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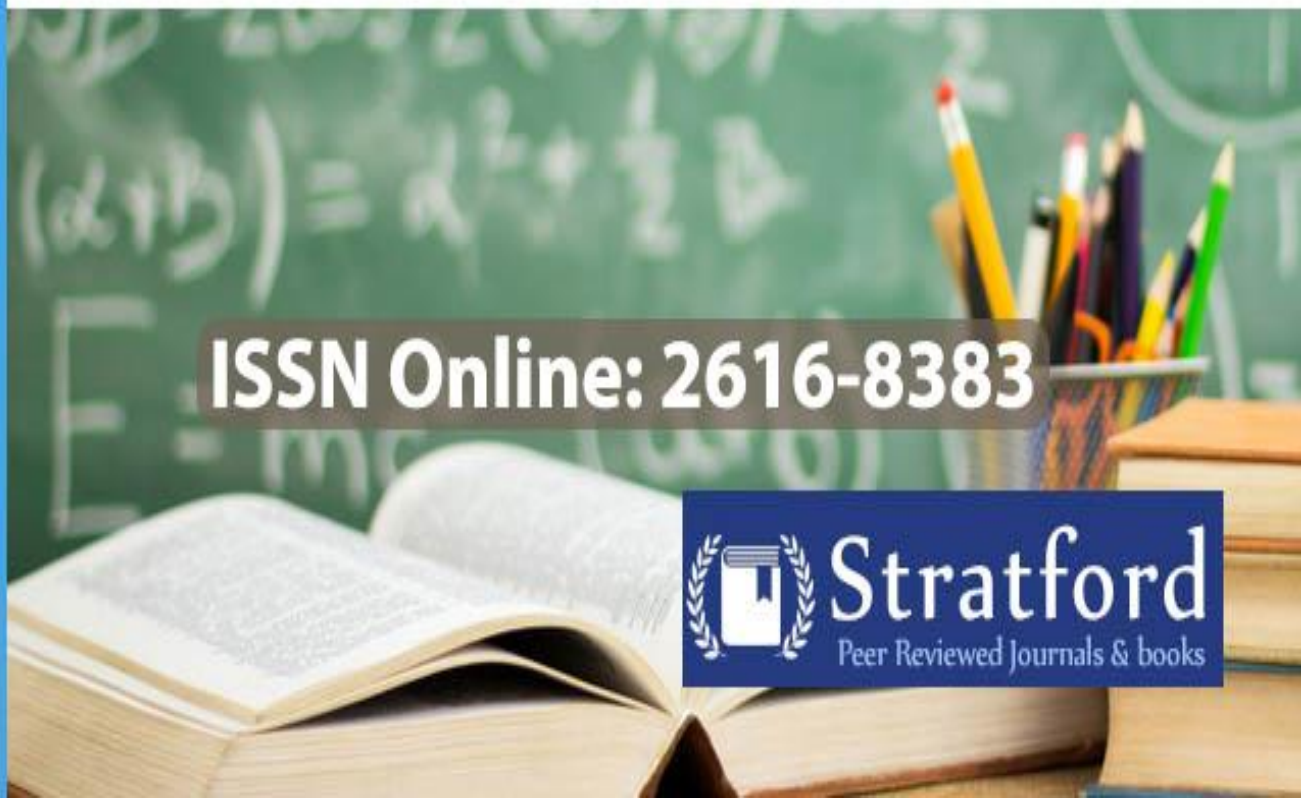

