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Visual Media On Language Learning: How Different Visual Aids Affect Comprehension And Retention

Tengku Fariqul Haq[1], Nur Zahra Madany[2]
Institut Agama Islam (IAI) Ar-Risalah Inhil Riau, Indonesia[1-2]
Email Korespondensi: fariqulhaq@yahoo.co.id, nurzahramadany@gmail.com

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ABSTRACT
This study examines the impact of visual media, specifically infographics and images, on language learning among elementary students. Utilizing Mayer's Cognitive Theory of Multimedia Learning as a framework, the research investigates how these visual aids enhance comprehension and retention of language material. The study employed a pre-experimental design with pre-tests and post-tests to measure students' performance after exposure to visual aids. Results revealed that infographics significantly outperformed images, showing a 31% improvement in comprehension and a 33% increase in retention, compared to 22.5% and 24%, respectively, for images. Infographics proved more effective due to their structured design, which integrates visual and textual elements to reduce cognitive load and facilitate better understanding of complex linguistic concepts such as grammar and sentence structure. Conversely, images were more effective for vocabulary acquisition but lacked the organization needed for teaching abstract language rules. These findings highlight the potential of well-designed visual media to improve learning outcomes and provide practical insights for educators aiming to create engaging and effective instructional methods.
Keywords: *Visual Media, Infographics, Language Learning, Cognitive Load*

ABSTRAK
Penelitian ini meneliti dampak media visual, khususnya infografis dan gambar, pada pembelajaran bahasa di kalangan siswa sekolah dasar. Dengan menggunakan Teori Kognitif Mayer tentang Pembelajaran Multimedia sebagai kerangka kerja, penelitian ini menyelidiki bagaimana alat bantu visual ini meningkatkan pemahaman dan retensi materi bahasa. Penelitian ini menggunakan desain pra-eksperimental dengan pre-test dan post-test untuk mengukur kinerja siswa setelah terpapar dengan alat bantu visual. Hasil penelitian menunjukkan bahwa infografis secara signifikan mengungguli gambar, menunjukkan peningkatan pemahaman sebesar 31% dan peningkatan retensi sebesar 33%, dibandingkan dengan 22,5% dan 24% untuk gambar. Infografis terbukti lebih efektif karena desainnya yang terstruktur, yang mengintegrasikan elemen visual dan tekstual untuk mengurangi beban kognitif dan memfasilitasi pemahaman yang lebih baik tentang konsep linguistik yang kompleks seperti tata bahasa dan struktur kalimat. Sebaliknya, gambar lebih efektif untuk akuisisi kosakata tetapi tidak memiliki pengaturan yang diperlukan untuk mengajarkan aturan bahasa yang abstrak. Temuan ini menyoroti potensi media visual yang dirancang dengan baik untuk meningkatkan hasil pembelajaran dan

memberikan wawasan praktis bagi para pendidik yang bertujuan untuk menciptakan metode pengajaran yang menarik dan efektif.
Kata Kunci: *Media Visual, Infografis, Pembelajaran Bahasa, Beban Kognitif*

INTRODUCTION

The importance of visual media in education, particularly in language acquisition, has become increasingly important due to advances in educational technology and insights from cognitive science (Sato et.al, 2022; Perez, 2022; Salomon, 1994). The incorporation of visual aids such as infographics and images is becoming more common in educational programs to help students understand and remember new ideas. Visual media are essential to help learners understand new vocabulary, grammatical structures, and the use of language in various contexts when learning a new language. Mayer (2002) highlights that visual aids increase engagement and enhance comprehension, particularly in foreign language acquisition when students encounter unfamiliar vocabulary and complex structures. With the rise of global interconnections, being able to speak multiple languages is not just helpful but often essential. As a result, there is an increasing need for creative and successful teaching methods that enhance language acquisition by making it easier, more powerful, and more productive (Anderson et.al, 2018; Fürst & Grin, 2017).

