

EFFECTS OF GRAPHIC ORGANISER INSTRUCTION ON SENIOR SECONDARY SCHOOL STUDENTS' MAIN IDEA AND RETELLING SKILLS (COMPREHENSION) OF EXPOSITORY TEXTS

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ABSTRACT

*Reading comprehension is an important skill for students to achieve academic progress and function effectively in a variety of situations, including school setting and work place. Secondary school students are required to read and understand different content areas in school. This study investigated the impact of graphic organizer instruction on students' comprehension of expository texts using a quasi-experimental design. Descriptive statistics showed that both experimental and control groups had comparable comprehension levels before treatment, but posttest results indicated a significant improvement in the experimental group, with mean scores rising from 7.49 to 21.01 for main idea identification and from 8.00 to 20.78 for retelling. Independent samples *t*-tests confirmed pretest equivalence, while paired samples *t*-tests revealed highly significant within-group improvements ($p < .001$) with large effect sizes. Posttest comparisons further demonstrated that the experimental group significantly outperformed the control group ($p < .001$, Cohen's $d > 4.0$). These findings support schema theory, suggesting that graphic organizers effectively enhance comprehension by visually structuring information. Given the study's limitations, future research should assess long-term retention and explore its application in diverse subject areas. The implications were that teachers should use the graphic organiser technique to teach students how to identify main idea and retell the reading passages in an organised and meaningful way. The study recommended that among other things, more awareness through seminars and workshops on the use of graphic organisers in schools should be created.*

Keywords: *Graphic Organizer, Main Idea, Retelling Skills*

Introduction

Reading is a fundamental skill essential for students to extract meaning from texts, directly influencing their academic performance and serving as a predictor of future success. It is the most efficient means for learners to acquire knowledge; thus, their performance across all fields of learning is affected by their ability to read and comprehend. In secondary schools, students read to learn, making comprehension crucial in the educational process (Uba, Audu & Lawal, 2017). Without strong reading comprehension skills, students' academic success may be unattainable, as these skills are vital for grasping complex concepts (Musa, Ibrahim & Bako, 2024). As students advance through grades, academic demands increase, often in the form of reading new and complicated content (Nwose, Nkama & Nwose, 2023). However, explicit reading instruction tends to diminish, leading to poor

performance in reading comprehension. Cultivating reading skills during elementary education lays the foundation for effective reading, but this requires further reinforcement to meet the content area reading demands of secondary education.

Numerous studies have revealed that Nigerian students face various reading comprehension difficulties, including the inability to distinguish relevant from irrelevant details, extract facts from passages, retain and recall information, and a weak vocabulary base (Akaeze & Okigbo, 2021; Owolabi & Adaramati, 2015). Consequently, students struggle to extract meaning from texts and answer comprehension questions effectively

In secondary school, students encounter two major types of texts: narrative and expository (Nwose, et al., 2023). While some characteristics of these texts overlap, they differ in structural patterns, which refer to the organization of ideas and their relationships to convey meaning. Comprehending and responding to

both narrative and expository texts is critical for secondary school students (Fatimayin, 2017). Narrative texts are generally easier to comprehend and remember than expository texts due to their familiar content. Students possess a wealth of experiences relevant to the structure and content of stories, whereas they may lack similar background knowledge for expository texts (Akaeze & Okigbo, 2021).

Several factors make expository texts challenging to read, including complex text structures, new information, specialized vocabulary, readability levels, abstract concepts, and the expectation for readers to retain information (Owolabi & Adaramati, 2015). Furthermore, expository texts are less personal, more concept-dense, contain more technical terms, and require greater background knowledge. As students' progress through grade levels, the complexity of expository texts increases, necessitating the ability to comprehend texts both literally and inferentially. This ability enables readers to interact with texts by predicting, questioning ideas, monitoring understanding, clarifying confusion, and connecting information to prior knowledge and experience (Fatimayin, 2017).

Therefore, students cannot achieve academic progress, particularly in reading comprehension, without guided reading instruction that fosters effective and efficient reading skills. Strategic reading involves gaining information by reading smarter, moving from decoding to meaningful comprehension, identifying main ideas and supporting details, and recalling information to comprehend texts at both literal and inferential levels. Many secondary school students read below their grade level, often due to difficulties in reading strategically and comprehending materials (Owolabi & Adaramati, 2015). Poor instruction by teachers, attributed to a lack of appropriate methodology, exacerbates this issue (Fatimayin, 2017). The prevailing method of teaching reading often involves having students read texts and answer questions without sufficient guidance, leading to assessments based solely on correct answers. Teachers are responsible for preparing students for success, and many reading difficulties could be mitigated by using graphic organizers as a teaching strategy in reading instruction.

