Impacts of L2 Multiple Choice Glosses on English Language Reading Comprehension and Vocabulary Development of Primary Five Pupils in Sokoto State, Nigeria

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Abstract: *This study aimed to find out the impact of L2 Multiple Choice Glosses on the English Language Reading Comprehension and Vocabulary Development of Primary Five Pupils in Sokoto State, Nigeria. It was motivated by the retrograding conditions of reading culture, reading with comprehension, and vocabulary development by primary school pupils in Sokoto State. A quasi-experimental research design was used in the study. The population of the study is 94,088 primary five pupils, out of which 303 students from four different schools in intact classes were sampled. The sample was distributed into two experimental and two control groups. Two research questions and two null hypotheses guided the study. The instrument used is an adapted version of the Nigerian Early Grades Reading Assessment (EGRA) developed by the Northern Education Initiative in Bauchi in 2006. It was a ten-item multiple choice question that tested pupils' reading comprehension and vocabulary knowledge. The instrument was validated by an Associate Professor in Language Education and two senior lecturers in the Department of Curriculum Studies and Educational Technology, Usmanu Danfodiyo University, Sokoto. The instrument was pilot tested through pretest-posttest analysis. The reliability was measured using Kuder Richardson's R and an r = 0.89 was recorded. This ensures the researcher that the instrument is reliable. All hypotheses were tested at a p = 0.05 level of significance. After the analysis, all the two null hypotheses were rejected. The study found that Multiple Choice Glosses impacted the scores of the experimental group, and it did not show any significant difference between the performance of male and female pupils in the study. It was recommended that Multiple Choice Glosses should be included in the teaching of English language reading comprehension and vocabulary development.*

Introduction

Reading, particularly with comprehension, is recognized to be the basis of any form of instruction. Today, the term "reading" is currently interpreted far more broadly as a set of complex activities that allow individuals to interpret different discourse texts, including multimedia texts as another form of receptive language skills. That is why, in the present technologically driven society, the act of reading has further been broadened to include multimedia skills necessary to acquire information from pictures, video streams, mobile devices, computers, or other accessible digital technologies available in the educational sector, such as the

internet, blogs, wikis, and digital storytelling, rather than the previous notion of print-based literacy.

Reading involves comprehending what the writer has put down in the form of symbols. To do this, the reader has to understand the meaning of individual symbols before getting the overall message conveyed by the aggregate symbols. Eventually, these individual symbols refer to the words used in the passage. The practice of defining or explaining words, particularly difficult or less frequent or technical words, the reader comes across in the passage is called glosses, annotations, or marginal notes (Hong, 2010; Shalmani and Sabet, 2010). These notes are usually located on the side or at the bottom margin of the text passages. In some cases, the gloss is placed in the text of the passage (Cheng, 2009). Glosses are used with the intention of aiding decoding (Ko, 2005), assisting reading comprehension and improving vocabulary acquisition (Bowles, 2004), while also enhancing the fluency of the reading process (Taylor, 2009). All these are acts of accommodation used to provide the readers with relevant information for the comprehension of the main points, details, or meanings of words and registers found in the texts. By so doing, glosses supply explanations for "unfamiliar" words to limit continual consultation of dictionaries that may hinder and interrupt the L2 reading comprehension process (Lomicka, 1998).

Reading comprehension has been conceived as a process of constructing meaning from the information provided by the author, either in the traditional or digital discourse type that is the essence of reading and the ultimate goal of any form of reading instruction (Beatrice, 2008; Snowling, Cain, & Oakhill, 2009). Hence, in reading, learners can obtain effective comprehension skills by possessing a variety of skills in automaticity of word decoding (McConnaughhay, 2008). This is diagrammatically illustrated by the simple view of word recognition and message comprehension. These skills are the two major interactive skills in dealing with reading comprehension skills. Consequently, readers who are not yet fluent in reading slowly, word by word, read unnaturally, choppy and plodding, and thus experience difficulty in comprehending the text passages (Jibrilla, 2014).