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Abstract

Academic performance has remained elusive as different cohorts of learners perform differently in national examinations. Previous studies on academic performance of pupils have explored the question mostly from environmental perspectives rather than pupil's intrinsic factors such as reading difficulties and successes of respective intervention measures. Interventions on reading difficulties being experienced by learners have been sought, however, the persistence of the problem leads to questions over the efficacy of the interventions. This study was set out to find out the effects of cooperative thinking skills training intervention on academic performance of public primary school pupils in Nakuru West Sub-County, Kenya. Descriptive survey research design was used targeting 12 public primary schools from which 342 language teachers and 1133 pupils were theorized to have reading difficulties were sampled. A sample size of 160 respondents was selected using both purposive and stratified random sampling for teachers and pupils respectively. Data was collected using a well-structured questionnaire and an observation schedule which were analyzed with the aid of the Statistical Package for Social Science (SPSS) version 21.0. Descriptive statistics involving frequencies, percentages, means and standard deviations, and inferential statistical methods involving linear regression were used to analyze data. The results from the observation schedule were analyzed using content analysis and integrated during interpretations, discussions and conclusions. The study found that cooperative thinking skills training intervention had a positive and strong effect on academic performance of pupils with reading difficulties among public primary school pupils in Nakuru West Sub-County. Hence, the study concluded that cooperative thinking skills training intervention as currently applied in teaching was a very promising intervention in remedying reading difficulties. The study recommended that teachers should find out and introduce new ways of cooperative learning specifically those which encourage the learners to assist each other improve their reading proficiency .

Keywords: *Academic Performance, Cooperative Thinking Skills Training, Training Interventions, Reading Difficulties, Nakuru West Sub-County, Public Primary School & Kenya.*

1.1 Introduction

The Dakar Framework nearly two decades ago was a significant milestone in the quest for Education for All. The framework underscored the need for academic performance as a means of educational advancement for learners (UNESCO, 2014; USAID, 2007). Academic performance has, however, remained an elusive as different cohorts of learners perform differently. Determinants of pupils' performance have been the subject of ongoing debate among educators, academicians and policy makers. It has also formed the subject of several studies worldwide over the years. Most of these studies, however, explored the academic performance question from an environmental perspective, and mostly adopted motivational or interventionist in the approach. Little attention has, however, been paid to the pupil's intrinsic factors such as reading difficulties (RD) despite its critical role on the pupils's learning outcomes. Studies such as Richardson and Lyytinen (2014) and Lyytinen and Erskine (2016) show that almost 80 per cent of children with learning disabilities have primary educational problem in the area of reading. The reading problems of all these students have a substantial impact on their ability to master other subjects in school and ultimately affect their academic performance.

Reading difficulty is defined from a normative perspective, that is, how a child performs in reading compared with peers or educational expectations (Fletcher, Lyon, Fuchs & Barnes, 2007). The ability to read is an essential skill for students to master because; information is mostly presented in text throughout the world. Existing research such as Silva and Crenitte (2016), have argued that interventions have remedying capability on reading difficulties experienced by pupils. Johnson, Johnson, Roseth and Shin (2014) found that fostering thinking skills develops school children's cognitive abilities and leads to positive curricular outcomes. However, despite the role of thinking skills in learning at the primary school level (Alwadai, 2014; Gashan, 2015), the practice of teaching cooperative thinking skills at primary school is still insufficient (Anyachebelu, 2012; Polat, 2015). Some important thinking skills can be developed in a cooperative learning environment. However, there is only modest contribution of the teachers' practices to teaching thinking skills (Sardare & Saad, 2013).

Exploring the link between cooperative learning and reading difficulties as intended in the present study is very important to the development of education at the formative learning years where mastery of reading skills is important before the learner progresses to more advanced subjects and learning concepts that require a solid foundation in reading abilities. Warning of 'a learning crisis' in global education, the World Bank report (2018) said schooling without learning (as learners fail to acquire reading skills) was not just a wasted development opportunity, but also a great injustice to children and young people worldwide. The report argues that without learning, education will fail to deliver on its promise to eliminate extreme poverty and create shared opportunity and prosperity for all.

1.2 Statement of the Problem

UNESCO (2014) estimates that at least 250 million of the world's 650 million primary school age children, were not learning the basics in reading. Even after several years in school, millions of children cannot read, write or do basic math (Thompson, 2018). This learning crisis is widening social gaps instead of narrowing them. Young students who are already disadvantaged by poverty, conflict, gender or disability reach young adulthood without even the most basic life skills (UNESCO Institute for Statistics (UIS), 2017). In Kenya, the Uwezo Assessment report of 2010

and 2011 estimated that around 50 percent of children in class 4 are not able to read class 2 level work in Kenya. Evidently, the performance standards among these groups of learners, a problem precipitated by reading difficulties and that has led to a learning crisis nationally require urgent redress. Notwithstanding the substantial investment by the Ministry of Education in Kenya to address the reading difficulties, poor academic performance continues to reoccur in many public primary schools in the country (Onkoba, 2014; Karanja, 2015) therefore, posing serious questions regarding the efficacy of the reading difficulties interventions among them cooperative thinking skills training.

