

Effects of Literal and Inferential skills on Senior Secondary Students' Achievement in Reading Comprehension in North-Central, Nigeria

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ABSTRACT

The study examined the effects of literal and inferential skills on senior secondary students' achievement in reading comprehension in North-Central Nigeria which comprises Plateau, Benue, Niger, Kwara, Kogi and Nasarawa states. The study adopted the quasi-experimental research design. Specifically, the pre-test post-test non-equivalent comparison group design. The sample size of the study consisted of 203 senior secondary students (SS2) The sample was drawn using simple random and purposive sampling techniques. Reading Comprehension Achievement Test (RCAT). was used to gather data. The Reading Comprehension Achievement Test (RCAT) measured the two reading skills namely the literal and inferential comprehension. The data collected for the study were organized and interpreted using descriptive and inferential statistics. The research questions one to two were answered using the mean and standard deviation. Hypotheses one to two were tested using analysis of covariance (ANCOVA). The findings showed that pre-reading activities motivate and sustain students' interest in the actual reading activity. They also activate the building of related information in such a way that new information is easily assimilated into learners' existing fields of knowledge. Though pre-reading activities such as brainstorming, use of picture and predicting play a critical role in the reading comprehension classroom, the study revealed that a significant number of teachers do not use them. The few who do, neither use a variety of them nor use them regularly. The study recommends that curriculum developers and implementers should incorporate appropriate and regular pre-reading activities for assigned texts in the reading comprehension classroom.

KEYWORDS: reading, pre-reading activities, reading comprehension, achievements.

1. INTRODUCTION

Reading comprehension is a fundamental academic skill that enables learners to understand, interpret, and evaluate written information effectively. Among the major dimensions of comprehension are literal and inferential reading skills, both of which are essential for intellectual development, academic success and effective communication. The ability to read and understand is, therefore, essential for academic learning because it is the foundation for success in all academic subjects. It is the essence and goal of reading, since the purpose of all reading is to gather meaning from the printed page. The ultimate goal of reading is for extraction of meaning from what the reader is able to read. It is the ability to read text, process it and understand its meaning.

Background and Statement of the Problem

Reading comprehension is the ability to read, internalize, understand, and interact with the text you are reading. It involves critical thinking and deductive reasoning to make meaning of an entire piece of writing. Reading comprehension skills are essential for students, professionals, and anyone who wants to read for pleasure or information. It's not just about phonological awareness and reading words aloud; it encapsulates language skills such as grammar (syntax), vocabulary, and semantics, to understand the meaning of texts. You make inferences and form an opinion about the read text. Good reading comprehension involves creating images of the words you just read. Readers make connections to previous knowledge as they enjoy the text. They can comfortably answer comprehension questions and summarize parts of the writing or the entire text.

Without reading, ideas and facts stored up in printed materials and electronic sources cannot be tapped. In view of this, reading is regarded indispensable in education as it promotes cognitive growth (Beard, 2021).

Seeing the important role that English language plays as medium of communication in education in Nigeria, the ability to read and understand texts is central. Reading is one of the four basic skills of English language namely listening, speaking, reading and writing. It is the primary means through which students gain information across various subjects and discipline. It makes students understand and interpret text which helps to enhance their critical thinking. Reading exposes one to new ideas, culture, and perspective and increases one's understanding of the world (Nwodo, 2019).

Researchers have consistently shown that both teachers and students face numerous challenges in teaching and learning reading comprehension. Many English language teachers in secondary schools lack specialized training in teaching reading strategies. According to Ajide (2020), many teachers rely on outdated methods that focus on literal comprehension and vocabulary drills rather than teaching inferential or evaluative reading skills. Teachers often adopt the read and answer method without guiding students through active reading strategies. Lack of familiarity with scaffolding techniques like prediction, vocabulary pre-teaching, pre-questioning, summarizing and previewing has effect on the students' performance and achievement. The conventional method employed by the teachers does not allow the students to employ various skills of reading that will aid their comprehension of the literal, inferential and critical among other skills.

