Predictors of Parental Home Involvement in Low-Income Families in Tanzania

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Abstract
Understanding factors influencing parents' involvement in education activities is essential in tailoring strategies to encourage and maximize their participation. This study assessed predictors of parental home involvement in low-income families in four regions of Northern Tanzania. The questionnaires assessed 1176 parents of grade two children from 55 primary schools invited to teacher-parent meetings. The hierarchical multiple regression analyses showed that parents' perception of general school invitation, specific teacher invitation, specific child invitation, parents' knowledge and skills, parents' level of education, and marriage conditions were the strongest predictors of parental home involvement. However, parents' past school experience (valence) did not predict their present involvement at home. This study underscores the pivotal role of teachers and schools in instigating and fostering parental involvement at home. Teachers can create a collaborative learning environment beyond the classroom by implementing activities designed to arouse parents' interest and stimulate their desire to participate actively in their children's learning. The study recommends the interconnectedness of the educational ecosystem, where the efforts of schools and teachers serve as catalysts for meaningful parental involvement at home.

Keywords: *Parental Involvement, Home Involvement, School-family partnership, Low-income families, Primary School*

INTRODUCTION

Tanzania makes a significant step in increasing access to basic education by implementing the fee-free education policy in seven years of primary education and four years of ordinary secondary education. With all these efforts to increase the enrollment rate, the quality of education and equality in learning opportunities between children are still questionable (Twaweza, 2019; 2017). These uncertainties cause a significant achievement gap between children living in low-income families in

public schools and children living in middle-income families in private schools (UNESCO, 2019; URT, 2020; 2021).

Although many discussions and concerns have been directed toward the quality of classroom instructions, efficiency of teachers and other school factors, little attention has been paid to the role of parents in children's learning. The insignificant improvements in early literacy development raise concern about the limited involvement of parents in their children's education (Kigobe et al., 2018; Kigobe et al., 2021). To address these concerns, it is crucial to understand the factors influencing parental involvement in the education and schooling of primary school children in Tanzania, particularly within low-income families. By identifying these factors, educational stakeholders can develop targeted interventions and strategies to promote parental engagement. This can, subsequently, contribute to reducing the achievement gap between children from low-income families and their more privileged peers (Gregory, 2016; Nyembeke, 2016).

Owing to multiple roles that parents play in reducing achievement gaps, it is essential to explore the specific challenges and barriers that may prevent them from actively participating in their children's education in Tanzania. Understanding the socio-cultural context, economic constraints, and potential communication gaps between schools and families could provide valuable insights into designing effective interventions that encourage and facilitate parental engagement.

Supportive relationship between schools, parents, and the community, the education system in Tanzania can create a more inclusive and equitable learning environment for all children, irrespective of their socioeconomic backgrounds. Research on the role of education in reducing achievement gaps affirmed that involving parents and caregivers in children’s learning is crucial to reducing achievement gaps. According to Dearing et al. (2006), families' involvement in their children's schools is central to most public efforts to reduce the achievement gap between children living in low-income families and their wealthier peers. This study assessed factors that influenced parental home involvement in low-income families in Tanzania.

Parent Involvement and Socio-Economic Conditions

Understanding the unique challenges and opportunities within different socio-economic contexts is essential for designing targeted interventions

and support systems that can bridge the gap in parental involvement. This can promote a more inclusive and equitable learning environment.

Several studies (Abrams & Gibbs, 2002; Borgonovi & Montt, 2012; Li et al., 2000) have proven that parental involvement is very minimal in low-income families as compared to middle and higher-income counterparts. Lower involvement of low-income parents denies their children educational benefits more than children from higher-income homes (Taylor et al., 2004; Smith, 2006). As a result of this, children from low-income households who start school frequently lag behind their peers from more affluent families (Ferguson et al., 2007). If this problem remains unaddressed, the achievement gap between children from families with low incomes and those from families with moderate or higher incomes will continue to persist.

Smith (2006) argues that children who come from households with poor incomes are at a greater risk of academic underachievement than children who come from wealthy families with highly educated parents. In addition, children who originate from households with low incomes and parents with low levels of education are at an extremely elevated risk of academic failure. In order to get access to and promote parental engagement, it is vital to consider social and economic structure, which defines and stratifies parents.

Due to the presence of fee-free education, teachers have expressed their worries about the extent to which parents in public schools define their roles and engagement in their children's education (Gregory, 2016; Maliti, 2018). Therefore, it is essential to ensure that parents participate well in their children's learning process regardless their socio-economic backgrounds. In the meta-analyses, which included 95 studies of family involvement, Van Voorhis et al. (2013) proved that regardless of their background, parents from diverse backgrounds, when given direction, can become more engaged with their children learning. Moreover, when parents are more engaged, children tend to do better in school.

Theory of Change: From School-Centric to Family-Centric Schools

Lawson (2003) defines "school-centric" activities as primarily consisting of attendance at school-organised events (i.e., parent-teacher conferences, volunteering, parent involvement in the classroom as teachers' aides, parent involvement on field trips, and involvement in other school related

activities. Traditional research on parent involvement is school-centric, focusing on parents' interactions with and attendance at school events. This school-centric approach, however, fails to incorporate the conjoint influence of parenting practises, parenting styles, parent-child relationship quality, and family structure (Malczyka & Lawson, 2019). The fact that many parent participation programmes are centred on the school rather than the home is a fundamental weakness that has led to a rise in educational disparity. Pushor and Ruitenberg (2005) argue that in school-centric approaches, what constitutes "parent involvement" is defined and controlled by school administrators and teachers. It affords little or no space for parent knowledge or voice in constructing their children's school experience or the school's place (Stitt & Brooks, 2014). Researchers have found that parent involvement in school-centric programmes and activities is often minimal, sporadic, or non-existent (Alameda-Lawson & Lawson, 2012; Lareau, 1996). Literature on parent involvement in low-income school communities suggests that complex sociocultural and political factors may contribute to low levels of parent involvement and engagement in school-designed activities. Despite the benefits and barriers included in the parent involvement literature, it remains necessary to analyse and clarify the often-unarticulated assumptions and implicit theories of action that undergird what parent involvement means.

Walker et al. (2011) assert that schools should be skeptical of assuming that parents who are not regularly present at school are not involved in supporting children's learning; parents may provide more support for their children's schooling at home than school personnel perceive based on visibility. Kigobe et al. (2018) argue that parents are more involved in home-based activities than school-based activities. Perceptions of available time and energy are the strongest predictors of school-based involvement rather than working hours.

It is evident that school-based parental involvement might not be possible for most parents in Tanzania. That necessitates schools and teachers to think beyond the physical presence of parents as the most convenient way of getting parents involved in their children's education. The experience from the urban context of Tanzania motivated the exploration of homes in other places in Tanzania. This study aimed to understand home-based involvement in rural low-income families in Tanzania. The theory of change that assumes that motivational factors promote parental home

involvement. This helps teachers and policymakers to think about effective ways of stimulating parental involvement activities at home. Hence, studying the factors influencing home involvement activities is very crucial.

The Hoover-Dempsey and Sandler Model of Parental Involvement

This study employed the Hoover-Dempsey and Sandler model of parental involvement. The model underscores the multidimensional nature of parental involvement and highlights the significance of understanding the complex interactions between parents, schools, and communities in fostering effective collaboration and support for children's educational success (Hoover-Dempsey & Sandler, 1995, 1997; Walker et al., 2005).

The model is constructed around three main questions: (a) why families do (or don't) get involved in educational activities; (b) what families do when they do get involved; and (c) how family engagement in children's education improves student results. Along with the reasons parents decide to get involved, the model demonstrates how they get involved and the results of their involvement (Hoover-Dempsey & Sandler, 1995, 1997).

The model is organised into five levels that show a linear process of parental involvement. In Level one, parental involvement decisions are affected by parents' role construction, parental self-efficacy, general invitations from school, and specific invitations for involvement from the child and the child's teacher. Life context variables such as knowledge and skills, time, and energy are also considered. Level two includes the parents' choices about how they want to be involved (i.e., involvement activities at home and involvement activities at school).

Level three indicates how parental involvement affects a child's educational and developmental outcomes, including modelling, reinforcement, and instruction. Level fourth indicates the main factors that affect parental involvement, such as how well the parents' actions match up with the child's developmental needs. Finally, level five is about the outcomes for the child's learning, such as skills and knowledge, and self-efficacy for school success (Hoover-Dempsey & Sandler, 1995).

This study focused on the first and second levels of the model. It assesses how various factors surrounding parents affect their involvement choices.

Although the second level of the model describes two forms of involvement (i.e., school and home involvement), educators and teachers focus more on school involvement. Previous studies (Kigobe et al., 2018; Walker et al., 2011) have found that parents manage to be more involved at home than in school activities. Green et al. (2007) recommends examining the specific contribution of socioeconomic variables when using the model in assessing parental involvement decisions. Thus, we included parent valence towards school as suggested by Walker et al. (2005) to assess the effect of parents' own school experiences on their presenting practices in their children's schooling.

The Current Study

This study used the baseline data collected in a larger project designed to promote parental involvement through capacity building (teachers' training) on parental involvement. Previous studies confirmed that parents in Tanzania are willing and positive about being involved in their children's education (Kigobe et al., 2018). Specifically, this study explored two research questions: i) what are the predictors of parental home involvement in low-income families? ii) how do parents' perceptions of involvement invitations predict home involvement compared to their personal motivators?

METHODOLOGY

Participants

The study involved parents of children from 55 primary schools in 10 districts of four regions in Northern Tanzania. In total, parents were (n = 1176), whereby a maximum of (n = 27) and a minimum of (n = 19) parents per school were involved**.** Among the families, 22% had only one child; 20.8% had two children; 19.6% had three children; 18% had four children; and 14.1% had five or more children. The category of parents involved mothers (52%), and fathers (48%).

Of all the involved parents, 67.7% were married, 27% were unmarried, and 5.3% did not disclose their status. Approximately 63.5% of involved parents had a low income (under 2,000 Tshs per day), 19.7% had an income ranging from 2,001 to 5,000 Tshs per day. Additionally, 7.8% were parents with a middle income between 5,001 and 10,000 Tshs per day, 4.1% had an income between 10,001 and 15,000 per day, 3% had an income of 15,001 to 20,000 per day, and 1.9% had an income of 20,001 and above per day. Regarding education level, 70.4% of involved parents

had primary education, and 7.3% were uneducated, 13.9% had secondary education, 3.2% had college certificates and diplomas, 1.4% of parents had bachelor's degrees, 0.2% had postgraduate degrees.

Procedures

Parents were invited to teacher-parent meetings in schools. These meetings were officiated by district and ward educational officers to bring community awareness to the importance of parental involvement. Parents were asked to sign a consent form to participate in the study and allowed their children to participate. To coordinate the exercise and minimise social desirability, 12 trained research assistants who were tutors from five teacher colleges were sent to four regions of the project to guide parents and teachers in survey administration.

Measures

All measures were adopted from Walker et al. (2005), who revised Hoover-Dempsey and Sandler's model of parent involvement. The study assessed home involvement (second level of the Hoover-Dempsey and Sandler model) as an outcome variable against eight predictor variables (first level of the Hoover-Dempsey and Sandler model). The predictor variables are parents' school valence, parents' role construction, parents' sense of efficacy, parents' perception of general school invitations, parents' perception of teacher invitations, parents' perception of specific child invitations, parents' knowledge and skills, and parents' energy and resources.

The home-based involvement activities: This was measured by four items assessing parents' academically focused home involvement activities (Walker et al. 2005). Parents rated their perceptions on a 6-point Likert-type scale ranging from 1 (never) to 6 (daily). Item examples are: (a) "Talks with this child about the school day", (b) "Supervises this child's homework". The Cronbach's alpha of this scale was .69, indicating a moderate internal consistency.

Parents' personal Motivators

Parent Self-Reported Valence towards School: This was measured by six items assessing parents own general experiences at school, their teachers and school staff. (e.g., “My school 1 = I disliked, 6 = I liked”; “My teachers: 1 = ignored me, 6 = cared about me”). Higher scale scores indicated a stronger attraction to or good experiences with the school.

The Cronbach's alpha of this scale was .76, indicating a good internal consistency.

Parental efficacy for helping children succeeds: This was measured by four items from Walker et al. (2005). However, two negatively worded items were deleted because of low alpha the scale provided when these two items were included. Parents rated their self-efficacy beliefs on a 6-point Likert-type scale ranging from 1 (disagree very strongly) to 6 (agree very strongly). The two items were (a) "I Know how to help my child to acquire reading skills", and (b) "I feel successful about my efforts to help my child to learn". Higher scores indicated that parents have a higher sense of efficacy. The Cronbach's alpha of the two items in the scale was .63, indicating a moderate internal consistency

Parents' role construction: This was measured by nine items which describe beliefs that parent, school, and partnership focused on (Walker et al. 2005). Parents rated their role beliefs on a 6-point Likert-type scale ranging from 1 (disagree very strongly) to 6 (agree very strongly). Item examples are: "I believe it is my responsibility to (a) volunteer at the school (b) communicate with my child's teacher regularly". Higher scores indicated that parents have higher belief about their roles in children's education The Cronbach's alpha of this scale was .80, indicating a good internal consistency.

Parents' perceptions of invitation to be involved

Parents' perceptions of general invitations from school: This was measured by six items developed by Walker et al. (2005). Parents rated their perceptions on a 6- point Likert-type scale ranging from 1 (disagree very strongly) to 6 (agree very strongly). Item examples are: (a) "Teachers at this school are interested and cooperative when they discuss my child reading and literacy development", and (b) "This school lets me know about meetings and special school events". The Cronbach's alpha of this scale was .65, indicating a moderate internal consistency.

Parents' perceptions of specific invitations for involvement from teachers: This was measured by five items examining how often the child's teachers contact or make any communication with a parent (Walker et al. 2005). Parents rated their perceptions on a 6-point Likert-type scale ranging from 1 (never) to 6 (daily). Item examples are: (a) "My child's teacher asked me or expected me to help my child with

homework", and (b) "My child's teacher asked me to attend a special event at school" about meetings and special school events". The Cronbach's alpha of this scale was .86, indicating strong internal consistency.

Parents' perceptions of specific invitations for involvement from the child: This was measured by five items. Parents rated their perceptions on a 6-point Likert-type scale ranging from 1 (never) to 6 (daily). Item examples are: (a) "My child asked me to supervise his or her homework" and (b) "My child asked me to talk with his or her teacher" The Cronbach's alpha of this scale was .82, indicating a strong internal consistency.

Parents' perceived life context variables

Parents' understanding of their own skills and knowledge: This was measured by six items examining parents' understanding of their own skills and knowledge (Walker et al. 2005). Parents rated their perceptions on a 6-point Likert-type scale ranging from 1 (disagree very strong) to 6 (agree very strong). Item examples are: "(a) I know effective ways to contact my child's teacher (b) I know how to supervise my child's homework." The Cronbach's alpha of this scale was .79, indicating a good internal consistency.

Parents' perceptions of the time and energy: This was measured by 6 items referring to how parents perceived time and energy in their decision about involvement (Walker et al. 2005). Parents rated their perceptions on a 6-point Likert-type scale ranging from 1 (disagree very strong) to 6 (agree very strong). Item examples are: "I have enough time and energy to (a) communicate with my child about the school day (b) attend special events at school." The Cronbach's alpha of this scale was .68, indicating a moderate internal consistency.

Analysis

We first computed descriptive statistics, whereby Spearman correlations were calculated between the parent's characteristics (such as gender and income) and all variables. Moreover, Pearson correlations were calculated between the outcome and all independent variables. Second, we conducted hierarchical multiple regression analyses to examine the variables that predict parental home involvement. We assessed the multicollinearity of all variables. The calculation of the variance inflation

factor (VIF) for each variable is one way to identify multicollinearity. Multicollinearity is indicated when the VIF value is larger than 1.5 for any of the variables being examined.

The multicollinearity analysis found that seven variables had tolerance values greater than.10 and the variance inflation factor values were less than 1.5. This indicates that there is no multicollinearity within independent variables and dependent variable. However, parents understanding of their skills, and knowledge and parents' perception of time and energy showed a VIF of more than 2. This suggests that there is collinearity among these two variables. When VIF is too high, it is advised to remove highly correlated predictors from the model. Hence parents' time and energy were removed from regression model.

The hierarchical multiple regression had four blocks, the first of which included three control variables (level of education, marital status, and income). The second block variables related to motivational factors (role construction, self-efficacy, and parents' school valance) were added. The third block variables related to parents' perceptions of invitations to be involved (general school invitations, general teacher invitations, and specific invitations from a child) were added. The fourth block variables related to parents' perceived life context (parents' understanding of their own skills and knowledge, and parents' perceptions of time and energy) were added. The descriptive, correlational, and regression analyses were conducted through Statistical Package for the Social Sciences (SPSS) version 28.0 (IBM, 2021).

FINDINGS

Concerning the first analysis step, the descriptive statistics of the study variables are presented in Table 1, and Spearman and Pearson correlations are presented in Table 1. All correlations among the included study variables were observed to be significant. Analysis revealed a strong positive correlation between home involvement as an outcome variable and all eight independent variables (see table 1).

Table 1: Correlations, Means, Standard Deviations, and Cronbach's alphas of all Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Parents' Gender															
Employment status	.01														
Parents' Education Level	-.04	-.22***													
Parents' Marital status	.02	.04	.01												
Number of children	-.00	-.01	-.03	-.26***											
Parents' Income	-.01	-.21***	.24	-.11***	.04										
Home involvement	-.03	.01	.10***	-.165***	-.03	.14***									
Parents' school valence	.01	.03	-.02	.02	.03	-.05	.15***								
Parents' sense of efficacy	.01	-.03	.03	-.04	-.06	.09**	.21***	.23***							
Parents' Role construction	-.01	.03	.06*	-.12***	-.07*	.14***	.31***	.16***	.21***						
School invitation	.00	-.01	-.05	-.07*	-.06	.04	.34***	.30***	.30***	.23***					
Teachers' invitation	-.01	-.10***	-.01	.04	-.06	-.03	.21***	.08**	.12***	.12***	.32***				
Child Invitation	-.03	.02	-.02	-.05	-.02	.02	.53***	.09***	.18***	.29***	.40***	.38***			
Parents' Knowledge and skills	-.03	-.03	-.02	-.13***	.02	.15***	.50***	.23***	.33***	.49***	.34***	.17***	.34***		
Parents Energy and Resources	.02	.01	.06*	-.06	-.01	.15**	.40***	.25***	.32***	.48***	.37***	.15***	.31***	.70***	
M	1.48	4.24	1.53	1.77	2.80	1.69	5.04	5.80	5.04	5.33	5.13	3.26	4.29	5.24	5.36
SD	0.50	1.40	0.97	1.39	1.38	1.16	1.02	0.48	1.18	0.62	0.76	1.55	1.38	0.78	0.73
Cronbach's alpha							.69	.76	.63	.80	.66	.86	.82	.79	.68

Note. * $p < .05$ ** $p < .01$ *** $p < .001$. Spearman non-parametric correlations were calculated between parent's characteristics and other variables; Pearson correlations were calculated between all other variable

Predictors of parents' home-based Involvement

The regression analysis model showed that all four blocks of the variables were significant by $p < .001$). The three control variables in block one contributed 4.3% of the total variance in the model, with F (3, 1067) = 16.04, $p < .001$. The variables in the second model contributed 11.5% to the variance explained by parental home involvement (Fchange (3, 1064) 48.61, $p < .001$). The variables in the third block contributed 25.8% of the total variance in the model and explained parental home involvement by F (3, 1061) = 120.88, $p < .001$. Parents understanding of their own knowledge in the fourth block added 4.2% of the variance in the model. The regression analysis showed that among the first three control variables in the first block, parents' level of education and marital status were strongly related to parental home involvement (see Table 2).

