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## Impact of Inclusive Remedial Teaching on Performance of Pupils with Mathematics Difficulties in Lower Primary Schools in Butere District, Kenya

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### **Abstract:**

*Our world now regards being educated so highly making education a human right. Consequently, it is now expected that every child, regardless of their social status, physical or any other disability should access to quality education. Education for All (EFA) and the Millennium Development Goals (MDGs) in education are major international commitments to the achievement of universal primary education for all children and the inclusion of children with SNE in education at all levels. Globally: Recent statistics from UNESCO's EFA Global Monitoring Report indicate that approximately 27 million children in the Common wealth do not attend school due to special needs education such as those with Mathematical Difficulties. While there are no hard figures to illustrate how many children with Mathematics Disabilities are not in school, studies indicate that 10 -20% of children in a regular class in India have MD and 6-10% in the US (Jordan, 2010). In Kenya 20 – 24% children in regular primary schools have MD These children struggle a lot in their education, become stigmatized and may drop from schooling if early intervention is not given. Since most of them are in the regular primary schools, effective intervention can be done in the same schools. The UN Secretariat's Education Section adopted the UN Convention on the Rights of People with Disabilities in March 2007 and started the process of compiling lessons from promising practices in the provision of inclusive education, especially for children with disabilities such as MD. In Kenya: The Kenyan Government conducted a National Survey for Persons with Disabilities in 2008 and found that 4.6% of Kenyans experience some form of disability, comparing favorably to the WHO's estimate of 10% globally. From studies reviewed, children with MD form a population of about 20% of the entire population in the regular primary schools and hence the need to practice inclusive remedial teaching to avoid them becoming stigmatized and excluded from education due to a mixture of fear, shame, and ignorance. Purpose: this study sought to examine the effectiveness of inclusive remediation of children with MD in primary schools in Butere Sub County, Kakamega County by; assessing the status of early identification of MD and the Impact of Remedial Teaching in a regular primary school (inclusive set up) on the mathematics performance for pupils with MD. Selective factors influencing effectiveness of the inclusive education in the study area were also examined. Research Design: quasi experimental with a pretest and posttest exams to assess the impact of the inclusive remedial teaching on the mathematics performance for pupils with MD and descriptive survey design to gather demographic data from class three mathematics teachers and pupils with MD. Sampling: Stratified sampling was used to sample public and private primary schools for the study plus pupils based on their gender. Purposive sampling was used to sample four private schools (experimental and control), eight class three mathematics teachers and eighty pupils identified with MD respectively for the study. Four public primary schools were sampled systematically (nth=13) and proportionally to the sample size of private schools. A sample frame of 8 teachers and 80 pupils was used in the study. Process: Pupils were screened for MD. Administration of a pre and post Remedial Teaching Test followed. (Samveda Remedial Teaching Model). Questionnaires gathered background data from the teachers. The data was prepared and analyzed by SPSS. Findings: both public and private regular primary schools conducted Early Identification for MD plus Remedial Teaching. Pupils with MD. Remedial Teaching improved performance. Recommendations: To address the marginalization of children with disabilities, and its limiting outcomes, the Kenyan government should commit to make policies that enhance early identification and inclusive remedial teaching for pupils with MD. Furthermore, it should emphasize inclusive education with particular focus to marginalized groups, especially children with special needs and those with disabilities. However, the extent to which this program (of inclusivity) has made an impact on the ground is still a bone of contention.*

**Keywords:** *Inclusive education, remedial teaching, mathematics difficulties, screening procedures*

### **1. Introduction**

Our world now regards being educated so highly making education a human right. Therefore, it is now expected that every child, regardless of their social status, physical or any other disability should access to quality education. Education for All (EFA) and the Millennium Development Goals (MDGs) in education are major international commitments to the achievement of universal primary education for all children and the inclusion of children with SNE in education at all levels. [25]. Recent statistics from UNESCO's EFA Global Monitoring Report indicate that approximately 27 million

children in the Common wealth do not attend school due to special needs education such as those with Mathematical Difficulties. While there are no hard figures to illustrate how many children with Mathematics Disabilities are not in school, studies indicate that 10 -20% of children in a regular class in India have MD [20] and 6-10% in the US (Jordan, 2010). In Kenya 20 – 24% children in regular primary schools have MD (12); [26] &[27].

