Assessment Report of
Literacy and Numeracy levels for Primary School learners in Babati, Monduli and Ngorongoro Districts in Tanzania

GRiC

Grassroots nest for Innovations and Change

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List of Acronyms

COVID-19	Corona Virus Disease of 2019
FGD	Focus Group Discussion
GIS	Geographical Information System
GRIC	Grassroots nest for Innovations and Change
KII	Key Informant Interviews
KKK	Kusoma Kuandiaka na Kuhesabu
MoET	Ministry of Education and Vocational Training
MoHCDEC	Ministry of Health, Community Development, Gender, Elderly and Children
PWC	Pastoral Women Council
SPSS	Statistical Package for Social Sciences
UDSM	University of Dar es Salaam
WEO	Ward Education Officer

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Acknowledgement

Foreword

Foundational literacy and numeracy skills are the fundamentals of lifelong learning and social and gainful economic participation. Throughout the grades, literacy and numeracy skills are applied across all areas of learning. Acquiring the requisite literacy and numeracy skills empower learners to make meaning, think critically and creatively, and contribute to them reaching their full potential in their academic journey and, ultimately in life.

The Government of Tanzania and non-state actors have implemented interventions to promote the acquisition of literacy and numeracy skills, especially in underserved communities, with varying levels of success. Several factors are cited as both enablers and critical factors in ensuring learners acquire these skills. Categorized broadly into school and home-based factors, some of these include the large classes disabling close interactions between learners and teachers, whole class interventions that do not consider the variances in learners' numeracy and literacy abilities even within the same class, and home environments that do support continued learning.

GRIC is a regional non-profit organization passionate about and committed to ensuring that underprivileged learners go to school, stay on, and thrive. To us, education is an equalizer and an avenue for getting underserved communities off the cyclic, intergenerational web of poverty. We believe in working with and empowering grassroots organizations and structures to take up and optimally support education in their communities.

In Tanzania, we are implementing a numeracy and literacy program coordinated by Pastoral Women's Council that brings together six grassroots organizations. This project 'kusoma, kuandika na kuhesabu' aims at supporting learners furthest behind in the literacy and numeracy pyramids from the Arusha region. This assessment provides information on literacy and numeracy levels in the target areas and the factors affecting them. It provides the opportunity for the Government and other education stakeholders to implement innovative approaches to learning, monitor, and track and evaluate progress of the community-based education project in the pastoralist Arusha region and similar locations in the region.

We believe that both the Government of Tanzania and other non-profit organizations will use the results of this study to model and correctly place interventions that support learning in the underserved communities around Arusha region and beyond.

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Executive Summary

The overall aim of the baseline study was to collect and document empirical data on the literacy and numeracy capacity for primary school pupils in Babati, Monduli and Ngorongoro Districts in Tanzania. Literacy and numeracy assessment was administered to 1,179 pupils (396 in grade three, 405 in grade four, and 378 in grade five) who were randomly selected from two gender clusters; male (532) and female (647).

Given our intimate experienced-based knowledge of the education landscape in Tanzania, and the study location, and backed by literature, we deployed purposive sampling to select study districts and schools. In Monduli districts, Arkatan and Ledikinya primary schools were selected, in Babati district, Kakoi and Oltukai primary schools were selected while in Ngorongoro district, Monic, Engaresero, Sekenya and Soitsambu primary schools were selected. The baseline assessment sought to establish the current literacy and numeracy proficiency status using the ASER tool. ASER tools and procedures are designed by ASER Centre, the research and assessment arm of Pratham. it was first developed as a nationwide survey of reading and math achievement of children from rural India. It has since been adapted and contextualized for use in East Africa, including Tanzania, by the Ministry of Education and Vocational Training (MoET).

Purposive sampling was used to select Key Informant Interviewees (KII) and Focus Group Discussion (FGD) discussants. The baseline survey was enriched by information from 16 KII interviews and 16 FGD discussions. A total of 359 household heads (parents and caregivers) were randomly selected and interviewed for the household survey to assess the possible factors that affect the learning capacity of pupils beyond the school environment.

Literacy results indicate that learners have a better grasp of Kiswahili compared to English both at grade and gender levels. About 45.6% of learners in grade five can fluently read a story in Swahili, compared to only 19.4% of learners in the same grade who can fluently read a story in English. The same is replicated in grades four and three where 19.7% have fluency in reading Swahili stories compared to 7.1% with the same skills in English, and 11.4% in grade three with Swahili reading fluency compared to 0. 9% with the same competencies in English. Gender-wise, 34.7% of males can fluently read Swahili stories compared to 20.6% of the same gender who can read English stories. 32.9% of females can read Swahili stories fluently, with only 18.1% of the same gender able to read English stories.

In numeracy, boys performed better than girls in manipulating advanced numeric operations. About 41.2% of boys compared to 34.9% of girls can solve at least 2 subtraction problem solutions with borrowing (level four).

Across grades, there are 64.8% of learners in grade 5, and only 33.5% in grade four, and 18.4% in grade three with the ability to solve at least 2 subtraction problem solutions with borrowing (level four). Another trend noted by the study was that the gap in mastery of numeracy between the two genders widens as the levels advances. In level one, 72.7% of boys compared to 67.9% of girls could recognize at least four numbers out of six provided from 1-9. At level 2, 54.9% of the boys compared to 52.8% of the girls could identify 4 out of 5 numbers between 10-99.

Acquiring numeracy and literacy competencies is at the centre of success as it expands the chances for upward social mobility by learners from underserved communities. There is a need for concerted efforts to create a holistic learning ecosystem that promotes continued learning beyond the confines of the schools and allows all stakeholders to take up and play their roles. Simple, contextualized remediation activities should be infused into mainstream learning activities, learners should be provided with learning materials, and the learning infrastructure expanded. Parents and caregivers have been identified as critical players in ensuring continued learning, yet lack of skills make them a weak link in the ecosystem. There is need to continually upskill them on how they can support learning at home.

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1.0 Introduction and background information

Grassroots nest for Innovations and Change (GRIC) is an organization designed for community-driven sustainable impact. We believe in the skills, abilities, and competencies of grassroots organizations to initiate and drive sustainable change. We partner with and upskill local youth, communities, and Community-Based Organizations (CBOs) to seek solutions to the challenges facing their communities. This ensures the positive change triggered during our intervention period is ingrained in and owned by the communities and outlives our projects.

Our key entry point in any community is education. Education is a great social equalizer. Access to high-quality education opportunities level the playing field for disadvantaged children (Sterling, 2001). Our work is geared towards bringing together local youth, families, existing community structures, CBOs, the line government ministries, and officials in creating an ecosystem responsive to and supportive of child development and education.

1.2 Brief about the project

GRIC partners with 26 grassroots organizations across the East-African region. Six of GRIC's partner CBOs are implementing programs in the pastoralist areas within the Arusha region of Tanzania. The region is generally semi-arid, characterized with limited and erratic rains (Kihupi, Tarimo and Dihenga, 2007).

The partnership between GRIC and the six grassroots organizations in Tanzania is coordinated and housed by the Pastoral Women's Council (PWC). The project is designed to ensure that learners furthest behind in acquiring the necessary grade-level foundational numeracy and literacy skills are supported through a range of coordinated in-school and out-of-school learning activities. The project also aims to mainstream the role of parents and caregivers, school administration, school management structures, local and national government education officials in promoting holistic learning.