Developing cooperative thinking skills in school has been linked to improved learning outcomes (Johnson *et al.,* 2014). Gillies (2016) notes that the feedback that students receive on verbal and written responses from other students and teachers improves their thinking skills. Students may also gain from teaching other students since such teaching may require Meta cognitive strategies that foster critical thinking. However, studies suggest that much emphasis is not placed teaching of thinking skills at primary school is still lacking (Sardare & Saad, 2013; Polat, 2015) and there is a dire need for further work on primary students' synthesis, analysis, and interpretation skills (Gillies, 2016). Further, while existing studies (like Anyachebelu, 2012; Alwadai, 2014; Johnson et al., 2014; Gashan, 2015) found that fostering cooperative thinking improved the academic performance of learners, the studies did not, however, link the cooperative thinking skills with reading difficulties.

In Kenya, studies on reading difficulties (e.g. by Onkoba, 2014 and Karanja, 2015) showed that other reading difficulties interventions improved academic performance, however, the studies did not examine cooperative thinking skills training as an intervention. However, existing studies done in Kenya have not examined the effect of cooperative thinking skills training on academic performance of pupils in low socio-economic urban centers, such as, Nakuru West Sub-County, Nakuru County, Kenya where public primary school pupils' academic performance is dismal (Nakuru County Education Office, 2017). This motivates the present study to examined the effect of cooperative thinking skills training as an intervention of reading difficulties on academic performance of primary school pupils in Nakuru West Sub-County, Nakuru County, Kenya. The outcome of the study is meant to serve as an important building block when addressing reading difficulties problems in various contexts locally and globally.

1.3 Objective of the Study

The objective of the study was to examine the effects of cooperative thinking skills training on academic performance of primary school pupils in Nakuru West Sub-County, Kenya.

2.1 Cooperative Thinking Skills and Academic Performance of Primary School Pupils

Cooperative learning refers to instructional methods in which students work in small groups to help each other learn (Slavin, Lake, Hanley & Thurston, 2014). It also refers to teaching methods in which students work together in small groups to help each other learn academic content. Cooperative learning promotes student-student interaction via working in small groups to maximize their learning and reach their shared goal (Polat, 2015). It involves students working together to achieve common goals or complete group tasks–goals which they would be unable to complete by themselves (Gillies, 2016). In one form or another, cooperative learning has been used and studied in every major subject, with students from preschool to college, and in all types of schools. Cooperative learning is used at some level by hundreds of thousands of teachers (Slavin et al, 2014). A meta-analysis by Johnson et al., (2014) involving 122 studies in a sample of North

American schools revealed that cooperation was more effective than interpersonal competition and individualistic efforts. The results were found being consistent across all subject areas, for all age groups, and for all tasks involving conceptual understanding, problem solving, categorizing, and reasoning.

In a similar vein, Slavin, Lake, Hanley and Thurston (2014) synthesis of 60 studies across the US found that the overall effects of cooperative learning on achievement were clearly positive in 72% of the comparisons. Cooper's (1995) study as cited in Gillies (2016) on cooperative learning and critical thinking suggests that cooperative or heterogeneous group learning may foster the critical thinking skills that are lacking in many students. Kyle et al., (2013) study on effect of cooperative learning groups and higher order thinking skills on improving reading comprehension revealed that use of cooperative learning groups and higher order thinking skills as interventions resulted to a substantial increase in reading comprehension. In the same context, Almanza (2013) found that the majority of children in the cooperative reading groups scored higher on their reading comprehension tests than when they used cooperative learning can be used as an instructional strategy. Therefore, it was evident that cooperative learning encouraged cooperative thinking which was important in promoting shared understanding and problem-solving skills and was an effective strategy for increasing student academic achievement. However, there is lack of studies in the Kenyan context on the effect of cooperative thinking skills on learners' academic performance.