These children struggle a lot in their education, become stigmatized and may drop from schooling if early intervention is not given. It was against this background that the UN Secretariat's Education Section adopted the UN Convention on the Rights of People with Disabilities in March 2007 and started the process of compiling lessons from promising practices in the provision of inclusive education, especially for children with disabilities such as MD. The focus was to persuade members Kenya being one of them to implement inclusive education.

To address the marginalization of children with disabilities, and its limiting outcomes, the Kenyan government committed themselves to the provision of inclusive education to all children irrespective of their gender, age, and the physical and mental ability. Furthermore, it emphasizes inclusive education with particular focus to marginalized groups, especially children with special needs and those with disabilities. However, the extent to which this program (of inclusivity) has made an impact on the ground is still a bone of contention.

### *1.1. The Purpose of the Study*

The purpose of the study was to examine the effectiveness of inclusive remediation of MD in primary schools in Butere Sub County, Kakamega County. Specifically, the study sought to: assess the impact of Early identification of MD and the Remedial Teaching in a regular primary school (inclusive set up) on the mathematics performance for pupils with MD. Selective factors influencing effectiveness of the inclusive education in the study area were also examined.

To find out better ways of teaching is called inclusive remedial teaching. It is a never ending process. It aims to fulfill the need of diversity. Diversity among students in terms of educational needs acts as the stimuli for this process. This type of class helps to recognize as well as amputation of obstructions. This method relies on the improvement of policies and procedures. Inclusion is a broad term refers to the admittance, contribution and attainment. Attainment comes when students can find the meaning of everything in the syllabus rather than only passing the exams. It basically focuses on the concept that all children should learn. Hence the need for remedial teaching for children with MD is relevant. Inclusive education helps to prepare special educational need to the non-disabled students [25].

It is broadly divided in to two parts: Regular/ partial inclusion and Full inclusion. In regular education students taught for at least half of the day on the basis of availability. Specialized services are being provided inside the classroom. They need to attain very small amount of instructional sessions apart from these outside the class. Speech and language therapy, occupational and/or physical therapy, and social work are also included in the full inclusion program just like mainstreaming practices [1]. This type inclusion program is helpful for students whose needs are easily met in a classroom like those with MD.

A modification on the basis of environmental, teaching and learning helps students to complete the assignments [1]. Using 'push in' strategies all the professionals deliver assistances. No separate classrooms are present in schools that provide full inclusion [7]. Several agencies help students for receiving educations. More focus placed for the students with disabilities.

Now-a-days schools do not differentiate between 'general education' and 'special education' programs. All students who are interested can learn together[21]. Priorities have been given with the acceptance of the United Nations Convention on the Rights of People with Disabilities. Article 24 helps the inclusion of the education system for all the children by giving priority and enthusiasm. This approach helps to recognize and solve disability. Effective support measures helps to achieve the full objective of the goal of full inclusion [22].

Effective inclusive education concept has undergone a long metamorphosis. For instance, the 1983 World Program of Action Concerning Disabled Persons (Article 120) states that all Member States agree that education for persons with disabilities should be carried out, as far as possible, within the general school system. A few years later, the 1989 Convention on the Rights of the Child acknowledged the special needs of children with disabilities, and stated that these children must be guaranteed 'effective access to education in a manner conducive to the child achieving the fullest possible social integration and individual development...' [15]. A second key argument is that everybody benefits from inclusion. Advocates say that there are many children and young people who don't fit in (or feel as though they don't). Moreover, at least one author has studied the impact a diversified student body has on the general education population and has concluded that students with mental retardation who spend time among their peers show an increase in social skills and academic proficiency[24].

