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Impact of Cognitive Strategies and Graphic Organizers on Kurdish EFL Learners' Writing Performance

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Abstract
The current research sought to explore the impact of cognitive strategies and graphic organizers on Kurdish EFL learners' writing performance. One hundred fifty Kurdish EFL learners from a state university in Iraq's Kurdistan Region participated in this quasi-experimental research. The students were EFL learners in the TEFL field and belonged to two faculties. The learners were between the ages of 18 and 22. There were both males and females. After homogenizing them with the Oxford Placement Test (OPT), a sample of 99 participants from the study was chosen. The study sample was split into three groups: the experimental group on cognitive strategy, the graphic organizer group, and the control group. Each class had 33 learners. Three instruments were used to collect data: the Oxford placement test, the Pretest, and the Posttest of writing. They had thirteen sessions of treatment. After data collection, students' writing was rated by two raters, and their inter-reliability was calculated. Data analysis by Mancova revealed that both cognitive strategies and graph organizers positively impacted the writing skills of English as a Foreign Language (EFL) learners. However, the group receiving graphic organizer treatment outperformed in its effect on learners' writing performance. The current research findings could assist creators of textbooks, educational organizers, materials developers, language institutions, educators, and students create a more effective environment for learning foreign languages and enhancing writing skills.

Keywords: Cognitive Strategies, EFL learners, Graphic organizers, Writing

INTRODUCTION

In today's increasingly globalized world, English has become a crucial communication medium and a gateway to various academic and professional opportunities. As English as a Foreign Language (EFL) learners strive to enhance their proficiency in the language, one skill that demands careful attention is writing. Writing is essential to thinking, understanding, and producing knowledge. Writing is essential for academic success, social and professional development, and learning specific content. People must write to meet the demands of multiple tasks in various subject areas throughout their educational lives, present what they have learned, and learn new material. (Fidalgo et al., 2017). Writing is vital to people's intellectual and emotional growth, personal experiences, and social identity (Hyland, 2010), in addition to being a crucial component of lifelong learning and leading productive lives (Mo et al., 2014).

English as a Second Language (ESL) teachers need to be knowledgeable about second language (L2) writing to be good writing instructors. They require logical viewpoints, guidelines, and model tools for generally considering

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writing in second languages and ESL composition and assessing and contrasting opposing viewpoints (p. 11). In another way, teachers must adopt writing philosophies and create realistic instructional goals to improve students' writing performances and effectively satisfy their learning requirements. To this end, many viewpoints, techniques, and approaches have been developed to provide insight into teaching and learning English writing (Hinkel, 2011). Considering the variety of instructional approaches and individual characteristics among students, it is essential to recognize that there are several approaches to improving writing instruction.

Learning strategies' significance and positive contribution to language learning are widely acknowledged. According to Hyland (2003), cognition is essential to writing. Among the crucial learning strategies language learners use are cognitive strategies (CS). These strategies enable students to comprehend and utilize the target language in various contexts. Generally, CS involves analyzing and synthesizing learning materials. They are closely connected to classroom activities and require active engagement with teaching materials. Moreover, CS helps learners establish and strengthen associations between new and existing information, allowing for effective language processing (Oxford, 1990). Learners utilize mental models to review information, receive messages, and communicate in the target language (Oxford, 1989, as cited in Nagao, 2019).

