Impact of Digital Storytelling on Reading Fluency and Comprehension of Pupils with Special in Sokoto State (Nigeria)

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Abstract: The study explores the Impact of Digital Storytelling Strategies on Reading Fluency and Comprehension of Pupils with Special Needs in Sokoto State, Nigeria. The problem of the study was the predominant use of conventional instructional method in teaching reading skills to primary school pupils in the study area irrespective of the pupils’ learning condition. The study has a sample size of 94 pupils. Static Group Pre-test and Post-test research design was employed for the study. Two research questions, and two null-hypotheses were formulated. The hypotheses were statistically tested at α=0.05 level of significance. t-test independent sample was employed to test the null-hypotheses. Ten reading passages were selected and converted into multi-modal forms of Digital Storytelling as treatment. The study finds no significant difference in the level of reading fluency between gender of the pupils exposed to digital storytelling strategy. Also, no significant difference was noted in the level of reading comprehension between boys and girls exposed to digital storytelling in the study area. Consequently, the study concludes that, Digital Storytelling strategy has the potential to enhance reading fluency and comprehension of the participants across genders. In this view, DSTS is recommended to stakeholders in early grade reading programme intervention in the public primary schools, to cater for pupils with Special Needs in the study area.

Keywords: Digital Storytelling Strategies, Reading Fluency, Reading Comprehension and Pupils with Special Needs

I. INTRODUCTION

With the advent of 21st century, and with the rapidity with which technology changed the educational setting, the concept of literacy has also change to include the ability to manipulate digital and multimedia gadgets for educational purposes necessary to remain relevant in the society. This necessity informs the need to integrate information communication technology into the classrooms for educational purposes to align with the modern concept of literacy, and to prepare the pupils with adequate skills to thrive in this global digital environment (Chung, 2007; Suleiman, 2011; Garba and Olaofe, 2013). These, among many other reasons, justify the need to explore the Impacts of Digital Storytelling Strategies on Reading Fluency and Comprehension of Pupils with Special Needs in Sokoto. The following keywords need, at this juncture, to be defined: Digital storytelling, reading fluency, reading comprehension, and pupils with special needs.

The concept of Digital Storytelling was pioneered by Lambert and Ashley based on the assumption that every child has a story to tell (Suleiman, 2011; Chung, 2007). The strategy is a form of Multimedia Literacy that measures the ability of users to perform tasks on digital images, audio and video clips. Green, (2013); Robin & McNeil (2016) and Suwardy, Fan & Seow (2013) report that there are two broad-techniques in which digital storytelling strategy could be integrated in the classroom. One of the techniques known as learners generated content, involves learners to create their own digital story as means of learning certain curriculum specific subjects. The second technique known as content-based digital storytelling are created by teachers for teaching and learning purposes.

National Reading Panel, 2000; Rasinski, 2004; Applegate, Applegate and Modla, 2009; and Jibrilla, 2014 define reading fluency as an indicator of speed, accuracy and prosody of oral reading. However, a new interest on reading fluency instruction emerged. The new trend assesses reading fluency with comprehension based on the argument that “Comprehension is the basis for any reading instruction (RTI, 2011; Moats, 2004).

Reading comprehension refers to the process of constructing meaning from the information provided by the author either informs of traditional or digital discourse type. Reading comprehension is the essence of reading and ultimate goal of any form of reading instruction (Beatrice, 2008; Vaughn & Candace, 2009; and Snowling, Cain & Oakhill, 2009). And for learners to obtain effective comprehension skills, they must possess a variety of skills including automaticity in word decoding (McConnaughhlay, 2008).

National Policy of Education (2013) defines Pupils with Special Needs to include any pupil that fall within any of the following classifications: Pupils with visual and hearing impairments; Pupils physically challenged or with any particular health impairment; Pupils with mild, severe or profound intellectual disabilities;Pupils identified with behavioural or learning disabilities disorders;Pupils exhibiting speech and language disorders; and The gifted, talented and the albinos. However, in this study, Pupils with Special Needs are defined as Pupils with Reading Difficulties. These are pupils who were reduced to unintelligent learners due to
inappropriate materials and instructional approaches. The challenges of these teeming populations of individuals stem from insufficient instruction, low socio-economic status and poor learning environment (Freeman & Freeman, 2004; Olaofe, 2001; Milne, 2005; Raponi, 2016). In addition, considerable number of these types of learners are mostly found in the rural public primary schools where reading is not encouraged.