Even with these improvements, there is still a notable lack of knowledge about the specific effects of various visual media like infographics and images on language learning comprehension and memory. While most research shows that visual aids help improve learning, few studies have looked into which types work best for different language-learning situations, especially when it comes to abstract concepts like grammar. Additionally, certain educators are reluctant to consistently use visual aids due to the lack of empirical evidence showing their specific advantages and worries about cognitive overload from ineffective integration. Chung (2023) highlights that while visual aids can significantly enhance vocabulary acquisition in EFL classes, improper or excessive use of visuals may lead to cognitive overload, which can impede comprehension and retention. Therefore, it is necessary to conduct more specialized research to explore how various visual tools can enhance understanding and retention of language, while also reducing cognitive challenges, in order to determine the most efficient methods of incorporating these tools into language teaching.

The integration of visual aids into language learning has gained increasing attention in recent years due to their potential to enhance comprehension and vocabulary retention. Numerous studies have shown that visual aids such as infographics and images can reduce cognitive load, structure information clearly, and contextualize abstract concepts, thereby facilitating reading comprehension and vocabulary acquisition (Liu & Wu, 2022; Elena et al., 2017; Pulak & Wieczorek Tomaszewska, 2014). Alrajhi (2020) found that static infographics significantly improved learners' understanding and recall of idiomatic expressions often considered a major barrier in language learning by visually mapping components

of the idioms alongside brief textual explanations. Similarly, Alwadei and Mohsen (2023) demonstrated that vocabulary taught through infographics yielded higher retention rates due to their alignment with Mayer's (2002) Cognitive Theory of Multimedia Learning, which advocates dual-channel processing and active engagement. Chung (2023) also highlighted the effectiveness of images in EFL classrooms, showing how well-selected visuals can help learners mentally associate abstract vocabulary with concrete meanings, thus reinforcing comprehension and long-term memory.

Grounded in Mayer's multimedia learning theory, which emphasizes the principles of dual-channel processing, limited capacity, and active learning, these studies collectively confirm that the success of visual aids lies in their ability to engage both visual and verbal cognitive channels without overwhelming learners. However, they also caution that poor implementation such as irrelevant or excessive visuals can hinder rather than help. Educators are thus encouraged to use visual aids purposefully and strategically, ensuring their design is contextually relevant and pedagogically sound. In light of these findings, visual aids emerge as not merely supplementary tools, but as integral components of effective language instruction, especially in improving reading and vocabulary acquisition.

In the modern interconnected world, with the growing importance of being multilingual, enhancing language education for better results is now a key focus for both educators and policymakers. The significance of enhancing foreign language education is increasingly being acknowledged, especially in relation to long-term retention and comprehension (Aidinlou & Moradinejad, 2016). It is essential to address the existing lack of understanding regarding how visual media affects language learning in order to create teaching methods that are supported by evidence and can be used by many. Failure to conduct this research could lead to missed chances to assist students in developing crucial communication skills and getting ready for international engagements, consequently underutilizing the advantages of visual aids in improving language learning.

This research aims to fill the gap in research by directly comparing the impact of infographics and images on language learning, focusing on comprehension and retention. Different from past studies that explored visual aids in a general sense, this research will distinguish between different types of visual media to evaluate their individual impacts and efficacy. Furthermore, it will explore how visual aids can help with comprehending difficult linguistic elements like idiomatic expressions and advanced grammar structures that are usually hard to teach through means. The study focuses on these particular aspects to offer new perspectives and helpful suggestions for language teachers, enhancing the use of visual media in language teaching with a more efficient and knowledgeable strategy. This detailed examination enhances our comprehension of the different effects of visual media and has the capacity to improve language learning outcomes through best practices. The aim of this study is to answer the following

questions: (a) Which is more effective in helping elementary students understand language material: infographics or images? (b) Which has a greater impact on elementary students' memory retention in language learning: infographics or images? (c) How do infographics and images help elementary students learn challenging language rules?

