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Effects of graphic organizers on students' reading engagement of Ethiopian grade five students

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Abstract

Reading engagement remains a major challenge among Grade Five EFL learners in Ethiopia, where limited exposure to English texts and teacher-centered instruction often reduce students' motivation and active participation in reading. To address this gap, the present study examined the effect of graphic organizers on students' behavioral, cognitive, and emotional engagement in reading. A quasi-experimental pre-test–post-test design was employed, involving 98 students sampled from a single school. The study was conducted over a seven-week intervention period. The experimental group (49 students) received reading instruction using instructional materials prepared by the researchers, which incorporated various graphic organizers, such as concept maps, Venn diagrams, Know–Want to Know–Learned charts, story maps, and cause-and-effect charts, applied to reading passages sourced directly from the Grade Five English textbook. In contrast, the comparison groups (49 students) were taught through teacher-centered methods using the textbook's standard activities without any graphicorganizer. Quantitative data were collected through a reading engagement questionnaire, and qualitative insights were gathered via focus group discussions to complement and deepen the interpretation of results. The post-test findings revealed that the experimental group (M = 111.67) demonstrated significantly higher engagement than the comparison group (M = 85.57), with a mean difference of 26.10, t (96) = 12.47, $p < .001$, and a large effect size (Cohen's d = 2.97, $\eta^2 = 0.69$). Qualitative findings supported these results, showing that students found reading more interesting, interactive, and meaningful when graphic organizers were used. Overall, the study concludes that integrating graphic organizers into EFL reading instruction enhances students' behavioral, cognitive, and emotional engagement, suggesting their strong potential for promoting active, student-centered learning and improving reading comprehension in primary classrooms.

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Introduction

Engagement with reading is a vital component for young learners in EFL learning. They have to continue to allocate their sustained attention to reading with a positive disposition towards it. These factors of a reading-engaged reader are most commonly linked with their enhanced mastery of reading comprehension and academic success (Guthrie & Wigfield, 2000). Still, the promotion of such factors for EFL young learners in the elementary level setting remains challenging for many EFL learners with less exposure to learning the English language.

In Ethiopia, English is taught as a subject throughout primary education and is the medium of instruction beginning in secondary school. Because of their limited vocabulary, unfamiliar text structures, and passive learning environments, primary school students struggle to engage with English reading assignments despite the subject's central place in the curriculum. The Ministry of Education has recognized this (MoE, 2005). In Grade Five classes, where students are expected to transition from learning to read to reading to learn, the issue is more severe because they lack the skills necessary to interact with texts in a proper manner.

Considering the different roles of the English language in education and personal lives into account, different language experts and researchers have played their own roles to develop students' English language skills. Among the different language skills, developing learners' reading skills have been given great attention as reading is a fundamental learning skill that underpins learning across all disciplines which is the cornerstone of a lifetime educational development. Apart from information gathering, reading helps students develop skills in problem-solving, critical thinking, and communication. In English as a Foreign Language (EFL) settings, such as in Ethiopia, reading is essential in helping students access curricular content and improve language use in general (Guthrie & Wigfield, 2000).Cultivating strong reading habits in primary school is crucial for building a solid foundation for academic success and preparing students for future learning opportunities.

While having comprehension skills is crucial for students, reading achievement also depends on students' engagement. Reading engagement in this particular study refers to the involvement and personal investment as well as cognitive effort in processing the reading tasks among the learners (Taboada et al., 2013) Engaged and committed readers will be most likely to see difficult texts through to the end and be able to apply their strategies in meeting the tasks through transferring the learning across new contexts. On the other hand, a non-engaged learner will be able to read through the task in a passive way without putting in much effort and therefore deriving little from the learning process

among the learners (Rodríguez & García, 2025). As such, this study will therefore look to improve reading engagement as an important consideration in increasing the learners' overall performance in this particular aspect of learning However, despite the importance of cultivating such engagement, reading instruction in the primary classrooms of Ethiopia is frequently teacher-directed, stressing memorization and recall more than interactive reading. This can impact the students' motivations and involvements, especially in reading complicated texts in English (Adane, 2024). There is therefore a need to devise ways that can be used to actively engage students in reading for better involvement and improvement in literacy achievement. Teachers find important uses of graphic organizers in their instruction. Not only do graphic organizers show visually the information, but they also show the relationships between the ideas. The students can benefit from the use of graphic organizers because they will be able to spot the main ideas and know the order in which the text was laid out. As a result, graphic organizers make it easier for students to process the reading material (Qi & Jiang, 2021; Hernández-Chérrez et al., 2020). Graphic organizers can take many forms, including concept maps, Venn diagrams, flowcharts, cause-and-effect charts, KWL charts, graphs, and story maps, all of which foster cognitive processing and improve retention (Santika et al, 2021).

