INFLUENCE OF PARENTAL PARTICIPATION ON LEARNERS PERFORMANCE IN MATHEMATICS IN SELECTED PUBLIC EARLY YEARS EDUCATION CENTRES IN EMUHAYA SUB - COUNTY, VIHIGA COUNTY, KENYA

KWENDO RESSY KHASAYI

Thesis Submitted to the School of Postgraduate in Partial Fulfilment of the Requirements for the Award of the Degree of Master of Education in Early Childhood Education in the School of Education and Human Resource Development in the Department of Early Childhood Development Education of Kisii University

SEPTEMBER 2022

DECLARATION AND RECOMMENDATION

Declaration by the Candidate

This research thesis is my original work and has not been submitted in any University for any award and that all sources of information have been acknowledged by means of references.

KWENDO RESSY KHASAYI Sign ---------- Date ----------

EM17/04550/15

Recommendations by Supervisors

This research thesis has been submitted for examination with our approval as the University Supervisors.

Dr.NeliahOmboga, PhD Sign ----------Date ----------

Lecturer Department of Educational Psychology, Early Childhood Education & Special Needs Education

Kisii University.

Dr. George Areba Sign---------- Date ----------

Lecturer Department of Educational Foundations, Administration, Planning and Economics

Kisii University.

DEDICATION

This thesis is dedicated to my adorable children: Vanessa Ayiemba, Jasper Kwendo and Victor Oduor. Their overwhelming support and encouragement made me come this far. May God bless them abundantly.

To my loving family who showed immense love and support during development of this thesis. You truly sacrificed a lot to see me through.

ACKNOWLEDGEMENT

This work completion has been due to immense support from various individuals and institutions. Firstly, my supervisors Dr. George Areba and Dr. Neliah Omboga for their unconditional supervision and guidance from the beginning to the end of this work. I am highly indebted to Kisii University fraternity for allowing me to undertake this programme. I also grateful to all course lecturers for building my knowledge in this field: not forgetting Dr. Murundu, your contribution is highly valued. To all my colleagues at Ebuyalu Primary School under Mrs. Noel Omenda and Mr. Martin Opati for providing me supportive atmosphere and resolute understanding whenever I needed help and permission to be away tackling this work.

Exceptional thankfulness is to family, my beloved husband posthumously and my adorable children Vanessa, Jasper and Victor for your constant support and prayers. I love you to every bit. Heartfelt gratitude goes to the Emuhaya Sub - County Director of Education for providing authorisation to collect data from schools. Special thanks to all the headteachers of sampled early years education centres, EYE, pre-school parents and EYE pupils in Emuhaya Sub - County for availing the needed information during the study: not forgetting my sister Sophia Kwendo for typing and editing this work. Special thanks to Nicanor Alela for unwavering support throughout this educational journey. Above all I thank God for sustaining me throughout the whole long period of my Master's degree. May God bless abundantly everyone who supported this work in many fronts.

TABLE OF CONTENTS

Content

Page

LIST OF TABLES

Tables

LIST OF FIGURES

Figure

Page

LIST OF APPENDICES

Appendices **Page**

LIST OF ACRONMYS AND ABBREVIATIONS

AIDS	Anno immune-deficiency Syndrome
BOM:	Board of Management
DICECE:	District Centre for Early Childhood Education
ECDE:	Early Childhood Development Education
FGDGP:	Focused Group Discussion Guide for Parents
FPE:	Free Primary Education
HIV	Human Immuno-deficiency Decease
HSSHC:	School to home and home to school communication
GER	Gross Enrollment Rate
GDP	Gross Domestic Product
KCPE:	Kenya Certificate of Primary Education
IGHT:	Interview Guide for Head Teachers
IGPO:	Interview Guide for Programme officer
KCSE:	Kenya Certificate of Secondary Education
KICD:	Kenya Institute of Curriculum Development
NACECE:	National Centre for Early Childhood Education
NACOSTI	National Commission for Science Technology Innovation
NEAB:	National Educational Advisory Board
OCL	Observation Check List for Learner
P1:	Primary Teacher 1
PA	Parental Attitude
PHS:	Parental Home Support
PV	Parental Volunteering
PA:	Parental Attitude
PPQ:	Pre-school Parents Questionnaire
PTQ:	EYE Questionnaire
SDP:	School Development Program
SES:	Social Economic Status
SIMSC:	School Instructional Materials Selection Committee
SPO	Sub County Programme officer
SPSS:	Statistical Product and Service Solutions
USDE	United States Department of Education

ABSTRACT

Research reveals that parental participation has a constructive influence on pupils' learning and accomplishment in schools. However, researchers have had inconsistent findings on how and to what extent parental participation influences pre-scholars learner's Mathematics outcomes. The aim of the research was to investigate Influence of parental participation on learners' performance in Mathematics in Public EYE centres in Emuhaya Sub - County, Vihiga County, Kenya. The objectives of the study were to: analyse the influence of parental learning at home support on Mathematics outcomes of EYE pupils, determine the influence of school to home and home to school communication on Mathematics outcomes of EYE pupils, investigate the influence of parental volunteering in school activities on Mathematics outcomes of EYE pupils, and to assess the influence of parental attitudes on Learners mathematics performance in public EYE centres in Emuhaya Sub - County. The research was grounded on Epstein's (1995) theory of overlapping spheres of influence. A mixed methods research design guided this investigation. The target population was 53 head teachers, 108 EYE, 1927 pre-school parents, 1927 EYE pupils and 1 pre-school Sub County Programme officer. Simple Random Sampling approach was applied when selecting 16 head teachers, 32 EYE (30% of the study population) 193 parents (10% of the study population) and 20 learners were selected using multistage simple random sampling technique. Purposive Sampling technique on the other hand was employed to select 1 pre-school Sub County Programme officer (100%). The study used Focused Groups, Interview Schedules, Discussion Guides, Questionnaires, and Observation Checklist to collect both qualitative and quantitative data. Test-retest method was used to establish reliability of research instruments, while validity was ascertained by expert judgment of the research instruments. Quantitative data was analysed through descriptive and inferential statistical techniques. Qualitative data was analysed thematically according to various themes. Data presentation was through table and graphs for quantitative data and narrations for qualitative data. Findings revealed a positive correlation at 0.578 significance level between mathematics outcomes and parental home support, 0.662 significance level between home to school communication and school to home communication, a moderate correlation at 0.478 significance level between mathematics outcomes and parental volunteering and a strong positive correlation at 0.728 significance level between mathematics outcomes and parental attitudes. The study concluded that parental home support, two-way communication from home to school and vice versa, volunteering in school activities and positive parental attitudes were significant predictors of learners' academic outcomes especially in mathematics activities. The study recommended the following; parents are to sensitised on the importance of mathematics activities, create time and assist their children with homework, provide both writing and reference materials for mathematics activities, School managers and administrators to put in place strategies and practices to make parents feel welcome and valuable at school and also introduce programmes that will ensure parents participate in school activities such as school open days, academic clinics and trips. For the policy makers in the ministry of education it was recommended that they come up with policies that encourage parental engagement in their children education for better outcomes. The study is significant to various pre-school stakeholders such as the parents, school managers and administrators, EYE teachers and trainees, and policy makers in the ministry of education.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The US Subdivision of Education delineates parental engrossment as the involvement of parents and EYE teachers in "regular two-way" and significant communication concerning pupil educational learning and other institutional tasks" (USDE, 2015). Parental participation is reinvigorated by EYE' child care givers, policy developers, parents and scholars (Duch, 2005; Sheldon & Epstein, 2005). United Nations Educational, Scientific and Cultural Organisation (UNESCO) monitoring report for Education for All (EFA, 2015) emphasized on early years education in ascertaining that pupils gain basic skills such as numeracy, reading and literacy which empower them thrive in school. The most vital inspiration on early childhood development is conceived from within the household setting and the quality of education imparted at institutional level. Many research works have indicated that parent involvement, starting as early as preschool years have positive impact on learners' mathematics and literacy skills (Van Voorhis et al. 2013; Wilder, 2014).

In the last 50 years, parents' roles and teachers' role in Early Years Education (EYE) pupils learning have greatly transformed. Previously, early years education was alleged by scholars was that there was no requirement for parents to be involved in their children education process (Duckworth, 2018). Nevertheless, recently theories in education have constantly revealed that parents are collaborative partners of equal rank in early childhood education (Huang, 2017). Therefore, improving parental participation has taken an important part in various educational policies development and reforms across the world like in United Kingdom and United States of America

and the positive association between parental participation and their learners academic performance is steadily supported.

In the USA the National Survey data demonstrates that presence in school meetings or occasions is the leading way in which parents participate in schools followed by school fund raising ceremonies. There exist four areas of parental involvement; school outreach activities made to involve parents to make them feel included and welcome, family participation in schools and classroom-based activities, supportive parenting activities which aid pupils developmental well-being and learning activities at home that parents utilise to support their children's mathematics and literacy skills(Van Voorhis et al., 2013). On his part, Fasian (2011) mentioned four areas of parental involvement is through making contact with schools for information sharing, participation in school management, participation in school works and participation in various events at school.

Despite much research on the effects of parental participation on academic attainment, Epstein and Sanders (2006) assert that most EYE teachers and head teachers in USA even now see themselves as individual leaders in their schools and classrooms at times. The study further indicates that to a large extent it is the schools that played a large role in ensuring whether parents participate in their learners' education or not (Epstein and Sanders, 2006). This study further reported that parents' work schedules which conflict with school events, time and financial constraints were the main impediments to effective communication between parents and EYE teachers.

The personality of Japanese parents being close to their children and the solid social and cultural position positioned in the fostering of a child performed an essential role in motivating their children in primary schools. Before the learners joined school,

mothers gave them opportunities such as helping them in drawing, making gadgets with paper, and also paste and various activities related to basic reading and numbering abilities. This is a clear indicator bearing the fact that most Japanese offspring are able to read and write the 48 basic Japanese phonetic symbols (Hoover-Dempsey, & Sandler, 2015).

While the study proof is less than decisive, wisdom, theory years of practice and correlated areas of study powerfully suggest that parental participation in children's formal education is significant for their academic achievement and personal growth (Irvin, Farmer, Leung, Thompsom, & Hutchins, 2010). In the United States, research shows that learners from parents who are more involved in schools attained higher outcomes, came to school on daily basis and completed their post secondary education irrespective of their family backgrounds (Department of Education, 2004). These findings concur with those of Sanders and Sheldon, (2009) who maintained that institutions post good results when a positive and strong relationship is built between pupils, parents and teachers and community has been founded. However, other studies contradict this fact by showing that there is no connection between parental participation and children's academic achievement, Goodall and Vorhaus (2011). Therefore, the present investigation investigated the application of Epstein's Theory of Overlapping Spheres of Influence on Parental Participation in Learners mathematics performance in public EYE centres in Kenya.

Studies in Norway show that parents' participation in homework has noteworthy effect on pupils' academic attainment, Huang (2017). This has been reinforced by researches from Latin America (Dessarrollo, 2007; Epstein, 2005). The education standard in Ghana lower primary institutions has presumed a descending trend in

recent times. Some of the studies have shown that most parents were not engaged in their children education activities (Nyarko, 2011). Osei-Akodo, Chowa and Onsong (2012) researched on the degree of parental involvement and academic achievement. 100 schools from 8 out of 10 regions were sampled using randomised cluster sampling. Findings showed that most parents barely helped their children in homework tasks. The study failed to analyse the effect of parental participation on academic outcomes. These studies denote that poor performance of learners in Ghana was due parents not undertaking their responsibilities of helping their children. This scenario demands for the desire to motivate parents to be actively engaged in their children's education.

Studies in Nigeria propose that learner, parents, EYE teachers and head teachers in addition to institutions benefited from improved parental involvement. Parental involvement activities which are effectively designed and well executed resulted to significant advantages to pupils, EYE teachers, schools and parents. For pupils, they attained more irrespective of parental level of education, social economic status or ethnic background (Olatoye & Ogunkola, 2008). Further, pupils from parents level of involvement was high, showed higher motivations and aspirations towards education, exhibited more self discipline and had higher self esteem.

In Rwanda Kaberere, Makewa, Muchee and Role (2013) discovered that parents of pupils in top performing schools were more involved compared to children from low performing schools especially in support and aid of pupils homework tasks. Despite the investigation making a considerable effort in determining the parental involvement effect on academic performance, no effort was made to determine the degree at which involvement of parents forecasted a change in academic performance.

at independence in the year 1963, the government of Kenya recognised education as a basic right and influential equipment for national development. The government has addressed issues facing education through setting up task forces, committees and commissions over the years with the main intention of provision of quality and relevant education to all across all spheres of education. Through Sessional Paper No. 1 (2005), committed itself to develop policies that would ensure accelerated industrial and technological development. In this regard, free primary education (FPE) introduction in the year 2003 resulted to considerable educational improvements (Republic of Kenya-RoK, 2015). From statistics, enrolment increased significantly in public primary schools from 5.9 – 6.9 million children in the first term of 2003 signifying a gross enrolment rate of 99.0%. Despite increased enrolment, primary education continued to face various barriers like reduced community support and inadequate facilities since parents felt that the government shouldered the burden of undertaking all tasks required for effective implementation of primary education.

Available studies indicate that most pupils in primary schools who enrolled in Class 1 performed poorly in mathematics activities (Grade 1 currently) and this state has been blamed to various variables like lack of parental concern with their children's education or excessive parental control and demands for superior achievement and poor foundation in early years education centres (Jebii, Odongo, & Aloka, 2016). In addition, other researchers have shown that parents who showed little or no interest in the education of their children, their children were regularly absent from school, repeated classes, performed poorly and some dropped out of school permanently (Kibet, 2010).

The participation of parents in their children education has resulted to more attention

in recent times as topic of interest in most studies. However, limited studies have attempted to investigate whether such participation through parental learning at home support, parental communication (home to school), volunteering in school activities and parental attitudes influence children's outcomes in Mathematics activities in Emuhaya Sub County. The researcher conducted a feasibility study and looked at assessment tools used in early years education centres such as rating scales, checklists, norm referenced standardised performance tests and portfolios of learners who were to transit to grade one in 2020 and 2021 respectively. During the feasibility study, it was found out that most responses on mathematics thinking competencies of EYE pupils were "Below Expectations (1)" or "Approaching Expectations (2)" thus, indicating low performance. This infers that most learners did not show "Meeting Expectations (3)" or "Exceeding Expectations (4)"outcomes in mathematics. This warranted the present investigation to investigate whether Parental Participation was an Influencing factor on Learners mathematics performance in public EYE centres in Emuhaya Sub - County, Vihiga County, Kenya.

1.2 Statement of the Problem

Growing body of literature suggests that parental participation in their children's Mathematics activities is significant, chiefly since they are the main shareholders to the delivery of operative education for their children in the developmental years and so, do have a positive influence on children's learning and accomplishment in the school. However, for decades researchers have had inconsistent findings on how and to what extent parental participation influences pre-school learning outcomes, especially in Mathematics outcomes. To date it is not clear which forms of parental participation have a greater influence on EYE pupils' outcomes in Mathematics activities. In addition, many parents seem only to concentrate on taking their children

to school without knowing specific roles required of them. This study is formed on the premise that if all parents would follow Epstein's levels of parental participation, perhaps there would be improved learning outcomes especially in outcomes in Mathematics. Most of the studies carried out in Emuhaya Sub – County were based on feeding programmes in schools, availability of play materials in schools, implementation of pre-school curriculum among others and no available evidence of research on mathematics outcomes especially from parental perspective. Emuhaya Sub-County was selected because of poor outcomes of EYE pupils in Mathematics as shown by assessment tools. With regard to this backdrop, the present investigation investigated Influence of parental participation on learners' performance in Mathematics in Selected Public EYE centres in Emuhaya Sub - County, Vihiga County, Kenya.

1.3 Justification of the Study

This study was inspired by the need to add to existing literature regarding early childhood education. The study is justified on the ground that most studies done in Emuhaya Sub - County based on Feeding Programmes, Implementation of ECDE Curriculum, and Integrating Play in ECDE, HIV and AIDS and Resources in ECDE. A gap exists on available literature especially on parent participation in Mathematics activities. On the same note, no study has come out to address parental participation influence on Mathematics outcomes. Emuhaya Sub - County was chosen because parents are not involved in supporting and enhancing children's' outcomes in Mathematics. It is on this premise that the present investigation examined Influence of parental participation on learners' performance in Mathematics in selected early years education centres in Emuhaya Sub - County.

1.5 Purpose of the Study

The aim of this research was to assess Influence of parental participation on learners' performance in Mathematics in Public EYE centres in Emuhaya Sub County, Vihiga County, Kenya.

1.5.1 Specific Objectives of the Study

The research sought to achieve the following objectives:

i. To assess the influence of parental home support on learners performance in Mathematics in selected Public EYE centres in Emuhaya Sub County.
ii. To determine the Influence of home to school and school to home parental communication on Learners mathematics performance in selected Public EYE centres in Emuhaya Sub County.
iii. To investigate the Influence of parental volunteering role in school activities on Learners mathematics performance in selected Public EYE centres in Emuhaya Sub County.
iv. To assess the Influence of parental attitudes towards Learners mathematics performance in selected Public EYE centres in Emuhaya Sub County.

1.6 Research Questions

The research was guided by the following research questions;

i. What is the Influence of parental home-support on learners' performance in Mathematics in selected Public EYE centres in Emuhaya Sub County?
ii. How does home to school and school to home parental communication influence Learners mathematics performance in selected Public EYE centres in Emuhaya Sub County?

iii. What is the Influence of parental volunteering in school activities on Learners mathematics performance in selected Public EYE centres in Emuhaya Sub County?

iv. How do parental attitudes towards Mathematics influence learners' performance in selected Public EYE centres in Emuhaya Sub County?

1.7 Significance of the Study

The research findings are beneficial to pre-school stakeholders such as the EYE who are classroom in charge of curriculum implementation so that they can improve on Mathematics activities teaching methods which later impact positively on mathematics outcomes.

Secondly, the study may enlighten parents of learners in early years education centres on their roles in enhancing mathematics outcomes.

Thirdly, pre-school administrators may utilise the results of the study to inform parents on their essential responsibility of being involved in their children education through introduction of guidelines for parental involvement in their children education progress. Moreover, EYE teachers and trainees may use this information to equip themselves with relevant skills on how to involve parents in the early years education centres. This can be through for example, making sure parents append signature to their children daily homework tasks as a way of ensuring that the child has done the work properly.

Lastly, policy makers may use the result of this study to develop policies and programmes at which would enrich parents with understanding on their participation in their children education from policy point of view. This will improve the quality education provision due to involvement of parents hence improved performance of

learners in mathematics in schools.

1.8 Scope of the Study

This study focused on selected public EYE centres in Emuhaya Sub - County, Vihiga County, Kenya as public institutions have children from various kinds of backgrounds ranging from low, middle to more affluent income backgrounds. The study involved EYE, headteachers, Sub county programme officer, learners and parents of learners in public EYE centres. EYE were targeted because they are the classroom implementers of the curriculum. Headteachers of public primary schools were participants because all public EYE centres are linked to public primary schools and the head teachers are in charge of curriculum supervision. The Sub County programme officer was targeted because the responsibility of supervising the implementation of the pre-school curriculum in the Sub-County. The learners were involved because they are the recipients of the curriculum. The parents of EYE pupils were respondents in the study because they are the custodians of the EYE pupils and parental participation in the study was a predictor of Mathematics outcomes among the EYE pupils. The study investigated Parental Participation Influence on Mathematics Outcomes of EYE pupils in selected Public EYE centres in Emuhaya Sub County. The researcher focused on: parental home support on mathematics outcomes of EYE pupils, home and school communication, parental volunteering in school activities of EYE pupils and parental attitudes influencing Mathematics outcomes of EYE pupils. A sample size comprising of 16 head teachers, 32 EYE, 20 EYE pupils 193 pre-school parents and 1 Sub County Programme officer were involved in the investigation.

Limitations of the Study

It would have been better to carry out a national study on "Parental Participation Influence on Mathematics Outcomes in public EYE centres in Emuhaya Sub - County, Vihiga County, Kenya" but due to limited funds and time to cover the population at national level, the researcher only managed to carry out this research in Emuhaya Sub - County. Due to this limitation generalization of the results to other Sub-Counties in Kenya was impossible. To overcome this, more similar studies should be done in other areas of Kenya.

The illiteracy levels of some parents were a limitation to the study causing delay to the process of data collection and interpretation. Some parents were semi-illiterate while others were illiterate. This limitation was addressed through translation of instruments into the language the respondents understood. For those could not read, the investigator and her research assistants assisted them fill the questionnaires. Their responses were simplified by interpretation of questionnaire items into the language they understood. This minimized diverse responses generated from the same question items.

The attitude of respondents was negative because some respondents found the study to be too sensitive making them to be suspicious about the findings. To overcome this, the researcher assured them that the data they provided was treated with confidentiality and the report was only to be used for academic purpose.

Assumptions of the Study

The following were the main assumptions of this investigation: -

i. That all the parents and EYE teachers had relevant information on parental participation on mathematics outcomes of EYE pupils.

ii. That all parents were either directly or indirectly involved in one way or another in Mathematics outcomes of their children in pre-school.

iii That the respondents were objective, responded willingly and truthfully and that the information provided was accurate without bias.

Theoretical Framework

The research espoused the Overlapping Spheres of Influence Theory whose proponent is Epstein (1995). Epstein's theory of Overlapping Spheres of Influence posits that school, family, parents and community wield intersecting influences on the education of learners (Epstein, 1995, 2005). Recognizing the inter-dependency of the essential agents or environments which socialise and educate pupils, one basic maxim of this theory is that certain goals of which EYE learners academic outcomes is no exemption, have shared interests of each of these environments or agents and are bested achieved through collaborative association. This aspect is characterised through three areas of interests; community, family and schools and their linkage is established through practices and attitudes of individuals who are situated within each environment as indicated by Epstein (2009).

Epstein developed a framework of parental participation which involved six main forms of activities which link families, communities and schools (Epstein, 1995). This framework of parental participation is considered to be among the main essential instruments designed by the environment hence, for explaining parental participation behaviours and connect them with various academic results. This globally recognised directs early childhood education centres to construct wide ranging family – school collaborations. The six forms of parental participation consisted of: communication (developing efficient school to home and home to school communication), collaborating with the community (harmonising community services with family

needs, and serving the community), decision making (including families as decision-makers through school environments, prefectship, committees),learning at home (supporting learning activities at home which strengthen school curriculum) parenting (helping families with parenting skills and child-rearing)and volunteering (developing means through which families can become involved in activities at the school). Each kind of participation includes a range of activities to be performed by EYE teachers, learners and parents and is tentatively connected with an array of definite results for EYE teachers, parents and learners.

Epstein (2011) observed that parenting requires support from school in the form of parent education in order to equip the parents with competencies to assist them develop methods of working with their children at home. She notes that parents ought to receive training in areas such as; family support programmes to assist families with health issues, nutrition, family literacy and other services. Epstein (2011) advocates for schools to regularly collect information like; background, culture, talent, objectives and expectations of learners because being aware of such information ensures that institutions know how to realise the needs of families and children. Epstein goes on to state that schools should provide family workshops in order to increase the knowledge of parents as far as child development is concerned. Epstein (2011) goes on to indicate that some parents would not attend seminars because of various grounds like living far from school, speaking languages other than English, feeling unwelcome or frightened by the school, working outside the home, being busy with other children, or having other basis for not participating. However, Epstein maintains that this does imply that they are not concerned in their children's' education and hence institutions should make sure that such parents obtain the information shared via other means.

Communicating accordingto Epstein (2011) encompasses developing efficient types of home-to-school and school-to-home communication. Communication is a requisite component of family-school relationships because both home and school are primary institutions for children's education. Parents should share important information with the school concerning their children such as their health status so that the EYE are in a position to handle them as required at school. Unfortunately, parents sometimes have a tendency of being secretive, cautious and hesitant to share any information they think might reduce their children's competitive advantage.

Volunteering is another form of parental participation. According to KICD (2019) schools require various kinds of resources including financial, physical and human resources to function effectively and efficiently. Hence, parents are an important human resource that an institution can engage in voluntary work for example; being resource persons to the children at school in their area of expertise, providing simple, safe, attractive and age-appropriate learning aids for children, assisting in building and construction and so forth. Epstein (2011) notes that many institutions encounter a challenge of inspiring parents to volunteer since families do not think they are treasured as volunteers. Schools should therefore come up with and implement programmes which outline methods through which parents may volunteer at school.

Learning at home entails reinforcing what is learnt at school. This method of involving parents creates efficient community that encompasses partnership from home to school and gives ideas and information to families concerning ways of assisting pupils at home with home work among other curriculum associated tasks. Most parents rare encountering challenges in emphasising homework at home environment and pre-primary teachers are not in a capacity to assist them to know the

programme (Epstein, 2011). With the novel Corona Virus (Covid-19) pandemic parents are experiencing a very tough time with this form of parental participation.

On decision making Epstein (2011) asserts that parents should need to be permitted to support to arrive at decisions relating between home and school. Parents need to be incorporated in devising of decisions affecting their children overall well being in and outside the school (KICD, 2019). According to KICD (2019), activities that parents undertake during participatory decision-making include: sharing ideas on how to develop the school, offering their candidature, voting, attending meetings, and participate in BOM and PA forums. They can also be involved in deliberations relating to their children observed behaviours which is geared towards assisting parents to be involved in identification of their children inherent capacities, career guidance, career choice and academic capabilities. They can also observe growth and development of children in addition to identification of learning disabilities in scenarios that may happen. They can be aggressive in matters relating to the general well being of their children within and outside the school.

Epstein (2011) argues that institutions need to permit parents to assume leadership responsibilities and air their perceptions in relation to certain decisions at school. This ensures that the attribute of parental participation improves. Lastly, Epstein (2011) recognises partnership with the community as a style of parental participation. The community also contributes to children academic results through amalgamation of resources and programmes from the community to reinforce school activities, family practices and pupils' growth and development. This form of parental participation encompasses issues like information for families and pupils on social support, recreational, community health, cultural and other programmes.

Epstein (2011) observed that these forms of family involvement can be utilised to develop firm linkages within families and recommends that community, home and schools needs to form linkages to make sure healthy children and support lifelong education programmes. There are various explanations for building and anchoring collaborations between community, family and schools (Epstein, 2009). One of the key motive for this collaboration to accelerate learning output results by pupils in school. Other bases are for instance, to enhance the climate of the school and school programmes, to enhance parental leadership skills, to help families link with others in the community and school, in addition to help pupils with their homework. All these grounds stress the role that parents need to perform in their children learning and to hold a strong and positive relationship with education institutions.

In Epstein's view, institutions and households share tasks for the socialisation of the pupil. Hence, this theory of overlapping spheres of influence implies that the activity of the most useful schools and families overlie and they share missions and goals. Despite some school activities and families are performed separately, there are certain essential things which required to be done together by these circumstances, illuminating the shared roles of parents and teachers. ideas of school like family and family like schools are applied to reinforce that family have to understand that the child id a pupil to whom the benefit of school, home activities and learning common required need to be indicated out, while the institution is to make every pupil feel included, accepted and special as it is within the family setting. Analogues doctrines go also for the society level and its dealings with schools and families.

The present study focused on parental participation on Mathematics outcomes of EYE pupils where the six forms of parental participation identified by Epstein formed the

ground for good outcomes in EYE. This theory was relevant to the present investigation in that parental participation their education children results to significant dividends in the educational performance of their children, which in this case were outcomes of Mathematics among the EYE pupils.

