

# Influence of Prompting on Enhancement of Reading Abilities among Pupils with Dyslexia in Kenyan Primary Schools

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**Abstract** The study investigated the influence of prompting on enhancement of reading abilities among pupils with Dyslexia in Kenyan primary schools. The study adopted the Solomon Four Research Design. The unit of analysis included 20 public primary schools. The target population comprised 8978 pupils, 4 guidance and counselling teachers. The sample size for the study consisted of 229 pupils, 54 English language teachers and 4 guidance and counselling teachers. The data was collected using interview schedules, questionnaires which had both the open and close ended questions to collect data from teachers on selected skills to use with Dyslexic learners. The reliability coefficient of the questionnaire was ascertained using the Cronbach's alpha with an internal consistency ranging from shaping 0.673 to modeling 0.807. In analysing qualitative data, the study used thematic analysis while descriptive and inferential statistical techniques were used to analyze quantitative data. The inferential statistics used included ANOVA, simple and multiple regression analysis. Validity of research instruments was ensured by expert judgment by university supervisors. SPSS statistical Package was used in data analysis. The study established that there is significant difference [ $t(48) = -15.059, p < .001$ ] between pretest and posttest score of Experiment group which means a significant impact of treatment (behavior modification strategies) was established on the experimental group. There was a statistically significant relationship between prompting and reading ability ( $R^2 = 0.296$ ). The guidance and counseling teachers need to be equipped with skills to address and assist dyslexic learners cope with learning in the public primary schools in Kenya.

**Keywords** Prompting, Reading Abilities, Pupils, Dyslexia, Kenya, Primary Schools

## 1. Introduction

Reading can be defined as the ability of a learner to put what he has read in print into action. Reading skill helps one to make meaning out of a text. Lewis (2010) defines reading as the ability to read and write. Reading is a vital skill. It helps to contribute to the socioeconomic success of individuals in the society. The ability to read is a necessary tool for everyone both in and out of school considering that reading continues many years even after one has left school. Reading is important for the daily functioning of an individual. One can read for purposes of solving a problem, acquiring information, attempting an examination or recreation. The reading skill enables one to fill in forms,

read directions, newspapers, books, magazines, house numbers, signs or important messages (Tobin & Hill, 2012).

The reading skill does not occur naturally. It needs to be taught using specially designed instruction methods (Hulme & Snowling, 2011). In our education system reading is needed for purposes of reading and answering questions in the examinations, such that educational success in a learner goes hand in hand with knowing how to read. In schools, teachers use various skills to introduce reading among learners (Marima, 2015). Some learners who are not able to read well and have difficulties in decoding may have a condition called dyslexia though not everyone who has problems with reading is dyslexic. Dyslexia is a condition linked with language learning. It affects the learner's ability to read, write or spell words regardless of their age, language or intelligence. The condition can affect learners of average, low or high intelligence (IDA, 2017). It also affects learners of all ages and gender and continues into adulthood if not remediated early.

Symptoms associated with dyslexia according to the IDA (2017), include confusion of words that start with letters

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b.p.d.g memorizing numbers and words, slow and labored comprehension, problems with arithmetical calculations, remembering days of the week in sequence or letters of the alphabet. They state that dyslexic learners need an instructional environment where accommodation and extra learning support can be given to improve their reading ability. The prevalence of dyslexia globally is scarce as most of the studies on it has been done on European population. A study by Andreou and Tsela (2014), among a Greek population found that dyslexia affected acquisition of French as a second language. In India the prevalence is estimated to be between 2- 18 % (Karande & Kulkarni, 2005) as cited in Cheruiyot (2015).

Wahujan and Naidoo, (2011) reported that dyslexia affects 1% of the Chinese and Japanese population. They attributed the low prevalence to the writing style used to write the English alphabet in comparison to the writing style used to write the Chinese and Japanese languages. They further argued that the English language has an inconsistent writing style between the letters and sounds thus challenging readers whereas these two languages have a consistent link between the letters and sounds. Another study done by Onyenachi (2012) in Nigeria states that dyslexia in Nigeria is still a grey area as most people lack awareness of it. Although dyslexia is acknowledged as a learning condition in many parts of the world, the actual numbers affected by the condition may not be known in Africa, due to lack of awareness and a clear definition (Iwan, 2013). There is not a lot of literature available detailing the prevalence of dyslexia in Africa. However, it is assumed that dyslexia affects 1% of the Egyptian population, 10% of people in South Africa (Iwan, 2013) and 20% in Uganda. It is not clear what percentage of the overall population in Kenya is affected, although prevalence is estimated to be about 10% since 4 out of 40 pupils are said to be dyslexic (Symthe, Everatt, Ocampo & Gyarmathy, 2004) as cited in (Cheruiyot, 2015).

