

Pictorial Illustration for Enhancing Reading Skills of Learners with Intellectual Disability

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Abstract

This study determined the efficacy of using pictorial illustration remedial strategy to enhance the reading skills of learners with intellectual disability. First, an intensive short-term pictorial illustration instruction was designed to target reading comprehension and vocabulary skills at the second grade level. The instructional guide was then implemented in classrooms at two special schools for pupils with intellectual disability in Ibadan. The pretest-posttest control group quasi-experimental design was used. Analysis of pretest-posttest data revealed that reading skills of pupils with intellectual disability significantly improved from pre to post on all three subtests: word decoding ($p = .04$), word recognition ($p = .01$), reading comprehension ($p = .01$), and test total ($p = .01$). Analysis of Covariance results showed that reading skills among pupils with intellectual disability was significantly affected by the treatment ($F_{(1,2)} = 38.756$; $\eta^2 = .951$). The mean that the mean score of participants exposed to pictorial illustration was higher (48.93) than that of the control group (21.22). There were no significant main effect of verbal ability as well as the interaction effect of treatment and verbal ability on the reading skills of participants. Therefore, teachers of learners with intellectual disability should adopt pictorial illustration for their improved reading skills.

Keywords: Reading skills, pictorial illustration, intellectual disability, verbal skills

Introduction

Skills necessary for efficient reading are commonly considered to be the most important skills to be learnt by learners, regardless of their intellectual capacity. This is due to the influence that such skills would have on the different aspects of social and academic achievement of learners. Although, the development of literacy skill is non-optional and imponderable educational objective for pupils with intellectual disabilities (ID) (Ratz and Lenhard, 2013), based on the assumption that their cognitive ability is not likely to attain requisite literacy skills to participate fully in community and professional life (Lundberg and Reichenberg, 2013). Moreover, development of fluent reading skills was considered as a task too challenging for them, resulting in the perception that acquisition of reading should not be an one of goals of educating these group of learners when educational efforts were initially made for them (Katims, 2000, Ratz and Lenhard, 2013). Reading is an indispensable skills required for social and intellectual development and growth of man (Ihejirika, 2014).

This implies that reading should not be seen merely as process of accurate recognition of letters, words, and subsequently sentences resulting to comprehension developed from letter to word to sentence (Bojovic, 2010). As soon as a child develop

the skills required for decoding alphabetical sounds and identification of words, phrases may be read as units (Bender, 2004). These will make enable the learner to be efficient reader because less time is spent in decoding each sound in a word while focusing attention on reading fluently with better understanding of what is being read. A deep concerned was expressed recently by Swedish Schools Inspectorate (2010) having noticed limited effort shown by special schools in the provision of instruction related to reading comprehension to learners with intellectual disabilities particularly those in the upper grades of compulsory schooling.

Despite the volume of research findings based on the variables of interest in this study (pictorial illustration and verbal ability) on pupils with intellectual disability reading skills, there no established study that considered the effect of effect of pictorial illustration on reading skills of pupils with intellectual disability.

Literature Review

Importance of reading skills

Reading skills is useful for the recognition of each words without the relying on the contextual interpretation in a sentence. Therefore, educational strategy aimed at improving pupils' word recognition skill and in turn develop appropriate reading skills

should be such that ensures learners irrespective of cognitive ability intellectual capability are functionally literate. Functional literacy will enhance reading with understanding and application of the information in solving life challenges (Ekpo, 1999) because reading as the corner stone of effective learning constitutes the foundation that academic achievement is laid (Adeolle, 2005). Some of the challenges confronted when reading by learners with intellectual disability includes difficulty generalising ideas, problem solving skills, application of information for personal benefit and difficulty in later years if not practically impossible to participate effectively in social activity and contribute to community development positively. There is no doubt that the development of reading skill among this group of learners is crucial since it will enable them comprehend information. In the assertion of Read (2000) the development of rich vocabulary is a critical prerequisite for pupils with intellectual disability. Previous studies conducted investigate the correlation between the use of reading skills and text comprehension by students supports such concern (Palincsar & Brown, 1984 and (Pressley, ElDinary & Brown, 1992). Readers with good reading skills when compare with those who are less competent are more strategic.