1.3 The Context of Tanzania

The Government of the United Republic of Tanzania recognizes the central role education plays in achieving the overall development goal of improving the quality of life for its citizens. Since attaining independence in 1961, the Government of Tanzania has shown a strong commitment to providing primary education for all its children by making policy decisions to improve access to education. In 2014, the Government of Tanzania introduced a fee-free education policy, making pre-primary and primary education free (UNICEF, 2015). This led to increased gross enrollment from about 70% before 2014 to 110% (UWEZO, 2015). The influx of students came with a challenge. The number of students has continually increased much faster than the schools' infrastructure, resulting in a skewed pupils-to-teacher ratio and inadequate teaching and learning resources. With the pupil-to-teacher ratio standing as high as 145:1 in some regions of mainland Tanzania, the quality of classroom teaching is negatively impacted (UNICEF, 2018).

Data from 2017 literacy assessments indicate that only 15% of Standard 3 pupils and 47% of Standard 7 pupils could read a Standard 2-level story in English (UWEZO 2017). Furthermore, results from the last three UWEZO assessments show a sharp decline in English pass rates for Standard 7 from 56% in 2014 to 47% in 2017. Overall, around 3 out of every 10 pupils (31%) who graduated from primary school in 2017 lacked basic reading and numeracy skills.

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1.4 Justification and purpose of the assessment

Whereas expanding school enrollment is fundamental, the most important measure of success in education is to verify whether the children attending school are learning. With COVID-19 adding to the pre-existing difficulties of the most vulnerable children—girls, children living with disabilities, or in extreme poverty (UNICEF 2018), the question of the quality of education accessed by these children is both critical and urgent.

The COVID-19 learning institutions lockdown in Tanzania was only for three months between March-June 2022, a comparatively short time of closure in the East-African region and globally. The real effects of the pandemic on the education of, especially, the vulnerable children in Tanzania, will reverberate from the economic component of life (World Bank, 2021). With the World Bank projecting an additional 1,500,000 people to sink below poverty levels in 2021, the ability of parents in underserved communities to provide the required education resources to support their children's learning needs, will be greatly hampered (World Bank, 2021). For all students, but especially those who are furthest behind in the learning pyramid, not having those resources makes learning generally, and specifically the acquisition of numeracy and literacy skills, even more complicated. The fallout from the pandemic threatens to depress the prospects of learners from underserved communities and constrict their opportunities far into adulthood. The ripple effects may undermine their chances of attending college and ultimately finding a job that enables them to support their families, limiting chances of any upward social mobility (HRW, 2022).

GRIC uses data and evidence to learn, improve and correctly place action. GRIC commissioned a baseline assessment in the Babati, Monduli and Ngorongoro Districts of Tanzania where our partner CBOs work. The purpose of the baseline survey is to collect actual ground data on the students' numeracy and literacy levels, which would be used as the benchmark based on set performance indicators in the results framework. This study sought to provide ground results on the status of literacy and numeracy among school pupils from Standard 3 to 5 in Monduli, Babati and Ngorongoro districts in the wake of the COVID-19 pandemic.

This report presents the project's background, aims, objectives, scope of the study, including the methods used to address the baseline objectives and the study findings.

1.5 Objectives of the study

In the project location, the study sought to determine two core objectives:

(i)   To assess the current literacy and numeracy levels of vulnerable learners in grades three to five.

(ii)   To assess stakeholders' perceptions of the factors affecting the literacy and numeracy levels of children in the underserved communities.

1.6 Methodology

This section discusses the methodology adopted to address the key baseline objectives. It presents the study design, the geographical location of the study areas and the targeted population, the sample size, and the data collection methods employed.

1.6.1 Study Design

To achieve the principal purpose of this evaluation, the baseline survey employed participatory mixed methods with a combination of quantitative and qualitative approaches and tools. This allowed for the triangulation of findings by bringing together data collected through more than one method and allowing for convergence in findings. Qualitative methods enabled the researcher

to obtain detailed information on various aspects of inquiry. Quantitative methods enabled the researcher to collect information from many respondents within a considerably short period.

Clarification of results based on multiple methods increased the interpretability and validity of constructs and inquiry by both capitalizing on inherent method strengths and countering inherent biases in the methods.

1.6.2. Study Area, Targeted Respondents, and Sampling Strategy

The study areas included three project districts, namely, Babati in Manyara region, Ngorongoro and Monduli in Arusha region.

Babati district is located at Latitude 4° 11' 45" south and Longitude 35.8759° or 35° 52' 33" east, at Elevation1,270 meters above sea level. As per Tanzania's last census conducted in 2012, Babati district had a population size of 312,392, males (158,804) and females (153,588).

Ngorongoro district is located at Latitude -3°14'23.03" S and Longitude 35°29'14.89" E. The 2012 national population census places the district's population at 174,278; males (82,610) and females (91,668).

Monduli District is located at Latitude 3°20'S and Longitude 36°15'E, as per 2012 census, the district had a human population of 158,929, males (75,615) and females (83,314).

The major ethnic group inhabiting the study areas is the Maasai community. The Maasai's are majorly semi-nomadic pastoralists who migrate within semi-arid lowlands and more humid uplands in search of water and pasture. They also engage in non-livestock-based activities, including petty business, tourism ventures, and wage labour.

Figure 1.0: Study areas

Source: GIS LAB (UDSM, 2022)

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1.6.3. Study Population

The study targeted in-school learners in grades 3-5 in selected primary schools. In-school interviews and globally standardized assessments targeting 1,759 pupils in grades 3-5 were administered to determine the learners' literacy and numeracy proficiency levels. Focused Group Discussions and Key Informant Interviews were conducted with teachers and head teachers in selected schools. Out-of-school FGDs were conducted among female and male parents/guardians/caregivers to determine opportunities and challenges which affect pupils' literacy and numeracy capacity. Key Informant Interviews with Ward Education Officers (WEO) provided a good understanding of the local and national policy environment on education and, specifically, how these affect literacy and numeracy levels in our areas of implementation.

1.6.4 Literature Review

A detailed review of secondary data was conducted to obtain relevant preliminary data for some indicators and identify gaps. This informed the design of data collection tools targeting the missing data. Key documents reviewed are attached as references in this report. To ensure that data collection tools captured the relevant data, GRIC and the PWC provided necessary project documents that guided the process of tools development and data collection.

1.7 Sampling Procedures

1.7.1. Sampling for Schools

The study deployed maximum variation purposive sampling techniques to select schools for assessing learners' literacy and numeracy levels. Based on the study teams' understanding of the project location, researchers were able to select research schools with typical attributes to the more rare or extreme ones about the 'total population' that provided us with a diverse range of cases for this study. All the selected schools are project beneficiary schools.

Table 1.0: Selected schools for the study and their locations

REGION	DISTRICT	SCHOOL
ARUSHA	MONDULI	ARKATAN
		LENDIKINYA
		MONIC
ARUSHA	NGORONGORO	ENGARESERO
		SOITSAMBU
		SUKENYA
BABATI	BABATI	KAKOI
		OLTUKAI

1.7.2. Selection of Pupils

In each class, all the girls and boys in grades 3-5 were lined up separately for random selection. They were counted and each group divided by nine. Every second boy or girl from the line was then selected for the interview. The team of researchers ensured that there was a safe place/room where the selection took place (to avoid mixing with other children).

In each school, learners with special needs were purposively selected.

Overall, 1,179 pupils (55%) were selected for interviews, with 532 boys (45%) and 647 girls.