About 80% of learners with learning difficulties in Kenya also experience reading difficulties according to Runo (2010). In many countries dyslexia is associated with reading difficulties as many lack awareness of its existence (Onyenanchi, 2012). In the U.S.A dyslexia is separated from other learning difficulties (Youngman & Mather, 2013). This gives the teachers a chance to distinguish the condition to offer intervention early enough for such learners. In Kenya it is classified among the intellectual disabilities. A teacher attending to a dyslexic learner may notice a discrepancy in learning to read, spell or organization of work. The learner may also not perform well at the expected age level thus signifying that there is a problem with their learning. Sumner, Connelly and Barnett (2013) asserted that dyslexic children falter often when copying or writing a sentence. This is because the motor skills influence the rate at which a handwriting can be produced. Most dyslexics have weak motor skills which make them to tire quickly when it comes to writing. The weak skills in writing makes most to write and pause as they transfer

written information from one book to another or from the chalkboard to the book. This works to their disadvantage as they end up mixing letters or distorting information as they write it down. These difficulties in dyslexia affect the cognitive and academic capabilities of the learners (Peterson & Pennington, 2012).

In a study, by Boets and De Smedt (2010), research findings indicated that dyslexics are slower at grasping and less efficient when dealing with single digit arithmetic or when identifying new words with sound-letter representations. They also find difficulty in analyzing sounds of spoken words and putting them together with their respective letters as they read them. Dyslexia is however not a reading problem but a condition which affects the learners reading ability. It is in lieu of this that it can affect the literacy rate of individuals. Pareto (2012) concurred by stating that challenges affecting a dyslexic learner in reading can affect also their writing and mathematics achievement.

Skinner (1957) as cited in (Skinner, 2011) argues that when a behavior is strengthened it increases the chances and speed of acquisition of a new behavior. Consequently when a child has read a set of given words correctly and is rewarded by praise words as well done the child will get motivated to read again. Negative reinforcement in the classroom can be done by: withdrawing a difficult assignment or eliminating criticism as the child reads.

Alkhadi, Hamilton, Webster, Michie and Murray (2016) investigated the effectiveness of prompts to promote engagement with digital interventions in the U.S.A. The study found that strategies promoting new digital intervention content and those sent to users shortly after they started using the digital intervention were more likely to engage users. In Turkey, Barkaus, Jeske, Poinsting and Koenig (2009) investigated the effects of antecedent prompt on teaching changing sanitary napkins on a doll. The study established that use of antecedent prompts were effective in transferring skills taught to the young females. Wong', Firestone, Ronduen and Bang' (2016) in the U.S.A, investigated the effects of explicit and reflective online prompting instruction on students' performance in science and mathematics. Findings show that the teachers' conceptions of 'Nature of Science' improved significantly after two semesters of instruction.

A study by Faul, Simonsen and Stepekensky (2012) in the U.S.A, investigated effects of prompting appropriate behavior on the off-task behavior. The study found that use of prompts reduced off-the task-behavior. Allenger (2015) in the U.S.A, investigated effects of teacher prompting techniques on writing performance of grade four and grade five students. The results showed that there were no significant differences between the students' word productions and sentence lengths with the teacher's writing prompts. In Germany, Renner, Prilla, Cress and Kimmerle (2016) conducted a study on the effects of prompting in reflective learning tools in such situations where people reflect on others' issues. The study found that prompts that requested employees to write down potential solutions led to

more widespread remarks on their colleagues' experiences. In their third study also done in Germany, Renner, Prilla, Cress and Kimmerle (2016), investigated how to use prompts to describe other student's problems and identify possible solutions to the problems. The findings indicated that detailed instructions and specific wording of the prompts increased the quality of comments with prompting tools.