3.1 Methodology

The study was carried out in Nakuru West Sub-County, Nakuru County – Kenya and was conducted using descriptive survey design. It targeted 12 primary schools in the area as its unit of analysis. From these 342 language teachers, that is, in the upper primary levels were targeted. The study also targeted 1133 pupils with reading difficulties from the upper primary levels in the schools. According to KISE (2018) 8% of the primary schools' pupils in the country have reading difficulties. The inclusion criteria for learners with reading difficulties required that only those learners who their teachers identified as having consistent reading difficulties from their regular class exercises were included in the study. From this, the study derived a sample size of 92 of pupil respondents through Nassiuma's (2000) formula and 68 teachers through purposive sampling of 20% of the teacher population as recommended by Walliman (2017). Stratified random sampling was used to select the pupils according to their categories. In this study, the researcher made use of the questionnaires and observation schedule to collect data. Data was collected using a well-structured questionnaire and an observation schedule. The instruments were pretested for both content and construct validity and also for reliability using the internal consistency through the Cronbach reliability coefficient. Data was analyzed with the aid of the Statistical Package for Social Science (SPSS) version 21.0. Descriptive statistics involving means, modes and standard deviations, and inferential analysis involving bivariate regression analysis were computed. The results from the observation schedules were also analyzed descriptively and used to provide supporting narratives to the study.

4.1 Results and Discussions

The study administred 68 questionnaires to the teachers sampled from which 57 were returned duly fiilled and useable for the study representing a response rate of 86% which was acceptable according to Babbie (2015).

4.1.1 Cooperative Thinking Skills and Academic Performance of Primary School Pupils

The objective of this study was to assess the effects of inculcating cooperative thinking skills as a reading difficulty intervention on academic performance of primary school pupils in Nakuru West Sub-County. A five point Likert scale was used to rate responses of this variable and it ranged from; 1 = strongly disagree to 5 = strongly agree. The data was analysed on the basis of the mean score and standard deviation. The results are presented in Table 1.

Table 1: Cooperative thinking skills and academic performance of primary school pupils

Statements (N = 57)	1	2	3	4	5	Mean	Std Dev.
I try to create an environment where pupils appreciate the value of "swimming or sinking together" when learning	0	6(10.5)	21(36.8)	27(47.4)	3(5.3)	3.47	0.758
I organize pupils into small groups for the purposes of learning reading	3(5.3)	3(5.3)	0	27(47.4)	24(42.1)	4.21	0.959
I reward groups depending on their performance on reading	0	0	3(5.3)	33(57.9)	21(36.8)	4.32	0.572
I often instruct learners in groups to orally explain to each other how to solve problems	0	0	3(5.3)	33(57.9)	21(36.8)	4.32	0.572
Groups are used for discussing concepts learnt	3(5.3)	3(5.3)	3(5.3)	42(73.7)	6(10.5)	3.79	0.901
I often use group work to check for understanding of reading concepts	3(5.3)	6(10.5)	9(15.8)	24(42.1)	18(31.6)	3.79	1.161
I always give each pupil a test to take individually	3(5.3)	6(10.5)	6(10.5)	21(36.8)	18(31.6)	3.84	1.146
I randomly select a student from each group for a task and he/she is expected to represent the whole group	3(5.3)	3(5.3)	9(15.8)	24(42.1)	18(31.6)	3.89	1.08
I often require that pupils teach what they have learnt to others in my presence	3(5.3)	3(5.3)	9(15.8)	21(36.8)	21(36.8)	3.95	1.109
Average						**3.95**	**0.917**

With an aggregate mean of 3.95 and a standard deviation of 0.917 in Table 1, it is evident that that majority of the teacher respondents strongly agreed with the statements regarding their inculcating of cooperative thinking skills as an intervention to address reading difficulties among their pupils. The top three comments reinforce this position suggesting that majority of the teachers; often instruct learners in groups to orally explain to each other how to solve problems (mean = 4.32); reward groups depending on their performance on reading (mean = 4.32), and; organize pupils into small groups for the purposes of learning reading (mean = 4.21). This was meant to create positive interdependence among the learners.