In order to address the challenges of students' achievement in reading comprehension, the following skills need to be taught systematically and intentionally which are literal comprehension and inferential comprehension.

Literal reading comprehension is an understanding of information and facts that are directly stated in the text. This ability is considered the first and most basic level of comprehending a text. The literal level is the most fundamental part of reading. Without understanding of literal meaning, it will be difficult for the students to answer questions on a passage that requires literal understanding. Inferential reading is the ability to realize the hidden concepts and the unstated relationship between the lines in a text. It is concerned with the ability of students to understand meaning that is not explicitly stated or explained in the text. Critical reading is a process of analysing, interpreting and sometimes evaluating. When students read critically, they use critical thinking skills to question the text. Critical reading helps the reader to have a deep understanding of the passage. It helps the reader to seek knowledge, develop ideas and to reflect on the objectives of the passage.

Most of the studies conducted concentrated on EFL classroom environments and at the tertiary, pre-tertiary, and preschool levels. There exists little current literature on the effects of pre-reading activities on senior secondary students' achievement in reading comprehension. This study, therefore, purposed to find out the effects of literal and inferential skills in pre-reading activities on senior secondary students' achievement in reading comprehension in North-Central, Nigeria.

Aim and Objectives

The aim of this study was to ascertain the effects of literal and inferential skills in pre-reading activities on senior secondary students' achievement in reading comprehension in North-Central, Nigeria.

RQ1: What is the difference in literal comprehension skill achievement between experimental and control groups of SS2 students in public secondary schools?

RQ2: What is the difference in inferential comprehension skill achievement between experimental and control groups of SS2 students in public secondary schools?

Scope of the Study

This research work was restricted to the effect of literal and inferential skills in pre-reading activities on senior secondary students' achievement in reading comprehension in North-central Nigeria. Pre-reading activities such as brainstorming, pre-questioning, predicting were used to teach reading comprehension. The variables of interest as contained in the research questions were the ability to answer literal comprehension questions, and identify inferential ideas.

2. THEORETICAL FRAMEWORK

Schema theory was used for the study. The theory was first proposed by Immanuel Kant which was later developed by Sir Frederic Bartle who became the propounder of the theory in 1932 who posits that people's understanding and remembrance of events is shaped by their expectations or prior knowledge, and that the prior knowledge is presented mentally in some sorts of schematic structures. The profounder observes that when people are asked to repeat a story from memory, they often fill in details which are not included in the original but related to what they have already known based on their cultural background. The proponent identifies means on how to guide the reader in the actual reading comprehension as a process.

3. LITERATURE REVIEW

Reading comprehension is one of the pillars of the act of reading (Lawal, 2019). When a person reads a text he engages in a complex array of cognitive processes. The reader is simultaneously using his awareness and understanding of phonemes, phonics and ability to comprehend or construct meaning from the text. This last component of the act of reading is reading comprehension. It is the most difficult and most important of the three. There are elements that make up the process of reading comprehension. In order to understand a text, the reader must be able to comprehend the vocabulary used in the piece of writing. Reading comprehension is one of the necessary subjects in the primary and secondary levels of education. The readers are expected to drive the real information incorporated by the author, accurately. The fluency and accuracy skills motivate the children and create the tendency to read more. This provides the basis for the use of pre-reading activities as a strategy to teach reading comprehension to senior secondary students.

Reading comprehension is therefore the purpose of reading and remains an essential part of all learning. Comprehension can be conceptualized as the extraction of relevant knowledge from texts and consists of three elements; the reader, the text, and the purpose of reading. It is the interaction between text, readers, and purpose as well as the use of reading comprehension strategies that increase comprehension. Nardina (2018) consequently defines reading comprehension as the level of understanding of a text/message. Reading comprehension is the interaction between the written words and the knowledge they elicit from sources outside the text or message. Thus, reading comprehension is a cognitive process that is meant for decoding the meaning embedded in a text in order to understand what the author is communicating to their audience through the message. Without comprehension, reading is reduced to symbols that do not provide the reader with any information, and again, without comprehension, reading is nothing more than tracking symbols on a page with the readers' eyes and sounding them out (Mahmoud, 2015).

