Tanzanian primary schools frequently lack a strong grasp of leadership strategies in conflict resolution. Despite the government's efforts to provide leadership training that includes conflict resolution and mediation, there is a shortfall in conflict resolution skills and strategies among school leaders (Lovan et al., 2017), contributing to ongoing conflicts (URT, 2013). Conflicts within primary schools, particularly in Kondoa District, present substantial hurdles to the educational system's efficacy. This gap in knowledge hampers efforts to develop targeted interventions and support mechanisms to mitigate conflicts, potentially affecting the quality of education and the well-being of students and staff members (Lacson et al. et al., 2024).

Research on conflict resolution strategies in many settings has been carried out by different scholars, but less has been conducted in Kondoa District. Moreover, the use of conflict resolution strategies in primary schools in Kondoa district has not been extensively studied (Sibajene, 2022; Ahmad et al., 2020; Okoye & Okeke-Okonkwo, 2020; Nkomo et al., 2020; Shanka & Thuo, 2017). This disparity emphasises the necessity of conducting this research to offer guidance for improving conflict resolution procedures in Kondoa District specifically in primary schools.

The Justification of the Study

The justification for understanding the leadership skills and strategies

employed by head teachers in primary schools in Kondoa District to resolve conflicts serves as the rationale for this study. This study also enables interventions to effectively improve and handling of conflicts and create environments that are favourable for teaching and learning. By raising students' performance and engagement, effective conflict resolution plays a great role in academic performance in primary schools. Additionally, it fosters environments for mutual respect and cooperation within the school, which is advantageous for the overall growth of staff, instructors, and students. Moreover, evidence-based policies that align practices with recognised leadership abilities can be informed by study insights, which will ultimately benefit the entire education system by promoting continual improvement in school management and administration. In addition to the arguments above, the study addressed the head teachers' leadership skills used in resolving conflicts, identified the sources of conflicts found within primary schools, and examined head teachers' leadership strategies used in resolving conflict in primary schools at Kondoa District.

Theories Guiding the Study
The study draws upon the Human Relations Theory to guide its exploration of conflict resolution in primary schools within the context of Kondoa District. This theory, introduced by Professor Elton Mayo, emphasises the importance of valuing employees and their relationships as a means to enhance productivity and organisational effectiveness (Omolawal,2021). Within the realm of primary schools, the Human Relations Theory underscores the significance of recognising and appreciating individual teachers and staff, promoting positive group dynamics and relationships, and involving employees in decision-making processes. This approach aligns with the study's conceptual framework, highlighting the need for a relations-oriented leadership style that encourages teamwork, positive attitudes among employees, and participative management.

Implementing the principles of the Human Relations Theory can play a pivotal role in conflict prevention and resolution within primary schools. Schools can cultivate a harmonious and productive environment that supports educational objectives by valuing and respecting employees. Acknowledging the human elements within the school setting is essential for effective leadership and management, ultimately contributing to the institution's overall success. Therefore, the Human Relations Theory underscores the significance of human interactions and relationships in achieving productivity and minimising conflicts within primary schools.

Adopting a relations-oriented leadership approach and involving employees in decision-making processes are essential strategies for creating a positive work environment and improving overall performance, making this theory highly relevant for effective conflict resolution in primary schools
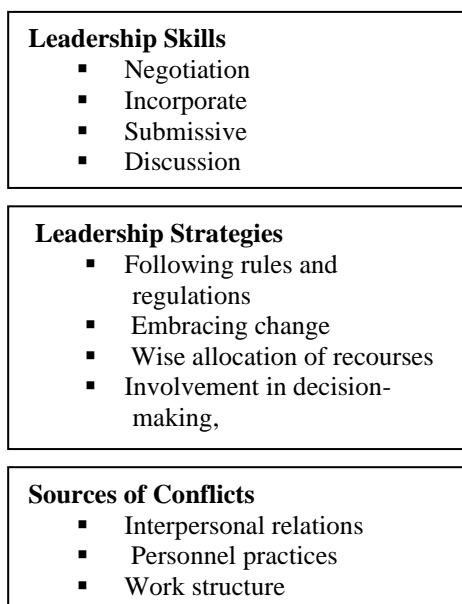
Independent Variables   **Dependent Variables**
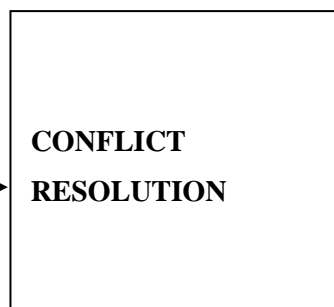
Figure 1: Conceptual Framework
Source: Researcher's thinking

The Research Methodology

Based on the nature of the study, pragmatism philosophy was used to guide the study. The study followed the pragmatism philosophy, recognising the importance of both quantitative and qualitative approaches. This philosophy acknowledges that knowledge and inquiry can be derived from multiple sources, and it emphasises the practical application of research findings (Ryan, 2018; Tombs & Pugsley, 2020). Therefore, the pragmatist paradigm aligns with the research objectives, focusing on practical implications for educational leadership and providing a holistic view that acknowledges conflicts' diverse and dynamic nature within the school context. In addition, a cross-sectional descriptive design was employed, which involved collecting data from a diverse sample of individuals using both in-depth interviews and survey questionnaires at a specific point in time. This design was aligned with the research objective of gathering information about people's attitudes,

opinions, and various educational or social issues. According to Kombo and Orodho (2002), the descriptive design was particularly suitable for obtaining information about people's attitudes and opinions. This design allowed the researchers to investigate in detail and comprehensively describe the topic under study. By adopting a cross-sectional descriptive design, this study aimed to gain a deep understanding of the factors related to conflict resolution in primary schools. In line with this approach, the study employed a mixed methods approach, combining both quantitative and qualitative data collection methods. This study's primary data collection methods included a questionnaire survey and in-depth interviews. The questionnaires were used to gather quantitative data, while the in-depth interviews used to gather qualitative data. The data collected through these methods were analyzed thematically. The study also conducted multiple regression analysis to examine the leadership skills employed by head teachers in resolving conflicts in primary schools in Kondoa District. The study participants were education stakeholders in Tanzania, specifically within the Kondoa District. The population of interest included district education officers, district academic officers, wards education officers, head teachers, teachers, pupils, and school committee members.

The study was limited to 144 respondents, who included 124 respondents for the questionnaires and 20 participants for interviews. Simple random sampling was used to select sub-samples from primary school teachers and committee members. The study employed purposive sampling, which refers to the selection of units based on personal judgment rather than randomization (Creswell, 2012). This study's purposive sampling ensured the inclusion of all head teachers from the 10 selected primary schools. A combination of purposive and stratified random sampling was used to select standard seven pupils based on their gender.

Four data collection techniques were used to gather information on head teachers' leadership skills in conflict resolution. The first one was the survey questionnaires, in-depth interviews, focus group discussions, and documentary reviews. The survey questionnaire was administered to teachers, school committee members, and head teachers, utilising a combination of closed-ended and open-ended questions. This approach allowed for both quantitative and qualitative data collection, offering insights into the frequency and types of conflicts, satisfaction with current practices, and deeper contextual factors influencing conflict resolution. Secondly, in-depth interviews were conducted with key informants, including education professionals such as district education officers and

head teachers. These interviews delved into personal opinions and provided nuanced insights into conflict resolution strategies, enriching the research with expert perspectives. Thirdly, focus group discussions (FGDs) were organised with teachers and school committee members, creating an interactive platform for participants to openly discuss their experiences and attitudes related to head teachers' effectiveness in conflict resolution. FGDs promoted rich, nuanced discussions and added depth to understanding leadership skills, common conflict sources, and resolution strategies. Cresswell asserted that FGD allows for richness and flexibility in data collection and the extensive exploration of the research problem (Creswell, 2014). Lastly, documentary analysis was utilised to review official documents such as committee meeting minutes and attendance records from primary schools, offering objective, factual information that complemented the data obtained from interviews and FGDs. This method has equal significance as collecting first-hand data because it helps increase research effectiveness (Martins et al., 2018). These diverse data collection methods ensured a holistic and comprehensive evaluation of conflict resolution practices within the primary schools in Kondoa District in Tanzania.

Results and Discussion
Teachers' Leadership Skills Used to Resolve Conflicts in Primary Schools
The first objective of this study is to examined head teachers' leadership skills used to resolve conflicts in primary schools at Kondoa District. During the FGD, the researcher asked, " Can you share an example of a significant conflict situation you have encountered as a head teacher? How did you approach its resolution? Participant H replied:

> ...certainly, we had a situation where two teachers disagreed with resource allocation. I initiated a mediation session, allowing both parties to express their concerns. We reached a solution that satisfied both teachers through open dialogue and compromise.

A participant, C, added:

> ... recently, in a conflict involving student discipline, I facilitated a restorative justice circle on May 12, 2023, where the student, teacher, and affected peers shared their feelings. This approach helped build empathy and led to a resolution that focused on learning and growth.

The researcher asked the participant, "What specific conflict resolution skills do you believe are effective in a primary school setting?" According to insights gathered during a FGD, Participant S mentioned:

> ...to my experience, fostering a culture of open communication is crucial. Additionally, I find that implementing peer mediation programmes among students helps them develop conflict resolution skills early on, reducing the need for teacher intervention.

Furthermore, Participant K shared that:

> ...we encourage teachers to use a 'win-win' approach, emphasising compromise and finding solutions that benefit everyone involved. This approach helps create a positive atmosphere and fosters a sense of community within the school.

The quotation above is consistent with the study by Ghaffar (2019), who suggests that general conflict management methods include a win-lose method, a lose-lose method, and a win-win method. In the win-lose method, one side wins and one side lose, and it includes using authority or power to suppress another party.

During an interview with head teacher M in school X, the researcher asked, "How do you communicate with teachers, staff, and parents about conflict resolution skills and efforts"? Headteacher M replied that:

> ...I ensure transparent communication by holding regular staff meetings where conflict resolution strategies are discussed. For parents, letters and parent-teacher meetings serve as platforms to share our approaches and seek their input.

Another perspective from Participant A, gathered during a focus group discussion, the participant had this to say:

> ...We utilise a digital platform for real-time communication with parents. This has proven effective in promptly addressing concerns and ensuring that everyone is informed about the conflict resolution processes in place.

Reflecting on an interview, the researcher asked the head teacher, G, "Can you provide an example of a time when effective communication played a crucial role in resolving a conflict within your school"? The Head teacher G, stated:

> ...we had a situation involving a miscommunication between a teacher and a parent regarding a student's performance. We resolved the conflict harmoniously by facilitating a meeting where both parties expressed their perspectives and clarifying the misunderstanding.

