

## **Analysis of Influence of Parental Provision of Number Work Learning Resources on the Acquisition of Parental Provision in Public Pre-Primary Schools in Molo**

**Division, Nakuru County**

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### **Abstract**

*The purpose of this study was to investigate the influence of parental involvement through the provision of number work learning resources on children's numeracy skills acquisition in public pre-primary schools in Molo Division. The study employed cross-sectional survey research design while adopting both quantitative and qualitative approaches. The sample size comprised of one hundred and ninety-eight (198) respondents, which included eighty-four (84) pre-primary school learners, thirty (30) pre-primary school teachers and eighty-four pre-primary school parents (84). The study used random sampling procedure to select respondents to engage in the study. The study collected data using questionnaires for pre-primary school teachers and parents, Focus Group Discussion (FGD) for pre-primary school parents, and interview guides and observation checklists for pre-primary school learners. Supervisors and lecturers in the department of Early Childhood Development Education (ECDE) ascertained the validity of research instruments, while the researchers tested the reliability of the instruments by conducting a pilot study. The researchers analyzed quantitative data using Statistical Package for Social Sciences (SPSS) version 23.0 and presented it in bar graphs, frequency tables, and pie charts. On the other hand, the study used the qualitative tools to observe behaviors and record group discussions as objectively as possible. In observation checklist, the researchers ticked (√) where the skill was present and a crossed (×) where it was not present. To analyze the qualitative data, the researchers identified and refined essential characteristics and concepts and then interpreted directly the observations and put them together to become meaningful information. The findings revealed that parental involvement through provision of number work learning resources contributed positively towards pre-primary school children's acquisitions of numeracy skills. The analyzed data showed that number work activity books and playing materials, such as toys, help pre-primary school children develop their creativity in school. The study concluded that parents among other stake holders in education ought to provide pre-school learners with various number work learning resources and also explore inexpensive technology, devices and the use of internet, since a balanced approach to education and innovation offers a rich environment for learning numeracy skills.*

**Key Words:** Parental provision, acquisition of numeracy skills, learning resources

## 1. Introduction

Early Childhood Development Education (ECDE) is a basis for pre-primary school learners' future education. According to Nsubuga (2000), children should receive numeracy skills that would enable them achieve desirable outcomes in Mathematics later in their educational life. Numeracy skills acquisition has been a subject of concern not only to pre-primary school teachers and the entire council, but also to parents regarding their role in promoting the development of these skills. Parents are the learners' primary and most valuable caregivers in life, and are required to be very active in the learner's pre-primary school journey. A child and the parent have to grow together for the minor to enjoy a rewarding pre-primary school knowledge. Learners' parents should be very supportive in physical, emotional, mental, and social aspects of their children (Epstein, 2001). Hart, Ganley, and Purpura (2016) recommend that parents' social, cultural and economic factors, such as level of income, educational level, occupations, and the way guardians communicate with their children, might be the key factors that influence children's mathematical performance. In a similar study, Desforges and Abouchaar (2003) established that parents' involvement at home produced a meaningful positive outcome on the learners' performance, even after considering all additional aspects that shape performance. On the other hand, Beatson (2000) conducted a research whose findings showed that home environment plays a crucial role in children's orientation to education. According to the study, home environment is a combination of social, economic, personal and cultural factors. These research findings have further been expounded by Caño et al. (2016), who added that the role played by pre-primary school teachers is absolutely inverse and, to some extent, relies on what learners come to class with.

An assessment by District Centre for Early Childhood Education (DICECE) (2015) regarding the progress of pre-primary school programs in Kenya reported that pre-primary schools in Molo division, Nakuru County, had not been performing well in numeracy skills development.