## **2. Methodology**

The study adopted quasi experimental with a pretest and posttest exams to assess the impact of the inclusive remedial teaching on the mathematics performance for pupils with MD and descriptive survey design to gather demographic data from class three mathematics teachers and pupils with MD. Stratified sampling was used to sample public and private primary schools for the study plus pupils based on their gender. Purposive sampling was used to sample four private schools (experimental and control), eight class three mathematics teachers and eighty pupils identified with MD respectively for the study. Four public primary schools were sampled systematically (nth=13) and proportionally to the sample size of private schools. A sample frame of 8 teachers and 80 pupils was used in the study. The study involved screening pupils for MD, then administering a pre and post Remedial Teaching Test. (Samveda Remedial Teaching Model from India was domesticated in line with Kenyan syllabus and used for the study. NB. The tool is freely posted for use on the internet). A questionnaire was also used to gather background data from the teachers. The data was

prepared and analyzed by SPSS. The study found that both public and private regular primary schools conducted Remedial Teaching for Pupils with MD. Pupils with MD given Remedial Teaching performed better in mathematics better than those who did not. Factors like gender, type of school, children's ordinal position family size or SES did not influence effectiveness of the Remedial teaching. It was recommended that the Kenya government makes policies to enhance inclusive remedial teaching for pupils with MD and rolls out the Remedial teaching programme to other counties.

### 3. Results and Discussions

Class three teachers were asked to indicate whether they had remedial teaching programme for pupils with MD. Results from data analysis had revealed that all teachers in both private and public primary schools had remedial teaching programmes for children with MD.

The type of remedial teaching used for children with MD was also investigated and the results are presented in Table 1.

School Type	Responses	Frequency	Percentage
Private	Paid private tuition	03	37.5
	Multisensory approach	01	12.5
TOTALS		04	50
Public	Paid private tuition	02	25
	Teaching in ability groups	01	
	Multisensory approach-many l/aids	01	12.5
TOTALS		04	50
Overall Totals		08	100

Table 1: Remedial Programme Used for MD by Type of School

Table 1 indicates that most teachers in both private and public schools conducted paid tuition as a way of helping children with mathematics difficulties. They also used multisensory approaches, and ability groupings. This means that most schools used paid tuition. However, paid tuition was not necessitated by the need for early intervention of MD but a heavy emphasis on exams which forced pupils and parents' demand for it. The private tuition was not even well designed to help learners with MD but merely covered the normal syllabus [16].

Teachers taught children in their schools and at times in other venues outside the school compound. The tuition was paid on hourly or session basis (ranging from Kshs. 1000-1500 and in some cases higher than that). The subjects taught mostly in tuition were those considered important like mathematics, language and sciences. Further research by [29] revealed that besides the private tuition was being done over the weekends; it could also be done after formal classes in the evening when children were already tired or during school holidays. This therefore, raises the question of effectiveness in helping children with MD.

The time class three teachers conducted remedial teaching was also established and the results are presented in Table 2.

	Frequency	Percent	Percent
In the afternoon	67	77.0	77.0
During vocations and Saturdays	6	6.9	6.9
Morning before formal lessons	14	16.1	16.1
Total	87	100.0	100.0

Table 2: Time of Remedial Teaching

Table 2 reveals that most teachers conducted remedial classes for children with MD in the afternoons (77%) or in the morning before formal class lessons (16%). The remaining group of teachers conducted tuition over the weekends or during the school holidays. The findings of the study concurs with that found by [29] which revealed that the time for the tuition was usually over the weekends, after formal classes in the evening when children were already tired or during school holidays.

### 4. Effect of Remedial Teaching Programme on Mathematics Performance of Pupils with MD

The effect of remedial teaching programme on mathematics performance of pupils with MD in the experimental and control groups was investigated. Table 3 presents the results.