For Grade Five EFL learners, who frequently struggle with limited vocabulary and unfamiliar syntactic structures, graphic organizers, can be especially impactful. Tools that visually organize how ideas are connected help young readers focus and understand text. In other words, kids do not have to work quite so hard to remember everything, so they can engage into reading. This helps them be more reflective, read more carefully, not give up as easily, and learn how to sort and remember main ideas. And studies highlighted such a premise: for instance, Qi and Jiang (2021) noticed such tools helped EFL learners to understand for a longer period of time what they read, while Albufalasa (2022) found students were more motivated and understood stories better. Yet these highly helpful pedagogical tools are not used in most Ethiopian elementary schools, where teaching reading is under a serious problem. So, we really need to find ways of using these tools practically. This study looks at how using visual organizers in an Ethiopian fifth-grade English class affects students' interest in learning. The purpose is to show Ethiopian teachers practical, guidance about ways students learn to read making them involved in texts.

Statement of the problem

Reading engagement plays an important role in learning success regarding reading achievement in general, as well as English as Foreign Languages (EFL), which remains one of the difficult-to-achieve areas especially in young and inexperienced EFL learners who tend to lack interest in learning to read (Guthrie

and Wigfield, 2000; Fredricks et al., 2004). The purpose of this study, therefore, encompasses intervening not only to benefit teachers in Ethiopia how to efficiently assist in reading skills instruction. Engaged readers' exhibit behavioral engagement through active participation, cognitive engagement by investing their thoughts, and emotional engagement by developing a love for reading activities. These together contribute significantly to improved understanding and learning outcomes Reading comprehension can be improved in students by concept-based reading methods (Guthrie et al., 2004). However, in Ethiopia, it has been observed, including assessments, that there are major reading engagement problems in primary-level students in upper grades when it comes to reading in English class (MoE, 2005; USAID, 2018). This relates to little active participation in reading exercises, inappropriate reading practices outside class, and little persistence when reading difficult materials.

One of the causes of weak reading participation is the extensive reliance on traditional, instructor-led teaching styles; the latest research in Ethiopian primary schools indicates that although instructors recognize the advantages of student-focused methods, they hardly utilize them due to constraints such as large class sizes, minimal teaching materials, and prevailing lecture-presentation styles (Hunde & Hika, 2023). These findings suggest that structural and pedagogical challenges are ongoing barriers to the formation of sincere student interaction with texts, a two-way interaction **(**an *active, reciprocal exchange* between the reader and the text, and often between the teacher and the learner**),** required for the strengthening of reading processes. In such contexts, it becomes difficult for the students to effectively engage with the texts through the process of reading and apply strategies for improved understanding. According to recent global research, instructional approaches involving active engagement, use of graphic organizers, have been extremely effective for encouraging higher levels of engagement among students. These approaches have been extremely effective for substantially raising levels of understanding as well as motivational levels of the students, as they enable them to make connections among ideas and take control of the reading task (Qi & Jiang, 2021; Albufalasa, 2024).

Graphic organizers have been found to increases in behavioral engagement (e.g., more participation), cognitive engagement (e.g., better application of comprehension strategies) and emotional engagement (e.g., enhanced interest and enjoyment) across a range of educational contexts (Nesbit &Adesope, 2006; Griffin & Tulbert, 1995). The great majority of these studies, however, have been conducted in first-language or non-EFL learning environments, so it is uncertain whether they are directly transferable to Ethiopia's EFL classrooms, where students face linguistic as well as instructional challenges.

Despite the low levels of reading engagement reported among Ethiopian primary school students and the limited level of utilization of new, student-focused practices such as graphic organizers, no systematically designed studies have been conducted locally to examine their utility in fostering students' reading engagement. In addition, whereas foreign research such as Nesbit and Adesope (2006) suggests that graphic organizers can increase students' active engagement, attention, and persistence while reading activities, the majority of studies were implemented outside of non-EFL environments and thus whether or not these tools affect reading engagement among EFL classrooms in Ethiopia remains uncertain.

Based on these identified gaps, this study is guided by the following research questions:

1. What is the effect of using graphic organizers on Grade Five students' reading engagement?
2. What are the perceptions of students in the experimental group regarding the use of graphic organizers in reading lessons

Literature Review

3.1. Reading engagement

Reading engagement can be defined as investment in reading activities in terms of students' level of attention, effort, and interest. It has behavioral, cognitive, and emotional dimensions (Fredricks et al., 2004). Behavioral engagement is manifest by participation and persistence in reading tasks; cognitive, by intentionally applying strategies for comprehension, analysis, and interpretation of the text; and emotional, regarding enjoyment, personal connection, and motivation toward reading (Guthrie & Wigfield, 2000). Reading is an active process where the readers create meaning based on the integration of explicitly stated text information with prior knowledge, inference, evaluation, and summarization. Summarization, in particular, helps learners to comprehend and remember through the organization and writing of the main ideas in their own words (Duke et al., 2021).Research indicates that high levels of reading engagement are linked to improved comprehension, greater persistence in learning, and enhanced academic achievement, especially in EFL environments where motivation and interest in text play an essential role (Alderson, 2000; Wang & Guthrie, 2004).

3.2. Graphic organizers

Graphic organizers (GOs) are visual tools that show relationships among ideas, concepts, and facts in a structured manner (Hall & Strangman, 2002). They include a variety of types, such as concept maps, Venn diagrams, KWL charts, sequence charts, and cause–and–effect diagrams (Bromley et al., 1999).