Also, the headteachers in schools A, G, H, and Y mentioned a similar approach, indicating that meetings are the main strategy they employ in resolving conflicts in their schools.

Moreover, during a focus group discussion, Participant F added:

> ...our school uses a 'feedback box' where teachers and parents can anonymously submit concerns. This tool promotes open communication,

and addressing these concerns collectively has prevented potential conflicts from escalating.

Exploring collaborative approaches during an interview, the researcher posed a question, "How do you involve other school stakeholders (teachers, parents, community members) in the conflict resolution process? Headteacher P replied:

> ...I believe in a team approach. When conflicts arise, I focus group discussions involving teachers, parents, and community members if necessary. This collaborative effort ensures diverse perspectives are considered in finding the best resolution.

The quotations above are consistent with the study by Gaol (2021), who asserted that the head of a school manages a school, which is an educational organisation including a collection of several individuals who play an important role in school management activities. Each individual has their own uniqueness and different motivations in the involvement of school management in accordance with their duties.

Another perspective gathered from a focus group discussion on November 18, 2023, came from Participant P, who added:

> ...our school has a conflict resolution committee consisting of representatives from various stakeholders. This committee meets regularly to discuss ongoing conflicts and propose solutions collaboratively.

Discussing collaborative leadership skills during an interview, the researcher asked the head teacher B, "In what ways do you encourage a collaborative approach to problem-solving among your staff? Head teacher B responded:

> ...team-building activities are essential for fostering a collaborative environment. By creating a culture where teachers feel comfortable sharing ideas and concerns, we empower them to address issues, enhancing our problem-solving capabilities collectively.

During a focus group discussion on November 19, 2023, Participant E added:

> ...we have monthly collaborative planning sessions where teachers can share successful strategies and discuss challenges they face. This not only fosters teamwork but also helps in proactively addressing potential conflicts before they escalate.

In line with the quotations above, a study by Olaleye and Arogundade (2017) supports the findings by asserting that the heads of schools use

stakeholder meetings and consultations at their schools on a regular basis to resolve issues and suggests that schools should provide training on conflict resolution tactics to aid in dispute resolution. The study implies that conflict management is mostly resolved by using staff meetings and consultation techniques, while training stands as the major principle of imparting knowledge to the heads of schools and teachers about the best method of resolving conflict.

Also, the study ran multiple regression analysis to examine the leadership skills employed by head teachers in resolving conflicts at primary schools in Kondoa District. Examining the regression coefficients further elucidates the specific contributions of each leadership skill to conflict resolution. While communication skills did not show a significant relationship with conflict resolution ($p = 0.366$), it is essential to note that communication skills still play a vital role in leadership effectiveness. The non-significant result suggests that other factors, such as collaborative and problem-solving skills, may have a more pronounced impact within the context of conflict resolution. Conversely, both collaborative and problem-solving skills demonstrated significant positive relationships with conflict resolution ($p = 0.009$ and $p < 0.001$, respectively). A higher coefficient for problem-solving skills (0.544) compared to collaborative skills (0.216) indicates that problem-solving skills have a relatively stronger association with conflict resolution. This suggests that head teachers who possess strong problem-solving abilities are better equipped to address conflicts effectively in primary schools.

Therefore, this regression analysis highlights the importance of collaborative and problem-solving skills in enhancing head teachers' effectiveness in resolving conflicts. While communication skills remain important in leadership, their direct impact on conflict resolution may be mediated by other factors. These findings underscore the multifaceted nature of leadership in educational settings and emphasise the significance of targeted development programs to enhance leadership skills tailored to conflict resolution.

Sources of Conflicts Found Within Primary Schools in Kondoa District
Table 1: Presence of Conflicts at School

Responses	Frequency	Percent
Yes	112	90.3
No	12	9.7
Total	124	100.0

Source: Field data (2024)

Table 4.1 indicates the results from questionnaires; the researcher asked the respondents if there were any conflicts at school. Table 4.9 provides information on the presence of conflicts at school based on the responses received. The findings are as follows: Yes: 112 respondents, accounting for 90.3% of the total, reported the existence of conflicts at school. This indicates that a significant majority of the respondents acknowledge the occurrence of conflicts within the school environment. Only 12 respondents, comprising 9.7% of the total, stated that there were no conflicts at their school. This suggests that a small minority of the respondents perceive their school to be free from conflicts. These results are in line with the findings by Dingwe et al (2011), whose findings revealed that head teachers do not perceive conflict as an inevitable phenomenon that is real in any organisation. Furthermore, Onyango (2020) concluded that conflicts are inevitable in schools, and it is therefore important that they are managed well.
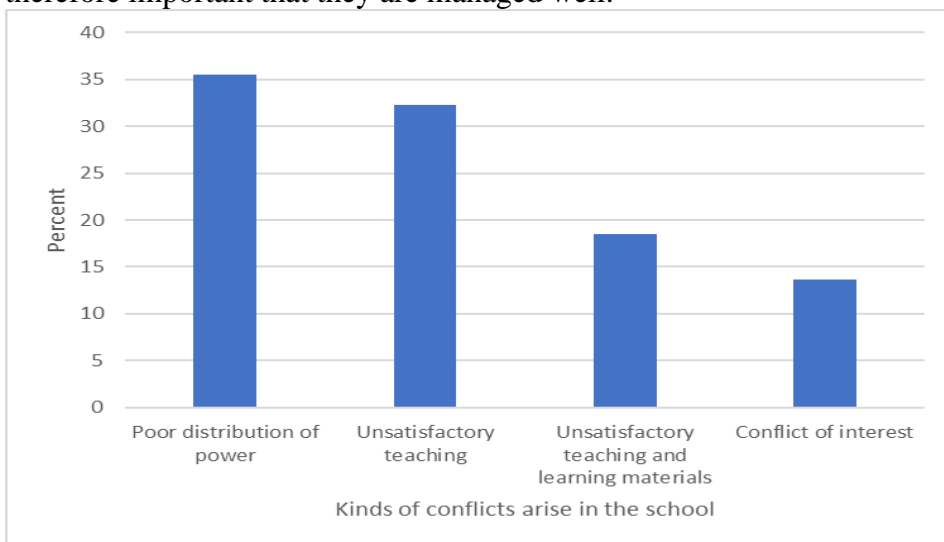
Figure 2: The Sources of Conflict in a School
Source: Field data (2024)

Figure 4.1 provides insights into the factors contributing to conflicts in school, as reported by the respondents. The findings show that about 35.5% of the respondents identified poor distribution of power as a significant factor leading to conflicts in the school. This suggests that issues related to authority, decision-making, and power dynamics within the school environment can contribute to tensions and conflicts. Unsatisfactory teaching about 32.3% of the respondents mentioned unsatisfactory teaching as a cause of conflicts. This implies that disagreements and conflicts may arise when teachers' performance or

instructional methods are perceived as inadequate or unsatisfactory by other stakeholders within the school community. About 18.5% of the respondents pointed out unsatisfactory teaching and learning materials as a factor contributing to conflicts. This suggests that deficiencies or inadequacies of educational resources and materials can lead to dissatisfaction and disagreements among teachers, students, and other school community members. About 13.7% of the respondents highlighted conflict of interest as a factor leading to conflicts in the school. This implies that competing interests, personal agendas, or conflicting priorities among different individuals or groups within the school can create tensions and disagreements. Therefore, these findings highlight the key sources of conflict as perceived by the respondents. Conflict of interest, lack of teaching resources and unequal distributions of power are all factors that can contribute to disagreements, tensions, and disputes within the school environment. Understanding these sources of conflict is worth implementing targeted strategies to mitigate and resolve conflicts effectively. Schools can work towards promoting transparency, fair resource allocation, and open communication channels to address these sources of conflict and foster a more harmonious and collaborative school atmosphere. These findings concur with the view by Asikhia (2010), who asserts that the reasons for conflict persistence include food problems, lack of enough teachers, poor learning environment, students' bad behaviour and lack of enough funds. Also, the findings concur with the study by Fakih et al., (2021), who suggest that constraints to leadership in managing conflicts were in four categories, namely: lack of effective communication, ineffective leadership and management practices, and inequitable distribution of resources.

Correspondingly, during a focus group discussion, one ward education officer said:

> ... when the school internal quality assurance officer does the monitoring and evaluation of teaching, they find it very difficult to be blamed by the teachers, and some of the teachers see that the evaluation report is like it suggests them to be negligent to the head teacher. ...

Additionally, another educational officer G said:

> ...another source of conflict is from the head teachers themselves because they are not transparent about the school's income and use of the capitation grant. Others do not even call meetings to discuss the income. also, the teachers of the projects have not been transparent to students, and their fellow teachers are not cooperating; how many sacks have they harvested at the end of the day. The crops end without notice, a situation that creates conflicts for teachers and students. I think this is because for a while now, the head teachers have not had leadership training, so I

suggest that they be given leadership training seminars so that they can gain knowledge and skills for leading the school.

Similarly, during the interview session, the informant X claimed:

…as far as I can see, in every school, you cannot miss conflicts as many head teachers are appointed with low understanding and poor knowledge about management issues, so they do not know appropriate ways to resolve conflicts. You find some principals have bad relationships with their teachers, they don't know how to use good language for teachers, and they don't care about anything…

The quotation above concurs with the findings by Ignace (2014), who stated that school administrators lacked the knowledge and abilities necessary to resolve disagreements. It was also the case that school administrators used varied conflict resolution techniques. Mostly, the heads of schools reported that they had tried to manage disputes by utilising various techniques when it came to how effective the tactics were at resolving conflicts in the public secondary school.

Conclusion

The regression analysis conducted in this research intended to evaluate the relationship between leadership skills and conflict resolution in primary schools. The model demonstrated moderate predictive power, explaining 51.6% of the variability in conflict resolution scores and was statistically significant ($p < 0.001$), indicating that at least one leadership skill significantly influenced conflict resolution. While communication skills did not show a significant relationship, collaborative and problem-solving skills exhibited significant positive associations, with problem-solving skills showing a stronger impact ($\beta = 0.544$) than collaborative skills ($\beta = 0.216$).

Furthermore, the study revealed the efficacy of mediation and restorative justice circles in fostering open dialogue, compromise, and personal growth, as exemplified by participants like H and C. Additionally, strategies such as promoting open communication and adopting a 'win-win' approach contribute significantly to creating positive school atmospheres, as highlighted by Participant S and K. Communication skills, whether transparent or technologically facilitated, have proven pivotal in conflict resolution, emphasising the crucial role of effective communication in preventing and resolving conflicts. Instances of clear communication shared by Headteacher G and Participant F underscore the importance of fostering an environment where concerns can be addressed promptly and transparently. Furthermore, collaborative leadership skills,

including stakeholder involvement through focus group discussions and committees, as well as team-building activities and collaborative planning sessions, reflect a proactive approach to cultivating a culture of collaborative problem-solving among staff.