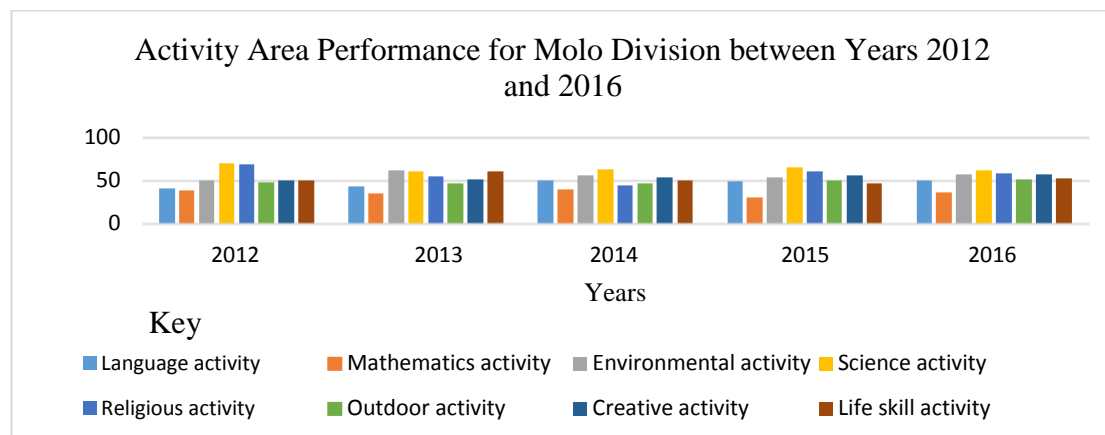


Figure 1 Activity area performance for Molo Division between 2012 and 2016

Source: Molo Division Education Office (2016)

The results in figure 1 on activity area performance for Molo Division between 2012 and 2016 showed that aggregate mean scores in mathematics had not been consistent, and had always been below average. Similarly, Molo Division Education Office (2016) reported that the Mathematics recorded a dismal cumulative mean of 180.42 in Molo division. The report further indicates that, in 2016, the division had registered an improvement of 30% in numeracy development, compared to the national aggregate of 68%. DICECE (2015) attributed the poor performance to lack of infrastructure, poor involvement by the stakeholders, and low socio-economic status in the region. This showed that numeracy skills acquisition among pre-primary schoolchildren could not be fully accounted for by factors within the school environment.

In addition, no research study in Molo division has ever been conducted to investigate parental involvement in the development of numeracy skills among pre-primary school learners. Therefore, the researchers found it necessary to analyze the influence of parental provision of number work learning resources, which is one of the external factors impacting performance, especially in numeracy skills acquisition of the pre-primary school learners in Molo division. Parental involvement is an important aspect in the achievement of numeracy skills among learners. According to Van Voorhis et al. (2013, guardians should be involved in the development of numeracy skills through various ways such as the provision of learning materials, engagement in number work activities, and assistance and reinforcement in homework activities. Inadequate parental participation in child's education results in undesirable outcomes in the child's numeracy skills development, both in and out of the classroom (Caño et al., 2016). Therefore, the main objective of this study was to analyze the influence of parental participation in learners' acquisition of numeracy skills, through the provision of number work learning resources, in Molo Division, Nakuru County.

## **2. Methodology**

The study employed a cross-sectional survey design to examine the relationship between parental involvement through the provision of number work learning resources on their pre-primary school learners' numeracy acquisition in Molo Division in 2018. This research design was chosen because it allowed the researchers to compare the different variables for the study at the same time. The target population comprised of forty-four pre-primary school teachers, eight hundred and forty pre-primary school learners, and eight hundred and twenty-five pre-primary school parents (Molo Division Education Office, 2016). The sample size comprised of one hundred and ninety-eight respondents, which included eighty-four pre-primary school learners, thirty pre-primary school teachers and eighty-four pre-primary school parents. Simple random sampling technique was chosen by the researchers to select pre-primary schools and the respondents. The technique was effective since it gave all entities in the group an independent and equal chance of being picked to represent the population. The study applied both qualitative and quantitative approaches, which involved descriptive and statistical analysis. This enabled the researchers to be more scientific in the presentation of results, making the generalization of study findings to be easily applied. In this study, questionnaires, interview guides, focus group

discussion, and observation checklist were used to collect data. The researchers utilized focus group discussion for pre-primary school parents because it saved on time during data collection, provided in-depth information, and was easier to seek clarification on issues. Furthermore, the instrument facilitated a free and open discussion, thus generating new ideas. Observation checklist enabled the researchers to directly watch the pre-primary school learners' actions, behaviors, and expressions in numeracy skills, and eventually measure the level of acquisition of individual numeracy skills among the participants. Questionnaires were administered to both the pre-school parents and teachers by the researchers within a day's visit to each selected pre-primary school.

