RESEARCH ARTICLE

Relationships Between Children's Literacy Comprehension and Their Achievement in Numeracy and Ethno-Math at Lower Primary Schools in Uganda

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ABSTRACT

The article examined the relationships between children's literacy comprehension and their competence/achievement in numeracy and Ethno-math at lower primary schools in Uganda using the UWEZO UGANDA (2021) secondary dataset collected by a cross-sectional survey design from a sample of 14,553 pupils. The quantitative data were analyzed using Pearson Product Moment of correlation coefficient and regression analyses to establish the relationship between children's literacy comprehension and their competencies in numeracy/ethno-math. Findings showed that there was a statistically significant relationship ($r = 0.539$, $p < 0.001$) between letter recitation and number recognition, literacy level in English and numeracy level ($r = 0.768$, $p < 0.001$), numeracy level and ethno-math ($r = -0.612$). Although findings show a positive relationship between letter recitation and number recognition, literacy level in English, and numeracy level, there is a negative relationship between numeracy level and ethno-math. The study concluded that children's ability to recite letters positively influences their ability to recognize numbers. Furthermore, children's ability in literacy comprehension positively influences their abilities in carrying out numeracy. It was also concluded that children's ability to work out ethno-math does not necessarily mean their ability to carry out numeracy.

Keywords: Ethno-math, literacy comprehension, lower primary, numeracy.

1. INTRODUCTION

The concern of stakeholders in education the world over is to ensure that children learn when they are sent to schools. Literacy and numeracy skills are the building blocks of education (Uwezo Uganda, 2021). They provide the fundamental tools for understanding and engaging with various subjects, including science, social studies, and even the arts (Graham *et al*., 2020). Without these foundational skills, students may struggle to comprehend more complex concepts as they progress through their education (Gomez *et al*., 2020). Literacy skills encompass reading, writing, and oral communication (Quigley & Coleman, 2019). The ability to read and write effectively is essential not only for academic success but also for clear and meaningful communication. Proficient communication skills are vital for expressing thoughts, ideas, and emotions, both

in the classroom and in daily life (Rahman *et al*., 2021). Literacy and numeracy skills enable individuals to navigate everyday tasks such as reading street signs, understanding instructions, managing finances, and making informed decisions (Abood *et al*., 2023). A strong foundation in these skills is crucial for personal independence and success. However, many countries in the world, including Uganda, indicate low levels of learners' literacy and numeracy abilities. For instance, learners are not able to recognize numbers, recite letters, read words correctly, blend and read paragraphs and passages, and interpret questions correctly (Uwezo Uganda, 2021). This is the same with the learners' failure to carry out operations on numbers as well as working out ethno-math (Uwezo Uganda, 2021).

Foundational skills like letter recitation, word reading, and number recognition play a critical role in a child's overall development and academic success (Uwezo

Uganda, 2021). These skills are the building blocks upon which more advanced literacy and numeracy skills are constructed. Letter recitation is closely tied to phonemic awareness, which is the ability to recognize and manipulate individual sounds (phonemes) in words (Buckingham *et al.*, 2019). Phonemic awareness is a foundational skill for reading and spelling. When children can identify and reproduce the sounds associated with each letter, they are better equipped to decode words (Tunmer & Hoover, 2019). Knowing the names of letters is an essential component of the alphabetic principle. The alphabetic principle is the understanding that letters represent specific sounds in language (Tunmer & Hoover, 2019).

Letter recitation sets the stage for recognizing and identifying words (Nahar *et al.*, 2020). As children become familiar with the alphabet, they can start to decode words by blending the sounds represented by the letters. Word reading is the ability to decode and understand written words (Abdullah *et al.*, 2020). It is the cornerstone of reading comprehension. When children can read words fluently and accurately, they can focus on understanding the meaning of what they are reading, which is crucial for academic success (Spear-Swerling, 2019). Word reading helps build a child's vocabulary. As they encounter new words in their reading, they learn their meanings and expand their language skills (Spear-Swerling, 2019). A strong vocabulary is essential for effective communication and comprehension in all subject areas.