Statement of the Problems

The problem of this study is the over-dominance of traditional method in the study area, regardless of the learning-condition of the pupils. It is a fact that, Digital technology in the 21st century, just like English language, has come to stay and already have acquired an important position in the overall economic and social development of the nation (Nigeria) in particular and the world in general. Consequently, learners of the 21st century require complex and multiple literacies; for inevitably the proliferation of technology and the capacity to easily record, store and send moving images, sounds and text would continue to change the way we communicate and challenge the way we create meaning from different forms of communication (O’Rourke, 2005).

Aim and Objectives of the Study

The aim of this study was to explore the impacts of Digital Storytelling on Reading Fluency and Comprehension rates of the participants. However, the specific objectives include to:

1. examine the Impacts of Digital Storytelling Strategies on Reading Fluency of Pupils with special needs between genders in Sokoto State; and to
2. analyse the Impacts of Digital Storytelling Strategies on Reading Comprehension of Pupils with special needs between genders in Sokoto State.

Research Questions

The following research questions were asked to achieve the objectives of the study:

1. Is there any significant difference in the level of ORF between boys and girls with special needs as the result of exposure to Digital Storytelling Strategies in Sokoto State?
2. Is there any significant difference in the reading comprehension level between boys and girls with special needs as the result of exposure to Digital Storytelling Strategies in Sokoto State?

Null Hypotheses

The following null hypotheses were formulated from the research questions as guide to the study and tested at $\alpha \leq 0.05$ significance level.

1. There is no significant difference in the level of reading fluency between boys and girls with special needs as the result of exposure to Digital Storytelling Strategy in Sokoto State.
2. There is no significant difference in the reading comprehension level between boys and girls with special needs as the result of exposure to Digital Storytelling Strategy in Sokoto State.

Significance of the Study

The present research could be of great benefit to pupils with special needs their parents, members of the community, and international stake holders concerned with early grade reading assessment, as well as teachers training institutions. The study offers reading fluency and comprehension programme as an empowerment tool for pupils with Special needs. The aim of the study being to empower the Pupils with special needs (PSN) to read fluently with a desirable speed and accuracy as a step towards developing their reading comprehension via digital storytelling Strategy. With this intervention, it is believed the pupils would acquire necessary training to bridge the achievement gap between their peers. by this means this intervention may serve as a license for the pupils to continue with their education for living a meaningful life in the society.

II. METHOD AND MATERIALS

The study employed Matching Only Static Group Pre-and Post-test Design. The design is chosen for the study because it allows the use of existing classroom structure, where random sampling could not be possible. In this research design, the pre-test and post-test scores of the participants are compared to determine the gains of the study (Fraenkel & Wallen, 2000; Sambo, 2005; McQueen & Knussen, 2006). Whole Class Reading Comprehension Screening Tests was administered to the for matching the pupils into group. For the sake of this study, those pupils scoring unsatisfactory comprehension score of between 0-39 were considered as pupils with special needs, thereby, being suitable candidates for the study.

Population

All primary five pupils reading with difficulty in the public primary schools in Sokoto State constitute the target population for this study. According to Departments of Research Planning and Statistics, and Department of Quality Assurance of the Sokoto State Universal Basic Education Board, the State has a total population of 25, 056 class five primary school pupils. 14,660 of the pupils are males, while the remaining 10,056 are female pupils (SUBEB, 2015). However, the population of pupils with special needs is unknown. Consequently, sampling by proportion technique was employed to estimate the population of the target population from the schools sampled out for pilot study. The outcome of the pilot study conducted reveals that, over 90% of the total number of primary five pupils in the study area constitute Pupils with special needs. Therefore, the study
estimates the population of Pupils with special needs at 23,000.