Reading comprehension has three major elements: the reader, the text, and the purpose of reading. Therefore, to assess comprehension in reading, Snowling et al. (2009) offer five broad guidelines as follows:

1. The pupils must have the ability to decode and access the meaning of the printed words

2. The assessment should be designed to measure both decoding and comprehension

3. The response format should be categorically defined, which could be informed by multiple-choice, true-false judgments, sentence completion, open question answers, and story-retelling.

4. The nature of the assessment, whether written or spoken, should be clearly stated.

5. The assessment should measure fluency and comprehension-based on extending the text beyond word or sentence-level comprehension.

This study was conducted to explore the impact of L2 Multiple Choice Glosses on the English Language Reading Comprehension and Vocabulary Development of male and female primary five pupils in Sokoto State, Nigeria. The paper reviewed related studies and identified a gap that this study intends to bridge. For example, Chen, Hsu, & Chen, (2020) explored the effect of adding L1 glosses in the subtitle of an adventure game for vocabulary learning. The types of glosses considered by the study were single and multiple glosses. The study was empirical in design, involving 80 students. The study reveals that no significant difference existed between SG and MG on overall gain in reading comprehension; however, learners' language proficiency had a significant effect on students' word learning and text comprehension. Based on this result, the study recommends that English language reading teachers be aware that no matter what gloss type is used, the students' word learning will improve, hence stating the suitability of language glosses in reading comprehension classes.

Another study on language glosses was conducted by Azari, Abdullahi, and Huon (2012). The aim of the study was to explore the effects of different glosses on the reading comprehension of low-proficient postgraduate students. The study involved 76 EFL learners from the University of Putra, Malaysia. The study used three types of language glosses: L1 (Persian language) gloss, L2 (English language) gloss, and L1 and L2 (Persian and English language) gloss, but no gloss. The result reveals that all the participants in the gloss group recalled more ideas compared to the participants in the no gloss group. The study therefore recommends L2 reading instructors to prove EFL learners with glossed text because, according to the researchers, that would reduce the burden of relying on a dictionary for the meaning of any difficult word while reading. Glosses also guard against guessing the wrong or false meaning of an unknown word in a context.

Farvandin and Biria (2012) investigate the controversy around the effect of marginal glosses on reading comprehension and vocabulary retention in EFL learners. Three types of glosses were used in the study: single glosses in L1, single glosses in L2, and multiple-choice glosses in L2. The study involved 120 undergraduate students majoring in English using two vocabulary tests. One was administered immediately after the reading, and the second test was administered three weeks later. The study reveals that single gloss in the participants' second language was the most facilitative gloss type for the participants' reading comprehension. The study therefore recommends further studies using control groups and qualitative means of measurements, as the study measures only the participants' receptive knowledge of the target language. Going by these studies on text glosses to facilitate reading comprehension of the second language reveals the positive and favorable pedagogical importance of text glosses. The studies also proved beyond any doubt that the facilitative role of text glosses in reading comprehension cuts across language proficiency levels and ages, as could be seen that even university postgraduate students were supported with text glosses in their reading comprehension lessons. The only controversy that remains to be solved is which of the gloss types is most facilitating. This is an open challenge to serious second language teachers to find an empirical classroom research method to answer.

Tatum (2009), in her doctoral study, determined the effects of participation in a directed reading activity with digital storytelling on the information comprehension of 80 6th grade students in a private secondary school in the USA. The study lasted for 8 weeks, employing a mixed experimental and control design. One teacher was coached on how to operate and teach the participants the skills necessary to operate the technology for the production of digital storytelling. Both groups received a pre-test at the beginning of the study, and were at the initial stage exposed to DRA reading based on two reading passages. The experimental group was separately exposed to instructional activities needed for the creation of digital storytelling. Video recording was used to determine students' interaction in both the DRA and digital storytelling. Statistically, one-way ANOVA was employed to determine whether a significant difference existed between the two groups. The study asked only two research questions, and at the end of the study, the result revealed that there was no significant difference in information comprehension as a result of participation in a digital storytelling activity.