On the other hand, number recognition is the ability to identify and name numbers (Berman *et al.*, 2019; Uwezo Uganda, 2021). It is a foundational skill for understanding and working with numbers. When children can recognize numbers, they can count, compare quantities, and perform basic mathematical operations like addition and subtraction (Litkowski *et al.*, 2020). Number recognition contributes to mathematical fluency, which is the ability to perform mathematical calculations quickly and accurately. This fluency is essential for solving math problems and tackling more advanced mathematical concepts in later years. Foundational skills like letter recitation, word reading, and number recognition are the foundation upon which literacy and numeracy skills are built (Mauhay & Villena, 2022). These skills empower children to become proficient readers, effective communicators, and confident mathematicians. Early development and mastery of these skills are critical for a child's educational journey and lifelong learning success. Teachers and parents should provide ample opportunities and support for children to develop and strengthen these foundational skills.

Faiziyah *et al.* (2021) define *ethno-math* as a field of study that explores the relationship between mathematics and culture, numeracy competence, also known as numeracy skills or numerical competence, refers to an individual's ability to understand, use, and work with numbers and mathematical concepts effectively in various real-life situations (Tout, 2020). It examines how different cultures and communities develop, perceive, and use mathematical concepts and practices within their unique social and cultural contexts. Ethno-math is relevant for several reasons. Ethno-math recognizes and celebrates the rich cultural diversity in mathematical thinking and problem-solving.

It acknowledges that there is no single "universal" way to do mathematics and that mathematical knowledge varies across different cultural groups. This recognition promotes inclusivity and respect for diverse worldviews. Incorporating ethno-math approaches in education can lead to improved learning outcomes, especially for students from culturally diverse backgrounds (Hannigan *et al.*, 2022). When students see the relevance of mathematics in their daily lives and cultural practices, they are more likely to develop a deeper understanding of mathematical concepts and perform better academically. Ethno-math often emphasizes the practical applications of mathematics in everyday life within specific cultural contexts (Hannigan *et al.*, 2022). This approach helps students connect mathematical concepts to real-world situations, making math more accessible and useful.

2. PROBLEM STATEMENT

Uganda is implementing and emphasizing literacy and numeracy skills in lower primary schools to ensure that children learn when they attend school. Literacy comprehension and numeracy achievement provide the foundational framework for understanding and engaging with various subjects, including science, social studies, and even the arts (Graham *et al.*, 2020). Also, numeracy skills acquired in classroom situations are fundamental to understanding and navigating the world, and they have a direct impact on various aspects of a child's daily life, including ethno-math (Ranta *et al.*, 2022). For instance, these problem-solving skills are valuable in various real-life scenarios, from figuring out how many apples to buy at the grocery store to calculating the time it takes to get to school. However, children in the lower primary in Uganda are not learning these skills, and this is attributed to low abilities in literacy and numeracy skills (Uwezo Uganda, 2021). For instance, children in lower primary can't read given letters, words, paragraphs, and stories and comprehend. Besides, many children in lower primary can't carry out addition, subtraction, multiplication, and division of numbers, although some can work out ethno-math (Uwezo Uganda, 2021). Therefore, there is a need to investigate the relationship between literacy comprehension and numeracy achievement as well as investigate the relationship between numeracy level and ethno-math. If this study is not carried out, many children in Uganda will continue attending schools but without learning, and in the long run, they will fail to acquire the skills needed for survival in the 21st century. This study seeks to investigate the relationship between literacy comprehension and numeracy achievement as well as the relationship between numeracy level and ethno-math by pupils in lower primary schools in Uganda.

2.1. Study Objectives

The current study has the following objectives:

1. To establish the relationship between letter recitation and number recitation by children in lower primary;
2. To examine the relationship between literacy level and numeracy level by children in lower primary;

3. To establish the relationship between numeracy level and ethno-math by children in lower primary.

2.2. Hypotheses

We have formulated the following hypotheses:

1. There is a statistically significant relationship between letter recitation and number recognition among pupils in lower primary classes.
2. There is a statistically significant relationship between literacy level and numeracy level among pupils in lower primary classes.
3. There is a statistically significant relationship between numeracy level and ethno-math among pupils in lower primary classes.

3. RELATED LITERATURE

3.1. The Relationship Between Letter Recitation and Number Recognition

Letter recitation, the practice of reciting letters of the alphabet, can have a positive influence on number recognition in lower primary classes (van Bergen *et al.*, 2021). Letter recitation often involves chanting or singing the alphabet, which helps pupils become more aware of the individual sounds (phonemes) associated with each letter (Buckingham *et al.*, 2019). Phonemic awareness is a critical precursor to both literacy and numeracy skills. It aids in recognizing and manipulating sounds, which can be beneficial when working with numbers and mathematical symbols (van Bergen *et al.*, 2021). However, Lower primary classes typically consist of students with varying learning styles and paces of learning (Amiti, 2020; Costa *et al.*, 2020). Some pupils may grasp letter recitation and number recognition quickly, while others may require more time and support. Catering to this diversity can be challenging.