Graphic organizers (GO) are another tool available to students for use in the development of their writing. They are essential in assisting students in mastering academic writing. According to Fisher and Schumaker (1995), graphic organizers are visual depictions of important topic material created to help students with trouble organizing their information. The goal of concept, cognitive, or content maps is to graphically represent how concepts are arranged within a text (Baxendell, 2003). GO is defined by Hall and Strangman (2002) as visual aids that highlight the connections between concepts, terminology, and facts in a learning assignment, drawing students' attention to these connections. Utilizing GO enhances organization and fosters understanding. GO is widely suggested as a teaching aid in the classroom to draw on students' past understanding of a subject or passage of text. Learning mainly occurs through visual information since the human brain is hardwired to look for patterns. Children identify the visual patterns with mental processes and language systems when GO is employed consistently across many curriculum areas and purposes. By showing links, patterns, and interactions between information, GO aids in organizing data and provides a framework for more complex thought processes (Meyen et al., 1996). Enhancing student learning requires a potent combination of instructors' expertise and pedagogical techniques (Bashir et al., 2018). Instructors set students' roles, activities, and accomplishments through strategies and tactics that encourage students to take ownership of the learning process (Buchori et al., 2017). Several research (McMullen, 2009; Shehzad et al., 2019) have looked into learning strategies that help students participate actively in learning and acquire information.

Kurdish EFL learners need help with writing due to limited exposure to English as a second language (LE) and their own language's prominence in their cultural and educational settings (Abar &Locken (2010)). Effective instructional strategies and approaches, such as integrating CS and GO, are crucial to improving their writing ability. Studies have shown a positive relationship between CS use and English achievement, with higher achievers using more strategies. Help learners to develop their writing. Teachers should raise learners' awareness of CS to help them use them appropriately, as upper achievers tend to use them more frequently. This will help them develop their writing skills effectively.

Various research studies have emphasized the utilization of different learning approaches among students. Several studies have indicated that learning strategies could serve as a strong indicator of academic success, as shown in studies by Pennequin et al. (2010), Muelas & Navarro (2015), Pinto et al. (2018), and Tan et al. (2019). On the other hand, some studies have identified an adverse correlation between learning strategies and academic performance. (Vettori et al., 2020). Building upon this existing knowledge, the present study attempts

to investigate the impact of CS and GO on the writing performance (WP) of Kurdish (EFL) learners. Considering the above discussion, the study tried to investigate the Kurdish EFL learners' views through the following research question:

RQ. *Is there a differential difference between the learners who apply cognitive strategies and graphic organizers in their writing performance?*

LITERATURE REVIEW

A recent literature review has explained the implementation of components such as CS, GO, and WP in the context of second language learning. For instance, Hosseini et al. (2020) said metacognitive strategy training enhanced listening performance among Iranian EFL learners at elementary, intermediate, and advanced proficiency levels. The study results indicated that the advanced group demonstrated more remarkable improvement than the intermediate and elementary groups, while the intermediate group showed more progress than the elementary group. As a recommendation, the researchers proposed integrating metacognitive strategy training into standard listening teaching programs.

In a recent study, Nath (2021) investigated the impact of planned instruction that integrates knowledge of cognition on the overall metacognitive awareness of reading strategies among non-native ESL learners in higher education. The findings revealed that students with lower perceived awareness experienced more significant benefits than those with higher awareness levels. Furthermore, the study showed that this type of instruction can help narrow the gap between students with varying levels of metacognitive awareness in reading strategies.

Notably, Hosseini (2021) explored the impact of metacognitive strategies on EFL learners' writing performance in Gachsaran, Iran. Forty intermediate learners were recruited to participate, with 20 students adopting metacognitive strategies and 20 following conventional teaching writing skills. Results showed that metacognitive strategies significantly affected WP. Cancino et al. (2022) found strong correlations between LLSs, SE perceptions, and L2 language proficiency of 47 adult EFL learners at a Chilean university. In addition, Sun and Jun Zhang (2022) concluded that metacognitive experiences in EFL writing positively affect lexical complexity and fluency but hurt writing accuracy.