The final regression model (see Table 2) showed that parents' perception of school invitation, parents' perception of teacher invitation, parents' perception of child invitation, and parents' understanding of their own skills and knowledge were the main predictors of parental home involvement. Furthermore, parent role construction showed a mild prediction of home involvement while parents school valence did not predict parental home involvement at all (see Table 2).

Table 2. Predictors of parents' home-based Involvement

		B	*Std. Error*	*Beta*	*Tolerance*	*VIF*
1	(Constant)	5.00***	.08			
	Education	.11***	.03	.10***	.910	1.099
	Marital status	.11***	.02	.15***	.988	1.012
	Income	.04	.03	.05	.904	1.107
2	(Constant)	.95*	.41			
	Education	.09**	.03	.09**	.907	1.102
	Marital status	-.09***	.02	-.13***	.976	1.024
	Income	.02	.03	.02	.895	1.117
	Parents' valence	.21***	.06	.10***	.920	1.087
	Role construction	.44***	.05	.26***	.931	1.074
	Parents' efficacy	.10***	.03	.11***	.897	1.115
3	(Constant)	.55	.36			
	Education	.09***	.03	.09***	.906	1.103
	Marital status	-.09***	.02	-.13***	.964	1.037
	Income	.03	.02	.03	.892	1.121
	Parent valence	.11*	.06	.05*	.859	1.164
	Role construction	.27***	.04	.16***	.887	1.127
	Parents efficacy	.027	.023	.031	.857	1.167
	School invitation	.18***	.04	.13***	.713	1.403
	Teachers' invitation	.05**	.018	.08**	.801	1.248
	Child Invitation	.285***	.021	.385***	.734	1.362
4	(Constant)	.43	.34			
	Education	.11***	.03	.10***	.903	1.107
	Marital status	-.07***	.02	-.10***	.948	1.055
	Income	.00	.02	.00	.880	1.136
	Parents' valence	.03	.05	.01	.840	1.191
	Role construction	.11*	.04	.06*	.760	1.316
	Parents' efficacy	-.01	.02	-.01	.825	1.212
	School invitation	.14***	.04	.11***	.707	1.414
	Teachers invitation	.05**	.02	.08**	.801	1.248
	Child Invitation	.25***	.02	.34***	.713	1.403
	Knowledge and skills	.36***	.04	.27***	.635	1.534

Note. * $p < .05$; ** $p < .01$; *** $p < .001$. *B* = Regression coefficient; *Beta* = Standardised regression coefficient

DISCUSSION

The primary purpose of this research study was to investigate the predictors of parental home-based involvement in low-income households living in rural Tanzania. Parents' reports, level of education, marriage conditions, general school invitations, invitations from teachers, and specific child-initiated invitations were identified as the most influential factors predicting parental involvement at home. Conversely, personal motivators and role constructions displayed relatively low predictive

power. At the same time, parents' sense of efficacy and valence towards school (based on their school experience) did not predict home involvement.

This study's findings are fascinating and insightful, showing the predictive power of schools, teachers, and child invitations in parental home involvement since these variables are usually connected to school involvement. These results are consistent with Deslandes and Bertrand (2005), who also observed that teachers and children's invitations played a role in promoting home involvement. Parents' opinions of their child's invitations were the main predictor of parental participation at home across all three grade levels. Both teachers and children's invitations played a role in encouraging home involvement. They concluded that when children personally invited their parents, they were more likely to regard their participation as desired and anticipated. As a result, parents felt obligated to be involved.

The findings revealed that parents' sense of self-efficacy and valence towards school did not predict parents' home involvement at all. Role construction was significant in some way, albeit not to the same extent as general invitations from schools, teachers, or a specific invitation from a child. Several studies, such as Walker et al. (2011) and Green et al. (2007) confirmed the prediction power of parents' perceptions of the invitation to involvement from teachers and their child. This result contrasts the findings of Kigobe et al. (2018), who, despite discovering that parents in Tanzania are more involved in home-based involvement activities, parents' sense of self-efficacy was the most significant predictor of parents' home involvement.

Based on the above findings, it is essential to acknowledge the role of schools and teachers in promoting parents' sense of efficacy and helping parents redefine their roles in children's education. Hoover-Dempsey and Sandler (1995) affirmed that when parents have a strong sense of role formation and self-efficacy, they are more likely to be involved in their children's activities, regardless of the number of competing demands. However, this might only sometimes be the case for low-income and less-educated families, who are constantly struggling and work for many hours to sustain their families. The difficulties that come along with living in poverty are the reason for the low levels of parent involvement in school-based activities. Poverty might be why low-income parents feel more

comfortable to engage their children's education at home, at their convenience, when asked by schools, teachers, or even by their children.

Walker et al. (2011) explained that parents may be more convinced to be involved at home because opportunities for home-based involvement may appear any day and any time. Home involvement differs from school-based involvement, whose opportunities are generally limited to hours and events made available by the school. Fixed school involvement might be unfeasible for some parents because disadvantaged low-income parents are more likely to require consistent satisfaction of their essential needs before making decisions about their involvement (Hoover-Dempsey & Sandler, 1995).

The findings of this study showed that parents' level of education was a strong predictor of parents' home involvement even after the addition of parents' personal motivator variables, invitation variables, and life contextual variables in the model. In this study, most parents had a lower level of education, and their role construction and sense of self-efficacy were considerably lower. Kigobe et al. (2018) emphasized that for effective parental involvement in a child's education, teachers and schools should recognize the home as the primary starting point.

Findings showed that parents' marriage condition strongly predicted home involvement, indicating that non-married parents were more involved at home than married parents. With the active involvement of single parents, one might argue that they have more direct responsibility for their children's daily activities. The absence of co-parenting might allow some parents to make educational decisions independently, leading to a higher level of direct involvement in their child's educational journey. Also, single-parent households may experience a close parent-child bond due to the nature of shared experiences and responsibilities. A close parent-child relationship can facilitate open communication and involvement in educational matters. However, the degree of parental involvement in a child's education can vary widely, and many factors influence it. Thus, it is essential to recognize the diversity of family structures and avoid generalizations. Some studies have reported that single parenting hurts a child's academic performance (Cheung & Park, 2016). Hence, encouraging and supporting involvement from all parents, regardless of marital status, is critical to fostering a positive educational experience for children.

CONTRIBUTION OF THE STUDY AND LIMITATIONS

The study's primary contribution to knowledge lies in its focused evaluation of home as a distinct component of parental involvement in children's education. Treating home and school involvement as separate components adds depth and nuance to our understanding of parental involvement in the educational process. The recognition of home involvement as a separate aspect implies that interventions and strategies can be tailored towards addressing specific needs and challenges associated with it. This targeted approach can lead to more effective and relevant initiatives aimed at enhancing the overall quality of parental involvement in a child's education. Previous studies (Anderson & Minke, 2007; Green et al, 2007; Kigobe et al., 2018; Walker et al, 2011) have already stressed the importance of recognizing and studying parental involvement in education as a multifaceted concept. By specifically addressing home involvement as a unique dimension, this study contributes to this existing body of knowledge.

The study's focus is on families with low incomes in rural areas of Tanzania. This targeted approach not only addresses the specific needs of a particular demographic but also aligns with the context of Tanzania. Given that a large portion of Tanzanian primary school children come from low-income households, the study's focus aligns with the socio-economic reality of the country. Understanding the factors that inspire family involvement in education becomes particularly relevant in this context, and thereby contribute to the development of evidence-based strategies and interventions that are tailored to the specific needs of low-income families not only in Tanzania but also to other developing countries.

The adoption of the Hoover-Dempsey model as a framework for defining fundamental aspects of parental involvement practices in low-income families adds theoretical rigor to the study. This model is well-established and provides a structured way to analyze and understand parental involvement. The use of such a model enhances the study's conceptual framework and contributes to the overall understanding of the research phenomena.

Although the study has theoretical and practical advantages, it has some limitations. Relying solely on self-reported data through a questionnaire survey led the possibility of social desirability bias. Parents may respond

in ways they perceive as socially acceptable or expected, potentially leading to an inaccurate portrayal of their actual behaviours and attitudes. Moreover, while using questionnaire survey is valuable for collecting large amounts of data efficiently, it may not provide a deep understanding of the nuances involved in parental involvement. Observation can offer a more in-depth perspective of home-based parental involvement including non-verbal cues, environmental factors, and the dynamic nature of family interactions.

Given these limitations, future research endeavours in this area could benefit from a mixed-methods approach. Combining questionnaire surveys with observational methods and potentially qualitative interviews can offer a more comprehensive understanding of home-based parental participation. This approach would allow researchers to triangulate data from different sources, enhancing the overall validity and reliability of the study.

CONCLUSION AND RECOMMENDATIONS

This study's findings contribute valuable insights into the factors influencing home-based parental involvement in rural Tanzania, offering practical considerations for educators, policymakers, and community stakeholders involved in enhancing parental engagement in the educational process.

Policymakers can advocate for policies that support inclusive practices in education, ensuring that all parents, regardless of educational background, feel valued and included in their child's education at school and at home. This may involve guidelines for effective communication and outreach strategies. Moreover, policymakers can allocate resources and invest in programs that specifically target parental involvement at home, recognising it as a key component of a child's overall educational experience.

Schools and teachers can adopt tailored communication strategies to reach out to parents effectively. This includes clear and personalized invitations to engage parents in various aspects of their child's education, training and workshops: Offering training sessions and workshops for both teachers and parents can address the perceived knowledge and skills gap on home involvement by providing practical tips, resources, and guidance on how parents can support their child's learning at home.

The conclusion drawn from the findings emphasizes the proactive role of schools and teachers in promoting parental involvement beyond school boundaries. The identified responsibility calls for intentional and strategic efforts to empower parents, recognize diverse backgrounds, and foster a collaborative partnership that extends the learning experience into the home environment. Schools and teachers should implement specific initiatives designed to enhance parents' effectiveness at home. These initiatives could include workshops, informational sessions, and resources aimed at equipping parents with the knowledge and skills to actively engage in their child's learning outside of the school environment.

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Science Subject Choices among Secondary School Students in Ilala-Dar es salaam: The Influence of School-Based Social and Personal Guidance

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Abstract
This study examined the influence of School-based Social and Personal Guidance (SBSPG) provided in schools on science subjects' choices among students. Three categories of respondents were involved, including 389 secondary school students, 82 science teachers, and 10 teacher counsellors who were subjected to a Self-Report Questionnaire (SQR), a Focus Group Discussion (FGD) and a Semi-Structured interview. A Binary Logistic Regression Model was employed to analyse quantitative data collected through SRQ, while thematic analysis was applied for FGD and interview data. The findings indicated that SBSPG was found to have significant positive influence on students' science subjects' choices for both male and females with odds ratio (OR) 2.04 (p=0.004) for males and 1.70 (p=0.005) for females. Therefore, the study recommends that the Ministry of Education Science and Technology to strengthen the efforts to ensure that comprehensive SBSPG fully provided in secondary schools. This could add up the ongoing efforts to bridge the existing gender gap in Science, Technology, Engineering, and Mathematics (STEM) in Tanzania for sustainable development.

Keywords: *School-based social and personal guidance, subject choices, science subjects, secondary school students*

INTRODUCTION

Choosing subjects is one of the most significant decisions and yet a challenging task since it signifies a person's profession in the future. It involves a series of self-assessments, acquiring knowledge about the world of work, and being aware of the connection between the subjects under study and the future career of interest (Singh & Jagdev, 2018). It

involves a series of self-assessment, acquiring knowledge about the world of work and being aware of the connection between subjects under the study and the future career of interest (Singh & Jagdev, 2018). It is at this point that making a connection becomes a challenge for most youth, especially those with little career information and limited access to career guidance (Braza & Jr., 2015). One may wish to become a medical doctor in the future; unfortunately, you may find such a person taking subjects that cannot lead him or her to become one Cases of this nature have been observed in most students in secondary schools where their career interest mismatch with subjects they take in school (Tesha, 2020). As theorized by Frank Parson (1990), career decision should not be made unless one has successfully gained self-understanding, knows what the labour market requires, and, lastly makes an objective and logical judgement of the two (self-understanding and the requirements of the labour market). Therefore, one needs appropriate guidance to choose subjects that definitely project future careers of interest. This is where career guidance has become vital in secondary schools to assist students not only in choosing subjects but also in achieving their social, personal, and educational goals (Zafar, 2019).

In Tanzania, students normally choose subjects of specialization as they transit from form two to form three at the secondary education level. The National Education and Training Policy of 2014 clearly stipulates that career guidance and counselling services should help students to select wisely the relevant subjects for their future and observe the importance of such subjects to themselves and national development (MoEST, 2014). Likewise, Tesha (2020) asserted that students should be assisted in making an informed decision during subjects' selection, as this is a very important stage of their career trajectory. Failure to make a wise subjects' choice may lead to job dissatisfaction and poor performance in the future (Hipkins & Vaughan, 2020; Rukewe & Oats, 2020). This is because, subjects that students take at secondary level determines not only programs to be taken at the college and university levels but also their future careers. Therefore, if the choice was not informed and wise enough, there is a high likelihood of incongruence between the individual's personality characteristics and the requirements of the particular job or career. Hence, SBSPG services are vital to students, especially when they are at the stage of making decisions that affect their career trajectory, society, and their lives in general.

The movement to encourage students to learn science is not only a national concern but also the worldwide agenda. International policies and research such as the Sustainable Development Goals 2015-2030, insist on investing more efforts in scientific fields for sustainable development. This is clearly observed in goals 6, 7 and 9 which focus on clean water and sanitation, clean energy, industry, innovation, and infrastructure. However, the implementation and achievement of these goals may be a challenge if countries do not have enough human resources in the scientific fields. Again, the World Economic Forum (WEF) report 2022 shows a great need to encourage more girls and boys to participate in science since the representation in these fields is still questionable. For example, taking into account graduate from all fields in 2020/2021, the percentage of male and female graduate in Information and Communication Technologies (ICT) was 8.2 and 1.7 respectively, while in engineering and manufacturing, men were 24.6 and women were 6.6 percent (WEF, 2022). These two documents provide a big picture of the importance of encouraging students to learn science, and in the context of this study; SBSPG services may serve the intended purpose. In the same vein, various studies conducted worldwide show the importance of motivating students to learn science. For example, the report by Archer et al. (2020) in London concluded that participation in STEM (Science, Technology, Engineering and Mathematics) is widely recognized as highly important for national economic competitiveness, upward social mobility, and active citizenship. This is in line with the studies by Hafkin (2016); Huyer (2018); and Toolo (2018) in Sub-Saharan African Countries, who maintained on the need to close the gender gap in science subjects to achieve a greater representation of boys and girls in STEM careers and occupations.

In Tanzania as well, various initiatives undertaken to ensure that student learn science. The Tanzania National Five-Year Development Plan (2021/2022-2025/2026) recognizes the importance of science, technology and innovation to ensure that the country is not lagging behind in the current competitive market. The document evidently stated on the need to attract more students to learn science by improving science learning infrastructure in secondary schools such as providing ICT teaching and learning tools and supplying science laboratory equipment (Ministry of Finance, 2021). Again, the Education and Training Policy (2014) also put an emphasis on science and technology education where one of its

objectives is to have adequate number of citizens educated in science and technology to meet the national development needs. This goes hand in hand with the National development vision (2025) which emphasises on the restructuring of education system to foster creativity and problem solving skills (Ministry of Finance, 2000). In the 2022/2023 academic year, Dr Samia Suluhu Hasan, the president of the Republic of Tanzania also provided scholarship to students who performed well in the form six national examinations 2021/2022 in science combinations: PCB, PCM, PGM, CBG, PMC and CBN to join University's science programs. This is a very important effort to ensure that more students are motivated to learn science to achieve the national agenda by having enough human resources with science, technology, and innovation skills.

Despite the government's efforts to encourage students learn science, various studies also have been conducted in the area (Kinyota, 2020; Mabula, 2012; Mwenga, 2015) focusing on the role of science teaching and learning environment. Specifically, Mabula (2012) and Mwenga (2015) insisted on teacher-students interaction and student approach in teaching and learning science while Kinyota (2020) put emphasis on the full engagement of students in scientific inquiring to improve students' interest to learn science. Mkimbili (2018) as well emphasized on the realization of learner-centred approach in community secondary schools in Tanzania as a means to improve teaching and learning of science subjects. However, most of the efforts focused on improving teaching and learning of science subjects' environment. The gap of students taking science against those in arts and other subjects still exist and calls for extended efforts to attract more students to learn science (Mwenga, 2015).

The Influence of SBSPG on Students' Science Subjects Choices

Choosing subjects is not an easy task for many youths as stated earlier. Students need to be well guided in the whole process so that, their decisions reflect their career interests in the future. Ntawigaya (2021) reports that among 135 students involved in the study, 60 percent of them were not aware of the subject combination they were studying and not comfortable with what they were studying. This indicates that, there is a danger to let students decide what subjects to take and wait until things become confusing to them. Therefore, the need to strengthen career guidance services in schools cannot be denied due to its important roles to support teaching and learning as well as assist students to make

appropriate decisions (Harry & Hafidhuddin, 2020; Zafar, 2019). Correspondingly, Amani and Sima (2015) proposed increasing access to career guidance and counselling in schools and higher learning institutions to assist students in various areas including self-awareness and career decision making. This is because there is no doubt that when students are well guided and adequately informed, the likelihood of having great self-awareness will be high to the extent that, in one way or another, facilitates decision-making. This is also revealed by Tesha (2020) thus, career guidance in schools help students to identify their career aspirations and understand career opportunities available in relation to their subjects' choices. Hence, the intention of this study to examine the influence of SBSPG in science subjects' choice remains valid.

This study was guided by one key question namely: What is the influence of School Based Social and Personal Guidance (SBSPG) on science subjects' choices among secondary school students? However, the key question was supplemented by a sub-question on the practice of subjects' choices in secondary schools.

METHODOLOGY

This study was conducted in ten (10) public and private secondary schools in Ilala municipality, Dar es Salaam. It was important to conduct this study in Dar es Salaam because Dar es Salaam has high enrolment rate in Tanzania mainland compared to other regions. In 2019/2020 academic year the Dar es Salaam region had a total of 231,612 students enrolled in both public and private secondary schools (MoEST, 2020). Consistently, Ilala led all other municipalities in the city, where the enrolment rate in 2020 was 79,265 while Kigamboni was 12,712; Kinondoni 40,776; Temeke 60,166; and Ubungo 38,693. Therefore, Ilala MC had a wide chance of being selected for this study. Three categories of participants were involved, including form three and four students, science teachers, and teacher counsellors from ten (10) public and private secondary schools. The selection of form four and three students was based on the fact that at this level, students had already selected their subject streams, and therefore, they were in a good position to reveal about their science subjects' choices with reference to the SBSPG provided. Science teachers and teacher counsellors were involved bec use

of their responsibilities in teaching and guiding students to achieve their academic goals and handle life challenges in general.

Yamane (1967) formula: $n = N/1 + N (e)2$ was applied to determine sample size of the students since their population was already known by the researcher (Singh & Masuku, 2014). Thereafter, stratified sampling techniques were employed to obtain various strata based on class level (form four and form three) and gender (male and female) students. After the formulation of these strata, a simple random sampling technique was performed in which pieces of paper labeled numbers one and two were randomly distributed for inclusion and exclusion criteria. Hence, those who picked number one were included, while those with number two were excluded. The stratified sampling technique enabled the researcher to study differences that existed between various subgroups of the population (Ary et al., 2010). Criterion-purposive sampling was employed to select schools, science teachers, and teacher counsellors whose enrollment rate was the criteria for schools. While teaching and guidance responsibilities were the criteria used to select science teachers and teacher counsellors, respectively.