Furthermore, the findings revealed the pervasive nature of conflicts, with a significant number of majorities acknowledging that conflict existence was common due to conflict of interest, lack of teaching resources, unequal distribution of power, communication challenges, and issues related to administrative transparency and leadership skills. Likewise, this study precisely examined the leadership strategies implemented by head teachers to discourse conflicts in primary schools located within the Kondoa district. The research illuminated a spectrum of effective methodologies, encompassing negotiation, transparency, collaborative problem-solving, equitable power distribution, formal meetings, and the engagement of experienced staff members. These strategies play a pivotal role in fostering conflict resolution within the intricate dynamics of school settings.

Recommendations

In light of the study's findings, several recommendations are proposed for administrative action to enhance conflict resolution skills in primary schools. These recommendations include the government of Tanzania enhancing head teachers' leadership skills through training, encouraging collaboration in conflict resolution, prioritizing financial transparency, and establishing clear communication channels to enhance conflict management and educational quality. Policy recommendations for conflict resolution in Primary Schools: Implement ongoing leadership development programs, establish formal mechanisms for collaborative problem-solving, ensure transparent resource allocation and foster open dialogue.

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The influence of parental engagement on ordinary-level public secondary school students' learning behaviour at home: An Exploratory Factor Analysis

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Abstract

This study investigated parental engagement's influence on students' learning behaviours in ordinary-level day public secondary schools. The intent is to examine key factors primarily used by parents to manage the daily learning behaviours of children enrolled in day secondary schools. The objective is to identify the factors parents employ to influence students' learning behaviours in ordinary-level day public secondary schools. An ecological systems theory by Bronfenbrenner guided this study, utilising an exploratory design within a quantitative research approach. Two ordinary-level day public secondary schools were randomly sampled, and a sample size of 273 subjects was determined using the Yamane Formula. Self-prepared questionnaires with 5-point Likert-type scales were used to collect data from the 273 subjects. Inferential data were obtained through exploratory factor analysis. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy of 0.953 and Bartlett's Test of Sphericity of ($\chi^2 = 1868.87, p < 0.001$) were retrieved and deemed suitable for factor analysis. Five key factors that parents use to influence students' learning at home were identified through exploratory factor analysis. These factors include parental guidance and counselling, parent-teacher communication channels, supportive learning resources, motivation and encouragement, and time management. A strong correlation is found when parents communicate with teachers to foster appropriate learning behaviours among students in ordinary-level secondary schools. The study recommends regular communication between parents and school management through class teachers. The study encourages parents to enhance the use of these five factors to instill desired learning behaviours among day students in ordinary-level secondary schools as they navigate the challenging transition from childhood to adolescence. Further, suggestions are made for future studies to explore the influence of religion and culture on students' learning behaviour as they navigate their adolescence both in and out of school.

Keywords: *Parental engagement, students' learning behaviour, exploratory factor analysis, ordinary-level, public secondary schools*

Introduction
The ordinary-level day public secondary school students are likely to encounter a myriad of psycho-social challenges as they are at the age of transition from childhood to adolescence. Since adolescent students are more likely to encounter these psycho-social challenges, parents at home and teachers at school have to guide them strongly to balance their learning within the school and out-of-school contexts. Many factors influence the learning of adolescent students, with parental active engagement in the home environment playing a crucial role in shaping students' attitudes, behaviours, and academic outcomes. Arguably, parental engagement in shaping the learning behaviour of students enrolled in day secondary schools, both at home and out of school, can be influenced by physical and psycho-social factors entangled within the home and school contexts surrounding adolescent children.

The physical and psychological contexts surrounding a child at home significantly impact their overall development in school (Ozturk & Hill, 2020; Sharma & Shakir, 2019). Numerous studies examining the influence of parental engagement on students' learning behaviour at home (Entwistle & Peterson, 2004; Gijbels et al., 2008; Granich et al., 2010; Jamal et al., 2013; Järvenoja & Järvelä, 2005; Maitland et al., 2014; Parpala et al., 2010; Tucker et al., 2011; Uiboleht et al., 2019) have predominantly employed a qualitative approach and drawn subjective conclusions, with limited use of exploratory factor analysis. This complicates the development of a comprehensive and objective conclusion.

Despite the ongoing debate regarding the influence of the home environment on students' learning behaviour and academic achievement (Castro et al., 2015; Fan & Chen, 2001; Kraft & Rogers, 2015; Lazarides et al., 2016), a gap persists in understanding the influence of parental engagement on learning behaviour among adolescent students enrolled in ordinary-level day public secondary schools through exploratory factor analysis. Therefore, the current study employed exploratory factor analysis (EFA) to investigate the influence of parental engagement on students' learning behaviours in ordinary-level day public secondary schools. The study had two specific objectives guiding the investigation of the influence of parental engagement on students' learning behaviours in ordinary-level secondary schools:

i) Examine the underlying factors through which parents manage children's learning behaviour in ordinary-level day public secondary schools.

ii) Investigate the most impactful factors parents use to enhance children's learning behaviour in ordinary-level day public secondary schools.

Literature Review

A home environment is a more crucial factor for adolescent student learning than any other factor, and parents are pivotal in setting proper conditions and essential factors to foster learning among students enrolled in ordinary-level day public secondary schools. The home learning environment significantly influences the level of students' learning (Keser-Aschenberger et al., 2023). Students excel in their studies when they have a positive learning atmosphere at home, including access to various books and other educational materials and support, encouragement, and motivation from their parents or caregivers. Encouragement from home fosters learning and enhances students' capabilities, while discouragement from the home environment only hinders their abilities. Kiilu, Läänemets, and Kalamees-Ruubel (2020) argued that a supportive home environment enhances a child's confidence and social skills. Possibly, this confidence enables students to adapt to different environments, positively impacting their learning behaviour, including ability to focus, stay motivated, self-regulate, and adopt good study habits such as attending classes, seeking clarification, being punctual, taking notes, completing homework, and preparing for exams. Students who lack supportive home learning environments may face challenges in various aspects of their lives, including sustained learning (Keser-Aschenberger et al., 2023).

A well-organized and supportive home learning environment arguably enhances student's learning behaviours by promoting study habits and positive engagement in academic activities (Dini, 2021). Khan, Begum, and Imad (2019) argue that students from homes with high levels of support are more likely to exhibit positive learning behaviours, such as participating in classroom discussions, completing homework and assignments on time, paying attention to teachers, taking notes, actively listening to lectures, and collaborating with classmates in groups. Nevertheless, a supportive home environment with actively engaging parents and positive peer dynamics tends to foster better learning behaviours among students, contributing to their academic success and

overall development. Conversely, a hostile home learning environment leads to poor learning outcomes and negative behaviours (Kimaro, 2021).

A chaotic home environment makes it challenging for students to concentrate and focus on learning, often resulting in poor learning behaviours such as low-class attendance and a lack of focus during discussions and attentiveness in class sessions (Jain & Mohta, 2019). Arguably, students' learning behaviour at school cannot be separated from the home environment in which they spend much of their out-of-school learning. A positive and significant relationship exists between parental engagement and academic achievement (Khan et al., 2019), suggesting that environmental factors within the home greatly influence students' learning behaviours, including parental engagement and peer groups (Castro et al., 2015; Kraft & Rogers, 2015; Lazarides et al., 2016). The assumption is that when parents actively participate in their students' learning by providing support, encouragement, and a nurturing learning environment, students are more likely to exhibit positive learning behaviours. This involvement includes assisting with homework, discussing educational goals, and fostering a passion for learning (Mapigano, 2018).

Students' learning activities out-of-schools are strongly influenced by parents' engagement who dictate the home environment's psycho-social factors and physical conditions. Parents' settings of the home learning environment can either enable or restrict students from engaging actively in learning. Class preparation and practice at home are fundamental because students spend only eight to nine hours at school, with the remaining time spent at home needing to be utilised properly (Keser-Aschenberger et al., 2023). Proper utilisation of home time involves providing an educational environment, which is crucial in improving students' learning behaviour.

Younas et al. (2021) argued that a positive home environment is indicative of students' academic success. They further noted that the teaching and learning process at school is incomplete without the active engagement of parents in the home environment. Additionally, parents' awareness of their role in their student's learning is fundamental, as it fosters a positive relationship between the home environment and students' academic achievement at the secondary school level. Studies show that parents who take responsibility for their student's learning help increase their student's interest in studies (Khan et al., 2019). The

previous studies primarily utilised a qualitative approach to subjectively explore the efficacy of the home environment on students' achievement. The current study employed a quantitative and objective investigation based on exploratory factor analysis to examine the home-related factors likely to influence the learning behaviour of students enrolled in day ordinary-level public secondary schools.

A positive and structured home environment fosters discipline, time management, and self-motivation, encouraging students to take responsibility for their learning. Conversely, distractions, a lack of academic support, or a stressful home environment can negatively impact students' ability to concentrate, stay organised, and perform well academically. The home environment probably serves as the first school for students to enter and learn after birth, with parents having a critical role as teachers. The home environment and parents contribute significantly to shaping the out-of-school learning behaviour of ordinary-level public day secondary school students. Soto-Ramirez et al. (2022) argued that the home environment significantly impacts nurturing human nature, loving and caring behaviours, and sharing habits, which influence most individuals. A combination of physical and psychological environments at home has been reported to affect overall individual development from childhood to adulthood. Study rooms, water, shelter, clothing, food, and learning facilities constitute the student's physical environment at home. In contrast, student's interactions with parents, peers, neighbours, and home-related chores shape their psychological environment.

Home environment and family background are crucial elements of social composition that can positively or negatively influence learning among secondary students (Lehrl et al., 2020). Consequently, parents represent the most powerful force in achieving their student's academic success. A nurturing home learning environment can significantly enhance a child's academic performance and social-emotional well-being. In contrast, a detrimental home environment can result in poor educational outcomes, behavioural issues, and diminished self-esteem (Kiilu et al., 2020).

It has been argued that quality education does not happen by chance, it is the outcome of an effective teaching and learning process, requiring concerted efforts from teachers, schools, students, and parents within their respective home environments (Suru, 2022). Therefore, parents must collaborate with teachers by sharing their beliefs regarding their

responsibilities at home and understanding the requirements for their child's success. Parents can provide essential educational support by fostering a conducive learning environment and discussing school matters with their students. Regular communication with the students about their studies and school activities has a positive impact on learning behaviour (Kraft & Rogers, 2015). Moreover, parents who actively encourage their children (students) to complete homework and engage in regular interaction during study sessions contribute significantly to their student's comprehension of lessons and, consequently, their academic achievement (Shir et al., 2021).