Idris et al. (2022) also realized how learners use cognitive and metacognitive strategies in learning French as a foreign language. One hundred eighty-nine respondents were chosen to answer a survey with three main sections: the demographic profile, 19 items on cognitive components, and 11 items on metacognitive self-regulation. The findings showed that both strategies were adopted, with cognitive strategies used for rehearsal, elaboration, organization, and critical thinking, while metacognitive strategies were used for planning and self-evaluation. They suggested that future research should analyze different learning strategies learners use in learning a foreign language. Remarkably, Chanderan and Hashim (2022) found that 200 freshmen from five faculties at a private university in Selangor use their preferred language learning strategies to improve their language skills. It is hoped that language educators can use the findings to facilitate English language learning programs appropriate for students' LLS.

What is more, Wirahyuni and Martha (2023) argued that learning a second language outside of school is more successful than learning it in class. This study used the deconstruction method to reveal implicit meaning and found that cognitive strategy is suitable for learners to use in acquiring language. Most of the works on learning a second language focused on metacognitive strategies more than cognitive strategies. Besides, the investigated skills mainly include reading, speaking, and listening, and few of them used these strategies in writing.

Saadu et al. (2022) conducted a study on the impact of using graphic organizers on the academic achievement of elementary school students in Atiba, LGA, Oyo State. The research employed a pretest and posttest quasi-experimental control design. Four schools, two public and two privates, were chosen using a simple random

sampling method. The results showed a significant overall effect of graphic organizers on students' academic performance ($F(1; 176) = 3.544$, $P < 0.05$). It was suggested that teachers undergo training through workshops and seminars to understand the benefits of utilizing graphic organizers for enhancing students' academic performance.

Omowumi (2023) carried out a study to see how word walls and graphic organizers affected Oyo State primary school students' academic achievement in English courses. A pretest-posttest, control-group quasi-experimental design was used in the study. All English Studies primary school pupils in Atiba Local Government Area, Oyo State, both public and private, made up the study population. Using straightforward random sampling methods, three private and three public schools were chosen. The Pupils' English Performance Test (PEPT) was used to gather data. An Instructional Guide for Word-Wall Strategy (IGWS) and an Instructional Guide for Graphic Organizer Strategy (IGOS) were the two instructional manuals that were employed. The results showed that, in comparison to conventional teaching techniques, performance was enhanced by graphic organizers and word-wall strategies, with graphic organizers being more successful.

Heng et. (2023) examined how genre affected the lexical richness of Chinese EFL learners' argumentative and expository writing. Eight compositions (in two alternating genres) were required of the fifty-four participants; four of them were argumentative and four were expository. The pieces were then parsed using two computer methods. Only lexical density and lexical sophistication showed a rising trend in explanatory compositions, but the results showed a substantial increase in all three sub-constructs of lexical richness in argumentative compositions over the course of the year. With time, participants in both genres tended to use more academic words, high-frequency bigrams, high-frequency words with multiple senses, and less common but more precise phrases. Additionally, the explanatory pieces showed more significant lexical density, but the argumentative compositions showed higher lexical density.

This section provides clear definitions and explanations of the study's variables or concepts, namely CS and GO. These definitions are supported by analyzing previous studies undertaken in these domains. The literature review identified a research gap in the impact of CO and GO on the writing performance of Kurdish EFL learners.

METHDOLOGY

Research Design

This study includes three main components: independent and dependent variables, pretesting and post-testing, and experimental and control groups. The effect of an intervention will be investigated by comparing two groups in an actual experiment design. Two groups receive the intervention (the experimental group, often known as the treatment group), while the other does not (the control group). One experimental group will be taught CS used in writing, and the other experimental one will GO usage in writing, but the control group will be taught through a traditional writing approach.

Participants

150 Kurdish EFL learners from a state university in Iraq's Kurdistan Region participated in the current research. The students were EFL learners in the TEFL field and belonged to two faculties. The students were native Kurdish speakers. Their ages ranged from 18 to 22 years. There were both males and females. After homogenizing them with the Oxford Placement Test (OPT), a sample of 99 participants from the study was chosen. These participants were randomly divided into three groups: the experimental group of CS, the GO group, and the control group. Each group consisted of 33 participants.