The results support those of Almanza (2013) which revealed that cooperative learning encouraged cooperative thinking that led to shared understanding and problem solving skills. They also support Cooper's (1995) study as cited in Gillies (2016) which found that cooperative learning was an enabler of critical thinking skills that are lacking in many students. However, it was evident that

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fewer teachers were not able to articulate well the concept of "swimming or sinking together" when learning and as such, put least effort in trying to create an environment where pupils appreciate its value as indicated by the lowest means of the statements (mean = 3.47). The results indicate that majority of the teachers readily applied cooperative thinking skills interventions to their learners in order to enable them learn from each other how to read. It was evident during the class sessions observations that the learners in groups readily supported each other and even provided non-verbal cues when a member of their group was called upon to read for the class. These results agree with those of Jalilifar (2010) on the effect of cooperative learning techniques that revealed team rewards may have a strong impact on learners' performance.

4.1.2 Academic Performance of Primary School Pupils in Nakuru West Sub-County

The study sought to determine the status of academic performance of primary school pupils in Nakuru West Sub-County described in terms of mastery of subject skills, test scores and assignments. The results are presented in Table 2.

Table 2: Academic performance of primary school pupils in Nakuru West Sub-County

Statements (N = 57)	1	2	3	4	5	Mean	Std Dev.
Pupils in my class are showing marked improvements in dealing with difficult subjects	3(5.3)	3(5.3)	3(5.3)	39(68.4)	9(15.8)	3.84	0.941
Pupils in my class are demonstrating good command of reading difficult subjects	3(5.3)	3(5.3)	0	36(63.2)	15(26.3)	4.00	0.982
Pupils in my class are able to demonstrate good comprehension skills in other subjects apart from languages	0	6(10.5)	15(26.3)	33(57.9)	3(5.3)	3.58	0.755
Reading appears to affect performance in all other academic subjects	3(5.3)	0	6(10.5)	21(36.8)	27(47.4)	4.21	1.013
Reading difficulties are the principle causes of failure in school	3(5.3)	0	3(5.3)	21(36.8)	30(52.6)	4.32	0.985
Reading interventions have led to improvements in test scores in all subjects	3(5.3)		6(10.5)	27(47.4)	21(36.8)	4.11	0.976
Pupils perform well in class reading assignments	6(10.5)	0	9(15.8)	30(52.6)	12(21.1)	3.74	1.126
Pupils perform well in homework	6(10.5)	0	9(15.8)	30(52.6)	12(21.1)	3.74	1.126
Pupils perform well in group assignments	6(10.5)	0	3(5.3)	39(68.4)	9(15.8)	3.79	1.065
Average						**3.93**	**0.997**

It is evident from the responses in Table 2 that majority of the teachers strongly agreed with all the statements describing academic performance of the pupils in their schools as indicated by the high overall mean for the responses (mean = 3.93). However, it was evident that most teachers were concerned with the reading difficulties which their pupils were experiencing, and linking to academic performance as suggested by the top two statements: reading difficulties are the principle

causes of failure in school (mean = 4.32) and reading appears to affect performance in all other academic subjects (mean = 4.21). Nevertheless, most of them felt that their interventions were having a substantial effect on academic performance as indicated by their rating of the statement; reading interventions have led to improvements in test scores in all subjects (mean = 4.11). The least rated statement (mean = 3.58) showed that most teachers were of the view that pupils in their class were able to demonstrate good comprehension skills in other subjects apart from languages.

These findings imply that the academic performance of the learners was to a considerable extent affected by the reading difficulties. The findings agree with Cimmiyotti (2013) in the US, Yamashita and Hayashi (2014) in Japan, and Onkoba (2014) and Karanja (2015) in Kenya whose studies found that reading difficulties affected the academic performance of pupils. However, they disagree with Oberholzer (2015) in South Africa who failed to find any significant correlation between reading difficulties and academic performance.

4.2 Inferential Statistics

To evaluate the relationships between the dependent and independent variables and subequently test the hypothesis, a bivariate regression analysis was done and the findings discussed as follows.

Table 3: Linear Regression Analysis Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.575a	0.331	0.319	6.05256

The R-square ($R^2 = 0.331$) in Table 3 indicates that the model could explain upto 33.1 % of the variations in the academic performance of primary school pupils in Nakuru West Sub-County. It also suggests that the model could improve when more predictive variables were incoporated into the model.

