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Influence of Teachers' Classroom Practices on Mastery of Number Activity Concepts among Pre-primary learners in Embakasi Sub County, Nairobi

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Abstract: **This study investigated the influence of teachers' classroom practices on pre-primary learners' mastery of number activity concepts among public pre-primary learners in Embakasi Sub County Nairobi. The target population comprised of the 25 public pre-primary,75 pre-primary teachers, 25 centre managers, 3 Sub County ECD Coordinator and 1536 pre-primary learners. A sample size of 25 public pre-primary, 25 centre managers, 3 Sub County ECD Coordinator and 461 learners was considered for the study. The study utilized cluster, simple random and saturation sampling techniques to select participants while questionnaires, interview Schedule, and observation checklist were used to collect data. Descriptive and inferential statistics were used to analyse quantitative data with the aid of Statistical Package for Social Sciences (SPSS) version 23 while qualitative data was analysed thematically. Findings indicated that teacher classroom instructional practices statistically and positively influence mastery of number activity concepts among pre-primary learners in Embakasi Sub County.The study recommends for adequate and appropriate teachers' instructional practices among pre-primary learners.The study further recommends that the government strengthens teachers' instructional practices by organizing for regular in-servicing, seminars and workshops to enhance teachers' instructional practices.**

Keywords: **teachers' classroom practices, pre-primary learners', ECD Coordinator.**

1. INTRODUCTION

The importance of quality instruction in early childhood cannot be overemphasized. Acar, Hong and Wu (2017) evidently noted that teachers' behaviors, techniques of discipline, teacher-child interaction, child-centered or teacher-centered activities and social emotional climate of the classroom form the instructional practices. However, Jechura, Wooldridge, Bertelsen and Mayers (2016) specifically identified these variables as key to learners' academic outcomes which are developmentally appropriate in promoting meaningful learning experiences for brain development in learners.

Karatas, Guven, Ozturk and Gursory (2017) suggested that experienced teachers have better understanding of the curriculum and their positive opinion affect teaching. Similarly, Hill, Rowan and Ball (2015) noted that teachers' number activity knowledge significantly relate to student achievement gains in first and third grades learners. Gencturk (2012) found out that teachers' knowledge gain changed quality of designing number activity agenda and classroom climate while Wolf, Aber, Behrman and Peele (2019) exposed that there was a positive impact of teachers' training on classroom quality, teacher well-being and learners' school readiness.

In a study conducted in UsA, Bellock, Gunderson, Ramirez and Levine (2010) found out that early childhood educators' attitudes predominantly and positively stimulate enthusiasm and in learners. However Zvoch (2009) identified unevenness of pre-primary practitioners' attitude, knowledge and professionalism as leading to consistency n implementation of number activity concept in Chicago.

Ladd and Sorenson (2017) argued that teacher's experience outweigh other characteristics which were found to affect the initial year performance in the profession and was prominent in earlier grades. The findings showed that classroom quality measures such as peer group composition and class size was affected by the experience of the teacher. The findings were also cited by Papay and Kraft (2015) in Dutch that teacher's experience added to professional and achievement learners in teachers' first few years of employment.

In Northern Carolina, Shuls and Trivitt (2015) identified that higher teacher cognitive skills in number activity are congruent to high achievement of learners in number activity achievement While Hill, Charalambos, and Chin (2018) investigated on teacher characteristics and found out that teacher characteristics such as preparedness, experience, knowledge, and disposition influence learning. The study affirmed that even though some of the characteristics show a positive relationship for learners' outcomes, no single component stood out as a definitive characteristic with effective achievement of number activity concept.

In a survey study, Rudhumbu (2014) investigated on motivational strategies as applied to the teaching of number activity in Zimbambwe. The study findings revealed that motivational strategies convey confidence, inspire high aspirations by giving positive comments and valuing learners' task. Similarly, Allen and Helms (2011) argued that based on operant conditioning and behavioural motivation, individuals improve in performance. The study revealed that motivational strategies are instrumental in enhancing teachers' practices.