However, based on the video recordings of the participants in both the DRA and DST, it shows that the participants in the digital storytelling show evidence of meaningful interaction. The study concludes that, although it records non-significant differences in the comprehension of the participants of digital storytelling, the study reveals that desirable learning instruction exists and therefore calls for a similar study to be conducted using struggling readers as a replication. Tatum's study differs from the present study in the following areas, although both are doctoral studies: Tatum's study took place only in one private secondary school, with only 80 participants, using only two groups based on two reading passages, coached by a single instructor, for only 8 weeks' duration. In contrast, this study, intended to be used in four public primary schools, has 120 participants equally distributed into four groups, to be instructed by one instructor each, for a period of twelve weeks. However, what is worth borrowing from Tatum's study is the number of participants deemed ideal for digital storytelling instruction.

However, no one can dispute the fact that comprehension is the basis of reading. Therefore, pupils are expected to obtain and effectively use reading comprehension skills in order to develop lifelong learning skills. However, the opposite is the case, particularly in the public primary schools in Sokoto State. The reading comprehension exercises are poorly instructed and sometimes not instructed at all in primary classes. The primary school teachers complained that the students are poor readers and so can hardly comprehend what they read. The implications of this negative perception would have grievous consequences for the pupils' education in the future. ERI (2007) reported that the heaviest burden placed on society is on the pupils who were not taught to read with comprehension. Olaofe (2001) also remarked that no country can develop without a strong and qualitative education based on reading and comprehending the content of the texts. Hence, this study intends to investigate the instructional values of L2 multiple choice glosses on the reading comprehension of primary five pupils in Sokoto state.

Objective of the Study

The objectives of this study are as follows:

1. To determine the effect of L2 Multiple Choice Glosses on the English Language Reading Comprehension and Vocabulary Development of primary five students in Sokoto State, Nigeria.

2. To find out the impact of L2 Multiple Choice Glosses on the English Language Reading Comprehension and Vocabulary Development of male and female primary five pupils in Sokoto State, Nigeria.

Research Questions

The following research questions were asked:

RQ1: What is the impact of L2 Multiple Choice Glosses on the English Language Reading Comprehension and Vocabulary Development of Primary Five Pupils in Sokoto State, Nigeria?

RQ2: What is the impact of L2 Multiple Choice Glosses on the English Language Reading Comprehension and Vocabulary Development of Male and Female Primary Five Pupils in Sokoto State, Nigeria?

Research Hypotheses

The following null hypotheses were generated using the research questions as guides.

Ho_1: There is no significant impact between the performance of primary five pupils exposed to L2 Multiple Choice Glosses and vocabulary development and those in the control group on English language reading comprehension in Sokoto State, Nigeria.

Ho_2: There is no significant impact between the performance of male and female primary five pupils exposed to L2 Multiple Choice Glosses and vocabulary development and those in the control group on English language reading comprehension in Sokoto State, Nigeria.

Significance of the Study

The study is intended to examine the impact of L2 multiple choice glosses in teaching reading comprehension among primary five pupils in Sokoto state, Nigeria. This work is beneficial to different stakeholders in education. It will benefit English language pupils by employing accommodative explanations of the new words they may come across in the course of their reading comprehension exercise. This serves as a step towards understanding the contextual meaning of words and towards understanding the message of the text passage. The teacher would find the study significant by relieving themselves of the time-consuming task of explaining new words, sometimes in the pupils' local language before reading the comprehension exercise.

Research Design

The research adopted a pretest-posttest quasi-experimental, non-equivalent, non-randomized control group design. This is a design in which the performance of the experimental and that of control groups is compared after the treatment to their significant impacts. The groups would be measured twice. The first measurement is a pre-test in which the performances are measured in order to determine the significant impacts of the variables under consideration.

Population

The population of this study is all the primary five pupils registered in the public primary schools in the 2020/2021 academic session in Sokoto state, Nigeria. The state has a total of 94,088 class five pupils in 2020/2021 (Directorate of Research, Planning, and Statistics, State Universal Basic Education Board, Sokoto). The gender difference is 60,303 males, and 33,7855 female pupils.

Sampling size and sampling technique

The study employed the recommendation of Wallen and Fraenkel (2000) that a minimum number of 30 participants is ideal for experimental research and sampled 303 primary five pupils in intact classes (male = 125, female = 105) to participate in the study. In selecting the samples, the intact class was used for the study.