	Group	N	Mean	Std. Deviation	Std. Error Mean
Posttest	Experimental	40	53.9231	22.30693	3.57197
	Control	40	33.0352	21.95656	3.16916
Pretest	Experimental	40	53.4872	21.93636	3.51263
	Control	40	39.2917	14.68529	2.11964

Table 3: Impact of Remedial Teaching on the Control and Experimental Group

Table 3 indicates that the mean of the experimental group improved from 53.487 to 53.923 whereas the mean of the control group dropped from 39.291 to 33.035. The results further show that there was a slight increase in the Std Deviation of the experimental group from 21.936 to 22.306 meaning there was increase in lower marks towards the mean which led to an improvement in the overall mean. The std deviation of the control group increased greatly from 14.685 to 21.956 meaning that a number of learners dropped in their average marks leading to a decrease in the overall mean of the control group. Hence the remedial teaching had a positive impact on the learners' score in mathematics.

Further statistical tests were done to establish the difference between the performance of children with MD who received remedial teaching and those who did not. To this end, the following hypothesis was formulated and tested: There is no significant difference in mathematics performance between pupils with mathematics learning difficulties who receive remedial teaching and those who do not.

The t test for independent samples was used to test whether the difference was significant and the results are presented in Table 4 below;

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
POSTTEST	Equal variances assumed	0.53	0.47	4.4	85	0	20.89	4.77	11.41	30.37
	Equal variances not assumed			4.4	80.7	0	20.89	4.77	11.39	30.39
PRETEST	Equal variances assumed	10.4	0	3.6	85	0.001	14.19	3.94	6.36	22.03
	Equal variances not assumed			3.5	63.9	0.001	14.19	4.1	5.99	22.39

Table 4: Independent Samples T Test

Table 4 shows that the ( $t=4.4$ ,  $df=85$  at a  $P$  value  $< 0.000$ ) was highly significant. The lower  $P$  value than 0.005 indicates that there is a significant difference between the performance of the experimental and control groups during the post test. Therefore, the null hypothesis stating that there is no significant difference in mathematics performance

between pupils with mathematics learning difficulties who receive remedial teaching and those who do not was rejected. This implies that the remedial teaching programme enabled children with MD to perform better.

**5. Influence of Gender on the Performance of Pupils with MD**

The influence of gender on the performance of pupils with MD was determined and Table 5 presents the results.

	Sex	N	Mean	Std. Deviation	Std. Error Mean
POST TEST	Male	22	47.2353	21.33521	5.17455
	Female	17	59.0909	22.12284	4.71660
PRE TEST	Male	22	44.3529	23.19736	5.62619
	Female	17	60.5455	18.46677	3.93713

Table 5: Gender Influence on Mathematics Performance of Children with MD

Table 5 shows that boys improved in their mean score from (44 – 47%) in the pre-test and post-test respectively. On the other hand, there was a slight drop among girls from (60-59%) in the pre-test and post-tests. Nonetheless, the changes did not bring about a significant difference in performance between boys and girls with mathematics difficulties who received remedial teaching in the post-test results while a significant difference was observed during the pretest examinations.

Further statistical analysis was done to establish the difference between the performance of children with MD who received remedial teaching and those who did not. To this end, the following hypothesis was formulated and tested: There is no significant difference in performance between boys and girls with mathematics difficulties who receive remedial teaching.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
PRETEST	Equal variances assumed	1.5	.24	-2.4	37	.020	-16.19	6.67	-29.7	-2.7
	Equal variances not assumed			-2.4	30.0	.025	-16.19	6.87	-30.2	-2.2
POSTTEST	Equal variances assumed	.16	.69	-1.7	37	.100	-11.85	7.04	-26.1	2.4
	Equal variances not assumed			-1.7	35.2	.099	-11.85	7.00	-26.1	2.4
		Lower	Upper							

Table 6: Independent Samples Test

Table 6 reveals that the ( $t=0.69$ ,  $df= 35$  at a  $P < 0.99$ ) is more than a  $P$  value of 0.005. The higher  $P$  value indicates that the difference was significant during the pre-test but an insignificant difference in the post test ( $t=1.69$ ,  $df= 37$  at  $P$  value  $<0.001$ ). This led to the null hypothesis being accepted. Therefore, the performance of girls and boys with MD who received Remedial Teaching had no significant difference. This implied that gender did not influence performance of pupils with MD who received Remedial Teaching.