The possibility of poor and inefficient readers reading prints without establishing any objective for what is read is high while exhibiting poor reading behaviour which makes comprehension difficult like regression, weak eye coordination, sub-vocalisation and movement of the head that not in accordance with the word. A crucial aspect of efficient reading skills is purposefully reading (Bojovic, 2010) which is result of being focused while reading the text (Brauger and Lewis, 2006; Keene, 2002) and the motivation derived from it. Reading as an interactive activity enables a reader to use information based on previous knowledge in combination with information from text; it is also interactive because various skills during the process of reading simultaneously work together (Bojovic, 2010) The fundamental of all instructional process is reading Kliever and Landis (1999), because it useful in evaluating academic progress and performance in other areas of life.

In fact, learning as it concerns formal education, implies reading (Ihejirika, 2014) requiring skills for extracting information from prints using a process that involves word recognition, comprehension, fluency and vocabulary so that an individual will react, assimilate, summarized and

utilised the information from the text (Otagburuagu and Chukwuma, 2002). Easy recognition of printed words is crucial to the development of reading skills while understanding the meaning of the identified word plays an important part in comprehending the text read. However learners with intellectual have difficulty developing accurate and efficient reading skills due to limited cognitive resources associated with understanding, decoding or recognising the text so that appropriate response to the information in the text can be made. The skill for independently identifying isolated words is known as word recognition (Andrew, 2010). According to Kreidler (2003) improved reading skills will enhance learner's ability to extract information from a text with ease.

Heath (2007) asserted that teaching should be structure to assist remedial readers because poor reading skills will result in lagging behind in specific content area. The possibility of improvement may occur if learners are supported by dutiful and efficient teacher using appropriate instructional strategy. The efficacy of instructional strategy purposeful tailored for the development of reading skills is supported by research findings (Lerner, 1997) but none has investigated enhancing pupils with intellectual disability reading skills using pictorial.

Pictorial Illustration and reading skills

Use of diagrams, shapes, imageries real objects and drawing for the presentation of information known as pictorial illustration according to Fennell and Rowan (2001) is good in assisting pupils to organise their thinking while associating the word with the image. Pictorial illustration based on the submission of Lewis (2001) is a small type of ecosystem that demonstrates mutual interaction between words and drawings and/or any form of representation in a picture book. Two different symbols are communicated using when pictorial illustration which are iconic and conventional. Iconic signs are signifiers showing similar qualities which is direct representation of what it indicates while the relationship between object represented conventional signs are not direct (Nikolajeva and Scott, 2006). Four conditions identified by Mayer (1989) are required in order for pictorial illustrations to be beneficial: a cause-and-effect system should be described in the text; the system or process under consideration must be reasonably described in the illustration; appropriate outcome measures must be selected; and the learners must not be experienced with regards to the specific process under consideration.

Pictorial illustration is unique in that both images and words are used to express an idea. A book will attract the attention of learners when pictures is used along with text because it serves beautification purpose (Levin, 1981). This imply that readers interest is stimulated by the pictures in the book while repeating the information presented through text which will likely increase learners ability to recall such information. A mental image of a specific situation describe using pictorial illustration according to Levie and Lentz, (1982) will play an important role in learners ability extraction information from a text so as to easily comprehend the text. Furthermore, Levie and Lentz (1982) concluded that emotional responses such as enjoyment, happiness, and optimistic attitude can be maintained by the stimulation of understanding, sustaining and supplementing knowledge with support in cognition.

Verbal ability and reading skills

Verbal ability should be taken into consideration because it is an alternative strategy to predict reading skills and also has significant relationship with general intelligence (Carrol, 1993) as well as predicts reading (Stage, Abbott, Jenkins, & Berninger, 2003). Moreover, research findings reveals that students with high verbal ability as evaluated by Delta Reading Vocabulary Test (Deignan, 1973), seems to exhibit understanding of the content studied when paired with partners with high verbal. Although, the effect of verbal ability on the reading skills of learners with moderate intellectual disabilities has yet to receive the requisite attention to study (Trassi, de Oliveira and Inácio, 2019). Holdnack and Weiss (2016) asserted that recalling information in verbal intelligence tasks is extremely information.