Research instrument

The instrument for data collection is an adapted version of the Nigerian Early Grades Reading Assessment (EGRA) developed by the Northern Education Initiative in Bauchi in 2006. The instrument was adapted to reflect appropriate vocabulary in Northern Nigeria and was derived from the Dolce Test of word recognition (NEI, 2011). The selected passages for data collection were subjected to the Flesch-Kincaid readability measurement test to establish the readability level of the passages and were modified where necessary to align with the on-grade oral reading fluency rates of the pupils in primary five in Sokoto State, Nigeria. This also coincides with the recommendation of Abadiano (2005) that 100–150 word passages are effective for primary five students.

This test measures an individual pupil's ability to answer ten questions from the reading passage test. It is a multiple choice test that measures the students' comprehension ability and knowledge of vocabulary. The questions for reading comprehension are both direct and simple. The running passage listed the questions asked and also provided examples of acceptable answers to guide the scoring decision. The comprehension test would be marked with 10 marks, one mark per correct response.

Experimental Treatments

Five reading passages from a UBE recommended English language book were selected. Each reading passage was accompanied by ten reading comprehension questions. Five unfamiliar words capable of hindering the comprehension of the passage were identified for L2 glossing prior to the study. The glossing was to assist in the learning of the unfamiliar words and facilitate the comprehension of the passage. The treatment lasted for 4 weeks as follows: one reading comprehension lesson per week. Each lesson tries to treat a passage using glosses, and the students' ability to understand the passage develops their ability to answer comprehension questions based on the story read and new vocabulary. The comprehension test would be marked with 10 marks, one mark per correct response.

Results

Ho$_1$: There is no significant impact between the performance of primary five pupils exposed to L2 Multiple Choice Glosses and vocabulary development and those in the control group on English language reading comprehension in Sokoto State, Nigeria.

Table 1: Analysis of the Mean Scores of the Experimental and Control Groups

Variables	N	DF	Mean	SD	T-Value	P-Value	Decision
Experimental Group	155		69.07	11.94			Ho1
		301			8.65	0.001	Rejected
Control Group	148		55.21	15.76			

Not Significant at $P < 0.05$

Table 1 shows the mean and standard deviation of the posttest scores of the experimental and control groups. The mean of the experimental group is 69.07, and the standard deviation is 11.94. The control group has a mean score of 55.21 and a standard deviation of 15.76. Therefore, the mean score of the experimental group taught English language reading comprehension and vocabulary using glosses is higher than that of the control group at t=8.65, df = 301, and P< 0.05. Hence, the null hypothesis was rejected. It indicated that Multiple Choice Glosses impacted the scores of the experimental group on the English language reading comprehension and vocabulary development.

Ho$_2$: There is no significant impact between the performance of male and female primary five pupils exposed to L2 Multiple Choice Glosses and vocabulary development and those in the control group on English language reading comprehension in Sokoto State, Nigeria.

Table 2: Analysis of the Mean Scores of the Males and Female Pupils Taught English language Reading Comprehension and vocabulary Development using Multiple Choice Glosses

Variables	N	DF	Mean	SD	T-Value	P-Value	Decision
Male Pupils	152		69.06	12.03			Ho2 Accepted
		301			0.65	0.52	
Female Pupils	151		68.18	11.70			

Not Significant at P < 0.05

Table 2 shows the mean and standard deviation of the posttest scores of the male and female pupils in the study. The mean of the male pupils in the study is 69.06, and the standard deviation is 12.03. The female pupil's mean score is 68.18, with a standard deviation of 11.70.This indicates that the mean score of the male and female pupils did not differ significantly at t = 0.65, df = 301, and P > 0.05. Therefore, the null hypothesis is accepted. This implies that teaching English as a Second Language reading comprehension and vocabulary development using multiple choice glosses impacts both males and females, irrespective of gender.