Besides, learning the order of the alphabet through recitation helps children develop memory and sequencing skills (van Bergen *et al.*, 2021). These skills are transferable to numeracy tasks, such as counting numbers in sequence or understanding number patterns. However, some students enter lower primary classes with varying levels of readiness in letter recognition and number recognition (Amiti, 2020; Costa *et al.*, 2020). Bridging these skill gaps can be a challenge, as teachers must ensure that no child is left behind while also challenging those who are more advanced. In addition, lower primary classes have limited instructional time, and teachers must strike a balance between teaching literacy and numeracy effectively. Finding enough time for both subjects in a crowded curriculum can be challenging; hence, there is a need to carry out a study to examine the relationship between letter recitation and number recognition.

More so, letter recitation contributes to language development by improving vocabulary and comprehension. Strong language skills are essential for understanding mathematical terms, word problems, and instructions in mathematics (Pakarinen & Kikas, 2019). As students become more proficient in letter recitation, they gain confidence in their ability to learn and remember information (Pakarinen & Kikas, 2019). This newfound confidence can extend to numeracy activities, making students more open to exploring and tackling math concepts. However, schools may face resource constraints, including limited access to teaching materials, textbooks, and technology (Agu *et al.*, 2021). This can impact the quality of instruction and limit opportunities for hands-on learning in both letter recitation and number recognition; thus, there is a need to carry out a study to establish the relationship between letter recitation and number recognition by pupils in lower primary classes.

Furthermore, teachers can create cross-curricular connections between literacy and numeracy through activities that involve both letter recitation and number recognition (Bitok, 2023). For instance, teachers can incorporate counting letters or using numbers in letter-related activities to emphasize the interconnectedness of these skills. Not all teachers are equally prepared to teach both letter recitation and number recognition effectively (MoES, 2018). Some educators may have specialized training in one area but not the other, which can affect the quality of instruction. This makes it hard to analyze the relationship between letter recitation and number recognition, hence the need to carry out this current study.

3.2. The Relationship Between Literacy Level and Numeracy Level

The relationship between literacy levels and numeracy levels highlights the interconnectedness of these core skills throughout an individual's lifespan (Pakarinen & Kikas, 2019). Early childhood development, educational experiences, and adult functional skills all demonstrate the strong ties between literacy and numeracy (Kersey *et al.*, 2019). Understanding this relationship is vital for educators, policymakers, and researchers as they work to improve educational outcomes and promote overall cognitive development. Further research is needed to explore the specific cognitive mechanisms and instructional strategies that can harness the synergy between literacy and numeracy to enhance learning and problem-solving abilities across various age groups. Both literacy and numeracy are essential components of a well-rounded education, and understanding their relationship is crucial for educational policy and practice (Kersey *et al.*, 2019). However, not all children develop literacy and numeracy skills at the same rate or at the same level. Variability in learning styles, strengths, and weaknesses can also influence the strength of the relationship between the two domains (Amiti, 2020; Costa *et al.*, 2020).

Research consistently suggests that literacy and numeracy skills in early childhood are intertwined. According to Lair (2019), literacy comprehension, in general terms, is meant to describe the levels of reading comprehension, which aims at measuring text-based reading comprehension. Young children who develop strong foundational cognitive skills, such as attention, memory, and language, are more likely to excel in both reading and mathematics (Kersey *et al.*, 2019). High-quality preschool programs that emphasize both literacy and numeracy activities have been shown to positively impact children's overall cognitive development. Early exposure to numbers and letters in an

engaging and supportive environment can set the stage for future academic success. On the contrary, some researchers argue that strong literacy skills can enhance mathematical comprehension, while others believe that these skills develop separately and may not directly influence each other (Hoover & Tunmer, 2022).