Home environments vary considerably among students, as reflected by different levels of parental engagement, household facilities, parental attention, and motivational behaviour. Students from different environments experience varying impacts on their academic achievements (Cheema & Bhardwaj, 2021). Despite many parents desiring success for their children (students) in school, their lack of awareness about effective educational practices may hinder them from adopting active engagement to create a more favourable learning environment at home (Mavuso & Malahlela, 2022). Unfortunately, some parents adopt a passive attitude towards their children's (students') learning process, assuming their responsibility ends once they have entrusted students to the care of teachers, whom they believe they have paid sufficiently for their services. This attitude reflects a disconnect between parental engagement and its crucial role in supporting students' learning behaviour at home. It is arguably true that parents have the responsibility to help their children (students) learn positively, as reflected by their student's interest in their studies (Erdem & Kaya, 2020). Therefore, the current study's focus is to investigate parental engagement's influence on students' learning behaviours in ordinary-level day public secondary schools using exploratory factor analysis (EFA).

Theoretical Framework
This study is guided by the Ecological Systems Theory (EST) developed by Urie Bronfenbrenner in 1979 (Crawford, 2020; Darling, 2007). This theory suggests that students' development, including the development of learning behaviour, can likely occur over time as fragments of a complex process linking a system of interactions within the individual and between the individual and the environmental contexts (Duerden & Witt, 2010), where biological, psychological and social systems assemble (Crawford, 2020). The theory underscores the four zones of interactive systems

which can shape a child's development. Bronfenbrenner conceptualised four layers made up of microsystem, mesosystem, exosystem and macrosystem, all of which shape individual development in society (Darling, 2007; Mary & Antony, 2022).

The microsystem and mesosystem comprise two inner cycles where a child interacts with the proximal environment (parents, family members and peers) while the exosystem and macrosystem comprise two outer cycles where a child interacts with the distal environment (school environment and society where the school is territorially located). The learning behaviour of ordinary-level secondary school students intertwined in the transition stage from childhood to the adolescent stage is presumably influenced by both proximal and distal environments (Entwistle & Peterson, 2004; Granich et al., 2010; Maitland et al., 2014; Tucker et al., 2011). For day secondary school students, the home environment and school contexts both impinge their influence on their learning behaviour. As day students are likely to spend more time at home compared to school contexts, much of the learning behaviours are also obtained within the microsystem and mesosystem, where parents, family members and peers strongly influence.

This study assumes that parents are pivotal for students learning in the home environment and strongly influence adolescent students' learning process in ordinary-level day public secondary schools. This assumption is based on the fact that students enrolled in day public secondary schools spend much of their precious time in cycles of parents and family members compared to their colleagues enrolled in boarding schools. This study's premise is that ordinary-level secondary school students develop their learning behaviour organised within the school system and out-of-school activities such as homework and assignments at home. This discourse assumes that learning occurs in school contexts and broadly in the home environment. As such, the learner is situated between the two forces of the mesosystem and exosystem of the ecological systems, and the learner has to balance the academic fulcrum through organised out-of-school learning. Therefore, this study intended to examine the influence of parental engagement on students' learning behaviours in ordinary-level day public secondary schools using exploratory factor analysis (EFA).

Methodology
The study utilised a quantitative approach within an exploratory study design, employing inferential data derived from the dataset through Principal Component Analysis (PCA). Different dimensions with factor

loading indices of 0.5 or higher were deemed satisfactory for quantifying factors primarily used by parents to influence the learning behaviour among students of ordinary-level day public secondary schools. Quantitative data were collected from students in two randomly selected ordinary-level day public secondary schools out of twelve in the Nanyumbu District Council, Mtwara Region. The Nanyumbu District was chosen based on several factors critical to ordinary secondary school students' time learning at home and in school environments. In Nanyumbu district, day students from ordinary-level public secondary schools often walk long distances to reach school due to the absence of school dormitories and hostels. This lengthy commute consumes a significant amount of time and energy, leaving students exhausted when they arrive at school and when they return home. Consequently, day students from the selected ordinary-level secondary schools will likely have little time or energy left to study and complete homework, which can impact their learning behaviour.

The population of this study was drawn from form I to form IV students enrolled in ordinary-level day public secondary schools in Nanyumbu District Council of Mtwara region, Tanzania. Probability sampling was used to select two out of twelve ordinary-level public secondary schools that enrolled day students who commute to school and back home each day. The selection of two ordinary-level public secondary schools from the Nanyumbu District Council was conducted by writing the names of each school on 12 pieces of white paper. The 12 pieces of paper with the names of the schools were neatly folded, placed into a jar, closed, and shuffled five times. The jar was then opened, the pieces of paper with school names were spread on the floor, and only two pieces were picked, opened, and identified as the two secondary schools representing the twelve. The two randomly selected day public secondary schools in the Nanyumbu District Council had a total population of 866 students (school X had 319 students, while school Y had 547 students).

The sample size for study respondents was derived using the adjusted Yamane's formula (Adam, 2020). The formula produced a sample size of approximately 273 students from 2 ordinary-level day public secondary schools whose total population is 866. The following mathematical equation represents the calculation of the sample size:

$$n = \frac{1}{\left(1 + Ne^2\right)}$$

Where:

n = desired sample size for the study

N = the population of the study, calculated as:

N = population of respondents from school X + population of respondents from school Y.

N = 319 + 547

N = 866

e = desired margin of error (5%)

A margin of error of 0.05 was selected since it is logistically difficult to manage a larger sample size (Mugenda et al., 2003).

Thus:

$$n = \frac{1}{(1 + 866x0.5^2)} = 273.617 \approx 273$$

$$n = 273$$

Therefore, the sample size of the study comprised 273 students from ordinary-level day public secondary schools in Nanyumbu District, Mtwara, Tanzania.

Study Instruments

Questionnaires were utilised to collect data from two hundred seventy-three students from ordinary-level day public secondary schools in the study location. The questionnaires consisted of item statements structured on a 5-point Likert-type scale. They were distributed to two hundred seventy-three (273) students in a designated classroom with the assistance of teachers during prearranged lesson sessions. Students were asked to complete consent forms with the help of the classroom teachers after voluntarily agreeing to participate in the study. Each respondent was requested to rate the item statements on a 5-point scale, where 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree. This process involved direct interaction with respondents, providing the opportunity to clarify any questions that arose during the data collection exercise. Completed questionnaires were coded and entered into the Statistical Package for Social Science (SPSS) software version 26. Exploratory factor analysis was conducted to identify underlying factors or dimensions that explain the influence of parent engagement on ordinary-level secondary school students' learning behaviour at home.

Validity and Reliability

The validity of the study instruments was ensured through master's students, instructors, and supervisors. The process typically involved distributing questionnaires to these groups. Master's students, instructors, and supervisors were asked to evaluate the suitability of the study instruments, identify potential issues, ambiguities, or errors in item statements, and provide necessary comments and recommendations. The feedback received was incorporated to align with the context of the study. In addition to validating the questionnaires, a reliability test was conducted to measure the internal consistency of the underlying factors related to the influence of parent engagement on ordinary-level secondary school students' learning behaviour at home. Cronbach Alpha indices of 0.848 for the influence of parents' engagement and 0.764 for learning behaviour were obtained. These indices were deemed appropriate and acceptable as they fall within the internal consistency range of 0.7 to 0.9, indicating that the measurement instrument is reliable, as suggested in most social science research (Youssef et al., 2023). Therefore, the internal consistency of the questionnaire for this study was considered acceptable for examining the influence of parent engagement on ordinary-level secondary school students' learning behaviour at home (see Table 1).

Table 1: Reliability statistics for item statements that explain the influence of the home environment

Cronbach's Alpha	Number of items
.848	15

Table 2: Reliability statistics for item statements students' learning behaviours

Cronbach's Alpha	Number of items
.764	12

Data Analysis

Students were instructed to rate item statements about how parents engage them in learning at home. The respondents were instructed to rate the item statements on a 5-point Likert-type scale represented by 5= strongly agree, 4= Agree, 3= neutral, 2= Disagree, and 1= strongly disagree. The loading extraction was retrieved from the SPSS dataset, as shown in Table 3. The dataset of the study sample was prepared to determine suitability for factor analysis. The Kaiser-Meyer-Olkin (KMO) test was conducted to assess the adequacy of the study sample for computing the correlation matrix of the factors (variables) and to determine the KMO value while controlling all other factors. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy of 0.953 was

retrieved and considered suitable for factor analysis, as a KMO rating of 0.774 is a strong candidate for factor analysis (Li et al., 2020; Salleh et al., 2023; Shrestha, 2021). In addition, Bartlett's Test of Sphericity was performed to assess the adequacy of the correlation matrix in factor analysis. The result of $(\chi^2 = 1868.87, p < 0.001)$ was retrieved, indicating that the correlation matrix was appropriate for factor analysis. Furthermore, different factors were retrieved from the questionnaire item statements after an exploratory factor analysis.

The extracted item statements which had equal or above 0.5 (≥ 0.5) extraction loading indicated a strong correlation between parental engagement and students' learning behaviour at ordinary-level day public secondary schools in the selected study location. Conversely, statements with lower factor loadings, less than 0.5 (< 0.5) *extraction loadings* such as "My parents model the behaviour they expect to see in me regarding learning and education," were not considered significant contributors. Therefore, five statements were removed from the rotated factor matrix. The removal of five statements means that some statements were insignificant in understanding the influence of parental engagement on ordinary-level secondary school students' learning behaviours at home.