These findings however, seemed to contradict other researches which indicated that gender influenced student's academic achievement. For in instance, research studies by [13] have found out that there was a significant difference in male and female achievement in numeracy in western province in favor of boys. In science, a meta-analysis of 77 studies was conducted between 1980-1995 among middle high school students in the U.S [4] established that science favored male performance. In another study by [17] it was found out that boys outperform girls in sciences.

## 6. Influence of Type of school on Remedial Teaching

An equal number of pupils was selected from the public and private primary school and grouped into control and experimental groups. A pre and post test exam was administered to establish the influence of the type of school on effect of remedial teaching for pupils with MD. Table 7 presents the findings of the study by type of school the teachers taught.

	Type of school	N	Mean	Std. Deviation	Std. Error Mean
POSTTEST	Public	19	47.9474	13.96215	3.20314
	Private	20	59.6000	27.21919	6.08640
PRETEST	Public	19	49.8947	15.89512	3.64659
	Private	20	56.9000	26.41750	5.90713

Table 7: Impact of Remedial According to the Type of School

Table 7 reveals that there was a slight drop in the mean of the pupils with MD in the public schools from 49.894 (in pre test) to 47.947 (in post test) and a slight improvement in mathematics performance of pupils with MD in the private schools from 56.900 to 59.6. The Std deviation of the public schools dropped from 15.895 in pre-test to 13.962 in post test and 26.417 to 27.219 in post test. The slight changes in the performance of the two groups indicated there was no significant difference in mathematics performance between pupils with mathematics difficulties in public and private primary schools who were in the experimental group (those who received remedial teaching). The lack of significant difference is observed in both pretest and post test results.

Further statistical tests were done to establish the difference in performance of children with MD who received remedial teaching and those who did not. Thus, the following hypothesis was formulated and tested: There is no significant difference in mathematics performance between pupils with mathematics difficulties in public and private primary schools who receive remedial teaching.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
POSTTEST	Equal variances assumed	24.8	.000	-1.7	37	.104	-11.7	6.98	-25.8	2.49
	Equal variances not assumed			-1.7	28.7	.101	-11.7	6.87	-25.7	2.42
PRETEST	Equal variances assumed	12.8	.001	-.98	37	.325	-7.0	7.03	-21.2	7.23
	Equal variances not assumed			-1.01	31.4	.321	-7.0	6.94	-21.2	7.14

Table 8: Independent Samples Test

Table 8 postulates that the ( $t=0.98$ ,  $df=37$  at  $P$  value of  $< 0.325$ ) is less than  $P$  value of 0.005 to be significant. In the post test ( $t = 1.7$ ,  $df= 37$  at a  $P$  value  $<0.104$ ) was equally less than  $P$  value of 0.005 for the null hypothesis to be rejected. Hence we accept the null hypothesis meaning there was no significant difference in mathematics performance of children with MD who receive remedial teaching in public and private schools. In this study therefore, the type of school did not

influence performance in mathematics of pupils with MD after intervention. This means that intervention can help the performance of all children.

The findings of this study contradicted those conducted by [6] to establish the factors that influence KCPE performance: Comparative study of the public and private schools in central division, Kirinyaga district. The study found out that there was a significant difference in KCPE performance between public and private primary schools in Central division.

## 7. Family Social Economic Status (SES)

This study wanted to establish the kind of work the fathers and mothers of children with mathematics difficulties were engaged in to earn a living and consequently support their children's education.

### 7.1. Fathers' Occupation

This study wanted to establish the kind of work the fathers of children with mathematics difficulties were engaged in to earn a living and consequently support their children's education. The findings of this study are presented in Table 9.

