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EFFECTS OF PICTURE BOOKS ON READING PERFORMANCE OF PUPILS WITH DYSLEXIA IN GOMBE METROPOLIS, GOMBE STATE, NIGERIA

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ABSTRACT

Introduction: Poor reading performance of pupils with dyslexia has necessitated the investigation of methods that can improve the pupils reading performance. Experts in special needs education especially reading disabilities have recommended the use of picture books in teaching reading to pupils with dyslexia.

Purpose: The study focused on the effects of picture books on reading performance of pupils with dyslexia in Gombe metropolis, Gombe State.

Methodology: The study adopted quasi experimental type, specifically, the pretest posttest control group design. 20 pupils with dyslexia were purposively sampled and shared into experimental and control groups. Umolu's adopted 100 high frequency words (100 HFW) was used to collect data for the study. Data collected were analyzed using mean to answer the research questions while the hypotheses were analyzed using t-test for independent samples and tested at 0.05 level of significance.

Results: The results obtained showed that pupils in the experimental group performed better than the pupils in the control group after intervention. The study concluded that picture books are helpful in remediating reading problems of pupils with dyslexia.

Recommendation: The study recommended that government should train primary school teachers on the use of picture books when teaching reading.

Keywords: Picture books, reading, dyslexia, word recognition, reading fluency and Gombe Metropolis



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PUBLIC INTEREST STATEMENT

The data obtained from this study would inform teachers, parents and government on the benefit of using picture books in teaching pupils with dyslexia. The results would also improve the reading performance of pupils with dyslexia.

INTRODUCTION

Dyslexia is a reading disability which occurs when an individual have significant difficulty with accurate and fluency of word recognition and poor spelling and decoding ability. A pupil with dyslexia is characterized by difficulties with accurate and/or fluent word recognition, poor spelling and decoding abilities. According to Stroke (2007), dyslexia primarily affects the ability to learn to read and spell and sometimes affects mathematical ability too. International Dyslexia Association (2022) also mentioned that dyslexia is a specific learning disability, is neurological in nature which is characterized by difficulties with accurate and or word recognition and poor spelling and decoding abilities. Dyslexia is a brain based type of learning disability that impairs an individual's ability to read and such individuals read at lower levels compared to their peers.

Ahmed (2015) carried out a research on dyslexia awareness and its impact on inclusive learning in primary schools in Doma Local Government Area (L.G.A), Nasarawa State. The aim of the study was to investigate dyslexia awareness in selected primary schools in Doma L.G.A. The design adopted for the study was survey research design. 57 primary school teachers were used as sample for the study. A structured questionnaire was used for data collection. Pearson Product Moment Correlation and descriptive statistics were used to analyze the data collected. The results obtained showed a poor awareness of pupils with dyslexia by teachers in schools in the study area. Based on the findings of the study, the researcher concluded that lack of an extensive understanding of disability and disability rights, which are features of a social model construct of disability, has impacted negatively on inclusive practices and perceived understanding of who is deemed educable.

Taran, fara, Difrancesco, Altaye, Vannest, Holland, Rosch, Schlaggar and Horowitz-Kraus (2022) also studied the role of visual attention on dyslexia: Behavioral and neurobiological evidence. The purpose of the study was to determine the involvement of visual attention during fluent reading in children with dyslexia and typical readers. Quasi experimental research design was adopted. A sample of 75 children (36 typical readers and 39 children with dyslexia) completed cognitive and reading assessments. Neuroimaging data was acquired while children performed a fluent reading task with a condition where the text remained on the screen and a condition in which the letters were being deleted. Cognitive assessment data analysis revealed that visual attention, executive and phonological awareness significantly enhanced reading comprehension in both groups. A seed-to-voxel functional connectivity analysis was performed on the fluency functional magnetic resonance imaging task. The results showed that typical readers showed greater functional connectivity between the dorsal attention network and the left angular gyrus while performing the still and Deleted reading task versus children with dyslexia. The result also indicated that higher connectivity values were associated with higher reading comprehension. The result indicated that the synchronized activity of executive, visual attention and reading related network is a pattern of functional integration which children with dyslexia fail to achieve.

Reading is the ability to interpret printed or brailled materials meaningfully. It helps an individual to attain success in all other subject. It is the road map to academic success. The ability to read is a determiner of a pupil's academic success or failure. Reading therefore, is the process of looking at a series of written symbols and obtaining meaning for them. Longpoe (2017) maintained that reading entails understanding the thought and

ideas of another person, entering different imaginary and real words created by the author. Therefore, reading can be regarded as the act of linking one idea to another, and it is the activity to read that has a purpose to get information from the reading material. According to Adewale (2001), reading is a crucial form of communication through which we get most of the information required in teaching and learning situations and in everyday life.

