

**The impact of using infographics on developing
EFL learners' writing skills and reducing
writing anxiety**

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Abstract

This study purposed to examine the impact of using infographics in teaching EFL learners writing skills. It also aimed to investigate the impact of infographics in minimizing writing anxiety. To achieve those goals, the research was conducted on 66 third-grade students at one of the middle schools in the Aseer region in Saudi Arabia. Students were enrolled in two groups, where one group represented the experimental group, and the other represented the control group. Adopting a pretest-posttest experimental group design, the test and the anxiety survey were administered to both groups. Following the treatment assigned to the experimental group, the posttest, and the anxiety survey were administered to both groups. Results revealed significantly higher performance in writing in favor of the experimental group. Further, the infographics have significantly decreased students' writing anxiety. Based on the results of the study, teachers are encouraged to incorporate infographics into their teaching, and they should train their students to create their infographics.

Keywords: Infographics; writing anxiety; EFL

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Introduction

In recent years, the use of visual aids in education has attracted significant attention because of its capability to improve learning outcomes. Also, visual aids have been used in learning other languages, such as English (Korniush, 2020). However, those who speak other languages usually need more help with writing. Writing is more difficult for foreign language learners than learning how to speak it. For instance, in the case of the English language, learners may need help understanding the different English rules. Foreign-language writing is a psychologically challenging activity, and most learners need help integrating the foreign language's demands (Alford, 2019). In this process, they develop writing anxiety. Learning to write in a non-native language is a complex and multifaceted task that needs knowledge and expertise in the language and an understanding of genre conventions (Krishnan, et al., 2020). The writing complexity and the dynamic processes for developing writing proficiency cause a significant psychological strain on foreign-language writers.

Teaching writing to learners of a foreign language in a way that fosters competence and confidence is quite challenging. Teachers teaching writing in non-native languages may sometimes need help with the requirements of providing effective instructions and responses to ensure they meet the curriculum standards (Dahmash, et al., 2017). To ensure effective writing instruction, educators are expected to use the available resources and strategies and create a supportive writing setting. However, sometimes foreign language writing teachers are tasked with reading, providing feedback, and giving grades face time constraints (Alwadei & Mohsen, 2023). It means that time that would have been on working on their instructive strategies to meet their learners' different and emerging needs is put into reading and providing grades to the learners' written work.

Although teaching writing to other language speakers is challenging, the growing landscape of modern learning demands teachers to enhance their instructional practices and use modern technologies effectively and efficiently in their teaching practices and support learning (Krishnan, et al., 2020). This is specifically essential

in a foreign language writing context where educators work with learners with different writing proficiency and language needs (Alwadei & Mohsen, 2023). Foreign-language writers usually experience writing anxiety and lack confidence in their ability to write properly. In this case, educators must create a supportive environment, use tools to support their writing development, and find ways to represent their ideas and opinions.

Statement of the problem

The Ministry of Education in Saudi Arabia has given great care to teaching English and has done a tremendous effort in developing it and facilitating the ways of learning and teaching it. However, the reality reflects a completely different picture of these remarkable efforts. That can be seen through the weakness that general education students suffer from in possessing the basic skills of English in general and writing skills in particular (Fareh, 2010). Writing is considered to be one of the most important skills for learning a language because it helps people communicate with others from all around the world and express their points of view (Fareh, 2010; Virdyna 2016). Other than understanding how to communicate in foreign languages, writing the languages is essential in helping speakers understand what they say (Jaleniauskiene & Kasperuniene, 2023).

Some studies attribute the reasons for students' low level of performance in English writing to having problems with vocabulary, grammar, and high writing anxiety (Hartono, & Maharani, 2019). Other studies return students' low proficiency in writing to having high writing anxiety (Liu, & Ni, 2015). For example, students with lower writing anxiety perform better in writing. In addition, students with high anxiety levels are likely to perform poorer (Kwon, 2017; Wang & Zeng, 2020).

Other studies attribute EFL students' poor writing skills to a lack of effective and enjoyable strategies that grab students' attention and help them acquire writing skills (Dahmash, et al., 2017). Acquiring writing skills can be done by stimulating more than one sense during learning. For example, students can learn and remember the information better if it is presented using two codes (visual and

verbal) compared to being coded singly (Sadoski et al., 2012; Mayer, 2001). One way to stimulate both codes in teaching writing is to use Infographics.