A study conducted by Lima and Santos (2017) on students in grade 6 to 9, using the Cloze strategy to assess reading skills and verbal ability scale of the Reasoning Test Battery (BPR-5). The result revealed that correlation between the two scales was moderate and the construct having relationship which implies that better verbal ability will lead to improvement in reading ability. Oliveira, Boruchovith and Santos (2013) conducted a research with learners in public primary school in grade 6 to 9 using the reading comprehension Cloze test and the verbal reasoning assessment WISC-III. The results indicated a positive statistical and significant relation between the variables. Specifically, verbal ability as an intelligence test can be used to predict student

achievement in literacy skills (Richard and Rodger 1986). Verbal ability involves language comprehension skills which is significant for oral reading development.

Unfortunately, according to Myles (2004), second-language learners have different commands of the target language (competence) and measures to a significant degree that they can use higher and lower language and cognitive processing mechanisms (verbal ability). Trainable cognitive domains including the computational and verbal skills according to Bakare (1990) can largely lead to an improvement in aptitude performance when considering the similarity of the brain, which in turn will improve performance and effectiveness. Verbal ability may demonstrate a significant level of association with the grades of students.

Theory of Learning Styles

This study is therefore anchored on David Kolb learning styles (1982) which is derived from application of experiences based on learning theory. This theory is rooted on the assumption that specific learning style is formed as a result of an individual's interaction with the environment. Four interconnected model are identified as critical for proper interpretation of information: specific experience, conceptualisation of theory, cogitative analysis and active validation. The correct learning model would require that the strategies be implemented based on reacting to contextual factors. The four learning approach must be considered for learning to be effective. In the experience of understanding and converting strategy an individual effort to adopt the four approaches would lead to increased ability.

The learning style ultimate outcome is the perfect blend of the preferred approach of the individual which is converger, diverger, assimilator, and accommodator. In Kolb's opinion, converger (1982) is classified by critical thinking and active experimentation which is efficient in the practical application of concepts and in the use of rational thinking to solve challenges while diverger refers to concrete experience and thinking critically while diverger deals with contextual approach and multiple perspectives, it is inherently imaginative and good at generating ideas that will lead to different perspectives in observing things. The assimilator is characterized by the use of abstract conceptualization and analytical evaluation capable of providing theoretical guidance by inductive approach. The accommodators make use of the concrete experience

and observational learning that is effective in directly engaging the reader with the world, and fully participating in the action instead of simply reading the text. The importance of Klob's (1982) learning-style model to this research valuable information it provides related to learning principle that is of interest in this study.

Description of the intervention

This research is concerned with the possible impacts that pictorial illustration can have on pupils with intellectual disability reading. Here I consider pictorial illustration as any approach that requires the use of images and diagrams to represent words and details in a class that can be included in the syllabus of a kindergarten or elementary school curriculum. Generally, pictorial illustration can be defined as the process of evoking or indicating a mental image or picture; vivid; graphic, as a summary. I concluded the review with list of what was referred to as the “ten commandments of picture illustration” (Levin et al., 1987, pp. 73–77). The commandments were as follows:

1. Pictures shall be appreciatively added to the text, so as to recall it entirely.
2. Pictures will respect the text. That is, the picture has to match the text since decorative images do not teach pupils text content.
3. Pictures shall not be misleading representation of the text because conflicting images are most certainly not beneficial to learning.
4. Pictures shall not be used in the presence of “heavenly” bodies of prose. There is no need to include pictures if the text is memorable to start with.
5. Pictures will not be used for images of text craving. That is, if useful mental images are explicitly created by the text content in students (as is often the case with specific narrative texts), it is often not appropriate to present photographs or instruct students to create their own text-related images.
6. Pictures are not to be planned in vain. The possession of basic reading skills is essential to the reader in order to benefit from pictorial illustration. Pictures are meant to be text supplements rather than replacements.
7. Pictures will be diligently produced from generation to generation. As an analogy to Commandment 6, this means that, in order

for a learner to create valuable internal pictorial representations of the text (i.e., visual images), the learner must also have sufficient basic reading skills.