In Uganda, Byamugisha and Ogawa (2010) identified that teacher structured lesson best suits learners when there is commitment to work. The study reckoned that although learners discover many things on their own, teacher structured lessons capture learner interest. The same sentiments were echoed by Shofoyeke (2010) in Ondo West Local Government of Nigeria. The study investigated on the impact of teaching methods on pre-primary learning achievement in some selected nursery and primary schools and found out that learners taught by demonstration method performed relatively better than those taught by conventional methods. However, Kwek (2011) noted that teachers are not recipients but suit different purposes in the context of learning.

According to Benegusenga, Ntawiha and Nzabalirwa, (2017) qualification of teachers play a great role in achievement of number activity. The study examined the relationship between the qualification of teachers and their teaching techniques in pre-primary in Kicukiro District in Rwanda and found out that inadequacy of qualification teacher-centred approach. The study reflected a strong, moderate and low positive correlation between teacher's professional training. However, a study carried out by Syslová (2019) in Czech Republic revealed that teachers with higher quality reflection qualify for selected areas of performance.

Merekus and Asante, (2012) identified that teachers who are competent in delivering instructional practices guide and equip learners with skills needed to excel in later years in Ghana. The study further reflected that there was a relationship between content and knowledge in teaching number activity concepts. Similarly, Gezahegn (2017) observed that effective teachers are those who reflect within the classroom and constantly looks for better approaches to relay information to learners in Ethiopia whirls Andaya (2015) affirmed that number activity achievement was highly correlated to individual's instructional factors, classroom management and evaluation factors in Philippine. The study further found out that individual factor and instructional factor adversely affect achievement of number activity concepts.

Prasertcharoensuk, Somprach and Keow (2015) investigated on competencies skills of teachers based on teaching methods, utilization of instructional media, evaluation techniques and preparation of instructional tools in Thailand. The study noted that teachers' competencies such as curriculum content mastery, curriculum content delivery, organization of content, mastery of employing training tools, keeping records and giving feedback matched learners' achievement of concepts. The same sentiments were echoed by (Uwamahoro, 2013) that teachers should go through hallmarks which lead to quality education where learners are creative, innovative adaptive and initiative.

A study by Warfali and Yusoff, (2014) in Libya found out that effective classroom management paves way for engagement between a teacher and a learner. The study further found out that management ensures that proper procedures such as safety and favourable condition for learners are set. The sentiments were asserted by Emmer and Sabornie (2015) that Classroom management is essential for both learners and teachers' professional development and crucial for quality teaching and learning.

Celik, (2017) investigated on the relationship between the pre-primary teachers' attitudes towards number activity development among pre-primary in Erzurum city and found out a positive correlation between pre-primary teachers' attitudes and number activity development. At the same time Papadopoulou, (2016) examined learners' perceptions on quality interactions with teachers and the possible association of teacher–child relationships during engagement in Greece. The study found out that learners mostly describe positive interactions with teachers. The study further found out that quality relationship positively associated with learners' classroom engagement.

Wadesango and Kurebwa (2012) carried out a descriptive survey study in Zimbabwe to investigate the factors that affect the implementation of pre-primary Development Program (ECD). The study adopted stratified random sampling to select twelve head teachers and twelve teachers. The study used Frequency tables and descriptive statistics to present, analyse and interpret data which demonstrated that teachers' qualification affected delivery of effective lesson while large classes reduced teacher-learner interaction. In a related study, Machaba (2013) examined teachers' approaches in teaching number activity. The result of the study revealed that multilingual learners had deficit in number activity due to languages barrier.

Teacher preparedness was cited as a contributing factor to methods of teaching which is fundamental to translate number activity achievement in pre-primary centers. These facts were acknowledged by Kariuki, Njoki and Mbugua, (2018) that differences in performance depend on teachers' lesson preparation. The study noted that the result of learners' performance remained the same regardless teachers' scheme of work preparation. However, Nyokabi, (2018) found out that pre-primary teachers did not prepare professional documents although the ECDE curriculum in Mathira East Sub–County was largely compliant with the recommendations of Kenya Institute of Curriculum Development (KICD. However, many of the respondents kept health records.