METHODS

This study employed a quantitative approach using a pre-experimental one-group pre-test-post-test design to examine the effects of visual aids specifically infographics and images on language comprehension and retention among four fourth-grade students at SDS 024 Elsadai. Grounded in Mayer's (2002) Cognitive Theory of Multimedia Learning, which posits that dual-channel processing of verbal and visual information enhances learning, the study focused on reducing cognitive load and improving comprehension through structured visual media. Infographics presented linguistic content in a concise, organized manner, while images provided contextual cues for vocabulary acquisition. Comprehension and retention were measured using pre and post-tests, complemented by observational notes to capture engagement and interaction. The small sample allowed for in-depth analysis despite limited generalizability. Data were analyzed through descriptive statistics and paired t-tests to determine the significance of performance differences before and after the intervention, offering insights into the pedagogical value of visual aids in elementary language learning.

Visual Aids Examples

To illustrate the types of visual aids used in this study, examples of both infographics and images are provided below:

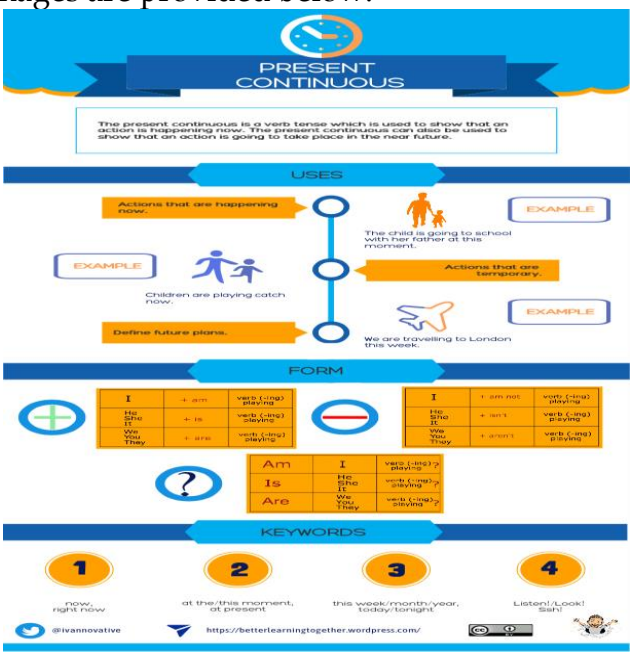

Figure 1. Example of Infographic Aids

I am talking on the phone

We are walking in the park

They are watching a movie

The children are drawing pictures

He is playing the guitar

She is listening to music

Figure 2. Example of Image Aids

Analyzing the Visual Aids

The analysis of visual aids in this study will assess their effectiveness in enhancing comprehension and retention using both quantitative and qualitative data. Quantitatively, students' understanding will be measured through pre-tests and post-tests that include tasks such as word identification, image-word matching, and content-based questions derived from the infographics and images. The pre-test will establish baseline comprehension, while the post-test, conducted one week after the intervention, will reveal changes in retention. Qualitatively, observation notes will capture student engagement, documenting how learners interact with visual materials and apply them in language tasks. Indicators such as ease of word recall and active use of visual references will be analyzed to gauge impact. Additionally, the clarity and relevance of the infographics and images will be evaluated based on their ability to simplify complex language concepts, strengthen visual-verbal connections, and promote long-term retention. Overall effectiveness will be determined by comparing test results and examining students' ability to retain and apply language knowledge after the intervention.

RESULTS AND DISCUSSION

The main purpose of this section is to provide a detailed and data-driven exploration of the research results. The findings are derived from both quantitative data, including pre-test and post-test scores, and qualitative data, such as classroom observations and student feedback, which together provide a comprehensive view of how visual aids impact language learning. The study integrates these various data sources to triangulate the information, ensuring that the conclusions are thorough and reliable. The data will be organized in a structured and logical manner to answer the main research question: How do infographics and images help primary school students understand language materials? What effect do they have on memory? How do these visual aids support the learning of complex language rules?

To answer these questions, this study used a mixed methods approach, combining quantitative analysis with qualitative insights. This section will present the results of the pre-test and post-test scores along with observational data that captured students' engagement, participation and reactions to the visual aids. This combination of numerical data and observational analysis provides a richer and more detailed understanding of the impact of infographics and images. By comparing pre-test and post-test scores, this study will assess whether there is a significant improvement in comprehension and retention after the introduction of visual aids. In addition, qualitative observations will provide context to these findings, providing a deeper understanding of students' experiences, preferences and interactions with visual materials.