**Sample Size and Sampling Techniques**

Irrespective of the population size, the study has a sample size of 94 pupils, 47 from each of the two school based on the recommendation by Fraenkel & Wallen (2000) that a minimum group of 30 participants is ideal for experimental research. While, purposive sampling technique was employed to sample the school. This was based on the understanding that the schools were homogenously using the same curriculum content; employing the same conventional approach; the teacher were employed by the same board; and having the same minimum teaching qualification. The schools were also not undergoing any International educational intervention programme of any sort.

**Instrumentation**

Two instruments were used in this study. Whole Class Reading Comprehension Screening Test (WHOCREST) and Individual Reading Fluency and Comprehension Test (IRFACT). WHOCREST is a screening test that was used to screen out able and disable readers based on their reading comprehension ability for this study. Pupils scoring below 50 marks are considered as pupils with special needs, thereby, considered as suitable participants of this study.

IRFACT has two sub-tests: Oral reading fluency and reading comprehension test. In this study only rate and accuracy of the pupils reading were assessed (Vaughn & Candace, 2009: 294). Reading rate is frequently measured by the number of words read correctly aloud per minute in specified grade level passage. While accuracy of word reading is determined by dividing the number of words read correctly by the number of errors committed. There are three levels of reading accuracy in assessing oral reading fluency. These include: Independent level; Instructional level; and Frustration levels (Klaude & Guthrie, 2008). The Reading Comprehension part of the IRFACT measures individual pupil’s ability to answer ten questions from a passage. The questions were both direct and simple. Pupils were expected to answer the comprehension questions after reading the passage once. Although the questions were not timed, excessive time taken to answer the question was considered as predictor of poor comprehension (Fry 1977; Quinn et al, 2007).

**III. RESULT**

**Research Question One**

Is there any significant difference in the level of ORF between boys and girls with special needs as the result of exposure to Digital Storytelling Strategies in Sokoto State? To answer this question, the mean scores of the post-test assessment between gender, excluding those exempted from the tasks was compared and presented in Table One.

Table 1 Means of Reading Fluency between Genders

<table>
<thead>
<tr>
<th>Gender</th>
<th>Mean</th>
<th>SD</th>
<th>Mean Difference</th>
<th>N</th>
<th>Excluded</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td>43.82</td>
<td>40.196</td>
<td>6.728</td>
<td>45</td>
<td>3</td>
<td>48</td>
</tr>
<tr>
<td>Girls</td>
<td>37.09</td>
<td>38.152</td>
<td></td>
<td>32</td>
<td>14</td>
<td>46</td>
</tr>
<tr>
<td>Total</td>
<td>77</td>
<td>17</td>
<td>94</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table One reveals that, after the treatment, boys (n = 45) had a mean score of 43.82, while the girls (n = 32) had a mean score of 37.09. The table shows a means difference of 6.7 in favour of the boys. This shows that, there was no significant difference in the mean scores of pupils with special needs between gender as the result of exposure to digital storytelling strategy in the study area.

**Research Question Two**

Is there any significant difference in the reading comprehension level between boys and girls with special needs as the result of exposure to Digital Storytelling Strategies in Sokoto State? To answer this question, Table 2 presents the means scores of the two assessments by genders, excluding those stopped from the two exercises.

Table 2 Means of Reading Comprehension Levels between Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Mean</th>
<th>SD</th>
<th>Mean Difference</th>
<th>N</th>
<th>Excluded</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td>21.11</td>
<td>26.648</td>
<td>1.42</td>
<td>45</td>
<td>3</td>
<td>48</td>
</tr>
<tr>
<td>Girls</td>
<td>19.69</td>
<td>23.069</td>
<td></td>
<td>32</td>
<td>14</td>
<td>46</td>
</tr>
<tr>
<td>Total</td>
<td>77</td>
<td>17</td>
<td>94</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table Two illustrates that, after the treatment, boys (n = 45) have a mean score of 21.11 with three of them being stopped from the test. Girls (n = 32) have a mean score of 19.69 with 14 girls being stopped from the test. The mean difference between boys and girls is 1.42 in favour of the boys. This answers the research question that, there was no significant difference in the mean scores of pupils with special needs between gender as the result of exposure to Digital Storytelling Strategies in Sokoto State.