Gwanshak and Gyang (2017) also carried out a research on the effects of picture books on reading performance of pupils with learning disabilities in Jos, Plateau State. The purpose of the study was to examine the effect of picture books on reading skills of pupils with learning disabilities. The study adopted the quasi-experimental research type specifically, pretest posttest control group design was used. The population of the study comprised of primary two pupils with reading problems. Purposive sampling technique was used to sample out forty (40) pupils for the study. Research questions were raised based on the extent to which picture books affect pupils reading performance. Assessment of language abilities Instrument (ALAI) was used for data collection. The research questions were analyzed using mean scores while the hypotheses were analyzed using t-test for independent samples at 0.05 level of significance. The results of the study indicated that when appropriate methods or interventions such as picture books, pupils reading performance can be enhanced.

Another study was conducted by Jingau and Iroham (2015) on the effects of three instruction strategies on the development of reading fluency among public primary school pupils with reading problem in Kano. The purpose of the study was to find out the effectiveness of the repeated reading, assisted reading and modelling story reading instruction strategies on word recognition, reading fluency and reading comprehension of primary four pupils in public schools in Kano. The research design adopted was the pre-test, post-test two experimental group design. Purposive sampling technique was used to sample out 15

pupils for the study. The instruments used for data collection were Umolu's 100 high frequency words and Informal Reading Inventory (IRI).

A one-way ANOVA was used to analyzed the data obtained. The results obtained indicated a significant increase in speed and accuracy skills for the pupils in the experimental group who used the modelling of story-telling instruction strategy.as against the pupils who were taught without.

The most obvious skills involved in reading is the recognition of the letters and words that make up the text. Both visual and aural simulation play a role here. The reader either recognizes the word from the visual pattern which it represents or converts the visual stimulus into sound stimulus. Interestingly, these two skills tie in with the whole word and phonic approaches that are used to teaching reading in schools. The phonic approach to teaching reading argues that readers recognize a word by sounding out the individual letters that make up the word (Sereno & Rayner, 2003).

Reading fluency is the ability to read a text easily which has four parts: accuracy, speed, expression and comprehension. Each part is important but no single part can function alone. A fluent reader must be able to coordinate all the four aspects of fluency. Fluency is important because it builds a bridge between word recognition and comprehension. It allows pupils time to focus on what the text is saying. They are able to make connections between what they are reading and their experience. It is the ability to read accurately, smoothly and with expression. Pupils recognize words without struggling over decoding issues (My Learning Springboard, (2021). It helps pupils to concentrate on comprehension.

Picture books are books that combine visual and verbal narratives in a book format often aimed at young children to improve their reading abilities. A picture book according to Sanders (2019), is a book typically for children in which the illustrations are as important as or more important than the words in

telling their story. In other words, the pictures in picture book speak to the child rather than the conventional verbal narratives. Andzayi (2002) maintained that picture books are designed to talk to children through prints and pictures. The images in picture books use a range of media such as oil paints, acrylics, water colour, pencil among others. Learning to read pictures is an important literacy skill and using picture books for children can play an important role in the process of developing visual literacy. However, as important as picture books are in teaching reading, these picture books are not adequate.

Abba (2014) conducted a study in Nigeria on assessment of availability and utilization of picture books and other instructional materials in Nomadic schools in Taraba state. The aim of the study was to assess the availability and utilization of picture books and other instructional materials. Survey research design was adopted for the study. Questionnaires were used for data collection. The population and sample were nomadic school teachers within the three sectional zones in Taraba state. Research questions were raised based on the extent to which instructional materials were provided of the implementation of nomadic education program, qualifications of teachers and their effectiveness in using picture books and other instructional materials. The results showed that there were no adequate picture books and other instructional materials in nomadic schools in the state, teachers also lack knowledge in the utilization of picture books and assistive technology devices.

Nicholas (2007) also carried out a research on the impact of picture book illustration on the comprehension skills and vocabulary development of emergent readers in Louisiana, U.S.A. The purpose of the study was to observe emergent readers as they demonstrate comprehension and retelling skills both with and without the assistance of the illustrations that are supposed to accompany a story. The research design used was descriptive case study and data for the study were collected through observation. The population of the study

consisted of two elementary schools in Parish in the North West part of Louisiana. The first school with a population of 450 students and the second school with a population of 850 students. The sample for the study was six students drawn from the two schools.