Effects of Pre-Reading Activities on Students' Reading Comprehension

Pre-reading activities are meant to give students the background knowledge they need in order to better understand a text when they interact with it. They are the activities that pupils are taken through to enable them to acquire skills for actual reading. Therefore, they are designed to prepare beginners for formal reading. Johnson (2010) states that pre-reading activities are a series of activities pupils are exposed to, as a way of preparing them for formal reading. For this reason, they can be viewed as essential tasks that should be carried out to activate learners' schema and avoid any failures in text comprehension. Pupils familiarize themselves with the subject, vocabulary, or challenging structures in the passage through the use of pre-reading activities. Pre-reading exercises are particularly useful in fostering a love for reading and in introducing important cultural ideas. According to Ping (2014), pre-reading activities are essential to pupils' later applications in school activities. They are exercises that give pupils the chance to decide whether to read more of a text in order to discover more intriguing ideas from it (Adonko, 2020), bring about success in pupils' comprehension (Lawal, 2019), has key impacts on reading comprehension.

Pre-reading activities are essential for giving students the fundamental knowledge they need about texts, piquing their interest in reading texts, and keeping them in a reading environment throughout their formal learning stage (Beard 2018). According to Naranjo (2021), students' schemata can be triggered during the pre-reading phase before the real reading stage, and this can improve their comprehension of written material. It is clear that pre-reading activities are very important in the reading class and have a good impact on pupils. Pre-reading activities, according to (Johnson, 2022), include a variety of games, comparative picture studies, and picture-storytelling exercises that are typically helpful in assisting children in developing the reading abilities necessary for formal reading. These activities are enabling activities which give young readers the thorough grounding they need to plan activities and understand the reading material (Fredrick, 2017). In this view, pre-reading activities uncover and elicit prior knowledge, and the purpose(s) for reading, and develop a knowledge foundation required for dealing with the content and structure of the contents provided (Adedigbe, 2019).

Pre-reading activities set up and strengthen students' foundation for reading materials, demonstrating the critical function pre-reading activities have in strengthening students' focus and attention on the reading materials they will be reading (Ahmed 2018). Without a doubt, the activities allow the child to gradually test out his emotional self, calm himself through emotional expression in a range of reading situations, and more easily pick up pre-reading skills (Abdulai, 2014). Pre-reading activities have drawn a lot of attention as the cornerstone techniques for introducing children to reading and maintaining their interest in texts (Bojovic 2017) and by employing these activities, readers are better prepared for the reading activities when they are motivated to read the text, which is

a result of pre-reading activities. Additionally, because of their increased confidence, children are better able to complete the activity without expending too much effort, and they are more eager to participate in it. Furthermore, pre-reading activities add excitement to the activity, give the students a reason to read, and give the teacher an opportunity to assess how well the text can be understood with the aid of the activities assigned before/after reading (Bakely 2021). Hence, by providing pre-reading activities, teachers can help learners become successful readers (Dickson, 2022). The application of the pre-reading technique is effective in improving reading comprehension of narrative text (Babayigit 2021) and increases reading performance.

Pre-reading activities have positive effects on students' performance in reading comprehension (Abraham, 2020) and can have positive effects on all students whether high-level or low-level, and all learners can benefit from the techniques (Coller, 2016). They are motivational (Nanda 2020), and improve students' comprehension of texts because pre-reading strategies activate students' prior knowledge and facilitate L2 learners' comprehension ability of the target text (Abbas (2018). Therefore, the wise use of pre-reading techniques is one primary step in ensuring efficient comprehension and a more successful reading (Christopher. 2017). Based on the forgoing arguments and empirical evidence, the following hypotheses are stated:

H₁: There is no significant difference in literal comprehension skill achievement between experimental and control groups of SS2 students in public secondary schools