Responses	Public		Private	
	Freq	Percentage	Freq	Percentage
Farmer	25	62.5	18	45
Cobbler	3	7.5	1	2.5
Teacher	2	5	5	12.5
Carpenter	2	5	1	2.5
Mason	2	5	4	10
BodaBoda	2	5	1	2.5
Businessman	1	2.5	5	12.5
Manamba/tout	1	2.5	1	2.5
Pastor	1	2.5	1	2.5
Cane cutter	1	2.5	3	7.5
Total	40	100	40	100

Table 9: Fathers Occupation

Table 9 indicates that most fathers of children with MD (from both public and private schools) were peasant farmers (62.5% and 45%) respectively. The other remaining were self employed in the informal sector with only a few having formal employments as teaching. This means that most families did not have stable income. Consequently, there was a high probability of high poverty rate in the region making educating children a difficult venture.

The results of this study corroborated with studies done by [23] & [3] indicating that parental socio-economic status (SES) affected children's academic performance. This is so because students whose parents had high socio-economic status enjoyed motivational intervention such as extra home coaching, had an enriched home environment with tutorial disks and programmes available in video, good library and better state of mental health. Their less fortunate counterparts were highly stressed and exploited at home through engagements in domestic tasks leaving little time for studies. Also, most parents with high SES took their children to private schools which were highly characterized by effective teaching, good instructional supervision and the other advantages of small-scale operation and more manageable teacher-pupil ratio. This could not be said of public schools. It was very likely therefore that the environmental disadvantage, coupled with persistent shortage of basic requirements in public schools disadvantaged these children's academic performance; most of whom were from poor backgrounds. This study therefore, wanted to establish whether fathers' occupation affected early intervention of pupils with MD. However, there is need to investigate how the direct influence of SES on mathematics performance of pupils with MD.

### 7.2. Mothers' Occupation

This study wanted to establish the kind of work the mothers of children with mathematics difficulties were engaged in to earn a living and consequently support their children's education. The findings of this study are presented in Table 1.10.

Responses	PUBLIC		PRIVATE	
	FREQ	PERCENTAGE	FREQ	PERCENTAGE
Housewife	16	40	12	30
Businessman	5	12.5	10	25
Farmer	5	12.5	4	10
Teacher	2	5	5	12.5
Hair dresser	2	5	2	5
Housemaid	4	10	1	2.5
Cook	2	5	4	10
Tailor	2	5	1	2.5
Nurse	2	5	1	2.5
Total	40	100	40	100

Table 10: Mothers Occupation

Table 1.10 reveals that most mothers of pupils with MD (from both public and private schools) were house wives (40 and 30%) respectively. The remaining were engaged in business, in the informal sector with only a few having formal employment such as teaching. This means most families lacked financial stability leading to a high poverty rate in the region.

Studies indicate that mothers' level of education and employment family played a fundamental role in child's academic performance and score [2]. It also greatly influenced adolescent's educational outcomes as well. Students who reported higher maternal educational level tended to have higher average scores. Maternal educational status and employment acted as an indicator of SES: a mirror reflection of their potential for socio-economic resources such as household incomes that were available to the student. Income and education were highly correlated in the US [10]. When income was examined as a separate variable, the research showed a consistent positive relationship between maternal income and student achievement.

In the studies done by OECD [19] the mother's level of education was found to be the most critical variable as far as the children's education is concerned. All in all, the family SES was the most fundamental variable than others [5]. Students from low SES background were at a higher risk in view of their mathematics performance [3].

In other related studies by [9] found out that increasing family income by \$10,000 by dollars per year is associated with an increase in a student's achievement of 2.4 percentile points. In Kenya, the national survey by [13] indicated that 51% of pupils in STD 3 were assisted in their homework by their mothers most of whom had some basic education. Therefore, maternal education level and economic status is vital in effective intervention of mathematics difficulties. However, further studies need to be done to show the direct relationship between maternal educational level and economic status on intervention of MD.