Descriptive statistical analysis particularly the simple percentage was used to analyze the data. The findings of the study showed that students who visually experienced the illustration accompanying a picture book demonstrated an overall comprehension of the story and retelling ability than those who did not see the picture of the story. At the end of the study, the researcher concluded that a better understanding of the use of illustrations as reinforcement tools in the developmental reading process for young readers was obtained.

The study is hinged on cognitive theory of intellectual development propounded by Jean Piaget in 1954. The theory has it that learning is organized into hieratical structures, thus the learner's previous experience determines their new learning capacity. This learning is achieved by mental process such as reasoning, remembering and recall which help in problem solving, developing new ideas and evaluation.

STATEMENT OF THE PROBLEM

There are indications of reading problems at all levels of the education system in Nigeria. These problems manifest themselves in pupils' inability to read and comprehend what was read to tackle school tasks and examination. Many of the pupils in primary school cannot follow written instructions appropriately to answer specific questions and follow directions especially in public primary schools. Many pupils experience difficulties in other school subjects due to inability to read.

Children with dyslexia may find it difficult to succeed in school because of the inability to read which is a strong determinant of pupils' success and so if a child is found to be dyslexic, such a child is at risk of academic, behavioral, social and emotional difficulties, that may affect them in school (Gwanshak & Zaram,

2017). The number of children experiencing reading problems in schools is increasing rapidly. Some pupils find it difficult to identify letters of the alphabet while some find it difficult to read words and sentences. It is based on the aforementioned that the researchers used picture books to remediate reading problems of pupils with dyslexia.

PURPOSE OF THE STUDY

The main purpose of the study was to:

1. establish the influence of picture books on word recognition of pupils with dyslexia.
2. determine the effect of picture books on reading fluency of pupils with dyslexia.

RESEARCH QUESTIONS

1. To what extent can picture books enhance the word recognition of pupils with dyslexia in Gombe metropolis?
2. To what extent can picture books affect the reading fluency of pupils with dyslexia in Gombe metropolis?

HYPOTHESES

1. There is no significant difference between the pretest word recognition performance mean scores of pupils in the experimental and control groups.
2. There is no significant difference between the posttest word recognition performance mean scores of the pupils in the experimental and control groups.
3. There is no significant difference between the pretest reading fluency of pupils in the experimental and control groups.
4. There is no significant difference between the posttest reading fluency of pupils who are exposed to picture books and those who are not.

METHODOLOGY

Design

The study adopted the quasi-experimental research type specifically, pretest posttest control group design was

used. The study used intact groups in which pupils were assigned to experimental and control groups. The experimental group was given a pretest, an intervention using picture books and a post-test. The control group was also subjected to a pretest, received no intervention and was also given a post-test.

Population and Sample

The population of the study was made up of 60 primary three pupils with dyslexia from one public primary school in Gombe metropolis. The choice of this public school was because it had the pupils with the characteristics the researchers intend to study. The sample of the study was twenty (20) pupils with dyslexia from the selected school. Ten (10) pupils with dyslexia were selected from class 3A who served as the experimental group while ten (10) pupils were selected from class 3B who served as the control group. The research made use of intact classes because of the design adopted which does not permit randomization. Purposive sampling technique was adopted to sample the participants for the study. The intervention was conducted in the pupils' respective classes after school hours because the school's policy which does not give room for any alteration.

Instruments for Data Collection

Two instruments were used for collection of data in this study. The instruments were Umolu's adopted sight Word Recognition Test of High Frequency Words (WRTHFW) and researchers made picture book (RMPB). The first instrument was divided into two sections. The first section contained the name of the school, gender and class of the participants. The second section contained 100 high frequency words. The choice of this first instrument was informed by the fact that the words are mostly occurring during reading. The second instrument was researchers made picture books test. This instrument was developed by the researchers. The picture books contained four sections and each section has pictures of which the pupils were asked to match with the appropriate words. The

instrument was administered to all the participants in the study.

In order to ensure the validity of the instruments the researchers gave the instrument to experts in special education and rehabilitation sciences and test, measurement and evaluation from the University of Jos for experts' judgement. The experts scrutinized the instruments, made some corrections and also offered some suggestions which were effected by the researchers. Pearson product moment correlation coefficient was used to obtain the reliability index which was 0.70.