Conceptual Framework

Figure 1 display the Independent Variable was Parental Participation in Mathematics. Examples of parental participation in Mathematics were; parental home support, parental school to home and home to school communication, parental volunteering in child's school activities and parental attitude towards children's mathematics outcomes. When parental participation in Mathematics was enhanced, Mathematics outcomes of EYE pupils improved. On the other hand, when parental participation in Mathematics was reduced, Mathematics performance of EYE pupils was inhibited.

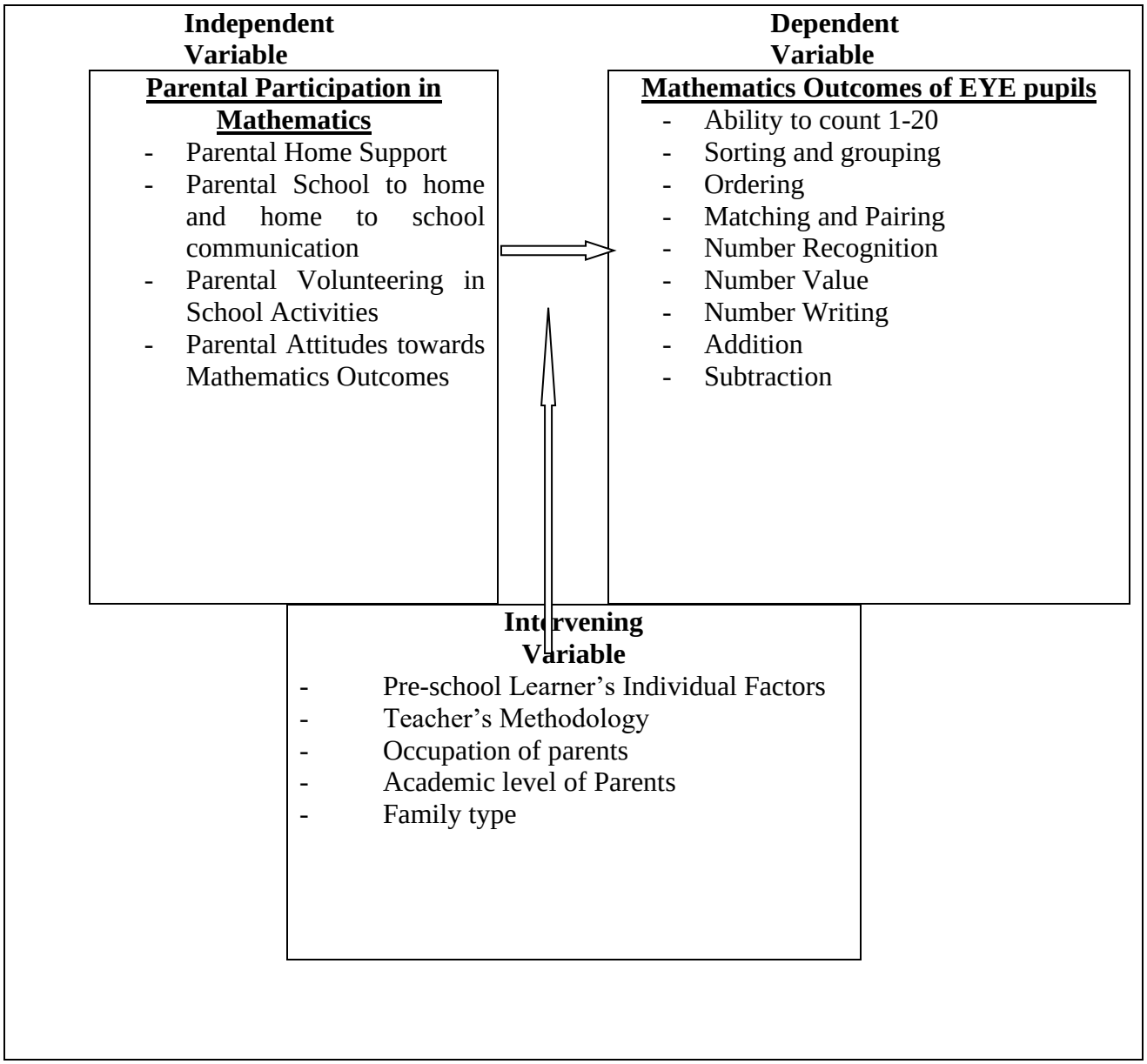


Figure 1: Conceptual Framework on Parental Participation Influence on Mathematics Outcomes of EYE pupils.

The Dependent Variable in this Conceptual Framework was Mathematics Outcomes of EYE pupils which was dependent on the level of parental participation in Mathematics (Independent Variable). Mathematics outcomes of EYE pupils was exhibited by ability to count 1-20, sorting and grouping, ordering, matching and pairing, number recognition, number value, number writing, addition and subtraction.

Intervening Variables in this Conceptual Framework were those factors that come in the process of parental participation in Mathematics to either enhance or inhibit Mathematics outcomes of EYE pupils. In this Conceptual Framework, intervening variables were Challenges in Parental Participation in Learners mathematics performance. Some of these challenges in parental participation in Learners mathematics performance were; pre-school learner's individual factors, teacher's methodology, teacher's academic and professional qualifications, teacher's experience, occupation of parents, academic qualification of parents and family type. When challenges in parental participation in Learners mathematics performance were minimized, Learners mathematics performance were enhanced. On the other hand, when challenges in parental participation in Learners mathematics performance increased, then Mathematics outcomes of EYE pupils were inhibited.

1.13 Operational Definition of Terms

Decision-making: is the process through which choice are made through identification of a decision by a group of people or an individual. In this study it refers to the process through which various decisions are made in schools.

Educational Achievement: The achievement of the pre-school learner. It is measured in relation to their school competencies in respective learning

activity areas using outcome indicators such as Exceeding Expectations (EE), Meeting Expectations (ME), Approaching Expectations (AE), and Below Expectation (BE).

Influence: The powerful effect participation of parents in education matters of their children has on the learning outcomes.

Learning at home: Parent's assistance to their children in homework and other curricular associated activities and tasks given to pupils by teachers to undertake while at home.

Learning Outcome: Educational achievement of the pre-school learner in learning activity areas and co-curricular activities.

Mathematics Outcomes: The extent of the progress achieved by the learners of the various early years education centres in Mathematics. It includes and not limited to smooth transition from home to school, timely syllabus coverage, high enrolment and increased retention of learners in early years education centres.

Parental Communication: is the process of exchange of information between a teacher or school with the parent to discuss matters pertaining child academic development. In this study it refers to talks that have initiated between schools and parents with regard to pupils outcomes in Mathematics activities

Parental Participation: Activities, actions, and behaviours that parents perform at home that Influence the academic success of the children as well as engagement of parents in the school activities of their children with the aim of fostering their' success.

Parental Participation in School Activities: actions undertaken by schools to make sure parents are fully involved in various school activities either at home or within school precincts.

.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter explored in depth literature connected to thematic segments drawn from the study objectives. Specifically, the study reviewed literature on parental learning at home support on pre-school learner's Mathematics outcomes, the Influence of school to home and home to school communications on pre-school learner's Mathematics outcomes, influence of parental volunteering in school activities of EYE pupils on Mathematics outcomes, and Influence of parental attitudes on children's Mathematics outcomes.

2.2 Parental Home-Support and Pre-School Learner's Mathematics Outcomes

Quilliams and Beran, (2009) argue that parental participation encourages the significance of performing better in class and this could result to a conversation of future educational goals of a pupil. The more parents participate in schools activity and also facilitate learning of their children at home the higher the pupil academic outcomes. Melhuish et al (2008) emphasized that parents' aid benefits children's' learning especially their numerical competence development. Chiu and Xihua (2008) further proved that delivery of learning materials and tasks at home like discussion of everyday facts, music and books is also connected with enhancement in children's mathematical attainment.

According to Sad and Gurbuzturk (2010), the most referred home based activities to comprise of providing favourable home learning environment, home supervision (limiting TV, going out to play), structuring home activities, parent-child discussion, and parental help in supervising their children's work. In the US, DeFlorio (2011) steered a research on home learning setting influence on pre-school children's

informal numeracy development. This mixed-methods correlation research precisely explored the association between components of home learning setting and numerical knowledge of 3- and 4-years old pupils from lower and middle Social Economic Status (SES) families. The study related reactions from parents (179), balanced for pupil's age and family's social economic status. They used a questionnaire to collect issues relating to quality and quantity of numerical help received from home and a video tape was incorporated to get findings from the sample on parents' level of engagement in activities at home perceived by parents to aid early child mathematical understanding. Results showed a positive relationship between parental level of participation and pupils' numerical knowledge. Analysis of video implied that parents of pupils from both age and social economic groups focused on identical mathematical concepts when engaging mathematic work with their children but there existed qualitative variations in parents' instructional behaviours which were extrapolative of pupil's results on mathematics tests when the pupil's age and family social economic status was held constant. The present study collected information using FGDs, observation checklist, interview schedule and questionnaires form sub county EYE programme officer, head teachers, EYE teachers, pupils and parents.

The meta-analysis study conducted by Jeynes (2015) in the United States of American discovered a strong positive relationship between parental approach explained as supportive, loving, helpful, and protecting a sufficient level of discipline and academic outcomes. The positive relationship was because of the capacity of parents with commanding parenting approach to ne supporting and loving and yet sustains a sufficient level of discipline at home. Parents with this parenting method also showed aspects like warmth and trust which inspired their children to debate academic

expectations and issues with their parents. Skwarchuk (2009) observed that more prominence need to be put on the attempts beside spending resources and time to craft methods of enhancing pupils mathematical competencies like after school tuitions. Parents also were held in other activities with pupils that consisted of: learn mathematics at home, engaging them in household chores and creating something to assist them, playing games, talking about nature, reading books with children, checking their homework, and discussing children's daily life at school.

A similar research carried out in USA by E-l Nokali, Bachman, and Votruba-Drzal (2010) revealed the connection between parental participation and children's social and academic development with a sample of 1,364 pupils across 1st, 3rd, and 5th grades. The research instrument for the study included items on volunteering or visiting the school, parents' attitudes about education, and supposed communication school and family goals for learners. The research showed a positive relationship between family involvement and learners' behaviours and social skills but no significant associations with cognitive measure. Skwarchuk (2009) conducted an international study that confirmed and extended the research undertaken in USA with supplementary correlational proof of positive relationship of family participation in mathematics learning tasks at home and pupils' mathematics skills. The research showed that parents' exchanges on more convoluted mathematics tasks at home were more advantageous for learner's mathematics performance. While the study provided results related to parenting as a form of parental participation, the results are predominantly based on American culture and parenting environment, which reflects a scenario reasonably different from Kenya's. The present made efforts to offer results based on the Kenyan environment that reflected the families, children, institutions and societies in the local setting.

In Australia, Arthur (2011) did a research on parent's perceptions of their responsibilities as home teachers of their children. The research engaged phenomenon graphic technique to ascertain and examine how education at home by parents visualised their roles as teachers at home. Analysis of data (qualitative) showed various understanding by parents of their roles as teachers to their children at home. The study utilised 27 parents as the research sample where 4 classes of descriptions of parents role as teachers at home were discovered. The parents saw themselves in the position of a student, as they needed to acquire knowledge and skills so that they can start and conduct learning at home. Further, they conceptualised themselves as acquaintances, normally with their spines, in a learning partnership which offered the family educational infrastructure.

Arthur (2011) also found that parents regarded themselves as Teachers of their children, enabling their development and education. The outcomes of the research showed that home EYE experience their roles in 4 vitally definite techniques, each of which contributes to learning at home. The outcomes recommend that home EYE, are true teachers and that they had parental qualities which offered a form of learning, that differed from educational practices features of many Australians. Although the Arthur (2011) study gave potential outcomes on the influence of home education on children's academic success, the study did not establish the scope to which the home learning environment predicted the children's academic achievement, which the present investigation sought to fill.

Australian Council of State Schools' Organisation, ACSSO (2006) noted that enhancing home environment resulted to increased pupils academic performance, parents capacity to discuss with their children teacher and their knowledge of their

children and it ended with strong association between teachers and parents. The changes in home environment have a significant lasting impact on pupils learning and personal growth and development. It was also confirmed that a positive relationship existed between parents that provided instructional resources for their children while at home and their academic outcomes. Further Baily (2016) supports the study findings by indicating that parenting influence pupils performance for pupils at risk of deteriorating academically specifically via their exchanges with their children as they complete homework.

Sender and Sungur (2009) examined parental participation and learners' arithmetic and science subjects' performance and attitude. The research found out that parental participation positively influenced learner attainment in science and mathematics subjects. They conclude that learners whose parents created time to communicate with them concerning science, who had confidence in their children capacity in science and mathematics subjects and who exhibited higher expectations and appeared to have more interest in the subject. Sanders and Sheldon (2009) concurred that parents performs a essential function in development of their children attitude towards science and mathematics subjects. Through engagement in mathematics subject activities at home and through taking their children to go to libraries they assisted their children to cultivate positive attitude in the subject.

Fasina (2011) research on parental role in ECD. The study aimed to provide solutions to challenges that were fronting parents as they participated in their children education by acting as a revelation to parents and community in assisting to change or re-design their way of parental participation in attaining a better future for themselves and their children. The design was a survey where questionnaire were administered to

respondents. ANOVA was used to test the hypothesis for the study. Results showed that parental participation that involved emotional and care support significant positive effect on ECDE specifically academic performance of the pupil. The present investigation on the other hand employed mixed methods research approach to find out the influence of parental participation in learners mathematics performance in public pre-school in Emuhaya Sub County.

A study was conducted in Botswana by Boipono, Tshegofatso and Kgomotso (2015) on the effects of parental participation level on the outcomes among students in Tsodilo secondary school. The research engaged quantitative, non-experimental design and was informed by Epstein's theory of parental participation. Stratified sampling was applied in arriving at the desired sample which included 144 students. Four standard indicators of parental participation level were identified and closed ended questions were formulated in relation to those indicators. The resultant parental participation level was categorized into three levels of high, medium and low. Analysis of Variance was performed to test for significant differences in mean outcomes across the three parental participation levels. The findings of the research showed that parental participation level had a significant effect on academic outcomes among students and their attitudes towards various subjects done. The above reviewed study was undertaken in Botswana among secondary school learners and employed stratified sampling technique to arrive at the desired sample, which comprised of only secondary students and not pre-school pupils. The study also used quantitative, non-experimental design but lacked qualitative findings. This present investigation was conducted with the same view but among EYE pupils and sampled parents, EYE teachers, head teachers and the Sub County pre-school Programme officer as participants.

In Namibia, Guolang (2010) undertook a qualitative case study on the effects of parental participation in education of their children. The research sought to ascertain how parental participation affected the academic attainment of learners. The objective was to establish if this connection existed in a school in Namibia which confronted with various challenges in education. Data was collected through interview of parents of 7 learners at one school in the capital (Windhoek), who were high performers. All parents interviewed were found to be highly involved in their children education and therefore they had high hopes of their future and were all reasonably voluble concerning the aspirations of their children. While the study provides a wealth of research findings on parental participation/engagement, there are still areas of emphasis in which the study did not look at like Mathematics. At the same time, this research provided outcomes based on Namibia's context, which reflects a context quite different from Kenya's hence a gap filled by the present investigation.

In Rwanda, Tuyisenge (2014) examined factors of parental participation in their children EYE. Epstein model theory guided the study. A descriptive research design was followed that involved a sample of 110 parents, 6 head teachers and 6 teachers. Interview schedule and questionnaire were used as instruments of collecting data. The research discovered that parents discreetly participated in their children education work because of their daily work commitment which was a challenge to them and hence restricting their ability to involve themselves in their children academic progress. Despite the research being anchored on Epstein model and mixed methods of data collection, the study used a smaller sample as opposed to this research. The present study deviates from the former as it was carried out in EYE centres in Emuhaya Sub County with a sample of 16 head teachers, 32 EYE, 20 learners, 193 parents and one Sub County Programme officer hence a gap to be filled by the present

study.

Imgram, Wolfe and Lieberman (2017) also found that institutions having learners with low achievement scores may gain from studying parental participation endeavours on developing parental ability and motivating leaning at home tasks. Conversely, the research was qualitative in nature but the present research adopted mixed research design approach. Qualitative and quantitative data were collected through questionnaires, observation checklist, interview schedules and focus group discussions. This gave more findings, which could not be gathered through qualitative method on the scope to which parental participation Influences pre-school learner's Mathematics outcomes.

Kisiang'ani (2018) explored parental participation and mathematics activities performance by EYE pupils in Kabuchai Sub County. A descriptive survey design was employed involving 27 EYE teachers and 2019 parents. The sample size involved 150 parents, 10 teachers and 10 EYE centres who were selected conveniently. Data collection was through interview schedules and questionnaires. Analysis of data was done using descriptive statistics (quantitative data) and thematic content analysis (qualitative data). It was discovered that most parents were not highly involved in enhancing mathematics achievement of their children in EYE. This study is different since it was conducted in EYE centres in Emuhaya Sub County with a sample from 193 schools which had 20 EYE pupils. 32 EYE teachers, 16 head teachers and 1 Sub county programme officer. Apart from questionnaires and interview schedules, the present investigation also collected data using focus group discussions and observation checklist. Quantitative data was analysed through descriptive and

inferential statistical techniques while qualitative data was thematically analysed according to themes thus, a gap filled by the present investigation.

A study by Kaptich, Kiplagat and Munyua (2019) monitored pupils' academic achievement at home through parental involvement in education activities. The study was conducted in Ainamoi Sub County. A ex post factor research design was used where the target involved 61 EYE teachers, and 2404 class eight pupils. The pupils were selected through stratified random sampling and teachers selected using census method. Questionnaire and interview schedule were used as instruments of data collection. It was found out that parental participation in homework activities had a positive influence on academic achievement of pupils in schools. The present study unlike the former was carried out in early years education centres in Emuhaya Sub County. In addition to questionnaires and interview schedules, the present investigation also collected data using focus group discussions and observation checklist necessitating conduction of this study.

In Igembe South Sub County, Kimathi (2014) studied parental participation in primary institutions of grade three pupils reading at home. The study utilised descriptive study design and was directed by Sandler and Hoover-Dempsey framework for parental participation, complemented by Grolnick's theory of parental participation. Interviews were conducted using a semi-structured questionnaires where instruments were issued to 137 parents who were randomly selected. There was a significant relationship between parental role development and their involvement in behavioural, cognitive and modelling dimensions of pupils. The reviewed research was concerned with children in lower primary schools and not among pre-scholars,

which is the focus in the present investigation hence a gap filled by the present investigation.

In Kuresoi Sub-County, Koskei (2014) examined the influence of parental participation on students' academic achievement in public mixed day secondary schools. The main objective of this research was to investigate the influence of parental participation on academic outcomes. An ex-post facto design was utilised in selecting respondents (180 form four learners) from 6 public secondary schools in the Sub County. Resulted indicated that parental participation in education did not influence significantly learners' academic outcomes. This study shows inconsistent results on the scope to which parental participation predicts academic performance. Due to these outcomes, there was need for a survey to evaluate these contradictory outcomes therefore a gap filled by the present investigation.

Muindi and Twoli (2010) surveyed performance of learners at the end of four year cycle. Specifically, students personal; and school features and how they supported or hindered learning were examined. The population involved 328 primary schools from 79 Sub Counties involving 7931 pupils as target respondents. Results showed that 36.0% of mothers and 17.0% of fathers in Nairobi assisted their children in homework tasks. The responsibility of assisting children in their homework was left to their siblings as 46.0% reported. It was also evident that more than 60.0% of parents did not take keen interest in their children academic progress. Most pupils (88.0%) agreed that they were given homework by teachers on regular occasions but only 50.0% indicated that their parents assisted them. Surprisingly their fathers did not take keen interest in their children homework and therefore the researcher emphasised that fathers needed to undertake their responsibility of care and provision for their children

until they reach adulthood. Hence, this study found it necessary to look at how parental participation influence learners mathematics outcomes in public EYE centres in Emuhaya Sub County.

2.3 School to home and home to school communication and Pre-School; Learner's Mathematics Outcomes

Obtainable studies show that nurturing teacher-parent rapport through regular communication arrangements is a crucial ingredient in the development of team work among EYE, parents and learners (Hinojosa, 2014). According to Olatoye, and Ogunkola (2008) the benefits related to effective school-home two-way communication are: Learners become conscious of their individual advances and ways of maintaining or improving their scores, comprehend institutional expectations, desirable behaviour, and attendance in addition to other policies that allow them to take informed decisions about institutional programmes. Parents acquire information of institutional policies and programmes in addition to capacity of tracking their children progress. Likewise, EYE teachers are able to communicate with the various households and utilize parent networks to comprehend family views of pupils' programmes and progress.

In USA, Weiss, Kreider, Levine, Mayer, Stadler and Vaughan (2016) conducted a study to examine various forms of school to home communication applied beyond planned activities like opening of the academic calendar meetings and parent – teacher meetings. The researchers' conducted 23 interviews with parents of grade 1 children together with their teachers. Results showed that many Parents and EYE teachers engaged in and treasured short, unscheduled meetings which happened at least once a month. Unscheduled meetings between teachers and parents was found to

be facilitated by assistant teachers. Moreover, Chopra and French (2014) did an interview involving 17 EYE teachers in primary schools to establish the relationship they had with parents of learners with learning disabilities. Findings showed that learners' performance in academics increased considerably after parents and teachers had started and maintained regular communication. These findings are supported by those of Cox (2015) that provided a review of empirical researches (18) of strategies that applied home to school partnerships for learners aged between 4 – 16 years having a problem or disorder in USA. These findings also indicated that home-school partnership had significant positive effect on learners social or academic outcomes from 17 of 18 studies reviewed. While these studies provide predominantly American findings, the results reflect a setting quite different from Kenyans in terms of home-school communication hence need to establish if the situation is similar in Kenya.

A research from United States undertaken Kraft, Matthew and Shaun (2011) to assess the effectiveness of teacher interactions with parents and learners as a strategy of enhancing learner commitment. The research established the causal impact of teacher communication using a randomised field study where pupils were set to receive every day telephone call from home and a written text message during school holiday programmes. It was found out that frequent teacher-parent communication instantly improved learner engagement as seen from high completion rate for homework, on-task behaviour and active participation in class. This research conversely assessed parental participation initiated by the EYE' extent of communication oblivious of analyzing the two-way communication between parents and EYE teachers. The present research went a notch higher to establish the scope to which home-to-school communications predicts EYE pupils' educational achievement therefore a gap filled by the present investigation.

Shiffman (2011) researched on the association between parents and EYE teachers' interactions on pupils' education, this study was narrowed to title one of primary school Parents and EYE teachers in an expanded urban school in Texas. The research was anchored on exploratory case study design. The study used mixed method research design with sequential trans-formative approach. Data sources for the investigation came from interviews with parents, EYE teachers and school staff. Ecological systems theory by Bronfenbrenner's was used to address the benefit of communication between Parents and EYE teachers. Both qualitative and quantitative data was gathered. The outcomes exposed practical fears related with lack of education trust, accessibility, parent educational knowledge and background. This study only used interviews while the present investigation used questionnaires, interview schedules, FGDs and observation checklist for more conclusive results hence a gap filled by the present investigation.

A study by Stanley, Beamish and Bryer, (2013) in Queensland primary school, set to establish a more inclusive strategy to school – home communication by using a triennial school review procedure. The review was performed within the basis of participatory shared decision making where non teaching staff (90, teaching staff (24) and parents (12) prioritised guidelines for curriculum and school community associations which had been gathered from whole school research. From group conversations came responses that were recorded in note form. Findings revealed that regular communication was perceived to have improved relationships which permitted participative decision making and better achievement of learners. This study addressed the influence of parental participation from a qualitative approach but the present investigation established the relationship between parental participation and pupils' outcomes in Mathematics using mixed method research design which

gathered, analysed and interpreted findings using both qualitative and quantitative approaches therefore a gap filled by the present investigation.

A research in USA by Michelle (2012) examined the influence of teacher – parental communication on social development by learners. The research explored the nature of parent-educator relations and establishes the connection between these interactions and children's social growth. Collection of data was via focus group session and in-depth interviews from semi structured questions. it was found out that the form of teacher – parent communication was either participative or non participative. It was concluded that EYE teachers and parents had comparable opinions on what activities made their interactions participative. But, they expressed varied opinions on what made up non-participative processes. The present investigation sought to find out the Influence of parental participation on Mathematics outcomes of EYE pupils, unlike Michelle's study on influence of teacher-parent interactions on learner's social development thus filling the gap in research.

Sad and Gurbuzturk (2010) determined the degree of parental participation among their children primary school education relating to homework support and communication. A descriptive, correlation and comparative research design were utilised. The sample involved 1252 parents of children in first and fifth grades in primary schools from Indonesia Malatya province. A parental participation scale questionnaire was used to collect data. Outcomes indicated that parents' participation level was high for practices like communication with their children, providing good home environment for learning and supporting their children personality development. However, the results were low especially for volunteering. This study differed from the current one, which was conducted in early years education centres,

employed questionnaires, interviews, focus group discussions and observation checklists.

A study carried out by Department for Children, Schools, and Families (2009) in the United Kingdom utilizing a multiple case study design across ten primary and five secondary institutions found outcomes that indicated increase in results for the learners due to enhanced parental participation in school programmes. Face-to-face participation of parents in the early years of education was established to be fruitful. The outcomes further showed that EYE teachers in primary institutions, and early years of secondary education were capable to utilise a wider variety of methods to involve parents. The research additionally established that regular use of home-school communications was a vital aspect in improving teacher-parent collaboraiton, which resulted to better academic attainment of learners. Conversely, the present research further established the connection between parental and EYE teacher home-school communication and pre-school learner's Mathematics outcomes which the study did not consider thus filling the gap in research.

A survey research was carried out in Taiwan by Huang (2017) to determine the impact of parental participation on academic attainment of learners in secondary schools. The research outcomes revealed that enriched school-home communication allowed parents to value their own vital responsibilities and personal efficacy and inspires them to continue with the support of their children's academic progress. Results further indicated that EYE teachers felt more positive concerning teaching and about their institution when there was efficient communication. The study however, did not establish the scope to which school-home communication predicts pre-school learner's educational achievement. Further, the present study was

conducted among EYE pupils as opposed to secondary level thus filling the gap in research.

Abd, Zuwati, Umi and Jal (2013) carried out a research in Malaysia on the influence of family situation and parental participation on education of learners in secondary schools. Specifically, they assessed the scope of parental participation education of their children in secondary schools. Findings indicated family component context influenced 44.5% to parental participation at home compared to 16.0% for participation of parents in school. Research findings indicated that family situation influenced 41.1% to the participation (school and home). It was discovered that parents' involvement in school was not the main variable influencing performance of their children. This means that learners even obtained higher academic scores without parental involvement. A harmonious and conducive family situation did motivate children to pass well in their academics. This study finding provides inconsistent findings on the influence of home-school communication on children's learning outcome. Hence, the present research attempted to ascertain these contradictions therefore filling the study gaps.

In Kenya, Joan (2016) did a study on factors influencing on grandchild and grandparent communication across sex associated subjects. The researcher examined communication between grandparents and their grandchildren who were under their primary care in relation to their schooling. Bivariate and multi-variable analysis found significant relationship between communication aspects and outcomes of preference. In the multi-variable model, higher comfort during communication, gender, higher grandchild age, and higher perceived grandparent knowledge remained significantly related with advanced levels of communication occurrence. The positive relationship

between learners' satisfaction and desire for more communication was found to enhance their academic achievement. The research chiefly sampled grandparents and was based on quantitative techniques. Contrary to the present research which sampled pre-school parents, learners, head teachers and EYE teachers as well as the pre-school Sub County Programme officer and was also based on mixed method approach thus filling the gap in research.