H₂: There is no significant difference in inferential comprehension skill achievement between experimental and control groups of SS2 students in public secondary schools

Importance of Pre-Reading Activities to Students' Achievement

Pre-reading activities are strategies or exercises designed to prepare students for engaging with a text. These activities offer several advantages, both in terms of enhancing comprehension and fostering interest. Here are the key benefits:

- It activates prior knowledge by helping the students connect their existing knowledge and experiences to the new text and makes the reading material more palatable and easier to understand. It Builds vocabulary: It introduces key terms and concepts before encountering them in the text and reduces the cognitive load during reading, allowing students to focus on comprehension.

- It establishes purpose by encouraging students to understand why they are reading the text and sets goals, such as identifying specific information, themes, or ideas. It Stimulates Interest by engaging students' curiosity about the topic and makes them more motivated to read and explore the material.

- It promotes predictive thinking in encouraging students to predict contents based on titles, headings, and visuals and develops critical thinking skills by making them actively anticipate what they will learn. It facilitates engagement: It activities like group discussions, brainstorming, or visual analysis, foster collaboration and creates a dynamic learning environment before reading.

- It reduces anxiety by familiarizing students with the text's content or challenges this aspect can make it less intimidating and boosts confidence by preparing them for what lies ahead. It enhances comprehension: It prepares student to navigate the structure and ideas in the text and makes it easier to focus on deeper levels of understanding.

4. METHOD AND PROCEDURE

Design, Population and Sample

The quasi-experimental research design was used in the current study. Specifically, the study adopted the pre-test post-test non-equivalent comparison group design. The population of this study was all SS2 students in public secondary schools in North-Central Nigeria comprising; Plateau, Niger, Kogi, Benue, Kwara and Nasarawa States. The population of all the secondary schools in North-Central Nigeria was four thousand seven hundred, fifty-six (4,756) students. The sample schools for the study consisted of 203 students that were in SS2 at the time of the study in the designated schools.

Instrument

The Reading Comprehension Achievement Test (RCAT) was used to gather data for this study. The RCAT measured the two reading skills namely the literal skill, and inferential skill. The RCAT was adopted and adapted from SSCE English language 1 Examination of June 1992.

Procedure

The pretest was administered for two days. Day one was for testing questions on literal comprehension while day two was used for testing questions on inferential comprehension. A comprehension passage was given and students were asked to answer five questions.

Administration of the Treatment

Treatment was administered by the researcher in two experimental schools. Treatment consisted of reading comprehension achievement test. Students in the experimental group were taught using pre-reading activities while students in the control group were taught using normal school English lessons within the periods. Treatment lasted for the periods of 2 weeks which were delivered two times a week for 40 minutes, or a double period of 80 minutes.

Administration of Post-Test

The researcher administered on the participants in both the experimental and control groups after the treatment. It was administered the same duration of time and day as the pre-test. The text items were as same as the pre-test as students were asked to use 30 minutes to answer the comprehension questions on the passage.

Analyses

The research questions raised for this study were answered using the mean and standard deviation. By this, the significant difference between the experimental and control groups in the pre-test and post-test were determined.

Research Question One

What are the pre-test and post- test literal comprehension achievement mean of SSII students between the experimental and control groups?

Table 1

Results of the Analysis on Pre-test and Post-test Literal Comprehension skill Achievement Mean Scores of the Experimental and Control Groups

Groups		N	\bar{X}	SD	Mean gain	Mean difference
Experimental	Pre-test	44	5.72	0.99		
	Post-test	44	15.20	1.53	9.48	
Control	Pre-test	41	5.78	1.63		6.62
	Post-test	41	8.58	2.06	2.80	