Procedure for Data Collection

Intervention consisted of pupils (participants) in an experimental and control groups. All the participants were subjected to a pre-test in order to determine their eligibility to participate in the study. The pretest lasted for one (1) week. After the pretest, the pupils in the

experimental group were taught using picture books while the pupils in the control group were taught using the conventional method. The intervention lasted for six (6) weeks. After the intervention the pupils in the experimental and control groups were subjected to a posttest.

Method of Data Analysis

The two research questions were answered using the arithmetic mean while all the four hypotheses were tested using t-test for independent samples at 0.05 level of significance. SPSS version 22 output was used to analyze the data.

RESULTS

Research Question 1: To what extent can picture books enhance the word recognition of pupils with dyslexia in Gombe metropolis?

Table 1: Summary Table for Word Recognition Mean scores of the Experimental and Control Groups Before and After Intervention

Group	Pretest \bar{x} score	Posttest mean (\bar{x}) scores	Mean (\bar{x})difference
Experimental (x_1)	21.8 26.1	65.9	39.8
Control (x_2)	20.6 28.8	36.4	7.6

Table 1 showed the word recognition performance mean scores of both experimental and control groups before and after intervention. The word recognition mean scores of pupils in the two groups before intervention were 26.1 and 28.8. The mean difference for the experimental group was 39.8 while the control group had a mean difference of

7.6. The results showed that the experimental group performed better than the control group after intervention.

Research Question 2: To what extent can picture books affect the reading fluency of pupils with dyslexia in Gombe metropolis?

Table 2: Summary Table for Reading Fluency Mean Scores of the Experimental and Control Groups Before and after Intervention

Group	Pretest \bar{x} score	Posttest mean (\bar{x}) scores	Mean (\bar{x})difference
Experimental (x_1)	20.8	40.7	19.9
Control (x_2)	20.6	23.5	2.9

Table 2 showed the reading fluency performance mean scores of the experimental and control groups before and after intervention. From the result obtained, the experimental group had a mean score of 20.8 while the control group had a mean score of 20.6 before intervention. The result also showed that the control group had a mean score of 40.7 while the control group had 23.5. The mean difference for the experimental

and control groups were 19.9 and 2.9 respectively. This indicates that the experimental group performed better than the control group after intervention.

Hypothesis 1: There is no significant difference between the pretest word recognition performance mean scores of the pupils in the experimental and control groups.

Table 3: Summary table of the t-test analysis for Pretest Word Recognition performance mean Scores of pupils with Dyslexia in the Experimental and Control Groups

Groups	\bar{x}	S ²	df	Calculated t	Critical t($\alpha = .05$)
Experimental (x ₁)	27.1	170.17			
			18	0.25	2.101
Control (x ₂)	28.6	185.75			

Table 3 showed the pretest word recognition mean scores of the experimental and control groups before intervention. The analysis showed that the experimental group had a mean score of 27.1 and a variance of 170.77 while the control group had a mean score of 28.6 and a variance of 185.75. The result further indicated that the calculated value of t is -0.25 and the critical value of 2.101. Since the calculated t is less than the critical value

of t, the researchers retained the null hypothesis and concluded that there is no significant difference between the word recognition mean scores of the two groups before intervention.

Hypothesis 2: There is no significant difference between the posttest word recognition mean scores of pupils in the experimental and control groups.

Table 4: Summary table of the t- test Analysis of the Posttest Word Recognition Mean Scores of Pupils with Dyslexia in the Experimental and Control Groups

Groups	n	\bar{x}	S ²	df	Calculated t	Critical t($\alpha = .05$)
Experimental (x ₁)	10	68.8	214.18			
				18	5.21	2.101
Control (x ₂)	10	36.6	162.22			

Table 4 revealed the posttest word recognition mean scores of the experimental and control groups. The result showed that the experimental group had a mean score of 68.8 and a variance of 214.18 while the control

group had a mean score of 36.6 and a variance of 162.22. This showed that there is a significant difference between the word recognition mean scores of the two groups. In addition, since the critical value of t (2.101) is less than the

calculated value of t (5.210, the researchers failed to retain the null hypothesis and concluded that there is significant difference between the word recognition mean scores of the two groups after intervention.

Hypothesis Three: There is no significant difference between the pretest reading fluency of pupils in the experimental and control groups.