Moreover, literacy skills, including vocabulary and comprehension, are closely related to mathematical achievement (Amiti, 2020; Costa *et al.*, 2020). Children with strong language skills often find it easier to understand and solve mathematical problems, as word problems frequently require reading and interpreting. Some studies suggest that cognitive skills like working memory and executive function may be transferable between literacy and numeracy domains. For example, skills related to organizing thoughts or solving complex problems could benefit both reading and mathematics. However, children in lower primary classes undergo significant developmental changes that affect the development of numeracy skills and literacy skills differently (Hoover & Tunmer, 2022). Hence, there is a need to carry out a study to examine the relationship between literacy comprehension and numeracy achievement among pupils in lower primary classes.

Furthermore, recognizing the interdependence of literacy and numeracy has implications for educational strategies. Integrated teaching approaches that emphasize both skills can be particularly effective in promoting well-rounded academic achievement. However, students in lower primary classes have diverse learning styles and paces of learning. Some may excel in literacy but struggle with numeracy, and vice versa (Öztürk *et al.*, 2020). Teachers need to cater to these differences while still delivering a comprehensive curriculum; hence, there is a need to carry out a study to establish the relationship between literacy comprehension and numeracy achievement.

3.3. The Relationship Between Numeracy Level and Ethno-math

Numeracy achievement is integral to a child's day-to-day mathematics life and profoundly impacts their ability to function effectively in the world. It influences their problem-solving abilities, basic life skills, career prospects, financial literacy, and overall academic success (Ranta *et al.*, 2022). Therefore, fostering numeracy skills in young children is essential for personal and educational development. Numeracy skills are essential for basic life skills such as telling time, understanding calendars, and managing personal finances (Salini, 2022). Without these skills, children may struggle to plan their day, keep appointments, or budget their money effectively. However, teachers who do not use developmentally appropriate, engaging, or interactive approaches may not effectively facilitate pupils' understanding of numeracy concepts (MoES, 2018).

Nevertheless, teachers' methods of teaching vary widely. The question remains: Do the pupils in the lower primary classes acquire the intended numeracy competencies? This, therefore, calls for the need to carry out this study.

Numeracy skills acquired in classroom situations are fundamental to understanding and navigating the world. They directly impact various aspects of a child's daily life, including ethno-math (Ranta *et al.*, 2022). Numeracy achievement fosters problem-solving abilities. Young children proficient in numeracy can analyze situations, identify patterns, and make informed decisions. These problem-solving skills are valuable in various real-life scenarios, from figuring out how many apples to buy at the grocery store to calculating the time it takes to get to school (Ranta *et al.*, 2022).

On the contrary, classroom numeracy activities often involve abstract and formal mathematical concepts and procedures that can be challenging for young children. In addition, classroom math can be intimidating for some children as it involves formal instruction with prescribed methods and procedures (Tsimpli *et al.*, 2019; Xia *et al.*, 2020); hence, failure to grasp the classroom numeracy concepts and contribute to the math. Therefore, there is a need to study the relationship between numeracy achievement and ethno-math by learners in lower primary classes.

Besides that, numeracy is woven into numerous everyday tasks, and ethno-math integrates local wisdom with the problems of everyday life in the context of mathematical problems or concepts (Arisetyawan *et al.*, 2021). Numeracy skills promote critical thinking and logical reasoning. Numerically proficient children can analyze information, evaluate options, and make informed choices. For instance, children need numeracy skills to measure cooking ingredients, determine quantities when shopping, and calculate travel distances. Without these skills, simple tasks can become challenging. Surprisingly, each pupil has unique strengths, weaknesses, and learning styles (Amiti, 2020; Costa *et al.*, 2020). Some pupils may excel in day-to-day life mathematics due to their specific interests or prior experiences while struggling with more formalized classroom numeracy activities. Despite their differences, this study investigates the relationship between numeracy achievement and ethno-math by children in the lower primary classes.

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4. Methodology

We utilized secondary data collected by UWEZO, from interviews, observations, and gave pupils activities to do

as they tested pupils' abilities to recite letters and numbers orally, read given letters and numbers, and read words, paragraphs, and stories. Pupils were also given numeracy activities in the classroom and day-to-day life mathematics (ethno-math), i.e., simple classroom addition, subtraction, multiplication, and division. This was followed by ethno-math, which involved asking pupils to carry out mathematical tasks like asking them to find out the balance when they were given money to buy certain commodities or to go to the shop and buy certain commodities and bring back the balance. The ethno-math was interpreted in the local language. The results were analyzed by SPSS and recorded in terms of school, district, region, and Uganda. The pupil was considered to be literally competent if she/he could recite given letters, read words, paragraphs, and stories, and answer questions about the stories read.