Infographics refer to representing complex information in a visual way such as graphs and diagrams which helps to make it easily understandable at a glance (Mubarok & Asri, 2020). Infographics can help students acquire writing skills since it provides the students with information using both visual and verbal (Lamb & Johnson, 2014; Abilock & William, 2014). Although writing has scored low in all language skills globally, the use of infographics has played a key role in uplifting the level of writing among learners (Dahmash et al., 2017). However, there are only a few researches on the impact of infographics on developing writing skills (Hameed, & Jabeen, 2022; Fitriani, Melani, & Lismay, 2021; Krishnan, et al. 2020) and none of them investigated their impact on minimizing the writing anxiety. Therefore, this study examined the impact of using infographics on developing EFL students' writing skills and reducing writing anxiety.

Research questions:

What impact does the use of infographics have on developing EFL students' writing skills?

What impact does the use of infographics have on EFL students' writing anxiety?

Definition of the terms

Infographics:

Infographics are visual representations in graphic format and made to represent knowledge, data, or information quickly and clearly (Mubarok & Asri, 2020). Further, the infographic is defined as “ a larger graphic design that combines data visualizations, illustration, text, and images into a format that tells a complete story” (Krum, 2013, p.6)

The researcher defines it as a new strategy for teaching English writing, and it is based on visualizing complex information and data in graphic format to make them understandable.

Writing anxiety:

Anxiety is defined in the Longman Dictionary of Contemporary English Online as “The feeling of being very worried about something.” Anxiety is a barrier to language learning (Im & Lee, 2022). Writing anxiety is the learners’ lack to do writing exercises, feel confused, and the material is difficult to comprehend and understand (Alfiansyah, et al., 2017). The researcher defined writing anxiety as cognitive distress that people experience when faced with writing tasks, commonly resulting in reduced writing performance and confidence, and it is measured using a writing anxiety survey.

Literature review**Infographics in EFL learning:**

Infographics have largely been used in teaching the English language. However, limited research has been conducted to investigate the use of infographics in developing writing skills and minimizing anxiety. Teachers require innovative methods to improve teaching and learning experiences in learning English as a Foreign Language instruction. Infographics have been a major visual tool that effectively supports teaching and learning writing in English as a foreign language. The infographic combines images and concise texts to present information in a visually appealing and easily comprehensible format (Mubarok & Asri, 2020). The visual attracts the attention of learners and stimulates their interest and makes the learning experience engaging and enjoyable (Sadoski et al., 2012). As most EFL learners struggle with writing, vocabulary, and complex grammatical structures, the infographic simplifies and clarifies concepts, aiding comprehension and retention. It condenses complex language concepts and presents information in a visually organized manner, enabling learners to understand major points easily. By breaking down complex rules or language patterns into simple visual representations, the infographic facilitates the understanding and application of the principles of English as a Foreign Language writing (Lamb & Johnson, 2014; Abilock & William, 2014).

Studies on infographics for ELL

A variety of research has been done on the use of infographics in teaching languages different skills. Tarkhova and his colleagues

explored using infographics to enhance learners' visual learning and comprehension. They described how infographics present complex content concisely and engagingly, making it fit different academic subjects and levels. The authors gave a guideline for creating infographics, including selecting the right text and the design rules for ensuring clarity and efficiency. The target audience is also a major aspect to consider when creating infographics (Tarkhova, et al., 2020). Ozdamli and Ozdal (2018) also focused on creating an instructional design model for developing and assessing infographics in the teaching field. The study integrated the views of educators and learners concerning infographics use in the classroom setting. Further, the authors discussed the instructional design process involving selecting the right content, designing effective infographics, and assessing their impact on teaching and learning. They emphasized the necessity of considering the rules of instructional, visual, and information design in creating effective infographics.

Alford (2019) discusses the increasing popularity of infographics and emphasizes why educators must pay attention to their rise. In his article, Alford highlights the advantages of infographics in education, including enhancing visual literacy skills, improving critical thinking, and enabling the retention of information. The article also emphasizes that infographics can engage students and support active learning by presenting complex information in a visually attractive and accessible way. The author encourages educators to consider incorporating infographics into teaching practices to improve students' learning and communication.