In an ex-post facto research design, Onyango (2011) investigated the influence of interactive teaching methods on pre-primary learners' number activity concept in Nyang'oma zone, Muhoroni district. The result of the study found out that teachers Interactive methods, motivated learners to achieve more in number activity concepts. The same argument were asserted by Omondi (2014) in Ngong Division, Kajiado County, Kenya that inquiry-based approach enhanced learners' achievement in number activity..

A strong and effective pedagogy requires well trained teachers with a depth of knowledge about the developmental stages of learners and effective age appropriate pedagogy which can bring a fundamental change in the learner just as noted by Makewa, Role, Too and Kiplagat (2012).The study attributed teaching methodology, commitment, preparation, and use of learning resources, evaluation and assessment as paramount in pre-primary centers. The study rated these factors as an enabling environment for higher achievers in highly performing schools. Similar views were shared by Ngei, (2015) conducted a survey study on the effects of teacher characteristics on Pre-primary children's performance in number activity in Dagorret District Nairobi County. The study analyzed data descriptively and through narrative techniques and revealed that teacher's characteristics play a key role in Pre-primary learners' performance in Number activity.

In a descriptive research design, Jebii, (2020) conducted study to establish teachers' preparedness on implementation of competence based curriculum in lower public primary schools in Kilifi and Nandi counties, Kenya. The study aimed to generalize the study findings to other counties in Kenya where quantitative and qualitative data were simultaneously collected and analyzed. The study reveal that teaches' preparedness significantly influenced implementation of competency based curriculum. In the same segment Cheptoo, (2019) found out that competence based curriculum required facilitators, guidelines and cognitive trainer to allow learners acquire, develop, demonstrate and accomplish the actual competency as enshrined in the curriculum policy (2018) and Kenya institute of curriculum development (2017).

In pursuit of more and better education for the children in Kenya, parents have increasingly used ECDE centres as a head-start, institution for advocating for the 3RS (writing, reading and arithmetic) in preparation for entry into primary school.

The ministry of education has aligned early childhood under the management of County governments whereby the board of management assume the responsibility of outlining the standard quality of pre-primary centres as enshrined in the early childhood development education declaration policy (2018). According to Kenya institute of curriculum development (KICD 2017), learners are supposed to be assessed regarding mastery of number activity concepts. The requirement is that the end of each level, learners achieve concepts expected at that level (KICD, 2017), however, not all learners meet these expectations.

Nevertheless, there is scarce literature available on the possible contribution to achievement of number activity concept in Kenya, which could be inadequate hence to unlock the potential of achieving number activity concepts. Based on this premise, the current study investigates the predictive power of teacher classroom practices on mastery of number activity concept in pre--primary in Embakasi Sub County. These will contribute to both theory and empirical evidence for necessary policy framework to enhance quality of learning in preschools.

2. METHODOLOGY

The study was carried out in Nairobi County which has a total area of 696.1 Km^2 of which 105 .8 5 km^2 make Embakasi Sub County. The Sub County is located between Longitudes 36^o 45^1 East and Latitudes 1^0 18^0 South and it lies at an altitude of 1,798 meters above sea level. Embakasi Sub-County is one of the seventeen (17) sub-counties in Nairobi County which has 3 divisions, 6 locations and 13 sub-locations (Kenya National Bureau of Statistics, 2009)**.** The study adopted concurrent triangulation design within the mixed method approach whereby quantitative and qualitative data were collected concurrently in one phase then analyzed separately, compared and combined (Creswell, 2014). The method was used to confirm and cross-validate findings. The purpose of choosing this design was to obtain different but complementary data from the same topic. The design brought together the differing strengths and non-overlapping weaknesses of quantitative methods with those of qualitative methods (Creswell, 2014). The target population comprised of the 25 public preschools, 75 pre-school teachers, 25 centre managers, 3 Sub County Coordinators, 1536 preschool learners totalling to 1662 respondents. The sample size consisted of 25 centre manages, 75 pre-school teachers and 3 Sub County Coordinator who were chosen through saturation sampling. The study sampled two-stage cluster sampling and random sampling techniques to sample 30% of the learners from each cluster whereby 155 learners were selected from Zone A, 157 learners from Zone B and 149 learners from Zone C totalling to 461 learners. Data was collected using Pre-school teachers' questionnaire, interview Schedule and observation checklist while Rubrics assessment scale was used to rate learners' achievement. Both quantitative and qualitative methods were employed to collect data. Quantitative data from 159 questionnaires and rubrics assessment tool was coded and entered into SPSS version 23 where both descriptive and inferential statistics were generated. Descriptive statistics was analyzed through means, standard deviations, maximum, minimums and percentages of variables under investigation. Inferential analysis involved correlation and regressions analysis. Linear regression analysis was contracted to establish the influence of instructional resources on mastery of number activity concepts. Qualitative data from interview guide and observation schedule was analyzed thematically then multiple regressions was conducted to help in investigating the predictive power and uniqueness of teacher classroom practices on mastery of number activity concepts among the pre-primary learners