On the other hand, a pupil was considered competent in numeracy if she/he could recite given numbers and work out given classroom mathematics activities in addition to subtraction, multiplication, and division. In addition, the pupil was also supposed to work out ethno-math activities, including addition, subtraction, multiplication, and division. Both numeracy and literacy activities were given in consultation with NCDC Specialists.

4.1. Secondary Data Source Selection

We identified suitable secondary data that provided us with the information on literacy comprehension and numeracy achievement in lower primary. We found the Uwezo Educational Database 2021 as ideal source.

4.2. Data Extraction

We obtained access to the selected secondary data and extracted the variables that captured letter recognition, number recognition, reading words, counting numbers recognition, reading a story, and working out ethno-mathematics. We ensured that the data included information from lower primary classes which was relevant to the research questions.

4.3. Data Preparation

We cleaned and pre-processed the extracted data to ensure its quality and suitability for analysis. This was done by addressing missing values, checking data consistency, recording variables, and organizing the data for further analysis.

4.4. Descriptive Statistical Analysis

We carried out a descriptive statistical analysis, i.e., correlation, to summarize the variables of interest. We also calculated descriptive statistics, such as means, medians, standard deviations, and frequencies, for letter recognition, number recognition, reading words, counting numbers recognition, reading a story, and working out ethno-mathematics.

4.5. Correlational Analysis

We performed a correlational analysis to assess the relationships between variables. Specifically, we calculated Pearson's correlation to determine the strength and direction of the relationships between letter recognition and

number recognition, reading words and counting numbers recognition, reading a story, choosing numbers by adding, subtraction, multiplication, division, and working out tasks for ethno-mathematics. We also explored potential variations in the relationships among the different subgroups within the data, such as gender, class level, and socio-economic status. We compared the relationships between the variables across these subgroups to identify any differences. In addition, we used regression to verify the results obtained from the Pearson Product Correlation Coefficients.

4.6. Interpretation and Conclusion

We interpreted the results obtained from the quantitative analysis in relation to the research questions. We discussed the findings, including the magnitude and significance of the relationships between letter recognition and number recognition, reading words and counting numbers recognition, reading a story, numeracy level competencies, and working out ethno-mathematics. We considered the implications and explained the potential for the observed relationships.

4.7. Ethical Considerations

We ensured that the secondary data used complied with ethical guidelines and any applicable data protection regulations. We followed all the restrictions associated with the UWEZO data source.

5. Results And Discussion

Table I presents the Pearson coefficient correlation results on literacy comprehension, number recognition, numeracy levels, ethno-math, and letter recognition. Results in Table I show that $r = 0.539$, $p < 0.01$ for letter recitation and number recognition. This means there was a moderate correlation between letter recitation and number recognition. The correlation was also positive, meaning that the more the pupils recite letters, the more they can recite the numbers. The correlation was statistically significant because the p-value (<0.001) was less than the significance level. It did not happen by chance. Therefore, a statistically significant relationship exists between letter recitation and number recognition by pupils in lower primary.

TABLE I: Pearson Correlation Results for Variables

Variables	1	2	3	4	5
1. Literacy comprehension	1				
2. Number recognition	−0.221	1			
3. Numeracy level	0.553*	−0.463*	1		
4. Ethno-math	−0.419*	0.404*	−0.612*	1	
5. Letter recitation	−0.291*	0.539*	−0.532*	0.410*	1

Note: *$p < 0.001$.

Table II presents the regression model to establish the relationship between letter citation and number recognition. Pearson's Correlation Coefficient ($r = 0.539$) is the

TABLE II: RELATIONSHIP BETWEEN LETTER RECITATION AND NUMBER RECOGNITION

R	R-squared	Adjusted R-squared	Std. error of the estimate	Sig. F change
0.539[a]	0.290	0.290	0.339	<0.001

TABLE III: RELATIONSHIP BETWEEN NUMERACY LEVEL AND LITERACY COMPREHENSION

R	R-squared	Adjusted R-squared	Std. error of the estimate	Sig. F change
0.553	0.306	0.306	0.321	<0.001