2.4 Parental Volunteering role in School Activities and learners Mathematics Outcomes

Parental participation is perceived as one of the parenting support which assisted their children's transition from home to formal school environment (Mulei, 2012). Despite the many challenges children face as they join early years education centres, parents have a key role in making this transition less difficult by ensuring continuity between home and school life through parental volunteering (Masila, 2012). Studies done over several years show a robust and unswerving connection between parents' involvement in education associated tasks and their children's educational achievement. Nzabonimpa, Abbott, Tukahabwa and Sapsford (2009) observed whenever parents are closer to their child education; there was high probability of influence on their children education progress and performance. Research has revealed that pupils whose parents do not attend school meetings not only possessed indiscipline behaviours but regularly perform poor in academics (Reynolds, Bollen, Creemers, Hopkins, Stoll and Lagerweij (2009).

A research on parental participation by Brannon (2008), in USA established that parents' participation in activities like attending school events, going for field trips, volunteering in the classroom and having parent – teacher consultations, was

meticulously connected with higher reading attainment and lower level of class retention.

Hornby and Witte (2010) informed that New Zealand government has a very elaborate inclusive system where parental participation is compulsory in all schools. This made sure that each family is involved in helpful parenting approaches that enhance social and individual mathematical skills by children. A one-year research by Michelle, (2012) on professional development programme intended at supporting means in which parents and EYE teachers worked in unison to improve children's learning and well-being in New Zealand ECD settings. There was revealed a positive association between parental participation and well-being of children. This research varies from the present research in that it was a case study that involved parents. Conversely, the present investigation involved pre-school parents, learners, teachers, head teachers and pre-school Sub-County Officer for more validated outcomes.

A research carried out by Emerson, Fear Fox and Sanders (2012) examined parental involvement in their children education in Australia. They established that parent areas of participation at the pre-school comprise of attending excursions, volunteering on site and events or even sharing of talents related to language (speaking), cooking and gardening. Additional outcomes revealed enhanced learning results were noted when school staff and parents work in harmony to assist in an operative learning atmosphere at home and in the institutions. The research utilised quantitative technique only and collected data through questionnaire that were self administered. On the contrary, the present research encompassed both qualitative and quantitative approaches for more valid results thus filling the gap in research.

El-Nokali, Bachman, and Votruba-Drzal (2010) researched on parental involvement

and children's social and academic development in school. Hierarchical linear modelling was utilised to scrutinize within and between-child relations and parents from teacher view of parent participation and pupil's standardised attainment performance and social skills. The research revealed that parental participation in school was meaningfully associated with pupil's school readiness competencies. While the reviewed research focused on parental participation and pupils' social and academic advancement in primary school, the present investigation examined parental participation and children's Mathematics scores in Public EYE centres of Emuhaya Sub County.

Guo (2015) scrutinized Asian immigrant parents to New Zealand views in relation to EYE teacher – parent association in pupils' education. A total of eight families and 26 EYE teachers were sampled. The reason for choosing these respondents was to get the situation of how parental-teacher working together enhanced migrant children education. The study enquired from parents the roles that they deemed fit for them to play in education of their children and how they felt when working with EYE teachers. The parents reported that teacher's role was to take care of their children. They did not see that their assistance to their children learning was beneficial and they failed to approach the teacher due to them feeling afraid of committing mistakes and observed as not important. This research differs from the current one, which was done in Emuhaya Sub County, Vihiga County, Kenya thus filling the gap in research.

Lemmer (2016) carried out a research in South Africa to establish EYE' experiences with respect to parental participation using Epstein's model of family-school collaborations. The research established a positive connection between parents' visit to school and their children's exam scores because of them actively showing that they

treasured education of their children. The research further showed that having some parents being involved n their children work resulted to improved performance in school and resulted to enhancement of teaching and learning culture in school.

The Institute of Education, Action Aid, University of London (IoE) and partners in Senegal, Uganda, Burundi and Malawi, (2010) engaged collaborative research in the four named countries to find out the role of parents and EYE teachers in enhancing youngsters' education. Involving approach guided the research. Stakeholder interviews for 6850 respondents from 240 institutions were conduced across the nations. The general cross-national output indicated that only few parents were active participants in school affairs of their children. The findings also indicated that there was a direct connection between parent's participation and their children's attendance and behaviour at school. The present investigation used mixed method research design. The data was collected via questionnaire, interview schedules, observation checklists and focused group discussions.

Tarsilla and Ndirangu (2014) researched on parental involvement influence on their children performance in Kieni West Sub County, Nyeri county public secondary schools. The study was conducted in 21 schools targeting parents, teachers and students. Parents were interviewed whereas teachers and students were provided with questionnaire. Result indicated that most parents (84.7%) were actively involved in school activities and events, 71.6% of parents monitored their children homework and 92.0% of parents perceived that their participation was essential to the teachers in helping their children progress academically. Further, 98.2% perceived that planned parental participatory events would enhance the relationship between teachers, parents and their children. They recommended that schools should look and activate areas of

parental involvement, make all parents aware of their role in their children education by organising parent-teacher meetings, workshops and seminars.

In Kenya, Ang'ienda (2013) assessed influence of parental volunteering on pupils' education. The research established that about 78.9% of parents of the pupils who frequently volunteered performed good and 5.3% performed excellent in their class work. These percentages were relatively higher than those of which their parents never or rarely volunteered. This is an indication that parental volunteering greatly influenced the children's learning outcome. However, the study did not establish the scope to which parental volunteering influenced children's learning outcomes using inferential statistics. The present research on the other hand utilised mixed research approach with a bigger sample of 16 head teachers, 20 learners, 32 EYE, 193 parents and 1 Sub County Programme officer to assess parental participation influence on Mathematics outcomes of EYE pupils for more conclusive results thus filling the gap in research.

Manasi, Ndiku, Sang and Ejakait (2014) carried out a research in Kenya to determine parental participation influence on in the provision of learning materials in public primary schools in Teso North Sub County, Busia. Data was gathered using document analysis, semi- structured interview schedule and questionnaires. Data was analysed using Ms. Excel software. There was low parental participation in supply of learning materials for their children. There was significant relationship between parental participation in fees payment, PA funds and academic performance outcomes. The researchers suggested that parents needed to be advised to support schools in order realise improved results in academics. The present research was determined to

establish parental participation influence on Mathematics outcomes of pre-school pupils in Emuhaya Sub County, Vihiga, County, Kenya.

A study in Murang'a County Kenya by Gikonyo (2013) examined home-school partnership influence on learners' academic performance among pre-school pupils. The research utilised descriptive survey technique. The sample comprised of 26 EYE 93 parents and 156 pre-school pupils. Questionnaires were used as the research tool. They identified that parental participation in school activities influenced academic performance among pre-school pupils. The present investigation departs from Gikonyo study by using descriptive survey method. Further, the present investigation was based on the mixed research design giving more valid findings thus filling the gap in research.

2.5 Parental Attitudes towards Mathematics Outcomes of Pre-school Learners

Aronson (2008) explained the concept of attitude as an opinion that encompasses an emotional and evaluative component. In this study, parental attitude denotes the manner parents think or feel concerning the significance of being involved in their children's education, whether at home or institutional level. Henderson and Bella (2011) observed that parents' attitude towards education and attainment had a powerful Influence on children's enthusiasm to attain. When parents expressed their concern and commitment to the success of their children, they became more motivated to do their best.

One of the benefits of parental involvement is that they can demonstrate to their children that education is important when they are involved (Cheung & Pomerantz, (2012). It is the parents who put more pressure on the development of child from the period of birth to maturity. One of the most important attributes of parental attitude is

consistency in doing or participating in the schoolwork. As children mature, family participation in their learning remains important.

A research by Chandran, (2010) studied aspects of poor performance by urban primary school pupils in Malaysia. The outcomes of this research indicated that home environment structure in addition to parental perceptions and parental participation positively influenced their children view of education. The research was carried in the in home setting involving two children and it focused on determining how parental perceptions influenced their attitude towards schooling. The present investigation focused on Influence of parental participation on learners' performance in Mathematics in Public EYE centres in Emuhaya Sub County thus filling the gap in research.

Henning (2013) carried out a research on parent and perceptions towards their involvement in education and its final effect on results. Questionnaires were issued to learners in grade 3 together with their parents from urban primary schools to examine whether there was association between parental attitudes and beliefs on their involvement and how it affected their children motivation and attitude. Data on learner performance came from school records of continuous monitoring. Findings showed that parental decisions to be involved were significantly associated to school invitations, self efficacy and role construction. Most parents perceived that they were expected and welcomed to be involved by the teacher or the school and hence got more involved in education matters compared to parents who did not have this kind of feeling. Unlike this research which utilised surveys, the present investigation utilised interview schedules, questionnaires, observation checklists, and focus group discussions to collect data on Influence of parental participation on learners'

performance in Mathematics in Public EYE centres in Emuhaya Sub County hence filling the gap in research.

Stacey (2015) examined the connection between the parental attitudes on education and influence these attitudes have on their children's education. The study population comprised of 15 pre- school pupils aged 4-5 years, their parents and two EYE teachers. Out of these population three children, their parents and two EYE teachers were randomly sampled. Though the research findings were not conclusive in providing answers for research questions, they uncovered good insights of the essential of teacher – parent and teacher – learner relationships. The research dwelt on literacy while the present investigation examined the Influence of parental participation on pupils' performance in Mathematics in Public Pre-School in Emuhaya Sub - County. Stacey's study utilised a smaller sample in contrast to the present investigation which had a sample of 16 head teachers, 32 EYE, 20 learners, 193 parents and 1 Sub-County Programme officer.

Okado, Bierman and Welsh (2014) assessed how parent demoralisation and aid for learning affected children readiness for school. it was a qualitative research where data was collected on behaviours and attitudes related to school activities and the regularity of parent – child communication at home. It was found out that parent demoralisation of learning associated negatively with children readiness for schools whereas parental support for education positively related to school readiness for school.

Regasa and Taha (2015) studied on perceptions of parents on the academic performance of female learners in South Ethiopia. The findings indicated perceptions, views and opinions of parents' female education influence the academic performance

of female learners negatively. This investigation was conducted in a primary school while the present investigation was carried out in public EYE centres and included both boys and girls thus filling the gap in research.

Edward, Moses and Dinah, (2014) whose study examined the association between parental attitude on their involvement in school and secondary school students academic performance. The study was conducted in day secondary schools in Samia Sub County, Busia County, Kenya. Interviews were organised for parents and EYE teachers while questionnaire were distributed to learners. It was found out that parents' attitude towards their involvement in schooling affected their children academic performance in secondary schools in Samia. This study was conducted in day secondary schools while the current one was conducted in early childhood education Centres in Emuhaya Sub County therefore filling the gap in research.

Nyakoni (2012) examined the effect of parental participation on pupil's KCPE outcomes in public primary schools in Kiogoro division, Kenya. The research instruments were questionnaires for students, interview schedules for parents' and EYE teachers. Purposive sampling was applied in selecting a sample of 18 EYE teachers and 36 parents while stratified random sampling was also applied in selecting 180 students. The findings found that parental attitudes towards educational participation affect academic outcomes of pupils in primary schools in Kiogoro division. The above study was conducted in primary schools, while the present investigation was conducted in early years education centres in Emuhaya Sub - County, Vihiga County.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents research methodology procedure by focusing on research design, study area, target population, sampling methods, instruments of data collection, validity, reliability, data collection processes, analysis and ethical considerations.

3.2 Research Design

Denscombe (2010) described research design as a plan, outline, scheme and structure which is applied to generate answer to research problems. It shows layout which indicates how various components of a research process work together to address study research questions. When dealing with the research questions, this investigation adopted mixed method research design. The design was selected because it permuted merging and converging of qualitative and qualitative data so as to give wide ranging analysis of study problem (Creswell, 2014). In this approach, collection of qualitative and quantitative data happens at the same time and the integration of data happens at the interpretation stage of overall results (Denscombe, 2008; Creswell, 2014).

Integration of quantitative and qualitative methods happened at various phases of research like development of research questions, data collection procedure and data analysis (Bryman, 2012; Creswell, 2014). The method permitted the research to collect adequate data required to answer the research questions for the study instead of using qualitative and quantitative approaches separately. Denscombe (2010) indicate that this design increased the general strength of the research through improving trustworthy and validity of data collected.

The design also allowed use of questionnaire and interviews as instruments of data collection (Creswell, 2014). Quantitative data helps in discovering predictive association and the extent of association between variables. The decision to choose this design was according to the capacity to examine the association between variables which could not be experimentally manipulated (Orodho, 2009).It was also more suitable because the study attempted to compare parental participation and their children's learning outcomes.

3.3 Study Area

This research was conducted in Emuhaya Sub County, which is located in Vihiga County, Kenya. Emuhaya Sub County borders Luanda Sub County to the South, Gem Sub County to the West, Sabatia Sub County to the East, and Khwisero Sub County to the North. The Sub County has 2 zones namely Emuhaya North and Emuhaya West. Majority of the residents of the Sub County belong Banyore people of the large Luhya tribe. The size of the Sub County is approximated to be an area of 89.5 Square Kilometers. The population is 97,140 persons which show a high population density per square kilometre (Vihiga County Integrated Development Plan 2018-2022).

The economy of the Sub County is mainly on agriculture (crop, poultry and livestock farming. Agriculture sector forms the backbone of the economy which employs many people. Nevertheless, the sector has not brought good returns making majority of households to be poverty stricken influencing children education development. Despite poverty levels being high, incidents of HIV/AIDS among households have been a challenge. The high density (people per square kilometre) has resulted to increased land pressure making agriculture unaffordable to many households.

The literacy rate among many households is low which is connected to poverty level. This is due to inadequate number of educational institutions with the available ones situation being dilapidated resulting to low provision of quality education. Reports indicate that most parents hardly participate in education matters as they are mostly concerned fending for their households. Furthermore, data shows that the Emuhaya Sub County performance in mathematics is poor and this motivated the researcher to conduct the research there.

3.4 Target Population

Mugenda and Mugenda (2019) referred to target population as a unit comprising of individuals or objects that is selected for a specific purpose in a research study. The target population of the study comprised of all EYE (108), pre-school head teachers (53), EYE pupils (1927) pre-school parents (1927) drawn from all the 53 public EYE centres and 1 Sub-County Programme officer (SPO) in charge of early years education centres in Emuhaya Sub - County.

3.5 Sample and Sampling Techniques

Because the population is large, a sample is selected which refers to a proportion of respondent selected from the initial target to act as a representative of the whole population (Kothari, 2014). On the other side, sampling is the process of selecting individuals from the target population by studying the sample and hence providing inference for the sample selected to be a representative of the whole population (Cameron & Miller, 2015). Because it can be difficult to collect data from the whole target population, the researcher decided to select a sample as it cheaper, efficient and has the capacity of producing outcomes quickly with high accuracy compared to when

the whole population is involved (Hair, Wolfinbarger, Money, Samouel & Page, 2015).

There are various methods of sampling and this investigator used multistage simple random sampling, simple random sampling and purposive sampling techniques were used for selection of sample for this study. Simple random sampling technique was applied in selection of a sample size of 16 head teachers and 32 EYE representing 30% and 193 parents representing 10% of the study population who were drawn from 16 early years education centres representing 30% of the study population which according to Mugenda and Mugenda (2013) is representative enough. There are two academic zones in Emuhaya Sub County with a total of 53 Public EYE centres, and therefore, 53 headteachers; 16 headteachers (30%) of the study population were sampled using simple random sampling procedure whereby 53 pieces of paper were prepared and the headteachers took part in the lottery. Whoever picked a piece of paper with 'YES' was automatically included in the study. Whoever picked No was excluded from the study.

The population of EYE teachers was 108 out of which (30%) translated to 32 EYE teachers sampled using simple random sampling method. 32 pieces of papers were written on YES while 76 had NO. The EYE teachers who picked pieces of paper with YES were automatically included in the study while those who picked NO were excluded. Out of a population of 1927 parents 193 parents were sampled to take part in the study. The researcher used pieces of paper of which 193 of them had YES written on them and 1734 had NO written on them, folded and mixed up. Parents who picked YES were automatically included in the investigation. Those who picked NO

were omitted from the research. This sampling approach was preferred because it was gave each respondent an equal chance of being involved in the study.

The study had a population of 1927 early years education centres learners. Using the multistage simple random sampling, the investigator selected 193 learners and from this number narrowed down to 20 learners who participated in the study. According to Hair, Wolfinbarger, Money, Samouel and Page (2015) this sampling method divides the population into classes so as to make it simple for effective data collection and also ensure the process is smooth and with minimal operational costs.

Purposive sampling technique is a non-probability sampling process where investigators rely on their individual judgement when choosing members of the population to participate in their study (Borg & Gall, 2007). Purposive sampling approach was applied when selecting the Sub County ECDE programme officer because of the nature of the work he was engaged in that was critical to this study. Further, the officer was the only one with the information the researcher needs. The study sample size was as shown in Table 1.

Table 1: Population Sample Frame

Category of Respondents	Total Population	Sampling Technique	Sample Size	Percentage
Head teachers	53	Simple Random	16	30%
EYE	108	Simple Random	32	30%
Parents	1927	Simple Random	193	10%
Programme officer	1	Purposive	1	100%
Learners	193	Multistage	20	10%

Source: Survey data 2021

3.6 Data Collection Instruments

A research instrument involves tools the researcher deploys in data gathering (Kothari, 2014). To establish Parental Participation Influence on Mathematics Outcomes of EYE pupils, the study employed questionnaires, observation checklists interview schedules, and focus group discussion guides.

3.6.1 Pre-School Parents Questionnaire (PPQ)

The study used questionnaires to collect quantitative data from 193 pre-school parents on parental participation on Mathematics outcomes of EYE pupils. Yin (2009) postulates that a questionnaire is a pencil and paper instrument designed to gather primary data from respondents concerning their knowledge, attitudes, feelings and perceptions about a specific phenomenon. According to Oso and Onen (2009) said that questionnaires were the main effective approaches of reaching to majority of respondents within short period of time. The questionnaire was partitioned into two parts. The first section contained demographic information from respondents; the second part covered detailed information associated with study objectives. The questionnaires were suitable for the investigation because parents of EYE pupils were more assertive to articulate their opinion and concerns related to their participation in children's learning of Mathematics activities without the worry of being identified because they were prohibited to write their names in the survey instrument. The questionnaires had both closed (structured) and open-ended (unstructured) question items that were developed from the objectives of the study (Mugenda and Mugenda, 2010).

Closed-ended (structured) question items were more appropriate for the study because they generated significant facts and better understanding of the scope to which parents got occupied on their children's learning outcomes (Denzin & Lincoln, 2005). The respondents were expected to provide their response on closed ended questions which were designed in a Likert scale of five showing: Strongly Disagree (coded as 1), Disagree (coded as 2), Undecided (coded as 3), Agree (coded as 4) and strongly agree (Coded as 5). Further, the instrument had open – ended part (unstructured) which permitted the respondent to willingly write down their own individual answers without directions from the researcher. Those parents who could not comprehend reading and writing were assisted by the researcher. The questionnaire is attached in Appendix III.

3.6.2 Interview Guide for Head Teachers (IGHT)

Interviews consist of research data collection tool which is mostly expressive (conversation based) where an interviewer and interviewee have interactions one on one via different modes (virtual and physical) to seek various questions on topics under research. Sixteen (16) public pre-school head teachers were interviewed to gather information about Parental Participation Influence on Mathematics Outcomes of EYE pupils.

The researcher developed semi structured interview schedule with questions relating to the scope to which parents were involved in education matters concerning their children. The use of this interview format allowed the researcher to ask question related to the study topic in addition to ask for more information (probing) with respect to the kind of feedback that was provided during interview by the interviewee. The advantage of using this kind of research instrument is that it permits respondents

to express themselves well without being directed on what to respond to (Ader et al., 2008) which also provided detailed data which enriches the research work. Appendix IV shows the interview that was designed for this study.

3.6.3 Pre-School Teacher's Questionnaire (PTQ)

A questionnaire was defined by Orodho (2004) as a research instrument that comprises of a written set of questions that respondents are required to fill. Pre-school Teacher's Questionnaire was partitioned into two parts; Section A had demographic information, the next Section B had information on parental participation in Mathematics outcomes of EYE pupils. The questionnaire had both open-ended and closed ended items. Open – ended question sought to collect detailed data whereas the close ended ones provide structured feedback which enabled easier analysis and presentation of data (Ader et al, 2008). The study preferred to use this instrument as it gathered data from a large universe at a specific period of time (Ngumbo, 2006).

For effective administration of the EYE questionnaire, personal visits to sampled EYE were done giving them relevant directives on how to complete the questions set. To ensure that no questionnaire got lost the researcher ensured that EYE filled and returned the questionnaires back to her before leaving for another research station. In cases where EYE had no time to complete filling in the questionnaires, the researcher kept the questionnaire and arrangements were made to visit the same EYE at a convenient time to enable completed filling of the questionnaires. Appendix V show the discussed instrument.

3.6.4 Focus Group Discussion Guide for Parents (FGDGP)

The investigator also used interview guide to collect information from parents in a collective setting of ten parents per each group. The questions in the FGD guide were

ten. Every group was assigned questions that concern particular objectives to discuss. Guiding questions were prepared on influence of parental home support on mathematics outcomes of EYE pupils, school-home and home-school communication, parental participation in school activities of EYE pupils and parental attitudes towards mathematics outcomes of pre-school learner. Focus group discussions were suitable since they made it possible for the investigator to enrich the outcomes through comparison of data with those that came from the parents' questionnaires.

In addition to the individual parent questionnaire, a focus group discussion with pre-school parents was undertake to acquire respondents' collective thoughts and opinions relating to parental participation and the Influence of this participation on Mathematics outcomes among the EYE pupils. In every focus group discussion, there was one leader who undertook a leadership role in making enquiries and facilitation of discussion. So, the investigator and appointed assistants were just observers listening and taking notes on the discussion. This type of interview is more appropriate for the study because it depends upon the deliberations of respondents in the group and not with the one who is interviewing.

As such, participants' focus on an issue which produces information which could not otherwise have been there in a direct interview; they save time, produces volume of data within a short interval, but they appear to reduce inadequate data compared to interviews with the similar type of respondents one on one conversations (Denzin & Lincoln, 2005). This kind of interview also allows the researcher to contact the illiterate and semi-illiterate parents in the community as the interview does not require any kind of writing and parents were encouraged to use the local language of the

catchment area. The focus group questions and interview protocols were aligned to the research questions. (Appendix VI).

3.6.5 Interview Schedule for Programme officer (ISPO)

For effective administration of the Sub-County Program Officer's interview schedule, the researcher sought appointment with the Sub-County Programme officer who was the only officer in charge of early years education centres in the Sub County one week in advance of the material interview date. The SPO was provided with a verbal clue of what was to be discussed on that day in order to have adequate time to prepare for the interview. On the interview day questions were read one after the other to give the officer sufficient time to react to the question being asked. Answers to the questions asked were recorded in a field note book as received and kept for analysis.

The researcher conducted in-depth interview with the SPO. The researcher provided guiding questions (few) associated with the investigation and probed for detailed information. Findings from this interview also formed part of the data collected. The researcher preferred to use this tool since it offered a free atmosphere for the interviewee to articulate themselves and offered additional feedback which could not come from the questionnaire (Ader et al, 2008). (Appendix VII).

3.6.6 Observation Checklist for Learners (OCL)

The study carried out non-partisan observations on the children's outcomes in Mathematics activities, using well-structured outcome indicators such as ability to count, ability to sort and group objects, ordering, matching and pairing, number recognition, number writing, number value, putting together and taking away. This research instrument simplified the researcher's work and allowed the researcher to make judgement and correct conclusions as well as remarks. (Appendix VIII).

3.7 Validity and Reliability of Research Instruments

This section looked at validity and reliability of data collection tools.

3.7.1 Validity of Research Instrument

Denscombe (2010) defined validity as the extent to which a research instrument measures what is supposed to measure. On his part, Creswell (2014) indicated that validity in research attempts to determine the degree to which data collection tools when administered produces result which is in line with the research problem. Creswell adds that it focuses on the extent to which outcomes on survey study are generalisable to a bigger setting outside the stud area. The researcher embraced triangulation method to determine validity of research instruments. This is a formidable approach of showing concurrent validity in quantitative and qualitative research. Otherwise, this investigation used various approaches of collection data including: Focus Group Discussions, Questionnaires, Observation Checklists and Interviews. Hence, areas of the instrument which had been ignored by one tool were checked and strengthened by the other.

.

Data cross checking using multiple method technique ensures collected data is valid. This is supported by Creswell (2009) who informs that use of multiple method approach for data collection prevents the instances of having unreliable and invalid data. to guarantee that data collected measured what the research expected to measure, this investigation also chose content validity. Content validity of a research tool is enhanced through expert judgement (Gall, Gall & Borg, 2015). Hence, the data collection tools were assessed by the research supervisors to make sure they measured and cover what they were expected to focus on as Mbwesa (2006) advised. The study supervisors read each item of the research instruments to examine their simplicity, relevance, clarity and consistency. Questions (items) that were found to be invalid

were modified while others were rephrased. This enabled the research to ensure that the instruments were valid for data collection.

3.7.2 Reliability of Research Instruments

Borgand Gall (2007) denoted reliability as degree to which comparable results would be obtained by researcher if they applied the same procedure at repeated trials. Reliability of the instruments was analysed during the piloting phase where 2 pre-school head teachers, 3 EYE teachers and 19 pre-school parents from the neighbouring Hamisi Sub-County took part in the pilot study. According to Mugenda and Mugenda (2010) for pilot testing, (10%-30%) of the sample size is adequate for piloting. The questionnaires were re-administered to the same parents, EYE teachers and pre-school headteachers after one week. The composite scores on parental participation and EYE pupils' outcomes in Mathematics were computed using Cronbach reliability test with the help of the SPSS version 22. According to Creswell (2009), a reliability coefficient of more than 60% or $r \geq 0.6$ deemed the questionnaire reliable for the study.

Reliability of qualitative data was ascertained through objectivity of the qualitative data, authenticity, trustworthiness, credibility and transfer-ability of data. The purpose of trustworthiness in a qualitative research is to aid the contestation that, the outcomes of the findings were worth focusing attention to. Credibility was determined through selecting individuals randomly and interactive inquiring in data collection engagements undertaken (Creswell, 2009). To guarantee transfer-ability, the investigator provided adequate contextual data on the study sites, which permitted readers perceived their conditions to be comparable to those illustrated in the

investigation, making them associate the findings with their own standing (Creswell, 2009).

3.8 Data Collection Procedures

An introductory letter to undertake the study was sought from School of Post Graduate Studies, Kisii University which facilitated application of research permit from National Commission for Science, Technology and Innovation (NACOSTI). This permit allowed the investigator to acquire acquiescence from Sub County Education Officer in Emuhaya Sub County to carry out the study in the area. With the help of the head teachers, participants were sampled. An introductory letter explaining the intention of the research was attached with the study instruments. In addition to introducing the study to the respondents, the cover letter assured them that the information given would be treated with uttermost confidentiality and not used for commercial objectives.