In Texas, U.S.A, Carp, Peterson, Arkel and Petursdottir (2012) examined how least-to-most prompting sequence facilitated acquisition of auditory-visual conditional discriminations. Regression analysis revealed that prompting was effective in training of audio-visual discriminators in learning. Backaus, Jeske, Poinsting and Koenig (2017) investigated efficiency of prompts on the characteristics of a learner in Austria. The findings of the study indicated that there was a significant correlation between efficiency of prompts and test performance, errors and omissions. The study established that only the assessment prompt increased test performance. Yilmaz (2010) investigated effects of most to least prompting on teaching simple progression swimming skill to children with autism in Turkey. Results showed that use of most to least prompting was an effective way of increasing and maintaining simple progression swimming skill of children with autism. Ingvarson and Duy (2011) investigated prompting tactics used to establish intraverbal responding and question answering in U.S.A. The study found that prompts were effective in establishing intraverbal responding. Another finding was that when learners are reinforced by use of praise words they got motivated thus encouraging them to work harder. In Singapore, Wu and Looi (2012) investigated whether agent prompts, acting as scaffolding, can promote students' reflection in an intelligent learning environment. The Anova results indicated that there were significant difference between the two groups as to reactive statements ( $F(1, 17) = 36.747, p < .05$ ) and contemplative statements ( $F(1, 17) = 19.472, p < .05$ ). The study findings established that agent prompts have the potential to add value and encourage student in reflection and achieving a better learning outcome. In India, Jeyasekaran (2014). The study found that there was a positive relationship between use of visual, kinesthetic, auditory and tactile teaching method to improve the reading skill of the children with dyslexia.

A study done by Mosito, Warnick and Essabel (2015) in South Africa investigated how prompts are used to enhance reading abilities. The study found a positive significant correlation between use of prompts and reading ability. Agumba (2017) studied the influence of prompts for effective teaching of learners with cerebral palsy in two special primary schools in Kisumu County Kenya. The study established that teachers use accommodations, adaptations, modifications and other instructional approaches to prompt cerebral palsy students. The literacy rate in most countries is the ability of their population to read and write (United Nations, 2010). Majority of the countries base it on those with reading ability and are above 15 years of age. However

countries like the U.S.A base their literacy on those above 16 years of age. The literacy rate for all people in the world above 15 years is estimated to be 86.3% (UNESCO, 2015). Males who can read are estimated to be 90.0% while females who can read are estimated to be 82.7%.

According to Kelly and Philips (2016), most learners in their formative ages are very happy emotionally. However when their early reading instruction does not match their learning style, frustration begins setting in their social relationships and personality. These can be attributed to being socially immature, difficulty in reading social cues, or in use of language. Due to this, it is imperative that dyslexics be taught using special skills to help them improve their reading ability. There are learners with symptoms of dyslexia in public schools. The number seems to be increasing due to the population increase in Changamwe area (Ooko, 2015) agrees that the prevalence of many learners with learning difficulties is a reality in Kenyan classes despite provision of appropriate learning opportunities.

## 2. Research Methodology

The Solomon Four Research Design was adopted. The main purpose of Solomon four research design was to use the quantitative and qualitative data to describe the research issue better than when either of the methods were used. The advantage of this method is that it dealt with issues that could affect internal validity. The method also analyses Contradictions or incongruent findings (Cohen, Manion and Morrison, 2007). The population will consist of 8978 pupils in Classes 5 up to 8 and 387 teachers in the 20 schools (Changamwe, 2016). Out of these, 3267 pupils and 54 English language teachers from seven schools will be purposively selected to form a target population. The researcher randomly selected 7 public primary schools with a population of 3267 pupils and 54 English Language teachers from a population of 8978 pupils in 20 schools. Four guidance and counseling teachers were also sampled.

Teachers helped the researcher in the initial screening of pupils with Dyslexic characteristics using the tool from Hardin, Simmons University. This was done after a short induction of the teachers by the researcher on dyslexia and its characteristics. The researcher also trained four data collection assistants who helped in conducting the reading comprehension and writing test. The researcher then rescreened those identified with dyslexic characteristics with the same tool from Hardin Simmons. Those confirmed to have the dyslexic characteristics were then screened using a Bangor Dyslexia Test (Miles, 1997). The reading performance of pupils listed to be having dyslexic characteristics were then extracted and recorded. In addition, the researcher gave a short reading comprehension test to assess pupils' reading ability and a writing test to assess the pupils' ability to organize ideas.