Table 3: Communalities after Extraction

Statements	Initial	Extraction
My parents encourage me to complete my schoolwork and assignments regularly.	1.000	.545
My parents actively communicate with me about my schoolwork and learning process.	1.000	.517
My parents provide me with educational resources such as books and other learning materials.	1.000	.511
My parents help me set priorities and break down complex tasks into manageable steps	1.000	.499
My parents encouraged me to take ownership of my learning by setting personal educational goals.	1.000	.971
My parents praise and acknowledge my efforts and academic achievements.	1.000	.973
My parents offer assistance and guidance when I face learning challenges	1.000	.986
My parents encourage me to ask questions and seek clarification when I do not understand something.	1.000	.976
My parents actively involve themselves in my educational progress by attending parent-teacher conferences and school events	1.000	.982
My parents track and limit my screen time to ensure a healthy balance between study and leisure activities.	1.000	.558
My parents support my efforts to develop critical thinking and problem-solving skills through educational activities	1.000	.444
My parents actively seek feedback from me regarding their involvement in my learning process	1.000	.497
My parents helped me develop good time management skills to balance my studies and extracurricular activities.	1.000	.618
My parents support and encourage me to pursue my interests and hobbies outside of school.	1.000	.656
My parents model the behaviour they expect to see in me regarding learning and education	1.000	.435
My parents let me collaborate and discuss my learning with peers or siblings.	1.000	.971
My parents encouraged me to embrace challenges and learn from failures.	1.000	.973
My parents provide constructive feedback to help me improve my learning and performance.	1.000	.986
My parents motivate me to study and complete my homework independently.	1.000	.976
My parents created a quiet and suitable study space for me at home.	1.000	.982
My parents discuss my long-term educational and career goals with me	1.000	.458
My parents set specific study times or routines to support my learning at home.	1.000	.619
My parents help me when I face difficulties with my studies	1.000	.598
My parents engage in discussions with me about the importance of education and learning.	1.000	.705
My parent creates a positive and supportive learning environment at home.	1.000	.629

Source: Field data (2023)

A Principal Component Analysis (PCA)

Using the Principal Component Analysis (PCA) method, an exploratory factor analysis was conducted on the 20 items to examine the influence of the parents' engagement on students' learning behaviours at ordinary-level day public secondary schools. The factor analysis revealed the underlying dimensions that explain the correlations between parents' engagement and the learning behaviour of ordinary-level day public secondary school students in the study location. Factors that elucidated the correlations between the parents' engagement and students' learning behaviour in ordinary-level day public secondary school were calculated using Varimax with Kaiser Normalization of 0.953 to understand the underlying factors (dimensions). Consequently, item statements with factor loadings less than 0.5 were deemed less significant in explaining the correlations between parents' engagement and students' learning behaviour at ordinary-level day public secondary schools.

After running exploratory factor analysis through PCA, only five factors with loading indices above 0.5 were retained for further analysis because extraction loadings above 0.5 are a strong candidate to explain the correlation between factors. The numbered factors comprising coded item statements and factor loadings are briefly accounted for hereunder:

Factor 1: This factor represents parental engagement in providing guidance and counselling to influence the learning behaviour of ordinary-level day public secondary school students at home. It is explained by six-item statements (Q1, Q2, Q4, Q6, Q13, Q18) with factor loadings ranging from 0.517 to 0.986.

Factor 2: This factor represents parental engagement in parent-teacher communication channels to influence the learning behaviour of ordinary-level day public secondary school students at home. It is explained by six-item statements (Q7, Q8, Q11, Q12, Q19, Q20) with factor loadings ranging from 0.629 to 0.982.

Factor 3: This factor represents parental engagement in providing supportive learning resources to influence the learning behaviour of ordinary-level day public secondary school students at home. It is explained by five-item statements (Q3, Q14, Q16, Q17, Q20) with factor loadings ranging from 0.511 to 0.986.

Factor 4: This factor represents parental engagement in motivation and engagement to influence the learning behaviour of ordinary-level day public secondary school students at home. It is

explained by seven-item statements (Q1, Q6, Q11, Q12, Q13, Q15, Q26) with factor loadings ranging from 0.545 to 0.986.

Factor 5: This factor represents parental engagement in time management to influence the learning behaviour of ordinary-level day public secondary school students at home. It is explained by four-item statements (Q1, Q9, Q10, Q17) with factor loadings ranging from 0.545 to 0.619.

Table 4 indicates the rotated factor matrix of the retrieved items from the dataset and their respective factor loadings.

Table 4: Rotated Factor Matrix

	Factor				
	1	**2**	**3**	**4**	**5**
Q1	.545			.545	**.545**
Q2	.517				
Q3			.511		
Q4	.971				
Q5					
Q6	.986			.986	
Q7		.976			
Q8		.982			
Q9					**. 558**
Q10					**.618**
Q11		.656		.656	
Q12		.971		.971	
Q13	.973			.973	
Q14			.986		
Q15				. 976	
Q16			.982	.982	
Q17			.619		**.619**
Q18	.598				
Q19		.705			
Q20		.629	.629		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser
Normalization

Source: Field data analysed in 2023

Understanding the variance explained by each factor was achieved through the initial eigenvalues and the extraction and rotation summation of squared loadings. Five factors with eigenvalues greater than one

emerged from this factor analysis as appropriate indices for further analysis. The initial eigenvalue of factor 1 is 4.568, accounting for 22.842% of the variation. The extraction and rotation sums of squared loadings are 4.568 and 3.191, respectively, which explains this level of variance. After extraction and rotation, factor 2 explains a significant percentage of the variance, with extraction and rotation sums of squared loadings of 2.777 and 2.820, respectively. Factor 2's initial eigenvalue is 2.777, representing 13.885% of the variance. Following extraction and rotation, factor 3 explains 9.399% of the variation, with extraction and rotation sums of squared loadings of 1.880 and 2.340, respectively. The initial eigenvalue of factor 3 is 1.880, accounting for 9.399% of the variation. Factor 4 has an initial eigenvalue of 1.586, explaining 7.932% of the variance, with extraction and rotation sums of squared loadings of 1.586 and 1.728, respectively. Factor 5's initial eigenvalue is 1.252, accounting for 6.260% of the variation; after extraction and rotation, it still accounts for a significant percentage of the variance, with extraction and rotation sums of squared loadings of 1.252 and 1.639, respectively.

Table 5: The variance explained by exploratory factor analysis for the influence of parents' engagement on students' learning behaviours

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of variance	Cumulative %
1	4.568	22.842	22.842	4.568	22.842	22.842	3.191	15.953	15.953
2	2.777	13.885	36.727	2.777	13.885	36.727	2.820	14.101	30.054
3	1.880	9.399	46.126	1.880	9.399	46.126	2.340	11.701	41.755
4	1.586	7.932	54.058	1.586	7.932	54.058	1.728	8.641	50.396
5	1.252	6.260	60.318	1.252	6.260	60.318	1.639	8.194	58.590

Source: Data extracted from exploratory factor analysis in 2023

A scree plot derived from PCA was used to determine the optimal number of components or factors to retain in a factor analysis. For identifying factors that influence students' learning behaviour at home, the scree plot was used to decide how many of these factors were most crucial in explaining how parental engagement influences the learning behaviour of students enrolled in ordinary-level day public secondary schools. Specifically, Figure 1 indicates the scree plots representing the eigenvalues of each factor in descending order, with the x-axis representing the number of factors and the y-axis indicating the eigenvalues.

The scree plot in Figure 1 typically shows a steep decline in eigenvalues, and the "elbow", or point where the eigenvalues level off, was considered the cut-off point for retaining significant factors. The "elbow" in Figure 1 indicates a balance between capturing sufficient variance in the data (representing relevant factors parents use to influence students' learning at home) and avoiding overfitting, ensuring that the retained factors contribute to a meaningful influence of the home environment (parents' engagement) on students' learning behaviours in ordinary-level day public secondary schools. The criterion of having an eigenvalue greater than 0.5 was used in this analysis to determine how many home-related factors would be extracted, suggesting that five factors to the left of the scree plot are significant in explaining parental influence on students' learning behaviour in the home environment.
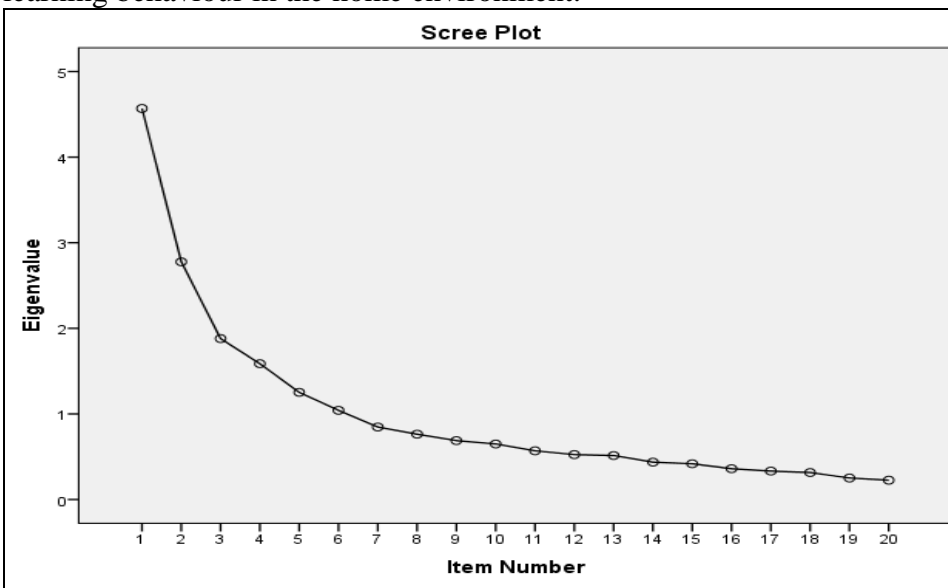
Figure 1: Scree plot graph
Source: Data extracted from Exploratory Factor Analysis

After conducting exploratory factor analysis using PCA and the Kaiser-Meyer-Olkin (KMO) test to evaluate the adequacy of the study sample, only five factors were identified that strongly explain the influence of active parental engagement on ordinary-level day public secondary school students' learning behaviour at home.

Table 6: Extracted and identified factors by Exploratory Factor Analysis (EFA)

Factor	Influencers of Student Learning Behaviours at Home	Component
1	Guidance and counselling	Q1, Q2, Q4, Q6, Q13, and Q18
2	Parent-teacher channels of communication	Q7, Q8, Q11, Q12, Q19, and Q20
3	Supportive learning resources	Q3, Q14, Q16, Q17, and Q20
4	Motivation and engagement	Q1, Q6, Q11, Q12, Q13, Q15, and Q16
5	Time management	Q1, Q9.Q10 and Q17

Source: Home-related factors derived from exploratory factor analysis

Table 6 indicates the factors retrieved by exploratory factor analysis (EFA) that likely explain parental influence on ordinary-level day public secondary school students' learning behaviour at home. The extracted factors included parental guidance and counselling, parent-teacher communication channels, provision of supportive learning resources, parental motivation and encouragement, and time management.

Findings and Discussion

Five factors emerged from an exploratory factor analysis, strongly explaining the influence of parental engagement on ordinary-level day public secondary school students' learning behaviour at home. Parental guidance and counselling, communication channels with teachers, provision of supportive resources, motivation and encouragement, and time management exhibited a strong correlation that consistently explains the influence of parents' engagement on ordinary-level day public secondary school students' learning behaviour at home. Therefore, the discussion of the findings from the current study focuses on the five factors through which parents are likely to influence the learning behaviour of their children enrolled in ordinary-level day public secondary schools. The five factors comprise guidance and counselling, communication channels with teachers, provision of supportive resources, motivation and encouragement, and time management.