A Mixed methods research approach employed a guided data collection process, analysis, interpretation, discussion, and reporting of the findings. The ultimate purpose of adopting a mixed-methods approach is based on the fact that the key variables – the subjects' choices and SBSPG – cannot be well investigated by a single approach. Therefore, blending the quantitative and qualitative approaches provided an opportunity for breadth and in-depth investigation of the phenomenon under study. In terms of the quantitative aspect, ex-post facto design was employed to investigate the existing cause-and-effect relationship as proposed by Ary et al. (2010). This is because the students who were the key participants of the study had already chosen their subjects; therefore, it was important to investigate the existing influence of SBSPG in their subjects' selection. On the other hand, a multiple-case study design was employed to collect in-depth qualitative data from students who were also subjected to FGD, science teachers, and teacher counsellors on the same research question. Yin (2014) argues that a multiple-case study design is an empirical inquiry that investigates a contemporary phenomenon within its real-life context in which multiple sources of evidence are used. Therefore, the choice of this design allowed the researcher to explore the experiences,

perceptions, and opinions of teachers and teacher counsellors on students' science subject choices in relation to the SBSPG provided. Table 1 presents the sample size of the study.

Table 1: Selected Sample for the Study

Schools involved		**S.A**	**S.B**	**S.C**	**S.D**	**S.E**	**S.F**	**S.G**	**S.H**	**S.I**	**S.J**	**Total**
Students	**Form IV**	18	20	18	16	20	20	20	18	13	20	183
	Form III	20	20	22	24	20	20	20	20	20	20	206
Science teachers		6	7	8	6	8	8	9	10	10	10	82
Teacher counselors		1	1	1	1	1	1	1	1	1	1	10
Total		**45**	**48**	**49**	**47**	**49**	**49**	**50**	**49**	**44**	**51**	**481**

Source: Field data (2022)

Data Collection Instruments

In the process of data collection, Self-Report Questionnaire (SRQ) was used to collect quantitative data, while semi-structured interviews and Focus Group Discussion (FGD**)** guides were employed to collect qualitative data. Thus, SRQ was designed for students who were also involved in the FGD. Again, teacher counsellors participated in the semi-structured interviews while science teachers were involved in the FGD. The SRQ consisted of thirty (30) items with five-point scales ranging from 1 (Strongly disagree) to 5 (Strongly agree. However, before administering the questionnaire, item and reliability analysis were performed to evaluate the quality of the questionnaire, and the results are as presented in Table 2:

Table 2: Results of Item and reliability Analysis of School-Based Social and Personal Guidance Measurement

Item	Sign	Item-rest correlation	alpha
sece_1	+	0.566	0.9583
sece_2	+	0.719	0.9571
sece_3	+	0.715	0.9571
sece_4	+	0.5165	0.9587
sece_5	+	0.3954	0.9596
sece_6	+	0.4424	0.9592
sece_7	+	0.3835	0.9597
sece_8	+	0.7622	0.9568
sece_9	+	0.5293	0.9586
sece_10	+	0.4743	0.959
sece_11	+	0.5062	0.9587
sece_12	+	0.4517	0.9591
sece_13	+	0.4428	0.9592
sece_14	+	0.7477	0.9569
sece_15	+	0.5914	0.9581
sece_16	+	0.7596	0.9568
sece_17	+	0.8078	0.9564
sece_18	+	0.7576	0.9568
sece_19	+	0.7964	0.9565
sece_20	+	0.7873	0.9566
sece_21	+	0.8155	0.9563
sece_22	+	0.7791	0.9566
sece_23	+	0.8065	0.9564
sece_24	+	0.7571	0.9568
sece_25	+	0.737	0.957
sece_26	+	0.6664	0.9575
sece_27	+	0.7025	0.9572
sece_28	+	0.6561	0.9576
sece_29	+	0.7467	0.9569
sece_30	+	0.6415	0.9577
Test scale			**0.959**

Table 2 shows the results of the item and reliability analysis of the school-based social and personal guidance (SBSPG) measurement scale. The analysis was conducted to assess the psychometric properties of the scale, including the item-rest correlation and the internal consistency of the scales. The results showed that all 30 items of the SBSPG cale had a positive item-rest correlation, ranging from 0.3954 to 0.8155, which was

greater than the cutoff of 0.3. This indicated that all items measured the same underlying construct, which is SBSPG. Higher correlation indicates that the items strongly correlated with overall scale score. Besides, the results showed that the alpha coefficients measure of the internal consistency of the scale was high (0.959). This suggests that the scale was reliable and consistent in measuring the SBSPG construct. Generally, a coefficient alpha between 0.6 to 0.7 is considered acceptable for research purposes, while a coefficient of 0.8 or higher is considered good in practice. On the other hand, semi-structured interview and FGD guides, and expert reviews were conducted to ensure that the questions were relevant and reflected the content intended to be measured. Thereafter, the SRQs were given to form three and form four students, and the response rate was about 95 percent. Eight (8) semi-structured interviews and seven FGDs were conducted in the selected secondary schools with the help of the assistant researcher.

Data Analysis Procedure

Quantitative data were analysed through both descriptive and inferential statistics with the help of Statistical Package for Social Sciences (SPSS IBM) version 25. Specifically, frequencies and percentages were obtained through descriptive statistics while a Binary Logistic regression analysis was performed to determine the influence of SBSPG on science subjects' choices. In the case of qualitative data collected through FGD and Semi-structured interviews, thematic analysis was used, in which the six stages suggested by Braun and Clarke (2006) were adhered to. Thus, data were familiarized by the researcher familiarised himself with the data, followed by transcription and translations since FGD and interviews were conducted in Swahili. Thereafter, initial codes were generated, followed by defining and naming the themes and sub-themes.

FINDINGS

This section presents qualitative and quantitative findings regarding the specific research questions on the influence of SBSPG on science subjects' choices among secondary school students.

Subject Choices in Secondary Schools

To get insight on the influence of SBSPG on science subjects' choices, it was thought important to determine the existing practices of which secondary school students used to select subjects as they transit from form

two to form three. The researcher asked a key question that was anchored by follow-up questions in the FGD with teachers and semi structured interview with teacher counsellors. The key question asked was: what is the practice of subjects' choices in your school? With this question, the researcher wanted to understand what teachers consider by the time students choose subjects. Among 82 science teachers involved in the FGD 75(91.46%) had the opinion that academic performance was considered the most in placing students in either science, arts or other subjects' streams existed in a particular school. Others said on students' interest, family influences and peer pressure. Table 3 presents the summary of the data collected through FGD with science teachers and few examples of their responses.

Table 3: What Teachers Consider to Guide Students in Subjects' Choices

Theme	Sub-theme	FGD-Responses (Examples)	Frequency
Academic performance	Form two national results	In most cases, we consider students results from form two national examination. Those who score many A's in science subjects we advise them to go to science class while others go to either arts or business subjects	35
	Annual examination results	We normally assess individual students' results from annual examinations. What we do here is that, those in top ten are actually placed in science classes while others are advised to go for arts and other subjects' areas.	30
	Midterm examination results	Sometimes, midterm tests and examinations results are used as the base to advice students on what subjects to choose. This is because, a student may underperform in the final exams but when you track his or her continuous assessment; you find that, the progresses in particular subjects are not bad.	10
Interest	Class-attendance Good marks	Some students clearly show interest in certain subjects. For example, we have those who frequently attend classes, they never miss classes for subjects they like and they actually have good scores in those subjects. Others may tell you that I like biology and chemistry or English and geography; therefore, in this kind of situation, we just follow what student is interested.	5
Family influence	Parents relatives	Family members such as parents and relatives sometimes influence students to choose certain subjects. I have witnessed this in our school where some students take let say science or arts just because their parents said so.	4
Peer pressure	Friends Class mates	Some of our students have friends whom they trust so much. Therefore, when it comes to subjects' choices, they sometimes follow what their friends have chosen. We have such students here whom they are in either science or arts because of being pressured by their friends and peers	3

Source: Field Data November (2022)

Similarly, during interview with teacher counsellors, academic performance was mentioned as the most factor considered to guide students in subjects' choices. For example, one teacher counsellor from school D had this to say:

> *Normally, we track students' academic performance in various examinations specially form two national examination results. Because these results are the ones that give us the clear picture of students' academic ability. However, sometimes you may find students scored excellent but he or she may refuse to take those subjects. I had one student in the session last year where he had good A's in science subjects but he chooses to go for business class where he was interested.* (School D-FGD conducted in November 2022)

Correspondingly, another teacher counsellor from School B said:

> *I have been teaching in secondary schools for more than ten years now and seen that academic performance determines what students should choose. For example, if it happens that a student has A's in both science and arts subjects, we advise him or her to take science because most of our students get low marks in science especially mathematics. Therefore, when we find such student, we never miss the chance to have him or her in science classes. (School B-FGD conducted in November 2022)*

Apart from academic performance in various examinations taken by students, some of teacher counsellors involved in the interview also reported on students' interest, family influence, and peer pressure. For instance, one teacher counsellor from School H narrated that:

> *Students' interest matters a lot during subjects' selection. Besides examinations' results of a particular student, we check whether that student is interested in such subjects or not. This is very important because, if he or she does not have interest in let say mathematics, it will be difficult to him or her to do better in science. Therefore, to me interest is a good guide for subjects' selection.* (School H-FGD conducted in November 2022)

Again, another teacher counsellor from school A added that:

> *Our students are sometimes told by their parents or relatives to choose certain subjects because of plans they have for them. For example, most of our students come from families involved in entrepreneurship activities. Therefore, they also want their children to be involved in those activities that are why they tell them to choose commerce and bookkeeping, which are business kind of subjects.* (School A-FGD conducted in November 2022)

The Influence of School Based-Social and Personal Guidance on Students' Choices in Science Subjects across Gender

In this aspect, the researchers wanted to find out the extent to which SBSPG influence students to choose science subjects. Self-report Questionnaires (SRQ) and FGD were employed to collect quantitative and qualitative data from students. The quantitative results are presented in Table 4.

Table 4: The Influence of School-Based Social and Personal Guidance (SBSPG) on Students' Choice in Science Subjects Across Gender

	Males			Females		
Variables	**OR**	**SE**	**P-Value**	**OR**	**SE**	**P-Value**
SBSPG Score	2.03567	0.5007	0.004	1.7007	0.3222	0.005
Age	0.7644	0.5055	0.685	0.3136	0.2872	0.205
Ownership						
Public	Reference			Reference		
Private	0.0005	0.0014	0.007	0.0007	0.0020	0.01
Class Level						
Form Three	Reference			Reference		
Form Four	0.3429	0.6564	0.576	1.5087	3.2903	0.85

Source: Field Data November-February, (2022**)** Notes**:** OR-odds ratio, SE-standard error.

Table 4 presents the results of the Binary logistic regression model on the influence of school-based social and personal guidance (SBSPG) on students' choices in science subjects across genders. The analysis was performed on the aspects of age, school ownership, and class level of the students. For males, the SBSPG score had a statistically significant positive influence on their science subjects' choices, with anratio (OR) of 2.04 (p=0.004). In contrast, for females, the SBSPG score had a significantly positive but weaker effect as compared to males with an OR of 1.70 (p=0.005). Regarding school ownership, attending private school had a significantly negative effect on students' choice of the science subjects for both males and females, with ORs of 0.0005 and 0.0007, respectively (both $p<0.001$). Besides, age and class level had no significant effect on students' choice of science subjects. Overall, the results suggest that School-based Social and Personal Guidance can play an important role in promoting students' choice of science subjects, regardless of gender.

On the other hand, the FGD results from students' choices of science subjects indicated that about 86 percent of females compared to 68 percent of males reported their choice of science subjects to be highly influenced by SBSPG provided by their teacher counsellors. This is in contrary to data from questionnaire where the effect of SBSPG found to be higher to males than to females. For example, during FGD one female student from School B said that:

> *When I was in form one, I did not have a plan to take science, but because our teacher counsellor used to insist on the importance of science in the future employment market, it was so easy for me to choose science* (School D-FGD conducted in November, 2022)

Similarly, another female student from School A added that:

> *For sure, if it could not be my teachers' guidance and advice, I could not take science because, at first, I thought science subjects are very difficult as others used to say. However, since in many occasions our teachers encouraged us not to be afraid of science, it motivated me a lot and I chose science. I really enjoy doing calculations in math and physics* (School A-FGD conducted in November 2022)

DISCUSSION

This study examined the influence of School-based Social and Personal Guidance (SBSPG) on science subjects' choices among students in secondary schools. One key research question and a sub-question were addressed regarding the existing practice of subjects' choices and the influence of SBSPG on science subjects' choices in secondary schools. In the case of subjects' choices, the findings indicated that academic performance, students' interest, family influence, and peer pressure are the factors considered by teachers to guide students during subjects' choices. However, academic performance represented almost 91 percent of the science teachers involved in the FGD. This implies that in order for a student to take certain subjects, he or she must have good marks in those subjects. This is determined either in the form of two national examination results, annual examination results, or midterm tests. These findings contradict other researchers' arguments in developed countries on the aspects that teachers observe in guiding students' subjects' choices. For example, Archer et al. (2020) in England found that students' confidence and interest in certain subject areas predict their choices. This is also observed in New Zealand by Hipkins and Vaughan (2020) who argue that academic achievement is not the only basis for students to

choose STEM subjects; however, other factors such as career intention and students' interests are very much regarded by career counsellors in New Zealand. This is to say that subjects' choice is not a straightforward procedure; one needs to assess various aspects for the decision to be meaningful. As confirmed by Njeri (2020) in Kenya, academic performance, availability of resources such as science laboratory equipment, and family influence were considered reasons for students to choose science subjects. However, career development scholars hold the opinion that an individual's personality characteristics and future career plans are very important to look upon to assist students in making appropriate career decisions (Lent & Brown, 2019; Leung, 2008). The reason for this argument could be the fact that one might have good A's in certain subjects, but he or she may not have the plan to pursue a career in such an area.

On the other hand, SBSPG was found to have positive influence on science subjects' choices among male and female students. However, the effect reported was higher for males than females. The reason for this may be due to the number of students who received SBSPG services. Before administering the questionnaires, the researchers first determined the number of students who received SBSPG and found that among the 40 students who filled out the questionnaire at each school, 65 percent of the male students received SBSPG while females received only 35 percent. However, during FGD the magnitude of the SBSPG effect changed, and the effect was found to be higher for female students compared to their male counterparts. These findings indicate that the provision of SBSPG plays an important role in subjects' choices. This is in line with Dela Fuente (2019) in the Philippine who argued that teachers' guidance had an influence on students' science subject choices. In South Korea as well, Shin et al. (2017) documented that formal career motivation and guidance had a significant positive influence on students' decision-making and science learning. This is also true in Kenya, where Njeri (2020) advocated that 66 percent of the students involved in the study declared career guidance useful during subjects' choices, while 34 percent observed career guidance as not useful. Thus, based on the findings of this study and those from previous studies, it can be argued that guidance and support are very important by the time a student is in the process of making an important decision that has long-lasting effects. Choosing subjects is an essential decision, and students need close

support throughout the process since many of them may lack insight into what to choose for their future career plans. Therefore, in these kinds of situations, schools have no choice but to ensure that comprehensive SBSPG is well provided to students to increase the number of science subjects' choices by considering not only their academic performance but also their interests and future career plans.

CONCLUSION AND RECOMMENDATIONS

This study aimed to shed light on the importance of SBSPG on science subjects' choices in secondary schools. In particular, the focus was on the existing practice of subjects' choices and the influence of SBSPG on science subjects' choices. In all 10 secondary schools visited, academic performance was reported to be a highly influential factor in guiding students to choose science, arts, or business subjects. Other aspects, such as students' interest, family influence, and peer pressure, were also presented by a few science teachers and teacher counsellors involved in FGD and semi-structured interviews, respectively. Correspondingly, students subjected to SRQ and FGD hold the same opinion that SBSPG had a significant positive influence on their science subjects' choices. However, the magnitude of SBSPG effects varied across genders (male and female). Questionnaire results showed that SBSPG had a high positive effect on male students' science subjects' choices, while the effect was weaker for females. This is contrary to the FGD data, where most of the female students involved revealed that their choices were highly influenced by the SBSPG provided to them.

Based on the findings of this study, it is recommended that academic performance should not only be regarded as a guide for students to choose subjects. Other aspects, such as interest and future career plans, may also be observed. The Ministry of Education Science and Technology has to widen its efforts to ensure that students are well provided with SBSPG in secondary schools. The belief holding this argument is that when students' doubts and negative perceptions of science subjects are well addressed, it facilitates science subjects' choices and eventually bridges the existing gender gap in STEM. Thus, another study may be undertaken to find out why male students seem to have more access to SBSPG than females. In addition, the question of how family, peers, and gender influence students' choices may be investigated since it was not the focus of this study.

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Disparities in teaching practice corrective feedback among university teaching practice assessors in Tanzania: Implications on pre-service professional practices

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Abstract
This study examines disparities in teaching practice corrective feedback among university assessors in the Tanzanian context: Implications on pre-service professional practices. A mixed-method research design was employed to bring together different strengths and non-overlapping weaknesses of quantitative and qualitative methods. The purposive sampling technique was used to get 120 undergraduate pre-service teachers from three colleges involved in the study. Questionnaire, interview and documentary reviews were used to collect data and analyzed descriptively to provide summaries in terms of numerical counts and frequencies. The study revealed that teaching practice assessors have conflicting suggestions and non-consensus in supporting pre-service teachers when dealing with similar issues. Conflicting suggestions might pose anomalies on the course of action to be undertaken by pre-service teachers who are trying to grow professionally. The study recommends the formulation of inter-institutional consensual supervisory guidelines that could inform synergy among university teaching practice assessors and supervisors.

Keywords: *Assessors, disparities, teaching practice, corrective feedback, pre-service teachers.*

INTRODUCTION

Quality education is pegged upon many factors that intersect in the whole teaching and learning process (Nilsson, 2008; Blazar, 2015). Predictors of teacher quality have classically included class size, certification, types of qualification, degree earned or years of experience (Blazar, 2015). Less studies indicate pedagogical knowledge of teachers as the quality indicator (Henning, 2000). The notable principle in the context of quality education is the pre-employment training, teaching practice (TP), which is a compulsory requirement for the award of any certificate, diploma or

degree pursued in teacher education (Fry, Ketteridge & Marshall, 2009). Teaching requires expert knowledge and specialized skills acquired and maintained through rigorous and continuing study (Etkina, 2010).

As a pre-service scheme, persons aspiring to become teachers gain the initial exposure to the classroom realities of teaching through information on contents, methods, materials, experiences, models and useful tools (Avalos, 2011; Lee, 2011). Cooperative and interactive guidance from veteran teachers ensure that pre-service teachers conform to prescribed guidelines, rules and standards of teaching profession (Tang & Chow, 2007; Grossman *et al.,* 2009; Aglehart, 2009; Kardos & Johnson, 2010; Kimani, 2014; Jansen & Merwe, 2015). Teaching practice in education is compared with the novices who go through prescribed pre-service training for would-be doctors, lawyers, engineers and pharmacists (Ogonor & Badmus,2006; Adeoye, *et al*., 2008; Kimani, 2014; Jansen & Merwe, 2015). Opportunities to practice under the supervision of an experienced teacher help to improve the quality of teaching (Cuenca, 2012). As educational architects, university lecturers, have the role of guiding and assessing pre-service teachers objectively to synchronise their understanding towards professional growth and development (Cuenca, 2012; Ngara, Ngwarai & Ngara, 2013; Ngwenya, 2015). TP assessors are expected to provide confirmative and corrective feedback in their area of expertise in order to flourish in the key curriculum dimensions of teaching (Adeoye, *et al*., 2008; Fry, Ketteridge & Marshall, 2009). Where specialists in specific subject areas are not available, instructors in other subject areas are subcontracted to serve as TP assessors under instructions of the field guidebook describing the core elements of effective teaching.