According to Ausubel's (1968) theory of advance organizers, graphic organizers facilitate learning by helping learners integrate new information with their existing cognitive structures. They are also supported by schema theory, which states that readers organize and infer meaning from information based on mental structures, and that visual supports enable schema activation and integration (Anderson, 2010).

There are some instructional benefits of GOs as indicated by research. They can reduce cognitive load by explaining relationships, act as a scaffold for handling complex information, and support analysis and synthesis skills (Kim et al., 2004). In reading instruction, GOs help students identify main ideas, describe text structure, and enhance comprehension (Nesbit & Adesope, 2006)

3.3. Theoretical Framework

The present study depends on three general theories of learning, cognitive theory, constructivist theory, and sociocultural theory that together provide a good basis to explore the effect of graphic organizers on reading engagement in students. These theories explain how students process, make sense, and engage in literacy practice through scaffolding and interaction.

3.3.1. Cognitive Theory of Learning.

In cognitive theories, learners play an active role in processing and organizing information. According to Mayer (2009), effective learning is enhanced when learners try to select, regulate, and integrate information into a mental map. This is an advantage of graphic organizers, which make text visually appealing. In reading engagement, this cognitive support enables attention, persistence, and effort, key components of engagement (Fredricks et al., 2004).In making abstract written information visible and organized, graphic organizers enable deeper processing and more extended engagement in reading tasks.

3.3.2. Constructivist Theory of Learning

In constructivist models of learning, Knowledge Construction: Students construct knowledge based on prior experiences and learning. Graphic Organizers can be thought of as tools that help make connections between new information read and prior knowledge. When concepts are organized using story maps, concept maps, or cause-and-effect charts, the role of the student is changed from a receiver of knowledge to a constructor of knowledge. This active construction has an immediate effect on behavioral and cognitive engagement as students are more likely to respond to texts, ask questions, and negotiate meaning. (Piaget, 1976; Bruner, 1996) This study is primarily based on the Social Constructivist Theory as the dominant theoretical framework, emphasizing that learning is an active social process constructed through

interaction with others and the environment (Vygotsky, 1978). As explained in this perspective, knowledge cannot be transmitted passively; rather, it needs to be constructed through discussion, cooperation, and involvement in meaningful tasks. Applied to reading instruction, social constructivism postulates that learners acquire comprehension skills when they approach texts actively, share ideas with peers, and utilize scaffolding tools such as graphic organizers (Palincsar, 1998; Wells, 2000). Graphic organizers are kinds of cognitive scaffolds that support students in structuring, visualizing, and organizing information and promote deepened understanding through collaborative and reflective activities (Kim et al., 2020). In the context of Ethiopian elementary schools, where traditional teacher-centered approaches have dominated, the adaptation of a social constructivist perspective provides a theoretical underpinning for interventions that involve Grade 5 students as active constructors of meaning from texts and enhances reading engagement.

3.4 Graphic organizers and reading engagement.

Researches carried out on GOs showed that GOs are potential instructional strategies to involve readers and enhance their reading comprehension. In a meta-analytic summary of intervention studies for English language learners, GOs as reading strategies for scaffolding and leveled questioning improved reading comprehension considerably, and the larger the intervention, the greater the effect (Kim et al., 2004). Further, Marzano et al. (2001) outlined how the use of visual aids such as GOs actively involves students with the text, thus improving behavioral and cognitive engagement. Further, Alvermann (1981) explained how visual mapping motivates students' more extended interaction with text, which further increases students' reading interest.

The evidence from previous research emphasized the positive effects of graphic organizers (GOs) for reading engagement. For example, Robinson and Kiewra (2024) did a meta-analysis which showed that GOs significantly promote positive performance of students belonging to grades K-12. Mendhakar et al. (2025) with their research proved that graphic organizer based on dual-coding theory and schema theory helps students' meaning-making activities for difficult text. In the ESL context, a systematic review by Griffin and Tulbert (2023) indicated that GOs promote reading comprehension via meta-cognitive awareness and active processing of text. Yet other studies point out that the effectiveness of GOs depends on implementation and design. For example, Burns et al. (2023) found that while GOs in general are effective, their effect on reading engagement is dependent on the students' previous experience with the tool and the complex nature of graphic organizer. They emphasize the importance of reflective integration. The other empirical evidence underlies the facilitation effect of graphic organizers (GOs) on comprehension during reading

as well as motivation; nevertheless, some limitations in existing research necessitate further research, particularly in multicultural, heterogeneous classrooms.

One of the major limitations to existing literature is that most research has been conducted predominantly in first language (L1) contexts. As an example, Kim et al.'s (2004) meta-analysis and Marzano et al. (2001**)** study are predominantly based on native English speakers. This is an area of uncertain application in terms of how GOs are functioning with English language learners (ELLs) or multilingual students. ELLs' linguistic and cognitive challenges can be qualitatively different from those of native speakers, and therefore it is reasonable to suspect that the efficacy of GOs may not generalize across languages (Griffin & Tulbert, 2023).