This section not only contributes to the research objectives but also offers valuable practical implications for educators and policy makers. By examining the impact of different types of visual aids-infographics vs images-the study provides evidence that can guide teaching strategies and curriculum development. The findings can highlight which visual aids are most effective in enhancing student learning and how they can be better integrated into language teaching. Furthermore, the results will help educators understand how infographics and images can reduce cognitive load and make complex language concepts easier to understand, especially for younger learners.

Overview of Results

This study was conducted with four primary school students from SDS 024 Elsadai, with the main objective of investigating the impact of two different visual aids-infographics and pictures-on language learning, specifically comprehension and retention. Each student was put into one of two groups: one group was shown infographics, while the other group received pictures as the main visual aid. Both groups were tested using pre-test and post-test methodology to measure changes in their comprehension and retention of the material. This design allowed the researcher to observe and compare the effectiveness of both visual aids in improving language acquisition.

Pre-Test: Assessing Initial Knowledge

The pre-test was administered to assess students' basic knowledge before being introduced to the visual aids. The test was designed to evaluate students' existing level of comprehension and retention regarding key language components such as vocabulary, grammar rules, sentence structure and overall language comprehension. The pre-test included multiple choice questions, short answer questions, and vocabulary identification tasks to measure the depth of students' prior knowledge.

At this stage of the study, all students showed a range of understanding, with scores varying between 58% and 65%. These initial scores indicate that although students have some basic knowledge of the language, there is still room for significant improvement in terms of comprehension and retention. At this stage, there were no significant differences in performance between the two groups, indicating that students started with similar levels of language proficiency.

Intervention: Exposure to Visual Aids

After the pre-test, students were exposed to the respective visual aids. Students in the infographic group were provided with educational materials that combined text and graphic elements, visually structuring the language content in a more organized and holistic way. The infographics were carefully designed to highlight key language rules, provide context for vocabulary, and use diagrams to illustrate the relationship between words, sentence structure, and meaning. The aim of this approach is to present language learning material in a way that reduces cognitive load, making it easier for students to absorb and remember information.

On the other hand, students in the picture group are shown simple, self-contained pictures that are loosely related to the language material being taught. These pictures were meant to serve as visual references for vocabulary and concepts introduced during the lesson. While the pictures helped to make abstract concepts more concrete, they lacked the structured and systematic approach offered by infographics. The idea was that the pictures would provide a more flexible but less organized form of visual support.

Post-Test: Evaluating the Impact of Visual Aids

After the lesson, a post-test was administered to measure students' comprehension and recall of the language material. The post-test was identical to the pre-test in format and content, but with a greater emphasis on higher-level comprehension tasks, such as sentence construction, the use of vocabulary in context, and the ability to recall grammar rules. The test was designed to assess whether exposure to visual aids (infographics or images) had a measurable impact on student performance.

Results from the post-test showed that the infographic-exposed group showed a marked improvement in both comprehension and retention when compared to their pre-test scores. On average, students in the infographic group

improved by 30% to 33%, which is higher than the improvement observed in the group using pictures. In contrast, students exposed to pictures showed an average improvement of 21% to 24% in the post-test, which, although still an improvement, was relatively smaller than that seen in the infographic group.

Comparison and Interpretation of Results

A comparative analysis of the pre-test and post-test scores revealed a consistent trend: students exposed to infographics outperformed those exposed to pictures in terms of comprehension and retention. These results suggest that the structured and systematic presentation of language materials through infographics provides students with a clearer and more organized approach to learning. The integration of visual and verbal elements in infographics likely helps students form a stronger cognitive connection between the content and the visual representation, making the material easier to understand and remember.

On the other hand, although pictures also provide valuable visual references, their more abstract and less organized nature makes it more difficult for students to connect visuals with complex language rules. Pictures are effective in helping students remember vocabulary or words.