At the abstract level, the field guidebook is seen as a starter kit for thinking about effective content and pedagogical skills, presumably designed to guarantee fairness in the delivery of educational services. However, attributes of the field guidebook are open to wide and different interpretations regarding quality teaching observed in the classroom. Corrective feedback which needs to be specific, detailed and informative enough to make TP a quality tool in teacher preparation, calls for attention to areas of improvement (Hooton-Kurtoglu, 2016; Menaa *et al.*, 2016; Ngara & Ngwarai, 2013; Hooton-Kurtoglu, 2016). Despite the presence of the field guidebook describing the core elements of effective

teaching, and concerted efforts to identify characteristics correlated with teaching effectiveness, corrective feedback falls short of the ideal.

There are some hints supported by anecdotal evidence that TP assessors have conflicting suggestions and non-consensus in supporting pre-service teachers when dealing with similar issues (Ogonor & Badmus, 2006; Adeoye *et al*., 2008; Cabaroglu & Tillema, 2011; Jansen & Merwe, 2015). The lack of specificity in comments given by TP assessors reflects a gap in pre-service teachers' conviction on the course of action to undertake. The pedagogical and content knowledge dynamics in the teaching profession pose significant anomalies towards new understanding (Boikhutso, 2010; Frith, 2020; Hobson *et. al*., 2009; Pandey, 2009; Çimen & Komur, 2019; Frith, 2020; Kremer-Hayon & Tillema, 2002; Tillema, 2005; Cabaroglu & Tillema, 2011; Jansen & Merwe, 2015; McIntyre & Hobson, 2016). If the business-as-usual scenario remains in effect without mandated interventions, the anticipated quality of pre-service teachers will not be realized. This study aims at unravelling disparities in corrective feedback that pose barriers for aspiring teachers in the teaching profession.

Theoretical Framework

This study was guided by Social Constructionist Framework by Vygotsky, (1978). Vygotsky asserts that the most fruitful experience in learners' education is the collaboration with more skilled partners who provide intellectual scaffold to the less experienced learners. TP assessors and heads of educational institutions were regarded as more knowledgeable and experienced in navigating through the task of a level of difficulty with the pre-service teachers' zone of proximal development (Borich, 2007). The University of Dodoma through college of education attach pre-service teachers in various educational institutions for continuous 8-weeks liaising with heads of institutions through coordinated partnership between school personnel and instructors.

Mentoring pre-service teachers features mutual support, technical advice and classroom management tips to meet teacher-centered concerns of survival (Henning, 2000; Nilsson, 2008; Lee, 2011; Watanabe, 2013). A good teacher must among other important things, display the four elements of composure; enthusiasm, confidence, warmth, and support (Anderson, & Radencich, 2012). TP assessors as educational lodestars, need to harmonize their comments to pre-service teachers to ameliorate

the subsequent teaching (Harden & Crosby, 2000; Feiman-Nemser, 2001; Grossman *et. al.*, 2009; Kimani, 2014; Sethusha, 2014; Ngwenya, 2015; Komorowska, 2016). A frequent criticism of teacher preparation programme is the lack of adequate provision for transfer of training from university to school classrooms though field experience. Developing teaching skills appears to be less a result of practice or experience than a result of instruction and intervention (Anderson, & Radencich, 2012). If TP corrective feedbacks are confused look, pre-service teachers might be frustrated clinging to persistent teaching dilemmas (Khun-inkeeree *et. al.*, 2019).

METHODOLOGY

A mixed research approach was used to bring together the differing strengths and non-overlapping weaknesses of quantitative and qualitative methods. The principle of sequential methodological triangulation was applied where the quantitative phase preceded and led to the selection of suitable individuals for participation in the qualitative phase (Mugenda & Mugenda, 2003; Seidman, 2006; Tashakkori & Teddlie, 2009; Creswell, 2014; Mertens, 1998). The combination of two research methods followed the model of dominant-less dominant design, with dominant model being quantitative and findings from the two datasets were merged during the interpretation phase (Guest, 2012).

To ensure the transferability of the findings to other settings, purposive sampling was deemed proper for this study (Tobin & Begley, 2004; Bitsch, 2005). A sample of 120 third-year undergraduate pre-service teachers from the University of Dodoma was selected on the basis of the homogeneity of their degree programmes with educational-related studies. The university offers field placement in educational institutions after the second semester-based instructions and examinations. Eligibility criteria required students who participated in their TP during 2020/2021 and 2021/2022 academic year from three university Colleges-College of Education (55), College of Humanities and Social Sciences (39) and College of Natural and Mathematical Sciences (26) student teachers. These three groups represented the range of undergraduate pre-service teachers who participated in the TP session. As seniors, these pre-service teachers were in the position to reflect on TP supervision mechanisms. Furthermore, as finalists, were assumed to have freedom of expression of views on TP since they have no room to do again, hence, no blockage of information was anticipated.

Data collection tools

A hybrid of data collection tools was used to attain a valid description of disparities in TP corrective feedback. Data were collected from three sources; questionnaires, structured interviews and document review. Closed-ended questionnaires were relatively free from bias as they had predetermined response categories (Bordens & Abbott, 2011; Creswell, 2014). A single-item scale consisting variation or no variation statement about TP aspects was used in detecting differences in TP corrective feedback among supervisors. Interviews were conducted to ten selected TP supervisors at the College of education to produce an alternative set of findings (Brown *et. al*., 2021). Additionally, interviews were used to get feedback from a different pool of informants to cross-validate the statistical results provided through the questionnaire. Results from the documentary review were used to enhance the trustworthiness of the study from the two sets of data.

Data analysis

Quantitative data were subjected to numerical counts and percentages to provide simple summaries. Frequencies and percentages of the respondents according to disparity variables were computed. Subsequently, the analysis yielded disparities in PT corrective feedback differentials concerning categorical variables of variation or non-variation responses.

In addition to the key quantitative variables described and analyzed, TP assessors were interviewed about opinions in relation to disparities in TP corrective feedback among supervisors. Because qualitative research is labour-intensive, a small sample of 10 participants was invited for structured interview (Shah & Corley, 2006). The responses gathered were screened and categorized in various themes for analysis. Qualitative data analysis involved scrutinizing and transcribing interview responses into statements that belonged together around the major themes of the interview (Keppel & Wickens, 2004; Braun & Clarke, 2006; Stangor, 2011). Provision of quotations drawn from participants' original data and correct interpretation of views add to the credibility placed in the truth of the study findings. Systematic analysis of the content of relevant documents - lesson plan, schemes of works, lesson notes and portfolio records were used as the evidence of comments by TP supervisors. Furthermore, assessment kits were utilized to get feedback on what needs intervention for improvement. Ethical clearance approval was sought

from the Research, Publications and Consultancy authority. Participants remained anonymous in the presentation of the research findings to ensure non-traceability to anyone with dishonest intentions. Participation was voluntary, therefore; the participants had the option to opt out of the study with no consequence whatsoever.

FINDINGS

In this study, TP components were sieved out of various factors affecting the quality of the teaching and learning process. 15 aspects were infiltrated around specific instructional dimensions and expounded for in-depth analysis. Redundant items were knocked out for lack of merit meaning or found interwoven in such a way that they were likely to threaten the internal validity. The 15 coded questions on corrective feedback aspects were: supervisor's directives on the format and components of the lesson plan, comments on stages of the lesson plan, formulation of specific objectives in terms of components; audience, behavioural change, conditions and the degree of performance and in terms of objective characteristics; specific, measurable, attainable, realistic and time-bound.

Other aspects were suggestions on the innovation of teaching and learning aids, the improvisation on teaching and learning using locally available resources, remarks on schemes and records of works, amount of time devoted to supporting pre-service teachers, frequency of visits made by supervisors, supervisor's expertise in the area of subject taught, grading procedures and indications of performance. Furthermore, portfolio records, reflection about teaching, recommendations on statement of evaluation and remarks, settings for TP and relevance of materials and teaching notes were scrutinized. Key domains in terms of variation and no variation were classified.

The findings are presented in the light of 15 deduced TP components. Responses to supervisor's directives on the format of the lesson plan were distributed unevenly. Data on pre-service teachers 96 (80%) had a common view that there were variations in corrective feedback. Only 24 respondents (20%) were appreciative that there were no variations characterizing this aspect. In the next domain of practical variations on stages of lesson plan, 90 respondents (75%) opined that variation existed among supervisors and the rest 30 respondents (25%) felt that there was no variation. Formulation of specific objectives based on SMART criteria

results suggested that 63 (52.5%) of respondents opined variation in corrective feedback. There were consistently keeping the value almost balanced judgements tapering this aspect. 69 pre-service teachers (57.5%) admitted that there were no considerable variations in terms of corrective feedback on the formulation of specific objectives.

Data related to reflection on teaching revealed that 80 respondents (66.6%) favoured variation response. But no consistency was seen in the opinion, as 40 respondents (33.4%) favoured no variation response in this domain. These findings are consistent with those reported by Underson and Radencich (2012) who observed that pre-service teachers need reflection with feedback to learn from key aspects of their field experience. The distribution of opinions on grading procedures revealed that most of the respondents, 81 (67.6%) were confirming the opinion of variation among supervisors. The discrepancy of 39 respondents (32.4%) opined no variation in corrective feedback among supervisors. Corrective feedback related to the indication of excellent performance, a high percentage of the feedback (65.9%) with 78 respondents was evidence-based remarks made by supervisors and the remaining 42 individuals (34.1%) pinpointed no variation among supervisors. Based on portfolio records, most of the pre-service teachers 81 (67.5%) were stable on the opinion of variation response and the remaining 39 respondents (32.5%) were held up at response of no variation.

Notable among these precepts, emerged the corrective feedback on the supervisor's expertise in the area of subject taught. 85 respondents (70.9%) had reservations that there is association between expertise in the area taught and supervision. There was considerable variation in respect of the innovation of teaching and learning aids where by 75 (64.5%) and no variation in the responses of 45 students (35.5%). Remarks on schemes and records of work had a variation of 86 (71.7%) and a non-variation of 34 (28.3%). Under the domain a written evaluation of the strengths and weaknesses remarks, a significantly higher proportion of respondents 95 (i.e., 79.2%) indicated variation in corrective feedback while the rest 25 (20.8%) illustrated the nature of the feedback in the domain did not vary. Therefore, pre-service teachers indicated little correspondence between marks and remarks made. Settings for TP which had 82 (68.4%) variation and 38 (31.6%) of no variation. In the final part of the survey respondents were asked to indicate whether remarks on the relevance of materials and teaching notes existed. Regarding this item, 82 respondents (68.3%) out

of 120 expressed their views that variation existed among supervisors while 40 (31.7%) seem to hold the opinion that there was no variation in comments regarding the relevance of materials.

DISCUSSION

From the analysis, the general picture that emerges is that pre-service teachers were strongly oriented in the belief that supervisors lacked consensus in dealing with similar issues. Overwhelmingly, TP featured a supervisor-dominated feedback pattern with greater variations. Only four aspects of TP including frequencies of visits made by supervisors, reflection on teaching practice, statement of evaluation and remarks and setting for TP indicated a significant relationship among categorical variables. Findings in this study are in general confirmatory by Käpylä et al., (2009), Bishop et.al., (2011) who observed that pre-service teachers have inadequate content and pedagogical knowledge about teaching. Pedagogical knowledge has been characterized as piecemeal, less structured and having more inaccuracies (Nezvalová, 2011). Furthermore, pre-service teachers might transfer their misconceptions to their students during classroom instructions. This fieldwork dilemma requires informed decisions to avoid negative implications for students' learning as expressed by Cranton (2009). This was a significant factor in the common failure of service delivery at TP centres.

Drawing from qualitative interviews with 10 supervisors, variation results stemmed not only from the quantitative aspects. A common view amongst interviewees was that TP supervisors had a belittling nature of comments. Lack of commitment to TP directives and instructional mechanisms designated might lead to low efficiency, equitable service delivery and accountability. Furthermore, informants expressed the belief that TP supervision reports were illegible and biased compromising on the quality of teaching and so were of little help to pre-service teachers. Documents provided rich information which was not revealed through interviews and questionnaires, especially marks and remarks disparities. Documents reviewed included institutional report from regional coordinators, assessment forms, guidelines from the Ministry of Education Science and Technology (MoEST) and TP committee members' reports. Moreover, the study evaluated pre-service teachers' lesson plans, schemes of work and assessments as commonly used classroom artefacts in the teaching and learning process.

Scrutinizing from the documents, it appears that no universal guide for various schooling levels such as primary schools, secondary schools and teachers' training colleges. The documentary reviewed revealed variations in different aspects including the language to be used in writing reflection reports between Kiswahili English subjects. From the examination of additional qualitative remarks provided, it is apparent that there was little correspondence between marks in various TP aspects and remarks made. These results imply that TP supervisors applied independent judgement and relied on their discretion and there is a need to change the asymmetrical power relations between supervisor and supervisee.

CONCLUSION AND RECOMMENDATIONS

The chief concern of this paper was to identify the implications of disparities in TP corrective feedback among pre-service teachers. Corrective feedback among supervisors significantly attracts a disjointed teaching and learning output. Uncertainty expressed by supervisors in making judgments points to the importance of developing a shared assessment criterion within the community of supervisors. Recent studies have reported that teachers working collaboratively in content and pedagogical knowledge is the panacea of enhancing supervisors with limited pedagogical practices. Central to the entire teaching profession standards is the concept of formulating the National Council for Accreditation of Teacher Education (Brown et. al., (2021). Given the conclusions drawn from the study objectives, inter-institutional consensual supervisory guidelines to inform synergy among supervisors is vital.

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Examining the Benefits and Challenges of the Diversion Programme as a Mechanism to Enhancing Juvenile Justice Administration in Dar es Salaam, Tanzania

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Abstract
This study is informed by goal number four, target one of the Sustainable Development Goals (SDGs), on the increase of accessible, equitable, and quality primary and secondary education by 2030. The intended outcome of this goal cannot be achieved in Tanzania when juveniles who fall in conflict with the law are left out of the mainstream of education. The study utilized a cross-sectional design, which embraces the qualitative approach. Its data were obtained through purposeful sampling techniques (convenient and snowballing sampling), in which twenty-eighty respondents participated. The data collection techniques used were in-depth interviews and focus group discussions. The ATLAS.ti 9 software was employed during qualitative data analysis. The main findings reveal that the diversion programme effectively addresses juveniles' educational needs and mitigates associated stigma and retribution. Furthermore, it helps in amicably solving the juveniles' problem due to assessment of individual juveniles, generating suitable tailor-made interventions. Challenges obtained were that police officers still used much force during the arrest, and some would demand bribes; the traditional system was lengthy and cumbersome; there was a shortage of workforce and buildings; limited financial resources and equipment; and some juveniles and actors did not know the programme. The article concludes that the diversion programme is vital to achieving education for all as envisaged by the SDGs. It further recommends capacity building to all social actors on the importance of diversion, mobilization of resources, and researchers should be encouraged to conduct studies in JJA, in particular indigenous models and practice of the diversion programme.

Keywords: *Child Protection, Education, Sustainable Development Goals, programme, juvenile in conflict with the law*

INTRODUCTION

Diversion programme is a systematic procedure of removing a juvenile matter from the formal criminal court procedures to community rehabilitation (Steyn, 2010). This concerns that juveniles' harmful activities are only socially undesirable behaviors, not necessarily crimes (Robb, 2012). Bright et al. (2014) pointed out that diversion programmes use informal means to serve low-level or first-time offenders in the community. Loeb, Waung & Sheeran (2015) argued that juvenile diversion programmes provide an alternative response to the traditional justice system. When diversion programmes are implemented accordingly, juveniles in conflict with the law can still access education programmes, ultimately contributing to the realization of SDG which envisages in goal number four (target one) that by 2030, all boys and girls will be enrolled in quality education programmes.

It is worth noting that education is essential for human development. In this vein, soon after the independence of Tanzania in 1961, Mwalimu Nyerere, the first President, declared education as one of the three national priorities (Nyerere, 1968). The declaration found further expression through the Arusha Declaration of 1967— a blueprint for a particular brand of African socialism, *ujamaa* (Mbise et al., 2021). The Sustainable Development Goals (SDGs) continue human development and social capital, which can be achieved through increasing accessibility to quality and equitable education for all. Additionally, of the seventeen SDGs, quality education is a stand-alone goal, goal number four, and it is reflected upon even in some other goals. Tracing the history of diversion programmes, Cauffmanand and Steinberg (2012) highlighted that the same programme was established in 1899 as an alternative to the criminal justice system in the United States of America. It was based on the premise that youths' characters are not yet fully formed; thus, youth courts became increasingly common interventions used to divert youth with minor offenses (Cauffmanand & Steinberg, 2012).

In Africa, the Convention on the Rights of the Child (CRC) of 1989 and the African Charter for Rights and Welfare of the Child (ACRWC) of 1990 provide the juvenile justice administration (JJA) framework. In South Africa, through the diversion programme, juveniles were placed under the supervision of a community-based agency (Roestenburg & Oliphant, 2012). Mashamba (2013) noted the issue of including juvenile justice in the South African 1996 constitution. Additionally, Berg (2012)

raised the question of linking the juvenile diversion approach to the indigenous way of solving adolescent problems. He argued that in African countries, indigenous and restorative justice similarities were often accentuated before European law concepts were introduced (Berg, 2012).

In Tanzania, indigenous knowledge and practice in dealing with juveniles in conflict with the law was paramount. Twikirize and Spittzer (2019) argued that in traditional African societies, self-determination principles were evident in community and family obligation rather than individualism. Also, adult persons were responsible for caring for the young ones, and children were considered an asset, where everyone in the community was responsible for correcting a deviant child (Mabeyo & Mvungi, 2019). *Saigha* has been a model whereby clans meet to address social challenges and family meetings; arguably, issues of juvenile deviance and clan leaders can institute punishments to deviants (Twikirize & Spitzer, 2019). Spitzer (2014) argued that the ideology of *ujamaa* was still applied in Kilimanjaro through the *Msaragambo* practice, whereby the whole community was responsible for upbringings and reprimands.

The JJA in Tanzania is administered by various legal instruments- global, regional, and local. The CRC (1989), the ACRWC (1990), and other international as well as regional tools are given effect by the LCA, R.E. (2019), which in Chapters 1X and X provide for JJA, including setting up institutions such as Juvenile Court and Approved School (MoHSW, 2012). The establishment of the diversion programme was a result of numerous challenges. Mashamba (2013) revealed 1400 children who were held in adult prisons and detention facilities. On the same note, Omesa (2014) identified no alternatives to custodial sentences; juvenile cases being subject to lengthy delays, stigma, and community pressure often dissuaded families from lodging cases and preferred to handle them outside the judicial system. The diversion programme could be used to reduce juvenile delinquency and channel away the juveniles from the judicial system and institutions such as remand homes. Such juveniles could be connected to rehabilitation centres, which facilitate their transit in the educational system.

In 2012, the diversion pilot programme was initiated in Temeke, Dar es Salaam region, and later in Kigamboni Municipality, then in Mbeya region in 2015 (MoHSW, 2012). Through this programme, juveniles could be referred to diversionary measures by the police, court, or social

welfare officers (MoHSW, 2013). The Department for Social Welfare headquarters supervises the programme's implementation, and diversion could be made at any stage of the case process (MoHSW, 2013). It was designed for 10–17-year-old boys and girls on individually tailored intervention programmes developed in response to an assessment of their needs (MoHSW, 2012).