Alwadei & Mohsen (2023) explored the effectiveness of infographics in helping foreign language vocabulary learning. In their article, the authors investigated how infographics can improve vocabulary acquisition and retention. Learning vocabulary is one-way learners try to understand a foreign language, which is a step toward becoming proficient in writing in another language (Nhan & Yen, 2021). The study analyzed the impact of infographics on learners' language engagement, motivation, and comprehension. Alwadei & Mohsen concluded that infographics are a tool essential for foreign

language learners, as they can enhance their outcome of learning vocabulary and depict active engagement with the material. Dahmash, et al. (2017) study discussed the importance of infographics in teaching linguistics. The authors emphasized the benefits of using infographics, including the simplification of complex information and visual appeal. The argument in their article is that infographics can improve learners' understanding of language concepts and support active learning.

Bicen and Beheshti (2022) focus on evaluating the achievement and perspectives of learners learning English as a foreign language in a flipped classroom learning setting with the help of infographics. They examined the impact of infographics on student engagement, comprehension, and language learning results. They also explored students' attitudes toward using infographics as a learning tool and evaluated their performance based on knowledge acquisition and retention. The outcomes indicated that infographics in a flipped classroom significantly influence the students' perceptions, learning outcomes, and motivation. In general, Bicen & Beheshti are in support of the use of infographics as an important resource for improving the teaching of English as a foreign language and supporting active learning.

Elaldi and Cifci (2021) presented a meta-analysis on the effective use of infographics to enhance academic achievement. This was enabled by conducting a comprehensive review of past studies on the topic and synthesizing the outcomes. The outcome revealed that the integration of infographics has a positive effect on academic performance in different subjects and educational levels. The authors found that infographics improved learners' engagement, comprehension, and retention of learned content. Major themes were identified to be related to the effectiveness of infographics, including organization of information, cognitive load, visual appeal, and retention of information.

Studies on infographics for ELL writing

Infographics have also been used in teaching writing in other languages, and a few studies have examined the effect of using infographics to aid in teaching writing in foreign languages (Hamer, et

al., 2022). For instance, Melani and Lismay (2021) explored the effect of incorporating infographics into students' writing summary skills. Their study was conducted with two groups of students, one receiving instruction using infographics and the other receiving instruction without infographics. The outcome of the assessment of the writing skills showed that learners using infographics significantly improved their writing abilities in writing their summaries compared to the other group. The study indicated that infographics can improve learners' understanding of strategies to create a summary, information organization, and the general quality of writing. Similar research was conducted by Hameed and Jabeen (2022) to examine the use of infographics in promoting cognition for creativity in teaching writing skills in English as a foreign language. The study evaluated the learners' levels of creativity in written comprehension. The outcome revealed that students exposed to infographics showed higher levels of creativity in writing compositions than those who used traditional instruction methods without infographics. The studies on using infographics in writing revealed that infographics can serve as a prompt for cognitive processes, inspiring creativity in writing English as a foreign language.

Mubarok and Asri (2020) emphasized the role of infographics in improving learners' writing skills. The authors considered infographics as a medium for transmitting content and information visually to be engaging. It is considered that infographics facilitate understanding of complex concepts and stimulate students' interest in writing (Hameed & Jabeen, 2022). Through analyzing and synthesizing information to develop visually appealing and concise representations, learners get motivated to think critically about the presented content. Also, according to Mubarok and Asri, infographics foster creativity and allow learners to integrate different elements, such as images, graphics, and texts, into their writings.

A study conducted by Krishnan, et al. (2020) aimed to explore the uses and benefits of infographics in undergraduate process-based writing. From the study discussion, the authors noted the impact of infographics in increasing confidence or enhancing the writing

experiences of the learners. The authors also discussed how infographics are useful to students, especially in organizing ideas, improving their understanding of writing concepts, and providing visual aids that ease the writing process.

Writing anxiety

Learners of EFL usually experience fear of interacting with content or writing tasks. The fear or apprehension experienced is writing anxiety and has detrimental effects on writing. In this case, writing anxiety can result in reduced written expression fluency due to impeded ideas and thought flow. Learners struggle to find proper words, formulate comprehensible sentences, and effectively organize ideas. Consequently, the learners' writing seems to lack coherence, and this obstructs their writing development. Learners also may lose confidence in their writing abilities because of doubts they develop considering their language ability and the fear of making errors or getting negative evaluations. The lack of confidence can be daunting to learners, especially when participating in writing tasks. It can also hinder their willingness to take risks and experiment with the English language, thus affecting their writing development (Hartono & Maharani, 2019).