**Null-Hypothesis One**

There is no significant difference in the level of reading fluency between boys and girls with special needs as the result of exposure to Digital Storytelling Strategies in Sokoto State. The summary of the Independent Samples T-test is presented in Table Three.

Table 3 Independent Samples t-Test on Reading Fluency between Gender

<table>
<thead>
<tr>
<th>Test</th>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>Mean Difference</th>
<th>SD</th>
<th>T</th>
<th>df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-Test</td>
<td>Boys</td>
<td>45</td>
<td>43.82</td>
<td>6.728</td>
<td>40.196</td>
<td>.739</td>
<td>75</td>
<td>.462</td>
</tr>
<tr>
<td>Level of Reading Accuracy</td>
<td>Girls</td>
<td>32</td>
<td>37.09</td>
<td></td>
<td>38.152</td>
<td>.739</td>
<td>75</td>
<td>.462</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>77</td>
<td></td>
<td></td>
<td></td>
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</table>

t (77) = .739, P = .462
The result in Table Three shows that the t-value was obtained at .739, with p-value of .462 at 75 degrees of freedom. The p-value obtained was greater than the alpha value of 0.05, this indicates that there is no significant difference in the level of reading fluency between boys and girls with special needs exposed to Digital Storytelling Strategy in Sokoto State. Therefore, the null-hypothesis was retained.

Null-Hypothesis Two

There is no significant difference in the reading comprehension level between boys and girls with special needs as the result of exposure to Digital Storytelling Strategies in Sokoto State. Table 4 presents the summary of the Independent Samples t-Test.

Table 4 Independent t-Test on Level of Reading Comprehension by Gender

<table>
<thead>
<tr>
<th>Test</th>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>Mean Difference</th>
<th>SD</th>
<th>T</th>
<th>Df</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-Test Level of</td>
<td>boys</td>
<td>45</td>
<td>21.11</td>
<td>1.424</td>
<td>26.648</td>
<td>.244</td>
<td>75</td>
<td>.808</td>
</tr>
<tr>
<td>Reading Comprehension</td>
<td>girls</td>
<td>32</td>
<td>19.69</td>
<td>1.424</td>
<td>23.069</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>77</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The summary of the Independent Samples t-test in Table 4 shows that the t-value was calculated at 0.244, with the p-value at .808. This implies that there was no significant difference in the reading comprehension level between boys and girls with special needs as the result of exposure to DSTS in Sokoto State. Thus, the Null-hypothesis was retained.

IV. DISCUSSION

The first finding reports no significant difference between the level of reading fluency between boys and girls with special needs exposed to Digital Storytelling Strategies in Sokoto State. This reveals that DSTS is gender friendly suitable for reading instruction to pupils with special needs. The finding confirms the assertion that pupils with special needs learn better when instructed via the multimedia elements(Mercer & Mercer, 1993; IDA, 2017).

The second finding reports no significant difference in the reading comprehension level between boys and girls with special needs exposed to digital storytelling in Sokoto State. This corroborates with Salkhord, Gorjian & Pazhakh (2013) who reported that, digital stories affect the learners’ reading comprehension positively among Iranian pupils through an internet-based instruction. Similarly, O’Donnell (2015) reported that digital technology in reading related instructions offers viable resources to aid the reading skills of pupils with special needs.

V. CONCLUSION

Based on the findings of this study conclude that: Multimedia elements of digital storytelling have the capacity to enhance the reading fluency and comprehension of boys and girls exposed to the strategy in the study area. Also, the study has shed new light that digital storytelling was amiable to both gender with reading difficulties in the study area.

Recommendations

Based on the findings of the study the following recommendation was made that digital storytelling should be embedded in the public primary schools to cater for the teaming population of Pupils with Special Needs in the study area. Also, primary school administrators should encourage their teachers to pursue digital and visual literacy skills to integrate DSTS into their classrooms.

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