Despite the existence of the programme, an evaluation that was one year later by the Ministry of Health and Social Welfare (in 2013) revealed that the programme was relevant and useful to the country (MoHSW, 2013). However, it was noted that there was still a gap of failure of juveniles to access education due to being enticed to a lengthy procedure of case handling (in the traditional court system) and sending such juveniles to remand homes which escalated the problem (MoHSW, 2013). This owed to the fact that once juveniles were in the legal (court) procedure or placed in remand homes they could no longer attend school until their cases were determined which again could be long overdue for re-entry in school. The result called for a need of scaling up the service to the entire country in order to address the scourge amicably through which each juvenile intervention is made basing on tailor made needs (MoHW, 2013).

Theoretical Framework

The systems theory explains the importance of the diversion programme about access to education opportunities by juveniles. System theory is a dominant tradition within social work, particularly on issues related to child protection (Hutchinson & Oltedal, 2014). It has influenced and spawned theory and research since the 1960s much more in the 1980s based on relationships and interdependence among components as they interact (Lai & Lin, 2017). Systems have commonly identified properties, such as hierarchical ordering, coupling, permeability, holism, emergence, and homeostasis (Lai & Lin, 2017). It focuses on the arrangement of and connections between the components and how they work together as a whole; how the pieces are organized and how they interact with each other determines the properties of that system (Chikere and Nwoka, 2015).

It further delineated its spatial and temporal boundaries, surrounded and influenced by its environment (Robbins, 2012). Dupuis (2010) observed that in a systems framework, elements within it have interconnected

effects on one family member and ultimately have an equal and opposite outcome to the rest. A system is more than just a collection of individuals, and as such, a system needs to be viewed in its entirety (Robbins, 2012).

This theory is relevant to this study because it facilitates the understanding that the diversion programme and the entire juvenile justice system do not operate effectively in a vacuum but in the interconnectedness and interplay of sub-systems. It is essential as it draws the actor/child protection stakeholders' attention to help intervene at multiple stages in an individual's life. Another relevance of the theory is its broad spectrum. Hepworth et al. (2010) point out that a significant advantage of the systems model is its broad scope; hence, a researcher can have a comprehensive picture of systems and the environment in which research is done. Also, system theory can inform practice, providing insight into the effects and influences of techniques on and with children and families (Tilbury, 2013). Indeed, Munro (2010) argued that adopting a systems approach will help to understand how the system supports social workers and other professionals to work together. Overall, systems theory is supported by research evidence and policy drivers and is increasingly employed as it can be beneficial in working with juveniles and families (Tilbury, 2013). On critics, the author believes that the generic theory is inadequate to explain individual juvenile tenets and address needs, especially of sensitive service users such as juveniles. Payne (2014) discussed the complexity of the theory, providing limited practice guidance and making it difficult to employ effectively.

METHODOLOGY

Twenty-eight (28) participants informed the cross-sectional, qualitative research; among them, juveniles were twelve (12) social welfare officers working at Remand homes (4), social welfare officers at the juvenile court (2), two (2) officials of the Kigamboni Community Centre, two (2) juveniles' parents, two (2) teachers, two (2) magistrates, and two (2) police officers. Out of these twenty-eight participants in all, juveniles were subjected to focus group discussion (FGD), where a group of six was organized at the Remand Home and another at Kigamboni Community Centre (KCC), and the remaining number, sixteen participants were covered by in-depth interview.

Purposeful sampling (convenience and snowball) was used to select this study's twenty-eight participants. The principle of saturation was

observed, as Kothari (2012) highlighted. Due to the study's sensitivity, ethical consideration was observed and adhered to accordingly. The principles of voluntary participation, do not harm, seeking consent, permission, and confidentiality were strictly observed. As Kothari (2012) pointed out, the principle of inclusion and exclusion was also followed for stakeholders involved in the diversion programme to determine the twelve juveniles and their parents. The information collected from the FGD and key informants was analyzed with ATLAS.ti 9 software, where the typical themes were identified and presented accordingly.

FINDINGS

The results or findings of this study are presented in two major themes, namely, the benefits and challenges of the diversion programme in facilitating access to education. More details of each theme are presented accordingly.

Benefits of the Diversion Programme

The first theme of the study findings was informed by the benefits of the diversion programme, where participants revealed the following as analyzed by Atlas.ti 9 software. The following voices of law enforcers (for anonymity referred to as L) were captured to support the various understanding of the benefits of the programme as follows:

> *The diversion programme assisted in doing justice to juvenile offenders instead of subjecting them to the normal adversarial courts, as it connected a child with SWO's skilled in child behaviors, and due to that normally children change their behavior completely.*

One KCC official (referred to as M) and a primary school teacher (employed in the organization for child literate education) revealed:

> *For Temeke and Kigamboni, it is done legally and through court orders. All children can be enrolled in the diversion programme, which accompanies behavior modification, instead of other punishments such as imprisonment and which enables exploring education opportunities. In the past, they had no alternative programme for separating and protecting children from adult offenders. This programme started in Temeke Municipality as a pilot area where we have had two Centres: Kigamboni Community Centre (KCC) and Youth Community Rehabilitation Centre (YCRC), then to Kigamboni Municipality. So, it was well organized and beneficial to children and the community.*

In agreement with the presentation above, another social welfare officer from Dar es Salaam remand home (referred to as N) noted:

> *I have facilitated the diversion programme training in scaled-up areas. Diversion as a programme is still alive as the NGOs initiated by the project still exist. This shows ownership of the programme. Knowledge and ownership of the programme in piloted areas is higher than others such as Ilala in Dar es Salaam where it was not piloted.*

Cementing the observations above, a resident court magistrate in Kisutu Juvenile Court (referred to as O) pointed out:

> *The programme is not well known, except in the areas where it has been operational. Even if I had not been working in the piloted area, perhaps I could not have been informed as I am. Otherwise, it is an outstanding programme.*

Juveniles' parents (referred to as O) could not hesitate to echo their overwhelming feelings about the programme as they revealed the following:

> *The diversion programme retains the basic right to children; it doesn't treat children as criminals. This programme could reduce the number of juveniles held in custody while forfeiting their right to education.*

Another juvenile's parent (referred to as P) added:

> *The diversion programme provides a platform where parents and their children can meet to share the means to support the juvenile. The juvenile can still seek support and advice from their parents, teachers, and interested community members who are willing.*

The juvenile parents, (referred to as P) while cherishing the inception of the programme as well as the benefits based on the way it has transformed their children, noted:

> *My child was languishing; I had lost hope completely, and I could not imagine that my child would be back to school. Through this programme, this was possible. I greatly thank the government and wish this programme would reach other children.*

The parent (referred to as P) added:

> *Initially, I had decided that since children belong to the government, then the child was supposed to be handed over to a remand home where he would be taught a lesson so that when he grows, he can become a good citizen.*

A teacher at KCC (referred to as Q) posited:

> *They were able to understand their wrongs and the actual cause of the problem, then regretting both parents and their children, which made them go to the root of their problems. This contributed so much in understanding the problem, hence amicably getting a lasting solution.*

The social welfare officer from the remand home (referred to as R) noted:

> *The programme was based on an assessment of individual needs, and intervention coined through diversionary measures could be tailor-made to meet individual child educational needs. Individual assessment and tailor-made programmes are beneficial to juveniles as they underscore specific needs of the juveniles.*

The juvenile court magistrate (referred to as O) pointed:

> *The traditional court process is normally "adversarial" based on the win-lose concept. The one who loses can remain with psychological wounds and sometimes resort to retribution. The process is cumbersome and lengthy and can subject the juvenile to losing education opportunities once he is placed in a remand home. It can also exacerbate the juvenile into further offending. This is not the case with the diversion programme that takes a win-win approach, and the tailored intervention can immediately facilitate schooling.*

The teacher from KCC (referred to as Q) noted:

> *In this center (KCC), 407 juvenile rehabilitees in 2012-17 got technical skills; only six juveniles relapsed. This shows that if well organized, the diversion programme can be very effective in JJA.*

The FGD with juveniles pointing to the benefit of the diversion programmes revealed mixed feelings. Some of the juveniles from the piloted districts had a relatively more affluent knowledge of the programme and were able to mention the issue of awareness of their rights, while in contrast, others in piloted areas indicated that it was a surprise to them and they had not heard any information regarding the programme. Thus, voices from juveniles at KCC heralded some information on the programme. At the same time, those at the remand home indicated that, initially, they did not understand the programme until they were at the remand home when they were already in conflict with the law.

Challenges Facing the Diversion Programme

There is a myriad of challenges facing the diversion programme in enabling juveniles to access education. Despite education being an essential aspect of child development, in the traditional juvenile justice

system, once a child conflicts with the law, it becomes difficult to continue education. Even though the LCA, PART X (S. 121) gives room for further continuing with education once a child is sentenced to approved school (for one to three years), usually, this takes place at a later stage of the post-trial process when the chances for re-entry in school are already diminished and slim, hence most likely losing the child's education opportunity.

Juvenile's ideas captured in the field through the FGD described the challenges as follows:
Despite the existence of the diversion programme, police officers still used much force during the arrest of juveniles; some would demand bribes to set them free, which contributed to the programme being effective. Also, those who came from the non-pilot area, i.e., Ilala, did not know there was such a programme.

In agreement, the juveniles' parents and social welfare officers (referred to as O&N) stated the following challenges,

> *In the traditional juvenile justice system, once a child conflicts with the law, it becomes difficult to continue with education due to instances of reporting to police stations or courts, despite the stigma that lingers in school and the community. The situation is even worse once the child is placed in remand custody where he is not allowed to go out except for medical purposes under escort.*

The police officers (referred to as L) pointed out the issue of shortage of office equipment:

> *We have a shortage of play material in gender desk offices and a television set required to make juveniles feel at home and pave the way for juveniles to open up, especially during interviews.*

Juveniles at KCC and Dar es Salaam remand home indicated that although they had known the programme, there were still challenges regarding channels of going back to school and that the means to help them remained in the hands of initiatives of mainstreaming them into educational programmes. The challenge they mentioned was mainly being held in custody, which made them give up on their education and future dreams.

DISCUSSION

Two themes guide the discussion of the findings; details for each are provided below accordingly.

Benefits of the Diversion Programme

As indicated in the literature reviewed, and much more in evaluations that were done in 2012 and 2013, as well as findings from key informants, were all in agreement that the programme was beneficial, humane, and with no stigma and retribution from community members. They observed that the traditional court process usually was "adversarial" based on the win-lose concept (MoHSW, 2012; MoHSW, 2013). The one who lost could remain with psychological wounds and, in some instances, could resort to retribution. Their argument was also that the regular legal process was cumbersome and lengthy and to the extent of subjecting the juvenile to being denied justice or losing education. Indeed, they noted that placing juveniles into remand homes. At the same time, the pending case in court could cause stigma and paint a juvenile as a "criminal, " lose the child's opportunity to education, and complicate aftercare services or socially reintegrate the juvenile back into the community.

Also, they noted that the programme was based on an assessment of individual needs, and intervention through diversionary measures could be tailored to meet individual children's educational needs. Individual assessment and tailor-made programmes were noted to be beneficial to juveniles as they could underscore the specific needs of the juveniles. It was noted, for example, for an individual juvenile, it entailed identifying particular needs such as schooling, which school or level of education, the willingness of the juvenile, the accessibility, costs associated, ability to pay, and resources available. Such initiatives were most likely to be sustainable and prosperous for the wellness of the juvenile were based on their self-determination. This information resonates and ties nicely with the literature-reviewed evaluation studies conducted in 2012 and 2013 on the programme's efficacy and that it was relevant to the context of Tanzania (MoHSW, 2012; MoHSW, 2013).

The findings also echo the empirical literature reviewed, especially Bright et al. (2014) who pointed out that diversion programmes use informal means to serve low-level or first-time offenders in the community hence useful for rehabilitation and avoiding sending them into prisons. Loeb, Waung & Sheeran (2015) argued that juvenile diversion programmes

provide an alternative response to the traditional justice system is also pertinent as the later is can eschew juveniles' access to education due to its lengthy and cumbersome procedures especially when children are incarcerated in remand facilities.

Indeed, the benefits of the programme are well tied to the systems theory which informs this study. The theory not only explains the interplay of parts in the systems but echoes on the usefulness diversion programme that largely dwels on its broad scope and the interconnectedness of sub systems in the environment (Hepworth et al., 2010). This is important especially in the rehabilitation of juvenile offenders and their re-transit to education as it calls for various actors such as teachers, social welfare officers, local government leaders, and neighbourhoods to mention a few. To this end Hepworth et al. (2010) pointed out that a significant advantage of the systems model is its broad scope; hence, a researcher can have a comprehensive picture of systems and the environment in which research is done, hence beneficial to the programme.

Challenges Facing the Diversion Programme

There were challenges to the programme highlighted by participants. The challenge that featured most was a shortage of workforce, as UNICEF, which supported the programme, employed only one social welfare officer for each NGO participating in the programme, which could not suffice for many juveniles who were in conflict with the law and sought services. This information resonates the argument of Mashamba (2013) who argued that the Law of the Child Act had pressed an enormous role on Social welfare officers who were of shortage in number and that in some instances that lacked specialty. The evaluation that was done by the MoHSW in 2012 noted an acute shortage of social welfare workers as attributed to several factors, including the decentralization by devolution policy which in the context of the local government reform programme, requires each local authority to take up the responsibility of overseeing the provision of social welfare services of which the LGAs is employing social welfare workers (URT, MoHSW, 2012). According to the DSW capacity assessment report, in September 2008, through circular no CHA.215/355/01/87, the Principal Secretary, PMO-RALG informed all Directors in District Councils, Municipal Councils and City Councils to start employing at least 4 Social Welfare Officers to work in each of the three units in the Social Welfare Department structure, namely the

Family, Child Welfare and Early Childhood Development; Juvenile Justice and Disability and Aging, effective 2009/10 financial year.

Responses also came from municipalities where the diversion programme was piloted and indicated that funding was not adequate to run the business of the programme. They knew that UNICEF contributed and was the primary source of financing in the piloted areas. However, law enforcers in Ilala, who thought diversion was a government programme, efficiently argued that the government provided finances for the programme. They did not mention the contribution of UNICEF in running the programme. There were also concerns over funds to run the existing areas and long-term financing of the programme after UNICEF pulled out and scaled up, which could affect its effectiveness.

According to the assessment that was done by the MoHSW (2012) with social welfare staff across the board as well as different client groups suggest that service provision in social welfare offices has significantly deteriorated due to lack of enough funding. Responses to the question on budgetary allocation show that 86% of the respondents were working under severe budgetary constraints. Others participants mentioned variously that they were not involved in budget preparation, used their own money to follow up cases, experienced delay in disbursement and that when they prepared budgets the social welfare activities end up not being allocated any funding (URT, 2012).

This information regarding failure to understand the programme well and the malpractice of the police force echo the systems theory that informs this study, as regards the interconnection of parts in a way that if one part does not function well, it renders the entire system ineffective. In this vein, the malpractice of the police, as well as the failure of other actors in the non-pilot areas to understand well the diversion programme, posed a challenge to the programme's effectiveness and inability to facilitate re-entry into education programmes by the juveniles.

Of all the police stations visited, the Kigamboni Gender and Children Desk was the only facility that was a separate building and in good condition. However, the officer-in-charge observed that play material and a television set were required to make juveniles feel at home and pave the way for juveniles to open up, especially during interviews. A common feature in police stations was congestion of staff in a small room or a

front desk, and juveniles were held in the same building as adults, only that the buildings were partitioned. On one occasion, some juveniles were interrogated by police officers outside the buildings (under a tree), which could cause stigma and labelling to juveniles by community members. Information obtained from the police was that, in some instances, juveniles were kept near the front desk of the police to separate the juveniles from adult offenders.

Furthermore, indigenous knowledge and practice is a pivotal tenet of the Convention for the Rights of the Child (CRC) (MoHSW, 2012). Ironically, it does not feature well in the programme. Berg (2012) raised the very question of linking the juvenile diversion approach to the indigenous way of solving adolescent problems. He argued that in African countries, indigenous and restorative justice similarities were often accentuated before European law concepts were introduced (Berg, 2012). Twikirize and Spittzer (2019) argued that in traditional African societies, self-determination principles were evident in community and family obligation rather than individualism. Also, adult persons were responsible for caring for the young ones, and children were considered an asset, where everyone in the community was responsible for correcting a deviant child (Mabeyo & Mvungi, 2019).

CONCLUSION AND RECOMMENDATIONS

Education is an essential factor in fostering societal development. The diversion programme is vital to achieving education for all as envisaged by the SDGs, as it addresses the individual needs of juveniles in conflict with the law. The programme's efficacy is based on the fact that it withdraws the juvenile from the judicial system that impinges upon education and allows the child to undergo rehabilitation while continuing with education. As indicated in this article, the benefits of the diversion programme outweigh those of the setbacks, as it cherishes the child's best interest and creates accessibility to quality and equitable education for juveniles. Furthermore, it is humane, without stigma or retribution, and responds to the juvenile's specific needs, hence individually tailored schooling interventions. This calls for enhancing and scaling the programme countrywide and employing concerted efforts for efficacy in the JJA in Tanzania and the education system.

This study recommends that capacity building should be carried out to all social welfare officers, teachers at primary and secondary schools,

policymakers and law enforcers, and juvenile justice actors in general on the importance of diversion programmes to enable them to access reentry in the education system. This should be done as new juvenile actors enter and others exit. Moreover, the government of Tanzania and other actors should mobilize resources to meet equipment buildings and enhance education opportunities at the grassroots to contain juvenile delinquency from the onset.

Tanzania still lacks research on the understudy topic; hence, researchers and academicians should be encouraged to conduct studies in this area education and juvenile delinquency/ juvenile justice administration. It is awake among researchers, which will contribute mainly to coming up with amicable solutions and enable imparting knowledge of the programme and sensitizing the community members about it.

There is a need to break from the shackles of colonial and neo-colonial ideologies and practices by embarking on research in indigenous models and the practice of the diversion programme in JJA. This entails using traditional methods of conflict management for settling juvenile cases by embarking on intensive training of juvenile justice community elders through the existing child protection system (framework) at all community levels. This should be done after training so that such practice should resonate with international and regional standards and facilitate juveniles who have fallen into conflict with the law get re-entry into the education system.

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The Constraints in the Implementation of Inclusive Education in Public Primary Schools in Njombe Town Council, Tanzania

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Abstract
This study explored the constraints in the implementation of inclusive education in public primary schools in Njombe Town Council, Tanzania. The methodology of the study was qualitative. It employed multiple case study design. The study engaged a total sample of 19 respondents namely; special need education officers, heads of schools and subject teachers who were selected through purposive and snowball sampling. Data collection methods were semi-structured interviews, focus group discussion, non-participant observation and documentary review. Data were subjected to content analysis. The findings of the study revealed that teachers in public school's face constraints in implementing inclusive education namely inadequate of teaching and learning materials, unfriendly environment to pupils with disability, small budget allocation, inadequate classrooms, less motivation to teachers, absence of in-service training, and curriculum in use is not in favor to pupils with disability. Hence, the constraints in the implementation of inclusive education are an impediment towards achieving the World Education Agenda for all by 2030. The study recommended that; the government should find out suitable ways on how to solve the aforementioned constraints for smooth running of the inclusive schools so as to maintain the teachers' positivity in the implementation of inclusive education.