The researcher visited the selected early years education centres and sought permission from the headteachers and built bond with participants before the data collection is undertaken. This also gave an opportunity to do early appointments with respondents in order to collect data, undertaken focused group discussions and interviews. Interviews were carried out on the head teachers while EYE was required to fill in the questionnaires to gather in-depth information on parental participation. The researcher and research assistants observed learners as they carried out learning activities and filled in the observation check list for learners. This process was repeated for the chosen early years education centres within two month period. The collected data was kept well for analysis.

Through the headteachers, scheduled sessions were prepared in advance for the focus group discussions and the filling of questionnaires by the parents. On the agreed dates, parents were invited to the schools to complete the questionnaires and hold the focused group discussions. Questionnaires were personally administered to the sampled parents through drop and pick style by the investigator and appointed research assistants. They were collected and checked for errors. The researcher had a total of 19 focus groups with the first 16 groups having 10 members each and the last three groups 11 members each. Each focused group discussion session took one hour. The researcher used 19 focus group discussion involving ten respondents each as recommended by Krueger and Casey (2015). In general, the number of focus groups depends on the complexity of the research questions and the composition of the groups (Stewart & Shamdasam, 2014).

For effective administration of the Sub County Programme officer's interview schedule, the researcher sought appointment with the Sub-County Programme officer who is the only officer in charge of early years education centres in the Sub County one week in advance of the material interview date. The SPO was provided with verbal clue of what was to be discussed on that day in order to have adequate time to prepare for the interview. On the interview day questions were read one after the other to give the officer sufficient time to respond to the questions. Answers to the questions asked were recorded in a field note book as received and kept for analysis.

The researcher conducted an in-depth interview with the SPO. The researcher guiding questions (few) association to study objectives and probed for detailed information. Findings from the interview were also incorporated in the data collected from the field.

3.9 Methods of Data Analysis

Data was collected, cleaned and coded and quantitative data was analysed using descriptive and inferential statistical techniques. Descriptive statistics comprised of frequencies and percentages while inferential statistics involved running Pearson Correlation Co-efficient and multiple regression. Qualitative data was thematically analysed based on study themes. Data analysed is presented using tables and graphical illustrations.

3.9.1 Quantitative Data Analysis

Quantitative data from closed ended questions from teacher's and parent's questionnaires and then were coded and entered into electronic spreadsheets with the help of Statistical Product and Service Solutions (SPSS) version 22.0. Descriptive statistics computed were frequencies, and percentages which were then summarised and presented in tables, graphs and charts. Frequencies and percentages were used because since they well communicate outcomes to most readers. The descriptive statistics permitted the investigator to significantly describe distribution of measurements or scores using few indicators (Mugenda & Mugenda, 2019). This allowed the investigator to convert large volume of data into more convenient forms which was easy to interpret and understand (Mbwesa, 2006).

A Quantitative Data Analysis Matrix was used in the process of analyzing quantitative data. A sample of Quantitative Data Matrix is shown in Table 2.

Table 2 Quantitative Data Analysis Matrix

Research Questions	Independent Variables	Dependent Variables	Statistical Test Descriptive/Inferential Statistics

How does parental learning at home support Influence Mathematics outcomes of Pre-School Learners?	Parental Learning at Home Support	Mathematics Outcomes of EYE pupils	Frequency, percentages, Pearson's Correlation & multiple regression
How does parental home-school and school-home communication Influence Mathematics outcomes of Pre-School Learners?	Parental Home-School and School-Home Communication	Mathematics Outcomes of EYE pupils	Frequency, percentages Pearson's Correlation& multiple regression
How does parental volunteering in school activities Influence Mathematics outcomes of Pre-School Learners?	Parental Volunteering in School Activities	Mathematics Outcomes of EYE pupils	Frequency, percentages Pearson's Correlation, & multiple regression
What is the Influence of parental attitudes on Mathematics outcomes of Pre-School Learners?	Parental Attitudes Towards Mathematics Outcomes	Mathematics Outcomes of EYE pupils	Frequency, percentages Pearson's Correlation & multiple regression

An analysis of data regarding parental attitude towards their participation in Mathematics outcomes of EYE pupils was undertaken through computation of mean scores based on Likert Scale value codes. To undertake this, numerical scores were assigned and provided response options to each item on attitude scale. For negatively stated items, the score values were denoted as follows: Strongly Disagree (SD) =1, Disagree (DA) =2, Undecided (U) =3, Agree (A)-4 and Strongly Agree (SA) = 5.

Scoring for positively stated items were reversed as follows; Strongly Disagree (SD) =5, Disagree (DA) = 4, Undecided (U) =3, Agree (A) =2 and Strongly Agree (SA) =1. A mean score exceeding 3.4 on each item on the scale indicated a Positive Attitude. A mean score of below 2.5 showed a Negative Attitude. Total scores of all the 193 parents per item found on the attitude scale were calculated from which the mean

scores were obtained through dividing the total scores per item by the number of parents to discover parents' attitude per item for all the four items. Lastly, the overall mean score was computed to represent the overall attitude of parents towards involvement in their children's' education through division of the sum total of all the mean scores for all the four items by four.

3.9.2 Qualitative Data Analysis

Borg and Gall (2007) said that qualitative analysis is a systematic process that is followed to discover essential categories, themes and features. Qualitative data came from open ended questions from; Parents' Questionnaires, EYE' Questionnaires, Headteachers' Interview Schedules, Focused Group Discussion Guide for Parents, Interview Schedule for Programme officer and Observation Checklist for the Learner. The descriptive statistics which were applied included frequencies, means and percentages. These were then organised, categorised and presented through narrations based on the emerging themes. The qualitative data from both the interview with the Sub-County Programme officer and the focus group discussions with the parents were analyzed using the Qualitative Data Thematic Analysis. The analysis of the data gathered by both interviews and focus group discussion adopted a simplified version of the six universal phases of thematic analysis (Braun & Clarke, 2006). This method was essential for this study since it is based on any specific theoretical framework and can then be used across a varied range of qualitative methods, making it adaptable.

3.10 Ethical Considerations

Ethical considerations in research are codes, rules or principles that govern the researcher in the research practice; they dictate how information and clients' (researcher's – respondents') relationships should be managed (Organizational

Research Service, 2006). Ethical conducts were adhered to when designing, conducting, analysing and presenting the research outcomes. The researcher requested for permission from NACOSTI, the Emuhaya Education Office and head teachers of the respective schools who allowed the researcher to undertake the survey. The researcher ensured that respondents' safety, wellbeing, rights and dignity was observed throughout the study. Only respondents who were sampled participated in the study.

The researcher explained the aim of the study, processes, significance and the period of time to all respondents. The respondents were fully informed and assured that the responses they provided was to be kept confidential and only used for research purposes only to attain Masters Course in Early Childhood Education. They were informed their participation was voluntary and could vacate from the study any time without prejudice. They were also asked to append their signature in the consent form (see Appendix II). This informed consent is essential and the researcher provided consent form and read out to them for them to understand the content and purpose of their involvement. Habitually, informed consent was documented and was accepted by study supervisors. One copy was given to the individual signing the form and another copy was kept by the investigator. Plagiarism policy was adhered to as per Kisii University regulations.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSIONS

4.1 Introduction

This chapter presents findings from the data collected, analysed and the results presented in tables and discussed in themes according to the study objectives: Parental home support, school to home and home to school parental communication, parental volunteering in mathematics and parental attitudes towards mathematics outcomes of EYE pupils in Emuhaya Sub - County. First, instrument response rate, and respondents (parents and EYE teachers) demographic profile.

4.2 Instrument Return Rate

The target population comprising of 32 EYE, 16 Head teachers, 193 pre-school parents, 2 pre- school learners and 1 Sub-County Programme officer (SPO) in charge of early years education centres drawn from the 53 public EYE centres in Emuhaya Sub County. The return rates are provided in Table 3.

Table 3: Instruments Return Rate

Respondents	**Target**	**Obtained Return rate**	**Percent (%)**
Pre-school Parents	193	186	96
Head teachers	16	16	100
EYE	32	30	94
Pre-school Programme officer	01	01	100
Learners	20	20	100
Total	**262**	**253**	**97**

Source: Survey Data (2021)

Outcomes in Table 3 show that 186 (96%) pre-school parents, 16 (100%) Head teachers, 30 (94%) EYE, 1 (100%) Programme officer and 20 EYE pupils responded to the instruments and returned them.

4.3 Demographic Information of Respondents

The study collected the demographic information from respondents who participated in the research involving; 186 Parents, 32EYE, and 16 Head teachers 1 Programme officer and 20 EYE pupils. The study asked respondents questions on their gender, marital status, ages, monthly income, highest level of education attained, professional training and what should be done to improve performance in mathematics. The demographic information was considered as important to this research as they were analysed to determine their influence on parental participation on learners' performance in Mathematics in public EYE centres.

4.3.1 Distribution of Respondents according to Gender

The researcher asked respondents to state their gender as whether male or female. This was important to this study in order to determine first if both genders were given equal probabilistic opportunity to participate. Table 4 provide the analysed results.

Table 4: Distribution of Respondents according to Gender

Respondents	Sex	Number of respondents	Percent (%)
Head teacher	Male	5	31.25
	Female	11	68.75
Parents	Male	29	16.0
	Female	157	84.0
EYE	Male	8	27
	Female	22	73
Programme officer	Male	1	100
	Female	0	0
EYE pupils	Male	8	40
	Female	12	60

Source: Survey Data (2021)

Outcomes in Table 4 reveal that there were more female than male participated in the study as respondents. These findings implied most teaching staff in public EYE centres were female compared to male. This coincides with Lamb (2004) who observed that male and female teachers are correspondingly important in implementation of curriculum for children in school. However, the distribution of teachers' gender skewed towards the female which implies that there are fewer males teachers are in pre-school sub-sector and there is need for balance of gender parity.

4.3.2 Distribution of Pre-School Teachers by Age

The respondents were asked respondents to provide their ages as: below 25 years, 25-40 years and 40 years and above. This was to establish if there was any relationship between age of EYE teachers and support on learners' performance in Mathematics in public EYE centres. The Age distribution structure for the respondents is presented in Figure 2 below.

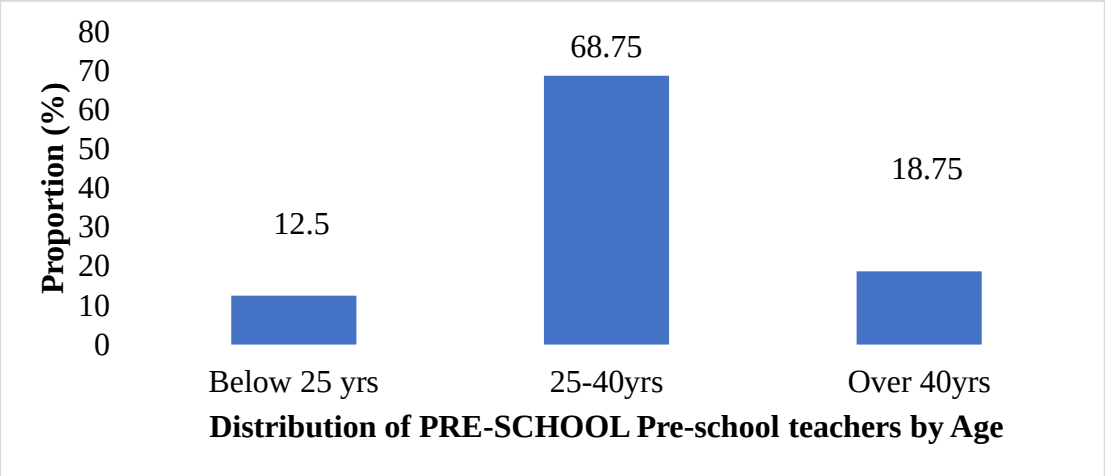


Figure 2: Distribution of Pre-schoolteachers by Age

Figure 2 indicates that 12.5% of EYE teachers were aged below 25 years and below, 68.8% were between ages 25-40, 18.8% were aged above 40. Based on these numbers, it is clear that most EYE teachers who participated in this investigation were between ages 25-40 hence, energetic enough to teach the young children.

Table 5: Distribution of Pre-School Parents by Age

Age category	Frequency	Percent (%)
Below 20 years	52	28
20-30 years	4	2
30-40 years	99	53
Over 40 years	31	17
Total	**186**	**100**

Source: Survey Data (2021)

Findings show that 28% of pre-school parents were aged below 20 years and below, 2% were aged between 20-30 years, 53% were between ages 30-40 while 17% were aged above 40. Based on these numbers, it is clear that pre-school parents involved in the study were between ages 30-40, which are a critical productive age in education sector.

4.3.3 Distribution of Respondents according to Marital Status

The study enumerated marital status as one of the demographic characteristics of the sample population. The researcher asked the pre-school parents whether they were single, married, separated, widowed and to specify if they did not fall in any of the aforementioned categories. The findings are given in Table 6.

Table 6: Distribution of Pre-School Parents by Marital Status

Marital status	Frequency	Percent
Married	133	71.5
Single	32	17.2
Divorced	13	7
Widowed	8	4.3
Total	**186**	**100.0**

Source: Survey Data (2021)

Result in Table 6 indicates that from 186 sampled respondents, those married were the majority at 71.5%, singles were 17.2% and those widowed were the least at 4.3%, while those who were at some point married and were divorced stood at 7%. For this study, marital status is presumed to be important as those who are married are highly likely to handle well home support on learners' performance in Mathematics in Public EYE centres since they can assist one another.

4.3.4 Distribution of Parents by Level of Education

This study enumerated respondents' education. The pre-school parents were asked to state their levels of education under the following categories; University Degree (Undergraduate, Masters and PHD), College, Secondary and Primary. Level of education was considered important to this research as it can influence decision making in support of Mathematics outcome of learners in public EYE centres.

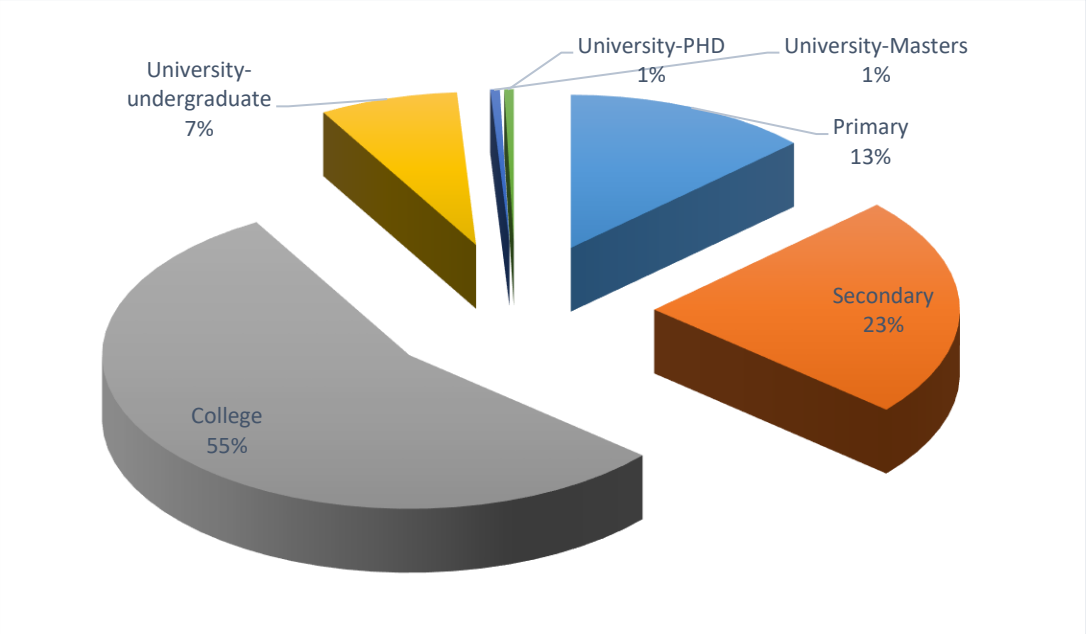


Figure 3: Distribution of Parents by Level of Education
Source: Researcher

The results in Figure 3 indicated that 7.0% of the respondents had at least an undergraduate university degree, 0.5% had Master's degree and 0.5 % had PhD while

13% had a primary, 23.6% had a secondary and 55.4% had College education. This result therefore is a good evidence to show that the pre-school parents were literate and could offer support to learners and influence the outcome of Mathematics among EYE pupils in public EYE centres.

4.3.5 Distribution of Pre-School Teachers by Qualification and Professionalism

The study enumerated the level of qualification and professionalism among the EYE. The respondents were requested to show their levels of qualification under the following categories; Certificate, Diploma, Degree Masters and others. Level of qualification were considered important to this research as it can influence decision making in support of Mathematics outcome of learners in public EYE centres. Teachers with higher qualifications levels are assumed to have specialised skills which are key ingredients to quality education provision (Pineda-Herero, Belvis, Moreno & Ucar, 2010). Thompson and Stryker (2010) assert that teacher quality is linked to pupils' performance.

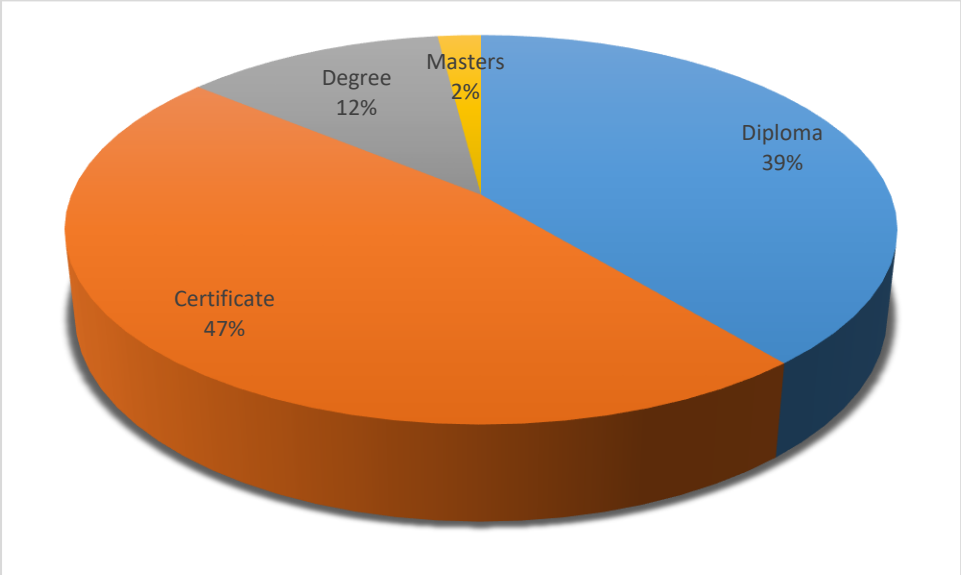


Figure 4: Distribution of Pre-School Teachers by Qualification and Professionalism

Source: Researcher

The results as tabulated in Figure 4.3 indicated that 47% of the EYE had at least a certificate, 39% had diploma, 12% had degree and 2% had Masters degree. This result therefore is a good evidence to show that the EYE were literate and could offer support to learners and influence the outcome of Mathematics among EYE pupils in public EYE centres. According to Crawford (2010) teachers undergoing professional development programme assists them to acquire competencies of working with EYE children key to their intellectual growth and development.

4.3.6 Duration Served by Pre-School Teachers

The study asked EYE to provide their experience in teaching (in terms of number of years). Outcomes are provided in Figure 5.

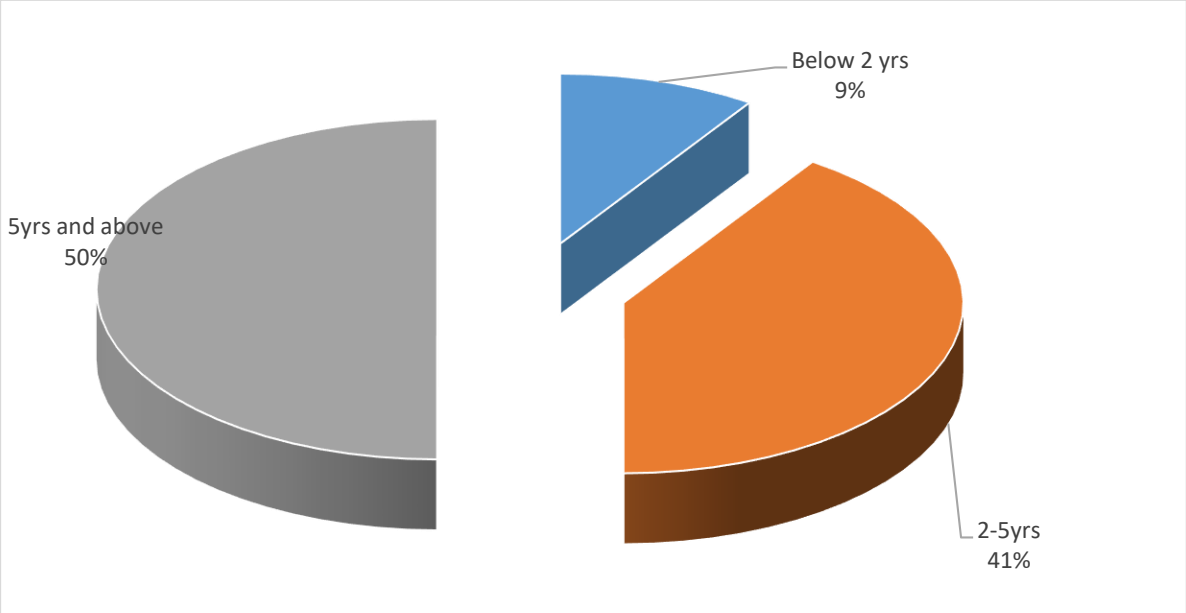


Figure 5: Duration Served by EYE

The results as tabulated in Figure 5 indicated the years of service categories of EYE with majority having 5 years and above (50%) and the least with below 2 years in service (9%). This coincides with Brown (2009) who noted that teachers who were experienced utilised various teaching techniques hence improving children academic

performance compared with those that had limited or fewer number of years in the teaching profession.

Table 7: Distribution of Pre-School Parents by Occupation

Professional qualification	Frequency	Percent
Professional teachers	54	29.0
Farmers	130	69.9
Others	2	1.1
Total	**186**	**100.0**

Source: Survey Data (2021)

Findings tabulated in Table 7 reveal that those with teaching profession in primary/secondary were 29.0%, farmers 69.9% while those with other professional qualifications were 1.1%. The results reveal that many parents were farmers while more than a quarter had a professional qualification.

4.4 Parental Home-Support and Pre-School Learner's Mathematics Outcomes

This section gave data analysis connected to thematic segments drawn from the first study objective. Specifically, the Influence of Parental Home Support on Learners mathematics achievement in Public EYE centres in Emuhaya Sub County.

4.4.1 Parental Assistance of Children with Homework on Mathematics activities

The parents were asked if they helped their children with mathematics homework activities. Most parents indicated that they rarely (75%) assisted their children while only 16% of parents interviewed always assisted their children with mathematics homework Figure 6 shows how parents assisted their children with homework on Mathematics activities:

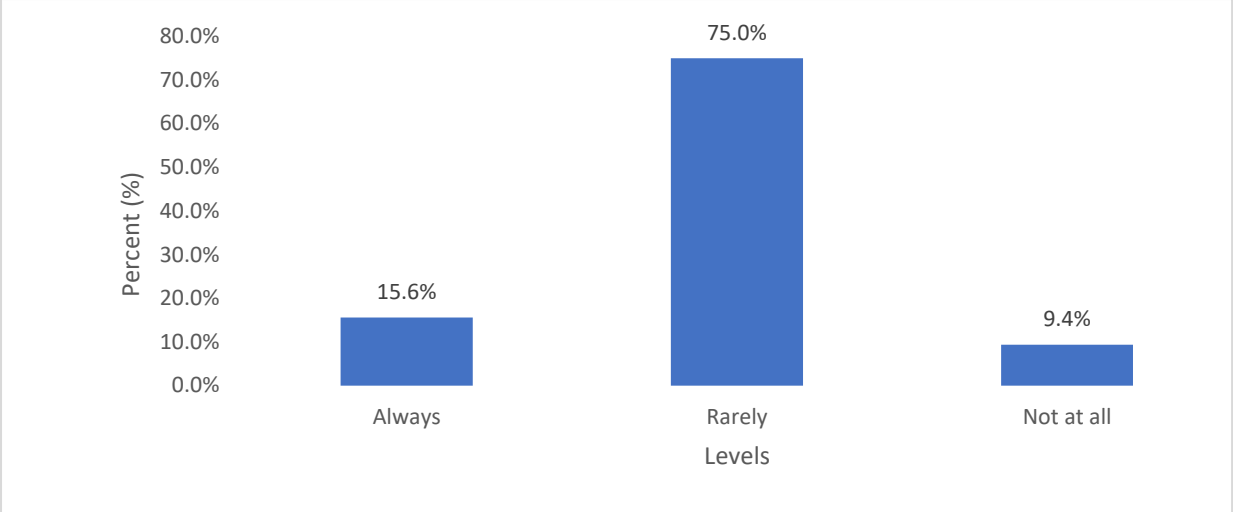


Figure 6: Parental Assistance of Children with Homework on Mathematics activities

This implies that most parents (75%) did not fully participate in assisting their children with homework on mathematics activities. A parent in a focused group discussion had this to say which was supported by others;

> "Teachers understand well all the needs of their children in class, therefore what are we going to do whereas we were not trained for? It is teachers' role to teach what they trained for and besides, nowadays children are not taught the same way we were taught."

Hornby (2011) argues that some parents believe that they are not well prepared to help their children to undertake homework. Muir (2012) indicated that parents and their children interaction in mathematics homework activities desired to improve two way exchanges of knowledge and understanding to permit feedback. Hence, parents have the responsibility of helping their children in their homework activities for better performance.

4.4.2 Parental Learning at Home Support and Mathematics Outcomes of Pre-School Learners

The objective of this theme was to establish the influence of home support on mathematics achievement of EYE pupils in Emuhaya Sub County. Table 8 presents the results of descriptive statistics.

Table 8: Parental Learning at Home Support and Mathematics Outcomes of Pre-School Learners

Statement	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
I talk to my child about Mathematics activities he/ she does at school – PL1	3 (33.9%)	90 (48.4%)	8 (4.3%)	21 (11.3%)	4 (2.1%)
I help my child with homework on Mathematics activities-PL2	52 (28%)	100 (53.7%)	12 (6.5%)	20 (10.7%)	2 (1.1%)
I try to find out what Mathematics activities the child likes doing at school-PL3	50 (26.88%)	91 (48.92%)	13 (6.99%)	29 (15.6%)	3 (1.61%)
I talk with the child about his/ her Mathematics achievement-PL4	43 (23.12%)	103 (55.38%)	14 (7.52%)	22 (11.83%)	4 (2.15%)
I set rules about how long the child is allowed to play-PL5	43 (23.12%)	72 (38.7%)	21 (11.3%)	35 (18.8%)	15 (8%)
There are rules about the television programmes the child is permitted to watch-PL6	47 (25.3%)	82 (44.1%)	9 (4.8%)	25 (13.4%)	23 (12.4%)
I praise my child's school Mathematics achievements-PL7	52 (27.96%)	111 (59.68%)	6 (3.23%)	14 (7.52%)	3 (1.61%)
I control the child's behaviours at home-PL8	64 (41%)	86 (46.24%)	11 (5.91%)	17 (9.14%)	8 (4.3%)
I guide and counsel my child-PL9	72 (38.7%)	80 (43%)	8 (4.3%)	19 (10.2%)	7 (3.8%)

Source: Survey Data (2021)

Key: PL -Parental Learning at Home support

Item PL1 sought to establish if the parents talk to their children about mathematics activities of the 186 respondents 63 (33.9%) Strongly disagreed, 90 (48.8%) disagreed, 8 (4.3%) undecided, 21 (11.3%) agreed while 4 (2.1%) strongly agreed. This implied that 82.7% of parents either strongly disagreed or disagreed that they talked to their children about mathematics at home. A parent in a focused group discussion echoed by others noted that:

> "My child can't permit me to converse with him on anything related to school work especially those on mathematics activities. The responses I have been getting are that I am not his teacher, that I do not know how to teach. As a parent, what do you do when your own child rejects your help? You have no choice but to keep off."

