



Effect of Brain-Based Learning Strategy on Junior Secondary School Students' Reading Skills in English Language in Maiduguri Metropolis, Nigeria

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Abstract. This study deals with the Effect of Brain-Based Learning Strategy on Junior Secondary School Students' Reading Skills in English language. The study seeks to examine the extent to which the use of a brain-based learning strategy determines the abilities of students in the five sub-skills of reading. These are: pronunciation, vocabulary, grammar, fluency, and reading comprehension. A quasi-experiment design was used. The population of the study comprised all junior secondary school two (JSS II) students of a selected school in Maiduguri Metropolis, Borno State, Nigeria. Two intact classes of the same level from the selected school formed the experimental and control groups respectively. One hundred and twenty (120) students were selected to participate in the study using convenience sampling technique. A self-developed instrument entitled 'English Language Reading Skills Test' (ELRST) was administered as a pretest and posttest to the participants to determine their homogeneity as well as the effect of the strategy. The reliability of the instrument was obtained through Cronbach Alpha's reliability test at the 0.05 level of significance. The data were analysed using independent sample t-test and eta squared was used to examine the effect size. The findings of the study revealed that the brain-based learning strategy has a significant effect on students' reading skills. It is, therefore, recommended that teachers be trained to effectively deploy brain-based learning strategies in their instruction.

Keywords: Brain-Based Learning Strategy, Reading Skills, Pronunciation, Vocabulary, Grammar, Fluency and Reading Comprehension.

1. Introduction

English language teachers, all over the world, have recently become increasingly aware and interested in understanding the psycholinguistic in their quest for appropriate pedagogy. This is because of the growing needs to address complexity and diversity in classroom; particularly with the current trends of advocacy for inclusive education for all categories of students with diverse backgrounds, needs and cognitive ability in a classroom. Therefore, the deployment of brain-boosting activities to support cognitive development of learners become prominent in the teaching and learning.

Brain-based learning strategy is an educational approach that incorporates diverse teaching methods, lesson designs, and education programs that are grounded in scientific research on how the brain learns. This concept is typically built on the ideas of brain-based learning which focusses on crucial variables such as cognitive growth in students (Uzezi & Jonah, 2017). The mind thrives in a collaborative environment (Gardner 1983). Brain-based learning can influence the instructional methods that are closely connected to the learner and learning environment, as certain parts of the brain are directly involved in emotions, consciousness, and memory (Pool, 1997). Both teachers and students possessed a clear understanding of their respective expectations. Brain-based learning was shown to be an efficient learning method that allowed for flexibility in time. It involved a consistent approach to teaching, utilising tactics and continuing questioning and analysis by teachers for their students (Klimek, 2009).

Brain-based learning is a revolutionary learning model that has significant implications for educators and learners (Uzezi & Jonah, 2017). It can be characterized as a method that emphasizes deliberate practice, enhancing students' capacity to retain new information and enabling them to establish realistic objectives and expectations based on observable progress. It is, therefore, neuroscience and psycholinguistic-shaped teaching methods and strategies that tends to enhance teaching and learning.

According to Li (2022) brain-based learning examines student learning and their achievement from the lens of the human brain. It involves unique teaching and learning techniques that are designed based on how attention, retention, motivation, and the cognitive aspects function in human brain. Hence, incorporating the knowledge into teaching and learning to maximise education outcome. By selecting a curriculum and delivery method for each student group according to the science of learning, brain-based learning strategy aims enhance the learning process and its phase. Sousa and Luna (2004) opined that Brain-based learning approach helps facilitating meaningful language learning through the natural way, brain work to help learners to use language in a meaningful context. Using such a brain compatible approach undoubtedly follows the spontaneous techniques learner use their brains. Spontaneous learning experiences maximize the learning opportunities and make learning last longer. According to Wolfe (2001) Brain-based learning is relevant and meaningful to previous mental, emotional and physical experiences strengthen memory. Caine and Caine (2006) view that each brain system within whole brain seem to work collaboratively to provide meaning full learning. Learning is complex process, despite the advent of several teaching and learning theories approaches and strategies. The ultimate goal teacher aspires to achieve is to get their students involved and hopefully engaged in the lesson through carefully selected teaching practice. Moreover, the significance of this strategy on English language skills have been widely accepted.