Keywords: *Gender, Inclusive, Disability, Equality*

INTRODUCTION

An inclusive educational setting in the mainstream school ensures equal and quality education along with need-based learning environment and all way participation for all students regardless of background (Hasan, & Islam, 2020). The assumption is that every learner matters equally and has the right to receive relevant, quality, equitable and effective educational

opportunities (UNESCO, 2020). As such, it starts from the belief that education is a basic human right and the foundation for a more just society (Ainscow, 2020). The primary goal of inclusive education is to create a safe and inclusive learning environment where all students feel welcome, supported, and engaged, as well as valuing and celebrating diversity (UNESCO, 2023). There has been a growing impetus worldwide towards full inclusion (Evans & Lunt, 2002). International advocates and governments have made conscious efforts to achieve inclusive education (Sijuola, & Davidova, 2022). It is elucidated by increasingly promoted and supported, not just by a few passionate individuals and groups, but by United Nations agencies and governments globally (Lindsay, 2003). However, the implementation of inclusive education and its related policies is difficult, especially in developing countries is challenging and almost impossible to achieve the desired objectives (Sijuola, & Davidova, 2022).

Even after endorsing their signatures, most developing countries still have unclear policies on inclusion, and where policies are clear implementation is either ignored or left to chance without committing resources to secure required facilities for its effectiveness (Evans & Lunt, 2002). Tanzania started implementing inclusive education in early 1990s and the process has involved a number of government decisions, resulting in policy development, and legislative and programmatic interventions that increasingly rules out exclusion and create environments supportive of inclusion in educational settings (URT, 2021). Despite the progress towards inclusive education, many children with disabilities in Tanzania face substantial barriers to accessing education (Able Child Africa, 2023). For example, in 2018, the Ministry of Education, Science and Technology of Tanzania reported that of the total 362,847 children with disabilities aged 4–14 years, 15.5% were refused entry to schools because of their disabilities (Able Child Africa, 2023). Further, the Government of Tanzania has also ratified and implemented an inclusive education policy and strategy for mainstream classrooms to include marginalized groups such as children with disabilities, girls, ethnic minorities, and children from poor socio-economic and cultural backgrounds (Mkama, 2021).

At present, negative attitudes towards disability remain one of the most pervasive barriers; however, there are several barriers that compound this (Able Child Africa, 2023). Therefore, Tanzania, like any other developing countries, has been insisting on the implementation of

inclusive education; however, the efforts have not produced the required results. The government has tried much in insisting parents to send their children to schools, which are becoming more encouraging toward the rights of children. This has greater advantage to children with disabilities as they get access to education in inclusive schools. However, even strategies to enhance inclusion have proven limited in their success to promote inclusive education for students with disabilities, especially deaf learners across Tanzania (Mkama, 2021). Therefore, this study aims to answer an essential question which states, 'What are the constraints that face teachers in the implementation of inclusive education in public primary schools?'

METHODOLOGY

The study was conducted using a qualitative approach, which enabled the researcher to collect data from the participants' setting. With such approach, the researcher was in a position to adjust inquiry methods and techniques according to the settings. Qualitative approach focuses on the interpretation of the perception of people from a social perspective. So, this approach enabled the researcher to build conclusions inductively. Data were collected through semi-structured interviews, focus group discussion, non-participant observation and documentary review. A semi-structured interview was administered to one Special Need Education Officer and two Head Teachers. Non-participant observation helped the researcher to see how the teachers treat students with and without disability and verify the information given through interview and focused group discussion. Documentary review was used in reviewing various policy documents, school registers, ledgers and school minutes. Focus group discussion was conducted in groups to sixteen teachers who provided insights on the implementation of inclusive education. Multiple case study design was chosen in order to get detailed information and a comprehensive picture about the constraints in the implementation of inclusive education. Based on the design of the study cases were formed in two inclusive primary schools. Moreover, the study employed case study design in order to get detailed information and a comprehensive picture about the constraints in the implementation of inclusive education. Two Public Primary Schools were selected as a sample of the study. The choice of Njombe as the area of study depends on the following four major factors. First Njombe was selected since this is one of the regions in Tanzania where Inclusive Education has been implemented. Second Njombe town council has 88 primary schools but only two schools with

units for pupils with special needs. Third, inclusive education is narrowly focused in Njombe also the nature of economic activities of the area attracts exclusion of the pupils due to child labor in potato farms. Fourth, there are some historical reasons where many house maids are coming from Njombe region; this makes them to be excluded from the school. Data were analyzed by using thematic analysis which involved transcribing, coding contents into themes, interpreting direct quotations and presented in narrative form.

FINDINGS

This part was guided by the question which states that," what are the constraints that teachers face in the implementation of inclusive education in public primary schools? The researcher collected data through semi-structured interviews from the Special Needs Education Officer (SNEO) and head teachers, focused group discussion with teachers, Documentary review from sampled schools and observation. Therefore, all (19) respondents confirmed the presence of constraints which were explored and reviewed hence reported as follows:

Unfriendly environment

This factor subsists as a greater setback in the implementation of inclusive education. This was affirmed by all the respondents during the study. For example, during the focused group one of the teachers from school B reported that:

> *Classes were constructed without considering all the learners as you can see the presence of stairs in some buildings and also our school does not have a fence as it is very dangerous to albino pupils. And we only have two toilet pits, which are used by the pupils with disabilities, and they are in their dormitory, so once they need to go to the toilet they have to go in their dormitory. (Focus Group Discussion, School B, 28th February 202).*

Another teacher from school B added: *The windows in the classes are not that big to allow enough light to pass through, hence it makes pupils with low vision get difficulties when looking at what is written on the board. (Focus Group Discussion, School B, 28th February, 2020.*

On the other hand, another teacher from school A added:

> *The classes are not conducive for all learners that they can enjoy learning, and we have only two toilet pits for the pupils with mental disorders and we have 40 pupils. These toilets are not enough for our pupils. We need the government to*

> *look at how to improve the buildings with modern toilets. (Focus Group Discussion, School A, 25th February, 2020.*

The respondents in this part of the environment opined that the teaching and learning environment should favor all learners regardless of their disability. For example, the classrooms and toilets to be designed in favor of blind, low vision and physical impairment. Also, the researcher observed in school B that the windows were not big enough; hence pupils with low vision were unable to read on the blackboard due to lack of enough ventilation. Teachers were writing big sized words to help these pupils to study comfortably. And also, some buildings have stairs which are not friendly to pupils with low vision, physical impairment and blind. They suggested that the government provide enough funds for construction and renovation of the classes so as to have a conducive teaching and learning environment that will suit all types of learners.

Small budget allocation

This is a very big problem starting from SNEO, head teachers up to teachers in the implementation of inclusive education in their schools. Government does not give enough support to these schools and hence it makes running of these schools very difficult. This was witnessed during interview as follows:

SNEO reported that:

> *In the council, the special needs department is not allocated with the budget. We are under the umbrella of the education department, this makes it very difficult to implement the strategies planned at the level of the council. And if the system will not change it can make the department goals to take very long time to be achieved (semi- interview, 25th February, 2020)*

Another Head of school added that:

> *It is very difficult to run this school, especially mine which is having boarding pupils as the government brings the budget of 2000 TZS for each student per day for 30 days. This is really not enough starting from breakfast, lunch and dinner, Remember the same amount is given to schools with day pupils. But there are some stakeholders who are helping us like Asas company (Semi-structured interview, Head of School B on 28th February, 2020)*

In responding to these interviews almost all of the respondents responded that the budget allocated is not enough to run the boarding inclusive

schools. The researcher observed that if not the assistance from various stakeholders in school B were having the boarding pupils could be in trouble. It was argued that 2000TZS per day for each student is not enough. This is because the same amount was to be used for food, paying the watchmen, paying matron and paying a cook. Good enough the parents' committee contributed money for paying these people from parents and also Asas Group of Companies as education stakeholders is helping in the part of nutrition by bringing every day 25 litres of milk without missing. As regards to the documents, the researcher witnessed the monthly report of head of school B insisting the money which the government is sending to run the special needs unit is not enough as everyday expenses are going up.

Shortage of teaching and learning resources

The respondents opined that teaching an inclusive class needs to be incorporated with hands-on activities, pupils understand more when they are fully engaged in the teaching and learning process. But sometimes it becomes difficult due to insufficient learning facilities. In the interview a Head of school B narrated that:

> *It is difficult to prepare for the examinations of blind pupils, we do not have the instruments of drawings in their exams and hence it becomes very difficult for the pupils when it comes to the National examination because they are not used to it from the beginning. Also, we do not have the sports and games gears as this year we have been told they are supposed to participate in UMITASHUMTA (Semi-Interview, Head of School, School B, and 28th February, 2020).*

Head of school A also added that:

> *We do not have enough books for the pupils with disabilities. I think the government could bring the package of each child depending on his or her needs, as you can see in our school we have the pupils with various needs as there is a need for the government to look at the needs of these children as they really need to be assisted (Semi-Interview, Head of School, School A, 25th February 2020)*

In the focused group discussion with teachers, they had various contributions on the constraints that face them including lack of teaching and learning materials in their schools that hinder teaching process. A teacher from school A also added that;

> *In our school, we have pupils who have mental disabilities; we do not have books for them; this makes it difficult during the teaching and learning process*

> *and hence it is very difficult for us teachers to help them. Pupils need to read, draw to count but where are we going to get these books for pupils to read? But we do help them. (Focus Group Discussion, School A, STC, 25th February 2020)*

Another teacher from school A narrated that;

> *These pupils, who have mental disabilities, we teach them to cook, make baskets and sew but we do not have materials. We have the sewing machine but the pupils cannot sew due to lack of the materials. They need to learn by doing, so if we miss the materials for them to do practical, it is going to be very difficult for them to understand what to do. We need these pupils to be independent and not dependent (Focus Group Discussion, School A, 25th February 2020).*

Furthermore, the teachers were lamenting the absence of teaching and learning materials as it makes it difficult in the teaching and learning process. The teaching and learning materials were inadequate and did not cater for the needs of all learners in inclusive education. The researchers observed in school B have 7 Braille machines, which in a real sense are not enough due to the needs of the pupils. Also, they do not have a special machine for drawings while in School A there are no books for pupils with mental impairment. In school B, the documents that researcher witnessed are the letters written to Braille place in Dar es Salaam in order to get assistance for helping pupils with low vision and blind pupils, example Braille papers and to repair the Braille machines.

Inadequate classrooms

In the two schools, the researcher noticed that they do not have enough preparation rooms for the pupils with special needs, and also the inclusion classes are not comfortable for the pupils with and without special needs. In school A and B, they have only one preparation class for pupils with special needs causing them to lack concentration while others are studying, others may be playing. And there are pupils of different ages in the same classroom.

In the interview and focused group discussion, the respondents on the issue of lack of classes contributed as follows:

> *In our school as you can see we have only one preparation classroom because these pupils with special needs are not mixed with their fellows as they are registered, there is prior special training for them. Look! We have forty pupils in one room, now we have decided to use our office as a classroom as sometimes is very difficult to teach pupils of different age in the same classroom. So, we need*

> *the government to remember us by building other classrooms so as we can teach these pupils according to their level in different classrooms (Focus Group Discussion, School B, and 25th February, 2020)*

A head of school also contributed that;

> *In my school, I have only one preparation classroom, pupils with low vision, with mental impairment and the blind pupils of different ages and levels are staying in the same classroom. We really need the government to build other classes so that the pupils can be comfortable and the teachers can teach in a conducive environment. As you can see this school the building was not designed as an inclusive school. (Semi-Structured-Interview, Head of School B, 28th February, 2020)*

Less of Motivation to teachers

Teachers are working in a very hard and complicated situation and especially in the inclusive schools. Teachers use their ample time and resources in helping the pupils with special needs. This is really showing that teachers have positive perceptions toward inclusive education. In the interview and focus group discussion, these were the contributions to the teacher's motivation.

One head of school narrated that:

> *My teachers who are in the special needs unit every Friday use a day to visit pupils in their homes, to observe what they are taught at school if it is practiced at home. We do not have money to give them; they are using their money for fare in visiting these pupils. The government should at least give them an allowance which will be used by them when visiting these pupils. (Semi-Structured Interview, Head of School A, 25th February, 2020).*

Another head of school added that:

> *There are these pupils with physical impairment who need exercise in which we do not have the nearby hospital which has this service, so teachers are sending these pupils to Ilembula for exercise. The teachers who are sending the pupils are not paid any allowance rather than the bus fare. Imagine they are doing it for love and expect nothing in return. To motivate them at least we should give them the incentives (Semi-Structured-Interview, Head of School B 28th February, 2020)*

Another subject teacher commented that:

> *We use our own money when visiting these pupils at their homes every Friday. And there are some pupils who are coming far from the school surroundings but because of the love to our pupils we are doing it. Believing one day the*

> *government will make some changes and to have an allowance so as to support us to visit our pupils (Focus Group Discussion, School A, 28th February, 2020).*

The researcher observed that although teachers are not getting any allowance in helping these pupils with special needs, they are doing their best. The researcher noticed positive interaction between pupils and their teachers in the class and outside the classroom. Teachers believe that education stakeholders are the ones who will send their needs and wishes to the highest levels and they are working very hard.

The curriculum is not in favour of inclusive education

This was verified during an interview and focused group discussion who opined that curriculum does not consider learners' abilities. There should be modification of curriculum in inclusive education so as to cater the needs of all learners. And the assessment and evaluation for students did not meet the needs of the learners with special education needs. The respondents in this category commented that:

> *Evaluation and provision of marks should be provided separately to learners with disabilities for example in my school in a certain year there was a blind student during national the time that was given was not enough although they are added time to them. So, I suggest that even assessing them should be different with the students without disability (Semi-Structured Interview, Head of School B, 28th February, 2020).*

Another head of school added that:

> *In my school, I have the students with mental impairment in which for the reality are not assessed by NECTA we teach them to be able to interact in social life like cooking, using toilets, greeting and so on, but the curriculum did not identify where should they be sent after three years of being here at school. There should be vacation colleges for them to go and develop the skills which they have obtained here at school. (Semi structured Interview, Head of School A, 25th February, 2020).*

Another teacher added that:

> *Books do not suit learners with special needs. In our school we have students with mental impairment; there is absence of their books. The Government should see it in a wide range that we have students with various needs and the books should be brought according to the needs of these students (Focus Group Discussion, School A, 25th February, 2020).*

As regards to the documents, the researcher did not see the syllabus for the students with mental impairment in school B. This means the teachers are not having the guidelines while teaching and how to prepare their teaching and learning activities. So the issue comes that the teaching and learning materials are inadequate. And this is one of the most serious ways that binds the learners from accessing the curriculum due to inadequate materials that help them to participate in the learning process.

Lack of in-service training

Teachers need to develop their cognitive capabilities now and then by training them in their practical abilities in their career. In these schools, the teachers who are not specialized in special education should get in-service training so as they can cope with the needs of the school which is inclusive. The in-service training is only for teachers who already studied special education in the colleges but not training those who do not have that education.

One head of school added that:

> *Since 2017 only two teachers got in-service training, one teacher got the training on how to repair the Braille machines and another one was the training about curriculum. We need teachers who did not have the training about inclusive education to get various seminars so they can cope with the current situation. I as a head of school I got in-service training which was held in ADEM about inclusive education in 2017-2018 (Semi-Structured Interview, Head of School B,28th February,2020).*

One teacher added:

> *We need all teachers to get training on special and inclusive education. Inclusive education is unavoidable nowadays, a school can sometimes have no unit of special needs students but there are students with special needs. So teachers must be fully equipped with the current needs of the world. We should get these training sessions in groups during students' holidays (Focus Group Discussion, School B, 28th February, 2020).*

Another teacher commented on the issue of in-service training and added that:

> *The Ministry should not only give seminars of building capacities to teachers who have education about special education and inclusive education but also we who we not have education in those field we need to be trained because we teach these students or in one way or the other we do interact with them in the school surroundings (Focus Group Discussion, School A, 25th February, 2020).*

One teacher who is special education specialty commented that:

> *There is a need to increase the number of special education teachers at our school. The number of teachers is insufficient. We are only three teachers and we have forty students in preparatory class and our students have mental impairment. So, suggest specialty teachers to be employed so as to fill the gap or those who are employed to get the induction course or in-service training (Focus Group Discussion, School A, 25th February, 2020).*

The researcher observed in school B that teachers are eager to learn, those who know how to use Braille machines they are teaching their fellow teachers on how to use them. Because they know that they will teach these students with low vision and those who are blind so if they do not learn how to use the Braille machine it is going to be a hard task for them. And also, in school A teacher who specialized to special education convinced one teacher to go and study special education and now she has completed and is doing well in helping the students with special needs in their school. So, this means teachers really need to learn about helping the students with and without special needs.

DISCUSSION OF THE FINDINGS

The findings confirmed teachers fail to implement inclusive education due to; unfriendly environment, lack of teaching and learning materials, motivation to teachers, small budget allocated to schools for implementation of inclusive education in schools. Moreover, the overcrowded classes become more difficult for teachers to help those who need special assistance in the class.

Unfriendly environment

The researcher has observed that the contexts of favorability in teaching and learning environment need modification to suit inclusive education. The teaching and learning environment need to be friendly for all pupils and especially with special needs examples with physical impairment, low vision, the blind and with cognitive disability so as they can enjoy learning. Heward (2006) supports by saying environmental modifications are frequently necessary to enable a student with physical and health impairments to participate fully and independently in school. In the two schools, the issue of infrastructure is a problem hence special assistance is needed to enhance smooth implementation of inclusive education. However, the government is required to provide funds for teaching and learning materials which might cater the needs of all learners in inclusive

schools. The infrastructures must favour all diverse levels of learners together with construction of resource rooms specifically for remediation. Hence, there would be a smooth teaching and learning environment for all learners in an inclusive setting.

Despite venerable progress made over the past years to increase access to basic education, more needs to be done to lessen barriers to education and to ensure that all pupils experience a genuine inclusive environment (UNESCO, 2017). This is to be done to enable all children with or without disabilities get equal chance of getting education in a conducive environment. Children need to enjoy learning in an environment where they can have peace and hence receive the materials. Physical barriers in schools are really a challenge for example, doors, stairs, toilets and play areas in many inclusive schools, the building construction did not follow the guidelines for Universal Design so quick renovation of these buildings is needed. Pupils cannot enjoy learning if buildings are physically inaccessible to them. To ensure enjoyment of the right of children with and without disabilities to an education, user-friendliness must therefore be addressed widely in entranceways to buildings, classrooms, and appropriate seating and restroom facilities.

Small budget allocation

The budget allocated to the two schools was small while the buildings are very old and in real situation not suitable for teaching and learning activities. Quick renovation in these schools is essential so as to have a conducive environment for the pupils to learn. What the government was supposed to do is to renovate the building to suit inclusivity before establishing these schools, but it is not late for the renovation to take place as it is doing now in renovating the old secondary schools by providing special funds for it. However, Said (2017) argues that, government and other education stakeholders put less emphasis in introducing inclusive education in primary schools, this goes parallel with less government budget allocated to finance primary education through setting appropriate environment for the practice of inclusive education. Also, Godwin (2013) suggested the budget for those schools should be at least boosted from what they were given from the government because there are so many resources and facilities needed to those schools, therefore the budget should be enough and equivalent to the needs. The physical infrastructure in these two schools found to be unfriendly and supportive for the pupils in need. The inappropriate designed school

building is due to lack of special funds allocated to gratify the need for the pupils with special needs. Planning must be undertaken in each of these areas with adequate budget allocation to achieve convenience progressive.