Discussion of Findings

Multiple Choice Glosses impacted the scores of the experimental group over the control group in English language reading comprehension and vocabulary development. Through the instructional methodology, the students can easily identify the main and supporting details in the passage. They can also use glosses to understand new words (vocabulary) in the passage. This study is in line with the study conducted by Tatum (2009) on the effects of participation in a directed reading activity with digital storytelling on information comprehension among 80 6th grade students in a private secondary school in the USA. The study found that the participants in the digital storytelling showed evidence of meaningful interaction. This is because of the new innovation introduced with accommodation using picture clues, sounds, and some eventualities in the passage. It also supported Farvandin and Biria (2012), who investigated the controversy around the effect of marginal glosses on reading comprehension and vocabulary retention of EFL learners. They found that gloss was facilitative in teaching pupils a second language in reading comprehension.

Multiple Choice Glosses did not show any significant difference between the performances of male and female pupils in the study. In the instructional methodology, both of the pupils can easily identify the main and supporting details in the passage and can also use similar tactics in using glosses to explain new words (vocabulary) in the passage. This finding supported the findings of Hsu (2011), Azari and Abdullahi (2012), and Farvandin and Biria (2012) that gloss was helpful in teaching second language reading comprehension and vocabulary development to students.This has also cut across gender, age level, and pupils' learning preferences.

Recommendations

The following recommendations were made:

1. L2 multiple choice glosses are a new instructional method of teaching English language reading comprehension and vocabulary development.

2. English language teachers should update their instructional methodologies by including innovative instructional strategies that could help English language pupils with their reading comprehension and vocabulary development.

Conclusion

English language teaching becomes effective when innovative instructional strategies are included in the instructional process. However, in L2 instructions, especially in primary schools, the English language teachers can help pupils by accommodating their English language learning needs. These accommodative techniques, like L2 multiple choice glosses, are informative enough to help students understand both the main and supporting details in the reading texts. It also assists students in expanding their vocabulary stores with new vocabulary and improving their lexical differentiation in contexts. Therefore, L2 multiple choice glosses are believed to develop in the pupils the culture of reading with comprehension and to take reading as a lifelong activity.

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Appendix

L2 MULTIPLE CHOICE GLOSSES PASSAGES
PASSAGE 1: TAYO'S COMPUTER

Bunmi loves visiting her oldest sister, Tayo, in Onikan. Tayo worked very hard 14
at school and she won a place at Ibadan University where she learned business studies. 28
Now she lives in a modern flat and has an important job in a shipping company. 45
Several times a year Tayo travels overseas to discuss business with colleagues who live 59
in Europe. She always invites Bunmi to stay during the school holidays and Bunmi is 74
very pleased. Tayo has a computer in her flat. 82

Tayo has been very patient and she has shown Bunmi all the things she can do on 99
her computer. When Bunmi first sat down at the computer, Tayo explained that the 114
little picture on the screen is called icons. 'What are they for?' asked Bunmi. 'Well, I 130
open an application for writing letters and reports with that icon. And this one turns my 146
email on and lists my messages. Can you see the special icon like a waste bin? I move 164
into it everything I have written that I don't want to keep in my computer any more. 181
Later, I can empty the bin by clicking on it.' 191

'What is this round icon for?' Bunmi asked. 'Ah, I can get onto the internet with 207
it. The internet has sections called websites and I read them to find all kinds of 223
information. You can use it to find facts to help with your school work. 237

'Tayo, what do you do with this icon?' 'I use it for looking at all the pictures I 255
have stored on my computer. Here's one of you at your cousin's naming ceremony.' 269

Bunmi has so much to learn about computers but she can already find different 283
websites on the internet, and send and receive emails. She hopes to write her school 298
essays on it soon. 302