Anxiety in writing can make learners avoid writing tasks and may procrastinate, finding excuses not to take part in writing assignments. Therefore, learners do not get sufficient opportunities to learn and develop their writing skills, which promotes anxiety and lack of progress. Learners can also develop negative self-perception concerning their writing skills, especially when they have a fixed mentality that they are incapable of improving their writing, thus amplifying anxiety and decreasing motivation in writing. In other cases, learners may not be motivated to use the language they learn effectively. Under the pressures of learning to write, learners may experience cognitive blocks that prevent their ability to remember what they learned, such as vocabulary and sentence structures. Therefore, their writing lacks complexity and flow, hindering their language development (Liu, & Ni, 2015; Kwon, 2017; Wang & Zeng, 2020).

Writing anxiety refers to the negative feelings that can occur when given a writing task. It is the extent of nervousness that a writer experiences, especially when handling tasks in other languages other than their native language. Im & Lee (2022) studied the effects of using Padlet, an online collaborative platform, on writing anxiety and using strategy in online learning of English writing. The outcome of the assessment showed that the use of Padlet had a positive impact in minimizing writing anxiety among the participants. Therefore, there is a need to apply some strategies that can help reduce learners' anxiety to perform better in writing. However, there are no studies, to the researcher's knowledge, that was conducted on the use of infographics in developing writing skills and minimizing writing anxiety.

Methodology:

This research purposed to investigate the impact of using infographics in developing writing skills for the third year of middle school students who are studying English as a foreign language. It also purposed to examine its role in reducing writing anxiety. The research adopted a quasi-experimental design with pre-and post-test with two groups: experimental and control group (Rogers & Révész, 2020). It also applied a survey to examine the impact of infographics on writing anxiety. All participants took a pre-test and answer the writing anxiety survey, taught writing skills with either the infographic or the traditional method, and then were provided with a post-test and the writing anxiety survey again.

The procedure of the study:

To conduct the study, the researcher trained the teacher on how to incorporate infographics in teaching writing. Then, the teacher met with the students at the beginning of the foreign semester of the 1444 AH and explained to them, that she will be examining the effect of a strategy on their writing. Students were told that their participation will be confidential, and they have the chance to withdraw at any time and there is no penalty for that.

Students in both groups were given the writing performance test and writing anxiety survey to examine the students' writing skills and anxiety and to evaluate the equivalency of both groups. Then, they

were taught the writing activities in two units (Since When & Do you know where it is) with either the traditional method or the infographic method for 6 weeks. The students were given detailed directions, illustrations, and practices on how to benefit from using infographics to brainstorm and organize their thoughts and ideas and prepare an outline for their writing then writing it. Two weeks later after the experiment, students were given the posttest of the writing performance test and writing anxiety survey.

Participants:

The participants of the study were recruited randomly from one of the middle schools in the Aseer region in the south of Saudi Arabia. Two out of three classes were chosen randomly to participate in the study; one group represented the control group and was taught with the traditional method, and the other group represented the experimental group and was taught with the infographic method. Both groups consisted of 33 students.

Materials and apparatus:

The materials for the study consisted of infographics for presenting writing activities to the experimental group. They were taught writing activities in two units using a variety of infographics which were designed using the power point and the Piktochart website (which has over 200 free templates to use). Four steps were followed to design the infographics: planning and analyzing, designing, production, and evaluation. First, in analyzing and planning step, the content of both units was analyzed to identify the objectives and to decide which writing skills students need to master. Second step, which is designing started by searching some websites for designing infographics such as Canva, PowerPoint, Piktochart, and Visme. Then, the designing at first was done by sketching out ideas using paper and pen, and a decision about the colors, shapes, and lines that would be used in designing the infographics was picked. Third, the production step involves transforming the design of the website. Fourth, the evaluation step where the design was evaluated to ensure its visual hierarchy and language integrity; was given to some specialists to examine its clarity and appropriateness to the student's level. An example of the infographics used in the study is attached below.

ADVANTAGES AND BENEFITS OF SAUDI ARABIA

TOURISM IN SAUDI ARABIA

Introduction:

Saudi Arabia is a land of abundant natural and historical spectacles. It has been a travel destination for Muslim pilgrims for centuries from all over the world.

Saudi Arabia has multiple products to offer to tourists.