The majority of research literature, for instance, Robinson and Kiewra (2024); Mendhakar et al. (2025), basically focuses on GOs with fixed learning contexts without accounting for variability of instructional practices. The impact of this limitation may raise doubts about their results' generalization. The nature of learning contexts might affect students' reaction to GOs. It is revealed that the success of GOs can depend heavily on their design and implementation (Burns et al., 2023). Nevertheless, in most of these studies, it does not seem clear how these tools are considered in reading classes as efficient reading strategies. The familiarity with the graphic organizer, the instructional practices used in conjunction with the graphic organizer, and the students' experience with previous similar structures are some issues yet to be investigated in depth. This lack of implementation-level analysis limits our understanding of the conditions under which GOs are most effective.

From a body of research conducted in educational settings about the impacts of graphic organizers and reading engagement, some issues were raised. In line with this, much of the recent work has consisted of short-term interventions that are unable to ensure the long-term impact of working with GOs. For instance, while Kim et al. (2004) showed that more intervention was more impactful, more longitudinal research is needed to evaluate the long-term impact of GOs on reading engagement over time. To address such issues effectively, it is very important to comprehend how such effects influence reading behavior and attitude within students on a long-term basis. To address this issue, this investigation aims to fill such research gaps and significantly contribute to existing knowledge with regard to how reading instruction can be enhanced within students by incorporating graphic organizers to their fullest potential within teaching. Through its attention on design, application, and long-term effects of graphic organizers, this research investigation aims to

significantly address and fill research gaps with regard to existing knowledge about graphic organizers and reading engagement.

Materials and Methods

4.1. Research design

This study, investigated the impact of graphic organizers on reading engagement among Grade Five learners in an Ethiopian primary school setting, an embedded mixed-method quasi-experimental design with pre-test/post-test comparison group design was used. In this approach, one group receives an intervention in graphic organizers, while another group, known as the comparison group, receives conventional teaching Random assignment was not feasible due to administrative constraints, intact class structures, and ethical considerations common in school-based research (Creswell, 2014; Fraenkel et al., 2022). It contained matched groups on such key factors as grade level, school environment, and instructional schedule to minimize the impact of confounding variables. Both the groups received the same pre and post-tests. In this design, the researchers were allowed to have quite some control over the outside variables and, therefore, could assess the independent variable about its effect on the dependent variable.

4.2. 4.2. Participants of the study

A total of ninety-eight grade five students from Endimata General Primary School, Debre Markos town, Ethiopia, aged 11 to 13 years, took part in the study. The school was purposely sampled because preliminary observations and interactions with teachers and administrative staff indicated that many pupils within that setting were perpetually struggling with reading comprehension and engagement. Thus, the school provided a context for the possible benefit of graphic organizers on reading comprehension and engagement that warranted study. Further, the school administration facilitated to conduct this study**.**

A sample size of 98 participants is considered representative for a quasi-experimental design, comprising two intact Grade Five classes. This is also sufficient in terms of statistical power for any comparison between groups across pre-test and post-test.Two classes (section A and C) were selected from among the five Grade Five sections because of their similar pre-test performance in reading engagement scores After confirming equivalence, the classes were randomly assigned to the experimental group (n = 49) and the control group (n = 49).

4.3. Sampling technique

The study took place at Endimata Primary School, Debre Markos Town Administration, within the Amhara Regional State of Ethiopia. The reason for

choosing this school for conducting this study was that it has a supportive administration, students from a wide background, and fits the research objectives. The success of the study was also contingent upon the participation of some willing teachers in incorporating the use of graphic organizers and having sufficient resources and materials that facilitate intervention and analysis. Purposive sampling was employed in the current study. The reason for choosing a purposeful sampling method is that it gave the researcher a chance to select participants who are relevant to the research objectives. Nevertheless, it is worth mentioning that one limitation is that it contains a possible risk of selection bias. The main reason for considering a purposive sampling method is that it is convenient and based primarily upon the support and participation of the school administration and teachers. The lottery method is involved in selecting students for both experimental and control groups.

4.4. Data collection instruments

To determine the level of reading engagement measures among the students, the participants filled a reading engagement questionnaire before as well as after the intervention took place. The purpose of the pre-intervention questionnaire was to check the equivalence of the two groups – the experimental group and the control group – while the post-intervention questionnaire was used to note the differences in the level of reading engagement affected by the application of graphic organizers. The form of the questionnaire was based on the study (Fredricks et al., 2004) a standardized survey widely used in educational research to measure three broad constructs of engagement: behavioral, cognitive, and emotional. The current study employed a 28-item questionnaire that contained the three sub-constructs of engagement. Each subscale included both positively and negatively worded items to minimize response bias. Participants responded using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire was translated into the participants mother tongue, Amharic, to enhance understanding and ensure cultural relevance, and was carefully reviewed by experts to ensure clarity.

Before the main study, we tested the questionnaire in a small group of students to ensure validity and reliability. This made us to revise the items appropriately. To ensure clarity and cultural relevance, the questionnaire was also thoroughly examined by subject-matter experts after being translated into Amharic.

In addition to the quantitative data, qualitative data was collected about the students' experience in the use of the graphic organizers from the experimental group, using focus group discussions. This method of qualitative data collection has a number of advantages. For example, it provides a chance

for understanding what students are experiencing during their involvement with the graphic organizer. However, it is worth noting that the number of students participating in the discussion for the qualitative involvement in the study was low. For example, a total of six students participated in the focus group discussion. Probably, a low number of students participating in the involvement of a study in a focus group discussion may lower the reliability of the qualitative information sought or generated.