3. RESULT

3.1: Demographic Characteristics

The study revealed that majority (95.1%) of pre-school teachers was female while the fewer (4.9%) respondents were male. This imply that pre-school teaching in Embakasi Sub-County is female dominated. This could also mean that there are more female pre-primary professionals than their male counterparts.

Testing Hypothesis

H_o3: ***There is no statistically significant relationship between teachers' classroom practices and Pre-primary Learners' Mastery of Number activity Concepts*****.**

To gain more insight to teacher classroom practices on pre-primary learner's mastery of number activity concepts, the study conducted Pearson's moment correlation and regression analysis. Table 1 Table 1 presents the result of correlation analysis.

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Table 1: Correlation of performance and use of teacher classroom practices

		Teachers' Classroom Practices	Mastery of Number activity Concepts
Teachers' Classroom Practices	Pearson Correlation	1	.578**
	Sig. (2-tailed)		.000
	N	61	61
Pre-primary Learners' Mastery of Number activity Concepts	Pearson Correlation	.578**	1
	Sig. (2-tailed)	.000	
	N	61	61

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

Source*: Data Analysis, 2019*

The study finding show that there is a statistically significant correlation between teachers' classroom practice and mastery of number activity concepts (n=61; r=.578; p<.05). Since the p- value was less than 0.05 the Null hypothesis was rejected. It was therefore concluded that there was statistically significant positive relationship between teachers' classroom practices and pre-primary learner's mastery of number activity concepts. High level of teacher classroom practices was associated with improvement of mastery of number activity concepts.

Table 2 shows that regression model summary

Table 2: Model Summary of performance and teacher classroom practices

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.578[a]	.335	.323	.38825

Predictors: (Constant), Teachers' Classroom Practices

Source*: Data Analysis, 2019*

The regression model indicated that teacher classroom practices accounted for 32.3% (Adjusted R^2=.323) of the variation in pre-primary mastery of number activity concepts in Embakasi sub-county. This showed a greater extent of the variation of teacher classroom practices on mastery of number activity concept among pre-primary learners in Embakasi sub-county.

In addition, to establish the predictive value of teacher classroom practices on pre-primary learner's mastery of number activity concepts, analysis of variance (ANOVA) was calculated and the results was summarized in Table 3 below.

Table 3: ANOVA results for of performance and teacher classroom practices

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.473	1	4.473	29.677	.000[b]
	Residual	8.894	59	.151		
	Total	13.367	60			

Source*: Data Analysis, 2019*

According to the findings, the F-ratio predicts that the general model of regression is a good fit. The estimates show that use of instructional resources is statistically significant predictor of performance in number activity concepts among the pre-primary F (1, 59) =29.677 p< .05 .With a mean of 3.27 and a standard deviation of 1.21 it can be concluded that teacher classroom practices improves mastery of number activity concepts as shown in the estimate table of coefficient below.

Table 4 presents the coefficients estimated.

