ENGLISH-MAJOR STUDENTS' PERCEPTIONS AT NAM CAN THO UNIVERSITY REGARDING THE USE OF INFOGRAPHICS TO IMPROVE ENGLISH VOCABULARY LEARNING

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Abstract:

The present study investigates English-major students at Nam Can Tho University's perceptions on using infographics for improving English vocabulary. Through a mixed-method study that included the use of quantitative data from questionnaires (N = 213) and the collection of qualitative information from semi-structured interviews. The study was designed to identify the benefits and challenges of infographics for vocabulary learning from the learners' viewpoint. The results addressed the use of infographics as very useful by students in terms of perceived usefulness, engagement and motivation, visual appeal, learning preference, and challenges. Infographics provided an opportunity for dual coding and multimodal processing, which supported learners in making links between visual and text information. In addition, student-created infographics inspired creativity, ownership, and collaboration, and all these factors generated a deeper understanding through social and cognitive connective processes. The research also noted positive emotional effects from infographics. These findings advocate that infographics can be used as successful and learner-friendly tools in EFL vocabulary teaching in the Vietnamese tertiary education system, where digital literacy and learner autonomy are encouraged.

Keywords: infographics, vocabulary learning, English majors, EFL, learner perceptions

1. Introduction

Vocabulary is considered an important step for learners in language learning; it is the basis of listening, speaking, reading and writing skills in EFL. A good vocabulary helps students to comprehend texts, to articulate ideas and to participate in a wide variety of contexts. However, the acquisition of vocabulary is difficult for EFL learning, because there is not much opportunity to be exposed to the language outside the classroom. More

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traditional activities, such as memorization, word lists, and dictionary exercises, have been dismissed as unproductive in terms of retention, context, and motivation (Nation, 2013; Schmitt, 2010).

In response, educators have leveraged new and learner-focused approaches like infographics – visual representations that use text, images and symbols to convey information in a clear and fun way. Infographics facilitate elaborative processing and interactivity, consistent with Dual Coding Theory (Paivio, 1990) and Multimedia Learning Theory (Mayer, 2005) theorists who have suggested that multimodal presentations of information enhance learning and memory because they stimulate verbal and visual channels.

With digital literacy on the rise, infographics are timely additions to today's educational culture. They are said to promote vocabulary learning and engagement (Apriyanti *et al.*, 2023; Chung, 2023; Eremkina *et al.*, 2022; Nhan, 2023; Polman & Gebre, 2015). However, studies analyzing the perspectives of students are scarce, particularly in Vietnam's higher education. Learning participants' perceptions of the infographic-based learning can provide practical, effective, and motivational considerations of the infographic-based learning.

In such a context as Vietnam, where language competence is of recognized importance to English majors, searching for new vocabulary learning strategies is so important. Infographics might also help to fill the gap between old ways and students who are native to the digital era by providing a more visually stimulating and supportive process.

The present study aims to shed light on the views of English-major students at Nam Can Tho University on the use of infographics in vocabulary learning in terms of their usefulness, attractiveness, accessibility, benefits, and challenges. The results are intended to help raise instructors' awareness of how effective vocabulary learning can be improved through visual support in higher education EFL learning.

2. Literature Review

2.1 Definition and Importance of Infographics
Infographics are graphic visual representations that are able to convey information in a more dynamic way than more traditional formats like a direct chart or graphic. And, by using graphics, charts, icons and limited wording, they break down the information and increase comprehension among a widespread demographic. The point of infographics is to turn heavy, intellectual, or arcane information into an attractive and easily digestible visual narrative that is more quickly understood and more easily remembered.

In education, infographics are great for getting information across quickly and efficiently. They are text enhanced; they look not only nice but also read well. According to Fauzi *et al.* (2022), targeting the public, infographics increase engagement, comprehension and memory due to their appealing and organized visual design. It is

because of their capability to emphasize and direct attention that they are a useful tool for instruction.

Good design is also essential to the success of infographics. See-ability (good visual and the right typography, colour and order) is critical to attract attention and support the message strategy (Fauzi *et al.*, 2022). When it comes to presenting results or showing data, infographics are a quick and aesthetically pleasing way to communicate.

2.1.1 Types of Infographics

Infographics can be classified into several types based on their format and level of interactivity:

- **Static Infographics:** These are traditional, non-interactive visual representations. Static infographics often employ images, charts, and concise text to communicate information effectively. They are ideal for simple presentations where interactivity is unnecessary (Agustini *et al.*, 2020).
- **Animated Infographics:** These infographics include motion graphics that can enhance storytelling by dynamically conveying information. Animated infographics tend to capture viewers' attention more effectively than static ones, as they can illustrate changes over time or processes that might be difficult to understand in a static format (Gaber *et al.*, 2023).
- **Interactive Infographics:** This type engages users by allowing them to interact with the data presented. Users can explore different datasets or customize views, making the learning process more immersive (Anas *et al.*, 2023). Interactive infographics often employ advanced technologies, such as data visualization tools, to facilitate user interaction, thereby enhancing understanding of complex information (Burnett *et al.*, 2019).

2.2 Learners' Perceptions of Infographics in Learning Vocabulary

Students value infographics as instructional tools, particularly in learning vocabulary items. Infographics can facilitate information processing by integrating visual and text, thereby increasing retention and engagement (Nhan, 2023; Arochman *et al.*, 2023). Learners find them interesting and adjustable to learning styles (Apriyanti *et al.*, 2020) and effective for fostering critical thinking (Dewi *et al.*, 2023).