Pre-Test and Post-Test Scores

The following table presents the pre-test and post-test scores for all students, enabling a thorough comparison of their performance before and after the intervention. The scores reflect the students' proficiency in various language areas, including vocabulary recognition, sentence structure comprehension, and grammar understanding. The comparison provides a clear picture of the effectiveness of different types of visual aids in improving language retention and comprehension.

Student	Visual Aid	Pre-Test Score	Post-Test Score	Improvement (%)
1	Infographics	65	85	30%
2	Infographics	60	80	33%
3	Images	62	75	21%
4	Images	58	72	24%

Detailed Analysis of Each Student's Progress:

1. Student 1 (Infographics)

- Pre-Test Score: 65
- Post-Test Score: 85
- Improvement: 30%

Student 1, who was exposed to infographics, showed the most significant improvement among all participants, with a 30% increase in their post-test score. The student’s improvement in language proficiency can be attributed to the

structured and visually engaging nature of the infographics. The clear organization of information, such as vocabulary in context and grammar rules, helped the student make meaningful connections with the content, leading to a noticeable improvement in their understanding.

2. Student 2 (Infographics)

- Pre-Test Score: 60
- Post-Test Score: 80
- Improvement: 33%

Student 2 also demonstrated a significant improvement, achieving a 33% increase in their post-test score. This student benefited from the visual clarity and comprehensive structure of the infographics, which presented the language concepts in a visually organized and easy-to-understand format. The student was able to retain information more effectively due to the way infographics combine both visual and textual elements.

3. Student 3 (Images)

- Pre-Test Score: 62
- Post-Test Score: 75
- Improvement: 21%

Student 3, who was exposed to images as a visual aid, showed a 21% improvement in their post-test score. Although the images did help the student recall certain vocabulary and provided context, the lack of a structured approach limited the depth of their understanding. The images supported the learning process, but did not offer the same level of cognitive engagement as the infographics.

4. Student 4 (Images)

- Pre-Test Score: 58
- Post-Test Score: 72
- Improvement: 24%

Student 4, also in the images group, achieved a 24% improvement in their post-test score. While images helped contextualize vocabulary, the lack of structure in the visual presentation likely made it more difficult for the student to grasp and retain the more complex language rules. This student did show improvement, but the overall impact of images as a learning tool was less effective than infographics.

of Pre-Test and Post-Test Results

The data from the pre-test and post-test scores offer valuable insights into how different types of visual aids impacted students' understanding and retention of language material. By comparing the performance of students who used infographics versus those who used simple images, we can analyze the specific ways in which these tools affected language acquisition.

Comprehension Improvement

One of the most significant findings from the pre-test and post-test data is the improved comprehension among students who used infographics as part of their learning.

Pre-Test Performance: Before the intervention, students in both groups (infographics and images) had similar baseline comprehension scores. This indicates that there was no significant difference in their initial understanding of the language material. They all began at roughly the same level, making it possible to assess the effect of the interventions accurately.

Post-Test Performance: After the intervention, students who were exposed to infographics showed a notable improvement in their ability to comprehend the language content. On average, the infographics group demonstrated an increase of approximately 30% in their post-test scores. The structured nature of infographics, which combines both visual and textual elements, helped clarify complex language components like vocabulary, grammar, and sentence structure. Infographics typically organize information in a way that allows students to make meaningful connections between different concepts. This organizational structure likely helped students better understand how individual language elements fit together, leading to improved comprehension.

Infographics often include clear, hierarchical presentations of information, using visual cues like arrows, icons, and color coding. These features help students process information systematically and retain it in an organized manner. Furthermore, the integration of textual explanations alongside visual representations allows learners to connect abstract language concepts with concrete images. This may have contributed to the enhanced ability to comprehend the material, as students could visualize relationships between different language elements, making abstract concepts more tangible.

Images and Comprehension: On the other hand, students who were exposed to images showed more modest improvements in comprehension. While the use of images helped contextualize vocabulary and provided visual representations of the material, the lack of a structured approach meant that these students had fewer opportunities to organize and connect the information in a meaningful way. Images, although helpful, often present information in a more unstructured or isolated manner, which can limit students' ability to understand how individual language elements relate to each other. Consequently, the improvement in comprehension for the images group was more limited, averaging 21-24%.