Parental engagement in guidance and counselling

Parental engagement in guidance and counselling to influence children's learning behaviour at home is explained by six-item statements (Q1, Q2, Q4, Q6, Q13, Q18) with factor loadings ranging from 0.517 to 0.986. These six-item statements explain how parental guidance and counselling help children complete assignments, learn, set priorities, break down complex tasks, and balance studies and extracurricular activities. These findings align with Bronfenbrenner's ecological systems theory (Crawford, 2020; Darling, 2007; Duerden & Witt, 2010; Ferguson et al., 2013; Mary & Antony, 2022) and concur with previous research, which suggests that guidance and counselling are among the most effective forms of parental engagement for fostering suitable learning behaviours in students at home (Masek, 2017; Ozturk & Hill, 2020; Sharma & Shakir, 2019).

In addition, the parent engagement in guidance and counselling in influencing students' learning behaviour at home aligns with the findings of Bancin et al. (2019), which attributed students' unacceptable learning behaviours, such as skipping lessons, to a lack of parental engagement in guidance and counselling for their students. The study by Bancin et al. (2019) revealed that counselling provided by teachers at school and parents at home helps students become self-fulfilled, well-adjusted, and more responsive to learning.

The current study's findings support the notion that students who receive regular guidance and guidance from their parents at home and teachers during classroom instruction have a greater opportunity to excel academically and adapt to learning challenges than those who do not. Conversely, the current study's findings contradict those of Watli (2018), which indicated that an excessive focus on guidance counselling and parental involvement might unintentionally place undue pressure on students' learning behaviour, resulting in stress and anxiety. Watli (2018) suggests that an overemphasis by parents on students' learning and academic achievement can lead to burnout among students and a constant focus on guidance and counselling may exacerbate learning behaviour at home.

Parent-teacher communication channels

Parental engagement in parent-teacher communication channels to influence the learning behaviour of ordinary-level day public secondary school students at home is explained by six questionnaire items (Q7, Q8,

Q11, Q12, Q19, Q20) with factor loadings ranging from 0.629 to 0.982. These six items explain how parent-teacher communication channels influence children's learning behaviour in the following ways: 1) offering assistance to students in overcoming learning challenges, 2) providing students with the freedom to ask questions and seek clarification, 3) enhancing students' efforts to develop critical thinking and problem-solving skills, 4) allowing parents to seek feedback from school management about students' learning progress, 5) boosting students' confidence in working independently, and 6) enabling parents to provide a quiet and suitable study space at home for students. These findings strongly align with Castro et al. (2015), who argued that the parental models most associated with students' high achievement are those emphasising general supervision of children's learning activities.

Furthermore, the findings of this study align with Kraft and Rogers (2015), who emphasize the importance of educational policies that promote and facilitate teacher-to-parent communication to enhance parental involvement in students' learning. The study also supports Castro et al. (2015), who identified a strong correlation between parent-teacher communication and improved students' reading habits at home. The findings of this study regarding parent-teacher communication channels align with those of Mazikana (2023), who argued that when students are supported and motivated by both teachers and parents, they are more likely to develop self-esteem, strive for academic excellence, acquire additional competencies, and remain in school longer.

Furthermore, the findings in this study are consistent with Lv et al. (2019 research), which highlighted the significance of a strong, positive relationship between parental and teacher involvement in schools and its impact on student's education, including the cultivation of good learning behaviours. This study emphasises parental engagement, communication, volunteering, home learning, decision-making, and community collaboration to enhance the learning behaviours of students enrolled in ordinary-level day public secondary schools. However, it disagrees with Fan and Chen (2001), whose findings indicated that parental home supervision has the weakest relationship with students' academic achievement. The parent-teacher communication channels highlight the importance of parents being attentive to what occurs in school contexts.

Parental engagement in providing supportive learning resources

Parental engagement in the provision of supportive learning resources to influence the learning behaviour of ordinary-level day public secondary school students at home is explained by five questionnaire items (Q3, Q14, Q16, Q17, Q20) with factor loadings ranging from 0.511 to 0.986. These five items explain how parents engage in their children's learning behaviour in the following ways: 1) providing textbooks and other school stationery, 2) supporting students' pursuit of interests and hobbies outside of school, 3) allowing students to collaborate and learn with peers, 4) encouraging students to embrace challenges and learn from failures, and creating a quiet and suitable study space at home for students.

These findings align with Bajar and Bajar (2019), who noted that the availability of educational resources and other supportive learning materials enhances students' commitment to self-learning at home, providing them with additional opportunities for inquiry and knowledge development to reinforce what they learn in the classroom. Impliedly, the provision of relevant learning indicates that parents are dedicated to providing learning resources through which students can benefit academically. Conversely, the findings in this study contradict those of Al-Madani (2020), who reported that the availability of learning resources (books and materials) does not consistently lead to improved student learning behaviours. Contrary to Al-Madani's (2020) findings, the results of this study indicated that the effectiveness of supportive learning resources depends on students' self-learning attitudes. In some cases, students may not fully utilise the available resources, making the correlation between resource availability and improved learning behaviours more complex. Moreover, the findings in this study concur with those of Gunaretnam (2021) and Rafi et al. (2020), who reported that parents need to inspire their children to develop learning habits and address the challenges they face in their schooling through encouragement rather than punishments as these tended to create fear of the expenses of self-confidence for the student.

Parental engagement in motivation and encouragement

Parental engagement in motivation and encouragement to influence the learning behaviour of ordinary-level day public secondary school students at home is explained by seven questionnaire items (Q1, Q6, Q11, Q12, Q13, Q15, Q26) with factor loadings ranging from 0.545 to 0.986. These seven items describe the ways parents motivate and encourage their children's learning behaviour: 1) regularly encouraging students to work

on assignments, 2) praising and acknowledging students' efforts and academic achievements, 3) encouraging the development of student's critical thinking and problem-solving skills, 4) following up on feedback about students' learning progress from school management, 5) encouraging students to balance self-learning and extracurricular activities, 6) modelling positive learning behaviours at home to motivate students, and 7) allowing students to collaborate and discuss with peers through out-of-school learning.

The findings on parental engagement in motivation and encouragement contrast with those of Muhammad-Fuad, Edi-Suyanto, and Ulul (2021), who reported that students accustomed to external rewards and motivation become less interested in learning and rely instead on external incentives. According to Muhammad-Fuad, Edi-Suyanto, and Ulul (2021), excessive external pressure and motivation, including encouragement, can negatively affect students' learning behaviours.

Additionally, Iqmaulia and Usman (2019) argue that overemphasising achievement and external praise can foster a sense of competition and performance anxiety among students, potentially hindering their intrinsic motivation and genuine love for learning. Furthermore, a study by Lazarides et al. (2016) revealed that students in the high-motivation group are significantly less likely to aim for higher academic achievement.

Based on the arguments from these previous studies, this study suggests that parents must strike a balance to allow day secondary school students to develop their interests and internal drive for learning, as an excessive focus on external motivation might unconsciously hinder the development of self-regulated and self-motivated learning.

Parental engagement in students' time management
Parental engagement in time management to influence the learning behaviour of ordinary-level day public secondary school students at home is explained by four questionnaire items (Q1, Q9, Q10, Q17) with factor loadings ranging from 0.545 to 0.619. These four items describe the ways parents manage time to influence their children's learning behaviour: 1) regularly encouraging students to finish schoolwork and assignments, 2) actively involving themselves in their children's learning progress by attending parent-teacher conferences and school events, 3) tracking students' learning and setting a schedule to ensure a healthy balance between study and leisure time, and 4) encouraging students to embrace

challenges and learn from failures. These findings indicate that parents' engagement in their students' time management for learning at home focused on emphasising the creation of timetables for school activities, homework, and assignments.

The results suggest that students with effective time management behaviours exhibit better classroom attendance, attentiveness, and participation, which are hallmarks of good learning behaviours. Conversely, these findings contradict those of Roshanisefat, Azizi, and Khatony (2021), who reported that excessive emphasis on structured time management and adherence to strict schedules might lead to increased stress and anxiety among students. According to Roshanisefat, Azizi, and Khatony (2021), the stress and anxiety created by the pressure to meet specific deadlines may not always consider individual variations in learning paces and preferences. Consequently, effective time management could inadvertently contribute to negative learning behaviours, such as procrastination and burnout (Kordzanganeh et al., 2021).

Additionally, structuring students' time may limit their exploration, creativity, and self-directed learning opportunities. The findings reveals that strict time management for students' learning may hinder the development of essential skills, such as critical thinking and problem-solving, as students may become overly reliant on following predetermined schedules. Therefore, this study opines that parents strongly influence students learning behaviour in both school and home environments. Parental engagement appears to affect students' learning behaviour directly, enabling ordinary-level students enrolled in day secondary school to manage their learning schedules (time management), set goals, and seek support when necessary. Conversely, parents' discussions about school experiences and homework foster a supportive environment encouraging students to take responsibility for their learning. These findings align with Ecological Systems Theory (EST) as articulated by Bronfenbrenner (Duerden & Witt, 2010), which posits that individual development, including the development of learning behaviour, constitutes a complex process linking systems of interactions both within the individual and between the individual and environmental contexts. For secondary school students, these complex processes shape students' learning behaviour and are situated between the home and school contexts. Nonetheless, this study's findings contrast with the concerns raised by Roshanisefat, Azizi, and Khatony (2021) regarding the potential negative impacts of excessive focus on structured time management, such

as increased stress, anxiety, procrastination, and burnout. Additionally, strict time management may limit opportunities for exploration, creativity, and self-directed learning, potentially hindering the development of critical thinking and problem-solving skills.

Conclusion

Using EFA, five factors were identified that indicate how parents engage their children enrolled in ordinary-level day public secondary schools to enhance their learning behaviour at home and in school contexts. These five factors are guidance and counselling, parents' communication with teachers, provision of supportive resources, motivation and encouragement, and time management of students' learning. These factors were found to have a strong correlation that explains parental influence on students' learning behaviour at home.

Students enrolled in ordinary-level day public secondary schools were more likely to become responsible learners when parents actively engaged them in learning through continuous conversations and communication with teachers. A strong correlation is found when parents communicate with teachers to foster appropriate learning behaviours. Parents' ongoing conversations and frequent communication with class teachers provide proper direction to students' learning behaviour. When parents' express concerns about their children's learning challenges with school management, these concerns are communicated to classroom teachers. Regular guidance and counselling sessions conducted by teachers at school and parents at home help students become self-fulfilled, well-adjusted, and more responsive to time management in their learning.