Studies (Almashaleh, 2023; Chung, 2023) show that images promote recall and understanding. Teachers are recommended to include the use of infographics in teaching to match the current requirements and enhance student performance (Khaeranda *et al.*, 2024; Aguilar & Panoy, 2022).

2.3 Students' Perceptions of Using Infographics for Vocabulary Learning
2.3.1 Perceived Usefulness

Infographics are widely regarded by learners as useful for organizing, understanding, and retaining vocabulary. Their visual structure helps break down complex lexical information into digestible formats, improving comprehension (Nhan, 2023; Alrwele,

2017; Smiciklas, 2022). They also support connections between word forms, meanings, and contexts, which is critical for vocabulary development (Wang & Yang, 2021). Alshammari (2023) notes that learners value infographics as practical and time-efficient tools, especially during revision. Their perceived usefulness directly contributes to learner motivation and willingness to use them independently (Ghanbari *et al.*, 2022).

2.3.2 Engagement and Motivation

Learners frequently describe infographic-based tasks as more engaging than traditional methods. The incorporation of colors, icons, and illustrations makes vocabulary exercises more enjoyable and attention-grabbing (Liu *et al.*, 2020). When students design their own infographics, they become active participants in the learning process, exercising creativity, decision-making, and problem-solving skills (Mubarok *et al.*, 2021; Zainuddin *et al.*, 2020). Research by Rahmawati and Umamah (2022) further indicates that students involved in infographic tasks demonstrate greater interaction and participation. With the availability of digital tools like Canva and Piktochart, such tasks are easily integrated into collaborative, tech-enhanced learning environments (Almurashi, 2021).

2.3.3 Visual Appeal and Learning Preferences

Infographics cater to visual and multimodal learners by presenting vocabulary in an aesthetically pleasing and organized way. According to dual coding theory, combining text and visuals enhances memory retention (Paivio, 2006), which explains their effectiveness. Infographics help learners visualize abstract vocabulary concepts, often incorporating pronunciation guides, example sentences, and usage contexts (Yıldız Durak, 2021; Asiry & Al-Malki, 2022). However, design elements such as font readability, image clarity, and color harmony significantly affect their impact (Hasanova, 2020; Noroozi *et al.*, 2021). Poorly designed infographics may hinder learning rather than support it (Yıldız, 2023), underscoring the need for effective instructional design.

2.3.4 Learner Confidence and Collaborative Learning

Infographics also contribute to learner confidence by providing clarity and reinforcing vocabulary knowledge. Alwadei and Mohsen (2023) found that students felt more competent and confident after engaging with infographic-based materials. Mansyur *et al.* (2022) report similar results, indicating higher motivation and positive attitudes toward learning. Additionally, when students collaborate to create infographics, they engage in shared cognitive and social learning processes, which enhance comprehension and encourage peer feedback (Kibar *et al.*, 2019). These tasks foster a deeper understanding of vocabulary as learners must negotiate meaning and representation together.

2.3.5 Challenges in Using Infographics for Vocabulary Learning

Despite the overall positive perceptions, several challenges can limit the effectiveness of infographics. Poorly designed infographics—those overloaded with text or visuals—can lead to cognitive overload and reduced focus (Yıldız, 2023; Noroozi *et al.*, 2021). Students

may also lack the digital or visual literacy skills needed to design effective infographics (Hasanova, 2020), which can cause frustration. Moreover, access to the necessary technology, such as reliable internet or design software, may not be equal among learners, particularly in under-resourced areas (Almurashi, 2021). Some students may also prefer conventional learning methods, viewing infographics as less rigorous or too creative for academic tasks (Sadiku, 2015; Rahmawati & Umamah, 2022).

2.4 Related Studies

Recent studies demonstrate an emerging efficacy of infographics on developing learners' vocabulary, especially in comprehension, retention, and engagement. Polman and Gebre (2015) in an earlier work proved that student involvement in making infographics increases understanding and helps in knowledge transfer. Almazova *et al.* (2019) and Korniush (2019) observed that infographics are a source that enhances students' satisfaction and helps them develop their grammar and vocabulary.

Apriyanti *et al.* (2020) that the infographics are highly appreciated by students and can be adapted to a wide range of learning styles, were supported by Eremkina *et al.* (2022) highlighted their importance in innovative language teaching. Moreover, Letts and Jonker (2018) and Wu and Kuwajima (2022) also corroborated the reinforcement of learning outcomes as a result of student-created infographics contributing to an increase in motivation.

Recent researches by Nhan (2023), Chung (2023) and Arochman *et al.* (2023) confirm that infographics help simplify abstract data and are conducive to paying attention, retaining vocabulary and developing vocabulary in the EFL context.

3. Methods

3.1 Research design

The mixed-method approach was used in this study; the information was collected through quantitative (questionnaire) and qualitative (semi-structured interviews). This mixture of approaches permits an overall investigation of the perceptions of English-major students at Nam Can Tho University on the pros and cons of using infographics for vocabulary learning. A combination of both methods enabled a fuller insight into the research questions by providing statistical knowledge as well as detailed, qualitative data, which represents participants' personal experiences and attitudes.