On the other hand, the Sub-County Programme officer when interviewed indicated that:

> "Parental home support is key to improvement of Mathematics outcomes. School alone is not enough. The time allocated for Mathematics activities is 30 minutes which is not enough. Parents should create time at home and interact with their children and assist them to improve in Mathematics activities."

It can therefore be seen that most parents (82.7%) do not regularly communicate with their children in relation to mathematics activities that they do in class. The results showed that only 13.4% of parents confirmed to be communicating to their children about mathematics. Whenever parents converse with their children concerning academics, they make sure that homework is undertaken and assist them to plan for their next assignments to be given. Muola (2010) discovered that children whose parents communicate frequently are offered better learning atmosphere at home since their parents are interested in sharing learning experiences about school with their children, home study and always inspire their children to be focused.

Item PL2 sought to establish if parents supported their children with Homework on Mathematics at home of the 186 respondents 52 (28%) Strongly disagreed, 100

(53.7%) disagreed, 12 (6.5%) undecided, 20 (10.7%) agreed while 2 (1.1%) strongly agreed. These implied that parents don't help their children with their homework on mathematics activities at home. These outcomes showed that 81.7% of parents either strongly disagreed or disagreed to help their children with homework and only 11.8% agreed to be providing assistance to their children at home. These results were confirmed by parents in a focused group discussion who mentioned that:

> "What can we do to help our children do homework? Their teachers know better the right instructions to give but not us. This work is not that easy for us as parents, it requires more time and knowledge in it, and hence only teachers have that knowledge to teach and not us."

Nunez et al (2015) argued that parental homework assistance for example, avoiding direct participation in instances where their children did not require assistances was essential to allow them perform their instructional tasks. They were only providing support when it was necessary. According to Siririka (2016), parents with no formal education did have the desire to assist their children but were limited as they were not convinced that they were influenced by their inadequate formal education to assist their children with education.

Item PL3 wanted to establish if parents endeavoured to check Mathematics activities the child enjoyed performing while at school. Of the 186 respondents 50 (26.88%) Strongly disagreed, 91 (48.92%) disagreed, 13 (6.99%) undecided, 29 (15.6%) agreed while 3 (1.61%) strongly agreed. Therefore, 17.21% of parents concurred that they find out what mathematics activities their children when at school. On the other hand, 75.8% of parents don't find out the mathematics activities of their children which was the same action similar to Eastaway and Askew (2010) who found out that involvement on their children mathematics tasks inspired their children to be at par with regular reminiscent numeracy.

Item PL4 sought to establish if parents talked with their children about mathematics achievement of the 186 respondents 43 (23.12%) Strongly disagreed, 103 (55.38%) disagreed, 14 (7.52%) undecided, 22 (11.83%) agreed while 4 (2.15%) strongly agreed. This implied that parents (78.5%) did not talk with their children about mathematics achievement and performance, while 13.98% of parents agreed that they talked about mathematics achievements with their children. Taunyana (2010) contends that, most parents in rural communities are ravaged by poverty and spend most of their time away from their children's educational needs. Some spend time fending for the family by selling groceries and fruits and do not create time to discuss their children's mathematics performance. According to Henderson and Mapp (2010), most parents have a significant contribution to their children academic performance in school and through life.

Item PL5 sought to establish if parents had developed regulations on the time the child was permitted to play. From 186 respondents, 43 (23.12%) Strongly disagreed, 72 (38.7%) disagreed, 21 (11.3%) undecided, 35 (18.8%) agreed while 15 (8%) strongly agreed. This implied that 61.82% of parents strongly disagreed or disagreed to have formulated guidelines on how long their children were permitted to play while 26.8% agreed to the affirmative. Christens on and Reschly (2010) postulated that parents were involved in other activities with their children like; talking about nature, checking their homework, creating something to assist them learn mathematics at home, discussing children's daily life at school, engaging them in household chores, playing games, and reading books with children.

Item PL6 sought to establish if parents have set rules concerning television programmes the children are authorised to watch of the 186 respondents 47 (25.3%)

Strongly disagreed, 82 (44.1%) disagreed, 9 (4.8%) undecided, 25 (13.4%) agreed while 23 (12.4%) strongly agreed. This implied that 69.4% of parents did not have set rules about the television programmes the children were authorised to watch when they were at home while 25.8% have set rules about television programmes. There are programmes on television that teach children mathematics activities and children should be encouraged to watch such. Jeynes (2010) asserts that supervision and home-set policies are moderate degree of parental assistance. These results were confirmed by most parents in focused group discussions who noted that:

> "Our children are free to watch whatever they like. Watching television keeps them busy and they don't engage in naughty activities, go for walks or play with other children. This reduces confrontations and arguments."

Item PL7 sought to establish if parents praised their children school Mathematics achievements of the 186 respondents 52 (27.96%) Strongly disagreed, 111 (59.68%) disagreed, 6 (3.23%) undecided, 14 (7.52%) agreed while 3 (1.61%) strongly agreed. This implied that 87.64% of parents did not applaud their children class Mathematics achievements while only 8.63% of parents praised their children school mathematics achievements. Caspe (2010) argues that learners become more motivated to work harder when their parents praise them; this increases their self-efficacy too.

Item PL8 sought to establish if parents controlled their children's behaviours at home of the 186 respondents 64 (41%) Strongly disagreed, 86 (46.24%) disagreed, 11 (5.91%) undecided, 17 (9.14%) agreed while 8 (4.3%) strongly agreed. This implied that most parents (82.24%) do not control the children behaviours at home while 13.44% of parents control their children's behaviours at home. In Kenya, the available studies indicate most primary school pupils perform dismally in Mathematics activities attributed to, among other factors, lack of parental interest with their

children's education or excessive parental control and demands for achievement and poor foundation in early years education centres (Jebii, Odongo, & Aloka, 2016).

Item PL9 sought to establish if parents guided and counselled their children. Of the 186 respondents 72 (38.7%) Strongly disagreed, 80 (43%) disagreed, 8 (4.3%) undecided, 19 (10.2%) agreed while 7 (3.8%) strongly agreed. This implied that 81.7% of parents did not counsel and guide their children when at home while only 14% guided or counselled their children. Muir (2012) observed that parents could be discussing with their children concerning school programmes, assisting them in tackling mathematical tasks given by their teachers. That kind of commitment is expected to enhance pupils' performance in the activity.

4.4.3 EYE Responses on Parental Participation and Mathematics Outcomes of EYE pupils

The EYE teachers were asked to provide their responses on the influence of parental participation on mathematics outcomes of EYE pupils. The results are as indicated in Table 9.

Table 9: EYE Responses on Parental Participation and Mathematics Outcomes of EYE pupils

Statement	Strongly Agree	Agree	Undecided	Disagreed	Strongly Disagreed
Parents follow up their child's progress in Mathematics	11 (5.9%)	47 (25.3%)	23 (12.4%)	82 (44.1%)	23 (12.4%)
Parents participate in organized school activities	6 (3.2%)	58 (31.2%)	12 (6.5%)	81 (43.5%)	29 (15.6%)
Parents attend Parents Association Meetings	23 (12.4%)	17 (9.1%)	7 (3.8%)	64 (34.4%)	75 (40.3%)
Parents provide supplementary Mathematics activity books	12 (6.5%)	35 (18.8%)	23 (12.4%)	87 (46.8%)	29 (15.6%)
Parents assist their children with Mathematics homework	23 (12.4%)	17 (9.1%)	12 (6.5%)	75 (40.3%)	59 (31.7%)
Parents visit school to check on child's Mathematics outcomes	17 (9.1%)	12 (6.5%)	6 (3.2%)	81(43.6 %)	70 (37.6%)

Parents communicate their children's Mathematics strengths and weaknesses	23 (12.4%)	12 (6.5%)	20 (10.8%)	64 (34.4%)	67 (36.0%)
Parents provide space for doing homework to their children	23 (12.4%)	28 (15.1%)	18 (9.7%)	60 (32.3%)	57 (30.6%)
Parent are friendly to teachers	29 (15.6%)	93 (50.0%)	6 (3.2%)	46 (24.7%)	12 (6.5%)

Source: Survey Data (2021

Results indicated that EYE who strongly agreed that parents followed up their children's progress were 11 (5.9%) strongly agreed, 47 (25.3%) agreed, 23 (12.4%) were undecided, 82 (44.1%) disagreed while 23 (12.4%) strongly disagreed. These results indicated that many parents (56.5%) were less interest on their children's progress. These results concur with Gesare (2011) who reported that parents who visited schools received direct report on their children's academic progress and hence worked with EYE teachers to contribute to learner's higher standards of performance. These findings concur with responses from interviews with headteachers. A majority of them reported that:

> "Many parents hardly make a follow up on their children academic progress. To them, as long as their children are attending school then it is up to the teacher to teach them and make the children succeed in their education."

On parent participation in organised school events, responses from teachers indicated that 6 (3.2%) strongly agreed that they participated 58 (31.2%) agreed, 81 (43.5%) disagreed 29 (15.6%) strongly disagreed while 12 (6.5%) were undecided. The results implied that many parents (59.1%) did not participate in activities organised by schools Cheung and Pomerantz (2012) mentioned one singular advantage of parental participation was that they could be shown how their involvement in their children education matters was critical. The results were confirmed by the outcomes from head teachers' interviews where one of them indicated that:

> "Majority of our parents never participate in academic clinics and open days organised by the school. They view this kind of activities as time wasting and therefore do not get involved."

The results on parents' attendance of parent's association meetings showed that 23 (12.4%) strongly agreed, that they attended, 17 (9.1%) agreed, 7 (3.8%) were undecided, 64 (34.4%) disagreed and 75 (40.3%) strongly disagreed. This implied that the many parents (74.7%) did not attend PA meetings.

These results are in agreement with most responses from headteachers interviews who noted that:

> "Many parents do not attend parent's association meetings at school. Only a few parents avail themselves but even so, they do not bother to be involved in decision making activities related to their children learning and achievement in learning areas."

Okantey (2008) noted that whenever parents are involved in advocacy, government and decision making activities through their representatives in committees, parents' teachers association and other representative committees, resources and services for schools are improved. Permitting parents discuss with instructors, to keep side by side of advancement or deliberate on existing challenges, helped in practical tasks and management of schools provided.

Results on parents' provision of supplementary materials showed that 12 (6.5%) strongly agreed, 35 (18.8%), agreed 23 (12.4%) were undecided 87 (46.8%) disagreed while 29 (15.6%) strongly disagreed. The results indicated that many parents (62.4%) did not provide supplementary materials for mathematics activities. Practice in mathematics is important and supplementary materials enhance this. Laroqueet al (2011) established that provision of school requirements and supplementary materials is one of the core predictive variables influencing student's academic performance.

On parental assistance with mathematics homework, results by EYE showed that 23 (12.4%) strongly agreed that they assisted their children with homework, 17 (9.1%) agreed, 12 (6.5%) were undecided, 75 (40.3%) disagreed and 59 (31.7%) strongly

disagreed. This implied that many parents (72%) did not assist their children with homework. These results concur with findings from focused group discussions with parents who confirmed that:

> "We normally come back home from work in the evening exhausted and still have to do some house chores like, fetching water, cooking supper among others. The time is inadequate for us to help our children with homework. The teachers should teach the children well to understand what they are required to do in the homework."

Laroque et al (2011) reported that the failure of some parents not to help their children in homework tasks is due to the feeling that teachers needed to ask their teachers for any help associated with their education and not them. For a child to succeed in education, both the parent and the teachers have to work as a team.

Results on parents visit to school showed that 17 (9.1%) strongly agreed that they visited school, 12 (6.5%) agreed 6 (3.2%) were undecided, 81 (43.6%) disagreed and 70 (37.6%) strongly disagreed. The results showed that many parents (81.2%) did not make school visits to monitor their children mathematics subject performance. These results concur with Laroque et al (2011), who reported that parents did not place much effort on education because of the way they were brought up in addition to lack of achievement in schools themselves and this may make them cautions to question instructors or schools since they saw themselves as incapable of doing that. Olmstead (2013) on the other hand argued that interactions is essential but practice participation does not need parents to be physically available in schools because they can be linked through school social media platforms.

Concerning parent's communication on children's strengths and weaknesses in mathematics 23 (12.4%) strongly agreed that they communicated to EYE teachers, 12 (6.5%) agreed, 20 (10.8%) were undecided, 64 (34.4%) disagreed and 67 (36%)

strongly disagreed. This implied that majority (70.4%) of parents did not communicate. These results concur with responses from focused group discussions held by parents who reported that:

> "The teachers are the ones in charge of our children when they go to school. Teachers spend more time with our kids than us and hence they are in a good position to identify their strengths and weaknesses in mathematics and how to help them improve."

Epstein (2011) established that give and take relationships between teachers and parents inspired success of children. When parents do not play any part in their children's education and leave everything to the teacher then success of the children in mathematics activities cannot be achieved.

On provision of homework space by parents for doing homework 23 (12.4%) of parents strongly agreed, that they provide space, 28 (15.1%) agreed, 18 (9.7%) were undecided, 60 (32.3%) disagreed and 57 (30.6%) strongly disagreed. The results implied that most parents (62.9%) do not provide space for doing homework to their children. Mani, Mullainathan, Shafit and Zhao (2013) noted that most parents had no adequate mental capacity to respond to several activities related in supporting their children learning including providing space for doing homework. The results concur with a common response from focused group discussions by parents who were quoted saying that:

> "Our houses are small, besides the children are not given a lot of homework so they can just do it anywhere in the house that they feel comfortable."

Results on whether parents are friendly to teachers indicated that 29 (15.6%) strongly agreed, 93 (50%) agreed 6 (3.2%) were undecided, 46 (24.7%) disagreed while 12 (6.5%) strongly agreed. This implied that many parents (65.6%) were friendly to teachers. Murray (2010) found out that teachers and parents working together shaped achievement of children.

4.4.4 Correlation Analysis of Mathematics Outcome and Parental Home Support

Table 10: Correlation Analysis of Parental Home Support and Mathematics Outcomes

Variable		Parental Home Support	Mathematic outcome
Parental Home Support	Pearson's Correlation	1	0.578**
	Sig. (2-tailed)		0.01
	N	186	186
Mathematic outcome	Pearson's Correlation	0.578**	1
	Sig. (2 tailed)	0.01	
	N	186	186

**** Correlation is significant at the 0.05 level (2-tailed)**

Source: Survey Data (2021)

The results of the correlation analysis as presented in Table 10 ($r= 0.578$ $p < 0.01$) portray a positive relationship between Mathematics outcomes of EYE pupils and parental home support. This result is consistent with Gesare (2012) research which indicated that parental contribution in preschools mathematics activities was associated with positive academic results.

4.5 School to home and home to school communication and Pre-School Learner's Mathematics Outcomes

4.5.1 Home to School Communication and Mathematics Outcomes of EYE pupils

The objective of this theme was to ascertain influence of home - school communication on mathematics outcome of EYE pupils in Emuhaya Sub - County. Table 11 shows the results of parental school-home and home-school communication.

Table 11: Parental Home to School Communication and Mathematics Outcomes of Pre-School Learners

Statement	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
I participate in Parent Association (PA) meetings-PC1.	45 (21.2%)	88 (47.31%)	15 (8.06%)	27 (14.52%)	16 (8.6%)
I communicate with the teachers about the child's school results-PC2	45 (24.91%)	101 (54.3%)	12 (6.45%)	22 (11.83%)	6 (3.23%)
I wait for the teacher to communicate with me about the child's Mathematics performance-PC3	35 (18.8%)	24 (12.9%)	13 (6.98%)	55 (29.6%)	59 (31.72%)
I communicate with the teacher concerning how child feels at school-PC4	42 (22.58%)	93 (50%)	15 (8%)	28 (15.1%)	8 (4.3%)
I phone my child teacher to enquire about my child's Mathematics problems-PC5	39 (20.97%)	85 (45.7%)	16 (8.6%)	33 (17.74%)	13 (6.98%)
I communicate to tachers about the child's strength and weakness in Mathematics activities-PC6	56 (30.11%)	88 (47.31%)	13 (6.98%)	18 (9.68%)	11 (5.91%)
I discuss with the teachers concerning my child's academic progress. -PC7	49 (26.34%)	93 (50%)	7 (3.76%)	21 (11.3%)	16 (58.6%)
I communicate to teachers with respect to mathematics activities my child likes at home-PC8	42 (22.58%)	96 (51.61%)	13 (6.98%)	21 (11.3%)	14 (7.52%)

Source: Survey Data (2021

Key: PC - Parental Communication

Item PC1 sought to establish if the parents participate in Parent Association meetings (PAM). Of the 186 respondents 40 (21.5%) Strongly disagreed, 88 (47.31%) disagreed, 15 (8.06%) undecided, 27 (14.52%) agreed while 16 (8.6%) strongly agreed. This implied that 68.81% of parents did not participates in parent association meetings at school and only 23.12% participated in parents' association meetings.

These outcomes correspond with parents' responses in focused group discussions who reported that:

> "We hardly have time to attend these meetings because we have to go out there and work. Most of us are not employed and have to seek for menial jobs such as tilling land, washing clothes and fetching water for other people in order to put food on the table."

The findings also reiterated what most of the head teachers said when being interviewed that:

> "Many parents when called upon to attend school meetings rarely come. We normally have less than half of parents' population attending PA meetings. This is very discouraging."

According to Small and Gose (2020), parents associations are useful platforms for information delivery since they produce opportunities for social interactions among members with ensuing positive exchange of ideas that promote positive outcomes. Parents should therefore make time to attend such meetings in order to understand what is occurring in schools and how to help their children excel in their studies.

Item PC2 sought to establish if parents talked with teachers in relation their children's school performance. Of 186 respondents, 45 (24.19%) strongly disagreed, 101 (54.3%) disagreed, 12 (6.45%) undecided, 22 (11.83%) agreed while 6 (3.23%) strongly agreed. This indicated that 78.49% of parents did not communicate with teachers about their children school results while only 15.6% agreed that they talked teachers on the academic scores of their kids. These results are consistent with Davis-Kean (2009) who found a positive association between home-school talking and parents prospects for their kids achievement hence parents who highly communicate inspired their children to develop their own expectations.

Item PC3 sought to establish if parents waited for the teacher to communicate about the children's Mathematics performance of the 186 respondents 55 (29.6%) Strongly

disagreed, 59 (31.72%) disagreed, 13 (6.98%) undecided, 35 (18.8%) agreed while 24 (12.9%) strongly agreed. The results indicated that many parents (61.32%) waited for teachers to communicate with respect to children's mathematics achievement. These results are supported by Bakker (2010) who maintained that students whose parents sustain communication with school had a broad chance to be more successful in their studies in comparison to parents who talked fewer times with teachers. Some parents in focused group discussions were noted saying:

> "the school has never communicated to me with regard to my child Mathematics activities outcomes though the child comes home with homework, but again am normally too busy to look at it. I do not also call my child's teacher unless the child is unwell to notify him/her."

Item PC4 sought to establish if parents talked with the teacher about how the child experienced at school of the 186 respondents 42 (22.58%) Strongly disagreed, 93 (50%) disagreed, 15 (8%) undecided, 28 (15.1%) agreed while 8 (4.3%) strongly agreed. This implied that many parents (72.58%) strongly disagreed and disagreed that they talked with teachers to enquire how their children sense of schooling. Further 19.4% of parents strongly agreed and agreed that they talked with teachers on their children experiences at school while 8% were undecided. According to Muola (2010), home work ensures mathematics activities are interactive between children and their parents while at home hence improving two – way stream of knowledge and homework allows interactive mathematics activities between parents and children and feedback to the teachers at school.

Item PC5 sought to establish if parents called their children's class teacher using mobile phone to enquire about their children's Mathematics problems of the 186 respondents 39 (20.97%) Strongly disagreed, 85 (45.7%) disagreed, 16 (8.6%) undecided, 33 (17.74%) agreed while 13 (6.98%) strongly agreed. This implied that

66.67% of parents strongly disagreed and disagreed to have used the class teachers' mobile number to communicate the children's mathematics problems. Only 24.72% of parents agreed to have used the mobile number of class teachers to communicate their children's mathematical problems. Murray (2010) observed that association between teachers and parents had positive impact on children performance.

Item PC6 sought to establish if parents communicate with their children's teacher on their kids strengths and weaknesses in Mathematics activities of the 186 respondents 56 (30.11%) Strongly disagreed, 88 (47.31%) disagreed, 13 (6.98%) undecided, 18 (9.68%) agreed while 11 (5.91%) strongly agreed. This implied that 77.42% of parents did not talk to the subject teachers while 18.6% agreed to have talked to subject teachers of their children's strengths and weakness in Mathematics activities. Epstein (2011) established that mutual relationship between parents and teachers improves children academic outcomes.

Item PC7 sought to establish if parents discussed with the teachers about their children's academic progress. Of the 186 respondents 49 (26.34%) Strongly disagreed, 93 (50%) disagreed, 7 (3.76%) undecided, 21 (11.3%) agreed while 16 (8.6%) strongly agreed. This implied that 76.34% of parents did not discuss with the teachers their children's academic progress while 19.9% strongly agreed and agreed that they discussed about their children's academic progress with teachers. The findings from this study were confirmed by responses from parents' focused group discussions who indicated that:

> "We have never discussed our children's outcomes with teachers, we only encourage our children to work harder and improve."

The Sub-County Programme officer's comment on school to home and home to school communication also confirmed these results by reporting that:

> "School to home and home to school communication is important as it will lead to understanding of both parents and teacher's roles and therefore know how to support the learners to improve in Mathematics activities. Two-way communication needs to be enhanced."

These results concur with Piana (2011) who reported that if parents/guardians received comprehensive report on their children progress and needs, they would be in a position to press for their children higher standards of performance.

Item PC8 sought to establish if parents talked to teachers with respect to mathematics activities their children liked doing at home of the 186 respondents 42 (22.58%) Strongly disagreed, 96 (51.61%) disagreed, 13 (6.98%) undecided, 21 (11.3%) agreed while 14 (7.52%) strongly agreed. This implied that 74.91% of the parent's strongly disagreed and disagreed that they talked to teachers with respect to mathematics activities which their children liked at home. Only 18.82% of parents agreed to have talked to teachers with respect to mathematics activities the children liked doing at home. Eastaway and Askew (2010) contend that participation with pupils in activities like sending them to the shop to buy things, collecting a particular number of utensils, clothes, chairs among others helps children keep abreast with daily evocative numeracy.

4.5.2 How Parents communicate to the School on EYE pupils Mathematics Outcomes

Parental communication an important facet of their participation in their children mathematics activities subject in school and home which ultimately enhances school-family partnerships (Sloan, 2010). Two – way communication between parents and schools enhances productive rapport and trust between EYE teachers and parents hence improving parental involvement in educational activities at home and school. The results were as shown in Figure 7.

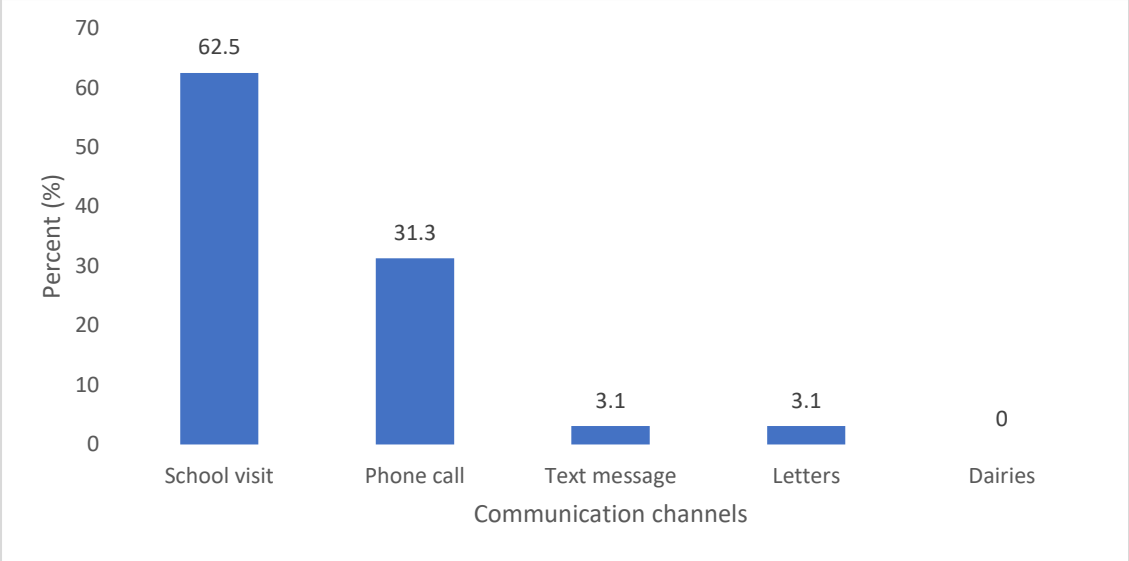


Figure 7: Communication by Parents to Pre- School on Learner's Mathematics Outcomes

Results showed that the many parents visited schools (62.5%) while others used phone calls (31.1%), text messages (3.1%) and letters (3.1%). The results are in agreement with the headteachers' responses when interviewed on how parents communicated to school. The headteachers commented that:

> "Most parents visit the school when they have an issue to settle or confirm from teachers."

The outcomes coincide with Gesare (2012) who found out that parents who made school visits received information concerning their children academic progress which made teachers work easier.

4.5.3 School to Home Communication on Learners' Mathematics Outcomes

Parental participation in their children mathematics activities is superior when they get regular and efficient communication from instructors concerning certain children (Albertson, 2012). In this study, communication took the form of phone calls, letters, text messages, diaries and home visits by teachers. Figure 8 shows the results.

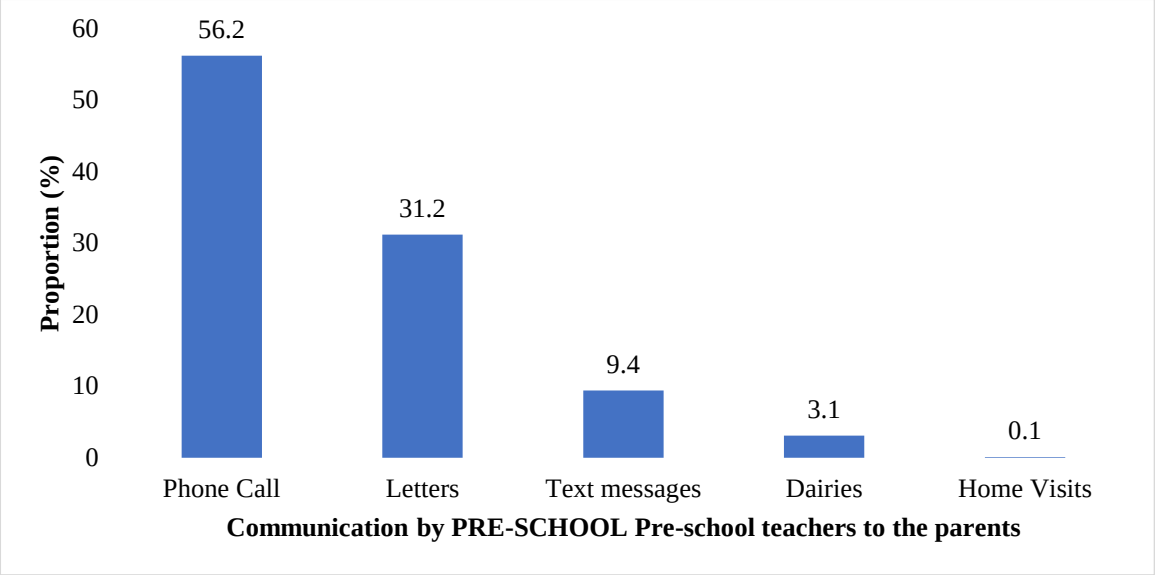


Figure 8: Communication by School to Parents on Pre-school Learner's Mathematics Outcomes

From the findings, the teachers' main communication channels to the parents were phone calls (56.3%) and letters (31.3%) while other teachers also used text messages (9.4%) and dairies (3.1%). Home visits were the least at (0.1%). The results concur with headteachers' responses when interviewed that:

> "Nowadays it is easier for teachers to communicate with parents by just making a phone call. If the communication is for all parents, then letters are normally drafted and given to the children to take to their parents."