Table 4: Coefficients for performance and use of instructional resources

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	1.936	.213		9.068	.000	1.508	2.364
Teachers' Classroom Practices	.189	.135	.361	1.402	.016	-.081	.459

a. Dependent Variable: Pre-primary Learners' Mastery of Number activity Concepts

The study found out that there is existence of a positive relationship between teacher classroom practices and mastery of number activity concepts. This is denoted by a positive coefficient (0.189) with p -value of 0.016 which indicates a unit increase of teacher classroom practices standard coefficient of .361 could lead to an increase in mastery of number activity by approximately 36.1 percentage points. Similar results were established by Acar, Hong and Wu (2017) that teachers' behaviors, techniques of discipline, teacher-child interaction, child-centered or teacher-centered activities and social emotional climate of the classroom form the instructional practices.

Most teachers argued that regular training culminate to better result whereby learners excelled in most of the concept. These views were shared by Benegusenga, Ntawiha and Nzabalirwa, (2017) study in Kicukiro District in Rwanda. The study examined the relationship between the qualification of teachers and their teaching techniques in pre-primary in Rwanda and found out that teachers are not adequately qualified and seldom use learner-centred approach. The study reflected a strong, moderate and low positive correlation between teacher's professional training. This argument was confirmed by some respondents who asserted that the level of experience and believes of teachers towards teaching number activity influence mastery of concepts by learners as reinforced by Ladd and Sorenson (2017) that teacher's experience outweigh other characteristics which are found to affect initial year performance in the profession and was prominent in earlier grades.

Teaching methods were found to affect delivery of content as suggested by, Onyango (2011) that use of Interactive methods enhance learners' achieved in number activity concepts. Similar views were advanced by Shofoyeke (2010) that teacher's perception of teaching methods hold a key role in learners' disposition to critical thinking .The study suggested that demonstration method performs relatively better than conventional method.

The implication of teacher classroom practices was observed by most respondents who argued that teacher's management must be exemplary to bridge the gabs in learning. This was supported by majority of the centre managers and Sub County Coordinators who suggested that classroom management pave way to a successful lesson presentation. Most respondents argued that early preparation ensure that teachers collect everything needed in the lesson as suggested by Kariuki, Njoki and Mbugua, (2018) that difference in performance depend on teachers' lesson preparation.

Knowledgeable teachers proved do well in teaching and learning in pre-primary as affirmed by most participants. Most centre managers agreed that professional knowledge was essential to all teachers while teachers suggested that regular in-servicing of teachers was necessary. These views were also advanced by the Sub County Coordinator who pointed out that most teachers had certificates from recognized government institution as affirmed by Hill, Rowan and Ball (2015) that teachers' number activity knowledge significantly relate to learners' achievement gains in first and third grades learners. Gencturk (2012) also pointed out that teachers' knowledge gain changed quality of designing number activity agenda and classroom climate.

These findings were further strengthened by qualitative data where majority of the respondents noted that teacher classroom practices were paramount in pre-primary. Most respondents argued that teachers suggest daily activities and

prepare learners for the lesson. The findings were further eluded by majority of the pre-primary teachers who were in agreement that teacher facilitate learning in pre-primary. This views were asserted by Hill, Charalambos and Chin, (2018) that teacher characteristics such as preparedness, experience, knowledge, and disposition influence learning. The study affirmed that even though some of the characteristics show a positive relationship for learners' outcomes, no single component stood out as a definitive characteristic to effect achievement of number activity concepts.

4. CONCLUSIONS AND RECOMMENDATIONS OF THE STUDY

The objective of the study was to determine the relationship between teachers' classroom practices and mastery of number activity concepts in pre-primary school. The study concluded that there was a statistical significant relationship between teacher classroom practiced and mastery of number activity concepts. Overall majority of teachers supported the statement while qualitative data supported teachers' classroom practices as mirrored in purposeful learning. This implies that teachers' good classroom practices ensured teamwork learning while teacher competency, efficacy, confidence and enthusiasm were directly proportional to learning achievements in pre-primary school.

The study recommends the government to find need to strengthen teacher classroom practices by organizing for regular in-servicing, seminars and workshops to improve pre-primary teacher classroom practices. The study further recommends for quality design that goes a long way in imparting the right instructional methods and enhancing efficacy in teachers' classroom instructional practices.

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