Table 4: Summary of ANOVA

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	997.472	1	997.472	27.228	.000b
Residual	2014.844	55	36.634		
Total	3012.316	56			

Further, from the ANOVA results as shown in Table 4, it is evident that there is a significant difference between means of variables predicting reading difficulties interventions and the mean of variable predicting academic performance of primary school pupils in Nakuru West Sub-County (F_o, = 27.228 > F_c = 4.00; $\alpha < 0.05$; df = 1, 55; p = 0.000 < p = 0.00), thus, validating the model in Table 3 and, hence, the regression weights could be determined.

Table 5: Regression Weight Table

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	11.249	4.681		2.403	0.020
Cooperative Thinking	0.676	0.13	0.575	5.218	0.000

a Dependent Variable: Academic Performance
b Predictors: (Constant), Cooperative Thinking

The regression analysis in Table 5 indicates that there was indeed a significant relationship ($\beta = 0.676$, $p = 0.000 < p = 0.05$) between the variables. The result suggests that there was a strong positive relationship between the variables indicating that cooperative thinking skills training as was currently being done by the teachers in the schools surveyed was significantly influencing academic performance of primary school pupils in the area. This finding also indicates that the dependent variable, that is, the academic performance of the pupils, would change by a corresponding number of standard deviations when the cooperative thinking skills training as an intervention changed by one standard deviation. The findings imply that there was a lot of emphasis being put by the teachers on all aspects of cooperative thinking skills training and this reflected positively on the academic performance of the pupils. This finding supported those of Johnson et al., (2014) who found strong effects between cooperative learning in comparison to competitive and individualistic learning on a number of academic dependent variables. It also concurs with that of Slavin et al., (2014) who found that cooperative learning can be an effective strategy for increasing student academic achievement.

5.1 Conclusions

The study also established that majority of the teachers; often instruct learners in groups to orally explain to each other how to solve problems (mean = 4.32); reward groups depending on their performance on reading (mean = 4.32), and; organize pupils into small groups for the purposes of learning reading (mean = 4.21). therefore, the study concluded that teachers used cooperative thinking skills training in order to create positive interdependence among the learners to address their reading difficulties. The study also established that that cooperative thinking skills significantly affect academic performance of primary school pupils in the area ($r = 0.575$, $p = 0.000 < p = 0.05$). The strong relationship evident between cooperative thinking skills and academic performance led to the conclusion that the putting learners in groups and assigning those reading tasks improved their reading abilities and enabled them to perform better academically. Overall, the study concluded that cooperative thinking skills training which essentially group work is a very effective intervention on reading difficulties carried out in the schools based on academic performance.

The study recommends need for the teachers to introduce more reading problem solving skills among groups of pupils to increase their scope of solutions to reading difficulties especially in this context where most pupils come from a multilingual background. The teachers need also to use recognition strategies to reward pupils collectively for their performance in reading, for example, by organizing to bring the head teachers to observe the pupils reading then recognizing and rewarding them for their performance. The teachers should ensure the reading groups are as diverse as possible to improve cooperative thinking skills and improve learner confidence. This will enable leaners with very high aptitudes and reading abilities to interact with the learners at the other end of the spectrum and solve problems together while being rewarded equally. Finally, with regard to the overall conclusion, the study recommends that there is need to ensure that cooperative learning is implemented at all levels of the primary school cycle and reading proficiency of learners in these groups are continually monitored. This will further enable the teachers to introduce other reading difficulties interventions with relative ease in the learning groups in schools in the area.

This study provides valuable contributions to Piaget's Theory of Cognitive Development which deals with thinking, problem solving, intelligence and language. It particularly demonstrates how cooperative thinking skills training improves learning problems such as reading difficulties and problem solving which translates to better learning outcomes. Contextually, the study has shown

that contrary to the earlier researches suggesting that cooperative thinking was moderately applied by primary school teachers at best, the intervention was actually well applied in the schools and helped improve academic performance. Finally, the study has also uncovered a crucial link between cooperative thinking skills and reading difficulties that future researchers and policy makers can build on to improve learning in primary schools.

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