8. The pictures should not be adulterated. This underlines the need to design images of good-quality.
9. Pictures shall be included as works of art. There should be distinction between real “pictorial” representations and “figural” representations, such as graphs or flow charts.
10. Pictures are created to perform specific functions. The amount and type of prose-learning facilitation are related to the type of picture selected

Hypotheses

The following null hypotheses will be tested at 0.05 level of significance

1. There is no significant effect of pictorial illustration on reading skills of participants
2. There is no significant effect of verbal ability on reading skills of participants
3. There is no interaction effect of treatment and verbal ability on reading skills of participants.

Methodology

The research adopted a quasi-experimental research design of pretest-posttest control group using a 2 x 3 factorial matrix. Treatment (Pictorial illustration and Conventional method) was considered at two levels while three levels were used for verbal ability (high, average and low) the intellectually disabled participants. The design is represented as thus:

Experimental Group 1: (E1) O₁ X₁ O₂

Control Group 2: (E2) O₃ O₄

Where:

O₁, and O₃ represent pretest scores of the experimental group and control group respectively

O₂ and O₄ represent posttest scores of the experimental group and control group respectively

X₁ represents the treatment for experimental group (the teaching mode of pictorial illustration)

X₂ represents the treatment for control group for the conventional method of teaching

Participants

The participants of this study were selected because they are learners with educable intellectual

disability in Special school for the 2018-2019 academic year. Slosson intelligent test for children and adult was used to screen the study population so that as to identify learners with educable intellectual disability in the school population. Based on the screen seventeen (17) learners with intellectual disability were selected for the study from two (2) special schools represented as school A and B in Ibadan, Oyo state Participants from school A were exposed to pictorial illustration while conventional method of teaching was used for those in school B who serve as the control group. Total enumeration was used based on the number of learners with mild intellectual in the two (2) schools. Demographic features of the participants are shown in

The instruments used were Slosson Intelligent Test (r=0.86) and Reading Skills Test (r=0.88)

The researcher developed reading skills test for the purpose collecting data related to reading skills of learners with mild intellectual disability. Pupils' English language syllabus and English textbooks were also used as reference. The test was subdivided into five sections. Demographic characteristics of participants were collected in the first section. The second requested for attitude of participants to reading while the third assessed participants skills on matching word with picture. For example 'Girl', the word should match the picture, nothing else. Task on description of various pictures

was evaluated in section four. The pupil observed the picture before each sentence and select the appropriate word in the bracket to complete the sentence.

The objective was to measure the ability of pupils in matching words with image representation. Participants were awarded two marks each for any correct response to Section C and D while zero (0) was awarded for wrong response. Section E consisted of ten simple sentences which measured pupils' ability to read orally. Two points were awarded to pupils who could read each sentence correctly with little or without errors. One point was recorded for pupils who managed to read some of the sentences and zero (0) was awarded to students who could not identify a word in each sentence.

The researcher draw questions for verbal ability from standardised text book used by primary ne pupils for verbal ability in the country. To determine the usefulness of the scale for the study, the researcher pilot tested the scale on pupils who were not of the study sample. A test-retest was used with Cronbach Alpha determine the reliability coefficient which yielded 0.88 and found reliable for the study. Learners in the experimental group were engaged in picture reading, while the Placebo treatment was given to the control group (Conventional Method). Treatment lasted eight (8) weeks. The data generated were analysed using Analysis of Covariance (ANCOVA) at 0.05 level of significance.

Results

H₀₁: There was no significant main effect of treatment on reading performance of learners with intellectual disability.

Table 1: Analysis of Covariance (ANCOVA) of Post- Reading Performance of Learners with Intellectual Disability by Treatment and Verbal Ability

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1653.355 ^a	16	103.335	19.225	.051	.994
Intercept	17.060	1	17.060	3.174	.217	.613
Pretest	30.250	1	30.250	5.628	.141	.738
Treatment	208.314	1	208.314	38.756	.025	.951
Verbal Ability	49.991	2	24.996	4.650	.177	.823
Treatment * Verbal Ability	34.741	2	17.371	3.232	.236	.764
Error	10.750	2	5.375			
Total	30097.000	19				
Corrected Total	1664.105	18				

a. R Squared = .994 (Adjusted R Squared = .942)

Table 1 shows that there was significant main effect of treatment on pupils with intellectual disability reading skills ($F_{(1, 2)} = 38.756$; $p < .05$; partial $\eta^2 =$

.951). Thus, the null hypothesis was not accepted. Estimated marginal means for treatment is presented in Table 2.