Graphic organizers are visual representations of information from texts that facilitate teaching and learning through the use of lines, arrows, and spatial arrangements to describe content, structure, and key conceptual relationships (Fatimayin, 2017). They help visualize and organize information, making abstract ideas visible and concrete, thereby engaging students and stimulating their motivation to learn (Akaeze & Okigbo, 2021). Visual aids have a positive impact on students' achievement by developing creativity, increasing general knowledge, and enhancing overall

academic performance. Graphic organizers identify salient details in passages and eliminate extraneous information that may distract readers from important content. They assist in identifying important ideas, understanding their relationships, and locating specific examples within the text. Research indicates that minimal expository text instruction occurs during secondary years, leading to inadequate acquisition of reading comprehension skills and many students reading below grade level (Owolabi & Adaramati, 2015). Mastering the comprehension of expository texts profoundly affects students' overall academic achievement (Akaeze & Okigbo, 2021).

Developing effective text comprehension instruction is a research priority, as it is crucial to assist students in reading, comprehending, recalling, and retaining information. Therefore, exploring various approaches to improve students' reading comprehension has become essential. It is against this background that this study examines the effects of graphic organizer instruction on SS1 students' comprehension of expository texts.

The theoretical framework for this study is premised on the Schema theory which posits that individuals interpret and comprehend new information by linking it to their existing knowledge frameworks, known as schemas. In educational contexts, activating these schemas can significantly enhance students' reading comprehension and retention. In this study the schema theory was integrated using graphic organizers to activate and link new information to pre-existing knowledge which enables students to build appropriate schemas.

Research Questions

The following research questions guided the study:

1. What is the level of performance of students in main idea identification (experimental vs. control) before and after treatment?
2. What is the level of performance of students in retelling (experimental vs. control) before and after treatment?

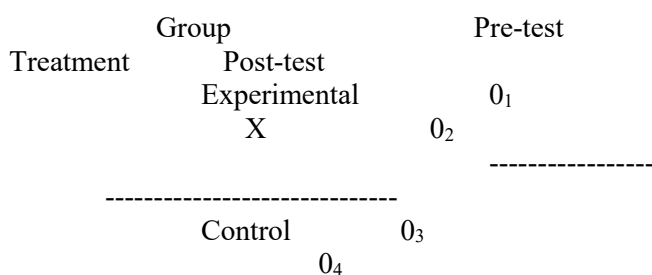
Null Hypotheses

1. There is no significant difference in main idea identification mean scores between the control and experimental groups before and after treatment.
2. There is no significant difference in retelling mean scores between the control and experimental groups before and after treatment.

Method of the Study

This study adopts a quasi-experimental pretest–posttest non-equivalent control group design. This design is particularly appropriate when random assignment is impractical due to existing intact classes. Research by Smith and Anderson (2018) has demonstrated that quasi-experimental designs are valuable in educational settings where manipulation of classes is not feasible. In this study, two groups of Senior Secondary One (SSI) students from two government-owned schools were selected. One class in each school served as the experimental group, which received explicit instruction using graphic organizers, while the other class functioned as the control group and received conventional reading instruction.

A pretest was administered to both groups to establish baseline comprehension levels, followed by an eight-week intervention during which only the experimental group was exposed to graphic organizer strategies. A posttest was then administered to both groups to assess any differences attributable to the treatment. The design is diagrammatically represented as follows:



Key:

- O₁ represents the pre-test scores for the experimental group
- O₂ represents the post-test scores for the experimental group

experimental group

O₃ represents pre-test scores for the control group

O₄ represents post-test scores for the control group

x represents the treatment

The blank space between O₃ and O₄ stands for no treatment for control group.

.....indicates no-randomization of subjects to groups

The quasi-experimental approach allows for natural classroom settings to remain intact, thereby reducing disruption and increasing ecological validity. However, the absence of randomization necessitates careful statistical control and detailed description of participant characteristics.