Table 2.0: Sampling of learners

REGION	DISRTICT	SCHOOL	FEMALE	MALE	TOTAL
ARUSHA	MONDULI	ARKATAN	91	53	144
		LENDIKINYA	79	61	140
		MONIC	78	60	138
ARUSHA	NGORONGORO	ENGARESERO	77	63	140
		SOITSAMBU	78	74	152
		SUKENYA	86	87	173
BABATI	BABATI	KAKOI	86	58	144
		OLTUKAI	72	76	148
		TOTAL	**647**	**532**	**1179**
		AVERAGE	**55%**	**45%**	**100%**

1.7.3. Key Informant Interviews (KII)

Purposive sampling was used to select KIIs respondents. Consideration was given to the respondents' variation in experience and length of interaction with learner-focused in-school and out-of-school literacy and numeracy interventions in Tanzania and the project location. A total of 16 KIIs with head teachers, academic teachers and Ward Education Officers were conducted.

1.7.4. Sampling of Focus Group Discussants (FGD)

16 FGDs were purposively sampled. For homogeneity of respondents and cultural sensitivity (culture restricts women and men from sitting together), the study conducted 8 FGDs each for the men and women. All FGD participants were either parents or caregivers of learners in our project location. Each FGD had, on average, 8 participants.

1.8. Inclusion and Exclusion Criteria

The inclusion criteria for learners were all in-school girls and boys from grades 3 to 5 for numeracy and literacy tests. Pupils' parents, guardians, or caregivers participated in household interviews and FGDs without discrimination based on ethnicity, disability, and social-economic status. Expertise and rich contextual knowledge and experience in the Tanzania education sector, specifically on numeracy and literacy capacity of pupils, determined KIIs selection. The exclusion criteria were all pupils in pre-primary grades 1, 2, 6, and 7. Also, parents who did not have pupils in their respective schools of interest or those with known history of mental illness and could not assent to the study were excluded.

1.9. Study Variables

The study examined the learners' performance as the primary variable with age, sex, grade (class), district and geographical locations as the variable dimensions.

2.0. Data Management, Analysis and Data Quality Assurance

2.1. Data collection

2.1.1. Quantitative data

Quantitative data collection forms were designed using Kobo Collect and uploaded onto the enumerators' digital devices. Data collectors were trained to use the Kobo Collect. The collected data was edited, finalized, and sent to a central server and instantly uploaded to the cloud to allow for real-time data analysis and situational awareness. Data was exported to SPSS for analysis.

2.1.2. Qualitative data

Qualitative data was collected using hard copy tools, and recorders were used to audio record (with consent) the interviews for backup.

2.2 Data Entry and Analysis

(i)   **Quantitative data analysis**

Quantitative data was captured electronically using smartphones and devices. Data was extracted from the server and exported to SPSS22 for analysis to obtain the various tables and graphs. Graphs were particularly generated using MS Excel and MS Word.

(ii)   **Qualitative data analysis**

Qualitative data was organized using the NVivo computer-aided data analysis software to augment quantitative findings. Data gathered and recorded from various sources was cleaned and transcribed verbatim and analyzed manually at some stage following a step-by-step process.

2.3 Data Quality Assurance

The quality of data was maintained throughout the process through:

(i)   Use of reliable sources of information, corroboration and cross-referencing with other credible sources through data triangulation;

(ii)   The design and use of the standard data collection tools and methods for analysis;

(iii)   Rigorous training of the research team to ensure that they are fully conversant with the use of tools;

(iv)   Pre-testing and reviewing the data collection tools based on the results of the pre-test;

(v)   Having the research team members and supervisors crosscheck each filled-in data collection tool for completeness, consistency, accuracy, reliability, and validity where applicable (this checking was done during the day and at the end of the day and corrections were done before field teams left the sites);

(vi)   Daily de-briefing (immediately after data collection) among the research team to share experiences and chart out strategies for the way forward;

(vii)   Conducting of random spot checks by supervisors in the field to validate the authenticity of compiled data.

2.4. Ethical Considerations

The assignment adhered to the following accepted codes of conduct;

(i)   Seeking consent: The survey consent forms, parental consent forms, assent forms, and embedded into the design of the data collection tools. Interviewers formally sought and obtained consent before conducting interviews or assessments.

(ii)   Maintaining confidentiality: Confidentiality of all data collected from various respondents was ensured, and anonymity was maintained throughout the data collection process.

(iii)   Sensitive information: Information considered private or infringing on the privacy of respondents was avoided.

(iv)   Avoiding bias: The team ensured that the questions were well-designed to avoid bias.

2.5. COVID-19 Mitigation Measures

The survey was conducted in the wake of the ongoing Coronavirus Disease 2019 (COVID-19) pandemic. A COVID-19 Risk Management Plan was developed by the consultant and submitted to the local health and education officials in the targeted areas for the study for their approval. The approved risk plan was cascaded to the enumerators for their guidance in the process.

Additionally, enumerators adhered to the guidelines provided for by the Tanzania Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDEC) and enforced the following measures to mitigate the risk of spreading COVID-19;

a.   Regular washing of hands with soap and water or using sanitizer before and after interacting with respondents.
b.   Mandatory enforcement of wearing face masks for all interviewers and respondents.
c.   Social distancing was ensured by maintaining a distance of at least one meter between interviewers and respondents during group activities such as FGDs and training to prevent the person-to-person spread of COVID-19.
d.   Prohibiting handshakes and hugging at all times
e.   Utilizing virtual communication methods like Zoom, Skype, WhatsApp, and telephone calls as much as possible to conduct planning meetings and communicate to partners, Districts and schools while scheduling appointments.

2.6 Literacy and Numeracy Assessment

The learning outcomes assessment was administered to pupils in grades three, four, and five to assess the literacy and numeracy capacity of pupils using ASER toolkit. All data collection tools were either in Swahili or English; however, given the low grasp of the languages amongst some respondent categories, it occasionally necessitated the team of researchers to use local languages to ensure quick understanding of instructions provided during the assessment.

2.7 Household Survey

Household surveys were administered only to parents, guardians or household representatives who have pupils in respective project school areas. The aim was to get the actual experience of parents and guardians' involvement in pupils' education processes. This study used at least 5% of the number of pupils interviewed. A sample size of at least 5 percent is considered to be adequate and reasonable for statistical research (Boyd et al., 1981) . Boyd et al's (ibid) sampling formula was employed to determine the sample size appropriate for household survey.

$$n = C \times N$$

Where C = figure greater than or equal to 5% of the household population.

N = the total number of determined households in the population.

n = number of selected households.

A total of 359 household heads and representatives were interviewed, representative of 30% of the 1,179 interviewed learners.

2.8 Analysis of the current literacy and numeracy proficiency levels of primary school children from standard (grade) three to five in Monduli, Ngorongoro and Babati Districts

The baseline assessment sought to establish the current literacy and numeracy proficiency status using the ASER tool. ASER tools and procedures are designed by ASER Centre, the research and assessment arm of Pratham, was first developed as a nationwide survey of reading and math achievement of children from rural India. It has since been adapted and contextualized for use in East Africa, including Tanzania by the MoET.

The ASER English Literacy tool assesses a child's ability to identify letters, read words, read simple sentences, read a simple story, and answer oral questions about the story they have read. The tool also assesses a child's ability to perform basic numeracy manipulations.

The rating of performance in ASER is as follows;

In literacy

(i)   Level 1- are those that can read 4 or more letters from a structured list; otherwise, they are in 'Level 0'.

(ii)   Level 2- those who are able to read 4 out of 5 words provided correctly.

(iii)   Level 3- learners who are able to read a paragraph with sentences.

(iv)   Level 4-learners who are able to read a story fluently.

In numeracy

(i)   Level 1- A learner is able to point to and identify a number between 1-9; otherwise, Level 0.