The survey was developed to collect the quantitative information of students' attitudes to the infographics in finding out the new words. The questions were aimed at capturing general information about the experiences, attitudes, and perceptions of the students in using Infographics. The participants were asked to rate the statements in terms of a 5-point scale that ranged from strongly agree, agree, neutral, disagree, and strongly disagree. Infographics were used in vocabulary learning. The Likert scale permits the researcher to determine increasing or decreasing levels of agreement or

disagreement with several of the statements and valuable statistical information for the efficacy of infographics.

3.2 Participants

The participants of this study consisted of 213 English-major students from Nam Can Tho University. All participants were enrolled in the English Language program during the academic year 2024–2025. The selection was based on convenience sampling, targeting students who had prior exposure to vocabulary learning using infographics in the classroom or self-study settings. The demographic information of the participants is summarized as follows

Table 3.1: Demographics of Participants

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	66	31.0
	Female	147	69.0
Year of Study	1st Year	58	27.2
	2nd Year	65	30.5
	3rd Year	52	24.4
	4th Year	38	17.8
Age Range	18–19	61	28.6
	20–21	97	45.5
	22–23	55	25.8
English Proficiency Level (Self-reported)	Beginner	18	8.5
	Intermediate	142	66.7
	Advanced	53	24.9

3.3 Instruments

This study used two main instruments: a questionnaire and a semi-structured interview, both aimed at exploring English-major students' perceptions of using infographics for vocabulary learning.

The questionnaire consisted of four clusters: (1) Perceived Usefulness, (2) Engagement and Motivation, (3) Visual Appeal and Learning Preference, and (4) Challenges. Items were adapted from prior studies (Alrajhi, 2020; Hasanova, 2020; Nhan, 2023; Khaeranda *et al.*, 2024) and measured on a 5-point Likert scale. It was validated by three experts and piloted with 20 students. Cronbach's alpha showed high reliability ($\alpha > 0.80$).

The semi-structured interviews provided deeper insights into students' experiences and attitudes. Questions were adapted from the same sources as the questionnaire. Ten participants from various academic years were selected purposively. Interviews, conducted in Vietnamese for comfort, lasted 20–30 minutes, were audio-recorded with consent, and transcribed for analysis.

3.4 Data Collection

Data collection occurred in two phases. First, the questionnaire was administered to 213 English-major students at Nam Can Tho University during class time in the 2024–2025 academic year. Participation was voluntary and anonymous.

Second, ten students were selected from the respondents for interviews, representing different academic years and proficiency levels. Interviews were conducted in a quiet on-campus setting, recorded with consent, and later transcribed.

4. Results

4.1 Quantitative Findings
4.1.1 The Effectiveness of Infographics in Vocabulary Learning

This section outlines an analysis of data and its interpretation with the goal of determining the effectiveness of Infographics in vocabulary learning.

Table 4.1: Students' Perceptions of Using Infographics to Learn English Vocabulary

Statements	N	Mean	SD
1. Infographics help me understand new English words more clearly.	213	4.08	.87
2. I remember vocabulary better when it is presented in an infographic.	213	4.14	.91
3. Infographics help me see how words are used in real-life contexts.	213	4.09	.90
4. Infographics make it easier to learn multiple words at the same time.	213	3.96	.93
5. Infographics improve my ability to recall vocabulary during speaking or writing tasks.	213	4.03	.97
6. I learn the meanings, forms, and usage of words more effectively with infographics.	213	3.94	.93
7. Infographics help me organize vocabulary by categories or topics.	213	4.19	.91
8. I can connect new vocabulary with what I already know when using infographics.	213	4.03	.92
9. Infographics help reduce confusion when learning similar words.	213	4.02	.89
10. Using infographics has improved my overall vocabulary performance.	213	4.15	.90

The highest-rated statement, with a mean of 4.19 (SD = 0.91), was that infographics help organize vocabulary by categories or topics. This suggests that participants particularly valued the structured presentation of infographics, which likely aids in mentally categorizing and retrieving vocabulary. Similarly, participants strongly agreed that infographics enhance memory retention, as evidenced by a mean of 4.14 (SD = 0.91) for the statement that vocabulary is better remembered when presented in an infographic. The ability of infographics to improve overall vocabulary performance was also highly endorsed, with a mean of 4.15 (SD = 0.90), indicating a perceived positive impact on learners' linguistic competence.

Other statements revealed consistent support for infographics across multiple dimensions of vocabulary learning. For instance, participants found that infographics clarify new English words (M = 4.08, SD = 0.875) and illustrate real-life word usage (M = 4.09, SD = 0.90), both critical for contextual understanding. Infographics were also seen as effective in reducing confusion among similar words (M = 4.02, SD = 0.89) and facilitating connections between new and existing knowledge (M = 4.03, SD = 0.92). Additionally, infographics were credited with improving recall during speaking or

writing tasks (M = 4.03, SD = 0.97), underscoring their practical utility in productive language skills.

Slightly lower, but still positive, mean scores were observed for statements related to learning multiple words simultaneously (M = 3.96, SD = 0.93) and mastering meanings, forms, and usage of words (M = 3.94, SD = 0.93). These scores suggest that while infographics are effective, their impact may be somewhat less pronounced in handling complex or simultaneous learning tasks. The standard deviations, ranging from 0.87 to 0.97, indicate moderate variability in responses, reflecting individual differences in how participants perceive the benefits of infographics.