Historical sites

The majestic rock-hewn tombs of Madain Saleh near the city al-Ula, Saudi Arabia



Museums

The National Museum of Riyadh is one among the several museums in Saudi Arabia



Religious tourism

In Saudi Arabia, tourism is associated mainly with religious pilgrimages



Conclusion

Tourism development is an important driver of growth for the future of Saudi Arabia. The country has a religious significance for being home to the renowned Holy Mosques. Further, the diverse natural environment and rich cultural heritage is a major attraction for domestic and international tourists.

Instruments:**Writing performance test:**

For examining the students' writing abilities, students were given a pre-test and a post-test. The tests were based on a list of writing skills that students need to master in the two units. It consisted of three questions. The first question provides students with a few related questions, and students were asked to write a paragraph using the answers to those questions. The second question provides the students with a word bank about a certain topic, and students were asked to write a paragraph using those words. The third question was about providing students with a picture, and the students were asked to write a short essay about it. Each question is worth 15 points, and it was evaluated based on: content, organization, grammatical structure, vocabulary, and mechanics.

Validity and reliability:

To evaluate the validity of the performance test, the test was presented to five specialists in the field to examine its suitability to the student's level and the goals of the content they are going to study, and its clarity. The amendment then was done. In addition, to evaluate the reliability of the test, Cronbach's Alpha method was used, and it equals 0.74%, which means a high level of reliability.

Pre-post writing anxiety survey

The survey was conducted twice at the beginning of the semester and at the end to investigate the impact of using infographics on reducing writing anxiety. The researcher used the Second Language Writing Anxiety Inventory, (Cheng, 2004). This survey is a closed-ended questionnaire and consisted of 22 items which are divided into three dimensions: cognitive anxiety (8 items) somatic anxiety (7 items) and avoidance behavior (7 items). The survey was designed using a Five-point Likert scale ranging from strongly agree to strongly disagree. This survey was used in some studies and has been tested for its reliability and validity (Jeon, 2018).

A-Reliability

To test the reliability of the survey for the current study, the researcher calculated the stability by using alpha-Cronbach and split-half methods. The stability of the survey was calculated by the alpha-

Cronbach stability coefficient for the survey as a whole, where its value was (0.87), which indicates a high stability coefficient. Further, Alpha-Cronbach stability coefficients were calculated for the three subcategories of the survey, and their values were in order (0.71, 0.72, 0.73). The values of Cronbach's coefficients are high for each Dimension of the survey. The stability was also calculated using the split-half method, where the overall stability coefficient was calculated using the split-half method using the Spearman-Brown equation, with a value of (0.81), which indicates a high coefficient of stability of the survey. The stability coefficient was also calculated using the split-half method for each Dimension of the survey; their values were in order (0.71, 0.70, 0.72). It is clear the high values of the stability coefficients by the split-half method for each of the Dimensions of the survey.

B- Validity:

-The validity of the arbitration:

After preparing the tool, it was presented to 5 jury members in the specialty to determine the appropriateness of the dimensions for measuring writing anxiety and the appropriateness of the phrases to the dimension to which they belong, and the clarity of the phrases. An agreement rate of (80%) and higher have been taken. The opinions of the jury members were considered, as no dimension was excluded from the survey, except for rephrasing, and thus the final number of the survey phrases was (22) distributed over three dimensions.

Internal consistency validity:

Table (1) show results of the values (correlation coefficients) of the internal consistency of the survey statements.

Statement No.	Correlation with Dimension	Correlation with Total	Statement No.	Correlation with Dimension	Correlation with Total	Statement No.	Correlation with Dimension	Correlation with Total
Somatic anxiety			Avoidance behavior			Cognitive anxiety		
1	0.59**	0.60**	8	0.60**	0.51**	15	0.56**	0.54**
2	0.70**	0.65**	9	0.65**	0.53**	16	0.57**	0.60**
3	0.71**	0.47**	10	0.57**	0.54**	17	0.59**	0.65**
4	0.67**	0.42**	11	0.57**	0.51**	18	0.53**	0.41**
5	0.69**	0.47**	12	0.65**	0.57**	19	0.61**	0.48**

Statement No.	Correlation with Dimension	Correlation with Total	Statement No.	Correlation with Dimension	Correlation with Total	Statement No.	Correlation with Dimension	Correlation with Total
Somatic anxiety			Avoidance behavior			Cognitive anxiety		
6	0.70**	0.50**	13	0.72**	0.64**	20	0.56**	0.43**
7	0.66**	0.45**	14	0.66**	0.62**	21	0.67**	0.60**
						22	0.55**	0.50**

Correlation coefficients significance at the level (0.01) (**)

It is clear from the previous table that all expressions are related to the degree of the dimension to which they belong, and to the total score on the survey. It shows positive and statistically significant correlation coefficients at the level of (0.01).