Instrument

In this study, three instruments will be used as follows:

Oxford Placement Test (OPT)

First, to ensure that all participants possessed an intermediate level of proficiency, an OPT elementary cut-off score was utilized OPT as a general English. According to the purpose of the study, the researcher needed intermediate

EFL learners. Hence, this test assesses learners of intermediate English as a Foreign Language (EFL). The OPT is comprised of two distinct sections. Part one consists of questions 1 to 40, whereas part two consists of questions 41 to 60. Sections one and two consist of multiple-choice questions. Questions 1–5 pertain to inquiries on visual understanding. Furthermore, questions 6–60 encompass a combination of grammar and vocabulary. The development of this product was a collaborative effort between Oxford University Press and the University of Cambridge Local Examinations Syndicate in 2001. The test comprises 60 items and requires 50 minutes for completion. The researcher, via convenience, selected approximately one hundred people from the entire group of learners whose scores were within one standard deviation (1SD) above and below the average.

Pretest

In order to collect the research data, the first writing task was based on *describing your favorite hobby and explaining why you enjoy it*. This topic was selected with the help of the dissertation supervisor and advisor. The participants were required to write at least 220 words in 60 minutes. The purpose of having a pretest in research is to establish a baseline measurement of participants' knowledge and skills that the participants had similar knowledge of writing skills and to see whether participants were homogenous in WP before treatment. Besides, it allowed researchers to compare the posttest or follow-up measurement results with the initial pretest scores.

Posttest

After the treatment phase, the experimental groups received treatment for applying CS strategies and using GO to improve their writing compared to the control group, which adopted the traditional treatment of teaching writing: product-based writing. The Posttest was administered to check what would be changed regarding the teaching writing through CS and GO during the treatment. In order to reduce the effect of the Pretest on learners, the topic given in the Pretest was modified*: Explain the hobby you enjoy the most and provide reasons for your strong interest in it*. Again, the same criteria students had in the Pretest Pretest were provided. They were asked to use at least 220 words in their composition in 60 minutes.

Procedure

In this study, teaching writing through CS and GO was the independent variable, and WP was the dependent variable. At the beginning of the study, there were 150 students from state universities in Kurdistan, Iraq, based on the Oxford placement test (OPT), about a hundred of whom were selected as the participants of the study, so nonrandom sampling was used for selection of participants because they were from intact classes. This study used an experiment pretest/posttest. A hundred participants were divided into three groups: thirty-three learners were put in the first experimental group, thirty-three in the second experimental group, and the remaining ones were put in the control group. The learners' course consists of 32 hours a semester; they attend classes once a week.

In the second session, they were given a proficiency test (OPT); in the third session, they wrote their Pretest to ensure homogeneity before starting the treatment. Following this, the treatment period began with 13 sessions. In each session, the professor taught writing with different approaches in each group; the professor used this material in the classes: the textbook for teaching writing was *Longman Academic Writing Series: Paragraphs to Essays, with Essential Online Resources by Oshima and Hogue (2017)*, this was taught in all of the classes. In the first experimental group, training on CS instructions was based on Oxford's (1990) classification; learners were taught different CS, such as planning, organizing, monitoring, elaboration, inference, note-taking, deduction, imagery, reasoning, and evaluating their writing. Providing explicit instruction on applying these strategies effectively during the writing process, the professor explained the benefits of using CS in enhancing WP. Moreover, in the second experimental group, the professor taught writing with the help of different graphic organizers. GO was selected from this source, the *Teacher's Big Book of Graphic Organizers, by McKnight*

(2010). Participants can use concept maps to organize their thoughts, demonstrate connections between different ideas, and clarify the overall structure of their written texts. Storyboards are typically used in narrative writing to plan and visualize events. Participants can create storyboards to outline their narratives' plots, characters, and critical events, ensuring a coherent and engaging story structure.