The application of both qualitative and quantitative research tools gave the study the opportunity to use the merits of one or more research instruments to cancel the demerits of another instrument. The researchers used Cronbach's Alpha to come up with reliability test of the research instruments. A value of 0.7 on a scale of 0-1 indicated that the research instruments were trustworthy (Kombo & Tromp, 2006). Before conducting the actual research study, the researchers planned a reconnaissance that aimed at pretesting the reliability and validity of the data obtained using the questionnaires. Quantitative data obtained using questionnaires was examined, coded, summarized, and keyed in for analysis using the computer statistical package for social sciences (SPSS) version 23.0 to determine patterns according to the research questions. The researchers used bar graphs, frequency tables and pie charts to show the results of the analysis, and used the outcomes to come up with explanations, conclusions and recommendations. On the other hand, the study used the qualitative tools; interviews, focus groups and observations, to observe behaviors and record group discussions as objectively as possible. In observation checklist, the researchers ticked ( $\checkmark$ ) where the skill was present and a crossed ( $\times$ ) where it was not present. To analyze the qualitative data, the study identified and refined essential characteristics and concepts. The researchers interpreted the observations directly and put them together to become meaningful information. A matrix was designed to facilitate the categorization and coding of the data, and identify the level of support on given hypotheses. The approach provided a multidimensional summary to enable the researchers to perform subsequent, more intensive data analysis.

### **3. Results**

#### **3.1 Demographic Characteristics**

The return or completion rate was an essential indicator of the quality of the study. The researchers divided the number of sampled members who responded to the research instruments by the total size of the sample. The questionnaires were administered in person by the researchers to the respondents. All of the seven questionnaires presented to pre-primary school teachers were successfully filled and returned. This gave a response rate of 100%. Out of the 84 pre-school parents presented with questionnaires, 75 of them filled and returned the instruments, giving a response rate of 89%. Respondent demographics enabled the researchers to identify what factors could influence the opinions, answers, and interests of the study subjects. A majority (44.8%) of the pre-primary school teachers who participated in the study had a teaching experience stretching over 16 years, against 1-5 years (14.3%), 6-10 years (14.3%), and 11-15

years (28.6%). This was a clear indication that they could give sufficient and reliable information, as the researchers expected plausible reasoning from teachers of such levels of experience.

### 3.2 The Influence of Parental Provision of Number Work Learning Resources on the Acquisition of Numeracy Skills

The main objective of this study was to analyze the influence of parental provision of number work learning resources, which is one of the external factors impacting performance, especially in numeracy skills acquisition of the pre-primary school learners in Molo division. The results showed that the provision of learning resources such as number work activity books, charts, and counters increased the creativity of pre-primary school learners and improved numeracy development in recognition, matching, and counting of numbers.

#### 3.2.1 Parents Provided Number Work Activity Books that Improved the Performance of Learners

The researchers administered questionnaires to parents and teachers to determine whether the guardians provided number work activity books to their pre-primary school children at home. Figure 2 below summarizes their responses.