In conclusion, the results strongly support the use of infographics as an effective tool for vocabulary learning. Participants consistently rated infographics highly for their ability to organize, clarify, and contextualize vocabulary, as well as enhance retention and recall. These findings suggest that infographics could be a valuable resource in English language education, particularly for structuring vocabulary and supporting memory. Further research could explore how infographic design elements influence their effectiveness and whether their benefits vary across different learner profiles.

4.2 The Motivational and Affective Impact of Infographics in Vocabulary Learning

This section presents the analysis and interpretation of data to determine the motivational and affective impact of Infographics in vocabulary learning.

Table 4.2: Students' Motivational and Affective Impact of Infographics in Vocabulary Learning

Statements	N	Mean	SD
11. Infographics make vocabulary learning more enjoyable for me.	213	3.98	.96
12. I feel more motivated to learn vocabulary when infographics are used.	213	3.95	.89
13. Infographics make vocabulary lessons more fun and interactive.	213	4.07	.98
14. I am more likely to pay attention when infographics are part of the lesson.	213	4.04	.92
15. Infographics encourage me to explore vocabulary outside the classroom.	213	4.03	.92
16. I feel more confident when learning vocabulary with infographics.	213	3.96	.93
17. I am more willing to complete the vocabulary homework that includes infographics.	213	3.72	.94
18. Infographics help reduce my anxiety about learning difficult words.	213	3.84	.95
19. I feel more engaged during lessons that use infographics.	213	4.00	.92
20. Infographics make me look forward to vocabulary learning sessions.	213	3.84	.97

Participants strongly agreed that infographics make vocabulary lessons more fun and interactive, as reflected in the highest mean score of 4.07 (SD = 0.98). This suggests that infographics enhance the enjoyment and dynamism of lessons, likely due to their visual

and interactive nature. Similarly, infographics were found to increase attention during lessons, with a mean of 4.04 (SD = 0.92), indicating that their engaging format helps maintain learners' focus. The statement that infographics encourage exploration of vocabulary outside the classroom also received a high mean score of 4.03 (SD = 0.92), highlighting their role in fostering independent learning.

Other statements revealed consistent positive effects on engagement and motivation. Participants reported feeling more engaged during lessons incorporating infographics (M = 4.00, SD = 0.92) and found vocabulary learning more enjoyable (M = 3.98, SD = 0.96). Infographics also boosted motivation (M = 3.95, SD = 0.89) and confidence (M = 3.96, SD = 0.93) in learning vocabulary, suggesting that the visual aid of infographics supports a positive learning mindset. Additionally, infographics were credited with reducing anxiety about learning difficult words (M = 3.84, SD = 0.95) and making learners look forward to vocabulary sessions (M = 3.84, SD = 0.97), further underscoring their affective benefits.

The lowest mean score was observed for the statement that infographics increase willingness to complete vocabulary homework, with a mean of 3.72 (SD = 0.94). While still positive, this score suggests that infographics may have a less pronounced effect on motivating homework completion compared to their impact on in-class engagement or enjoyment. The standard deviations, ranging from 0.89 to 0.98, indicate moderate variability in responses, reflecting individual differences in how learners experience the motivational and affective benefits of infographics.

In conclusion, the results demonstrate that infographics significantly enhance the motivational and affective dimensions of vocabulary learning. By making lessons more engaging, interactive, and enjoyable, infographics foster greater attention, confidence, and independent learning while reducing anxiety. These findings suggest that incorporating infographics into vocabulary instruction could improve learners' emotional experiences and motivation, potentially leading to better learning outcomes. Future research could investigate how specific infographic features influence motivation and whether these benefits persist across diverse learner groups or learning contexts.

4.3 The Visual Appeal and Learning Style Preferences for Infographics in Vocabulary Acquisition
This section analyzes and interprets the data to evaluate the visual appeal and learning style preferences for infographics in vocabulary acquisition.

Table 4.3: Students' Visual Appeal and Learning
Style Preferences for Infographics in Vocabulary Acquisition

Statements	N	Mean	SD
21. I prefer visual materials like infographics over plain text.	213	4.20	.942
22. Infographics are visually appealing and hold my attention better.	213	4.08	.939
23. I find it easier to understand vocabulary when it's presented with images and icons.	213	4.28	.822
24. Infographics help me learn because I'm a visual learner.	213	4.11	.933
25. I like colorful and well-designed infographics in vocabulary lessons.	213	4.27	.900
26. I enjoy learning through charts, diagrams, and visuals.	213	4.09	.911
27. I feel more comfortable using visual tools than reading long explanations.	213	4.26	.883
28. Infographics help me focus better during vocabulary lessons.	213	4.18	.816
29. I remember vocabulary longer when it's linked with images.	213	4.24	.878
30. Infographics suit my personal learning style better than traditional materials.	213	4.13	.922

The highest-rated statement, with a mean of 4.28 (SD = 0.82), was that infographics make it easier to understand vocabulary when presented with images and icons. This suggests that the integration of visual elements significantly enhances comprehension, likely by providing clear, memorable cues. Participants also expressed a strong preference for colorful and well-designed infographics (M = 4.27, SD = 0.90) and felt more comfortable using visual tools compared to reading long explanations (M = 4.26, SD = 0.88). These high scores underscore the aesthetic and functional appeal of infographics in making vocabulary lessons more engaging and accessible.