Table 2: Estimated Marginal Means of Post-reading performance by Treatment

Treatment	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Pictorial Illustration	48.936 ^{a,b}	1.674	41.731	56.140
Conventional Strategy	21.229 ^{a,b}	2.642	9.861	32.598

Table 2 shows that the learners with intellectual disability in the pictorial illustration group had the higher post-reading performance (48.936) than their counterparts in the conventional group (21.229).

H₀2: There is no significant main effect of verbal ability on reading skills of pupils with intellectual disability.

Table 1 reveal that verbal ability did not significantly influence pupils with intellectual disability reading skills ($F_{(2, 2)} = 4.650$; $p > .05$; partial $\eta^2 = .823$). Indicating that no significant difference in pupils with intellectual disability post-reading skills based on their verbal ability.

H₀3: There is no significant interaction effect of treatment and verbal ability on reading performance of learners with intellectual disability.

Table 1 shows that treatment and verbal ability interaction did not have significant effect on pupils with intellectual disability reading skills ($F_{(2, 2)} = 3.232$; $p > .05$; partial $\eta^2 = .764$). It means that post reading skills of pupils with intellectual disability was not substantially different as a result of the treatment and their verbal ability. However, reading skills of pupils with intellectual disability were affected by verbal based on partial eta squared of 0.764 that is 76.4%

Discussion of Findings

In research question one, the findings revealed that, the pupils with intellectual disability in in the experimental group taught with pictorial illustration, reading skills were better enhance when compare to the group. This is consistent with the argument of Richards, (2003) who noted that students' experience as a result of studying design elements of art such as lines, colours, emphasis, and unity facilitate recognition of printed letters and

comprehension of words. This finding is in tandem with the findings of Dretzke, (1993), Hill (2003), Özdemir (2007), Butcher and Vincent (2000) who concluded that there is temporal association between visual and verbal information. Learning will be enhanced when the information is presented visually and verbally simultaneously. In line with the assertion of Ryu (2000) that dual coding theory presented an issued than when there is more than one information process system. This is an indication that it would be better if two sources information is used during learning activities because it effect on improving comprehension.

Results based on the second hypothesis showed that there was no significant main effect of Verbal ability on reading skills of pupils with intellectual disability. Moreover, this has been blamed by different people at various times on other factors such as gender, instructional materials, etc. The above results is not consistent with the submission of Adegbile and Alabi (2007) that fond verbal ability to have a significant effect on achievement in essay writing of students. The assertion of Fakeye (2001) that the performance of student with good essay will affect other aspects of English is not in agreement with the present findings.

The findings showed that the interaction effect between treatment and verbal ability on the reading skills of pupils with intellectual disabilities was not significant. This is in line with the report of The finding of this study is in line with Olaboopo, (1999), Makinde (2004) and Maduabuchi (2006) who found that verbal ability had no effect on students' achievement in written composition and poetry respectively. It is also in tandem with Ezenandu (2012), who reported that that there no significant interaction effect of treatment and vernal ability on academic achievement if student.

Conclusion and recommendations

This study concludes that the pictorial illustration effectively enhance reading skills of

pupils with intellectual disability when compare to conventional classroom method of teaching. The reason for this may be due to the colourful nature of the images which sustains the interest of the learners. It creating opportunity for the learners to interact with one another while learning. The pictorial illustration is learner-centred instructional strategies that enhance active participation for learners in reading class. Based on the findings, schools should encourage pupils with intellectual disability to participate actively in developing their reading skills through the provision of pictorial illustration that ensure learning is made concrete and visual. Teachers should also teach using images and representation that learners can easily access both at home and in the school. Teachers of learners with intellectual disability should be urgently trained on designing pictures that will be attractive to learners with intellectual disability because of it effectiveness in enhancing their reading skills.

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