4.5. Reliability and validity of instruments

The face and content validity of the focus group guide questions and the questionnaires for measuring reading engagement were carefully analyzed by supervisors in the study, a lecturer in Psychology at Debre Markos University, and three other Ph.D. candidates in TEFL at Debre Markos University. Modifications were done based on suggestions from these experts in order to improve clarity. Although this validation was greatly valuable, piloting was done in another similar elementary school..

The internal consistency reliability of the original 28-item questionnaire was assessed using Cronbach's alpha, as 98 participants completed it both pre- and post-intervention. Upon analysis, one item was removed due to a low item-total correlation ($r < .098$), indicating that this item did not correlate well with the overall scale and may have introduced noise into the data. The item was removed to improve the instrument's overall reliability because this lack of correlation indicated that it did not measure the construct of reading engagement as intended.. Following this adjustment, the revised 27-item questionnaire yielded a pre-intervention reliability coefficient of $\alpha = .76$, indicating acceptable internal consistency. After the intervention, the reliability of the revised questionnaire was reassessed, resulting in a Cronbach's alpha of $\alpha = .88$. This significant improvement in internal consistency supports the efficacy of the revisions made to the questionnaire, reinforcing its validity in measuring students' reading engagement.

4.6. Materials

The teaching material used in this study is a researcher-made teacher & student guidebook that aims to enhance the incorporation of graphic organizers in teaching reading. This is because these goals are aligned with increasing comprehension and engagement. Grounded in Merkley and Jeffers' (2001) theory, the guide outlined the educational advantages of graphic organizers, provided step-by-step implementation procedures, and included real-world examples of lessons utilizing visual tools such as concept maps, Venn diagrams, cause-and-effect charts, story maps, and KWL charts. To maintain curricular comparability and preserve validity, all reading passages were sourced from the

officially adopted Grade Five English textbook. This approach enabled the evaluation of the instructional value of the graphic organizer without cumulating its outcomes with the value of the instruction on new content. Implementation of the graphic organizer into the learning process provided the involved students with the opportunity to evaluate the text structure both individually and in groups, while the other group (comparison group) simply took instruction through the normal process of instruction without making use of graphic organizers. Prior to the intervention, pilot testing of the guidebook was conducted among the involved teachers and students before the main study for feedback and revision.

4.7. Intervention procedure

This study was conducted over a period of seven weeks, from November 1st, 2024, to December 22nd, 2024, attempted to find out the influence of graphic organizers on reading engagement in grade-five students in the reading process. In the experimental class, reading comprehension instruction based on cause-and-effect graphics was done by a trained English teacher, Venn diagrams, concept maps, and K-W-L (Know, Want to Know, Learned) charts, following guidelines from Flygen and Hunter (2000) and Markley and Jeffers (2001). The teacher kept a reflective journal in which she recorded the use of graphic organizers, any difficulties encountered, and modifications made in response to student feedback in order to guarantee treatment fidelity.

During scaffolding, the teacher made the students complete tasks with graphic organizers in groups, with the teachers guidance and, and corrective feedback tailored to individual student needs. Later, students were released to complete the organizers independently during while-reading and post-reading tasks. The teacher continued to be aware of the various skill levels in the classroom and adjusted the level of help and difficulty of the reading activities to ensure that every student could successfully interact with graphic organizers and improve their reading comprehension. This approach encouraged a more inclusive learning environment by ensuring the instructional strategy was sensitive to the different needs of the students.

While reading, experimental group students applied the graphic organizers to identify main ideas, recognize cause-and-effect relationships, compare and contrast information, and organize concepts suitably. In post-reading activities, an emphasis was given to reflection, where students discussed how the graphic organizers supported their understanding, shared challenges found, and assessed their usefulness in enhancing their grasp of the text. On the other hand, the control group received a traditional lesson plan without the inclusion of graphic organizers and only took part in regular textbook activities. Students' self-reports and observational checklists measured differences in the

degree of engagement despite both groups engaging in the same reading activities. The observational data recorded students' participation, peer interaction, and other forms of engagement during the reading and discussion exercises. Self-reports contained student reflections about their experiences in relation to perceptions of engagement levels and hence gave a better representation of how the use of graphic organizers influenced students' reading experiences compared to the traditional approach. This detailed comparison provided an elaboration on how graphic organizers influenced the reading engagement of the two groups.

The seven-week intervention period was deliberately chosen to balance intensity and feasibility. A shorter duration (e.g., 2–3 weeks) would not provide sufficient time for students to become familiar with the different types of graphic organizers and consistently apply them in varied reading tasks. Conversely, a longer duration (like an entire semester) would be susceptible to the impact of external confounding factors such as exam preparation and curriculum pacing on the results. Seven weeks allowed for the systematic introduction of each graphic organizer (approximately one per week, with some overlap for review and practice) and gave students adequate time to internalize their use while ensuring the study remained manageable within the school calendar. The variables that might have influenced the outcome of the study were also considered. The teacher was given training on the way reading instruction is done through graphic organizers. The way the implementation plan is followed was also observed closely because of the need for uniformity when the instruction is done. The absence of the students during the time for intervention was also considered for the purpose of maintaining the outcome of the results.