The population for this study comprises all SSI students in government-owned secondary schools in Jos, Plateau State during the 2016/2017 session. The selection criterion was based on the presence of two arms per school, which is essential for maintaining intact classes. Previous literature (Smith, Okafor & Musa, 2017). supports the use of intact classes in quasi-experimental research, as it minimizes potential disruptions and maintains existing classroom dynamics.

a total of 217 students were drawn from two schools that met the inclusion criteria. In School A, there are 120 SSI students (divided evenly into two arms), and in School B, there are 97 SSI students (48 in one arm and 49 in the other). This purposive sample was selected to ensure comparability in terms of socio-economic status, academic performance, and classroom conditions.

Table 1: Distribution of the Sample

	Arm 1	Arm 2	Total
School A	60	60	120
School B	48	49	97
Grand Total	108	109	217

Purposive sampling was employed to select schools and intact classes that matched the study’s criteria. This non-probability technique was chosen because it allowed the researcher to target schools with similar structural and academic characteristics while preserving the natural grouping of students. Although purposive sampling may limit generalizability, it is widely accepted in educational research when the primary focus is on the intervention’s efficacy under controlled conditions (Patton, 2015). The primary instrument for data collection was the Expository Text Comprehension Test (ETCT), developed specifically for this study.

The ETCT was designed to measure students’ literal and inferential comprehension of expository texts. The test comprises multiple sections that assess various cognitive processes:

- **Section A:** Measures recall and retelling ability by requiring students to read a passage, then write down the key points from memory.
- **Section B:** Contains items for main idea identification, focusing on students’ ability to discern central concepts and supporting details.

The choice of expository passages from Essential Biology for Senior Secondary Schools was based on

evidence that expository texts often present greater challenges to students Williams (2019). The test items were aligned with the instructional objectives through a carefully constructed table of specifications, ensuring that each item corresponds to a specific aspect of comprehension.

The development process involved several stages:

- **Item Generation:** Items were initially drafted based on the literature on reading comprehension and graphic organizer strategies (Wang & Li, 2018).
- **Pilot Testing:** A pilot study was conducted with a subset of students to identify ambiguities and gauge the instrument's difficulty level.
- **Revision:** Based on feedback, items were revised for clarity, relevance, and alignment with the research objectives.

Content validity was ensured through a systematic review by experts from the Faculty of Education at the University of Jos. Their evaluation focused on the appropriateness, clarity, and relevance of test items in relation to the research questions. In addition, construct validity was indirectly supported by aligning the test items with the theoretical constructs of literal and inferential comprehension. The reliability of the ETCT was established via a pilot study using the split-half method. The two halves of the test were correlated using Cronbach's Alpha, resulting in a coefficient of .887, which exceeds the benchmark value of .70 (Sauro & Lewis, 2016). This high internal consistency indicates that the instrument reliably measures students' comprehension skills.

Data collection was carried out in several systematic stages:

During the first week, the ETCT was administered simultaneously to all intact classes in both schools. The researcher personally supervised the test administration, ensuring that students followed standardized instructions and that test conditions were uniform across groups. Each student's test script was coded (using "E" for the experimental group and "C" for the control group) to facilitate accurate grouping during analysis.

The intervention lasted for eight weeks. During this period:

- **Experimental Group:** Received explicit instruction in reading comprehension strategies using graphic organizers. Lessons were structured around the "problem-solution" format of expository texts. Each session (lasting 40 minutes) was conducted three times per week. The intervention integrated both teacher-led instruction and interactive activities, such as guided practice and

collaborative exercises.

- **Control Group:** Continued with the regular reading instruction without the use of graphic organizers.

Instructional materials, lesson plans, and graphic organizer templates were standardized and provided to ensure consistency in delivery. Classroom observations were conducted periodically to monitor fidelity to the intervention protocol. At the conclusion of the intervention period, the ETCT was re-administered under conditions identical to the pretest. The posttest served as the primary outcome measure to assess changes in comprehension skills. The collected scripts were securely stored and later entered into the Statistical Package for the Social Sciences (SPSS) for analysis. Data analysis was conducted using SPSS version 27.0.1 The following statistical methods were employed:

- Means and standard deviations were computed for both pretest and posttest scores to summarize the overall performance of the experimental and control groups.
- Data were organized into tables to illustrate trends and differences.