(ii)   Level 2- A learner is able to point and identify 4 out of 5 numbers between 10-99.

(iii)   Level 3- A child is able to solve at least 2 addition problem solutions with carry-over.

(iv)   Level 4- A child is able to solve at least 2 subtraction problem solutions with borrowing.

The ASER tool has several more literacy and numeracy levels, of interest to the study are those enumerated above that correspond to the numeracy and literacy competencies relevant to the grades in the study.
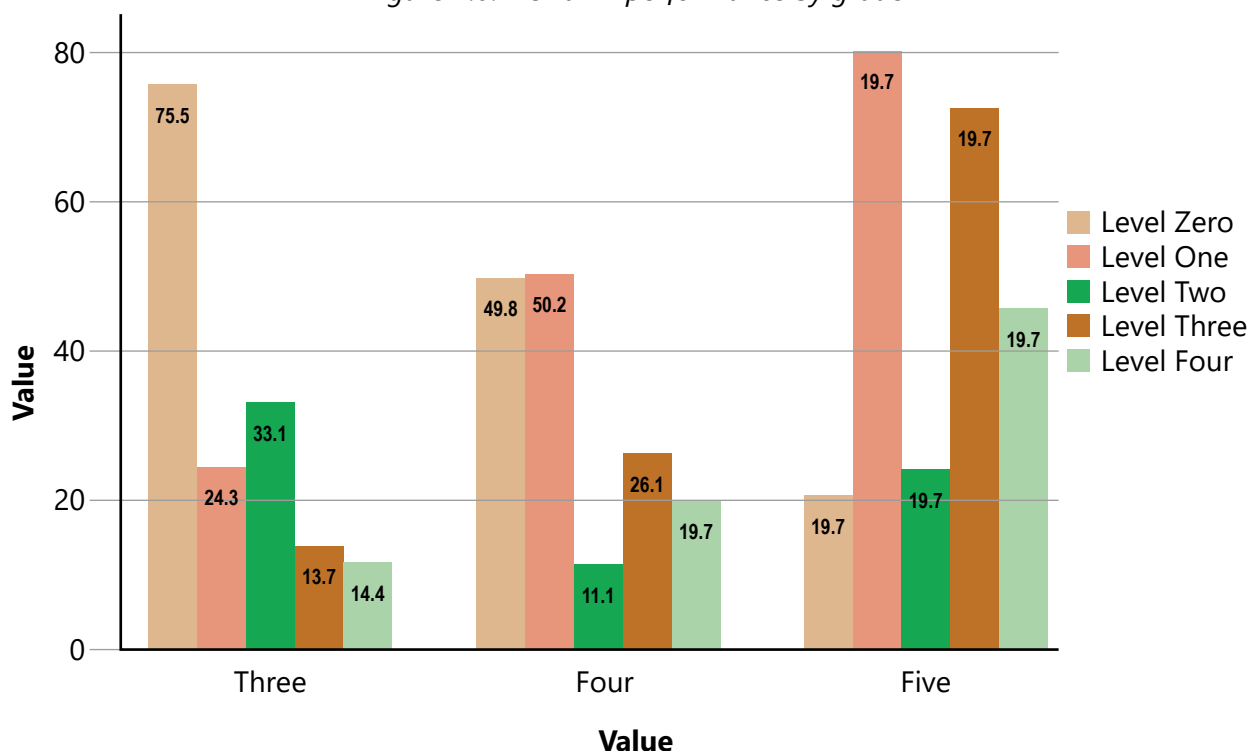
3.0 Study findings

3.1 Literacy performance

Swahili is used to facilitate communication and is the learning language across different subjects in all public primary schools in Tanzania. English is only taught as a subject. This section is divided into performance in English and Swahili by gender and grade and will provide insights into the levels of mastery of the two languages across the grades and gender.

Swahili performance by grade

Only 45.6% of the learners in grade five can read fluently in Swahili, compared to only 19.7% in grade four and 11.4% in grade three.

Kiswahili is the national language and language of instruction in Tanzanian schools and the predominant language of communication at home and social settings. The expectation would be exemplary performance in this subject, but the assessment results show otherwise. Even after years of contact with the language in the school and social settings, 20.4% of learners in grade five still cannot read four or more letters from a structured list with 49.8% in grade 4 and 75.7% of learners in grade three having the same reading challenges.

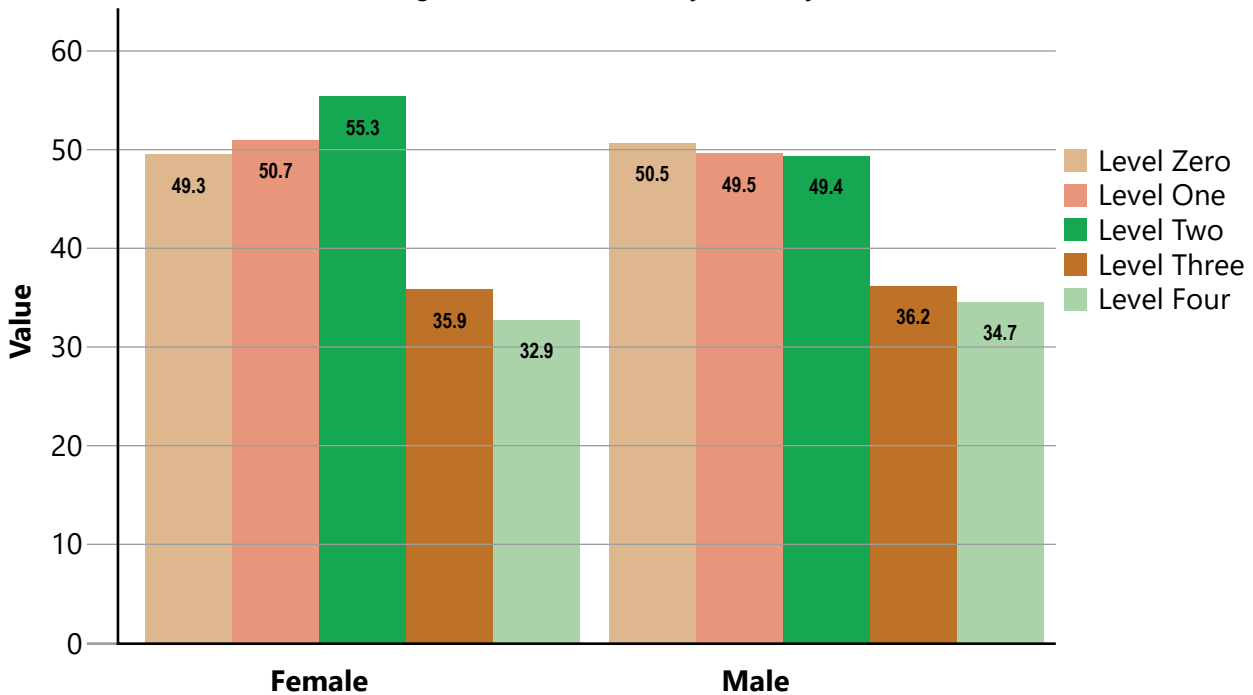*Figure 2.0: Kiswahili performance by grade*

(i)   Swahili performance by gender

Like in the assessment of Swahili mastery by grades, the performance of Swahili across both genders oscillates from average to below average.

Overall, males perform slightly better than females in mastery of the Swahili language. There are only 34.7% of males and 32.9% of the females with mastery of the Swahili language – are able to read stories in the language. About 50.5% of the males and 49.3% of the females are unable to read four Swahili words from a structured list.