Shortage of teaching and learning facilities and resources

The findings reveal that in these two schools they lack teaching and learning facilities which hinder them from doing their work. In School A, they do not have books for cognitive impaired pupils and also the materials for sewing this is highly making them not reach their goals but the issue is all about the government giving a special care to these schools because their pupils have special needs. Likewise, in school B they do not have enough Braille machines and the drawing machines for blind and low vision pupils. Looking at the situations which these schools face, reaching the planned goals is very difficult. This can only be done by making sure that these setbacks are abolished for the betterment of providing better inclusive education and hence those with special needs and those with not enjoy the learning. Said (2017) denotes that the achievement of inclusive education rests on quality teaching and learning materials. If there is unavailability of the teaching and learning materials it will be very difficult to have quality inclusive education especially for the children with special needs. At the end of the day these children will exclude themselves from the education system which seems isolating them. Satisfactory efforts are needed to save the established inclusive schools.

Inadequate classrooms

The study showed the lack of classrooms is really a problem in all these two schools. In all two schools, pupils with special needs are staying in the single classroom regardless their levels because of inadequate classrooms. Sometimes this causes lack of attentiveness in the class while teaching other pupils others is making noise. Due to the situation, these schools are not friendly for the practice of inclusive education. The best way is for the government and other education stakeholders to build preparation classes for the pupils with special needs depending on their level, this would help to further development of inclusive education. Hamad (2015) found out that the learning environment was not conducive to all learners, in the schools there was a high shortage of teaching and learning facilities and the classes were overcrowded. This is what has

been experienced in many inclusive schools due to lack of classrooms pupils are overcrowded.

Less of Motivation to teachers

Motivation of teachers is a crucial aspect to be considered in inclusive schools. Teachers use their ample time differently from the teachers in the regular schools. Teachers suggest that at least the Government should recognize their effort in helping these children as some time they use their own money in paying the visits of these pupils. When students are sick they send them to hospital as many of those pupils do not have health insurance. According to Omoro and Possi (2023) teachers' self-efficacy, particularly in instructional practices, as well as teacher demographics (except gender, age, and education) are considered to be significant factors that predict their inclusive practices. It is very important for the government and the community to value teachers' contribution towards efforts and motivate them. It is difficult to compensate for what they are doing, but little recognition of their effort is very important. The researcher revealed that inclusive education in public primary schools is very attractive to teachers and pupils but the big problem is an unfavorable teaching and learning environment, which leads to difficulties in the implementation of inclusive education. However, teachers manage to work in helping pupils with special needs apart from those difficulties that they encounter. Pupils enjoy the social interaction they get after being at school like using toilets for cognitive impaired pupils. Nevertheless, the society is sending the pupils with special needs to school as those children are no longer seen as a burden because they can sometime do their work with little or no assistance, and now parents can do their economic activities for the family benefits. As inclusive education is an ongoing process, a never-ending mission which aims to increase involvement of all children with and without disability must be given much emphasis.

The curriculum in use in favouring inclusive education

Modification of the curriculum is very important because it leads to improvement of academics, this should suit the needs of all learners through the diversification of the curriculum for effectiveness in provision of appropriate educational programmes looking at the needs of students. Example students with special needs should be assessed differently with the students without special needs unless all limitations are resolved. Ainscow (2005) found that testing and assessment procedures used by

teachers in schools reflected biased practices so teachers must incorporate the views of the learners themselves and the achievement is about the outcome of learning across the curriculum, not merely tests or results. With the intention of helping, it will be better to assess students with special needs towards their achievement.

Lack of in-service training

The proportion of teachers and the number of students with special needs is still a problem. Hence in- service training is really needed to fill the gap, seminars and workshops from the grass root are advised so as all teachers in our schools to have special and inclusive education. Khan (2017) supported by saying teachers are not provided with training through regular professional development to address needs of all learners. Teachers need to get regular training for those who have special education and those who have not so as to fit in the world of inclusivity. Making it a daily agenda is very important. In addition, the lack of training in the field of inclusive or special education may lead to less positive attitudes towards the inclusion of students with disabilities into mainstream settings, and increased training be can associated with more positive attitudes in inclusive education.

With the argument above, one would argue that despite the efforts made by the Government of Tanzania, the contexts under which teacher's implemented inclusive education were not favourable to achieve education for all.

CONCLUSION AND RECOMMENDATIONS

Based on the findings, the study concluded that the constraints that faced teachers during implementation of inclusive education were inadequate teaching and learning materials, unfriendly environment to pupils with disability, small budget allocation, inadequate classrooms, less motivation to teachers, absence of in-service training, and curriculum in use is not in favor to pupils with disability. Hence, the constraints in the implementation of inclusive education are an impediment towards achieving the World Education Agenda for all by 2030. The study recommended that the government should find out suitable ways on how to solve the aforementioned constraints for smooth running of the inclusive schools so as to maintain the teachers' positivity in the implementation of inclusive education.

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Enhancing Chemistry Learning Using Language Supportive Pedagogy in Multilingual Classroom

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Abstract
While there is a rich literature on science teaching and learning, little is hardly documented about how Chemistry learning is enhanced in lower secondary schools in Tanzania. This qualitative study assessed Chemistry learning using the Language Supportive Pedagogy (LSP) approach in multilingual classrooms. The study was conducted in community secondary schools in Kagera Region and it involved 30 Form II students who were randomly selected. It also involved 5 in-service Chemistry teachers in the host schools and 5 student teachers from the University of Dodoma with Chemistry specialties and Language Supportive Pedagogy (LSP) skills. Both in-service and student teachers were purposively selected for the current study. LSP employed a bilingual teaching approach whereby Kiswahili was strategically used alongside English to enhance Chemistry learning. Data were collected through interviews, Focus Group Discussions and classroom observation. The study findings revealed that most students were able to use subject specialism vocabulary when interacting with fellow students, teachers and subject matter, participate in English discussion and respond to questions in English despite minor grammatical errors in their speeches. Similarly, in-service teachers, student-teachers and students recommended the LSP approach to facilitate more engagement of students in Chemistry learning through intentional scaffolding. The study concludes that more students engage in learning activities through familiar language and instructional scaffolding assured students' confidence and interest in learning Chemistry. It recommends the scaling up of the LSP approach in other regions in Tanzania in an attempt to enhance smooth Chemistry learning.

Keywords: *Language Supportive Pedagogy (LSP), multilingual classroom, "English only" approach, bilingual teaching approach*

INTRODUCTION

Language Supportive Pedagogy (LSP) is an approach that integrates language learning into the teaching and learning of different subjects among students whose language ability is not sufficient for learning

subjects effectively without support. The LSP approach is increasingly drawing attention in Sub-Saharan Africa and Tanzania is no exception. The education and training policy of Tanzania recommends Kiswahili[1] as the language of learning and teaching (LoLT) for public primary school[2] education and English as LoLT for secondary and higher education (United Republic of Tanzania [URT], 2014). As Brock-Utne (2006) insists, the secondary schools which receive students from public primary schools do not aim at giving the learners any specific language proficiency qualifications as a preparatory step before being taught in English. If the learners are not furnished with any specific language proficiency, how will they master science content tailored to the language which they lack proficiency?

Sumra and Katabaro (2014) enlighten that the current practice of using Kiswahili in primary schools for the vast majority of children and English at secondary and higher levels is creating quality problems at the secondary school level. The findings by Cantoni (2007) corroborate those by Sumra and Katabaro in that the sudden transition from mother tongue to English instruction creates some descent in the participation of the pupils and possibly in the learning in the new language and content subjects. The fact that the issues related to language of instruction, as Adamson (2016) also explicates, should be fundamental to any definition of quality education or learning as it is the medium through which learning is communicated and most often demonstrated. Contrary to Adamson's argument with regard to the significance of language of instruction in relation to quality of education, the case is appalling in Tanzania. Despite teaching English as the subject from the first year of primary school, many children, do not acquire adequate proficiency to cope with an English medium instruction upon joining secondary education (Joyce-Gibbons et al., 2017). According to Joyce-Gibbons et al., some students lose hope, especially when they meet English language at secondary schools, and to some, it acts as a barrier towards students' understanding with regard to what the teacher is teaching and it suppresses their capacity to learn.

[1] Kiswahili is a Bantu language originating from the coastal areas of East Africa, which serves as an accessible lingua franca for most Tanzanians. It is also the Tanzania's national language which also serves as a native language to most Tanzanians notably those born and raised in urban Tanzania.

[2] They are primary schools in the country are accessed by the children from low-income families and those who do not have access to sponsorship.

To address the challenge of English proficiency among secondary school entrants, the first eight weeks are currently spent for English orientation course which aims to equip the referred entrants with necessary language skills before the commencement of secondary education. However, the experience shows that English teachers do less than required for a typical orientation, not to mention the ability of other subject teachers to teach English (Sane, Ndabakurane, & Biseko, n.d.). As such, the science curriculum, as conceptualized and delivered, does not necessarily consider the learners' level of proficiency in the language of instruction, in this case, English. The fact that most of the learners in lower secondary schools lack considerable English proficiency to cope up with academic needs in subjects content has consistently been emphasized in Tanzania (Ndabakurane, 2020). Ndabakurane further reports that whenever English is used as the sole medium of instruction through "English only" approach, the class becomes less interactive by most of the learners being silent. The relationship between language mastery and meaningful learning has largely been documented by Wang and Qi (2018) and Cantoni (2007). The aspect of learner's language proficiency has not been given due attention and it is normally detached from science learning as long as science does not have language component. This motivated the author to address the question of language in science learning in a multilingual classroom[3] as a question of learners' concern through LSP in selected community secondary schools in Tanzania.

Principles of Language Supportive Pedagogy (LSP) Approach

The LSP is considered to be a pragmatic response which builds on enduring challenges to learning science content by enhancing language skills to enable the learners with limited language proficiency cope with subject content offered in the language that they require proficiency. It also brings together language educators and other experts (science educators in this context) to develop an approach that supports students' subject and language learning all together. According to Rubagumya, Sane, and Ndabakurane (2021), the principles of LSP require the subject teachers to:

i) Guide the learners to accomplish activities by giving them clear

[3] This is a classroom which comprises students who are capable of using (mostly in spoken context) three languages. However, most students would adeptly speak two languages namely Kiswahili and Ethnic Community Language (ECL). English comes in as a third language through classroom learning.

instructions. The teacher can still use the learners' first language when necessary;

ii) Encourage learners to discuss using the language that they are familiar with to clearly conceptualize the content and connect it with what they learnt before;
iii) Make sure that everyone fully participates in class activities;
iv) Help them prepare their English presentations for the class;
v) Make sure that everybody gets an equal opportunity to prepare and present responses to the class;
vi) Encourage more girls to participate actively because in many rural schools, boys get more opportunities to participate compared to girls and
vii) Clarify all unclear points to encourage learners to read further.

The suggested principles of LSP are accomplished through the strategic use of Kiswahili. In this context, strategic use of Kiswahili implies that Kiswahili should be used when the needs arise. Therefore, implementation of LSP approach recognizes parallel use of English and Kiswahili. This fact is supported by Cummins (1980a) as quoted in Baker (2006) in that information processing skills and educational attainment may be developed through two languages as well as through one language. The two languages should, however, be equally successfully developed. In some circumstances, Kiswahili is not necessarily used in LSP classroom. The teacher may use a variety of teaching approaches which requires the teacher to simplify his/her English, thus making his/her students connect well with the content being covered.

The author of this paper would like to emphasize that LSP embraces bilingual approach without affecting the current language policy. It does, however, not suggest the replacement of English by Kiswahili but working in harmony. It is, therefore, worth mentioning that LSP approach is in tandem with the current parameters of the current education and training policy of Tanzania. The policy provides that Kiswahili as the national language will be used for teaching and learning at all levels of education and training, and the government will introduce a mechanism to facilitate the sustainable and effective use of this language in providing the targeted people with productive education and training both nationally and internationally (URT, 2014). URT furrther provides that the government will maintain the mechanism of strengthening the use of English language in teaching and learning at all levels of education and

training. Although the two clauses contradict each other by recommending both Kiswahili and English to be used in teaching and learning at all levels of education, the strategic use of Kiswahili medium in teaching Chemistry content stands to be a viable option in multilingual classroom. According to Mulwa (2014), the language used for thinking is most likely to be the learner's first language. Simultaneous use of two languages has been recommended by Creese and Blackledge (2015) in Chinese classroom context. For instance, both Chinese and Gujarati were needed for the story to be understood that is, the teacher used and allowed the student's bilingualism for the story to be made complete. It should, therefore, be noted that there is no harm behind simultaneous usage of both English and Kiswahili in the classroom context as Kiswahili can facilitate English learning.

Studies on Science Teaching Strategies

Teaching and learning Physics, Geography and Chemistry has not been effective in Tanzania, the context whereby Kiswahili is predominant (Maganga, 2016) due to learners' poor capability in English, which limits their ability to understand concepts. Bikongoro (2012) opines that most students from Swahili-medium primary schools fail secondary school examinations due to their insufficient English proficiency and fail to grasp large parts of the content presented in English in most lessons at secondary school level. Elsewhere, South Africa included, poor learner achievement has been closely linked to several factors including limited English language proficiency and literacy (Prinsloo, Rogers, & Harvey, 2018). In Kenya, Mathematics communicated in one language might need to be translated into another language to allow thinking and then translated back in order to converse with the teacher (Mulwa, 2014). For effective science learning, the learner must play an active role in 'taking on' the new knowledge through the range of learning activities (Millar, 2004). Millar further reveals that a learner has to 'make sense' of the experiences and discourse of science class, and use it to 'construct meaning'.

Bruun and Christiansen (2016) insist that fundamental insight should be utilized in teaching by devising experiments and teaching that explores the analogy between the students' basic bodily experiences and physical concepts and language. The use of local material adds value in terms of their content and pedagogical skills, creativity and confidence in teaching practical lessons (Kira & Nchunga, 2015). Millar (2004) reports that

learning science should involve seeing, handling and manipulating real objects and materials, and that teaching science will involve acts of 'showing' as well as of 'telling'. According to Yitbarek (2012), low-cost apparatus from locally available materials is believed to enrich the capacity to observe, explain and do real science. To meet the aim of utilizing locally available resources at low costs, Kira and Nchunga (2015) conducted practical lessons using local materials such as pins and plastic bottle to demonstrate the concept of floatation in connection to students' life situations.

Bonces (2012) and Harrop, E. (2012) propose Content and Language Integrated Learning (CLIL) as an effective approach in learning subject content as entails teaching the foreign language while students learn the subject – matter. In its broader sense, CLIL refers to any dual focused type of provision in which a second language, foreign or other, is used for the teaching and learning of a non-language subject matter, with language and content having a joint and mutually beneficial role (Marsh, 2002 as cited in Harrop, 2012). Given the fact that CLIL accommodates the learners with diverse language backgrounds, it can, therefore, translate well an aspect of placing learning in a truly multilingual context. According to Bonces (2012), CLIL has been able to guarantee students communicate academically and socially and it opens new borders and encourages students to explore and travel around the world.

The reviewed literature presents the rich strategies used to enhance science teaching and learning at various levels of education. It is evident that science learning enhancement may be accomplished through translation of difficult or unfamiliar vocabulary to students, a range of activities, drawing on learner's past knowledge and experiences, experiments, practical works, local material, manipulation of real objects and scaffolding by the knowledgeable other. However, to enhance effective science teaching, the strategies in question need to be integrated with LSP approach if the desired outcomes were sought. This study argues that employing Chemistry learning strategies in Tanzanian context (where students' English proficiency is relatively low) in isolation from language component is as good as disconnecting the learning process. The fact that the language should be developed in order to enhance Chemistry content learning and fully functioning of the child's cognitive system is contrary to what transpires in both Tanzanian educational system and classroom context. The current study, therefore, is an attempt to enhance

Chemistry content learning using Language Supportive Pedagogy (LSP) approach in multilingual classroom. It uniquely employs strategic use of learners' familiar language, in this context Kiswahili, in learning Chemistry content. It also inculcates a sense of collaboration between the Chemistry teacher and language teacher or expert in the preparation of the lesson plan. The role of the language expert is to integrate language aspects in attempt to enhance smooth science learning among students whose English proficiency is undoubtedly low.

METHODOLOGY

The current study was conducted in Kagera Region in Tanzania in 5 community secondary schools which were purposely sampled. It employed qualitative research approach in collecting the data. According to Haradhan (2018), qualitative research is a form of social action that stresses on the way of people interpret, and make sense of their experiences to understand the social reality of individuals. The approach in question was ideal since the current study accommodate the data obtained from interviews, classroom observations and focus group discussion. Most of such data, as Haradhan (2018) insists, seek to explain 'how' and 'why' a particular social phenomenon, or program, operates as it does in a particular context.

It adopted classroom ethnographic research design around which the research activities were based. Classroom ethnographic research seeks to understand what is taking place in the classroom as the teacher interacts with the students and how the interaction of the students and their teacher in the classroom reflect the multiple social and historical contexts in which they are embedded (Bloome, 2012). In essence, the researcher sought to observe the interaction between the teacher and students, students and Chemistry content and students and students during Chemistry learning through LSP.

The study involved Form II students who were obtained through random sampling. The selection of Form II class was based on the fact that this is among the transition classes whose learners' poor capability in English limits their ability to understand concepts in Chemistry (Maganga, 2016). A total of five (5) student teachers from the University of Dodoma with Chemistry specialties and LSP skills and 5 in-service Chemistry teachers (in host schools) were purposively selected for the current study. On the

other hand, the total of 30 Form II students were randomly selected for the current study.

The data were collected using interviews which were administered to both student teachers and in-service teachers in the host schools and focus group discussions which were administered to Form II students having been oriented towards LSP. Moreover, classroom observation was conducted while the student teachers taught Chemistry using LSP approach in the classroom context. The in-service Chemistry teachers from the school's understudy were invited as the co-observers. The in-service Chemistry teachers' role was to observe the implementation of LSP approach in the classroom context and eventually give their opinion on its effectiveness in enhancing science content learning among Form II students.

Taylor, Sinha and Ghoshal (2006) revealed that the nature of the data determines which methods of data analysis are applicable. The data which were obtained through interviews and focus group discussion were first listened to in order to ascertain the quality of the data in relation research objectives requirements. The qualitative data on the form of written and verbal texts were further subjected to coding and later reduction of wordy details and selection of pertinent information regarding its richness in data. The analysis stage was followed by establishment of themes and sub-themes to reflect the occurrence of the details on the research tools.

FINDINGS AND DISCUSSION

Lesson Preparation and Associated Challenges

Among other things, LSP considers collaboration in lesson preparation whereby teachers with distinguished expertise in relevant science subject collaborate with language specialists in the preparation of the lesson plan. The preparation of some Chemistry lessons involved the student teachers (prospective Chemistry teachers) and researcher who is a language expert. The main role of the language expert was to facilitate stating of language objective in Chemistry lesson plan and determine the nature of activities that would engage learners in the learning process and foster subject specialism language. Therefore, the language aspect was highly considered in order to enhance the students' English proficiency, which would in turn, enhance the mastery of Chemistry content. Some of the language supportive aspects included loud reading, pronunciation, writing, forming simple English sentences using different scientific terms,

translation (from English to Kiswahili) alternatives, strategic use of Kiswahili, pictorial representations, probing statements etc.

According to student teachers, LSP implementation was associated with several challenges. Firstly, lesson preparation is challenging since planning and integrating language-related issues that would enhance Chemistry learning among students are apparently cumbersome due to their limited scope in language issues. Moreover, implementation of LSP approach, particularly reading and writing, is difficult for most students due to limited English proficiency, thus making it difficult to enhance Chemistry learning among some students. Limited English proficiency among most students is worsened by the influence of the mother tongue which limits them in mastering some English aspects such as pronunciation. For instance, the vowel phonemes /eɪ/ and /aɪ/ as used in words such as "lake" and "like" were clumsily articulated due to students' mother tongue. The words "lake" and "like" would be pronounced as /laɪk/ and /leɪk/ respectively instead of /leɪk/ and /laɪk/ respectively. The issue of language problem among the students transiting to secondary school has acutely been reported by several scholars such as (Brock-Utne, 2006: Qorro, 2006).