Infographics were also highly valued for their ability to support memory and focus. Participants reported that vocabulary linked with images is remembered longer (M = 4.24, SD = 0.87) and that infographics help maintain focus during lessons (M = 4.18, SD = 0.81). Additionally, a general preference for visual materials over plain text was evident, with a mean of 4.20 (SD = 0.94), and infographics were seen as aligning well with personal learning styles (M = 4.13, SD = 0.92). The statement that infographics are particularly helpful for visual learners received a mean of 4.11 (SD = 0.93), reinforcing their suitability for learners who favor visual processing.

The lowest mean score, though still notably high at 4.08 (SD = 0.93), was for the statement that infographics are visually appealing and hold attention better. This slightly lower score may reflect varying individual preferences for specific design elements, but it still indicates broad approval of infographics' engaging qualities. The standard deviations, ranging from 0.816 to 0.942, suggest moderate variability in responses, likely due to differences in aesthetic preferences or degrees of visual learning orientation among participants.

In conclusion, the results strongly affirm the value of infographics as a visually appealing and effective tool for vocabulary learning, particularly for those who prefer visual learning styles. Their ability to enhance comprehension, support long-term retention, and maintain focus makes them a powerful alternative to traditional text-based materials. These findings advocate for the integration of well-designed infographics in vocabulary instruction to cater to visual learners and improve overall engagement. Future studies could examine how specific design features of infographics, such as color schemes or icon types, optimize their impact on diverse learner populations.

4.4 Challenges in Using Infographics for Vocabulary Learning

This section presents an analysis and interpretation of the data to assess challenges in using infographics for vocabulary learning.

Table 4.4: Students' Challenges in Using Infographics for Vocabulary Learning

Statements	N	Mean	SD
31. I sometimes feel overwhelmed by too much information presented in infographics.	213	3.42	1.08
32. It is difficult for me to identify the most important vocabulary items in a complex infographic.	213	3.89	.97
33. I lack the design skills needed to create effective infographics for vocabulary learning.	213	3.75	.88
34. I find it challenging to use digital tools (e.g., Canva, Piktochart) for creating vocabulary infographics.	213	3.21	.87
35. I do not always have access to the necessary technology to work on infographic-based tasks.	213	3.58	.90
36. I prefer traditional methods (e.g., word lists, flashcards) over learning vocabulary through infographics.	213	2.87	.83
37. I feel unmotivated when asked to create infographics because I am unsure about my creativity.	213	3.66	.82
38. I find infographic tasks time-consuming and hard to complete within the assigned schedule.	213	3.49	.78
39. I often need more guidance or examples to understand how to design a good vocabulary infographic.	213	3.12	.81
40. I find it difficult to focus on vocabulary learning when the infographic is poorly designed or cluttered.	213	3.36	.75

Among the highest-rated challenges was the difficulty in identifying the most important vocabulary items in a complex infographic (M = 3.89, SD = 0.97), indicating that visual overload and content density may hinder learners' ability to extract key lexical items. Similarly, a substantial number of students acknowledged a lack of design skills (M = 3.75, SD = 0.88), and low motivation due to uncertainty about their creativity when creating infographics (M = 3.66, SD = 0.82), both of which point to students' discomfort with the production aspect of infographic-based tasks.

In terms of technical challenges, students reported moderate difficulty using digital tools such as Canva or Piktochart (M = 3.21, SD = 0.87), and a notable portion also lacked access to necessary technology (M = 3.58, SD = 0.90), which could pose barriers to implementing infographic activities both in and outside the classroom.

Cognitive and time-related challenges were also evident. Many students admitted to feeling overwhelmed by too much information presented in infographics (M = 3.42, SD = 1.08), and several found infographic tasks time-consuming and difficult to complete within deadlines (M = 3.49, SD = 0.78). These findings suggest that despite the visual advantages of infographics, poor design and limited time may reduce their effectiveness for vocabulary acquisition.

Moreover, students expressed a need for more instructional support, with a moderate mean score for the statement, *"I often need more guidance or examples to understand how to design a good vocabulary infographic"* (M = 3.12, SD = 0.81). Additionally,

when infographics were perceived as poorly designed or cluttered, students found it difficult to concentrate on vocabulary learning (M = 3.36, SD = 0.75).

Interestingly, students showed a relatively low preference for traditional methods over infographics (M = 2.87, SD = 0.83), suggesting a general openness toward infographic-based learning despite the challenges faced.

Overall, the data indicate that while students recognize the potential of infographics for vocabulary learning, they simultaneously encounter various obstacles—particularly related to visual complexity, design skills, motivation, technology access, and time constraints—that need to be addressed through targeted instructional support and scaffolding.

4.5 Qualitative findings

4.5.1 Perceived Usefulness of Infographics

The student emphasizes the utility of infographics in improving vocabulary retention by combining visual and textual elements. The phrase "*see the picture and the word together*" highlights the role of dual-coding theory, where visual and verbal information are processed together to strengthen memory. The student's mention of understanding meaning "*even before I read the explanation*" suggests that infographics facilitate faster comprehension by providing visual cues that preemptively clarify word meanings.