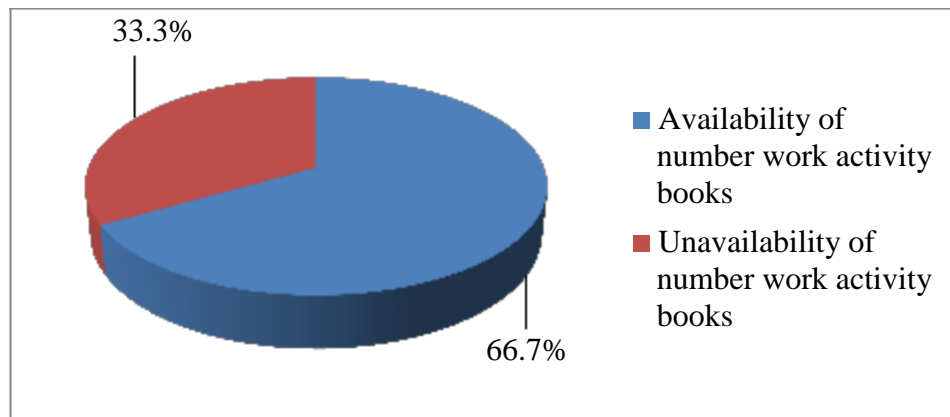


Figure 2 Questionnaire Response on the Provision of Number Work Learning Resources

Results from the pie chart in figure 2 give a representation of the responses from teachers' and parents' questionnaires; 66.7% of the respondents provided their pre-primary school children with number work activity books at home, while 33.3% did not provide their learners with number work activity books.

#### 3.2.2 Learners Used the Number Work Learning Resources at Home

The researchers also used interview guides to enquire from pre-primary school learners whether their parents provided them with number work learning resources, and if they use the materials at home for learning. Table 1 below shows a summary of their responses.

Table 1

*Learner's Response from interview Guides*

Sampled Pre-Primary School Learners	Parents provided number work activity books	
84	-	56
	Used them at home	Did not them use at home
	56	None

From table 1, the study showed that all of the pre-primary school learners who were provided with number work activity books used these books at home.

**3.2.3 Learners Improved Numeracy Development in Recognition, Matching, and Counting of Numbers**

In the questionnaire administered to parents, the researcher sought to determine which other number work learning resources, apart from number work activity books, did the guardians provide their learners at home. Figure 3 below presents their responses.

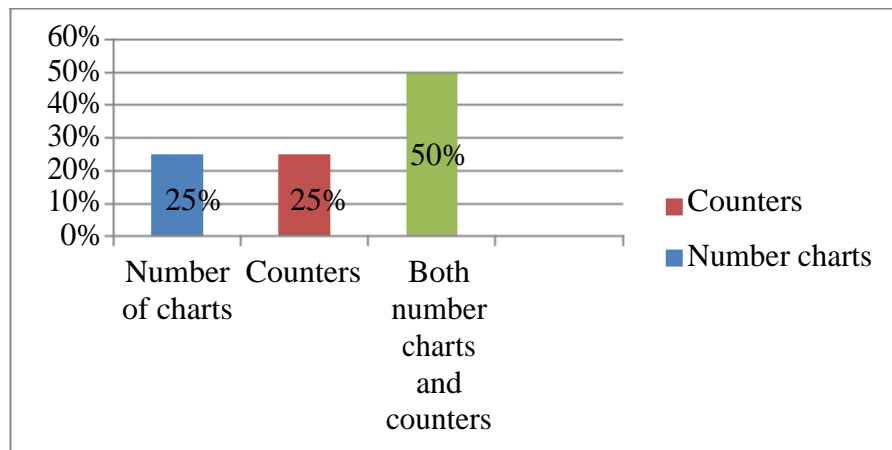


Figure 3 Questionnaire Response on Number work learning Resources Provided

Results in figure 3 show that 25% of the parents provided their children with number charts, 25% of them provided their pre-primary school learners with counters, while a majority of the parents, 50% provided their pre-primary school learners with both numbers charts and counters.

3.2.4 Learners Increased their Creativity and Did Well in Counting, Recognizing, and Matching Numbers. The researchers observed directly the pre-primary school learners actions, behavior and expressions in numeracy skills, and examined the main patterns and themes in relation to the aims of the study. Table 2 shows the analysis of the recorded information as it occurred.