Secondly, LSP approach was reported as being time-consuming in its implementation, thus making it too challenging to locate learning activities which engage students directly in the prescribed time. Thirdly, encouraging some students, in some cases, becomes difficult especially having demonstrated low confidence in making presentations and responding to questions in English. In some instances, some students felt shy when laughed at having made language mistakes amid responding to questions. Fourthly, the number of students is recorded at 75 instead of the recognized or recommended number which amounts to 45. The issue of overcrowded classes was also noted by Jidamva (2012) to be the major hindrance towards quality teaching and learning in schools. Therefore, attending 75 students in an attempt to realize the goals of LSP was difficult since the teachers could not effectively render scaffold to needy students.

Instructional Strategies and Language Supportive Activities in LSP Class
Execution of LSP encompasses a wide range of teaching and learning strategies. During some Chemistry lesson, teachers encouraged the students to express themselves using Kiswahili especially at times when

they failed to do so in English. The fact that Kiswahili was strategically employed in clarifying some of the Chemistry concepts which seemed cumbersome was evident in several learning activities. For instance, the students were allowed to use Kiswahili to explain some Chemistry concepts such as melting point, freezing point and molten material notably having failed to explain the same in English. It was also strategically used by teachers through translation (from Kiswahili to English) of some Chemistry terms such as manufacturing, carbon, non-polar and polar solvent which seemed difficult. The finding in question is in consonant with the finding by Mpapalika (2013) in that teachers in Tanzania opted to use 'Swahili' language in order to support the learners to elaborate scientific concepts.

LSP approach operates in the parameters of interactionist theory (Vygotsky, 1978), which stress that learning occurs through interaction. This was evident in LSP classes through grouping students into group discussions in which they interacted over Chemistry material. Group discussions on various concepts or activities give students good opportunity to express their own ideas and enhance their language proficiency (Juan, 2014). The role of discussion is of paramount importance in that it engages the students and encourages their active participation in teaching and learning process (Garrett, 2008). For effective learning, LSP class encourages interaction among students, with the teaching and learning materials and with their teachers. Linking the lesson of the day with what was previously taught was observed through a myriad of tasks. For instance, in some instances, there was a brainstorming session before the coverage of the planned lesson items. Brainstorming focused on concepts such as autotrophs, polar and non-polar solvents, poisonous compounds, just to mention a few. The teachers also executed LSP by drawing from the students' prior knowledge during Chemistry lessons. By doing so, LSP was observed through encouraging learners to respond to various questions or tasks before teaching the planned concepts.

Other tasks which were assigned to students in attempt to engage them in classroom interactions included giving explanations on various concepts, question-answer quizzes or challenging tasks, deriving formulae on scientific concepts such as electrovalent and electrolysis. Furthermore, demonstration of various experiments and discussions over various Chemistry matters followed by presentation of findings were also meant

to engage students in learning Chemistry through LSP. LSP qualities were overtly evident especially in the instances when some of the students failed to pronounce some of the scientific vocabulary such as crystalline, ionic bond, cathode, anode and aqueous and use the same in spoken text. In some circumstances, the subject teacher would encourage students to speak out as they demonstrated their findings on the chalk board by writing in order to enhance Chemistry vocabulary use in both spoken and written texts. Initially, the calculations on the chalk board were done quietly due to lack of proper Chemistry vocabulary to use and how to use them during the presentation.

Despite being able to employ a variety of instructional skills, some of the teachers still face language problem especially in grammar and pronunciation. The teachers' limited pronunciation and grammar were reflected through the following sentences as captured during Chemistry lesson:

T 1: Write five different between cathode/kæsɒd/ and anode/ænɒd/.
Ideal grammar and pronunciation: Write five differences between cathode/kæθəʊd/ and anode/ænəʊd/.

T 2: It is something/sʌmsɪŋ/ which look like a mirror/mɪrɒ/.
Ideal grammar and pronunciation: It is something/sʌməɪŋ/ which looks like a mirror/mɪrə/.

T3: If someone is running, it is movement/mʊvment/ or locomotion/lɒkɒmɒʃen/?
Ideal grammar and pronunciation: If someone is running, is he/she making a movement /mu:vmənt/ or locomotion/ləʊkəməʊʃn/?

T 1: Ion is a feature of the radio/redɪɒ/ battery/betrɪ/?
Ideal grammar and pronunciation: Is ion a feature of the radio/reɪdiəʊ/ battery/bætəri/?

T 2: What you mean by crystalline/kraɪstælɪn/?
Ideal grammar and pronunciation: What do you mean by **crystalline**/krɪstəlaɪn/?

T2: Ok. Radio battery is ionic/ɪjɒnɪk/ or non-ionic/næn-ɪjɒnɪk/?
Ideal grammar and pronunciation: Ok. Is radio battery ionic/aɪɒnɪk/ or non-ionic/nɒn-aɪɒnɪk/?

Source: Classroom observation

With reference to above teachers' sentences, it is evident that some of the teachers still face grammar and pronunciation challenges as the sentences

in question clearly indicate. The analysis indicates that the first sentence bears an adjective "different" which was wrongly used. The word "differences" which is a noun appears to be an appropriate word to make the sentence grammatical. The grammatical aspect appears to still be a problem among some of the teachers who seem to face a lot of challenges in "question forming" as revealed in the sentences as captured from the teachers during Chemistry lessons. The pronunciation aspect has inherently been a big challenge among some of the teachers as some of the key words in the subject matter were wrongly pronounced as revealed in all sentences. As Gilakjani (2016) affirms, limited pronunciation skills among the students may limit subject's content understanding. Gilakjani further affirms that if learners cannot utter the correct version of a word, they may consequently not be able to communicate it correctly.

Limited English proficiency among science teachers is also evident in other countries where English is used as language of instruction. This may, among other factors, be attributed to limited exposure to English use especially outside the school premises. As Hormarsdottir (2006) insists, most science teachers in South Africa do not use English outside the classroom setting and, as a result, their own exposure to the language is also limited. Such limited language proficiency among teachers is what Brock-Utne (2006) refers to as humiliating experience which may not happen when the teaching is in Kiswahili. This implies that strategic use of Kiswahili may save the teacher from English humiliating experience.

Through LSP approach, the learners were encouraged and oriented to participate in classroom activities that develop language skills, namely listening, reading, speaking and writing. Cummins (1980a), as quoted in Baker (2006), argued that speaking, listening, reading and writing in the first or the second language helps the whole cognitive system to develop. Several learning activities such as presentation of responses orally before the class and orienting students to correctly pronounce scientific terms such as crystalline, ionic bond, cathode, anode, compound, aqueous, electrolysis etc. were geared to enhance both presentation confidence and speaking skills among students.

Despite the big number of students in the class, group activities constituted part of the learning activities and were frequently given amid the teaching and learning process. During group activities, the learners taking part in the discussion were given greater autonomy to choose the

language to be used in discussing Chemistry subject concepts as assigned by their subject teachers. In the environment where English was used for discussing assigned tasks, the discussion was conducted in whispers. On the contrary, the discussion was actively done whenever Kiswahili was used as the medium for discussion. An appropriate thinking would rather be done in a familiar language than in a foreign one (Baker, 2006). After the discussion, the students were willingly asked to present their responses in English before the class under the guidance of subject teacher. In case of English challenges, some of the teachers could intervene in the process and guide the students through the appropriate approach. However, this approach works, at its best, when the teacher encourages his/her students to try to speak regardless of the likely language mistakes to be committed by a student as he/she speaks. However, some of the teachers could care less when language mistakes were committed by the students. Improving students' oral communication skills is a primary outcome of presentation/speech classes (Dollisso & Koundinya, 2011). Assigning students to copy notes in their copy books, listening while taking notes and inviting students to write responses on the board was evident in two classes and was geared to enhance writing skills among the students. Reading and listening skills among the students were largely enhanced through loud reading of the texts from the books and words or phrases on the board.

Language Guidance and Students' Lesson Participation

Through classroom observation, language guidance and students' participation were highly observed during LSP implementation. The two aspects were handled in several ways. The students were guided, from time to time, on how to pronounce Chemistry vocabularies which seemed completely alien and difficult to pronounce. This finding is in consonant with the finding by William and Ndabakurane (2017) in that the students faced more difficulties in pronouncing Mathematics terms in English because they had few English vocabulary. Words such as crystalline, ionic bond, aqueous, electrolysis, radius, periodicity, configuration, immiscible, electrolysis etc. seemed difficult to pronounce among most Form II students. It is worth mentioning that most students in lower secondary schools demonstrate limited English proficiency as Sumra and Katabaro (2014) and Rubagumya et al. (2021) report. For instance, Rubagumya et al. (2021) insist that adequate preparations for students to learn through English and enough resources dedicated to supporting students to learn the language are lacking.

Given their low level of English proficiency, most students were frequently scaffolded in sentence forming and uttering most Chemistry specialism vocabulary. The scaffolding was also widely used in guiding the students on how to appropriately use Chemistry terminologies in different contexts. For instance, most of the students failed to grasp the meaning of the word heterogeneous and phrase molten stage until when helped by their teacher. The students' failure to grasp the meaning of Chemistry terminologies is an inherent feature of monolingual class where English is a sole medium of instruction. To enable the students grasp the meaning of the word heterogeneous and phrase molten stage, the teacher translated them as "-enye mchanganyiko" and "hatua ya uyeyukaji" respectively. He also gave examples on how each of the two concepts can be used in a sentence. The following students' sentences indicate the extent to which the meanings of the word heterogeneous and phrase molten stage were grasped.

ST 1: Solvent is *heterogenous* as its colour indicate.
Ideal sentence: Solvent is *heterogenous* as its colour indicates.

ST 2: Our class is *heterogenous* because it has boys and girls.
Ideal sentence: Our class is *heterogenous* because it comprises the boys and girls.

ST 3: Water level was increased when ice reached *molten stage*.
Ideal sentence: Water level increased as an ice reached *molten stage*.

ST 4: Sun can *melt* ice.
Ideal sentence: The sun can *melt* an ice.

Source: Classroom observation

With reference to above sentences, it indicates that some of the students could appropriately use the vocabularies in different contexts having grasped their meanings and exposed to teacher's scaffolds. The analysis of the sentences constructed by the students had obvious grammatical errors. Semantic errors also characterize some of the formed sentences as reflected in the third sentence. Although the students were capable of constructing sentences in attempt to show how the vocabularies can be used in various contexts, just a few of them especially boys would do it. Despite being encouraged, the girls' participation in presenting group responses and responding to teachers' questions was evidently low. Girls' limited participation in science subjects is also documented elsewhere in African countries. For instance, Ekine and Abay (2013) acknowledge the

issue of girls' limited participation in science subjects in Nigeria. Since LSP approach is gender sensitive, encouragement of students' participation in the learning process would cut across both female and male students.

While students in LSP classes are given scaffolding when facing learning challenges, the case is different in ordinary science classes where students are punished in case they give incorrect answers (Brock-Utne, 2006). In an attempt to guide students, improve their English skills, group discussions coupled with reporting back what was discussed in their groups were used from time to time in LSP classes. Some of the sentences generated by the students during reporting of the group responses include but not limited to the following:

ST 1: Boiling point is a temperature at which liquid boils to form gas.
ST 2: Melting point decrease down the group.
ST 3: Period is a horizontal column of elements.
ST 4: Group is a vertical column of elements.

Source: Classroom observation

With reference to above sentences, the sentence analysis indicates that most students were able to construct correct, meaningful and fully-fledged sentences especially having been exposed to LSP approach. However, some of the students still need scaffolding to improve the language proficiency especially in spoken English. The teaching experience indicates that short responses characterize most students' written and spoken texts. For instance, Brock-Utne (2006) insists that the "yes response" was probably the only talk from the students in Tanzanian classes. Such short responses limit the students' possibility of developing language ability that would help them use English in different contexts and access both Chemistry content and learning materials. The learner who understands the learning language will be in a better position to understand during the learning process and acquisition of knowledge from different sources (Bikongoro, 2012).

Teachers' and Students' Views on Effectiveness of LSP Approach in Enhancing Chemistry Content Learning

Through interviews with both student teachers and Chemistry teachers in host schools, the views on the effectiveness of LSP in enhancing Chemistry learning were sought. During the interview, Chemistry

teachers in host schools reported that LSP approach is vitally important not only in Chemistry teaching but also in teaching other subjects. According to teachers, it gives flexibility to them to uniquely use learners' familiar language, Kiswahili in this context, to elaborate or translate Chemistry concepts especially those ones which seem unfamiliar to most students. This is mainly done in order to enable the students connect well with the concepts that they learn in science. In support of the argument in question, one of the teachers had the following assertion to comment during the interview:

> *... When we use English as the medium of instruction to students from Swahili medium schools from the beginning to the end, they don't understand the subject matter. So, as you change and, at least, use Kiswahili at some point, it makes their life easier when studying Chemistry (Interview with Chemistry teacher in one of the school's understudy).*

Secondly, it enables students participate fully during the teaching and learning process because they can easily grasp concepts as they are given necessary scaffolding in case of any challenges during the participation. Thirdly, LSP approach was recommended to be an ideal approach as it efficiently addresses the question of difficult or unfamiliar scientific terms through translation (mainly from English to Kiswahili). When the meaning of vocabulary is well known to a learner, learning becomes meaningful since the learner can easily comprehend the larger text which would otherwise be difficult to comprehend in the presence of a single unfamiliar or difficult vocabulary. Fourthly, being able to perfectly explain what was taught or covered in the class is the concrete evidence that LSP approach is effective. Understanding the subject matter is demonstrated by what a learner can do after instruction to signify the change in behaviour.

According to most students, LSP was recommended to be an ideal approach as it engages students in a myriad of activities around which concepts are made clear through the language that they best understand. Secondly, it is a good approach since it relies much on discussions over concepts which would have been difficult if dealt with individually. Thirdly, it encourages the use of teaching aids which not only expose the students to real object but also help them to acquire new subject specialism vocabulary. Some of the subject specialism vocabulary as attested by students include but not limited to high concentration, low concentration, crystalline, non-polar solvent, polar solvent and aqueous.

The classroom observation further indicated that the majority of students were able to freely involve themselves in discussion especially when Kiswahili was used. Interestingly, the majority of students whose discussion was in English did it in whispers or remained silent in the entire period of discussion. This finding was in consonant with that by Bikongoro (2012) in that the students' ability to express themselves in classroom is partly limited by the use of English as the medium of instruction, thus constituting a serious cause of poor quality of teaching, low level of acquisition of knowledge from different sources where English dominates. The findings in question also correspond with those by William and Ndabakurane (2017) and Brock-Utne (2006) in that most students remained silent during the discussions, notably when the discussions were done in English. The observation findings further indicated that 78.7% of the students who volunteered to ask questions and responded to questions posed by the teacher were able to do so in English. The research evidence indicated that most students especially in two schools out of those school's understudy demonstrated the highest ability in responding to questions posed during the lesson. The students' increased ability in responding to questions and participation in the teaching and learning process signals an increased students' mastery and interest in learning science subjects after the exposure to LSP approach.

Pedagogical Implications of LSP

LSP entails innovation in teaching methods and language approaches by considering language aspect as a potential lubricant of the teaching and learning process. Based on the principles of LSP as advanced by Rubagumya, Sane, and Ndabakurane (2021), the following constitute pedagogical implications: Firstly, the Tanzanian language policy should be recognize the role of the learners' familiar language in learning both foreign or second language and content. This implies that the foreign language in this context English may co-exist with learners' familiar language and work harmoniously in the classroom interaction. Secondly, since LSP requires the subject teacher to render the scaffold to needy learners to make them learn both language and subject content with ease, the teachers are required to get hold of linguistic aspects to be able to scaffold the learners faced with critical learning difficulties. Thirdly, LSP inculcates inclusive learning by making the teaching and learning process fun by accommodating all learners with diverse socio-economic backgrounds. Lastly, LSP needs to be conceived as a multifaceted

potential aspect which delineates linguistic diversity as a spice to meaningful learning.

CONCLUSION AND RECOMMENDATIONS

Based on the findings of the current study, it can be concluded that more students' engagement in learning activities through familiar language and other instructional scaffolds assured students' confidence, interaction with the subject matter, mastery and increased interest in Chemistry content learning and usage of subject specialism vocabulary in meaningful context. There should be a deliberate effort to integrate language objectives in Chemistry lessons through collaboration between Chemistry teachers and language specialists to enhance the learners' full learning potential. This paper appeals to all teachers, notably those other than language specialists, to have language objectives in mind when planning for the lesson of the day. Coupled with other language-supportive gears, the learners' familiar language, Kiswahili in this context, should constitute an integral part of teaching and learning Chemistry in multilingual classrooms. Using the "English only" approach limits students' participation and exploration of knowledge and it, indeed, undermines the teaching and learning process. Despite being potential in enhancing both content and English learning, most of the in-service teachers would initially cast doubt on the usage of the learners' familiar language, Kiswahili in this context, in scaffolding the learners when the need arises. To such teachers, the usage of Kiswahili in teaching in the classroom context contradicts the language policy as far as teaching is concerned. Since LSP proved greater effective in Chemistry learning, the study recommends the scaling up of the LSP approach in other regions in Tanzania in an attempt to enhance Chemistry and other subjects' content learning. Based on the great potential of LSP in science teaching as the study findings demonstrated, scaling up LSP to other schools is deemed necessary. The study also recommends the introduction of LSP in all classes at lower secondary schools in an attempt to safeguarding and nurture the students' talented abilities in science along with their language enhancement. Moreover, the extension of LSP in other non-science subjects except Kiswahili is highly recommended to address the issue of language difficulties among students whose English background still poses a subject learning quagmire. The integration in teaching science and non-science subject content learning is guaranteed through recognizable classroom context which may not be disentangled from the learners' familiar language coupled with other learning supportive gears.

Embracing a bilingual approach through the parallel use of Kiswahili as a co-medium of instruction in teaching Chemistry does not necessarily suggest the replacement of English by Kiswahili but working in harmony.

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Madesa or books! Using a Coverage Comprehension Model to Assess University Students' Ability to Comprehend Reference Books

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Abstract
Studies on reading in a foreign language report that meaningful reading comprehension is determined by an individual's vocabulary size. A conclusion from these studies is that a vocabulary threshold of 8000–9000 words is compulsory for the reader to comprehend 98% of running words in academic texts and consequently achieve optimal comprehension of the materials. A threshold of 4,000–5,000 words can only assist readers to understand 95% of running words, which guarantees minimal comprehension. This study examines the relationship between the vocabulary size of undergraduate university students and the vocabulary coverage of reference books sampled from among those listed in their course outlines. This corpus-based and descriptive study used the Vocabulary Level Test (VLT) to assess the vocabulary size of 774 participants and a vocab profiler to analyze the vocabulary coverage of the nine sampled reference books. The results showed that, on average, the participants' vocabulary size would enable them to comprehend 95% of the running words in most of the books in the sample, but that size would not help them to understand 98% of the running words in any of the sampled books. These results suggest that, on average, no student in the sample could have optimal comprehension of the sampled reference books. Therefore, our study calls for the need to introduce serious reading programmes at the primary and secondary school levels so as to promote students' vocabulary size and reading comprehension ability.

Keywords: *Vocabulary, vocabulary coverage, vocabulary family, vocabulary size, reading comprehension*