Participant 1 shared,

"*Infographics help me remember new words better because I can see the picture and the word together in one place. The image gives me an idea of the meaning even before I read the explanation.*" (Student 1)

The student highlights the organizational structure of infographics as a key factor in simplifying vocabulary learning. The phrase "*less confusing*" indicates that infographics reduce cognitive overload by presenting information in a structured, digestible format. The mention of "*too many definitions*" suggests that traditional methods (e.g., lists) overwhelm the student, while infographics provide clarity through their design. This reflects the cognitive load theory, where well-designed visuals minimize extraneous processing demands.

"*They make difficult topics easier to understand, especially when there are too many definitions to memorize. The way infographics organize the words and meanings makes it less confusing.*" (Student 2)

Similar to Student 2, this response underscores how infographics mitigate the overwhelming nature of traditional vocabulary lists. The term "*more relaxing*" suggests that infographics create a less stressful learning environment, likely due to their concise and visually appealing presentation. The mention of "*pictures and layout*" indicates that the visual design aids in breaking down complex information, making it easier to process

and understand. This aligns with the principle that visuals can reduce cognitive load by externalizing information processing.

> *"When I review vocabulary with infographics, I don't feel overwhelmed like when I read long lists of words and definitions. The pictures and layout make it more relaxing and clearer."* (Student 3)

The student highlights the efficiency of infographics in facilitating quick recall of vocabulary. The ability to "*quickly scan*" and use images as memory triggers suggests that infographics leverage visual memory to enhance retention. The phrase "*don't need to read everything again*" indicates that infographics provide a condensed, high-impact way to review, reducing the cognitive effort required for retrieval. This reflects the power of visual mnemonics in vocabulary learning.

> *"I can quickly scan an infographic and recall the words we studied before. Even just glancing at the images reminds me of the meaning, and I don't need to read everything again."* (Student 4)

The student explicitly connects infographics to improved performance on vocabulary quizzes, highlighting their practical utility in achieving learning outcomes. The ability to *"visualize the words and connect them to the pictures"* underscores the role of visual associations in strengthening memory retention, consistent with dual-coding theory. The phrase "*easier to remember*" during tests suggests that infographics create durable memory traces, aiding retrieval under pressure.

> *"Using infographics helped me do better in my vocabulary quizzes because I could visualize the words and connect them to the pictures I saw during study. It made it easier to remember them during the test."* (Student 5)

Students consistently noted that infographics simplify complex vocabulary, enhance memory through visual-word associations, and reduce cognitive overload compared to traditional lists, making learning clearer and more relaxing. The visual appeal of images and organized layouts also supports comprehension and aligns with students' learning preferences, while indirectly boosting engagement and motivation through increased confidence and reduced stress. These insights confirm that infographics are a powerful tool for improving vocabulary retention and academic performance.

4.5.2 Engagement and Motivation

The student highlights the engaging nature of infographics, contrasting them with "*plain textbooks*" that induce boredom. The use of "*colors and pictures*" is noted as a key factor in capturing attention, suggesting that the visual stimulation of infographics makes lessons

more dynamic and appealing. The phrase "*makes me want to follow*" indicates heightened intrinsic motivation, as the student feels actively drawn into the learning process. This aligns with theories of engagement that emphasize the role of aesthetically stimulating materials in sustaining attention.

"Infographics are more fun to look at than just reading plain textbooks. The colors and pictures catch my attention, and I feel more interested and less bored during lessons. It makes me want to follow what the teacher is saying." (Student 5)

The student explicitly connects the colorful and creative design of infographics to increased motivation and enjoyment. The metaphor of "*learning through art*" suggests that infographics transform the typically rote task of memorizing vocabulary into a more creative and emotionally engaging experience. The phrase "*makes sense visually*" indicates that the visual clarity of infographics enhances the learning process, making it more appealing and less mechanical. This reflects self-determination theory, where autonomy and enjoyment foster intrinsic motivation.

"I feel more motivated to study vocabulary when the materials are colorful and creative. It feels like I'm learning through art, not just memorizing. I enjoy learning more when it looks beautiful and makes sense visually." (Student 6)

The student highlights how infographics in PowerPoint slides enhance concentration and prevent disengagement, such as feeling "*sleepy*" during lessons. The contrast with "*just text or long paragraphs*" suggests that infographics break the monotony of traditional teaching methods, maintaining student attention through visual stimulation. The improved focus on the teacher's explanations indicates that infographics make the learning process more interactive and engaging, supporting sustained attention during vocabulary lessons.

"I like it when teachers use infographics in their PowerPoint slides. It helps me concentrate better on what they are saying, and I don't feel sleepy like when it's just text or long paragraphs." (Student 7)

The student describes infographics (referred to as "*visual vocabulary charts*") as sparking curiosity and a desire to explore vocabulary further. The term "*exciting*" and the sense of "*discovering new things*" suggest that infographics create an emotionally engaging learning experience that motivates active participation. The contrast with "*long definitions in the book*" highlights how infographics transform passive reading into an interactive, discovery-driven process, fostering intrinsic motivation.

"Whenever I see visual vocabulary charts, I want to read more and understand what they mean. It feels more exciting than just reading long definitions in the book. I feel like I'm discovering new things." (Student 8)

The student emphasizes the low-stress nature of learning with infographics, linking it to increased confidence and motivation. The phrase "*easier to understand*" suggests that the clear, visual presentation of information reduces cognitive and emotional strain, creating a positive learning experience. The desire to "*learn more and explore*" indicates that this stress-free environment fosters intrinsic motivation, encouraging deeper engagement with vocabulary content. This aligns with theories of motivation that highlight the role of positive affect and self-efficacy in learning.