The participants in the control group were provided with identical course content, but they received training in a product-based writing method. Each session had a duration of 90 minutes, providing participants with the opportunity to incorporate computer science into their writing process and adopt a product-based approach. During the third phase, participants were administered a posttest to evaluate the effectiveness of computer science (CS) in improving their writing skills. It is noteworthy that there are three classes. The practical classes implemented a process-oriented approach to teaching writing. Teaching the writing process and tactics involves instructing students on the various stages of writing, which include prewriting, drafting, revising, editing, and publishing. During the sixteen sessions, the students were instructed to write a posttest on a topic similar to the Pretest. The control and experimental groups were given the same writing test to assess the extent of improvement in the learners' writing from the Pretest to the Posttest.

RESULTS

Participants Selection

The first step in conducting the study was to select a sample compatible with its purpose. Table 4.1 displays the results of descriptive statistics for OPT administered to target participants.

Table 1
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Initial Participants	150	24.00	55.00	37.8133	6.35566
Selected Participants	99	28.00	47.00	37.4343	3.84167
Valid N (listwise)	99				

As reported in Table 1, the initial 150 participants OPT had a mean of 37.81 and a standard deviation of 6.35. Accordingly, those whose scores fell from 28 to 47 were selected as intermediate learners. The descriptive statistics results for selected participants showed that their minimum score was 28.00 and their maximum score was 47.00, with a mean of 37.43 and a standard deviation of 3.84.

Inter-rater Reliability for Writing Tasks

The Kappa coefficient was run to determine the agreement between two raters' scoring of learners' writing performance.

Table 2
Symmetric Measures

			Value	Asymptotic Standard Error	Approximate T[b]	Approximate Significance
Measure of Agreement	Kappa	Content	.720	.087	11.137	.000
		Vocabulary	.855	.067	11.547	.000
		Organization	.824	.071	12.101	.000
		Language use	.784	.079	10.680	.000

Cohen's κ was run to determine if there was agreement between two raters' scoring of learners' writing performance. There was substantial and almost perfect agreement between the two raters' scoring, $\kappa = .72, .85, .82, .78$, $p < .001$.

Addressing the Research Question

MANCOVA was run to answer the research question examining the differential effect of applying cognitive strategies and graphic organizers on the writing performance of Kurdish EFL learners. Table 3 summarizes the descriptive statistics results.

Table 3
Descriptive Statistics

	treatment	Mean	Std. Deviation	N
posttest of content	cognitive strategies	15.212	2.55878	33
	graphic organizers	17.606	2.04541	33
	traditional	13.969	1.91188	33
	Total	15.596	2.64544	99
posttest of vocabulary	cognitive strategies	13.393	1.86982	33
	graphic organizers	15.636	1.88445	33
	traditional	11.575	1.69614	33
	Total	13.535	2.45495	99
posttest of organization	cognitive strategies	13.878	2.05787	33
	graphic organizers	16.151	1.54356	33
	traditional	11.666	1.77951	33
	Total	13.899	2.56545	99
posttest of language use	cognitive strategies	12.787	2.13245	33
	graphic organizers	14.424	2.07711	33
	traditional	11.484	1.46033	33
	Total	12.899	2.24742	99
posttest of writing	cognitive strategies	55.272	5.71879	33
	graphic organizers	63.818	4.70674	33
	traditional	48.697	4.31918	33
	Total	55.929	7.91956	99

Table 4
Multivariate Tests [a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.451	18.251[b]	4.000	89.000	.000	.451
	Wilks' Lambda	.549	18.251[b]	4.000	89.000	.000	.451
	Hotelling's Trace	.820	18.251[b]	4.000	89.000	.000	.451
	Roy's Largest Root	.820	18.251[b]	4.000	89.000	.000	.451
treatment	Pillai's Trace	.948	20.286	8.000	180.000	.000	.474
	Wilks' Lambda	.087	53.189[b]	8.000	178.000	.000	.705
	Hotelling's Trace	10.090	110.994	8.000	176.000	.000	.835
	Roy's Largest Root	10.050	226.127[c]	4.000	90.000	.000	.910

a. Design: Intercept + content + vocabulary + organization + language use + prewriting + treatment
b. Exact statistic
c. The statistic is an upper bound on F that yields a lower bound on the significance level