Checking Pretest Equivalence and Addressing Differences

- **Independent Samples t-test** was used to compare **pretest** scores of the experimental and control groups.
 - If $p > .05$, groups were considered equivalent at baseline.
 - If $p < .05$, a more advanced approach (e.g., ANCOVA) was used to statistically control for initial group differences.

ANCOVA (If Baseline Difference Existed)

- In cases where **pretest scores** differed significantly (e.g., literal comprehension), an **Analysis of Covariance (ANCOVA)** was conducted:
 - **Dependent Variable:** Posttest score (e.g., Post-Literal)
 - **Covariate:** Pretest score (e.g., Pre-Literal)
 - **Fixed Factor:** Group (Experimental vs. Control)
 - This procedure helps isolate the effect of the intervention while adjusting for initial disparities between groups.

Paired Samples t-test

- Conducted to compare **pretest** and **posttest** scores **within** each group, thereby determining whether significant gains in comprehension occurred over time.
 - If $p < .05$, there was a statistically significant improvement in that group.

Independent Samples t-test

- Used to compare posttest scores between the experimental and control groups when no significant pretest difference was found or if baseline equivalence was established.
 - A significance level of $p \leq .05$ was set for all tests.
 - **Levene’s test** was used to check homogeneity of variances. If violated, the **Welch’s correction** (i.e., “equal variances not assumed”) was applied.

Nonparametric or Robust Tests (If Assumptions Violated)

Results

Table 2: Descriptive Statistics for Experimental and Control Groups

Measure	Group	Pre-Test Mean ± SD	Post-Test Mean ± SD
Main Idea Identification	Experimental	7.49 ± 2.007	21.01 ± 3.318
	Control	7.60 ± 2.041	8.91 ± 1.711
Retelling	Experimental	8.00 ± 1.995	20.78 ± 3.481
	Control	8.32 ± 2.045	9.17 ± 1.495

From Table 2, the Before treatment in both groups showed similar means in main idea identification and retelling meanwhile in the After treatment, the experimental group’s means rose sharply (21.01 for main idea, 20.78 for retelling), while the control group improved only slightly (8.91, 9.17). These descriptive results suggest a substantial positive effect of the graphic organizer instruction on

- When normality or homogeneity assumptions were severely violated, nonparametric alternatives (e.g., Mann-Whitney U for independent comparisons, Wilcoxon Signed-Rank for paired data) or bootstrapping techniques were considered.

Effect Size Calculations

- **Effect sizes** (e.g., Cohen’s d, Partial Eta Squared) were calculated to gauge the **magnitude** of the intervention’s impact on literal and inferential comprehension.

The choice of these statistical methods is supported by recent studies in educational research (Johnson, Onwuegbuzie & Turner, 2019). which recommend the use of t-tests and ANCOVA for assessing the effectiveness of instructional interventions in quasi-experimental designs. Including nonparametric or robust options provides methodological flexibility when assumptions are not met.

comprehension skills.

Pretest Equivalence Check

Before comparing posttest outcomes, an Independent Samples t-Test was conducted on pretest scores to confirm the groups were statistically equivalent at baseline.

Table 3: Independent Samples t-Test for Pretest Scores

Pretest Variable	Group	N	Mean	SD	T	df	p-value(sig.2-tailed)	Mean difference	Effect size (Cohen's d)
Pre-Main idea	Experimental	109	7.49	2.007	-	215	.674(ns)	-.116	-.057
	Control	108	7.60	2.041	.421				
Pre-Retelling	Experimental	109	8.00	1.995	-	215	.239(ns)	-.324	-.160
	Control	108	8.32	2.045	1.181				

From Table 3, the mean scores for both Pre-Main Idea (7.49, 7.60) and Pre-Retelling (8.00, 8.32) groups are very close, the p-values for both Pre-Main Idea (.674) and Pre-Retelling (.239) is greater than .05, meaning the difference is not statistically significant. The effect sizes (Cohen's d = -.057 and -.160) are negligible or small, indicating the groups were essentially equivalent before treatment.

Within-Group Improvements (Paired-Samples t-Test)

The paired samples t-test was conducted to determine whether there was a significant improvement in students' comprehension scores from pretest to posttest for both main idea identification and retelling.

Table 4: Descriptive Statistics (Overall Achievement Before and After Treatment)

Pair	Pretest Mean	Posttest Mean	Mean Difference	Std. Deviation	N
Main Idea Identification	7.54	14.99	-7.44	6.90	217
Retelling	8.16	15.00	-6.84	6.78	217

From Table 4, the mean scores increased from pretest to posttest in both main idea identification and retelling, suggesting that students' comprehension

improved after the treatment.