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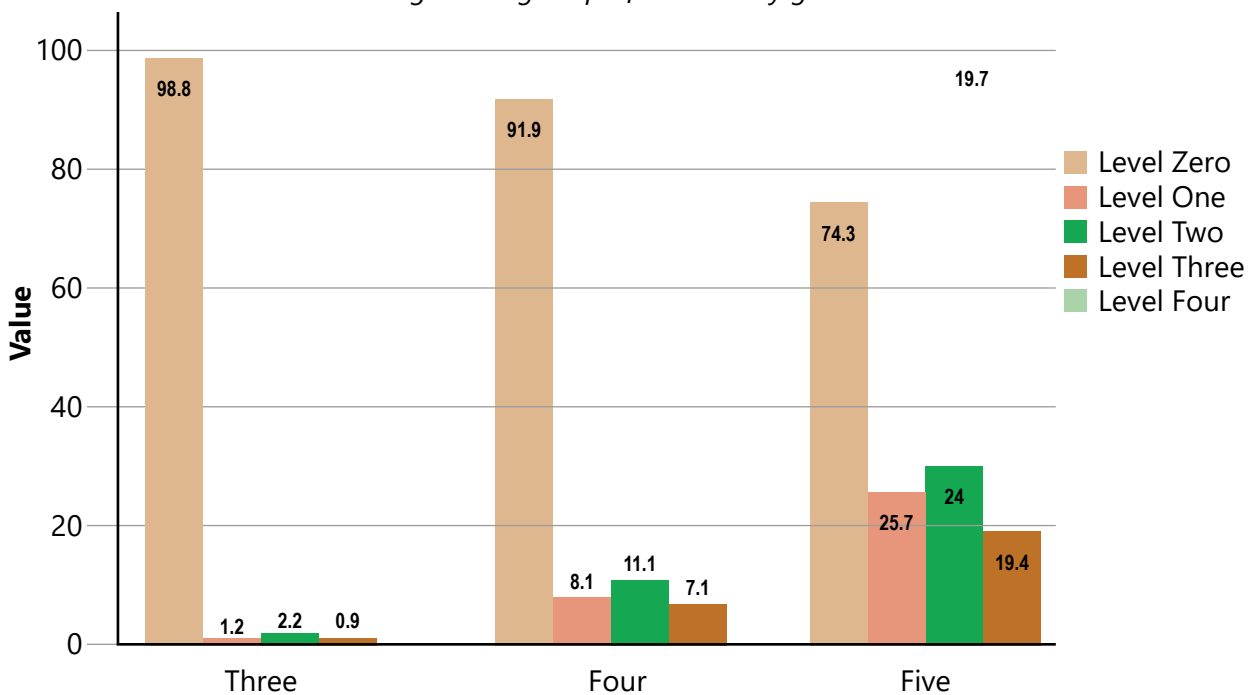
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Fig 3.0: Kiswahili literacy levels by sex

English performance by grade

As the complexity in mastery of English language advances, the number of learners in lower grades with these skills increases.

A paltry 0.9%, 7.1% and 19.4% of learners in grades three, four and five, respectively can fluently read in English with a majority, that is 98.8%, 91.9% and 74.3% of learners in grades three, four, and five are at the lowest level of English literacy assessment, level zero — they cannot read 4 or more letters from a structured list.

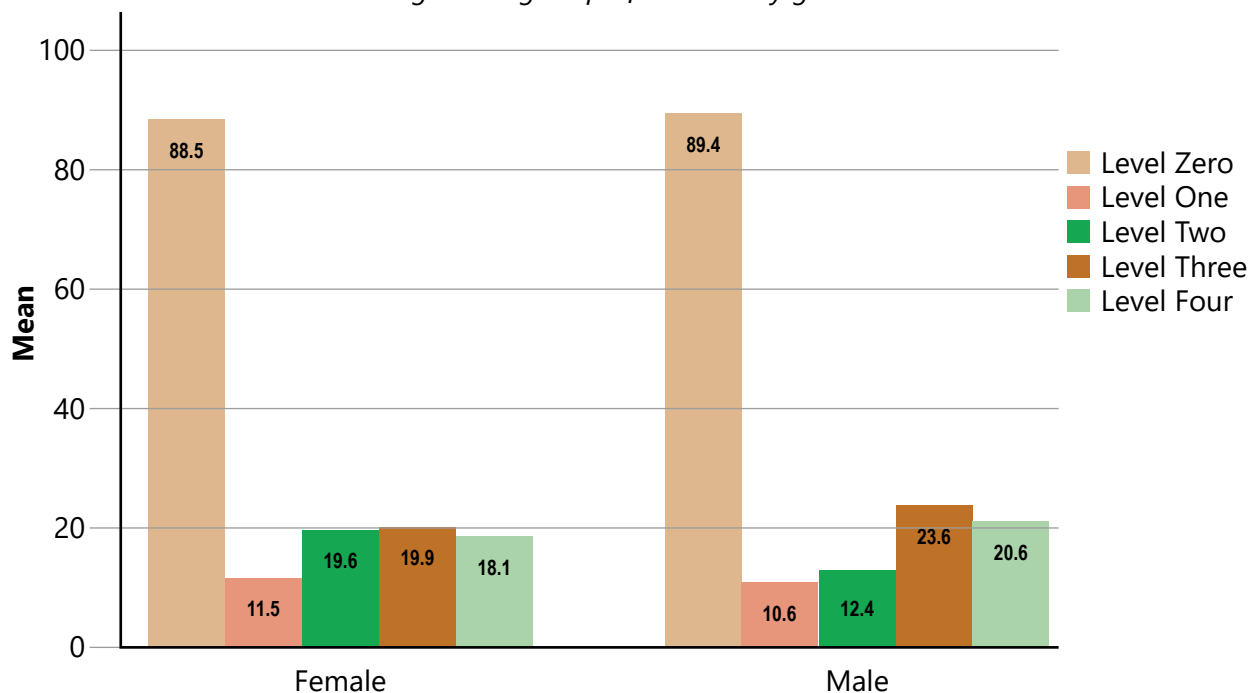Fig 4.0: English performance by grades

English performance by gender

Just like in Swahili, males perform slightly better than females in English at a higher level of mastery of the language. About 20.6% of males can fluently read an English story compared to 18.1% of girls.

AT the lowest level, level zero, there are more males than females. There are 89.4% of males at this level compared to 88.5% of females.