Furthermore, students enrolled in ordinary-level day public secondary schools receive regular support and guidance from their parents at home and teachers during classroom instruction. They demonstrate a greater inclination to learn at home and in school contexts, and they adapt better to learning challenges than those who do not. Therefore, parents should emphasise guidance and counselling, conversations and communication with teachers, provision of supportive resources, motivation and encouragement, and effective time management to enhance student learning behaviour in both home and school environments. Consequently, parents and school management should work together to create and enhance a supportive learning environment that would empower the learning of students enrolled in ordinary-level day public secondary schools.

Recommendations

This study's recommendations align with the learning process between home and school environments, considering the preferable policy context. At home, parents and guardians are encouraged to create essential learning conditions for their students during the secondary school period, when they transition from adolescence to young adulthood. Parents and guardians should actively engage in school-organized programs and establish communication channels with schools that promote learning both at home and in school environments. They should regularly discuss their child's learning progress and any challenges they encounter with teachers. Additionally, parents need to offer guidance and counselling, encourage time management skills, and cultivate a motivating learning environment at home.

Teachers and other school personnel should communicate effectively with parents or guardians when developing and implementing study programs. Clear and intentional communication should exist between teachers, school management, and parents or guardians through workshops, online resources, or dedicated communication platforms. School management and class teachers should provide resources and support systems to help parents understand and effectively manage their students' learning behaviour at home. In addition to parents' engagement, the study underscores the value of school culture and managerial practices that support students' active learning behaviour in ordinary-level day public secondary schools.

The study encourages parents to enhance the use of these five factors (guidance and counselling, parents' communication with teachers, provision of supportive resources, motivation and encouragement, and time management) to instil desired learning behaviours among day students in ordinary-level secondary schools as they navigate the challenging transition from childhood to adolescence. Additionally, the study strongly recommends regular communication between parents and school management through class teachers to improve students' learning at home and in the school context. Further, future studies are suggested to explore the influence of religion and culture on students' learning behaviour as they navigate their adolescence both in and out of school.

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Perceived Influence of Family Background on School-Based Social Problems Among Senior Secondary School Students in Epe Educational District, Lagos State

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Abstract
This study assessed the perceived influence of family background on school-based social problems among senior secondary school students in Epe Educational District, Lagos State. The study assessed the influence of family background on students' drug abuse and addiction and examined the influence of family background on the students' violent behaviour. The two research questions set to guide the study are does family background influence students' involvement in drug abuse and addiction and does family background influence students' violent behaviours? A survey research design was adopted for the study. The

study involved ten senior secondary schools and 149 senior secondary school students within Epe Educational District of Lagos State. Purposive sampling was used to select schools and convenience sampling enabled the selection of respondents. A questionnaire tagged "Family Background and School Based Social Problems Questionnaire" (FBSBSPQ) (R=0.82) was used for data collection. The collected data were coded and analysed using descriptive statistics. Findings show that parents social and employment status, family emotional support and parent housing patterns influence students towards abusing drugs and engaging in violent behaviours. Based on the findings, it is recommended that parents continue to be good role models for the students. This will help the students exhibit their best behaviour in society. Schools should continue to give reports of the students' behaviour to their parents from time to time, as this will allow parents also to adjust their ways of life where necessary.

Keywords*: Family background, social problem, school-based social problem, drug abuse, violence behaviour*

Introduction

Nigerian society is plagued with various social problems, which include stealing, pickpocketing, bullying, thuggery, drug abuse, cultism, examination malpractice, etc. These problems are now prevalent in secondary schools, and they create many problems for school administration and the attainment of the goals of education and national objectives. Social problems are ills and vices that are contrary to societal values. These problems make society dysfunctional. School-based social problems are vices that are common in the school system, which include drug abuse, examination malpractices, cultism, juvenile delinquency, sexual harassment/assault, human rights abuse and so on (Oyetade, 2019). Adedipe (2018) opined that the family in the current situation in Nigeria is becoming increasingly obsolete, with some of its essential and traditional functions under attack, because it is characterised by the stability of unlimited extra-marital activities, an increase in single parenthood, the downgrading of parenting roles and economic pressure, which is making the family objurgate her role to the school, teachers and society.

One of the variables of interest in this study is the relationship between drug abuse and family background. Drug use is defined as the use of various substances such as alcohol and other substances such as cigarettes, illegal drugs, prescription drug inhalants and solvents (World

Health Organisation, 2014). Substance abuse among students has become one of the complex social problems blossoming across the world and a major health concern for scholars and researchers because of its health and social consequences (Denwigwe et al., 2018; Saanvi, 2024). In Nigeria, drug abuse and substance use are increasing on a daily basis (Igara, 2017). The tendency to abuse drugs among secondary schools' students is becoming a serious problem. Challenging the functionality of our society and the appropriate use of drugs or chemical substances capable of changing the functions of cells in the body is assumed to be one of the issues attracting global attention (Obafemi, 2017).

Several reasons have been highlighted in the literature as the major causes of drug abuse among secondary school students. Such causes include peer influence, family background and availability of drugs (Etyang & Wenga, 2021), as well as alcohol-drinking family member, poor school substance use controlling rules, availability of substances in retailing shops in residential areas (Seid et al., 2021). Saanvi (2024) identified poor self-image, low religiosity, poor school performance, parental rejection, family dysfunction, abuse, poor parental control, parental divorce, peer cross-pressure, and family rejection, curiosity, and amusement are causes of drug abuse among secondary school students. Researchers such as Igara (2017), Kyei-Gyamfi et al. (2024), Saanvi (2024) and Zemba (2022) highlighted depression, rate of unemployment, idleness, low self-esteem, availability of drugs, pressure from family, poor grades to ease pain, low morale, social media influence and lack of recreation activities as causes of drug abuse among the students. Previous studies have also established the relationship between drug abuse and family background, peer influence and the availability of drugs (Obafemi, 2017; Denwingwe et al., 2018; Etyang & Winga, 2021). The extent to which family background is a factor that has led to school-based social problems in secondary school is one of the focuses of this study. Abuse of drugs leads to preventable death, illness and injury, and it impedes the peace of the world, causes poor academic performance, impaired concentration, truancy, increased expenses, increased risky sexual behaviour, violence, cultist activities and mental health problems (Dankano & Garba, 2017; Amadi & Akipelu, 2018).

Another variable of interest in this study is the relationship between violent behaviour and family background. Violence refers to any behaviour or situation that reflects the absence of peace and is intended to injure or kill someone or to destroy something (Opere et al., 2019). The

Educational Institute of Scotland (2024) defines violent behaviour as incidents in which a person is abused, threatened, or assaulted in circumstances relating to their work. School violent behaviour is one of the school-based social problems that require attention from policymakers, researchers and educators (Eisenbraun, 2007). Violence occurs between two or more individuals as interpersonal violence, or it involves identifiable groups in society and erupts as inter-group violence; this may be inter-ethnic or religious. Violent behaviour manifests itself in the form of rioting, sexual violence, fighting and bullying (destructive activities that contribute to physical disabilities, dropout and poor academic performance of students (Iyekolo et al., 2021). School violence incidents have been on the increase in recent times, mostly in urban areas of the country. School violence is a form of deviant, aggressive and externalising behaviour perpetrated by the students in the school (Jillian & Sonja, 2022). Young people are among the groups that are most vulnerable to violence (Burcu et al., 2018). School violence constitutes acts such as making serious threats, bringing weapons to school, committing aggravated assault, robbery, unwanted sexual contact, battery, physical aggression and non-contact aggression (Jillian & Sonja, 2022). Violent behaviours include physical fights, bullying, gun possession, kicking, punching, biting, and spitting, which can lead to physical injury and emotional distress and contribute to an unsafe school environment (Burcu et al., 2018; EIS, 2024). Violence in schools requires urgent attention as it can potentially affect the nation's future generations.

The issue of school violence in Nigeria is not a new phenomenon; it has become one of the school-based social problems. This happens mostly on Fridays after school hours or during the annual inters house sports competition (Opere et al., 2019; Isaac, 2022). School violence occurs during meals, social events and on the way home from school. School violence occurs in the form of verbal abuse, physical fights, bullying and arson attacks (Opere et al., 2019; Isaac, 2022). In recent times, public secondary schools in urban areas have been faced with numerous causes of school violence. Despite various interventions by the government to stop issues of school-based violence, the incidence of violence still exists in the form of inter and intra-school fighting, sexual violence, corporal punishment and verbal abuse. The Ogun State Ministry of Education, following cases of school violence reported in some secondary schools within the state, announced several measures towards reducing the rate of school violence in secondary schools in the state. Recently, there were various reports of school-based violent behaviours in secondary schools

in Lagos State. Within Lagos State, Ajumoni Secondary School, Iyana Isolo and Ansar-ud-deen High School, Falolu, Surulere, were attacked by neighbouring school students using stones and other dangerous items. Ego, peer pressure and fights over girls, overpopulation, the unpleasant nature of the school system, competition for resources, political differences, sexual discrimination and non-tolerance of cultural diversity have been ascribed to be among the major reasons for school violence, mostly within urban areas (Opere et al., 2019; Iyekolo, 2021). In most cases, it resulted in injuries and loss of lives and properties (Opere et al., 2019).

Several factors have been identified as the major causes of violent behaviour by young children in school. Burcu et al. (2018) highlight that sex, employment status, smoking, alcohol use and feeling unsafe are among the factors that lead to violent behaviour. Scholars such as Eisenbraun (2007), Iyekolo, et al., (2021), Tian & Zhang, (2022), Jullian and Sonja (2022), identifies escalate aggressive behaviours, exposure to violence and video game; gender, age , socio-economic factor, ethnicity, past victimization, drug or alcohol use; extreme annoyance display by parents towards their children, extreme harshness towards children by parent, inconsistent parents response to children, improper home training, abuse of children, bullying tendencies inherit from parents, frustrating children personal decision, too much freedom for children, exposing children to violent movies and neglect of the children, deviant peers, lack of self-control, anti-social attitudes, substance use, lack of bond with parent and school, aggressiveness, extraversion, moral disengagement, school avoidance, low academic achievement and peer rejection, family situation and parent style, domestic victimization, social media implication, psychological and physiological factors such as self-awareness, independence consciousness as causes of violent behaviour among school children. Violence has led to deaths, destruction of school property, disruption of the teaching and learning process and personal injury to their victims (Iyekolo et al., 2021). Violence can also lead to anxiety, depression, poor health, suicidal ideation, sadness, loneliness, substance abuse, violence, school dropout, bullying and poor adjustment in adulthood (Jillian et al., 2022).