4.8. Methods of data analysis

The data collected from the pre- and post-intervention reading engagement questionnaires, along with information obtained from focus group discussions, were analyzed both quantitatively and qualitatively to evaluate the impact of graphic organizers on students' reading engagement. The descriptive statistical analyses of mean values and standard deviation were performed to compare the results of both the experimental and control groups in the quantitative statistical analysis. The inferential statistical method of the independent sample t-test was then utilized to analyze the reading engagement results of both groups before and after the treatment. The statistical tests were done by applying SPSS version 20 to analyze if any statistical difference could be established for the use of graphic organizers. The information collected from the focus group interviews was translated from Amharic to English to analyze the results of the themes concerning the students' perceptions of the use of graphic organizers in reading engagements through thematic analysis

5. Results

The study employed a mixed-methods approach; with quantitative data from reading engagement questionnaires analyzed using a t-test to assess the impact of graphic organizers on students' reading engagement. In contrast, qualitative insights from the focus group discussions were explored through thematic analysis.. Preliminary analyses were performed to compare key demographic variables, such as sex and age distribution, as well as pre-intervention measures of reading engagement. These comparative analyses ensured that the groups were comparable before the intervention.

Table 1
Analysis of Sex and Age Distribution between Groups

groups	sex			Age			
	female	male	total	11	12	13	Total
control	23	26	49	16	23	10	49
Expr.	24	25	49	15	27	7	49
total	47	51	98	31	50	17	98

As shown in table 1,the results of the chi-square test revealed no significant differences in sex distribution between the comparison and experimental groups ($\chi^2(1) = 0.041$, $p = .840$), with the sample comprising 98 participants (n = 49 each). The gender distribution was notably balanced, with females making up 47.9% of the total sample (control: 23 females, 26 males; experimental: 24 females, 25 males). Fisher's exact test further confirmed this finding ($p = 1.000$), meeting the assumptions of the chi-square test with all expected cell counts exceeding 5.

Additionally, the analysis of age distribution showed similar homogeneity across groups, with participants categorized into three age groups (11, 12, and 13 years), and 12-year-olds represented the majority at 51.0%. Both groups exhibited comparable age distributions: the control group included 16 (32.7%) 11-year-olds, 23 (46.9%) 12-year-olds, and 10 (20.4%) 13-year-olds, while the experimental group had 15 (30.6%) 11-year-olds, 27 (55.1%) 12-year-olds, and 7 (14.3%) 13-year-olds. This balanced distribution of sex and age across the groups underscores the successful matching of these demographic variables, enhancing the study's internal validity by reducing potential confounding effects on the outcomes of the intervention, which is particularly important in quasi-experimental designs where random assignment is not feasible.

5.1. Effects of graphic organizers on 'reading engagement

The study aimed to examine the effects of graphic organizers on students' reading engagement to address this question; therefore, the participants' pre-intervention reading engagement scores were analyzed. Specifically, the scores from the pre-intervention questionnaire were analyzed using an independent sample t-test as presented below.

Table 2
Analysis of Pre-Intervention Reading Engagement Tst Scores

Independent Samples Test

		Pre-test -Engagement					
Groups		**N**	**Mean**	SD	t	**df**	**Sig. (2-tailed)**
	Experimental	49	86,0	12.920	-.217	96	.829
	Comparison	49	87,3	9.150	-.217	86.4	.

As shown in Table 2 the pre-intervention descriptive statistics revealed that the experimental group (M = 86.0, SD = 12.92) and the control group (M = 87.3, SD = 9.15) both achieved very comparable mean scores on the reading engagement questionnaire. Although the control group scored marginally higher at 1.3 points, the difference was extremely minimal. In terms of spread, the experimental group had a wider range of scores than did the control group, which would suggest that the students in the experimental group were more varied in their level of participation, while the control group was more consistent. In terms of score dispersion, the experimental group showed a slightly larger spread (SD = 12.92) compared to the control group (SD = 9.15). Although this indicates more variation in participation within the experimental group, care should be taken when interpreting this. A slightly larger standard deviation does not necessarily imply substantive differences in student participation.

Independent samples t-test results confirmed that the difference in mean scores between the two groups was non-significant, t(96) = -0.217, p = .829. This non-significant p-value indicates that there was no statistically meaningful difference in pre-intervention reading engagement levels. In other words, the two groups can be considered comparable.

Overall, the analysis indicates that the control and experimental groups entered the study with comparable levels of reading engagement. This baseline

equivalence enhances the internal validity of the study by allowing any post-intervention differences to be attributed with greater confidence to the instructional method (graphic organizers) rather than to pre-existing disparities between the groups. However, it is important to acknowledge that baseline equivalence does not eliminate the possibility of unmeasured variables, such as differences in students' prior learning experiences, motivation levels, or classroom dynamics that may still influence outcomes. Recognizing these limitations provides a more balanced interpretation of the findings and underscores the need for cautious inference when attributing changes solely to the intervention.