TABLE IV: RELATIONSHIP BETWEEN NUMERACY LEVEL AND ETHNO-MATH

R	R-squared	Adjusted R-squared	Std. error of the estimate	Sig. F change
0.612	0.374	0.374	0.396	<0.001

same as that in the model summary Table II. The coefficient of determination ($R^2 = 0.290$) in the model summary Table II indicates the amount of variation between letter recitation and number recognition. Thus, when R-squared is expressed as a percentage, it gives 29.0%. The adjusted R-squared value (0.290), as indicated in Table II, is the value when the R-squared is adjusted to better population estimates. This means that letter recitation contributes 29.0% to number recognition, and the remaining 71.0% is contributed by other factors. For this relationship, we can accept the hypothesis that there is a statistically significant relationship between letter recitation and number recognition by pupils in lower primary classes. This is in line with van Bergen *et al.* (2021), who contend that letter recitation positively influences number recognition in lower primary classes. For instance, recitation as a form of phonemic awareness helps learners develop memory and sequencing skills, which are beneficial when working with numbers and mathematical symbols. It is also in line with Pakarinen and Kikas (2019), who assert that strong language skills such as letter recitation are essential for understanding mathematical terms, word problems, and instructions in mathematics. Therefore, there is a statistically significant relationship between literacy level and numeracy achievement by pupils in lower primary.

Table III presents the regression model to establish the relationship between numeracy level and literacy comprehension. Pearson's Correlation Coefficient (r = 0.553) is the same as that in Table III. The coefficient of determination ($R^2 = 0.306$) in Table III indicates the amount of variation between letter recitation and number recognition. Thus, when R-squared is expressed as a percentage, it gives 30.6%. The adjusted R-squared value (0.306), as indicated in Table III, is the value when the R-squared is adjusted to better population estimates. This means that letter recitation contributes 30.6% to number recognition, and the remaining 69.4% is contributed by other factors. For this particular relationship, we can accept the hypothesis that there is a statistically significant relationship between literacy comprehension and numeracy level by pupils in lower primary classes. The results are contradictory with Hoover and Tunmer (2022) and Öztürk *et al.* (2020), who believe that literacy levels and numeracy levels develop separately and may not directly influence each other. Yet, they are in line with many other scholars such as Amiti (2020), Costa *et al.* (2020), Pakarinen and Kikas (2019), and Kersey *et al.* (2019), who contend that literacy levels and numeracy levels are interconnected throughout an individual's lifespan. That is, children with strong language skills often find it easier to understand and solve mathematical problems, as word problems frequently require reading and interpreting.

Table IV presents the regression model to establish the relationship between numeracy level and ethno-math.

Pearson's Correlation Coefficient (r = 0.612) is the same as that in the model summary Table IV. The coefficient of determination ($R^2 = 0.374$) given in Table IV indicates the amount of variation between numeracy level and ethno-math. Thus, when R-squared is expressed as a percentage, it gives 37.4%. The adjusted R-squared value (0.374), as indicated in Table IV, is the value when the R-squared is adjusted to better population estimates. This means that the numeracy level reversely contributes 37.4% to number recognition, and the remaining 62.6% is contributed by other factors. For this relationship, we can accept the hypothesis that there is a statistically significant relationship between numeracy level and ethno-math by pupils in lower primary classes. These results are in line with Xia *et al.* (2020) and Tsimpli *et al.* (2019), who assert that classroom numeracy activities often involve abstract and formal mathematical concepts and procedures that can be intimidating for young children. However, these results are contradictory to Ranta *et al.* (2022), who postulate that numeracy skills are acquired.

In the classroom, situations are fundamental to understanding and navigating the world, and they have a direct impact on various aspects of a child's daily life, including ethno-math. For instance, these problem-solving skills are valuable in various real-life scenarios, ranging from figuring out how many apples to buy at the grocery store to calculating the time it takes to get to school. Therefore, there is a statistically significant relationship between numeracy level and ethno-math among pupils in lower primary.

6. CONCLUSION

In summary, children's ability to recite letters positively influences their ability in number recognition. Also, their ability in literacy comprehension positively influences their abilities in carrying out numeracy. It was also concluded that learners' ability to work out ethno-math does not necessarily mean their ability to carry out numeracy. Hence, there is a significant relationship between letter recitation and number recognition, as well as a relationship between numeracy level and literacy comprehension. However, pupils can work out ethno-math-like operations on numbers easily but cannot attempt to work out the same concepts in the classroom. This might imply that teachers' methodology of teaching mathematics in the lower primary needs attention and that the mathematical language used in the classroom is also questionable.

Conflict of Interest

The authors declare that they do not have any conflict of interest.

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