The multivariate test results indicate a statistically significant difference between cognitive strategy, graphic organizer, and control groups' writing performance on the combined dependent variables after controlling for pre-test scores, F (8, 178) = 53.18, p=.00, Wilks' Lambda= .087, Partial Eta Squared= .70. When the results for the dependent variables were considered separately, it showed that content, vocabulary, organization, language use scores of cognitive strategy, graphic organizer, and control groups significantly differed from each other (F= 169.05, .118.21, 165.59, 61.58, 385.68, p<.05).

Table 5
Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	posttest of content	632.561[a]	6	105.427	182.05	.000	.922
	posttest of vocabulary	480.346[b]	6	80.058	66.787	.000	.813
	posttest of organization	583.548[c]	6	97.258	145.63	.000	.905
	posttest of language use	398.682[d]	6	66.447	63.475	.000	.805
	posttest of writing	5759.72[e]	6	959.954	228.33	.000	.937
Intercept	posttest of content	14.452	1	14.452	24.955	.000	.213
	posttest of vocabulary	25.442	1	25.442	21.225	.000	.187
	posttest of organization	19.899	1	19.899	29.795	.000	.245
	posttest of language use	5.938	1	5.938	5.672	.019	.058
	posttest of writing	247.847	1	247.847	58.953	.000	.391
treatment	posttest of content	195.806	2	97.903	169.05	.000	.786
	posttest of vocabulary	283.411	2	141.706	118.21	.000	.720
	posttest of organization	221.190	2	110.595	165.59	.000	.783
	posttest of language use	128.933	2	64.466	61.583	.000	.572
	posttest of writing	3242.98	2	1621.49	385.68	.000	.893

a. R Squared = .922 (Adjusted R Squared = .917)
b. R Squared = .813 (Adjusted R Squared = .801)
c. R Squared = .905 (Adjusted R Squared = .899)
d. R Squared = .805 (Adjusted R Squared = .793)
e. R Squared = .937 (Adjusted R Squared = .933)

Considering the eta squared values for the statistical differences between the three groups in terms of content (Eta Squared=.78), vocabulary (Eta Squared=.72), organization (Eta Squared=.78), language use (Eta Squared=.57), and overall writing score (Eta Squared=.89), it can be stated that the graphic organizer group outperformed in its effect on learners' writing performance.

DISCUSSION

The present study utilized different data sets to examine the impact of Cognitive Strategies and graphic organizers on Iraqi Kurdish EFL Learners' writing performance. Data analysis showed that cognitive strategies and graphic organizers positively affected the writing performance of Iraqi Kurdish EFL learners. However, the graphic organizer's application was more effective than cognitive strategies. The findings showed that graphic organizers could be more helpful for Iraqi Kurdish students learning English as a foreign language (EFL learners) when improving their writing skills than cognitive strategies. This finding suggests that graphic organizers, visual tools that help organize information, might be a more effective method for these students to develop their writing abilities. Graphic organizers had a more beneficial impact on the writing performance of Iraqi Kurdish English as a Foreign Language (EFL) learners than cognitive strategies. Graphic organizers are visual tools that help organize information and concepts, aiding learners in structuring their thoughts and ideas before writing. By providing a visual framework, graphic organizers can assist learners in planning, organizing, and expressing their ideas more effectively in written form. On the other hand, cognitive strategies refer to mental processes and techniques learners employ to understand and manipulate information, such as summarizing, predicting, or self-monitoring. While cognitive strategies are valuable in enhancing learning and problem-solving skills, the study suggests that graphic organizers were more effective in the specific context of writing proficiency for Iraqi Kurdish EFL learners.