Table 5: summary of t-test Analysis of the Pretest reading fluency mean Score of Pupils with Dyslexia in the Experimental and control Groups

Groups	n	\bar{x}	S^2	df	Calculated t	Critical $t(\alpha = .05)$
Experimental (x_1)	10	22.80	2.040	18	0.285	1.730
Control (x_2)	10	20.60	3.583			

Table 5 showed the pretest reading fluency mean scores of the experimental and control groups. The result indicated that the experimental group had a mean score of 22.80 and a variance of 2.2.040 while the control group had a mean score of 20.60 and a variance of 3.583. The result also indicated that the calculated value of 0.283 and critical value of 1.730. since the calculated t is less than the critical value of t , the researchers accept the null

hypothesis and concluded that there is no significant difference of between the pretest reading fluency of pupils in the experimental and control groups.

Hypothesis 4: There is no significant difference between the posttest reading fluency performance mean scores of pupils who are exposed to picture books and those who are not.

Table 6: Summary of t-test Analysis of the Posttest Reading Fluency Mean Scores of Pupils in the Experimental and Control Groups.

Groups	n	\bar{x}	S^2	df	Calculated t	Critical $t(\alpha = .05)$
Experimental (x_1)	10	14.2	11.07	18	6.78	2.101
Control (x_2)	10	6.2	2.76			

Table 6 presented the posttest reading fluency mean scores of the experimental and control groups. The results showed that the experimental group had a mean score of 14.2 and a variance of 11.07 while the control group had a mean score of 6.2 and a variance of 2.76. The result also showed that the calculated value of 6.78 and a critical value of 2.101. Since the calculated value of t is greater than the critical value, the researchers reject the null hypothesis

and concluded that there is a significant difference between the posttest reading fluency performance mean scores of pupils in the experimental and control groups.

DISCUSSION

The result of the study indicated that picture books intervention had more effect on the reading performance of the pupils with dyslexia than the conventional method since participants in the

experimental group had higher mean scores than the pupils in the control group. The higher mean scores of the pupils in the experimental group who were taught using picture books to see the pictures and wordings could be due to the fact that they had a better view of the reading material than those in the control group who only read the wordings without pictures attached to them. This is in line with the findings of Heinsbergen (2013) who found out that picture books enhance the literacy skills of pupils in early childhood education. The results obtained also support the findings of Costa (2017) who discovered that picture story books were able to improve students reading as well as interest in reading.

The findings of the study show that the use of picture books is effective on word recognition of pupils with dyslexia than the use of conventional method of teaching. This is evident in the performance mean scores of the pupils in the experimental group which is higher than those of their peers in the control group. This finding is in consonant with the findings of Jingau and Iroham (2015) who reported a significant increase in word recognition of primary school pupils after exposure to assisted reading using pictures. The result of the study agreed also with Oyetunde (2009) who maintained that picture books help children in the acquisition of sight words that is, words that pupils can recognize instantly at sight.

The finding of the study which investigated the extent to which picture books can enhance the reading fluency of pupils with dyslexia showed that pupils who were taught reading using picture books read more fluently than those who were taught using the conventional method. The higher mean scores of the pupils in the experimental group who were taught reading fluency using picture books by seeing the pictures and wordings could be due to the fact that they had a better view of the reading material than those in the control group who only read the wordings without pictures attached to them. This finding is in agreement with Andzayi (2002) who stated that beginning readers taught

using picture books read fluently than using words without pictures. The finding is also in agreement with the findings of Smith (2010) who discovered that animated assisted therapy significantly impacted the children's reading rate (fluency).

CONCLUSION

The use of picture books in teaching reading has shown a significant benefit especially to pupils with dyslexia. Comparative studies have shown that pupils perform better in reading when taught using picture books compared to those taught through the conventional teaching method. The picture books intervention has shown its strength in word recognition and reading fluency among pupils with dyslexia. The picture books have the advantage of drawing pupils' attention to the books thereby motivating them to want to learn to read. The picture books also encourage group discussion among pupils with dyslexia and their peers who are not dyslexics (average and skilled readers). When initial reading is introduced with picture books the learning process is simplified.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made:

1. Pupils with dyslexia and other reading difficulties should be taught word recognition using picture books.
2. Teachers of reading should use picture books when teaching pupils reading fluency.
3. Government and school managements should organize workshops and seminars for teachers on the importance of picture books in teaching reading to pupils.

Conflict of Interest: The authors declare no conflict of interest.

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Disclaimer Statement

We certify that this work is not an extraction of any work.

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Authorship and Level of Contribution

Nandi Abani Gwanshak: Financing the publication, writing the draft and proofreading the final draft of the manuscript.

Abani Gwanshak Shikden: Financing the publication, proofreading the final

manuscript and carrying out data analysis.

Hassan Isah Danrimi: Financing the publication, writing the final manuscript, analyzing and interpreting of data output.

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