The results of the analysis from Table 1 revealed that the experimental had a pre-test mean score of $x=5.72$, $SD=0.99$ and a post-test mean score of $x=15.20$, $SD=1.53$ with mean gain between the pre-test and post-test of 9.48 in favour of the post-test while the control group had a pre-test mean score of $x=5.78$, $SD=1.63$ and post-test mean score $x=8.58$, $SD= 2.06$ with mean gain of 2.80 in favour of the post-test. The results indicate that the post-test mean score of the two groups increased after exposure to different treatment, but that of the experimental group of $x=15.20$ is higher than that of control group of $\bar{x}=8.58$. It can be concluded that pre-reading activities improves senior secondary students' achievement in literal comprehension more than conventional method The results showed a mean difference of 6.62 in favour of the experimental group. This implies that pre-reading activities improves senior secondary school students' achievement in inferential comprehension more than conventional method.

Research Question Two

What are the pre-test and post-test inferential comprehension achievement mean scores of SSII students between the experimental and control groups?

Table 2

Results of the Analysis on the Pre-test and Post-test of Inferential Comprehension skill of the Experimental and Control Groups

Group		N	\bar{X}	SD	Mean	Mean difference
Experiment	Pre-test	44	6.54	1.19		
	Post-test	44	15.79	1.40	9.25	
Control	Pre-test	41	6.69	1.22		6.48
	Post-test	41	9.31	2.24	2.62	

The results of the analysis from Table 2 showed that the experimental group had a pre-test mean score of $\bar{x}=6.54$, $SD =1.19$, and a post-test mean score of $\bar{x}=15.79$, $SD=1.40$ with a mean gain between the pre-test and post-test

of 9.25. while the control group had a pre-test mean score of $\bar{x}=6.69$, $SD=1.22$ and a post-test mean score of $\bar{x}=9.31$ $SD=2.24$ with mean gain of 2.62 in favour of the post-test. The results indicated that the post-test mean score of the two groups improves after treatment with that of the experimental group of 15.79 higher than that of the control group of 2.62. The results showed a mean difference of 6.48 in favour of the experimental group. This implies that pre-reading activities improves senior secondary school students' achievement in inferential comprehension more than conventional method.

Hypothesis One

There is no significant difference between the pre-test and post-test literal comprehension achievement mean scores of SS II students between the experimental and control groups

Table 3

ANCOVA Results on the Pre-test and Post-test Literal Comprehension Achievement Mean Scores of the Experimental and Control Groups

Sources	Type 2 sum of squares	df	Mean square	F	Sig.	Partial Enter Square
Corrected model	950.612 9	2	475.306	155.666	<.001	.792
Intercept	408.568	1	408.568	133.809	<.001	.620
Pre literal	20.735	1	20.735	6.791	.011	.076
Group	935.074	1	935.074	306.244	<.001	.786
Error	250.376	82	3053			
Total	13465.000	85				
Corrected total	1200.988	84				

a R squared = .792 (Adjusted R squared= .786)

ANCOVA was conducted to determine if a significant difference exists in the post-test literal comprehension achievement mean scores of SS II students between the experimental and control groups. Table 3 showed that $f(1,82)=306.244$, $p>0.001$ partial $r=.786$. Since the p-value of 0.000 is less than the significant level of 0.05, with an effect sizes of 78.6%. The null hypothesis is rejected indicating that there is a significant effect of pre-reading activities on SSII students' achievement in literal comprehension. The results further showed an adjusted R squared value of .786 which implies that 78.6% of the variation in the dependent variable which is literal comprehension is explained by the variation in the treatment which is pre-reading activities. While the remaining 22.4% is due to the other factors not included in this model. We can conclude that pre-reading activities significantly improve SSII students' achievement in literal comprehension than conventional method.

Hypothesis Two

There is no significant difference in the pre-test and post-test inferential comprehension achievement mean scores of SSII students between the experimental and control groups.