Fundamental language skills include four key areas: listening, speaking, reading, and writing. Listening skills are about understanding, evaluating, and interpreting the information shared by the speaker. In line with this viewpoint (Jannah, 2015) opined that listening is a creative skill that involves hearing sounds, organizing, comprehending, and exploring the structural and phonological elements of the utterance to arrive at the implicature of the speech or perceived meaning driven by the utterance. On the other hand, speaking skills are crucial for keeping the listener

engaged and ensuring the entire communication process is grasped. According to Nopiyanti (2012) speaking is an interactive process of meaning construction that comprises information production, reception, and processing. It involves both speaker and listener and is one of the most difficult skills for language learners to master. To communicate effectively, it's important to have clear and fluent expression and language use. Reading is also another vital skill that helps in understanding different types of texts, including their background and implied meanings. Writing skills involve the capacity to clearly share ideas through well-organized writing and smooth information flow. In communication, individuals usually use a mix of these skills at the same time. Among these four language skills, reading is the most critical skill for language learners to master at all because students do more reading not only in language related subjects but also other discipline right from the basic education levels.

Reading skills can be define as a skill that help to understand different texts, their context and inference. These skills are crucial to improving your overall literacy skills as they can help enhance your vocabulary, expression, analysis and communication. The following are types of reading skills. Skimming: it is a technique that allows you to quickly read through a text and pick out the main ideas. Scanning: it's a technique that allows you to quickly read through a text and find specific information, intensive reading is a technique that allows you to read a text slowly. And carefully in order to understand all the details and nuances. Extensive reading/speeding reading is a technique that allows you to read a text quickly. Reading skills has a great importance like it stimulates imagination; it enhanced vocabulary it also helps in cognitive development and greater concentration. Reading sub-skill refers to the well-planned reading approach which helps the learners to comprehend and perceive the meaning of the text effectively. There are different kinds of reading sub-skill such as skimming, scanning, intensive reading, extensive reading etc.

Pronunciation is a key component of reading that refers to the ability to correctly articulate and enunciate the sound of a language, word and phrases. It involves understanding the phonetic element of a language such a vowels and consonants and being able to produce these sounds perfectly (Swingley, 2020). Good pronunciation skills are essential for effective communication as they ensure that others can understand what you are saying clearly and accurately. The second component is grammar which stands for the rules of a language governing the organization of the language structure as well as their meaning. It

includes several aspects of English language like words, phrases, clauses, sentences and other larger units. According to Pennington (2010) a basic understanding of grammar is fundamental for higher levels of communication, achievement in standardized tests. Reading comprehension and fluency are another vital part of daily life and skills that are tied to the lifelong success in academic and occupational perspectives. Shanahan (2000) emphasized the importance of developing reading fluency in the primary grades as essential for the transfer of literacy skills to other academic areas. Scholars like Pinnell and Fountas (2009) viewed reading comprehension as reflective reading that struggling students have trouble recognizing the words of age-appropriate text. It is the understanding of the text language and textual meaning.

Developing reading skills require both student and teachers to work hard to overcome the perceived challenges that students mostly encounter especially as the basic level. These are: confusion about the meaning of words and sentences; inability to connect ideas in a passage; The omission or glossing over of detail can make it difficult to identify crucial information from minor details; lack of concentration during reading. In the context of this study, it is observed that students at all levels struggle to improve their reading skills. Though some studies attributed the poor reading ability to the proliferation of social media that tends to distract students from good reading habit. Some studies highlighted key context-specific factors such as teacher quality and their motivation, socio-economic status and many more. Several efforts made to address this through national reading framework, seminars and academic gathering. Yet, there are significant issues of poor reading skills amongst public primary and secondary school leavers. Therefore, this research seeks to examine Effect of Brain-Based Learning Strategy on Students' Reading Skills.

1.1 Statement of the Problem

Student right from lower basic level are expected to have an improved reading proficiency. This is because reading is a crucial skill that guarantees academic success of all other subjects. Despite its importance, students struggle poorly to read especially at the primary, junior and secondary school levels in Nigeria. They feel unsafe, stressed or experiencing a low cycle of brain activity, learning becomes impossible and they may hate the learning process as a whole and may drop out. Several factors are believed to be contributing to this issue; including teachers' inability to deploy suitable pedagogies, lack of resources, lack of capacity to adjust to the diverse needs of the

students etc. Several attempts are recurrently made to address the problem by organizing teachers training, workshops, seminars, conference etc. yet the issue is persistent. Therefore, this research tends to examine Effect of Brain-Based Learning Strategy on Student Reading Skills.