There are some studies results indirectly back the findings of this research; for example, Omowumi (2023) looked at how graphic organizers and word walls affected elementary school students' academic performance in English studies in Oyo State. The findings showed that while both can improve performance above traditional teaching and learning methods, graphic organizers are more successful than word walls. The outcomes of another study support the conclusions drawn from this one. Also, the results of Omowumi (2019) support this research; he researched how effective graphic organizers are in enhancing the cognitive writing skills of junior secondary school students. The study also explored the impact of school type and gender on the academic performance of students taught using graphic organizers. Concerns over the illegible handwriting of junior secondary school pupils prompted the research. The study results showed that students taught with graphic organizers outperformed those taught using traditional methods.

Blair and Brandies (2015) studied the effect of computer graphic organizers on narrative writing students with mild disabilities. The results indicated a slight improvement in the quality of the pupils' writing, but a considerable improvement in the quantity of their writing. Visual analysis revealed improved writing quality for all participants, with a majority demonstrating increased writing quantity. Student interviews provided additional insights regarding the social validity of this technology-based intervention

Another investigation that agrees with this research's findings is that of Chasanatun and Lestari (2017), who investigated the impact of graphic organizers on students' composition abilities. This study was conducted for a class on writing paragraphs in English. The purpose of this study is to create a model of paragraph writing utilizing the graphic organizer concept and project learning. The informant and data source were the researchers. The research proceeded in the following ways: learning objectives were identified, learning analysis was conducted, student character analysis was conducted, learning objectives were formulated, a teaching materials module was developed, the product was validated, revision 1 was field tested, revision 2 was analyzed, the final revision was distributed, and so on. After using this module, the instructor and students both expressed satisfaction with it due to the clarity of each unit's material and the exercises' ability to provide useful examples for their writing.

There is another research that findings back the results of this study. The purpose of Juniarti and Sofyan (2017) was to look at how employing graphic organizers affected students' writing skills. The design of this study was quasi-experimental. Employing the t-test technique to examine

the data revealed that graphic organizers improved students' writing abilities regarding language use, organization, and content.

This result suggests that visual aids, such as graphic organizers, are especially beneficial for learners who struggle with organizing their thoughts and articulating them clearly in a second language setting. It emphasizes the significance of integrating different teaching techniques customized to meet the requirements and preferences of varied learners. The utilization of the graphic organizer facilitated cognitive processes in students. It empowered students to assume ownership of their writing. This intervention enhanced students' writing proficiency for this investigation and fostered their autonomy as writers. It enabled students to progress beyond relying solely on the traffic light or graphic organizer, instead helping them transcend the writing formula. They not only successfully adapted to what they were taught, but they were also instructed to go beyond expectations. Not only did students proficiently utilize the tools provided in this intervention, but they also adeptly modified them to enhance their writing and ultimately derive benefits.

CONCLUSION

This study sought to investigate the effect of cognitive strategies and Graphic organizers on Iraqi Kurdish EFL learners' writing skills. To meet this end, 150 Kurdish students enrolled in English as a Foreign Language (EFL) programs at a public university in Iraqi Kurdistan. Participants wrote an essay on a chosen topic, "Describing your favorite hobby," to establish a baseline for their writing skills and language ego before any interventions. Posttest: Administered after the treatment phase, this test used a slightly modified version of the pretest topic ("Explain the hobby you enjoy the most") to assess any improvements in writing due to the implemented strategies. The study findings provide strong evidence that applying cognitive strategies led to significant improvements in the writing performance of Kurdish EFL learners across all aspects measured in the study (content, vocabulary, organization, language use, and overall writing).