Internal validity of the constructs was tested by subjecting the survey data to suitability tests using the

Kaiser-Meyer-Olkin measure of sampling adequacy (KMO Index) and the Bartlett's Test of Sphericity (Creswell, 2014). indicates that Bartlett's test for Sphericity are significant ( $p < 0.001$ ,  $p = 0.000$ ) and Kaiser-Meyer-Olkin indexes are all  $> .6$  for all the subscales of the questionnaire. Consequently, based on the results, it was appropriate to conclude that the data were of adequate internal validity hence it was suitable for further analysis. all the sub-scales met the required level of internal consistency of reliability, with the Cronbach's alpha values ranging from a low of 0.673 (shaping behaviour questionnaire) to a high of 0.807 (modeling behaviour environment).

### 3. Results & Discussions

To establish whether prompting behavior modification practice had influence on reading abilities among pupils with

dyslexia in public primary schools, the null hypothesis was stated as follows:

***H<sub>01</sub>: There is no statistically significant influence of prompting behavior modification practices on reading abilities among pupils with dyslexia in Changamwe sub-county.***

To establish whether prompting behavior modification practice had influence on reading abilities among pupils with dyslexia in public primary schools, the null hypothesis was tested using a hierarchical linear regression analysis. The responses on prompting behavior modification practice indicators were converted into continuous scale and used as the independent variable, while the pupils score on posttest exams was used as the dependent variable. Controlling for the group of the respondents, a hierarchical regression analysis was run in SPSS as shown in Table 1.

**Table 1.** Model Summary - Prompting Behavior Modification Practice on Reading Abilities among Pupils with Dyslexia

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.330 <sup>a</sup>	.109	.104	10.004	.109	24.603	1	202	.000
2	.544 <sup>b</sup>	.296	.289	8.912	.188	53.548	1	201	.000

a. Predictors: (Constant), Group

b. Predictors: (Constant), Group, Prompting behavior modification practice

The variable for block 1 is group which the study wanted to control for, while block 2 represent the predictor variables (the level of prompting behaviour practices) together with their interactions and the control variable. It is evident from Table 1 that respondent group alone accounted for 10.9%, as signified by coefficient of  $R^2 = .109$ , of the variation in reading abilities among the primary school pupils. However, after the aspects of level of prompting behaviour practices were included in block 2, it is clear that the model as a whole explained 29.6% (R Square = 0.296) of the variability in reading abilities among the primary school pupils. This agrees with the findings of Schukajilow, Krug and Rakoczy (2015) in Germany that reported that there were indirect effects of modeling on the treatment on students' performance. However the finding was not in agreement with the findings of Allenger (2015) in the U.S.A who reported no significant differences between the students' word productions and sentence lengths with the teacher's writing prompts. Similarly Schukajilow, Krug and Rakoczy (2015) in Germany reported that multiple solutions does not improve their performance directly.

R Square Change (.188) in block 2, indicates the amount of variances accounted for by the predictor variables (level of prompting behaviour practices) after that explained by the control variable (respondent group) was removed. This implies that the level of prompting behaviour practices alone accounted for 18.8% after the effect of group of the respondents has been statistically removed. The Sig. F Change value  $= .000 < .001$ , being far less than the prior set

sig. level of .05, indicates that the addition of level of prompting behaviour practices has statistical significant contribution in predicting the reading abilities among the primary school pupils with dyslexia.

This agrees with the findings of Casey and Mac Phail (2018) in U.S.A who reported that teachers were more likely to influence the year 10's during physical education than the year 7's. The same findings are different from those of Bridge (2016) who found no significant difference in development of reading comprehension when two instruction methods were used. Finding of this study was corroborated by the qualitative data obtained from the English teachers who reported that

*"Through prompting a child feels that they can. It gives them a feeling of self-worth and may make the student want to try again. When presented with a task that involves reading a set of words the student will try reading the words and were he makes a mistake and he is prompted he will correct where he made the mistake thus improving how he acquires knowledge" (T1FGD1).*

The excerpt from T1FGD1 shows that prompting gives students a feeling of self-worth. This makes them to desire to participate in challenging tasks. Self-worth is a very significant characteristic of emotionally balanced individuals in learning situations. This promotes and modifies existent reading ability. The finding is in concurrence with the findings of Aurah (2018) in Kenya who reported that students with high efficacy perform better than those with

low self-efficacy. However, the findings did not concur with Allenger (2015) in the U.S.A who reported no significant differences between the students' word productions and sentence lengths with the teacher's writing prompts.