Table 2

*Observation Checklist on Acquisition of Numeracy Skills*

Numeracy skill	Remarks
Counting	Average
Writing numbers	Below Average
Recognizing numbers	Above Average
Ordering numbers	Below Average
Matching numbers	Above Average
Simple additions	Below Average
Simple subtraction	Below Average

From the observation checklist as shown in table 2, the researchers established that the pre-primary school learners could hardly order and write numbers, and had difficulty in performing simple addition and subtraction operations. However, the learners did well in counting, recognizing numbers, and matching.

#### 4. Discussion

In this study, the main number work learning resources provided by parents included the number chart and the counters; while playing ropes, building blocks, clay, water containers, number flash cards, number work picture books, and number work story books played a minor role in the acquisition of numeracy skills among pre-primary school learners in Molo division. It was clear that most parents provided their pre-primary school learners with various number work learning materials, and all of the pre-primary school learners who had number work activity books used these resources at home. One of the reasons might have been the fact that the materials were not common among the pre-primary school learners in the division. These learning resources helped the children to develop their creativity in school since the learners whose parents provided them with the materials could remember various types of toys in terms of their functionality and shapes. From the analysis of questionnaire response of pre-school parents and teachers, there was a positive significance between the provision of number work learning resources and acquisition of numeracy skill among pre-primary school learners.

Similarly, the findings from the observation checklist called for the establishment of ways to improve skills, majorly on addition, subtraction, as well as writing and ordering of numbers because the most learners were below average. On the other hand, the researchers observed that the pre-primary school learners performed well in counting, recognizing and matching numbers. The findings showed that parental involvement in the provision of number charts, and the engagement in counting activities, as shown in figure 3, greatly helped the learners improve numeracy development in the recognition, matching, and counting numbers.

## 5. Conclusion

This study sought to analyze the influence of parental provision of number work learning resources on the acquisition of numeracy skills among pre-primary school learners in public pre-primary schools in Molo division. The findings depicted a positive relationship between the two variables. Playing materials such as toys help the children develop their creativity in school. The findings of this study were in line with Tassoni, Kate, Eldridge, and Gough (2002) who stated that learners must be engaged in a number of math-related activities such as grouping and sorting, pairing and matching among others. A very effective learning process is one that a child can construct a meaning out of sensory inputs applied. To facilitate that, researchers recommended that learners be given a variety of learning and teaching materials to enable them easily recognize shapes, number symbols and their value. Similarly, majority of the teachers thought that parental assistance was very important, and some went ahead to argue that the children whose parents provided them with learning resources seemed to remember more what they are taught in class than those whose parents did not. The study showed that most teachers noticed a difference in performance between the pre-primary school learners who were helped both at home and at school. Children who were helped by parents in their learning were more knowledgeable and better academically. The findings meant that these learners could easily remember what they were taught because of the repetition, which enabled them retain knowledge. Therefore, when parents, school, and community groups team up to promote numeracy skill acquisition among pre-primary school learners, children tend to perform better in academics, enjoy the processes involved, and stay in their classrooms much more longer.

Wolfenson (2000), argued that the use of sensory aid learning resources such as watching television and videos enable children to enhance skills in matching, counting, and number values. The researcher added that pre-primary schoolchildren were attracted to technology; however, before they start to learn with the advancements, they are required to master the basics. Therefore, this study recommends parents to explore inexpensive rugged-framed mobile devices and the use of internet. The step would enable the learners to touch the screen and swipe; eventually, they will know how to use keyboards and mice. Exposing pre-primary schoolchildren to technology and internet would introduce them to software and applications that would develop their numeracy skills. For instance, Shine-2 is an app that allows learners to gain mathematical concepts, such as number recognition, number sounds, counting, grouping, and sorting. Similarly, Math and Literacy Bubbles is another software that enables children to enhance their literacy and numeracy skills with fun. The recommendation would also engage digital experience for the pre-primary school learners, which would promote creativity. However, parents should teach them appropriate ways to utilize technology. Applying a balanced approach to education and innovation offers a rich environment for learning numeracy skills. Guardians should be conscious of the amount of time they expose their children to technology. They should not allow it to be a substitute for other activities like unstructured play, outdoor playtime, and reading.



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