Data analysis:

The Statistical Package for the Social Sciences (SPSS) program was used to analyze data from both the pre-post performance test and the pre-post writing anxiety survey. The pre-post-test was analyzed using the T. test to investigate the significant differences between both groups in terms of writing development. Further, to analyze the survey, the arithmetic mean was calculated.

Results and Discussion

This study purposed to investigate the impact of using infographics on developing EFL writing skills and minimizing writing anxiety. To achieve those purposes, the researcher first analyzed the results of both groups' pre-test and pre-writing anxiety survey to examine the equivalency of both groups. Independent samples T-test was used to verify the equivalence between the control and experimental group. It is clear from the results presented in Table 2 below that there were no statistically significant differences between the control and experimental groups in the pretests, which implies the equivalence of both groups in pretests.

Table 2: Equivalence between the control and experimental group in the pretest.

Variable	Group	N	Mean	Std. Deviation	T
Writing	control group	33	2.57	1.414	0.47
	experimental group	33	2.72	1.15	
Anxiety	control group	33	91.15	3.29	0.15
	experimental group	33	91.27	3.22	

Results of research hypotheses1:

The first hypothesis states that there are no statistically significant differences at ($\alpha \leq 0.05$) between students' writing performance of the experimental group and the traditional group in the post-test. To test the validity of this hypothesis, an independent sample - t-test was used.

The results are presented in Table (3) and stated that there was a statistically significant difference at the level of significance (0.01) between the average scores of the experimental group and the **control** group in writing performance favoring the experimental group. The values of Eta Squared (η^2), which determines the effect size (0.15), have exceeded the value (0.14), which means that there is a large effect size. It means that the use of infographics has a positive impact on EFL learners' writing skills and writing anxiety.

Table 3: Independent samples T-test for differences between traditional group and the experimental group.

Group	N	Mean	Std. Deviation	T	df	Sig.	Eta Squared
control group	33	7.91	1.738	3.10	64	0.01	0.15
experimental group	33	9.61	2.62				

Results of research hypotheses2:

The hypothesis states that there are no statistically significant differences at ($\alpha \leq 0.05$) between the experimental group and the control group in terms of students' post-test scores in writing anxiety. To test the validity of this hypothesis, an independent sample - t-test was used. The results are presented in Table 4 below and indicated that there are statistically significant differences at the level of significance (0.01) between the average scores of the experimental group and the control group in writing anxiety, for the sub-dimensions and the total degree. The differences were toward the control group (The larger average). This means that there is a statistically significant decrease in writing anxiety for the experimental group compared to the control group. That supports the impact of infographics on reducing EFL learners' writing anxiety. The values of Eta Squared

(η^2), which determines the effect size (0.44), have exceeded the value (0.14), which means that there is a large effect size.

Table 4: Independent samples T-test for differences between traditional group and the experimental group.

Dimensions	Group	N	Mean	Std. Deviation	t	df	Sig.	Eta Squared
Somatic anxiety	control group	33	15.93	3.53	7.53	64	0.01	0.47
	experimental group	33	10.87	1.55				
Avoidance behavior	control group	33	15.27	3.55	6.28	64	0.01	0.38
	experimental group	33	10.57	2.41				
Cognitive anxiety	control group	33	17.87	4.40	4.58	64	0.01	0.25
	experimental group	33	13.15	3.96				
Total anxiety	control group	33	49.091	9.04	7.06	64	0.01	0.44
	experimental group	33	34.60	7.54				

Discussion

This study examined the impact of infographics on EFL learners' writing skills and minimizing writing anxiety. The researcher first compared both groups in the pre-test and pre-writing anxiety survey to evaluate the groups' equivalency. The results showed that groups are comparable, thus, the results from the experiment would be more likely to be related to the used treatment (Price, et al., 2015).