Further, to determine whether the model was a significant predictor of reading abilities among the primary school pupils, Analysis of Variance (ANOVA) was computed in line with the recommendation by Tabachnick and Fidell (2001).

**Table 2.** ANOVA –Influence of Prompting Behavior Modification Practice on Reading Abilities among Pupils with Dyslexia

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	2462.461	1	2462.461	24.603	.000 <sup>b</sup>
1 Residual	20217.828	202	100.088		
Total	22680.289	203			
Regression	6715.587	2	3357.793	42.276	.000 <sup>c</sup>
2 Residual	15964.702	201	79.426		
Total	22680.289	203			

a. Dependent Variable: Posttest

b. Predictors: (Constant), Group

c. Predictors: (Constant), Group, Prompting behavior modification practice

From model 2 in Table 2, the ANOVA results output reveals that, the model statistically significantly predicts reading abilities among the primary school pupils with dyslexia,  $F(2, 201) = 42.276, p < .05$ . This signifies that the null hypothesis that “*there is no statistically significant influence of prompting behavior modification practices on reading abilities among pupils with dyslexia in Changanwe sub-county*” was rejected. It was therefore concluded that there is statistically significant influence of prompting behavior modification practices on reading abilities among pupils with dyslexia. This finding agrees with the finding of Yanardag, Yilmaz and Akmanoglu (2012) in U.S.A who investigated the effectiveness of the video prompting on teaching aquatic play skills to children with autism and reported that video prompting was effective in teaching aquatic play skills to children with autism. Qualitative data was got from one of the English language teachers who stated that:

*“Some students volunteer or offer to teach others especially when they have mastered a certain concept in a given subject and this is so voluntary on the sense that such students do not expect any reward or any form of payment.” (T2FGD1)*

As observed from T2FGD1, prompting encourages collaborative working between the learners. It also encourages the ones who are intrinsically motivated to help others who they feel are left behind as learning progresses. It is not surprising that such students usually perform better in exams when they learn from their peers indicating that some form of peer influence can affect academic achievement. This finding is supported by Hudson, Browder & Jimenez (2014) in U.S.A effects of a peer-delivered system of least prompts intervention and read-alouds on correct listening

comprehension students with moderate intellectual disability and reported that peer delivered prompts improved the listening strategy among the intellectually challenged students. Lewis, Asberry, Dejarnett and King (2015) in U.S.A also found collaboration between students helpful in improving learning outcome. These findings however are in disagreement with those of Muller and Seufert (2018) in U.S.A who reported that prompting was effective in the baseline but not afterwards in the transfer of skills in hypermedia learning on learning performance and self-efficacy.

## 4. Conclusions & Recommendations

It was concluded that there is statistically significant influence of prompting behavior modification practices on reading abilities among pupils with dyslexia. This conclusion was based on statistical results which the study obtained from the ANOVA results which revealed that, the model statistically significantly predicts reading abilities among the primary school pupils with dyslexia,  $F(2, 201) = 42.276, p < .05$ . Similarly results from the regression analysis revealed that prompting behavior practices has statistical significant contribution in predicting the reading abilities among the primary school pupils with dyslexia. It was observed in this study that the teachers use varied strategies as a way of prompting. For example, many of the pupils who took part in the survey confirmed (mean=2.89) that their teachers always gave hints and instructions during English language reading lessons to aid a learner perform an expected behaviour. Qualitative data also revealed that prompting behavior modification practice helped students to improve their reading skills. Hence, it can be concluded that prompting helps to modify reading ability among students with dyslexia. The government should set-up a learning support area in the schools to help manage those learners with dyslexic conditions. It should also equip the learning support departments in the public primary schools with the latest strategies for handling dyslexia in the classes.

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