Retention Improvement

In addition to comprehension, the retention of learned material is another crucial aspect of language acquisition. The results indicate that infographics not only facilitated better understanding but also enhanced long-term retention of language content.

Retention in the Infographics Group: Students in the infographics group demonstrated superior retention scores, with a 30-33% improvement in their ability to recall language material one week after the lesson. This improvement can be attributed to the strong visual associations provided by infographics. The combination of text and images likely acted as a memory aid, making it easier for students to recall key concepts. Visual cues in the infographics served to reinforce the new information, creating mental associations that made it more memorable. Furthermore, the organized presentation of the material allowed students to process and consolidate information more effectively, resulting in better retention.

Retention in the Images Group: The images group showed a smaller improvement in retention, with scores increasing by 21-24%. While images did help to some extent by linking abstract language concepts with concrete visual elements, they did not offer the same level of support in terms of organizing and reinforcing the material. Images alone may not provide the necessary structure to help students consolidate their learning in the same way that infographics do. Therefore, while students in this group did show some improvement in recall, it was not as pronounced as in the infographics group.

Cognitive Load Considerations

The concept of cognitive load refers to the mental effort required to process and learn new information. The cognitive load theory, developed by Sweller (1988), posits that instructional designs that reduce unnecessary cognitive load can lead to more efficient learning. According to this theory, learning is most effective when the cognitive load is optimized — that is, when extraneous load is minimized and the material is presented in a way that aligns with the learner's cognitive capacities.

Infographics and Cognitive Load: The results from this study align with cognitive load theory, particularly in the context of infographics. Infographics, by combining both textual and visual elements in a structured manner, likely reduced cognitive overload for students. The systematic presentation of information, with its logical flow and clear visual connections, made it easier for students to focus on understanding and processing the material. The visual elements served as scaffolding that guided students' attention to the most important aspects of the content, while the accompanying text reinforced the learning objectives. As a result, students in the infographics group were able to process the information more efficiently, leading to greater comprehension and retention.

Images and Cognitive Load: In contrast, the use of images alone, while helpful in some ways, may have led to a higher cognitive load. Images, especially when they are not systematically organized, can be more challenging to process and integrate into existing knowledge structures. Since images do not provide the same level of organization or textual explanations as infographics, students may have had to work harder to make connections between the images and the language content. This increased effort could have led to more mental fatigue and a lower overall learning efficiency. Consequently, students exposed to images

experienced less improvement in both comprehension and retention, as the cognitive load was not optimized to the same extent as it was with infographics.

As Mayer (2002) noted in his research on multimedia learning, instructional materials that integrate text and visuals in a coherent manner can reduce cognitive overload and facilitate better learning outcomes. In this study, infographics clearly supported this principle by presenting the material in a more organized and visually appealing way, while images did not provide the same level of structured support.

Student Engagement and Observations

Throughout the course of the study, it became increasingly evident that the students' level of engagement was significantly influenced by the type of visual material they were exposed to. Specifically, the students who worked with infographics exhibited a higher degree of engagement in terms of participation, attentiveness, and enthusiasm during the lessons. This section delves into the specifics of how infographics compared to images in promoting student engagement, their focus during the lesson, and the challenges observed with each type of visual aid.

Engagement with Infographics

Infographics have long been regarded as effective learning tools because of their ability to combine both visual and textual elements in an easily digestible format. This study revealed that students using infographics displayed a noticeably higher level of engagement during the learning sessions. There are several factors that can explain this increased level of interaction and interest:

Clear and Organized Structure: One of the primary reasons for the heightened engagement was the organized, structured layout of infographics. Infographics typically provide information in a hierarchical manner, using headings, bullet points, arrows, and other visual cues that clearly organize and prioritize the content. This structure makes it easier for students to follow the flow of information, understand the relationships between different elements, and focus on key points without feeling overwhelmed by excessive information.