"Learning with infographics is not stressful for me. I feel more relaxed and confident because the information is easier to understand. When I'm not stressed, I want to learn more and explore the topic." (Student 9)

Students' responses underscore that infographics significantly boost engagement and motivation in vocabulary learning by creating a visually stimulating and less stressful environment. They describe infographics as fun, colorful, and exciting, contrasting them with dull textbooks or text-heavy materials, which reduces boredom and fatigue while sparking curiosity and enjoyment. The creative and clear visual designs enhance concentration, confidence, and a desire to explore, fostering intrinsic motivation. These responses also highlight the role of visual appeal in driving engagement and the practical utility of infographics in making vocabulary learning more accessible and enjoyable.

4.5.3 Visual Appeal and Learning Preference

The student explicitly identifies as a visual learner, emphasizing that infographics align with their learning style by combining "*images and colors*" with vocabulary. This suggests that the visual elements cater to their preference for processing information visually, enhancing comprehension and retention. The phrase "*helps me organize the meaning in my mind*" highlights how the structured layout of infographics supports cognitive organization, making abstract vocabulary concepts more concrete. This aligns with learning style theories, particularly the visual-spatial learning preference.

"I'm a visual learner, so I understand and remember words better when I see them with images and colors. The layout of infographics helps me organize the meaning in my mind." (Student 10)

The student contrasts the "*attractive*" design of infographics with "*black-and-white text*," highlighting the role of visual aesthetics in their learning preference. The phrase "*enjoy looking at them*" suggests that the appealing design fosters a positive emotional

connection to the content, while "*keeps me focused*" indicates that the visual appeal sustains attention. This reflects the importance of aesthetic design in catering to visual learners and enhancing engagement with vocabulary material.

> "*Infographics are more attractive than black-and-white text. I enjoy looking at them and feel more connected to the content. The design really matters to me because it keeps me focused.*" (Student 3)

The student appreciates the clear and integrated presentation of infographics, which combine "*words, pictures, and meanings*" in a single visual format. This consolidated design aligns with their preference for a streamlined learning experience, particularly for test preparation. The phrase "*makes it easier for me to study*" suggests that the visual clarity reduces cognitive effort, catering to their learning style. This reflects principles of information design, where visual hierarchy enhances accessibility.

> "*I like how infographics show everything clearly—words, pictures, and meanings all in one place. It makes it easier for me to study, especially when reviewing vocabulary before a test.*" (Student 2)

The student contrasts infographics with "*long paragraphs or explanations,*" indicating a preference for concise, visual summaries that prevent confusion. The phrase "*at a glance*" highlights the efficiency of infographics in delivering key information quickly, which aligns with visual learners' preference for immediate, intuitive understanding. The reduction in feeling "*lost*" suggests that infographics cater to their learning style by simplifying complex information. This aligns with cognitive load theory, where visuals reduce extraneous processing demands.

> "*I usually get confused with long paragraphs or explanations, but infographics give me a quick summary. I can understand the main idea at a glance without feeling lost.*" (Student 8)

The student emphasizes the personalized nature of infographics, noting that they can "*choose what part to focus on,*" which suggests that the flexible, visual format allows for individualized learning paths. The phrase "*matches my style*" indicates a strong alignment with their visual learning preference, contrasting with the rigid structure of "*traditional textbooks.*" This reflects self-determination theory, where autonomy enhances engagement and satisfaction in learning.

> "*When I study with infographics, I feel the learning is more personalized. I can choose what part to focus on, and it matches my style better than traditional textbooks.*" (Student 6)

Students' responses highlight a strong preference for the visual appeal and learning preference of infographics in vocabulary learning, emphasizing their alignment with visual learning styles and their accessible, enjoyable design. They value the attractive colors, clear layouts, and concise summaries that reduce confusion and enhance comprehension compared to text-heavy materials. Infographics cater to diverse learners by offering clarity, personalization, and autonomy, allowing students to focus on content that suits their needs. The aesthetic appeal and intuitive design foster focus and enjoyment, making vocabulary learning more engaging and effective.

4.5.4 Challenges in Using Infographics for Vocabulary Learning

The student describes infographics as visually "*interesting*" but overwhelming due to excessive elements (pictures, colors, text), leading to distraction and confusion. The phrase "*don't know where to look first*" suggests poor visual hierarchy or cluttered design, which increases cognitive load and hinders comprehension. This contrasts with cognitive load theory, where well-designed visuals should reduce extraneous processing, indicating that poorly designed infographics can negate their intended benefits. The inability to "*learn the vocabulary properly*" highlights a direct negative impact on learning outcomes.

> "*Sometimes the infographic has too many pictures, colors, and text all mixed together. It looks interesting, but I get distracted and don't know where to look first. I feel confused and end up not learning the vocabulary properly.*" (Student 1)

The student describes the challenge of creating an infographic, noting that the design process overshadowed the learning objective. The lack of experience with digital tools led to frustration and stress, indicating a barrier related to technical proficiency. The phrase "*spent more time trying to figure out the design*" suggests that the task's cognitive demands were misaligned with the student's skills, diverting focus from vocabulary acquisition. This reflects a mismatch between task expectations and student capabilities, which can hinder learning.