The findings of this study revealed that there were significant differences between the control group and the experimental group regarding to the posttest, where the experimental group outperformed the other group. This result is consistent with the findings of other studies in the literature, which support the positive impacts of infographics on developing writing skills (Hamer, et al., 2022; Melani & Lismay, 2021; Hameed & Jabeen; 2022; Mubarok & Asri, 2020; Krishnan, et al., 2020). The effectiveness of infographics could be because learners get to learn how to organize their ideas and thoughts, know their writing strengths, and identify areas that require improvement (Dahmash et al., 2017). In this case, learners would be

aware of what they have to emphasize to improve the organization of their ideas before beginning to write an academic text (Shaman, 2021). Teaching students how to write in a foreign language with the help of infographics puts much emphasis on effective communication, understanding concepts, planning ideas, and organizing them based on their relations to come up with a meaningful text.

Further, the infographics had a powerful impact on EFL learners' writing because they represented the information in dual coding which made learning easier and be retained (Mayer, 2001).

The results of this study discovered that there were statistically significant differences between the experimental group and the control group regarding the post-writing anxiety survey. That means the experimental group's anxiety was reduced after being taught with infographics. Minimizing anxiety assists learners to perform better (Kwon, 2017). The results showed a decrease in the total of the survey and in the three dimensions of anxiety: somatic anxiety, avoidance behavior, and cognitive anxiety. The larger significant decrease was for somatic anxiety. Somatic anxiety items assessed the degree of the students' apprehensive physical reactions when writing in English. For example, some of the somatic anxiety items are phrased as "I freeze up when unexpectedly asked to write English compositions," "I usually feel my whole body, rigid and tense when I write English compositions," and "My thoughts become jumbled when I write English compositions under a time constraints," and "I feel my heart pounding when I write English composition under time constraint. Therefore, the use of infographics seemed to have minimized the students' nervousness and fears in English writing situations.

Avoidance behavior items purposed to measure the degree of the students' avoidance of writing situations. The items included, "Unless I have no choice, I would not use English to write a composition," and "I would do my best to excuse myself if asked to write English compositions." The implementation of infographics showed significant differences in reducing avoidance behavior. In addition, cognitive anxiety survey items aimed to measure students' concerns about other people's evaluation of their English writing

skills. The examples are: “I am afraid of my English composition being chosen as a sample for discussion in class. “If my English composition is to be evaluated, I would worry about getting a very poor grade”. Infographics significantly minimized students’ cognitive anxiety. When students are taught with infographics, they are learning and acquiring the knowledge and skills that they need in an enjoyable way. Thus, their confidence is getting higher and they feel happy about their performance which helps in decreasing cognitive anxiety.

The experimental group’s anxiety level was reduced more than the control group. This could be because the implementation of infographics in teaching writing involves the use of visuals with the verbal which help in reducing the cognitive load (Eladi & Cifci, 2021). It also stimulates students’ interest in writing (Mubarok & Asri, 2020). Attracting students’ interests can help in minimizing anxiety, then students can perform better. The use of infographics also supports active learning which helps improve learning and communication and then should minimize anxiety (Alford, 2019). Further, it influenced students’ perceptions and learning outcomes, and motivation (Bicen & Beheshti, 2022). Therefore, students who were taught writing with infographics performed better than the control group.

Conclusion:

The research aimed to investigate using infographics to teach and enhance writing skills among English language learners in Saudi Arabia. In particular, it explored the impact of using infographics on improving writing proficiency and minimizing writing anxiety. The results of the study indicated that infographics support learners in writing lessons in English and help them develop their skills in writing. It also helped to reduce anxiety, which then assisted the learners to perform better in writing. It helped to minimize the anxiety related to the three dimensions: somatic anxiety, avoidance behavior, and cognitive behavior. Therefore, the implementation of infographics in teaching EFL learners writing skills was founded to significantly empower the students’ skills. Therefore, it should be applied in teaching writing and other language skills.

Recommendations

In consideration of the complexities involved in foreign language writing for learners, this study suggests an instructive inclusion of infographics as a digital aid and procedural tool for supporting the development of writing among English language learners. A writing curriculum that teaches English writers a foreign language to create infographics as an effective method of organizing ideas and presenting them to the right audience is uniquely important for developing writing among foreign language learners.

The result of the study recommends that specialists should train teachers, and supervisors, on how to create infographic and apply it in teachings. Further, curriculum designers should incorporate some infographics in the EFL curriculum, and they should include some instructions about how to apply them. Future research should be conducted on the impact of using infographics on developing creative thinking and visual thinking. Further, other research should be done qualitatively to investigate the teachers' and students' perspectives on the use of infographics in teaching English.

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