Table 4

ANCOVA Results on Pre-test and Post-test Inferential Comprehension Skill Achievement Mean Scores of the Experimental and Control Groups

Sources	Type II Sum of Square	DF	Mean Square	F	Sig.	Partial Enter Square
Corrected model	899.4289	2	449.714	132.961	<.001	.764
Intercept	591.699	1	591.699	174.940	<.001	.681
Pre-inferential	8.688	1	8.688	2.569	.113	.030
Group	892.583	1	892.583	263.898	<.001	.763
Error	277.349	82	3.382			
Total	14823.000	85				
Corrected model	1176.776	84				

R Square of =704 (adjusted R squared =759)

ANCOVA analysis was conducted to determine if a significant difference exists in the post-test inferential comprehension achievement mean scores of SSII students between the experimental and control groups. Table 4 shows that $F(1,82) = 263.898$, $p < 0.003$ (part $n = 763$), since the p-value of 0.000 is less than 0.05, level of significant with an effect size of 76.3%. The null hypothesis is rejected, hence there is a significant difference between the post-test inferential comprehension achievement mean scores of SSII students between the experimental and control groups. The results further revealed an adjusted R squared value of .759 which means that 75.9% of the variation in the dependent variable which is achievement in inferential comprehension is explained by the variation in the treatment which is pre-reading activities while the remaining 24.1% is due to other factors not include in this model. This implies that pre-reading activities significantly improves SSII students' achievement in inferential comprehension more than conventional method.

5. DISCUSSION

The results from research question one revealed that literal comprehension skill of both control and experimental groups were mostly in the poor category at pretest. After treatment, however, the literal comprehension skill of the experimental group showed significant improvement in the literal comprehension skill of students in the control group. This finding is in consonance with Osei (2016), Nurdima (2018)), who found that pre-reading activities are essential for giving students the fundamental knowledge they need about texts, piquing their interest in reading texts, and keeping them in a reading environment throughout their formal learning stage. Results obtained from research question two showed that both control and experimental groups recorded low scores in inferential comprehension achievement test at pretest as both groups had high percentage of students in poor category. At posttest, the experimental group increased in inferential comprehension skills while the control group did not improve significantly. This finding supports the research of Paul and Christopher (2017) who found out that Inferential skill helps the students to realize the hidden concepts and the unstated relationship between the lines in a text and it is concerned with the ability of students to understand meaning that is not explicitly stated or explained in the text.

Result from hypothesis one as presented on table 2 revealed that the experimental group improved in their literal comprehension scores after treatment unlike the control group which did not improve as indicated by the posttest. It means that pre-reading activities had effect on senior secondary students' achievement in reading comprehension in the experimental group than the control group. Finding from hypothesis two showed that the inferential comprehension achievement scores of the experimental group did significantly better than the control group after posttest when reading a text. Inferential comprehension is higher cognitive level of comprehension and it can only be attained when pre-reading activities are employed This view was corroborated by Naranjo (2021) who opined that; since inferential comprehension requires readers to read between the lines' It is more challenging comprehension task. The results also agree with the views Agbevivi (2022) and Ramli, (2019) who agree that, comprehension strategies like prior knowledge for text content which are fundamental factors in gaining comprehension should be taught intentionally to learners.

6. CONCLUSION

Literal and Inferential comprehension serves as the basis for higher-order thinking skills. A reader must first comprehend the explicit meaning of a text before making interpretations or critical evaluations. It helps the students to develop strong comprehension and as a result are able to follow instructions, answer factual questions, summarize information, and retain important details across different academic disciplines. Inferential skills help reader to analyze information, evaluate arguments and make logical judgements beyond surface level understanding. It trains the brain to do more than just photocopying. Pre-reading activities is, therefore, an effective strategy of teaching reading comprehension because of its gains it yielded to students in the experimental group. This study has established the fact that pre-reading activities have significant effects on students' reading comprehension achievement. When the right strategy and activity are employed to teach reading comprehension among students, the number of failures would be reduced drastically. Based on the significant gains recorded by the experimental group at posttest as compared to the control group whose posttest scores did not significantly improve, it is clear from the findings that pre-reading activities can have impact on the students' reading comprehension achievement. Findings from the study also established that the gain scores which reflected on the experimental group was a result of the use of pre-reading activities.

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