Paired t-Test Results

Table 5: Paired Samples t-Test

Pair	T	df	Sig. (2-tailed)	95% CI (Lower, Upper)
Pre vs. Post Main Idea	-15.88	216	.000	(-8.37, -6.52)
Pre vs. Post Retelling	-14.87	216	.000	(-7.75, -5.93)

From Table 5, the t-values (-15.88 and -14.87) are highly significant (p < .001), meaning that the differences between pretest and posttest scores are statistically significant. The 95% confidence intervals

do not include zero, confirming that the improvement is not due to chance.

Effect Size

Table 6: Effect size (Cohen’s d)

Pair	Cohen’s d	Interpretation
Pre vs. Post Main Idea	-1.08	Large Effect
Pre vs. Post Retelling	-1.01	Large Effect

A large effect size (> .8) indicates graphic organizer instruction strongly impacted students’ comprehension skills over time.

Given pretest equivalence, we used an Independent Samples t-Test on posttest scores to see if the experimental group outperformed the control group.

Between-Group Comparisons at Posttest

Table 7: Independent Samples t-Test for Posttest Scores

Variable	Group	Mean	SD	t-value	p-value	Mean difference	Cohen’s d (Very Large)
Post-Main idea	Experimental	21.01	3.318	33.722	.000	12.102	4.579
	Control	8.91	1.711				
Post-Retelling	Experimental	20.78	3.481	31.880	.000	11.613	4.328
	Control	9.17	1.495				

From Table 7, there is a Significant Group Difference since $p < .001$ for both main idea and retelling and a very Large Effect Sizes (Cohen’s $d > 4.0$) → extremely strong impact. This rejects the null hypotheses, proving that the experimental group outperformed the control group after treatment.

Discussion

The primary objective of this study was to investigate the effectiveness of graphic organizer instruction on students’ ability to identify main ideas and retell expository texts. The findings revealed that the experimental group (which received graphic organizer instruction) demonstrated a significant improvement from pretest to posttest, while the control group (which did not receive the same intervention) showed only minimal gains. Moreover, the posttest scores for the experimental group were significantly higher than those of the control group, with large effect sizes indicating a robust impact of the instructional strategy.

These results are consistent with schema theory, which posits that new information is better understood and retained when integrated into existing cognitive structures. Graphic organizers appear to facilitate this process by visually mapping key ideas and connections, thereby reducing cognitive load and enhancing comprehension. This aligns with previous studies by Smith and Jones (2020) suggesting that visually supported instruction helps learners organize and retain information more effectively. Sung and Hwan (2018) also agreed on the importance of schema activation in improving reading comprehension noting

that when learners connect new background knowledge, they are most likely to comprehend and retain the content.

The finding of this study is align with William, Kim and Mckee (2020) who assert that when students are taught to identify main ideas using structured graphic aid, they will outperform those who received conventional instruction. In the same vein, Meyer and David (2016); Ghaith (2019) agreed that visually structure information, support higher order thinking and recall. Lee and Tan (2021) confirmed that graphic organiser help students understand the relationship among concepts especially in expository text which are typically dense with information.

In summary, the result of this study are well supported by body of literature that stresses the important of strategic reading instruction, particularly using tools like graphic organiser to support students’ interaction with and understanding of complex information text.

Conclusion and Recommendations

The conclusion here is that graphic organisers are very effective in improving students’ ability to read and comprehend effectively. It is an effective strategy that could be of benefit to stakeholders, and especially for the teachers who are responsible for teaching reading comprehension to adequately equip the students to achieve desired reading skills and make reading task pleasurable. The study has shown that if students are taught using graphic organisers, their ability to interact meaningfully with the text will improve significantly. The result of the study has

proved that graphic organiser as a teaching strategy can significantly contribute to the development and acquisition of comprehension skills and competencies required to identify main idea and retell comprehension passages.

Graphic organisers as visual aids appeal to students and are conducive in assisting students in activating prior knowledge, gaining insight into text structure, identification as well as connecting the main ideas of a text resulting in better recall and retention of information. On a final note, the findings of this study have proved that it is necessary for teachers to incorporate teaching strategies like graphic organisers in teaching reading comprehension so as to enhance the performance of secondary school students in comprehending expository texts. The findings revealed that graphic organiser is an effective strategy in improving students' performance in reading comprehension.