These findings concur with Piana (2011) who reported that if parents received detailed information about children's needs and progress, they may be able to contribute to learner's higher standards of achievement. It is therefore important for schools to provide parents with worthwhile information to enhance learners' outcomes.

4.5.4 Correlation Analysis of Mathematics Outcome and Home to School and School to Home Communication

Table 12 Correlation Analysis of Mathematics Outcome and School to home and home to school communication

Variable		School to home and home to school communication	Mathematic outcome
School to home and home to school communication	Pearson's Correlation	1	0.662**
	Sig. (2-tailed)		0.01
	N	186	186
Mathematic outcome	Pearson's Correlation	.662**	1
	Sig. (2 tailed)	0.01	
	N	186	186

**** Correlation is significant at the 0.05 level (2-tailed)**

Source: Survey Data (2021)

The results of the correlation analysis as presented in table 12 ($r=0.662$ $p<0.01$) shows that there is a strong positive correlation between mathematics outcomes and school to home and home to school communication as suggested by Carr, Heath and Maghrabi (2015), there is a strong correlation between student learning outcomes, instructors' quality and instructor education. According to Crawford (2010), the competence of instructors is one of the influences that contribute to the accomplishment of students.

4.6 Parental Volunteering Role in School Activities and Pre-school Learner's Mathematics Outcomes.

This section gave the results of parental volunteering in school activities of EYE pupils on Mathematics outcomes. A research from Netherlands revealed that family volunteering in provision of quality and quantity cognitive stimulation is positively related to child success in mathematics performance (Mesman, Marinus, Van and

Bakersman 2011). Thus, the results show that to improve the outcomes in mathematics activities parents should be encouraged to volunteer in school activities such as classroom and field trips.

4.6.1 Parental Volunteering in School Activities and Mathematics Outcomes of Pre-school Learners

Partnership with families to share decisions made with schools on curriculum implementation, improves achievement in learner's mathematics activities among other areas. According to Christenson and Reschly (2012) Parents Associations recommend involvement programmes that welcome parents to volunteer as partners in schools decisions on matters that affect children and families. Engaging parents in ways that support parental involvement in mathematics activities at school and home, and improving learning by schools, create greater gains. This objective sought to determine how Parents volunteered in school activities and mathematics outcome of EYE pupils in school.

Table 13: Parental Volunteering in School Activities and Mathematics Outcomes

Statement	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
I participate in Parent Association (PA) meetings-PV1	43 (23.12 %)	91 (48.92 %)	10 (5.38 %)	27 (14.52 %)	15 (8.06 %)
I attend organized sporting activities of the school-PV2.	49 (26%)	70 (37.6 %)	21 (11.3 %)	28 (15%)	20 (10.8 %)
I attend organized functions of the school such as speech and prize giving days-PV3	36 (19.35 %)	84 (45.16 %)	17 (9.14 %)	33 (17.74 %)	16 (8.6%)
I always visit the school to follow up on my child's academic progress-PV4	47 (25.26 %)	82 (44.09 %)	13 (6.98 %)	32 (17.2 %)	12 (6.45 %)
I participate actively in activities involving parents and teachers in school-PV5	64 (41%)	86 (46.24 %)	11 (5.91 %)	17 (9.14 %)	8 (4.3%)
I make donations during school prize	44	60	36	18	28

award day-PV6	(23.66 %)	(32.26 %)	(19.35 %)	(9.68 %)	(15.05 %)
I volunteer in classroom or on field trips-PV7	41 (22.04 %)	79 (42.47 %)	15 (8.06 %)	37 (19.89 %)	14 (7.53 %)
I attend parents' meetings to discuss child's learning or behaviour-PV8	49 (26.34 %)	93 (50%)	7 (3.6%)	21 (11.3 %)	16 (8.6%)

Source: Survey Data (2021)
Key: PV- Parental Volunteering

Item PV1 sought to establish if parents participated in Parent Association Meetings (PAM).Of the 186 respondents 43 (23.12%) Strongly disagreed, 91 (48.92%) disagreed, 10 (5.38%) undecided, 27 (14.52%) agreed while 15 (8.06%) strongly agreed. This implied that 72.04% of parents strongly disagreed and disagreed to participate in Parent Association Meetings (PAM) while 5.38% were undecided and 22.58% strongly agreed and agreed they participated. Responses from headteachers interviewed confirmed these results as they noted that:

> "Many parents when called upon to attend school meetings rarely come. We normally have less than half of parents' population attending parent association meetings. This is very discouraging."

According to Bakker (2010) when parents participate in school decisions and governance and on matters that affect their children's education including evaluation of mathematics activities then success will be achieved. Small and Gose (2020) argue that Parents Associations are useful platforms for information delivery because they provide opportunities for social interaction among members resulting in positive exchange of ideas that promote positive outcomes. Okantey (2008), further states that, when parents participate in school decisions, governance, and advocacy activities through councils, committees, improvement teams, and parents‟ organisations, resources and services for preschools and families are enhanced. Allowing parents to discuss with teachers, to keep abreast of progress or discuss availing problems, assisted in practical activities and governance of schools.

Item PV2 sought to establish if parents attended organized sporting activities of the school. Of the 186 respondents 49 (26%) Strongly disagreed, 70 (37.6%) disagreed, 21 (11.3%) undecided, 28 (15%) strongly agreed while 20 (10.8%) agreed. This implied that 63.6% of parents strongly disagreed and disagreed to attend organized sporting activities of the school. The parents who strongly agreed and agreed they attended organized sporting activities of the school were 25.8% of the total respondents. The headteachers interviewed confirmed these results by stating that:

> "Very few parents are keen to get involved fully in school activities especially sports days. Parents should come out in big numbers to cheer up their children. But what we normally experience is disheartening even to the young ones."

These findings were further confirmed by the Sub- County Programme officer who confirmed that:

> "The attendance of parents during sports events is usually very low. Parents are not keen on being involved in school activities such as sports days and prize giving days. Some of them think it is a waste of time when they should be doing other important things to them such as fending for the family."

These results are consistent with Fan and Williams (2010) who contend that the frequency with which parents engage with extra-curricular activities for example, sports events and holidays is positively related with children's self-efficacy towards mathematics and their subsequent achievement.

Item PV3 sought to establish if parents attended organized functions of the school such as speech and prize giving days. Of the 186 respondents 36 (19.35%) Strongly disagreed, 84 (45.16%) disagreed, 7 (9.14%) undecided, 33 (17.74%) agreed while 16 (8.6%) strongly agreed. This implied that 64.51% of parents disagreed they attended organized functions of the school such as speech and prize giving days. According to Husen and Mansor (2018) parents who work closely with the school gain a better understanding of the school's expectations and how they can work with the teachers to support the children to achieve better outcomes.

Item PV4 sought to establish if parents always visited the school to follow up on their children's academic progress. Of the 186 respondents 47 (25.26%) strongly disagreed, 82 (44.09%) disagreed, 13 (6.98%) undecided, 32 (17.20%) agreed while 12 (6.45%) strongly agreed. This implied that 69.35% of parents strongly disagreed and disagreed to always visit the school to follow up on their children's academic progress. The result further reiterated that 6.98% of parents were undecided and 23.65% strongly agreed and agreed they visited the schools to follow up children's academic progress.

These studies are consistent with those of Avvisati, Gurgand, Guyon and Maurin (2014) as well as Rogers and Feller (2018) who found out that providing parents with information about their children's academic progress can lead parents to update their biased beliefs, reallocate resources, improve student behaviour and raise academic outcomes.

Item PV5 sought to establish if parents participated actively in activities involving parents and teachers in school. Of the 186 respondents 64 (41%) Strongly disagreed, 86 (46.24%) disagreed, 11 (5.91%) undecided, 17 (9.14%) agreed while 18 (4.3%) strongly agreed. This implied that 87.24% of parents strongly disagreed and disagreed to participate actively in activities involving parents and teachers in school while 5.91% of parents were undecided and 13.44% strongly agreed and agreed to have participated in parents and teachers' activities. Cheung and Pomerantz (2012) expressed that one benefit of parental involvement is that parents can show their children they believe school is important when they get involved.

Item PV6 sought to establish if parents made donations during school prize award. Of the 186 respondents 44 (23.66%) Strongly disagreed, 60 (32.26%) disagreed, 36 (19.35%) undecided, 18 (9.68%) agreed while 28 (15.05%) strongly agreed. This

implied that 55.92% of parents strongly disagreed and disagreed while 24.73% strongly agreed and agreed to have made donations during school prize award. Findings from a focused group discussion with parents confirmed that they do not make donations when they reported that:

> "In recent times, life has become very tough. We barely have enough to sustain our families. We desire to give out in support to our school but our financial situations do not allow us."

Bower and Griffin (2011) argue that parental involvement can take on many forms including donations and is seen as an effective strategy to enhance student's success.

Item PV7 sought to establish if parents volunteered in classroom or on field trips. Of the 186 respondents 41 (22.04%) Strongly disagreed, 79 (42.47%) disagreed, 15 (8.06%) undecided, 37 (19.89%) agreed while 14 (7.53%) strongly agreed. This implied that majority (64.51%) of parents do not volunteer in classroom or on field trips while a smaller proportion of 27.42% strongly agreed and agreed while 8.06% were undecided. The findings of this study concur with those of Catalano and Catalano (2014) who assert that some parents are highly involved at the school level for instance, by volunteering in the classroom, chaperoning field trips or events and communicating regularly with the teachers while some are not.

Item PV8 sought to establish if parents attended parents' meetings to discuss children's learning or behaviour. Of the 186 respondents 49 (26.34%) strongly disagreed, 93 (50%) disagreed, 7 (3.16%) undecided, 25 (11.3%) strongly agreed while 16 (8.6%) agreed. This implied that majority (76.34%) of parents did not attend parents' meetings to discuss their children's learning or behaviour, only 19.9% did so. These findings concur with those of Husen and Mansor (2018) who reported that there are many consequences when parents do not participate in their children's education activities which include high drop outs rates, illiteracy to children,

behavioural problems and poor academic outcomes. Thus, pre-school activities need to be supported in order for the anticipated achievement to be realized. Clark and Moss (2011) commended the Mosaic atmosphere of learning, where parents, teachers, and children collaborate in classroom instruction, because support by parents in instruction, facilitates easy transfer of learning, and has been demonstrated in many studies of children's mathematics learning.

4.6.2 Correlation Analysis of Mathematics Outcomes and Parental Volunteering in School Activities

Table 14: Correlation Analysis of Mathematics Outcomes and Parental Volunteering in School Activities

Variable		Parental Volunteering	Mathematic outcome
Parental Volunteering	Pearson's Correlation	1	0.478**
	Sig. (2-tailed)		0.01
	N	186	186
Mathematic outcome	Pearson's Correlation	.478**	1
	Sig. (2 tailed)	0.01	
	N	186	186

**** Correlation is significant at the 0.05 level (2-tailed)**

Source: Survey Data (2021)

The results of the correlation analysis as presented in table 14 ($r=0.478$ $p<0.01$) shows that there is a strong positive correlation between parental volunteering and mathematics outcomes of EYE pupils. Studies have shown that school involvement is associated with increased achievements (Dearing Kreider, Simpkins & Weiss, 2006; Huang, 2017; Lee & Bowen, 2012; Mc Bride, Dyer, Liu, Brown, Hong, 2009)

specifically, school involvement such as volunteering and participation in school events was found to have the largest beneficial effect on achievement.

4.7 Parental Attitudes towards Mathematics Outcome of EYE pupils

Decisions made concerning children's education would be effective if parents played part in implementation of the same with a positive attitude. The more mathematics a parent feels that they know, the more confident they are in their ability at mathematics and the better they like mathematics hence influencing their children's mathematics outcomes positively (Sloan, 2010).

4.7.1 Parental Attitudes and Mathematics Outcomes of EYE pupils

The study sought to establish the attitude of parents towards mathematics outcome. Table 15 shows the results of the attitude of parents towards mathematics outcomes of EYE pupils.

Table 15: Parental Attitudes on Mathematics Outcomes of EYE pupils

Parental home support	**Number of respondents**	**Percent (%)**
Positive attitude by parents	61	32.796
Negative attitude by parents	125	67.204
Total	**186**	**100**

Source: Survey Data (2021)

Results indicated that many parents (67.204%) had a negative attitude towards mathematics only (32.796 %) had a positive attitude. Parents who like mathematics have a positive attitude and thus, can encourage their children to work hard and get good outcomes by being role models to them. According to Sonnenschein, Metzger, & Thompson (2016), the scope to which children observe their parents doing

mathematics activities is related to the frequency that their children engage in Mathematics activities, which in turn is related to their early mathematics skills.

Table 16: Parental Attitudes towards Mathematics Activities of EYE pupils

Statement	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
I love to encourage my child to tackle Mathematics problems- PA1	61 (32.8%)	81 (43.5%)	8 (4%)	5 (2.7%)	31 (17%)
Personally, I love mathematics- PA2	49 (26.3%)	77 (41.4%)	10 (5.4%)	11 (5.9%)	39 (21%)
I buy supplementary Mathematics activity books for my child for practice at home- PA3	37 (20%)	80 (43%)	13 (7%)	22 (11.8%)	35 (18.2%)
I encourage and motivate teachers teaching Mathematics activities- PA4	43 (23.11%)	74 (39.8%)	12 (6.45%)	24 (12.90%)	33 (17.74%)

Source: Survey Data (2021)
Key: PA- Parental Attitude

Item PA1 sought to establish if the parents loved to encourage their children to tackle Mathematics activities. Of the 186 respondents 61 (32.8%) Strongly disagreed, 81 (43.5%) disagreed, 8 (4%) undecided, 5 (2.7%) agreed while 31 (17%) strongly agreed. The results indicated that 76.2% of parents strongly disagreed and disagreed that they encouraged their children to tackle mathematics activities. Only 19.7% encourage. The headteachers who were interviewed reported that:

> "Many parents from their early school experiences had a negative attitude towards mathematics and therefore, did not even encourage their children to tackle Mathematics activities."

These results are also consistent with responses from an interview with the Sub-County Programme officer who said that:

> "Most parents' attitude is negative since they are not involved in assisting their children to do better as evidenced by uncompleted homework."

These results are consistent with those of Oundo, Poipoi, and Were (2014) who reported that parental attitude towards education involvement affects academic performance. Sloan (2010) noted that attitude towards mathematics achievement can be influenced by the adults around children and a positive attitude can enhance learner's intrinsic motivation, and self-efficacy towards mathematics.

Item PA2 sought to establish if parents personally, loved mathematics. Of the 186 respondents 49 (26.3%) Strongly disagreed, 77 (41.4%) disagreed, 10 (5.4%) undecided, 11 (5.9%) agreed while 39 (21%) strongly agreed. This implied that majority (67.7%) of parents did not personally love mathematics, only 26.9% did. Quilliams and Beran, (2009) argue that parental participation and love of school activities encourages children to better their performance in class and results to conversations of future academic objectives for children.

Item PA3 sought to establish if parents bought supplementary Mathematics activity books for their children for practice at home. Of the 186 respondents 37 (20%) Strongly disagreed, 80 (43%) disagreed, 13 (7%) undecided, 22 (11.8%) agreed while 34 (18.2%) strongly agreed. This implied that majority (63%) of parents strongly disagreed and disagreed that they bought supplementary Mathematics activity books for their children to practice at home. Only 30% bought. A study by Missal, Hajnoski, Caskie and Rapasky (2015) revealed that, these supplementary picture books specifically written for teaching mathematics can be used to give explicit instructions at home hence, improving mathematics outcomes.

Item PA4 sought to establish if parents encouraged and motivated teachers teaching Mathematics activities. Of the 186 respondents 43 (23.11%) Strongly disagreed, 74 (39.8%) disagreed, 12 (6.45%) undecided, 24 (12.9%) agreed while 33 (17.74%)

strongly agreed. This implied that many parents (62.91%) did not encourage and motivate teachers of mathematics, only 30.64% did. If encouragement is done with respect and appreciation coupled with extrinsic motivation, teachers' greater output will be realized to a greater percentage, hence beneficial to learner achievement. Epstein (2011) opines that reciprocal relationships between parents and teachers promote children's success.

The attitude of parents towards Mathematics as a learning area can either enhance or inhibit outcomes of the preschool learners. Parents whose attitude is positive towards Mathematics assist and encourage the EYE pupils leading to better outcomes. A negative attitude by parents impacts negatively on the EYE pupils and thus poor outcomes.

4.7.2 EYE Responses on Parental Attitudes towards Mathematics Outcomes of EYE pupils

The study sought to establish the EYE' comments on the attitude of parents towards mathematics outcomes of their children. The results are as shown in Table 17.

Table 17: EYE Responses on Attitude of Parents towards Mathematics Outcomes

Attitude of parents toward mathematics outcome	Frequency	Percent (%)
Negative attitude towards outcome	18	60
Parents have positive attitude towards the outcome	8	26.7
Parents don't support Mathematics activities completely	2	6.7
Children just work hard on their own	1	3.3
Parents believe teachers don't teach well	1	3.3
Total	**30**	**100.0**

Source: Survey Data (2021)

From the results, many parents (59.3%) had a negative attitude towards mathematics while only (28.2%) had a positive attitude. Another (6.3%) did not bother to support

mathematics activities at all (3.1%) owned up to leaving children to work hard on their own while another (3.1%) believed teachers do not teach well and that's why their children perform dismally. In regard to these results, Sloan (2010) argues that, as far as mathematics achievement is concerned, attitude towards mathematics can have a huge impact on the ability of children to excel.

4.7.3 Correlation Analysis of Mathematics Outcomes and Parental Attitudes

Table 18: Correlation Analysis of Mathematics Outcomes and Parental Attitudes

Variable		Parental attitudes	Mathematic outcomes
Parental attitudes	Pearson's Correlation	1	0.728**
	Sig. (2-tailed)		0.01
	N	186	186
Mathematic outcome	Pearson's Correlation	0.728**	1
	Sig. (2 tailed)	.001	
	N	186	186

**** Correlation is significant at the 0.05 level (2-tailed)**

Source: Survey Data (2021)

The results of the correlation analysis as presented in Table 18 ($r= 0.728$ $p < 0.01$) show that there is a strong positive correlation between mathematic outcome and parental attitudes. The attributes, dispositions, skills and habits of thought necessary to become a valuable mathematics educator include knowledge of mathematics, persistence, positive attitude towards the subject of math, the state or quality of being ready for change and a reflective inclination or tendency (Ministry of Education, Jamaica 2014).

Observation Checklist for Learner

Task	EE %	ME %	AE %	BE %
Ability to count 1-20	4 (20%)	9 (45%)	5 (25%)	2 (10%)
Ability to sort objects	3 (15%)	2 (10%)	8 (40%)	7 (35%)
Ordering	1 (5%)	3 (15%)	4 (20%)	12 (60%)
Matching and Pairing	2 (10%)	2 (10%)	7 (35%)	9 (45%)
Number Recognition	3 (15%)	4 (20%)	4 (20%)	9 (45%)
Number Value	3 (15%)	4 (20%)	3 (15%)	10 (50%)
Number Writing	2 (10%)	5 (25%)	6 (30%)	7 (35%)
Putting Together	2 (10%)	4 (20%)	4 (20%)	10 (50%)
Taking Away	2 (10%)	5 (25%)	2 (10%)	11 (55%)

Source: Survey data 2021

EE: Exceeding Expectations
ME: Meeting Expectations
AE: Approaching Expectations
BE: Below Expectations

The study findings on ability to count revealed that 20% of the learners exceeded expectations, 45% met expectations, 25% approached expectations and 10% were below expectations. This implied that 65% of the learners were able to count numbers 1-20 correctly while 25% tried and 10 % were unable to count numbers 1-20 correctly.

On sorting, the findings revealed that 15% of the learners exceeded expectations, 10% met expectations, 40% approached expectations and the majority at 70% were below expectations. This implied that 25% of the learners were able to sort, 40% tried and 35% were unable to sort.

On ordering the findings showed that only 5% of the learners exceeded expectations, 15% met expectations, 20% approached expectations and 60% were below expectations. This implied that 20% of the learners were able to order, 20% tried while the majority at 60% could not order.

The study findings on matching and pairing revealed that 10% of the learners exceeded expectations, 10% met expectations 35% approached expectations while 45% were below expectations. This implied that only 20% of the learners were able to match and pair correctly, while 35% tried and 45% were below expectations.

The study found out that only 15% of the learners exceeded expectations in number recognition, 20 % met expectations, 20% approached expectations while 40% were below expectations. This showed that only 35% of the learners were able to recognize numbers correctly while 25 % tried and 45% of the learners were unable to recognize numbers correctly

On number value, study found out that 15% of the learners exceeded expectations, 20 % met expectations, 15% approached expectations and 50% were below expectations. This showed that only 35% of the learners were able to do tasks involving number value correctly, 15% tried and the majority at 50% were unable to do the task correctly.

On number writing, 10% of the learners exceeded expectations, 25 % met expectations 30% approached expectations and 35% were below expectations. This implied that 35% of the learners were able to write numbers correctly while 30% tried and 35% were unable to write numbers correctly.

10% of the learners on putting together exceeded expectations, 20% met expectations, 20% approached expectations and 50% were below expectations. This implied that 30% of the learners were able to put together numbers correctly, 20% tried while 50% were unable to put together numbers correctly.

The findings of the study revealed that 10% of the learners exceeded expectations in tasks involving taking away, 25% met expectations, 10% approached expectations and 55% were below expectations. This showed that 35% of the learners were able to take away correctly, 10% tried and the majority at 55% were unable to take away correctly.

4.7.4 Multiple Regression Analysis

Multiple regression analysis was done to test the relationship between the dependent variable (Mathematical outcome) and the series of dependent variables namely ;Parental Home support (PHS), Home to School and School to Home communication (HSSHC), Parental Volunteering (PV) and Parental attitude (PA). The relationship between mathematical outcomes (dependent variable) was tested against independent variables in a multiple regression model. The prediction model was statistically significant, F (4, 188) = 1.061, P ≤ 0.05), - meaning that the model can explain mathematical outcome.

ANOVA[a]

Model 1	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.593	4	.398	1.061	.037[b]
Residual	70.563	188	.375		
Total	72.156	192			

a. Dependent Variable: Mathematic outcome.
b. Predictors: (Constant), Parental Home-Support, School to home and home to school communication, Parental Volunteering, Parental attitudes

The independent variables explained 24.9% of the variation in mathematical outcome (R2=24.9%), R2 adjusted =22.0%) that is, the independent variables accounted for 24.9% of the proportion of mathematical outcome among learners (R2=24.9%), R2 adjusted =22.0%).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.249[a]	.220	.115	.061264

a. Predictors: (Constant), Parental Home-Support, School to home and home to school communication, Parental Volunteering and Parental attitudes.

These results may indicate that there are other important factors which influence mathematical outcome and were not considered in the model.

Coefficients[a]

Model	Unstandardised Coefficients		Standardised Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.875	.157		11.940	.000
Parental Home-Support	0.181	.096	.248	1.878	.042
School to home and home to school communication	0.027	.100	-.032	-.272	.046
Parental Volunteering	0.093	.088	-.157	-1.051	.295
Parental Attitude	-0.043	.060	-.091	-.716	.015

a. Dependent Variable: Mathematics outcome

Mathematical outcome (%) was primarily predicted by the constant (β = 1.875), Parental Home support (p=0.042), School to home and home to school communication (p=0.046), Parental Volunteering (0.295) and Parental attitude (0.015). The final model that helps to determine the mathematical outcome among learners are outlined:

MOU=1.875+0.181PHS-0.043PA+0.093PV+0.027HSSH

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides summary of the study findings on how parental participation influence pupils performance in mathematics subject in public EYE centres in Emuhaya Sub County, Vihiga County, Kenya. Conclusions from the findings are made along with recommendations and suggestions for further research.

5.2 Summary of Findings

The summary of the findings of the study are presented in the sub-sections following;

5.2.1 Influence of Parental Home-Support on Mathematics Out comes of Learners in Public EYE centres

On objective one, the study sought to examine the influence of parental home support on learners' performance in Mathematics in selected public EYE centres in Emuhaya Sub County, Vihiga County, Kenya. The findings of the theme of this objective were as follows;

i. Many parents (81.3%) indicated not to be assisting their children with homework tasks while only 14% of parents always assisted their children with mathematics homework.
ii. Many parents (81.9%) strongly disagreed or agreed that they communicated to their children about mathematics at home while 18.1% talked to their children about mathematics at home.
iii. Most of parents accounting 75.1% did not always try to find out the mathematics activities given to their children at school while 17.1% did find out the activities given to their children at school.

iv. Many parents (78.7%) did not talk with their children about mathematics outcomes, only 14% did talk.

v. Most of parents (68.4%) did not have an array of regulations concerning television programmes the children were permitted to watch while at home.

vi. The parents were asked if they praised and encouraged their children for their mathematics achievement. The results indicated that 86.5% of parents did not praise and encourage their children Mathematics outcomes in schools.

vii. 80 % of parents indicated that they did not control their children behaviourand81.3% of parents did not provide guidance and counselling to their children while at home.

5.2.2 Influence of School to home and home to school communication on Pre-School Learner's Mathematics Outcomes

On objective two, the study sought to determine the influence of home to school and school to home parental communication on learners' mathematics performance in Public EYE centres in EmuhayaSub- County, Vihiga County Kenya. The findings of the theme of this objective were as follows;

i. 68.4% of parents did not participate in parent associations meetings at school while 22.8% do participate in parents' association meetings.

ii. The results indicated that 78.7% of parents did not communicate with teachers about their children school results, only (14.5%) communicated about their children's mathematics school results.

iii. 50.8% of parents wait for the teacher to call them while 42.5% of parents make the effort to call the teacher.

iv. 72% of parents did not communicate to the teacher about how their children felts at school and66.3% of parents did not use the class teachers' mobile number to tell the child's mathematical problems.

v. The results indicated that 74.1% of parents interviewed did not talk to the teachers of their children concerning their strengths and weaknesses in mathematics activities.

vi. These results indicated that 76.7% of parents did not discuss with teachers' concerning their children's academic development and 72.6% of parents did not communicate to teachers with respect to mathematics activities the children liked doing at home.