Table 3
Analysis of post-intervention reading engagement Test scores

Independent Samples Test						
			post-test -Engagement			
Groups	N	Mean	SD	t	df	Sig. (2-tailed)
ExperImental.	49.	111.67	9.909	14.679	96	.,000
comparison	49	85.57	7.533	14.679	89.593	

As shown in Table 3, the post-intervention reading engagement scores offer important insights into the impact of the instructional intervention. The dataset includes two groups: the experimental group (n = 49) and the control group (n = 49). The experimental group obtained a mean score of 111.67 with a standard deviation of 9.909, whereas the control group recorded a mean of 85.57 and a standard deviation of 7.533. The substantially higher mean score of the experimental group suggests that the intervention was effective in improving reading engagement among its participants. Responses from both groups were fairly clustered, but the experimental group's higher standard deviation suggests that engagement levels varied more than those of the comparison group. This suggests that while many students in the experimental group benefited strongly from the intervention, others may have responded differently, reflecting a broader range of engagement outcomes. Acknowledging this variability provides a more nuanced interpretation of the intervention's overall effectiveness.

The t-value of 14.679 is exceptionally high, indicating a gigantic difference between the groups. With 96 degrees of freedom, this robust sample size lends power to the findings. The significance level (p-value) of .000 is extremely low, much below the typical 0.05 cutoff. Cohen's d = 2.97 (extremely

large effect), $\eta^2 = 0.69$ meaning about 69% of the variance in reading engagement is explained by the group membership. This finding enables us to reject the null hypothesis confidently and confirm the alternative hypothesis. It is possible to conclude that the intervention had a significant positive impact on reading engagement in the experimental group relative to the control group.

The significant increase in the experimental group's scores demonstrates the efficacy of the intervention and the potential of focused teaching techniques, like graphic organizers, to improve student engagement. These findings should be carefully examined, though, as teacher influence, a variety of instructional delivery methods, or the novelty of the approach itself may have contributed to these improvements. Naturally, the identification of such potentially confounding factors provides a more balanced understanding of the intervention's impact and opens the door to additional research to validate the effects' durability and generalizability.

5.2. Students 'reflections on effects of graphic organizers on their reading engagement

Analysis and interpretation of students' narratives

The study employed student self-reports to investigate how the students engaged in the reading activities after the intervention using the graphic organizers construct. The student reflections enabled insights and explorations of how the students viewed the application of the graphic organizers in developing motivation and interest in reading. The reflections reveal the success in transforming the reading process from being passive to an optimum learning process by using the graphic organizers.

Several students pointed out the ways in which graphic organizers were used effectively in active reading tasks. For instance, in the response provided by Student 6, the individual indicated the use of graphic organizers when noting unfamiliar vocabulary, the main points, and the distinction between the supporting details in a conversation about these points with their peers. The student's use of reading as "solving a puzzle piece by piece" indicates an appreciation of the reading task as an analytical activity.

Other classmates pointed out the motivational aspect of graphic organizers in handling tough concepts. For example, Student 2 observed, "Graphic organizers made tough concepts more manageable and aided higher-order thinking processes like comparing, analyzing, and evaluating." This lesson led to increased persistence and a shift in the concept of reading from an obligation to a participatory activity.

The above statements indicate the cognitive load was reduced by graphic organizers to allow the students to be interested in the tough readings. However,

persistence and sustained involvement could also be noticed in the reflective practices of Student 1. They placed a great deal of importance on putting in prolonged effort towards reading tasks despite it being a tough job. They found the use of graphic organizers helpful since they offered the learner a 'blank space' that helped in focusing their involvement with the reading task.

Likewise, Student 5 indicated that graphic organizers helped with organization and clarity, making possible the accomplishment of tasks in an organized manner. Such systematic thinking seemed to give the student confidence and control over the reading process, further encouraging positive behaviors among the students.

In conclusion, these narratives provide insight into the fact that graphic organizers have a very important role to play in the areas of improving the comprehension of readings and working as perseverance aids and as cooperative engagement tools.

6. Discussion

The results of this study demonstrate that the reading engagement of Grade 5 students in the experimental group was positively and significantly impacted by the use of graphic organizers. Students who received instruction with graphic organizers scored significantly higher on the measures of reading engagement than their peers in the comparison group, according to descriptive and inferential statistical analyses, including an independent samples t-test. In line with other research findings showing that the use of graphic organizers yielded increased levels of motivation and engagement (Kansızoğlu, 2017; Guo et al., 2023), it has been observed that graphic organizers act as tools for students to form connections between their ideas/concepts on a deeper level of cognition upon reading. These results have demonstrated that GOs can also stimulate learner autonomy and collaborative engagement, which is consistent with earlier research (Albufalasa, 2024; Rahat et al., 2020).