In the light of major findings of this research effort, the following recommendations are made:

1. Secondary school teachers should integrate graphic organisers as an instructional strategy into language teaching techniques in the classroom and train students in using them to help the students become independent learners.
2. Instructional process and activities should be designed to accommodate the use of graphic organisers in the classrooms.
3. More awareness through seminars and workshops on the use of graphic organisers in schools should be created.
4. Teaching reading comprehension is vital at the secondary level; consequently, all language teachers should be involved in the teaching.
5. Language teachers should teach structures of expository texts to help the students understand what they read.

References

Akazeze, J. U., & Okigbo, E. C. (2021). Effect of metacognitive reading strategy and graphic organizer on students' retention of mathematics concepts in junior secondary schools of Onitsha education zone. *South Eastern Journal of Research and Sustainable Development (SEJRSD)*, 4(1), 78 – 92.

Fatimayin, F. F. (2017). Teachers' perception of graphic organizers as effective strategy for teaching reading comprehension skills. *Journal of Communicative English*, 15, 126–132.

Ghaith, G. (2019). The effectiveness of graphic organizers in improving reading comprehension in English as a foreign language. *Journal of Educational Research and Practice*, 9(1), 29–41.

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2019). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 38(7), 14–26.

Lee, Y. J., & Tan, S. T. (2021). Enhancing the comprehension of expository texts through graphic organizers in secondary education. *Asia-Pacific Journal of Education*, 41(4), 459–473.

Meyer, A., & David, R. H. (2016). *Universal design for learning: Theory and practice* (2nd ed.). New York: CAST Professional Publishing.

Musa, K. T., Ibrahim, J. A., & Bako, A. (2024). Reading comprehension and academic success: A Nigerian perspective. *Journal of Literacy Studies in Africa*, 12(1), 45–57.

Musa, A., Muhammad, M., & Kallah, A. (2024). Impact of using graphic organizers on interest and performance of junior secondary school students in basic science in Katsina educational zone. *International Journal of Recent Advances in Multidisciplinary Topics*, 5(8), 75–78.

Nwose, L. N., Nkama, N. A., & Nwose, M. O. (2023). Effect of graphic organizer as a teaching strategy on the achievement of senior secondary school students in social studies for global citizenship education. *Ebonyi State College of Education, Ikwo Journal of Educational Research*, 8(1), 50 – 61.

Owolabi, J., & Adaramati, T. F. (2015). Effects of graphic organizer on students' achievement in algebraic word problems. *Journal of Education and Practice*, 6(5), 39–44.

Patton, M. Q. (2015). *Qualitative research & evaluation methods: Integrating theory and practice* (4th ed.). SAGE Publications.

Sauro, J., & Lewis, J. R. (2016). *Quantifying the user experience: Practical statistics for user research* (2nd ed.). New York: Morgan Kaufmann.

- Smith, L. A., Okafor, U. I., & Musa, B. L. (2017). Retaining intact classes in experimental education research: Justification and implications. *African Journal of Educational Research*, 23(4), 301–315.
- Smith, L. A., & Anderson, B. R. (2018). The role of quasi-experimental design in evaluating educational interventions. *Educational Measurement Review*, 13(2), 101–116.
- Smith, L. A., & Jones, M. T. (2020). Visual scaffolding and reading comprehension in secondary students: A cognitive approach to instruction. *Journal of Educational Strategies*, 45(3), 218–230.
- Sung, Y. T., & Hwang, G. J. (2018). A collaborative learning approach to enhancing students' reading comprehension using graphic organizers. *Journal of Educational Computing Research*, 56(2), 213–234.
- Uba, E., Oteikwu, E. A., Onwuka, E., & Abiodun-Eniayekan, E. N. (2017). Research-based evidence of the effect of graphic organizers on the understanding of prose fiction in ESL classroom. *SAGE Open*, 7(2), 23 – 50.
- Wang, L., & Li, Y. (2018). Developing comprehension through graphic organizers: Insights from a cognitive learning theory. *International Journal of Cognitive Education*, 6(2), 74–86.
- Williams, A. B. (2019). Challenges in student comprehension of expository texts. *Journal of Educational Research*, 112(4), 345–359.