5.2.3 Influence of Parental Volunteering Role in School Activities and EYE pupils Mathematics Outcomes

Thirdly, the study determined the influence of parental volunteering role in school activities on learners' mathematics performance in selected public EYE centresin Emuhaya Sub County, Vihiga County, Kenya. The results established that 71.5% of parents did not participate in Parent Association (PA) meetings, the results indicated that 62.7% of parents did not attend organized sporting activities of the school, majority (63.7%) of parents did not attend failed to attend functions organised in schools like meetings and prize giving day sand 64.8% of parents always did not make regular follow up visit to track their children academic progress. Moreover,findings indicated that 67.2% of parents did not actively participate in activities required their presence in school and 55.5% of parents did not make donations during school prize award and the results indicated that majority (55.9%) of parents volunteered in classroom or on field trips and75.1% of parents did not attend parents' meetings to discuss their children learning outcomes.

5.2.4 Parental Attitudes towards Mathematics Outcomes of EYE pupils

Fourthly, the study instigated the influence of parental attitudes towards learners mathematics performance in public EYE centres. The results on parents' attitudes towards mathematics outcomes indicated that most (65.8%) parents have a negative attitude towards mathematics while only (34.2%) have a positive attitude, concerning parental love to encourage children to tackle Mathematics problems; many parents(76.2%) did not encourage their children to tackle Mathematics activities, on parental love of mathematics, many parents (67.4%) indicated that they personally did not love mathematics while 62.7% of parents strongly disagreed and disagreed to buy supplementary Mathematics activity books for their children to practice at home, only 31.6% of parents motivated teachers teaching Mathematics teaching Mathematics while the majority (62.2%) did not motivate teachers.

5.3 Conclusions

The study concludes that most parents from Emuhaya Sub County public EYE centres failed to undertake supervisory work of their children mathematics activities at home. Teachers and parents agreed that the only area that parents participated in their children education was through volunteering to schools by ensuring that the required improvised materials for their children learning of mathematics were provided when needed. Phone calls and letters were the major modes of communication through which teachers and parents communicated on learner's mathematics outcomes. The study discovered that strengthening of communication and interactions modes by teachers to parents would help address the issue of communication which was poor between teachers and parents in schools. Poor communication between parents and teachers affected children acquisition of mathematical knowledge in EYE centres in the study area.

5.4 Recommendations

This study focused on parental participation and pupils academic performance in mathematics activities in public EYE centres. Based on the findings and conclusions made, the following are the recommendation for policy, action and theoretical application to various stakeholders:

i. Parents should be sensitised on the importance of mathematics activities and why they should get involved.

ii. Parents should create time and assist children with homework as well as provide conducive environment at home for study.

iii. Parents should also be sensitised to understand that learning starts at the pre-school level. Most of them overlook this truth and assume the children just go to play and to socialize.

iv. Parents should also provide for their children learning materials, both writing and reference materials for mathematics activities

v. Teachers need to undertake full responsibility of sensitising parents on voluntary involvement in their children education by providing the required materials and instructional assists in areas they are aware to promote positive outcomes.

vi. Teachers should re-transform their mode of communication by ensuring that every parent is communicated to and feedback provided. Phone calls and letters were the major modes of communication through which teachers and parents communicated on learner's mathematics outcomes.

vii. Schools should put in place strategies and practices to engage parents and make them feel welcome and valuable so that they are free to visit the school.

viii. School managers and administrators should introduce programmes that will ensure that parents participate in school activities as required in order for example, school open days, academic clinics among others for their children to excel.

ix. Schools should come up with programmes that empower parents who feel incapacitated to help their children due to their low level of education.

x. Policymakers in the Ministry of Education need to develop guidelines which will encourage parental engagement their children education matters.

5.5Suggestions for further Research

The study makes recommendations for further research in the following areas:

(a) Examine the areas of parental volunteering in mathematics activities in schools and its influence on EYE children performance.

(b) Examine how communication affects children learning of mathematics subjects in schools

(c) A similar study can be conducted in other sub counties to see if there are similarities or differences with Emuhaya Sub County.

REFERENCES

Abd, R. B. Z., Zuwati, H., Umi, K. M. S. & Jal, Z.M.Y. (2013). Family Context and Its Relationship with Parental Participation in the Education of Secondary School Children. *International Journal of Asian Social Science, 2013, 3(4),* 1063-1076.

Action Aid (2010). The Role of Teachers in Improving Learning in Burundi, Malawi, Senegal and Uganda: Great Expectations, Little Support. Retrieved at 3.30 P.M. on 13th January 2020 from; https://actionaid.org/sites/default/files/ilopsteachersfinal.pdf

Ader, H. J., Mellenberg, J. G. & Hand, J. D. (2008). Advising on Research Methods: A Consultant's Companion. Johannes Van Kessel Publishing: Huizen, The Netherlands.

Albertson,N, (2012). The Parent and Teacher connection: The Key to Successful Children's Education. Unpublished Colorado State University. MA. Thesis. Fort Collins, Colorado, USA.

Ang'ienda, L. (2013). Influence of Parental Involvement in the Learning Process Outcome of Children in Public Primary Schools in Kisumu Municipality, Kenya.Retrieved at 9.00 A.M. on 22nd October 2019 from; https://hdl.handle.net/11295/62959

Aronson, E. (2008). The Social Animal. (10th Ed.) New York, NY; Worth Publishers.

Avvisati, F., Gurgand, M., Guyon, N., &Maurin, E. (2014). Getting Parents Involved: A Field Experiment in Deprived Schools. *Review of Economic Studies 81(1),* 57-83.

Baily, L. (2016). Interactive Homework: A Tool for Fostering Parent-Child Interactions and Improving Learner Outcomes for At-risk Young Children. Early Childhood Educational Journal, 34 *(5)*:150215-167.

Bakker, J. (2010). Socio-Economic Background. Parental Involvement and Teacher Perceptions of these in Relation to Pupil Achievement. *Educational Studies 33(2),* 177-192.

Boipono, M., Tshegofatso, A. &Kgomotso M. (2015). Perceptions of Teachers on the Use of Corporal Punishment in Schools: A Case of Kang Secondary Schools, *Journal of Educational Science,* Volume 3, Issue (6), Pages 1-6.

Borg, W. R., Gall, M. D. & Gall J. P. (2007). Educational Research: An Introduction (8th Edition) USA: Longman.

Bower, H., A. & Griffin, D. (2011). Can the Epstein's Model of Parental Involvement Work in a High-Majority, High-Poverty Elementary School? A Case Study. *Professional School Counselling 15(2),* 77-87.

Brannon, D. (2008). Character Education: It's a Joint Responsibility. *Kappa Delta Phi Record, 44(2)*:62-65.

Braun, V. &Clerke, N. (2006). Using Thematic Analysis in Psychology. *Qualitative Research Journal. Vol. 13,* PP77-101.

Brown, W. H. (2009). Social and Environmental Factors associated with Pre-Schoolers Non-sedentary Physical Activity *Child Development Journal.*

Bryman, A. (2012). *Social Research Methods*. (4th Edition). Oxford: Oxford University Press.

Cameron, A. C. & Miller, D. L. (2015). A practitioner's Guide to Cluster- Robust Inference. Retrieved at 8.30 A.M. on 9th April 2020 from; Communicationhttps://cameron.econ.ucdavis.edu/research/Cameron_Miller_Cluster

Carr, N., Heath, d., &Maghrabi,R. (2015). Implications of Information and Communicztion (ICT) for School-Home Communication, Retrieved at 1.05PM. on 12th March 2021 from: DOI: 10.2894/2285.

Caspe, M. S. (2010). How Teachers Come to Understand Families. *School Community Journal, 13, 115-131*

Catalano, H., & Catalano, C. (2014). The Importance of the School Family Relationship in the Childrens' Intellectual and Social Development. Proc. Soc Behav. Sci. 128, 406-414. Doi: 10.1016/j.sbspro.2014.03.179.

Chandran, V. (2010). Factors Associated with Poor Academic Achievement Among Urban Primary School Children in Malaysia. *Singapore Medical Journal*, 51(3), 247-252. Retrieved on 12th November 2019 at 2.30 P.M. from: https://pubmed.ncbi.nlm.nih.gov/20428748/

Cheung, C. S. & Pomerantz, E. M. (2012). Why does Parents' Involvement Enhance Children's Achievement? The Role of Parent Oriented Motivation. *Journal of Educational Psychology, 104(3),* 820-832.

Chiu, M.M. &Xihua. (2008). Family and Motivation Effects on Mathematics Achievement: Analysis of Studies in 41 Countries. *Learning and Instruction* 18,321-336.

Chopra, R. V. & French N., K. (2014). Para-Educator Relationships with Parents of Students with Significant Disabilities. Remedial and Special Education, *25*(4)240-251.

Christenson, S., &Reschly, A. (2010). Handbook of School-Family Partnerships. New York: Taylor and Francis.

County Fiscal Strategy Paper (2020). County Government of Vihiga. Government Printer, Nairobi.

Cox, D. D. (2015). Evidence-Based Interventions Using Home-School Collaboration. School Psychology Quarterly, *20*(4), 473-497.

Crawford, P, A. (2010). Nurturing Early Childhood Teachers as Leaders: Long Term Professional Development. *Dimensions Early Childhood, 38(3),* 31-38

Creswell, J.W. (2009). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (3rd Ed.): Sage. London.

Creswell, J.W. (2014). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (4th Ed.): Sage. London.

Davis-Kean, P., E. (2009). The Influence of Parent Education and Family Income on Child Achievement: The Indirect Role of Parental Expectations and the Home Environment. *Journal of Family Psychology. 19*(4)294-304.

Dearing, E., Kreider, H., Simpkins, S. & Weiss, H. B. (2006). Family Involvement in School and Low-income Childrens' Literacy: Longitudinal Associations between and within families. *Journal of Educational Psychology, 98*(4) 653-664.

DeFlorio, L. L. (2011). "The Influence of the Home Learning Environment on Pre-School Children's Informal Mathematical Development: Variation by Age and Socioeconomic Status." Unpublished University of California. PhD Dissertation. Berkeley, USA.

Denscombe, M. (2008). Communities of Practice: A Research Paradigm for the Mixed Methods Approach. *Journal of Mixed Methods Research* 2(3): 270-283.

Denscombe, M. (2010). The Good Research Guide: for Small-Scale Social Research Projects (4th Edition) Maidenhead: Open University Press.

Denzin, N.K. & Lincoln, Y.S. (2005). Introduction: The Discipline and Practice of Quantitative and Qualitative Research (3rd Ed). The Sage Handbook of Qualitative Research, 1-32: Sage. London.

Department for Children, Schools, and Families. (2009). How Primary and Secondary Schools Help Parents and Carers to Improve their Child's Learning: Guidance for schools. Department for Children, Schools, and Families Publications: Nottingham, UK.

Duch, H. (2005). Redefining Parent Involvement in Head Start: A Two-generation Approach. Early Child Development and Care. 175:25-35. Retrieved on 10th January 2020 at 12.15 P.M. from; https://doi.org/10.1080/0300443042000206237

Duckworth, K. (2018). Influences on Attainment in Primary School Interactions Between Child, Family and School Contexts. DCSF Research Brief RB 04.

Duggleby, W. (2009). What About Focus Group Interaction Data? *Qualitative HealthResearch* 15, 832-40.

Eastaway, R. & Askew, M. (2010). Maths for Mums and Dad. Retrieved at 13;56 pm on 3rd March 2021. http://www.amazon.com

Edward, N.O., Moses, W. P. & Dinah S. W. (2014). Relationship Between Parent's Attitude Towards Educational Involvement and Academic Performance of Day Secondary School Students in Samia, Kenya. *International Journal of Human Resource Studies* 4(3) Retrieved on 3rd March 2020 at 3.20 P.M. from: http://dx.doi.org/10.529/ijhrs.v4i3.5964

El Nokali, N. E., Bachman, H. J. & Votruba-Drzal, E. (2010). Parent Involvement and Children's Academic and Social Development in Elementary School. *Child Development,81(3),* 988-1005.

Emerson, L., Fear, J., Fox, S. & Sanders, E. (2012). Parental Engagement in Learning and Schooling: Lessons from Research. A Report by the Australian Research Alliance for Children and Youth (ARACY) for the Family-School and Community Partnerships Bureau: Canberra.

Epstein, J. L. (1995). School, Family and Community Partnerships: Caring for the Children we Share. Phi Delta Kappa May.

Epstein, J. L. (2005).School-initiated Family and Community Partnerships, this we Believe in Action: Implementing Successful Middle Level Schools. PP 77-96.

Epstein, J. L. (2009), School, Family and Community Partnerships: Your Handbook for Action (3rdEd.). USA Corwin Press.

Epstein, J. L. (2011). School, Family and Community Partnerships: Preparing EYE and Improving Schools (2nd Ed.) Boulder, CO: Westview Press.

Fan, W. & Williams, C. M. (2010). The Effects of Parental Involvement on Students Academic Self-efficacy, Engagement and Intrinsic Motivation. *Educational Psychology 30*:53-74.

Fasina, F. F. (2011). The Role of Parents in Early Childhood Education: A Case Study of Ikeja, Lagos State, Nigeria Covenant University, Ota, Ogun State. *Global Journal Human Social Science,* Volume 11 Issue 2 PP 65–79.

Gall, M. D., Gall, J. P. & Borg, W. R. (2007). Educational Research. An Introduction, (8th ed.). New York, NY: Person Education.

Gall, M. D., Gall, J. P. & Borg, W. R. (2015). Applying Educational Research: How to Read, Do and Use Research to Solve Problems of Practice (7th ed.). New York, NY: Pearson Education.

Gesare,L.O.(2012):"*AStudyof ParentalInvolvementinPre-schoolers'' EducationWorkinDandora Educational Zone."* Unpublished MEd Thesis, University of Nairobi, Kenya.

Gikonyo, G. (2013). "Influence of Home-School Collaboration on Academic Achievement of PRE-SCHOOL Pupils in Kahuro District, Murang'a County, Kenya.*"* Unpublished University of Nairobi, MEd. Thesis. Nairobi, Kenya.

Goodall, J. &Vorhaus, J. (2011). Review of Best Practice in Parental Engagement. Research Report DFE-RR 156. London, UK: Department of Education and Skills

Guo, K. (2015). Asian Migrant Parents and New Zealand Early Childhood Teachers' View of Parent -Teacher Relationships. *NZ Research in Early Childhood Education, Vol 8.*

Guolang, E. (2010). "Effects of Parental Involvement in Education. A Case Study in Namibia.*"* University of Iceland. Educational Administration MEd. Thesis.

Hair, F. J., Wolfinbarger, C. M., Money, H. A., Samouel, P. & Page, J. M. (2015). Essentials of Business Research Methods. Retrieved at 4.00 P.M. on 17th May 2020from:http://www.worldcat.org//title/essentials-of-business-research-methods/oclc/904437648

Henderson, A., T. & Bella, N. (2011). A New Generation of Evidence; The Family is Critical to Students Achievement. Erick Digest Clearing House.

Henning, J., Karen, (2013). "Attitude and Achievement: A Study of Parent and Student Activities Towards Education and their Effects on Achievement." Unpublished Wichitta State University. MEd Thesis.

Hernderson, A., T. & Mapp, M. (2010). Parental Involvement and Students' Academic Achievement: A Meta-Analysis Educational Psychology Review

Hill, N. E. & Tyson, D. F. (2009). Parental Involvement in Middle School A Meta-Analytic Assessment of the Strategies that Promote Achievement. Developmental Psychology, 45(3),740-763. Retrieved at 5.20 P.M. on 5th May 2020 from; https://doi.org/10.1037/a0015362

Hill, N., E & Craft, S. (2013). Parental-School Involvement and Childrens' School Performance: Mediated Pathways among African American and Euro-American Children. *Journal of Educational Psychology 95* (3), *74-83.*

Hinojosa, S. (2014). "Predictors of Initial Level and Change Over Time of Academic Enablers During the Kindergarten Year: The Role of Gender, ECDE, and the Home Learning Environment."Unpublished University of South Florida. MEd Thesis. USA.

Hoover-Dempsey, K.V. & Sandler, H. M. (2015). Parent Involvement in Children's Education in Japan: Why Does it Make a Difference? Teachers College Records, 97, 310-31.

Hornby, G. & Witte, C. (2010). A Survey of Parental Involvement in Middle Schools in New Zealand. *Pastoral Care in Education,* Vol. 28, No. 1, pp. 59-69.

Hornby, G. (2011) Parental Involvement in Childhood Education: Building Effective School-Family Partnerships. Springer Science & Business Media, Berlin, Heidelberg.
https://doi.org/10.1007/978-1-4419-8379-4

Huang, C. L. (2017). Family, Schools and Taiwanese Children's Outcomes: Educational Research, 49(2):115-125.

Husen, S. D. &Mansor, R. (2018). Parents Involvement in Improving Character of Children. through Mathematics Learning. *JurnaliimiahPeuradeun,* 6*(1),*41 http://doi.org/10.26811/peuradeun.v6:1.178.

Imgram, M., Wolfe, R. B. & Lieberman, J. M. (2017). *The Role of Parents in High-Achieving Schools Serving Low-Income, At-Risk Populations*. *Education and Urban Society, 39*(4), 479–497. Retrieved at 10.30 A.M. on 6th December 2019 from; https://doi.org/10.1177/0013124507302120

Irvin, M. J., Farmer, T.W., Leung, M., Thompsom, J. H. & Hutchins, B.C. (2010). School, Community and Church Activities: Relationship to Academic Achievement of Low Income African American Early Adolescents in the Rural Deep South. *Journal of Research in Rural Education, 25(4),* 1-21.

Jebii, M., Odongo, C. &Aloka, P. (2016). Parental Strategies Enhancing Level of Involvement Among EYE pupils in Nandi Central Sub-County, Kenya. *International Journal of Education and Research, Vol. 4 No. 1* pp 123-136.

Jeynes, W. H. (2015). *Parental Involvement and Pupils performance*: A Meta-Analysis. Retrieved on 12th February 2020 at 5.20 P.M. from: http://www.hfrp.org/publications.resources/browse our publications /parental-involvement-and-pupils performance-a-meta-analysis.

Joan, T. (2016). "Factors Influencing Grand Parent and Grand Child Communication Across Sex- Related Topics in Kenya." Unpublished Duke University. Masters Thesis. Trinity, North Carolina, United States.

Kaberere, V., Makewa, T., Muchee, T. & Role, E. (2013). Parental Involvement in High and Low Performing Schools in Gasabo District, Rwanda. Review of Educational Research.

Kaptich, P., Kiplagat, H. K., Munyua, J. (2019). Monitoring Pupils Academic Performance at Home through Parent Participation in Educational Activities: Focus on Public Primary Schools in Ainabkoi Sub-County. 15*(2)62-71*. Retrieved at 3.19PM on 12th July 2021from: http://dx.doi.org/10.2103/jems.v15.n2.p2

Kibet, K.P. (2010). "Teacher-Parent Partnership for Enhancing Quality in ECDE Education: A Case Study of Uasin-Gishu District, Kenya."UnpublishedKenyatta University. PhD Thesis. Nairobi.

Kimathi, K. (2014). "Parental Involvement in Primary in Std 3 Pupil Reading at Home in Igembe South Constituency." Unpublished Kenyatta University. MEd Thesis.

Koskei, B. K. (2014). "Influence of Parental Involvement on Students' Academic Performance of Public Mixed Day Secondary Schools in Kuresoi Sub-County, Nakuru County, Kenya." Unpublished Moi University. MEd Thesis.

Kothari, C. R. (2009). Research Methodology: Methods and Techniques (Second Revised Edition). New Age International Publishers, New Delhi.

Kraft, Matthew A. & Shaun, M. D. (2011). The Effect of Teacher-Family Communication on Student Engagement: Evidence from a Randomized Field Experiment. *Journal of Research on Educational Effectiveness* 6(3), 199-222.

Lamb, M. E. (2004). *The role of the father in child development* (4th ed.). New York: Wiley and Sons, INC.

Larocque, M., Kleiman I. & Darling, S. (2011). Parental Involvement: The Missing Link in School Achievement. *Teaching and Teacher Education, 18(7).* 1-25.

Lee. J. S.& Bowen, N. K. (2012). Parental Involvement, Cultural Capital and the Achievement Gap among Elementary School Children. *American Research Journal, 46-81.*

Lemmer, E.N. (2016). Parent Involvement in Teacher Education in South Africa. *International Journal about Parents in Education,* 1(9) :218-229.

Manasi, E., Ndiku, J., Sang, A. &Ejakait, E. (2014). The Influence of Parental Involvement in Provision of Teaching - Learning Resources on Educational Outcomes: An Empirical Study of Teso North Sub-County Primary Schools. Retrieved at 2.14 P. M. on 12th February 2020 from; https://doi.org/10.14738/assrj.21.641

Mani, A., Mullainathan, S., Sharif, E, & Zhao, J. (2013). Poverty Impedes Cognitive Function. *Science 341(6149)*, 976-980.

Masila, V. (2012). Black Parental Involvement in South African Rural Schools: Will Parents Ever Help in Enhancing Effective School Management? *Journal of Educational and Social Research.* Vol. 2 (2).

Mbwesa, K. J. (2006). Introduction to Management Research, a Student Hand Book. Nairobi, Kenya: Jomo Kenyatta Foundation.

McBride, B.A., Dyer, W. J., Liu, Y., Brown, G. L.& Hong, S. (2009). The Differential Impact of Early Father and Mother Involvement on later Pupils performance. *Journal of Educational Psychology, 101*(2),498-508. http://doi.org/10.1037/90014238.

Melhuish, E. C., Sylva, K., Sammons, P., Siraj-Blatchford, I., Taggart, B., Phan, M. &Malin, A. (2008). Preschool Influences on Mathematics Achievement. *Science, 321*,1161-1162.

Merttens, r. & Newland, A. (2013). How Works:Shared Mathematics and Shared Writing. In Bastiani, J. and Wofendale, S (Eds.). Home to School Work in Britain, Review; Reflection and Development (pp.106-117. London, UK: David Fulton).

Mesman. J, Marinus, H. Van I. Marrian J. Bakersman, [K. (2011). Unequal in Opportunity, Equal in Process: Parental Sensitivity Promotes Positive Child Development in Ethnic Minority Families. Retrieved at 6.09AM on 4th February 2021 from: https://doi.org/10.1111/j.1750-8606.2011.00223.

Michelle, K. E. (2012). "Teacher-parent Interactions: A Study of the Dynamics of Social Influence." Unpublished Edith Cowan University. PhD Thesis.

Ministry of Education and Youth (2014), Every Child Can Learn, Every Child Must Learn. https:/moey.gov.jm

Ministry of Education: Competency Based Curriculum Guidelines on Parental Empowerment and Engagement (2019). Kenya Institute of Curriculum Development.

Missall, K.,Hajinoski, R. L., Caskie, G.L., &Repasky,P. (2015).Home Numeracy Environments of Pre-Scholars: Examining Relations among Mathematical Activities; Parent Mathematical beliefs and Early Mathematical Skills. *Early Education and Development. 26*(3), 356-376.

Mugenda, O. & Mugenda, A. (2010). Research Methods: Qualitative & Quantitative Approaches. Nairobi: African Centre for Technology Studies.

Mugenda, O. M., & Mugenda, A. G. (2013). Research Methods: Quantitative and Qualitative Approaches. Nairobi: Acts Press.

Muindi, K., K. &Twoli, M. (2010). Instructional Methods in Education. (Unpublished Module) Kenyatta University.

Muir, T. (2012). Numeracy at Home: Involving Parents in Mathematics Education, *International Journal for Mathematics Teaching and Learning*, 1-13. Retrieved from: http://www.cimt.plymouth.ac.uk/jounal/muir.pdf

Mulei, E. (2012). "Home Based Factors Influencing Kenya Certificate of Primary Education Examination Performance in Public Primary Schools in Yatta Division, Kenya." Unpublished University of Nairobi. MEd Project.

Mullainathan, S., &Shafir, E. (2013). Scarcity. Why Having too Little Means so Much. Macmillan.

Muola, J., M. (2010). A Study of The Relationship between Academic, Achievement, Motivation and the Home Environment among Standard 8 Pupils. *Educational Research and Review, 5(2),* 213-217.

Murray, C. (2010). Parent and Teacher Relationships as Predictors of School Engagement and Functioning among Low- income Urban Youth. *Journal of Early Adolescence, 29(3),* 376-404.

Ngumbo, H. (2006). Guidelines on Social Study Paper (SSP) Nairobi: Kenya Institute of Special Education.

Nunez, J., Suarez, N., Cerezo, R., Maurao, R., & Valley A. (2015). Homework and Academic Achievement across Spanish Compulsory Education. *Educational Psychology*

Nyakoni, J. (2012). "Influence of Parental Involvement on Children's Achievement in Mathematics Activities in Selected Schools in Kiogoro Division, Kisii County." Unpublished University of Nairobi. MEd Project.

Nyarko, K. (2011). Parental Involvement: The Case of Ghana. *Journal of Emerging Trends in Educational Research and Policy Studies.* Vol 2, Issue 5, pp378.

Nzabonimpa, J, P. Abbott, P. Tukahabwa, D & Sapsford, R. (2010). Girls into Science and Technology. Retrieved on 17th January 2020 at 3.05 p.m. from; scholar.google.com/citations?user=UmrefjTQAAAAJ&hl=en#d

Okado, Y., Bierman, K. & Welsh, J. (2014). Promoting School Readiness in the Context of Social-economic Adversity: Associations with Parental Demoralization and Support for Learning. *Child and Youth Care Forum,* 43, (3), 353-371.

Okantey, G. (2008). Facilitating Educational Attainment and Pupils performance: Science Bound Parents Program Purdue Extension, Marion County. 6640 intech BLVD. Ste. 120. Indianapolis, IN 4627.

Olatoye, R. A. &Ogunkola, B. T. (2008). Parental Involvement, Interest in Schooling and Science Achievement of Junior Secondary School Students in Ogun State, Nigeria. College Teaching Methods & Styles Journal. Retrieved at 12. 30 P.M. on 11th October 2019 from: https://do:10.19030/ctms.v4i8.5563

Olmstead, C. (2013). Using Technology to Increase Parent Involvement in Schools. Tech Trends: *Linking Research and Practice to improve Learning, 57(6),* 28-37.

Orodho, J. A. (2004). Techniques of Writing Research Proposals and Reports in Education and Social Sciences. Nairobi: Masola Publishers.

Orodho, J. A. (2009). Evaluation of Education and Social Science Research Methods. Nairobi: Kanezja Enterprise.

Osei-Akodo, I., Chowa, G. &Ansong, D. (2012). Parental Involvement and Academic Performance in Ghana. Youth Save Research Brief, CSD Publication No. 1.

Oso, W. O. &Onen, D. (2009). *A General Guide to Writing Research and Proposal and Report*: A Handbook for Beginning Researchers Revised Edition, Jomo Kenyatta Foundation.

Oundo, E. N., Poipoi, S. & Were, D. S. (2014). Relationship between Parents' Attitude towards Educational Involvement and Academic Performance of Day Secondary Schools Students in Samia Kenya. *International Journal of Human Resource*. DOI: 10.5296/ijhrs. V4i3.5964.

Piana, R. C. (2011). A Degree is Not Enough: Teachers Need Stronger and More Individualized Professional Development Support to be Effective in the

Classroom. In E. Zigher, W.S., Gilliam and W.S. Barnett (Eds)The Prek Debates, 64-68. Maryland Brooks Publishing.