> "*When I was asked to make an infographic for my vocabulary assignment, I spent more time trying to figure out the design than actually learning the words. I don't have much experience with digital tools, so it became frustrating and stressful.*" (Student 9)

The student highlights barriers related to resource access, specifically weak internet and lack of a personal laptop, which prevented them from completing an infographic project. The phrase "*felt left behind*" indicates a sense of inequity and exclusion compared to peers with better access, which can negatively impact motivation and self-efficacy. This reflects the digital divide, where unequal access to technology creates disparities in educational opportunities. The inability to use design websites effectively hindered engagement with the vocabulary task.

"I wanted to complete the infographic project at home, but my internet connection is very weak, and I don't have a personal laptop. I felt left behind because other students could use design websites easily while I couldn't." (Student 6)

The student expresses a preference for traditional note-taking over infographics, suggesting that infographics' creative design feels "*too playful*" and less suited for serious academic learning. This indicates a mismatch with their learning style, which favors structured, text-based methods over visual formats. The perception of infographics as not "*serious enough*" may reflect a cultural or personal bias toward conventional learning tools, highlighting that infographics do not universally appeal to all learners.

"To be honest, I'm more comfortable using my notebook and writing down definitions and example sentences. Infographics look creative, but sometimes they feel too playful and not serious enough for academic learning." (Student 5)

The student describes feeling "*stuck*" and "*unsure*" due to insufficient guidance on creating an infographic, indicating that unclear instructions hindered their ability to engage with the task. The absence of examples or clear expectations created a barrier to effective participation, likely increasing frustration and reducing confidence. This highlights the importance of scaffolding and clear instructional design when introducing complex tasks like infographic creation.

"Our teacher gave us the task to create an infographic, but I wasn't really sure how to start. There were no clear instructions or examples, so I felt stuck and unsure about what was expected of me." (Student 9)

The responses reveal significant challenges to using infographics for vocabulary learning, including overly complex designs that cause distraction and confusion, a lack of technical skills or access to digital tools, preferences for traditional learning methods, and insufficient instructional guidance. These barriers contrast with the positive perceptions of infographics' usefulness, engagement, and visual appeal, highlighting how poor design, inequitable resources, or lack of support can undermine learning outcomes, leading to frustration, exclusion, and reduced effectiveness in vocabulary acquisition.

5. Discussion

The results of this study confirm that infographics are useful and interesting for vocabulary learning for students majoring in English. Such positivistic perceptions are not only based on a preference for visual materials, but they are also consistent with multimodal and cognitive learning theories. One such great finding is the enhancement of vocabulary retention through infographics. The majority of learners affirmed that

infographics aided them in recalling new words, evidence to Polman and Gebre's (2015) argument that learner-designed visuals promote processing at a deeper level. Pictures and words are dual-coded: this increases term memory. Students also reported that infographics were easier and more entertaining to understand when compared to information presented through text only, as reported by Almazova *et al.* (2019) and Korniush (2019). Cognitive overload can be diminished, and the information can be visually organized using infographics, which in turn nurture understanding of difficult vocabulary (second language learners). Furthermore, students appreciated how infographics accommodated various learning preferences, which was congruent with Apriyanti *et al.* (2020). A number of attendees mentioned a better appreciation of the relevance of words in context, so it seems that infographics might serve as a kind of scaffold tying new learning to previous understanding. The very development of infographics exhibits a trend towards active learning. Wu and Kuwajima (2022) highlight that such involvement fosters ownership, metacognition, and motivation—vital in student-centered classrooms.

Learners also appreciated the general usefulness of infographics for academic and professional communication, which corresponds with Eremkina *et al.* (2022). With digital literacy increasingly a necessity, infographics cultivate transferable skills such as summarization, critical thinking, and visual communication. These findings are corroborated in recent Vietnamese studies (Nhan, 2023; Chung, 2023; Arochman *et al.*, 2023), which demonstrate the benefit of infographics on comprehension and engagement. This enhances their cross-context transfer in EFL instruction.

6. Conclusion

It is in this context that the present study investigated English-majored students' attitudes to the use of infographics in vocabulary acquisition, the results of which showed that they were highly in favor of the utility of infographics. Infographics improved understanding, recall, and interest consistent with the dual coding theory (Paivio, 1990) and multimodal learning approaches. Participants recalled that associating visuals with text enabled the formation of associations that made vocabulary easier to recall. Infographics that were student-generated further enhanced motivation and creativity, which supports the constructivist principles and the works of Polman and Gebre (2015) and Wu and Kuwajima (2022).

Apart from the cognitive benefits, students' anxiety and enjoyment were found to have decreased and increased, respectively, when using infographics, revealing the affective advantages of infographics that are rarely emphasized in vocabulary instruction. These results corroborate other works (Nhan, 2023; Chung, 2023; Arochman *et al.*, 2023) and confirm that infographics are adaptable for Vietnamese higher education. Therefore, infographics ought to be seen as indispensable instruments combining the students' theoretical background and preferences with students' instrumental needs.

After all, introducing EFL learners to 'infographics' in their vocabulary learning can result in deep learning, creativity, and also digital literacy, providing us with an additional sustainable and learner-centered way for language teaching and learning.

Conflict of Interest Statement

The authors declare no conflicts of interest.

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