PASSAGE 2: THE SNAKE RAINBOW

In Australia, there is a wonderful story about how life began. The black people, who lived there before the white people came, told the children this story.   16
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At first, the entire world was quiet and still. This was the time before there were any plants or animals. One day, Rainbow Snake woke and pushed up through the ground. She travelled far and wide, leaving long, deep marks on the land where she went. And that's how the valleys were made.   45
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Rainbow Snake shouted, 'Come out, frogs!' Slowly, the frogs came out from below the ground, with huge bellies full of water. Rainbow Snake tickled their bellies and when the frogs laughed, the water inside them came out. It filled the valleys and made the rivers and the lakes. Then grass arrived. Trees pushed out of the soil and yams grew under the ground. Now, all the other animals woke up and followed Rainbow Snake across the land. Everyone had enough to eat and all the birds and beasts were very happy.   94
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But some animals began to quarrel and make trouble. They wanted more food and more places to live in. Rainbow Snake said, 'I will reward those animals that behave well. They will become people, and they and their children will live on the land forever. I will punish those who make trouble. I will turn them into stone. And that's how the mountains and the hills were made.   186
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There were some people who had fights and hurt other people. Rainbow Snake was very angry. She said, 'I will turn all you bad people into vultures and no one will like you.' Today, vultures sit on buildings; watch the people below being kind and generous and friendly. Listen carefully and you can hear the vultures crying and wishing they could be people again. Sometimes black children in Australia catch a fat frog and tickle its belly with a little stick. They want it to laugh so that water will come out.   254
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PASSAGE 3: THE WIND AT NIGHT

Safiya didn't like going to bed because she couldn't sleep. It was the same every	16
night. Her mother sent her to bed but hours later she was often still awake.	31
Safiya was in bed but she couldn't sleep. She thought about her friends at school	46
and she wondered whether they were all asleep. Safiya looked through the window at	60
the stars. She looked at the moon high above her and sometimes she could hear the	77
wind in the trees outside.	80
Suddenly, Safiya heard a tiny voice outside. It said, 'Safiya, get out of bed. Stand up.'	96
Safiya wasn't frightened because the voice was very friendly. 'Who spoke to me?'	109
Safiya asked.	111
'It's me,' said the soft voice. 'Come to the window, won't you?'	123
Safiya went to the window but she didn't open it.	133
'Hello, Safiya,' whispered the voice. 'How do you know my name?' said Safiya.	146
'I'm always outside your home.'	151
'May I know your name?' Safiya asked. '1 don't have a name, but everyone knows me.	167
Which name would you like me to have?'	175
'You sound soft and kind - like gentle air,' Safiya said. 'May I call you Breeze?' 'You're	192
clever, Safiya. I am the cool night breeze. I'm always outside your room, keeping you	207
cool at night. Now, get back into bed.'	215
'Can I talk to you tomorrow?' asked Safiya as she pulled the cover over herself.	230
'Yes, but go to sleep now.'	236

PASSAGE 4: HOW A CAMERA WORKS

You have seen a picture in a newspaper or magazine. Have you ever wondered how 15
it was made? A camera works in the same way as your eyes. When your eyes look at 32
something, light travels from the object into your eyes. Then, a picture of it is sent to 49
your brain, but upside down! The front of your eyes is curved because your eyes are 65
each shaped like a ball. The front has a thin part like glass, called a lens. The direction 84
of light is changed as it travels to the back of your eyes. Because of the curve, the 102
bottom of what you see has become the top and the top has become the bottom, Your 119
brain does the job of turning the picture the right way up. 131

A photograph is made inside a camera in the same way. We put a special film inside 148
the camera. Light makes different marks on this film. The marks form pictures, This 162
film can then be taken out of the camera and developed into photographs. The picture 177
in the photograph is always upside down. A camera doesn't have a brain. We turn it the 194
right way up when we look at it. 202

Nowadays, there is another type of camera that is called digital camera. This camera 216
does not use a film. Instead of the image being recorded on a film as in the other type 235
of camera, the image, in the case of a digital camera, is recorded on a memory card. 252

PASSAGE 5: BILHARZIA

Snail fever or bilharzia is as old as history. Signs of it have been found in the	17
bodies of men from many past centuries. But only within recent years has man	31
learned its cause. Ways of curing it are still inadequate. And, far from being under	46
control, the disease already threatens 150-200 million persons and is steadily	57
spreading.	58

Snail fever is a disease of childhood that remains through old age, not often   72

killing by itself but weakening the people who catch it and making it easy for   87

them to get other illnesses. In its early stages it is marked by fever, too much   104

loose body waste, stomach pain, and later by the destruction of the intestines and   117

hardening of the liver.   121

This old and ugly disease is caused by small flat worms that live in the   136

human body, feeding on blood. Their presence was first discovered in 1851 by   149

Theodor Bilharz, who found the full-grown worms in the human body.   160