Pineda-Herrero, P., Belvis, E., Moreno, M. &Ucar, X. (2010). Is Continuing Training useful for EYE? Effects of Training on EYE and Centres. *European Early Childhood Education Research Journal, 18(3),* 257-271. Retrieved on 16th May 2019 at 3.20 P.M. from; http://eric.ed.gor/?id=Ej896921

Quilliams, L. &Beran, T. (2009). Children at Risk for Academic Failure: A Model of Individual and Family Factors. *Exceptionality Education International, 19(2),* 63-76.

Regasa, G. & Taha, M. (2015) Perception of Parents towards the Academic Performance of Female Students: The Case of KuttoSrfella Primary School in Sodo Zuria Woreda, Southern Ethiopia. *Journal of Education and practice,22*(6), 73-79.

Reynolds, D., Bollen, R., Creemers, B., Hopkins, D., Stoll, L. &Lagerweij, N. (2009). Making Good Schools; Linking School Effectiveness and School Improvement. Retrieved on 2ndFebruary 2020 at 10.00 A.M. from amazon.com/Making-Good-School-Effectiveness-Improvement/dp/04151313023.

Rogers, T., Feller, a., (2018). Reducing Student absences at Scale by targeting Parents misbeliefs. Nat Hum Behav 2, 335-342 (20!8). http:// doi.org/10.1038/s41562-018-0328-1

Sad, N. &Gurbuzturk, O. (2010). Primary School Parents' Level of Involvement into their Childrens Education. *Educational Science Theory and Practices.*

Sanders, M. G. & Sheldon, S. B. (2009). *Principals Matter: A Guide to School, Family, and Community Partnerships.* Corwin: A SAGE Company.

Senler, B. &Sungur, S. (2009). Parental Influences on Students' Self-concept, Task Value Beliefs, and Achievement in Science. *The SpanishJournal of Psychology,* 12(1), 106-117.

Sessional Paper No. 1 of 2005 on Policy Framework for Education, Training and Research. Nairobi: Government Printers.

Sheldon, S. B. & Epstein, J. L. (2005). Involvement Counts: Family and Community Partnerships and Mathematics Achievement. *Journal of Educational Research 98*; 196-206.

Shiffman, C. (2011). Making it Visible. An Exploration of how Adult Education Participation Informs Parents Involvement for School Age Children. *Adult Basic Education and Literacy Journal. 5(3),* 161-170.

Siririka, G. (2016). "An Investigation of Parental Involvement in the Development of their Children's Literacy in a Rural Namibian School." Unpublished Grahamstown Rhodes University. MEd Dissertation.

Skwarchuk, S. L. (2009). How do Parents Support Pre-scholar' Numeracy Learning Experiences at Home? *Early Childhood Educational Journal,* 37(3), 189-197. Retrieved at 3.20 P.M on 23rd June 2020 from: https://doi:10.1007/s10643-009-0340-1

Sloan, T., R. (2010). A Quantitative and Qualitative Study of Math Anxiety Among EYE. *The Education Forum, 74(3),* 242-256.

Small, M, L. &Gose, L., E. (2020). How do Low-income People Form Survival Networks? Routine Organisations as Brokers. *The Annals of the American Academy of Political and Social Science. 689(1),* 89-109.

Sonnenschein, S., Metzger, S.R., &Thompson, J., A. (2016). Low Income Parents Socialization of their Pre-scholars early reading and Math Skills. Research in Human Development 13(3), 207-224.

Stacey, T. (2015). The Influence of Parent Attitudes and Involvement on Children's Literacy Achievement. Educational and Human Development. Retrieved at 11.00 A.M. on 9th April 2020 from; http://digitalcommons.brockport/ehd_thesis

Stanley, A., Beamish, W. &Bryer, F. (2013). Using Stakeholder Recommendations to Improve Learning: Involving the School Community in Researching Practice. In B. Bartlett, F. Bryer, and D. Roebuck. Educating: Weaving Research into Practice. Conference paper. Griffith University: Brisbane, Australia.

Stewart, D. &Shamdasam, P., N. (2014). Focus Group Theory and Practice. Thousand Oaks: Sage Publications.

Tarsilla, M. &Ndirangu, L., M. (2014). Parental Involvement in their Children's Academic Achievement in Public Secondary Schools. International Journal of Education and Research. 2 (November, 2014).

Taunyana, P. (2010) Multicultural Literacy States at Home: Supporting Parental Involvement in Multicultural Education. *Childhood Education*

Thompson, J. & Stryker, A. (2010). Tale of Two Talents: How Two Early Childhood Teacher teachers use Peer Reflection to Examine their Practices. *Journal of Early Childhood Teacher Education, 31(2),* 185-199. http://doi:1080/10901021003781288

Tuyisenge, S. (2014). "Determinants of Parents' Involvement in their PRE-SCHOOL Children's Education in Gasabo District, Kigali City, Rwanda." Unpublished Kenyatta University. MEd Thesis.

UNICEF (2012). The State of the World's Children2012: Children in an Urban World.

United States Department of Education (2016). Every Student Succeeds Act (ESSA). United States Department of Education.

Van Voorhis, F.L., Maier, M. F., Epstein, J, L. & Lloyd, C. M. (2013). The Influence of Family Involvement on the Education of Children aged 3 to 8. New York. NY Centre on School, Family and Community Partnership, MDRC.

Weiss, H. B., Kreider, H., Levine, E., Mayer, E., Stadler, J. & Vaughan, P. (2016). *Beyond the* Teacher-parent *Conference: Diverse Patterns of Home-School Communication.* AmericanEducational Research Association, Annual conference, San Diego, CA.

Wilder, S. (2014). Effects of Parental Involvement on Academic Achievement: A Meta-synthesis. Educational Review Retrieved at 9.30 A.M on 12th November 2019 from: https://doi.org/10.1080/0013911.2013.780009

APPENDIX I:PRE-SCHOOL PARENT'S QUESTIONNAIRE (PPQ)

INFLUENCE OF PARENTAL PARTICIPATION ON LEARNERS PERFORMANCE IN MATHEMATICS IN SELECTED PUBLIC PRE-SCHOOL CENTRES IN EMUHAYA SUB - COUNTY, VIHIGA COUNTY, KENYA.

- There is no right or wrong answer. We are interested in your personal experience and opinion.
- For each item, please choose the answer which best describes your experiences.
- The confidentiality of your information is guaranteed.
- Do not write your name anywhere on this questionnaire
- Remember that by taking part in this study, you are contributing to our knowledge about promoting pupils' educational success.

Section A: DEMOGRAPHIC INFORMATION

(Please tick appropriately)

1. Please indicate your gender

   Male ( ) Female ( )

2. What is your age bracket?

   20 years and below ( )
   21-30 years ( )
   31-40 years ( )
   40 years and above ( )

3. What is your Marital Status?

   Married ( )
   Single ( )
   Divorced ( )
   Widowed ( )

4. What is your Occupation?
   White collar job ( )
   Semi-skilled job ( )
   Business ( )
   Peasant ( )
5. What is the level of your Education?
   Primary ( )
   Secondary ( )
   College ( )
   University:
   i) Undergraduate ( )

ii) Masters ( )
iii) PhD ( )

6. What is your average monthly income in KShs?

Below 1500 ( )

1500-1999 ( )

2000 – 5500 ( )

5501 and above ( )

Section B: PARENTS RATINGS OF THEIR PARTICIPATION IN LEARNER'S MATHEMATICS OUTCOMES

Please tick inside the spaces provided the choice that you feel suits your situation from the choices provided by the Likert Scale (1-5)

5= Strongly Agree (SA)	4= Agree (A)	3= Undecided (UD)
2= Disagree (DA)	1= Strongly Disagree (SD)	

Part One: Parental Learning at Home Support and Mathematics Outcomes of EYE pupils

No.	Response Item	SA	A	UN	DA	SD
1	I talk to my child about Mathematics activities he/she does at school					
2	I help my child with homework on Mathematics activities					
3	I try to find out what Mathematics activities the child likes doing at school					
4	I talk with the child about his/ her Mathematics achievement and performance					
5	I set rules about how long the child is allowed to play					
6	There are rules about the television programmes the child is authorised to watch					
7	I praise my child's school Mathematics achievements					
8	I control the child's behaviours at home					
9	I guide and counsel my child					

Part Two: Parental Home-School and School-Home Communication and Mathematics Outcomes of EYE pupils

No.	Response Item	SA	A	UN	DA	SD
1	I wait for my teacher to call me when I have not paid the school fees					
2	I participate in Parent Association (PA) meetings.					
3	I communicate with the teachers about the child's school results					
4	I wait for the teacher to communicate with me about the child's Mathematics performance					
5	I communicate with the teacher about how the child feels at school					
6	I use the mobile number of my child's class teacher to tell him/her of my child's Mathematics problems					
7	I talk to the subject teachers of my child about the child's strength and weakness in Mathematics activities					
8	I discuss with the teachers about my child's academic progress.					
9	I communicate to teachers with respect to mathematics activities my child likes at home					

Part Three: Parental Volunteering in School Activities and Mathematics Outcomes of EYE pupils

No.	Response Item	SA	A	UN	DA	SD
1	I participate in Parent Association Meetings (PAM).					
2	I attend organized sporting activities of the school.					
3	I attend organized functions of the school such as speech and prize giving days.					
4	I always visit the school to follow up on my child's academic progress					
5	I participate actively in activities involving parents and teachers in school.					
6	I make donations during school prize award day					
7	I volunteer in classroom or on field trips					

8	I attend parents' meetings to discuss child's learning or behaviour.					

Part Four: Parental Attitude and Mathematics Outcomes of EYE pupils

No.	Response Item	SA	A	UN	DA	SD
1	I love to encourage my child to tackle Mathematics problems					
2	Personally, I love mathematics					
3	I buy supplementary Mathematics activity books for my child for practice at home					
4	I encourage and motivate teachers teaching Mathematics activities					

THANK YOU

APPENDIX II: INTERVIEW GUIDE FOR HEAD TEACHERS (IGHT)

1. a) What is your highest professional qualification?

___

b) Have you undergone any special training on pre-school matters?

___

c) How long have you served as a Head teacher?

___

2. a) What qualities do you feel are important to support children's learning outcomes? Please elaborate:

___

___

___

b) How does the teacher-parent relationship affect children's individual needs?

___

___

3. a) How are positive relationships established with parents?

___

___

b) How would you motivate parents to participate in their children's education?

_____
___

_____
___

4. Comment on how parents support their children with Mathematics activities.

_____

_____
_____

5. a) Elaborate on how parents communicate with the school in order to enhance Mathematics performance of their children.

_____
___

_____
___

b) Explain how parents get involved in school activities to promote Mathematics performance of their children.

_____
___

_____
___

6. Why is parental involvement essential in the development of children's learning outcomes and specifically in Mathematics activities?

_____
___

_____
___

7. a) Comment on how parents attend school events that promote Mathematics outcomes.

_____
___

_____
___

b) What perspective do you have regarding reinforcing of Mathematics activities both at home and school?

_____
___

_____
___

8. Comment on how parents communicate to the school about their child's educational achievements andbehaviour.

_____
___

_____
___

9. Comment on how teachers communicate to parents about the child's educational achievements andbehaviour.

_____
___

_____

___

10. Comment on how parents participate in organized school activities to enhance Mathematics outcomes of their children.

_____

___

_____

___

11. Comment on the attitude of parents towards Mathematics outcomes of their children.

_____

___

_____

___

APPENDIX III:PRE-SCHOOLTEACHERS' QUESTIONNAIRE (PTQ)

The purpose of this study is to investigate ParentalParticipationInfluence on Learners mathematics performance in Public EYE centres in Emuhaya Sub County, Vihiga County, Kenya. Kindly tick (√) or write the correct response(s) in the space(s) provided. The information given will be treated with confidentiality and used for the research purpose only.

SECTION A: DEMOGRAPHIC INFORMATION

What is the name of your pre-school?

1. What is your gender?
   - Male ( )
   - Female ( )
2. What is your age?
   - Below 25 years ( )
   - 25-40 years ( )
   - Over 40 years ( )
3. What is your highest level of academic qualification?
   - KCPE ( )
   - KCSE ( )
   - Degree ( )
   - Any Other, Specify ( )
4. What is your highest level of professional qualification?
   - Certificate ( )
   - Diploma ( )
   - Degree ( )
   - Masters ( )
   - Any Other, Specify ( )
5. How long have you served as a teacher?
   - Below 2 years ( )
   - 2-5 years ( )
   - 5 years and above ( )

SECTION B: PARENTAL INFLUENCE ON MATHEMATICS OUTCOMES

1. What is the Influence of parental home support on children's Mathematics outcomes?

_____

___

_____

___

2. Do parents assist their children with homework on Mathematics activities?
   - Always ( )
   - Rarely ( )
   - Not at All ( )
3. How do parents communicate to the school about their children's educational achievements andbehaviour?
   - School visit ( )
   - Phone call ( )
   - Text message ( )
   - Letters ( )
   - Diaries ( )
4. How do teachers communicate to the parents about their children's educational achievements andbehaviour?
   - Home visit ( )
   - Phone call ( )
   - Text message ( )
   - Letters ( )
   - Diaries ( )
5. How often do parents participate in organized school activities?
   - Rarely ( )
   - Often ( )
   - Not at All ( )
6. Comment on the attitude of parents towards Mathematics outcomes in your pre-school.

_____

___

Indicate the scope to which you agree with the following statements:

No.	Response Item	SA	A	UD	DA	SD
1	Parent's follow-up their child's progress in Mathematics					
2	Parents participate in organized school activities					
3	Parents attend Parents Teachers Association meetings					
4	Parents provide supplementary Mathematics activity books					
5	Parents assist their children with Mathematics home work					
6	Parents visit the school to check on their child's Mathematics outcomes					
7	Parents communicate their children's Mathematics					

	strengths and weaknesses					
8	Parents provide space for doing homework to their children					
9	Parents are friendly to teachers					

APPENDIX IV: FOCUSED GROUP DISCUSSION GUIDE FOR PARENTS

(FGDGP)

To what extent do parents:

Discuss with their children on their academic school progress
Talk to their children about activities they do at school
Try to find out what their child likes doing at school
Set rules about how long the child is allowed to play
Set rules about the television programmes the child is authorised to watch
Applaud their children school achievements
Control their children's behaviours at home
Guide andcounsel their children

To what extent do parents:

Wait for the teacher to call them when they have not paid the school fees
Participate in Parents Association Meetings (PAM)
Communicate with the teachers about the child's school results
Communicate with the teachers about how their children feel at school
Use the mobile number of their children's class teacher to tell them of their children's problems
Talk to the subject teachers of their children about the children's strength and weaknesses
Discuss with the teachers about their children's academic progress
Communicate to teachers with respect to mathematics activities their children like at home

To what extent do parents:

Participate in Parents Association Meetings (PAM)
Attend organized sporting activities of the school
Attend organized functions of the school such as speech and prize giving days
Always visit the school to follow up on children's academic progress
Participate actively in activities involving parents and teachers in school
Make donations during school prize award day

To what extent do:

Parents watch informative television programmes with their children

Parents give guidelines to their children on how to tackle their homework
Parents provide learning and reference materials for their children
Parents always participate in volunteer work called upon by their children's school
Parents always check their children's homework
Parents guide their children when and where to do studies at home

APPENDIX V: INTERVIEW SCHEDULE FOR PROGRAMME OFFICER (ISPO)

1. a) What is your highest professional qualification?
_____
_____
b) Have you undergone any special training in pre-school matters? _____
_____
c) What is the influence of your answer to question 1(a) and (b) on the quality of pre-school Mathematics activities taught in the Sub County?
_____
_____-
_____
2. What is the influence of your answer in question 1(c) on Mathematics outcomes ofpre-school children in the Sub County?
_____
_____
3. What is your opinion on parental participation in pre-school Mathematics outcomes under the following sub headings?
   i. Parental home support.
   _____
   _____
   ii. Home school parental communication.
   _____
   _____
   iii. Parental involvement in child's school activities.
   _____
   _____
   iv. Parental attitude towards Mathematics outcomes of EYE pupils.
   _____
   _____
   _____
4. What is the influence of your answer in question 4 on outcomes in Mathematics in early years education centres in the Sub County?
_____
_____
5. In your opinion, what could be done to strengthen parental involvement in mathematics

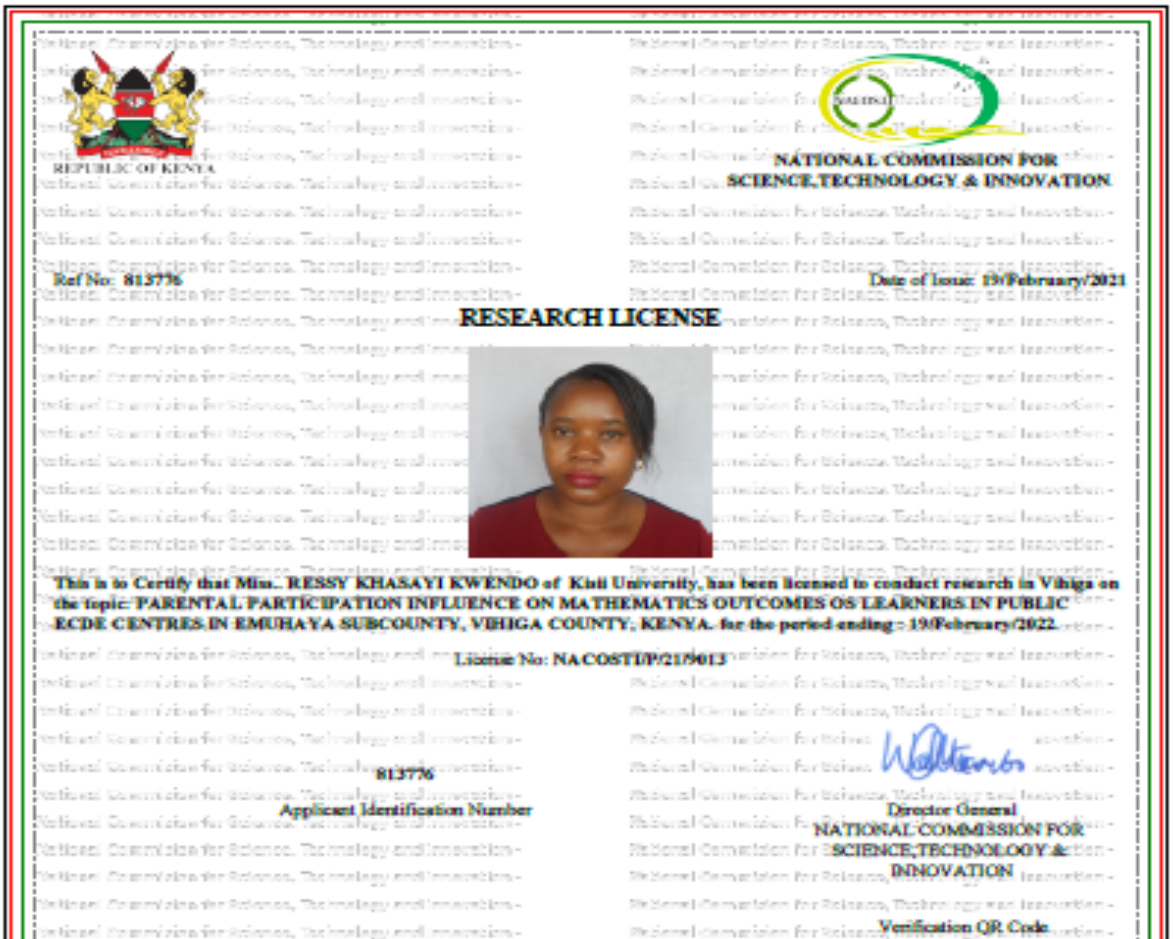
outcomes?_____
_____
_____
_____

APPENDIX VI: OBSERVATION CHECKLIST FOR THE LEARNER (OCL)

The teacher will determine the tasks to be given to the learners and rate them accordingly.

TASKS	Exceeding Expectations	Meeting Expectations	Approaching Expectations	Below Expectations
Able to count 1-20				
Ability to arrange objects				
Ordering				
Matching and pairing				
Number recognition				
Number value				
Number writing				
Putting together				
Taking away				

APPENDIX VII: RESEARCH PERMIT



REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 813776

Date of Issue: 19/February/2021

RESEARCH LICENSE

This is to Certify that Miss. RESSY KHASAYI KWENDO of Kisii University, has been licensed to conduct research in Vihiga on the topic: PARENTAL PARTICIPATION INFLUENCE ON MATHEMATICS OUTCOMES OS LEARNERS IN PUBLIC ECDE CENTRES IN EMUHAYA SUBCOUNTY, VIHIGA COUNTY, KENYA. for the period ending : 19/February/2022.

License No: NACOSTI/P/21/9013

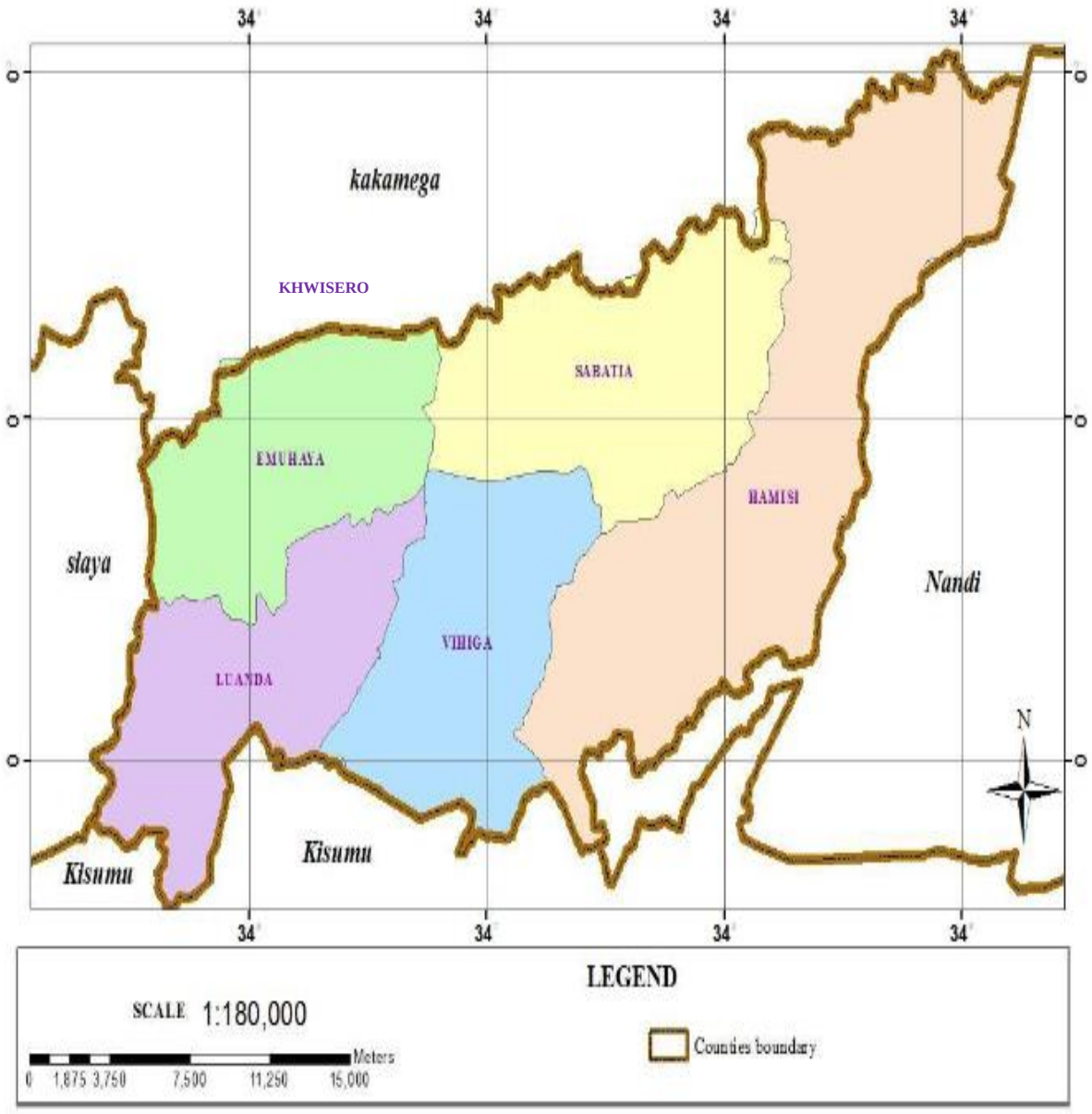
813776

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

APPENDIX VIII: MAP OF EMUHAYA SUB COUNTY



APPENDIX IX: RESEARCH LETTER

KISII UNIVERSITY

Telephone: 058 30826
Facsimile: 058 31140
KISII

P O BOX 408 – 40200

SCHOOL OF EDUCATION & HUMAN RESOURCE DEVELOPMENT

APPENDIX X: COVER LETTER

Dear Sir/madam,

LETTER OF PERMISSION

I am a Masters student of the Kisii University undertaking a study about the Influence of Parental Participation on Mathematics Outcomes of Learners in Public ECDE Centres. Since the study is supposed to be undertaken in Emuhaya Sub County Kenya, I would be extremely grateful if you can allow me to use your school as the population of the study.

Secondly, since the study is to find out the Influence of Parental Participation on Mathematics Outcomes of the ECDE Learners, I will appreciate it if you will allow me access to the academic grades of the ECDE learners. I vow for the confidentiality of the information that will be furnished by the respondents.

I hope you will give me the nod and the needed support to undertake the study in your school. Yours sincerely,

Ressy Khasayi Kwendo
(Student)

APPENDIX XI: LETTER FROM SUB-COUNTY DIRECTOR OF EDUCATION

TEACHERS SERVICE COMMISSION

Email: cdirvihiga@tsc.go.ke
Web: www.tsc.go.ke
When replying please quote

Ref. N°/EMU/: TSC NO. 537766

EMUHAYA SUB COUNTY
P.O BOX 34- 50314
EMUHAYA, KENYA

1/3/2021

RESSY KHASAYI
KWENDO

TO WHOM IT MAY CONCERN

RE: RESSY KHASAYI KWENDO TSC NO. 537766

The above mentioned person is a teacher at Ebuyalu Primary School and a part time student at Kisii University. As part of her studies she is required to carry out a research on the topic; **PARENTAL PARTICIPATION INFLUENCE ON MATHEMATICS OUTCOMES ON LEARNERS IN PUBLIC ECDE CENTRES IN EMUHAYA SUBCOUNTY**. She will carry out her research from 2nd March, 2021 to 4th March, 2021.

Any assistance accorded to her will be highly appreciated.

TSC SUB COUNTY DIRECTOR
EMUHAYA SUB COUNTY

JACINTA KERICH
FOR: SUB COUNTY DIRECTOR
EMUHAYA SUB COUNTY.

APPENDIX X: PLAGIARISM SUMMARY

INFLUENCE OF PARENTAL PARTICIPATION ON LEARNERS PERFORMANCE IN MATHEMATICS IN SELECTED PUBLIC EARLY YEARS EDUCATION CENTRES IN EMUHAYA SUB - COUNTY, VIHIGA COUNTY, KENYA

ORIGINALITY REPORT

19%	17%	4%	7%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	erepository.uonbi.ac.ke Internet Source	2%
2	Submitted to Kenyatta University Student Paper	1%
3	ir-library.ku.ac.ke Internet Source	1%
4	hdl.handle.net Internet Source	1%
5	Submitted to Mount Kenya University Student Paper	1%
6	ir.cut.ac.za Internet Source	<1%
7	scholarworks.waldenu.edu Internet Source	<1%
8	uir.unisa.ac.za Internet Source	<1%