1.2 Objectives of the Study

The Objective of the study are to examine:

- Effect of Brain-Based Learning Strategy on Students' Pronunciation
- Effect of Brain-Based Learning Strategy on Students' Grammar
- Effect of Brain-Based Learning Strategy on Students' Vocabulary
- Effect of Brain-Based Learning Strategy on Students' Reading Comprehension
- Effect of Brain-Based Learning Strategy on Students' Fluency

1.3 Hypothesis

The following hypothesis was tested:

There is no significant effect of Brain-Based learning strategy on junior secondary school students' reading skills in English language.

2. Methodology

The research design used for this study was quasi experiment to determine the baseline and endline performance of the two groups. The population for this study comprised of all Junior secondary school two (JSS II) students of a selected school. Total number of 120 students were sampled using convenience sampling technique. The participants were grouped into experimental (60) and Control (60) groups. English language reading skill test was developed. The questions were designed based on the objectives type question; fill in the blank and essay questions. The instrument was subjected to validity and reliability test. Content and face validity was obtained by subjecting the tool to series of reviews by the subject expert and English language teachers. Reliability of the instrument was obtained using Cronbach Alpha's reliability test at 0.05. The data was collected through pre-test and post-test. The pre-test was administered to both groups to establish their homogeneity in the reading skills whereas the post-test was administered after the treatment to examine the effect of reading skills on the treatment groups. Independent T-test was used to determine the effect of brain-based learning

strategy and the effect size was measured using eta square.

3. Results and Discussion

The hypothesis which stated ‘*There is no significant effect of Brain-Based Learning Strategies on junior*

secondary school students’ reading skills in English language’ was tested by comparing the performance of the experimental and control groups in both pre-test and post-test. An independent t-test was used to determine whether there was statistically significant difference between the performance of the two groups. The results were presented as in the following:

Table 1: Comparing the Performance of the Experimental and Control Groups in reading skills

| | | t-test for Equality of Means | | |
|--------------------|-----------------------------|------------------------------|----------------|-----------------|
| | | Df | Sig (2-tailed) | Mean Difference |
| Pronunciation | Equal variances assume | 68 | .000 | 11.000 |
| | Equal variances not assumed | 48.023 | .000 | 11.000 |
| Grammar | Equal variances assumed | 68 | .000 | 12.571 |
| | Equal variances not assumed | 45.282 | .000 | 12.571 |
| Vocabulary | Equal variances assumed | 68 | .000 | 11.857 |
| | Equal variances not assumed | 48.643 | .000 | 11.857 |
| Read Comprehension | Equal variances assumed | 68 | .000 | 10.143 |
| | Equal variances not assumed | 47.173 | .000 | 10.143 |

Table (1) presents the independent sample t-test of the control and experimental groups to compare their performance in the post-test. The results showed that experimental group outperformed their counterpart in all the sub-skills of reading at 0.01 level of significance. Thus, affirming the effect of the brain-based learning strategy on students reading skills.

To determine the effect size of brain-based learning strategy on the experimental group’s reading skills, eta square was used. The results showed high effect size of the brain-based learning strategy on all the five subskills of the reading.

4. Summary of the Findings

The following are the key findings of the research:

- Students’ pronunciation significantly improved when brain-based learning strategy deployed.
- Students learn grammar better when brain-boosting activities are incorporated into the teaching and learning.
- Students’ vocabulary increased due to the implementation of the brain-based learning strategy
- Students showed improved reading comprehension when teachers incorporate brain-boosting activities into the teaching.
- Students reading fluency enhanced due to the effective implementation of the brain-based learning strategy

5. Conclusion

Based on the findings of the study, it was concluded that the brain-based learning had a significant effect on students’ pronunciation, grammar, vocabulary, comprehension and fluency. When teachers incorporate brain-based activities into their teaching, students feel relaxed, secured and physiologically ready to learn faster.

6. Recommendations

Based on the findings of the study, the following recommendations were made:

- School administration should provide adequate instructional facilities needed for the implementation of the brain-based learning strategy to maximise its benefit.
- School administration should encourage teachers to learn variety of methods and strategies to enhance their pedagogical capacity for improved teaching and learning in schools.
- Government should invest heavily in proving safe, secure and conducive learning environment for the overall teachers’ job performance as well as students’ quality learning.
- Professional learning community should be promoted to create platform for teachers to

share experiences and exchange knowledge to address pedagogical gaps in schools.

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