Fig 5.0: English performance by gender

3.2 Numeracy Performance

Numeracy Performance by Grades

About 58.1% of learners in grade three, 65.5% in grade four, and 89.1% in grade five are in level 1. They are able to point to and identify a number between 1-9.
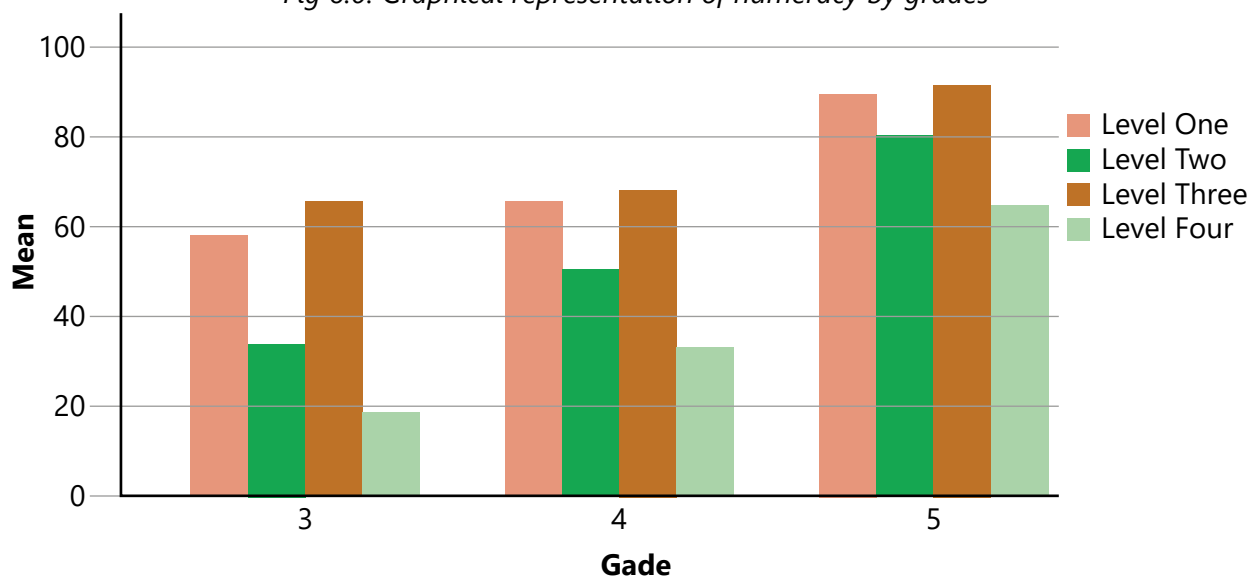
At level 2, about 34.1% of grade three learners, 50.2% in grade four, and 80.2% in grade five correctly identified at least five out of seven numbers from 10-99.

At level 3, 65.2% of grade three learners, 68.0% of grade four learners, and 91.3% of grade five learners can correctly solve at least two additional problems without carry-over.

At level 4, the child can solve at least 2 subtraction problem solutions with borrowing. 18.4%, 33.5%, and 64.8% of pupils in grade three, four and five, respectively, are in level four.

With 64.8% of learners in grade 5, only 33.5% in grade four, and 18.4% in grade three have grade-level competencies in numeracy. This should be a point of concern to education stakeholders in Tanzania. Interestingly, there are 68% of learners in grade four are at level three and on the verge of acquiring the expected numeracy competencies. If interventions are curated properly, it should be easy to increase the number of learners in level four.

Fig 6.0: Graphical representation of numeracy by grades
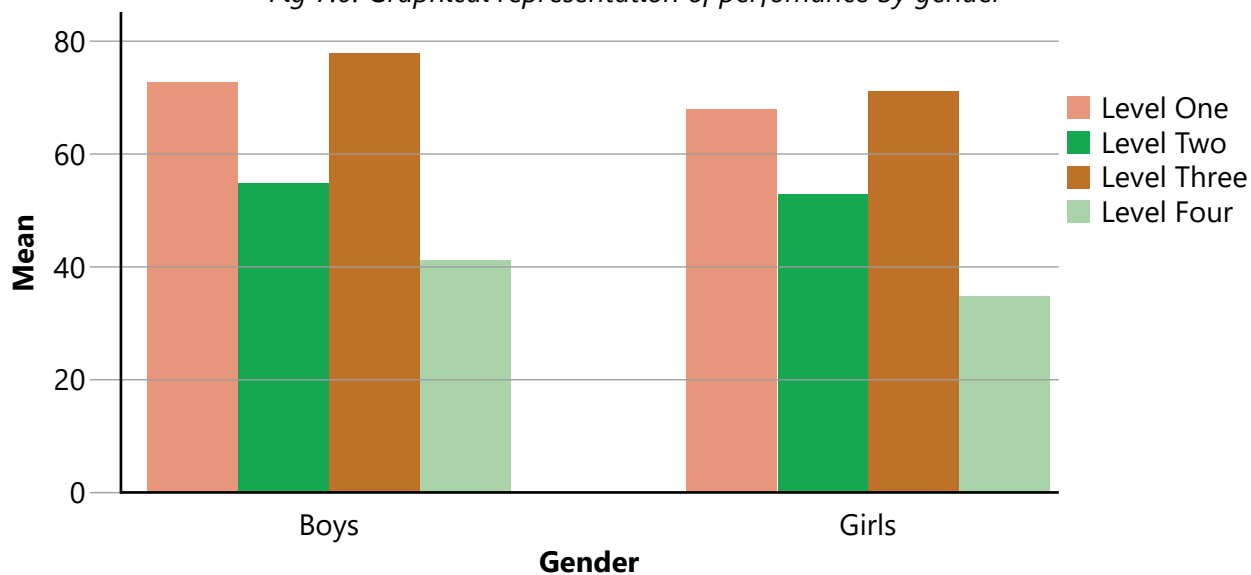
Numeracy performance by gender

A trend noted by the study was that the gap in the mastery of numeracy between the two genders widens as the levels advances. In level one, 72.7% of boys, as compared to 67.9% of girls, were able to point to and identify a number between 1-9 otherwise

At level two, 54.9% of the boys, compared to 52.8% of the girls, could identify 4 out of 5 numbers between 10-99.

There is a 6.6% gap between girls' and boys' performance in numeracy at level three. 77.7% of boys, as compared to 71.1% of girls, are able to solve at least 2 addition problem solutions with carry-over

At level four, the difference in performance between boys and girls is 6.3%, with 41.2% of the boys being able to solve at least 2 subtraction problem with borrowing. Only 34.9% of the girls were able to do the same.

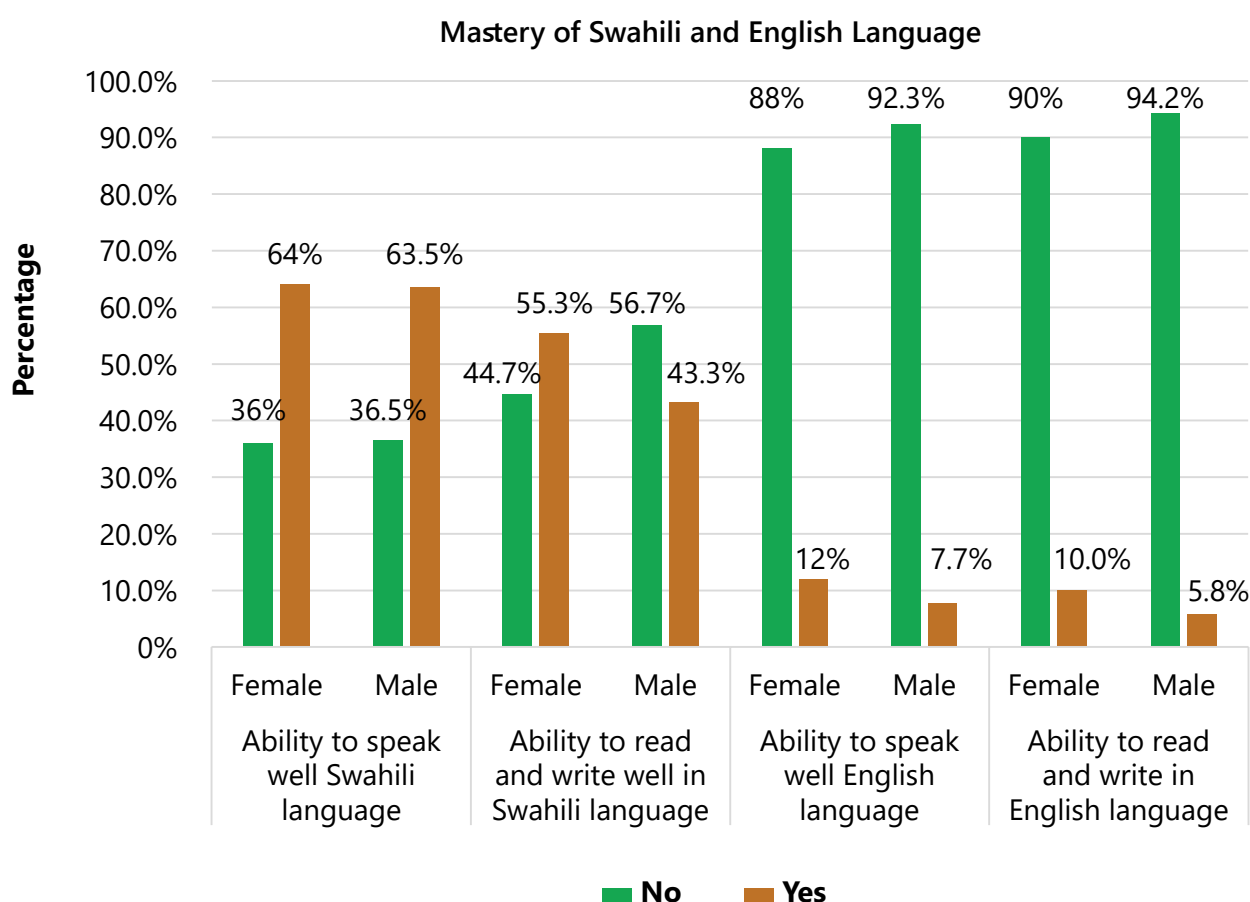Fig 7.0: Graphical representation of perfomance by gender