Dankamo and Garba (2017) examined the effects of drug abuse on the academic performance of secondary school students in Bali local government area of Taraba State. The results showed that drug abuse leads to an increase in the poor performance of students in examinations,

resulting in a consequent dropout rate from school due to intellectually challenged memory. Denwigwe et al. (2018) assessed family influence on substance abuse tendencies among secondary school students in Cross Rivers state. The findings showed that family type and size were significant predictors of drug abuse tendencies among secondary school students. Etyang and Winga (2021) assessed the prevalence, causes and effects of drug use and abuse on performance indicators among secondary school students in Kenya. Findings show that students abuse tobacco, miraa, cocaine, tranquilliser, kuber and marijuana at various degree levels. Opere et al. (2019) examined school violence as a cause of non-peaceful coexistence in public secondary schools in Nairobi, Kenya. Findings revealed that school violence occurs in the form of verbal abuse, physical fights, bullying and arson attacks. Violence occurs during meals, social events and on the way home from school. The main perpetrators are classmates, prefects and even teachers. Causes of school-based violence are competition for resources, political differences, sexual discrimination and non-tolerance of cultural diversity. Iyekolo et al. (2021) assessed the factors responsible for violent behaviours among secondary school students as expressed by teachers in Ilorin metropolis, Kwara state. Findings revealed that factors responsible for violent behaviours are extreme annoyance displayed by parents towards their children, extreme harshness towards children by the parents and inconsistent parental responses to children's needs.

The theory supporting the study is situated in social problem theory and Robert Merton's anomia and strain theories (1957). The central proposition of this theory is that social problems are the definitional activities of people around conditions and conduct they find troublesome. Social problems are socially constructed in terms of particular acts and interactions that participants pursue and in-terms of the process of such activities through time (Schneider, 1985). Robert Merton's anomia and strain theories (1957) sought to explain why individuals or groups engage in some anti-social or illegal behaviour. However, Merton's central emphasis is on deviance and criminality and according to Merton "criminality is a function of an over-emphasis on the goals associated with the societal issues to which the deviants are prone. Anomies and strain theories posit that criminality is due to an array of social causes.

Objectives

i) Assess the influence of family background on students' drug abuse and addiction.

ii)   Examine the influence of family background on the students' violent behaviour.

Research Questions

i) Does family background influence students' involvement in drug abuse and addiction?

ii) Does family background influence students' violent behaviours?

Methodology

This study assessed the perceived influence of family background on school based social problems among senior secondary school students in Epe educational district, Lagos state. The study assessed the influence of family background on student's drug abuse and addiction on one hand and student's violent behaviour on the other hand. Two research questions guided the study. The study adopted survey research design.

The population in this study comprised 10,970 year 2 students in senior secondary schools in Epe Educational District of Lagos state. The sample comprised ten (10) senior secondary schools and 149 senior secondary school two students. The ten (10) schools were selected through purposive sampling. This selection is based on schools that have experienced school-based social problems. The students were also selected using purposive and convenience sample techniques for the study. The students selected were those that have been involved in drug abuse and violent behaviours within and outside the school environment. A questionnaire tagged "Family Background and School Based Social Problems Questionnaire" (FBSBSPQ) was used to collect data for the study. The content and face validity of the questionnaire were established by presenting two copies of the draft questionnaire to two experts in the field of test and measurement for further scrutiny and modification. This was to ascertain the suitability of the instrument in terms of language, presentation, clarity and applicability. Based on their comments, necessary modifications were made. The verified copy of the questionnaires was trial tested on the respondents that were not part of the actual study. Split half method was used to determine the reliability coefficient of the instrument, which was found to be 0.82. Data collected from the field was coded and processed using Statistical Package for Social Science (SPSS) and analysed using descriptive statistics of mean and standard deviation.

Results

Research Question 1: Does family background influence students' involvement in drug abuse and addiction?

Table 1: Influence of Family Background on Students' Involvement in Drug Abuse and Addiction

S/N	Items	N	Mean	SD
1.	Children from polygamous families might likely involve in drug abuse than children from monogamous families	149	2.42	1.050
2.	Large family size often encourages children to be involved in drug abuse	149	2.44	.940
3.	Social status of the parents can affect students' involvement in drug abuse	149	2.63	.865
4.	Employment status of the family can be a causative factor for drug abuse	149	2.69	.999
5.	Emotional support and love from parents can discourage drug abuse.	149	3.28*	1.283
6.	Housing patterns that parents live can be a factor for drug abuse	149	2.86*	1.097
	Average Total	**149**	**2.72**	**1.0285**

Results from table 1 show that item 5, which stated that emotional support and love from parents can discourage drug abuse, has the highest mean score of 3.28 (SD = 1.283). This is followed by item 6, which states that the housing patterns that parents leave in can be a factor in drug abuse (X = 2.86, SD = 1.097); followed by item 4, which states that the employment status of the family can be a causative factor in drug abuse (X = 2.86, SD = 1.097); followed by item 4, which states that the employment status of the family can be a causative factor for drug abuse (x = 2.69, SD =.999); followed by item 3, which states that the social status of the parents can affect students involvement in drug abuse (x = 2.63, SD =.865); followed by item 2, which states that large the parents can affect students involvement in drug abuse (x = 2.63, SD =.865); followed by item 2, which states that large family size often encourages children to be involved in drug abuse and addiction (x = 2.44, SD =.940). The least item in Table 1 above is Item 1, which states that children from polygamous families might be more likely to be involved in drug abuse and addiction than children from monogamous families (X = 2.42, SD =.987). The average mean of the distribution is 2.72 (SD = 1.0285). This shows that factors such as parent social and employment status, family emotional supports, and parent housing patterns are family background factors that contribute to drug abuse addiction among the students. In other words, parents' forms of marriage and family size have limited

influence on students' drug abuse and addiction. The standard deviation showed a high level of closeness across the distributions.

Research Question 2: Does family background influence students' violent behaviours?

Table 2: Influence of family background on students' violent behaviours

S/N	Items	N	Mean	SD
1.	Students from polygamous families often exhibit violent behaviour in society	149	2.60	1.019
2.	Large family size can be associated with students' involvement in violent behaviour	149	2.73	1.050
3.	Social status of the family can encourage students to exhibit violent behaviour	149	2.64	1.060
4.	Employment status of the family can encourage student to be involved in violent behaviour	149	2.51	1.000
5.	Emotional support from the family is a factor for student involvement in violent behaviours	149	2.99*	1.922
6.	The environment or the housing pattern that the students live influences them to exhibit violent behaviours	149	2.69*	1.071
	Average Total	**149**	**2.69**	**1.363**

Results from Table 2 above on the influence of family background on students' involvement in violent behaviour show that item 5, which stated that emotional support from the family is a factor for students' involvement in violent behaviour, has the highest mean score of 2.99 (SD = 1.922). This is followed by item 2, which states that large family size could be associated with students' involvement in violent behaviour (X=2.73, SD = 1.050), followed by item 6, which states that the housing pattern in the student's living environment influences students to exhibit violent behaviour (X=2.69, SD=1.071), followed by item 6 which states that the environment or the housing pattern that the students leave influence them to exhibit violent behaviours (X =2.69, SD =1.071); followed by item 3 which stated that social status of the family can encourage students to exhibit violent behaviour (X =2.64, SD =1.060) followed by item 1 which stated that students from polygamous family often exhibit violent behaviour in the society (X = 2.60, SD = 1.019), the item with the least mean is item 4 which stated that employment status of family can encourage students to be involved in violent behaviour (X = 2.51, SD =1.000). The average mean of the distribution is (X= 2.69, SD =1.363). This shows that marriage types, family size, parent social status, employment and emotional status, housing pattern and environment contribute to students' involvement in violent behaviours. The standard deviation showed a high level of closeness across the distributions.

Discussion of Findings

This study assessed the perceived influence of family background on school-based social problems among senior secondary school students in Epe Educational District of Lagos State. The results of research question 1 show that factors such as parent social status and employment status, family emotional support and parent housing patterns are family background factors that contribute to drug abuse addiction among students. Parents' forms of marriage and family size have limited influence on students' drug abuse and addiction. This supports the findings of Obafemi (2017), Denwingwe et al. (2018), Etyang and Winga (2021), and Seid et al. (2021), who found the relationship between family background factors and students engaging in school-based social problems in the forms of abuse of drugs and addiction. However, the finding shows an unexpected result in the fact that parental forms of marriage and family size had the least mean value, showing that some factors may not contribute fully to students' involvement in drug abuse and addiction all the time. While factors such as forms of marriage and family size are found to be significant as factors that influence students' involvement in drug abuse and addiction in some studies, a finding in this study does not show a greater influence of forms of marriage and family size on students' involvement in drug abuse and addiction. This finding might be due to the fact that most of the schools used are within the semi-urban area of Epe in Lagos state semi-urban area of Epe in Lagos state, and these students have had shared experiences of school-based problems. In addition, few of the students are from socio-economic backgrounds, and their parents' status has influenced the students' character in the school.

The results of research question 2 on the influence of family background on students' violent behaviour show that family emotional support, environmental and housing patterns, family size, social status of the family and parental forms of marriage greatly influence students' exhibition of violent behaviour. However, the result also showed that factors such as parental employment status have a moderate influence on students' involvement in violent behaviour. Marriage types, family size, parent social status, employment and emotional status, as well as housing pattern and environment, contribute to students involved in violent behaviours. This supports the findings of Opere et al. (2019), Isaac (2022), and Iyekolo et al. (2021), who found a relationship between family background and students engaging in violent behaviours. This

finding might be due to the fact that most of the respondents are polygamous and have low socio-economic status in society.

This study did not focus on all types of school-based social problems. It is limited to only drug abuse and violent behaviour. This is due to the fact that drug abuse and violent behaviour are the most common social problems in the study area. Another limitation of this study is that it is only limited to secondary school students. Further study may exploit other areas of school-based social problems such as thuggery, cultism, indiscipline and so on, as well as in other areas such as primary and tertiary institutions. In the most significant term, the study finding shows that family background influences students' involvement in drug abuse and violent behaviour. The implication of this is that the family, as the smallest unit of social organization, influences teenagers and young people's behaviour, and this has implications for societal well-being.

Conclusion

The study assessed the perceived influence of family background on school-based social problems among senior secondary school students in Epe Educational District, Lagos State. The study concluded that parents social and employment status, family emotional support and parents' housing patterns influence students towards abusing drugs. Furthermore, marriage types, family size, parent social status, employment and emotional status and housing patterns and environments contribute to students' involvement in violent behaviour.

Recommendations

 i)   Parents should continue to be good role models for their students. This will help the students exhibit the best behaviour in society.

 ii) The school should continue to give reports of the students' behaviour to their parents from time to time, as this will allow the parents to receive feedback and adjust their ways of life where necessary.

iii) Students must receive necessary counselling from time to time to reduce the rates of school-based social problems.

iv)   The government should promote moral and character education and use it as a yardstick for graduation. The mode of assessment should be observation to provide adequate feedback that can transform society.

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