## 8. Birth Position

This study sought to find out the birth position of children with MD. The findings of this study are presented in Table 11

School Type	Responses	Frequency	Percentage
Public (Y)	1 <sup>ST</sup>	14	17.50
	2 <sup>ND</sup>	06	7.50
	3 <sup>RD</sup>	09	11.25
	4 <sup>TH</sup>	06	7.50
	5 <sup>TH</sup>	02	2.50
	6 <sup>TH</sup>	03	3.75
TOTALS		40	50.00
Private (X)	1 <sup>ST</sup>	09	11.25
	2 <sup>ND</sup>	10	12.50
	3 <sup>RD</sup>	07	8.75
	4 <sup>TH</sup>	02	2.50
	5 <sup>TH</sup>	08	10.00
	6 <sup>TH</sup>	04	5.00
TOTALS		40	50.00
Overall Totals		80	100.00

Table 11: Distribution of Children According to Their Birth Position

Table 11 revealed that majority of the pupils with MD in both public and private were first borne (17.5%) and (11.5%) respectively. This means that most of the pupils with MD were in the top ordinal positions. It was expected that these children received warm and good nurture unlike their peers in the subsequent birth positions who were neglected as parents went fending for food.

These results did not corroborate with studies of Adler as cited in [28] that the children in the first birth order or the oldest child was usually advantaged by a good deal of warmth during the early stages of life which he enjoyed alone. Observations and studies indicated that more time and attention were usually accorded to the first borns. Attention by parents decreased as the number of children increased and that's why later born children performed poorer than their older siblings. Other studies conducted on the relationship between academic achievement and birth order have shown that there were positive relationships. For instance, [14] established that first born and only children were significantly more creative on verbal test of creativity than later born. Nwafar and Anjo [18] observed that there was more significantly outstanding academic performance amongst first born than later born. Children born in later birth order did worse than those in high birth order. However, the findings of this study did not indicate the same state, hence the need to conduct further studies on the relationship between birth order, the cause and intervention of MD.

## 9. Findings of the Study

There was early identification of children with Mathematics Difficulties (MD) and there were more pupils with MD in the public primary schools than in the private ones. The most common forms of MD identified were; addition and subtraction with carrying over.

All the teachers who participated in the study indicated that they conducted remedial teaching for pupils with MD. The most common forms of remedial teaching were paid tuition, multi-sensory approach and use of ability groupings. Most teachers conducted the remedial teaching in the evenings after formal classes.

Pupils with MD who received remedial teaching performed better than those who did not receive remedial teaching. The average score of the children who received remedial teaching improved from 53.5 -53.9. However, the influence of the type of school and gender on the mathematics performance of pupils with MD was not significant.

## 10. Conclusions

The teachers in both public and private primary schools identified pupils with Mathematics Difficulties. The most common MD experienced was addition with carrying over and borrowing in subtraction. There was remedial teaching for pupils identified with MD; whereby the most common programme used was private paid tuition. There was also a difference in mathematics performance between pupils who received Remedial Teaching and those who did not receive. This means that the remedial teaching programme improved the mathematics performance of pupils with MD.

## 11. Recommendations

Kenya Institute of Curriculum Development (KICD) should develop standardized assessment tools for early identification of pupils with MD. The study revealed that teachers were not well equipped to effectively identify pupils with MD.

Teachers Service Commission (TSC) should ensure that better staffing of school is done to reduce the workload and lower the high teacher-pupil ratio which causes overcrowding in classes impeding effective teacher pupil interaction. The study revealed that many teachers handled as many as sixty children which was more than the recommended number of forty children per teacher.

Teacher Training Colleges (TTCs) should equip teacher-trainees with relevant pedagogical skills and knowledge to identify mathematics difficulties and offer effective early intervention of mathematics difficulties. The results of study revealed that most teachers were not trained in SNE and hence lacked the competencies to not only identify MD but also to offer effective early intervention.

Ministry of Education (MOE) should formulate policies that promote effective early identification and intervention of MD and also enhance stable parent-teacher collaborations in early identification and intervention of mathematics difficulties. The study revealed that there were no clear policy directives on early identification and intervention of MD from the Ministry of Education though there was a policy for person with Disabilities.

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