There are several reasons why applying cognitive strategies led to significant improvements in the writing performance of Kurdish EFL learners across all aspects measured in the study: Cognitive strategies involve metacognitive processes such as planning, monitoring, and evaluating one's writing. By teaching learners to apply these strategies consciously, they become more aware of their writing process. They can effectively plan and revise their compositions to address content, vocabulary, organization, language use, and coherence. Cognitive strategies often include techniques for organizing information effectively, such as outlining or using graphic organizers. These organizational tools help learners structure their writing logically, creating more transparent and coherent compositions. Cognitive strategies may involve vocabulary acquisition and usage techniques, such as using synonyms or word webs to explore related terms. By actively employing these strategies, learners can enrich their vocabulary and use a broader range of words to express their ideas more precisely and effectively.

Another finding indicated a significant enhancement in all aspects of writing when graphic organizers were utilized. Specifically, statistically significant improvements were observed in content, vocabulary, organization, language use, and overall writing performance among Kurdish EFL learners. The students can write better by using many kinds of graphic organizers. Hence, based on the findings and discussion obtained in this study, the researcher concludes that graphic organizers effectively improve students' writing ability by considering the complexity of writing. The analysis of the data shows that the participants in the experimental group made a more significant advancement on the Posttest compared to the control group's scores due to using graphic organizers in teaching processes. Besides, the positive results indicate that Graphic Organizers are an effective means to motivate students to learn how to write better; also, Graphic Organizers can be used to encourage students to be more creative so that students can develop their ideas well. The finding that the graphic organizer group outperformed the cognitive strategies group in its effect on

learners' writing performance can be explained by several factors: Graphic organizers provide learners with a concrete visual representation of the structure and organization of their writing. This visual aid can make it easier for learners to comprehend and apply writing principles, leading to more effective writing outcomes than cognitive strategies, which may rely more on abstract or conceptual understanding. Graphic organizers offer scaffolded support by guiding learners through the process of organizing their ideas and structuring their writing. This structured approach can be particularly beneficial for learners who struggle with independently applying cognitive strategies. By providing a clear framework, graphic organizers may facilitate more efficient and successful writing for learners than cognitive strategies alone. Graphic organizers offer a clear and accessible tool for organizing thoughts and ideas, making the writing process more manageable and less overwhelming for learners. This accessibility and clarity can help learners focus on content creation rather than struggling with writing mechanics, leading to improved writing performance compared to cognitive strategies that may require more cognitive effort and abstract reasoning. The visual nature of graphic organizers can enhance learners' engagement and motivation in the writing process. Learners may find graphic organizers more enjoyable and stimulating than cognitive strategies, leading to increased effort and investment in their writing tasks. This heightened engagement can improve writing performance among learners in the graphic organizer group. Graphic organizers offer a flexible tool that can be adapted to accommodate diverse learning styles and preferences. Learners with varying levels of proficiency and background knowledge can benefit from the visual organization and structure provided by graphic organizers, leading to more equitable outcomes compared to cognitive strategies that may not be as universally applicable or accessible.

Some suggestions are recommended for future studies based on the study's limitations and the problems the researcher encountered. Further study may investigate the role of cognitive strategies, graphic organizers, and background knowledge in other EFL classrooms, such as science technology, business administration, or those leaning into English for Specific Purposes (ESP). The present study investigated graphic organizers' impact on writing complexity. Further studies are suggested to investigate the effectiveness of these instructional strategies on other language-learning skills, such as speaking, reading, and listening. Further study may investigate the role of graphic organizers and background knowledge in other EFL classrooms, such as science technology, business administration, or those leaning into English for Specific purposes (ESP). The last suggestion is that this study would be directed to material developers for writing courses and EFL teachers to consider cognitive strategies and Graphic Organizer Charts as practical techniques for enhancing EFL learners' writing comprehension ability. Involving writing courses with a specific focus on teaching cognitive strategies and Graphic Organizer Charts and Diagrams will result in educating EFL learners with analytical abilities that lead to better comprehension while writing a text. Also, the research reveals that learners who use cognitive strategies and graphic organizer charts while writing a text demonstrate more professionalism in using intellectual processes.

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