3.3 Factors affecting learners' numeracy and literacy levels

The baseline survey explored the contributing factors for inadequate literacy and numeracy capacity of children in Monduli, Babati, and Ngorongoro at the household level.

Variables considered were the ability of parents and other household members to speak and write well in both English and Swahili languages. In government schools, all subjects except the English language are taught in the Swahili language. Household members' mastery of the two languages greatly impacts a child's literacy and numeracy capacity, as household members play an integral role in helping children with reading, writing, and counting at home.

Parents/Caregivers mastery of Swahili and English languages

Fig 8.0: Caregivers mastery of English and Swahili

Mastery of Swahili and English Language

The study sought to determine the caregivers' mastery of written and spoken English and Swahili as segregated by gender.

Only 64% of females and 63.5% of males reported their ability to speak fluently in Swahili, with 36.5% of females and 36% of males unable to speak Swahili fluently. 55.3% of females and 43.3% of females can read and write well in Swahili, and 44.7% and 56.7% of females and males, respectively, lack these skills.

The majority, 88% of females and 92.3% of males cannot speak fluently in English, with 90% of female caregivers and 94.2% unable to read and write in English.
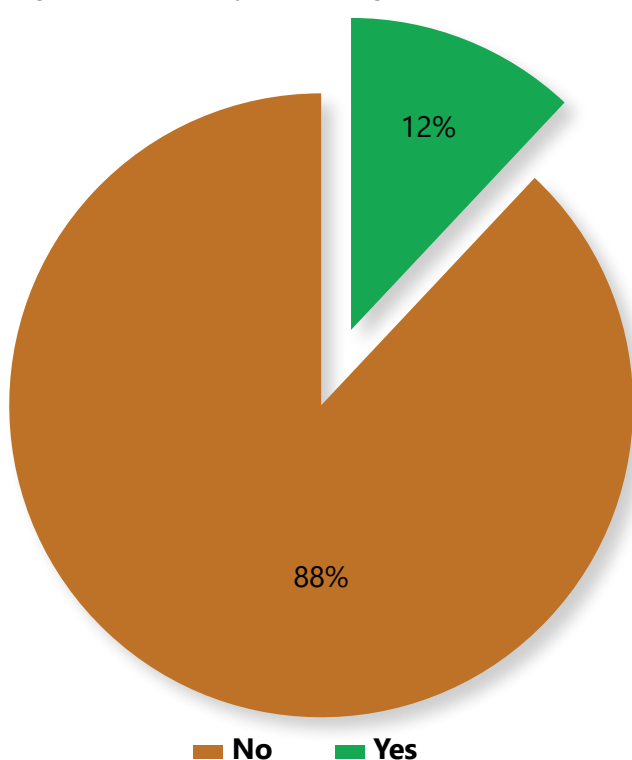
In these homesteads, the primary language of communication is the native language. An area for continued study is whether the language spoken at home has a bearing on the quicker mastery of the language.

Availability of Reading Materials at Home

About 88% of the parents reported having no reading materials to support learning at home. Only 12% reported to have at least a book at home.

For the learners in these households, learning most likely stops when they leave school.
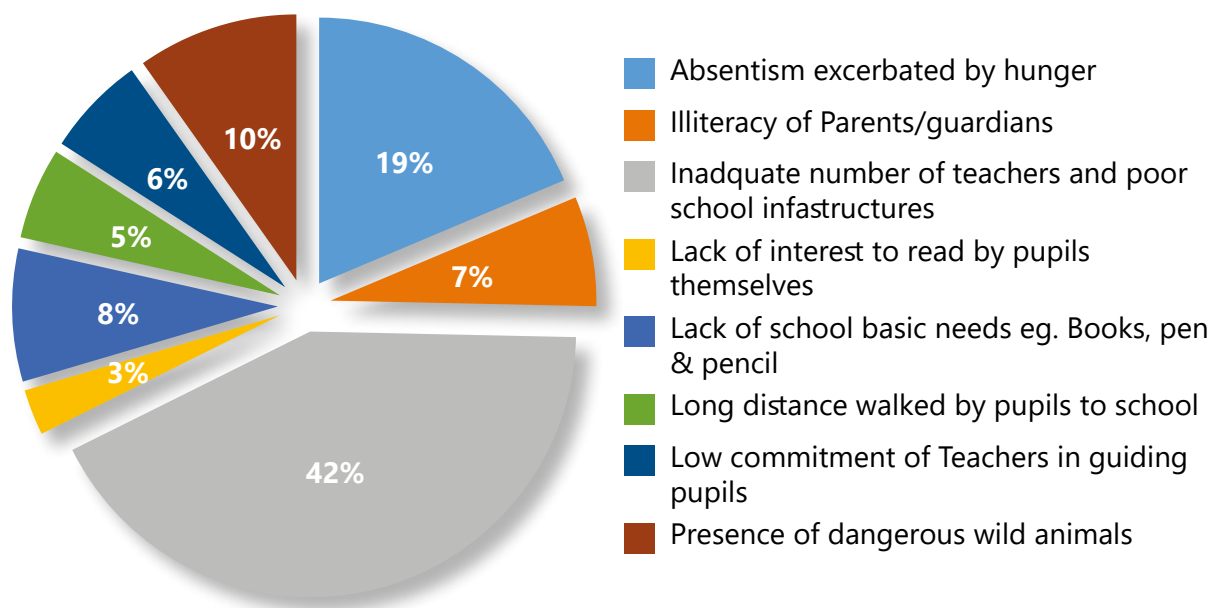
Fig 9.0: Availability of reading materials at home

"...Learning is the long-term process, school environment only is not enough for a child to acquire literacy and numeracy skills quickly... availability of various reading materials such as story books strengthens pupils' capacity" (KII 3: 13th May, 2022)

Perceptions of parents on a pupil's learning

The baseline survey explored parents' perceptions of critical factors that affect a pupil's learning in their respective environment.