Similarly, the results of the current study indicated that instruction using graphic organizers significantly enhanced students' behavioral, emotional, and cognitive engagement in EFL reading classes. The result of this research is consistent with Albufalasa (2022), who asserted that graphic organizer-mediated reading activities resulted in greater levels of class participation rates, higher levels of attentiveness, as well as higher levels of enthusiasm for related readings. Further, Guo et al. (2023) declared that secondary school students showed higher levels of learning achievement and greater levels of engagement with learning when graphic organizers were introduced into their learning process due to their capacity to render abstract topics concrete as well as stimulate critical thinking. Axrorova (2025) further validated that graphic organizers were effective mechanisms to further learning comprehension,

learning motivation, as well as levels of engagement of foreign language learners who saw readings as far more enjoyable and doable .Similar to this study, many studies emphasize that visual scaffolds like graphic organizers facilitate interactive, student-centered learning environments that naturally enhance engagement (Ahmad et al. 2021). However, there are findings in the literature supporting these observations. Some of these findings are discussed in the following: Zhang and Li (2021) found that while there were improvements in understanding due to the use of graphic organizers, there were little to no effects on students' interest in reading. Similarly, in a study conducted (Santos & da Silva, 2020), there were findings of little effects on the motivation of highly proficient EFL learners who were normally exposed to text-based teaching. Such observations show there are factors involved in students' motivation in reading due to the use of graphic organizers, such factors including reading strategies, proficiency, or exposure to visual supports.

These results could be explained by social constructivism from a theoretical point of view. Graphic organizers facilitate students in collaboration, creating a shared meaning. In fact, they provide students with an opportunity to learn in an interactive way by facilitating the construction of meaning by discussion and by illustrating the relationship of ideas. In reality, it has been shown by the qualitative data that with the aid of graphic organizers, it is possible to enhance students' capability in the recognition of similarities and differences, in creating a cause-and-effect relationship, or separating key concepts from specific details. In a nutshell, with the aid of graphic organizers, students are encouraged to have a deeper reading of texts.

Despite this positive finding, it must be made plain that there do appear to be some limitations to this study. The first of these appears to be that it involved one school only. This might be an issue in consideration of generalization. There seems to be a need for greater representation with regards to schools in investigations aimed at testing an intervention and its impact. The second appears to be that there was no longitudinal data. There appears to be no evidence here in this investigation of the long-term impact of graphic organizer use on reading engagement. A longitudinal investigation might well be interesting in uncovering whether there happens to be an impact in this way over a longer period of time or whether it subsides after an innovative means of instruction in reading lessons.

7. Conclusion

This study investigated the impact of graphic organizers on the reading engagement of Grade Five students in EFL classrooms. The findings revealed that students in the experimental group, who received explicit instruction in using graphic organizers, demonstrated significantly higher gains in engagement

compared to their counterparts in the control group. These results indicate that graphic organizers are practical tools for fostering active participation, sustaining attention, and increasing interest during reading activities. The statistically significant improvements in the experimental group confirm that integrating graphic organizers into reading instruction can meaningfully enhance 'behavioral, emotional, and cognitive engagement. Therefore, the study concludes that graphic organizers are valuable pedagogical resources for promoting and sustaining reading engagement among EFL learners in upper primary grades.

8. Implications of the study

These findings have significant implications for instructional practice and teacher development in EFL classrooms. The results suggest that graphic organizers can substantially improve the students' behavioral, emotional, and cognitive engagement by facilitating their active involvement with texts, sustaining focus, and participating meaningfully during reading activities. For such benefits to be actualized, teachers need adequate preparation to choose and appropriately use different kinds of graphic organizers. Inclusion of focused training into teacher education and in-service training programs would enable the teachers to use graphic organizers purposefully and adjust them to different reading tasks and proficiency levels of learners. Besides instructional practice, the present study points out several implications related to curriculum design. Curriculum developers and textbook writers should embed graphic organizers as an inherent part of reading materials to foster more learner-centered and interactive classes. Systematic inclusion of graphic organizers may facilitate independent processing of challenging texts by learners, enhance comprehension processes, and sustain engagement across the reading tasks.

9. Recommendations

Based on the findings, the following suggestions are offered to enhance curriculum development, school policy, and instructional practice in EFL contexts. In order to promote active participation, sustained attention, and deeper emotional engagement with texts, teachers are urged to regularly incorporate graphic organizers into their reading lessons. Teachers must explicitly demonstrate how each organizer functions so that students can subsequently use it on their own to enhance their understanding and involvement. This means that in order to create more interactive literacy environments, school administrators should try to promote the use of student-centered strategies like graphic organizers. They should support school leaders in setting aside time and resources for professional development to equip teachers with training in the effective selection and use of graphic organizers. A greater variety of graphic

organizers and guided activities that promote behavioral, emotional, and cognitive engagement should be added to English language textbooks by curriculum designers. Lastly, in order to confirm the generalizability of the current findings, it is anticipated that future researchers will carry out comparable studies in various educational settings and geographical areas. The long-term effects of graphic organizers on reading and other language skills, such as writing and speaking, also require longitudinal study. Future research should look into the best ways to incorporate digital graphic organizers—like interactive apps and web tools—into EFL reading instruction.

Conflict of interest

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Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Ethical Statements

This research was conducted in accordance with ethical guidelines and standards. All procedures performed complied with relevant ethical regulations and institutional requirements. Ethical clearance for the study DMU 1150/05/17 on 01/ 08/2025was obtained from [Debremarkos University Review Board], ensuring that participants' rights, confidentiality, and well-being were fully protected.

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