42% of the respondents reported that the poor performance of pupils is highly exacerbated by inadequate number of teachers and poor infrastructures such as classrooms. Frequent absenteeism of pupils as a consequence of hunger was reported by 19% of all respondents. The presence of dangerous wild animals was reported by 10% of pupils' parents. Inadequate literacy and numeracy capacity of pupils was further reported to be a result of limited capacity of parents to access and support pupils with basic school needs such as uniforms, reading books, exercise books, pen and pencils.

Fig 10.0 Perceptions of parents on pupils learning

Legend:
- Absentism excerbated by hunger
- Illiteracy of Parents/guardians
- Inadquate number of teachers and poor school infastructures
- Lack of interest to read by pupils themselves
- Lack of school basic needs eg. Books, pen & pencil
- Long distance walked by pupils to school
- Low commitment of Teachers in guiding pupils
- Presence of dangerous wild animals

Parents' perceptions on pupils' learning complements with Key informant interview with ward education officer in Engaresero who reported that;

"...at some points in prolonged dry season parents never let children go to school, often pupils are told to stay at home and wait until food is available at home" (KII 2:12th May, 2022)
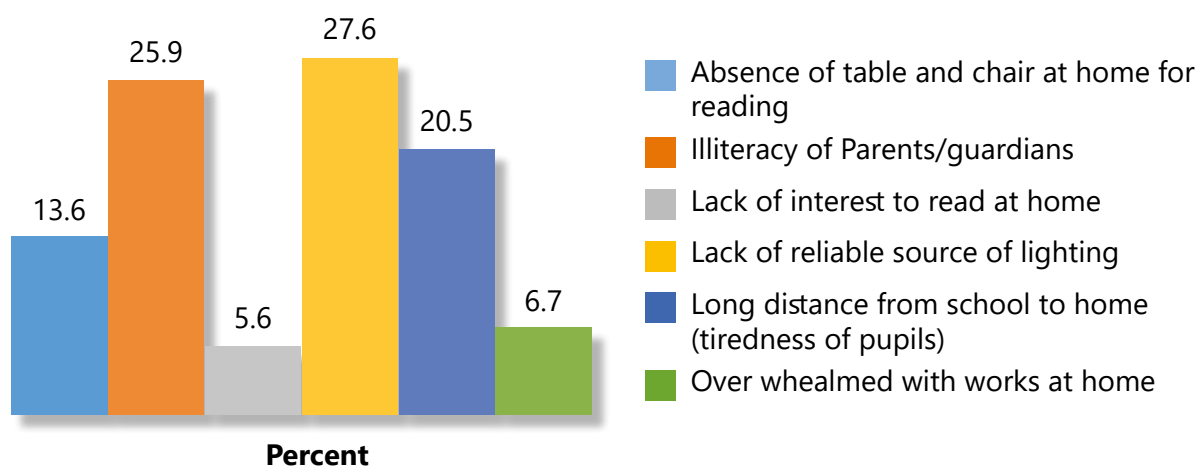
Further discussion with a key informant revealed that pupils are often involved in key livelihood activities, mainly pastoralism. It was reported that mobile livelihoods in search of pasture and water for livestock in dry seasons have particularly affected the development of pupils' literacy and numeracy capacity.

"...it is common phenomena to see the number of pupils' attendance dropping down in dry seasons. This place is close to neighbor country Kenya....seasonally parents do cross the border with their children looking pastures thus increasing the rate of absenteeism" (KII 3: 13th May, 2022)

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3.4 Challenges Parents Face when Supporting Learning at Home

The baseline survey explored challenges facing parents in promoting effective learning at home. The results show that 27.6% reported that lack of reliable sources of lighting at home makes it difficult for children and parents to go through books in the evening. 25.9% of parents reported that their limited numeracy and literacy capacity impede them from effectively helping pupils at home.

Fig 11.0: Challenges facing parents in promoting effective learning at home

Legend:
- Absence of table and chair at home for reading
- Illiteracy of Parents/guardians
- Lack of interest to read at home
- Lack of reliable source of lighting
- Long distance from school to home (tiredness of pupils)
- Over whealmed with works at home

Values: 13.6, 25.9, 5.6, 27.6, 20.5, 6.7

Percent

Moreover, parents (20.6%) reported that pupils walk a long distance from home to school, which make them tired and unable to do class reviews in the evening at home. Women narrated more about pupils walking long distances in their focus discussion;

"....this area has few schools, there are only two schools, some pupils walk 8 Kilometers just to go schools...so its 16 Kilometers to and from school. Pupils get home late, tired and end up sleeping after eating" (FGD 2: 12th May, 2022)

4. Conclusions and Recommendations

4.1 Conclusion

The baseline assessment revealed low literacy and numeracy levels across genders and grades in the study areas. The home environment is also not supportive of learning as the study revealed an acute inadequacy of learning materials and a lacking in the parents' ability in numeracy and literacy skills. The study further revealed that parents perceive acquisition of literacy and numeracy as a role that teachers and the schools should mostly take up. Learning is a holistic process that starts at school but should not end in schools. There is a need to design simple, inexpensive solutions that promote continued learning beyond the school environment, especially for learners in underserved communities such as where this assessment was conducted.

4.2 Recommendations

From the teachers and school administration

a. With the large numbers of children lagging in acquiring the required numeracy and literacy competencies, schools should design intentional remediation activities that support learners lagging behind. In addition to the normal classroom-based teaching and learning, there is a need to implement after-class activities that work to prop up the literacy and numeracy abilities of 'time-takers' in a friendly, non-discriminating, and non-stigmatizing way.

b. NGOs and the Government should step up efforts in supporting the provision of educational materials such as books and educational infrastructure such as classrooms and additional teachers. The overpopulated classes and inadequate school material affect the quality of instruction and learning.

c. Parents should take a more active role in supporting their children with basic necessities such as uniforms and food. Parents should also take a more active role in following up on their children's conduct and performance in school.

d. Continuous capacity building and training of volunteer teachers. This can be done through periodic refresher training on how to deliver effective lessons that will improve learning outcomes, regardless of the learners' social background or learning uptake levels.

e. Provision of a conducive learning environment. Depending on financial ability and implementation scope, NGOs, CBOs, and the Government of Tanzania need to either improve existing infrastructure or build physical spaces that create child-friendly and safe learning spaces in the communities or at schools supportive of learning. These can be temporary, semi-permanent, or permanent structures as is relevant in their context.

From parents and caregivers

a. Given the pastoralist nature of life, there is a need for training support to ensure continued learning at home. These should be simple activities that complement the parents' education and socio-economic levels.

b. There should be support in the provision of learning materials at home that the learners can use in the evenings or on weekends. Story books, exercise books and textbooks could go a long way in supporting continued learning at home.

c. There are community spaces within Manyattas and the communities that can be turned into learning centres and equipped with learning materials. NGOs, CBOs, and the local Government can work together to create these child-friendly and safe spaces that support learning, especially for girls.

From the research team

a. In the study community, there is glaring inadequacy of both education and other basic resources. What they have is a wealth of culture and social structures anchored in the traditional way of life. Education stakeholders (Both NGOs and the Government) should be involved in designing simple but innovative learning solutions that leverage the existing resources in the community (culture and social structures) to promote learning at home. Fireside storytelling is one such simple activity that will promote the acquisition of both literacy competencies and the inculcation of values.

b. Coordination, collaboration, and partnerships. All stakeholders within the community need to work together to support children to achieve good learning outcomes. There should be seamless coordination of efforts between the schools, families, and non-State and State actors involved in supporting education provision. This can be achieved by mapping out the regular and coordinated formal and informal interactions of these players in the education space at various administrative levels.

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