For example, a complex grammatical rule such as subject-verb agreement could be presented in an infographic with clear examples, color-coded sections, and step-by-step explanations. This organization helped students understand the material more effectively, which in turn sparked more focused and meaningful participation. Many students were seen pointing to specific parts of the infographic, actively asking questions, and contributing to discussions about how the infographic's elements related to the language concepts being taught.

Interactive Learning Experience: The interactive nature of infographics encouraged active learning. Since infographics present information in a concise and engaging format, students were often more inclined to explore the material further, whether by discussing the content with their peers, participating in group activities, or asking clarifying questions to the teacher. For instance, when

discussing vocabulary related to a particular theme, students were able to reference the infographic's visual elements, such as icons and diagrams, to facilitate their understanding of abstract terms and concepts.

This visual engagement, alongside the textual explanations, made it easier for students to retain information. Students seemed more confident when discussing the material and appeared more motivated to engage in language production activities such as speaking and writing, knowing they had a concrete reference point in the infographic.

Increased Focus and Concentration: Infographics also helped maintain students' focus during the lesson. When students use visual aids that are organized and visually appealing, they are better able to direct their attention to relevant parts of the lesson. In this study, students using infographics were able to more easily follow the teacher's explanations, refer to key details on the infographic, and quickly grasp essential language rules. The infographics provided clear guidelines and steps, allowing students to engage with the material in an organized and systematic manner.

Engagement with Images

While students who worked with images also showed engagement, the nature of their interaction with the material was quite different. The lack of structure in the images, as compared to infographics, led to several challenges that affected student engagement and comprehension.

Unclear Connections to Language Rules: One of the major challenges with using images alone was that students struggled to connect these visuals to more abstract language concepts. For example, when learning about grammatical structures like conditional sentences, students had difficulty linking an image (often representing a concrete object or action) to the more abstract concept of a "hypothetical situation" or a "cause and effect" relationship. While the images helped with basic vocabulary understanding (e.g., an image of a person running to illustrate the verb "run"), they did not offer enough context or explanation to aid students in grasping more complex linguistic concepts.

This lack of clarity sometimes caused frustration among students, as they found it difficult to see how the images related to the grammatical rules being taught. The abstract nature of language, especially when dealing with advanced vocabulary, idiomatic expressions, or complex grammar structures, proved to be a challenge when relying solely on images. For instance, when teaching idiomatic expressions such as "break the ice," students using images expressed confusion, as they could not make clear connections between the image and the figurative meaning of the phrase.

Limited Visual Structure: Unlike infographics, which are carefully designed to guide the learner's understanding through a well-organized structure, images were often presented without clear labels or associations. This lack of structure made it more difficult for students to identify key language elements and understand how they fit together within the lesson. For instance, in lessons

focused on vocabulary acquisition, an image of a "dog" might be useful in connecting the word "dog" to a concrete visual, but without additional context or explanation, the image failed to offer further learning value.

When the lesson required students to apply complex language rules, such as recognizing grammatical patterns or analyzing sentence structures, the absence of a clear framework within the images led to disengagement. Students seemed confused and struggled to articulate how the images fit into the language context. The lack of a clear, guiding structure meant that the students were often unsure of what to focus on or what parts of the image were most important to their learning.

Engagement with Complex Language Concepts: Images alone were more likely to capture students' attention with concrete, easily recognizable subjects (e.g., pictures of animals, objects, or actions). However, these types of images struggled to support the learning of more abstract concepts. Advanced vocabulary, idiomatic expressions, and sentence structures require contextual information and explanation, which images, without accompanying text or structure, could not provide. As a result, the students using images found themselves less motivated to engage with the content when it became more complex. They often resorted to asking for clarification or appearing disengaged when faced with more abstract language material, such as metaphors, conditional sentences, or nuanced vocabulary.

Limited Discussion Participation: While students working with images were certainly engaged at the beginning of the lesson, their participation in discussions seemed to decrease as the content became more challenging. Without the support of a structured visual aid, they often struggled to articulate their understanding of the language rules being taught. This lack of clarity led to a decrease in active involvement during group discussions, as students found it harder to contribute meaningful insights or ask relevant questions about the material.

Feedback from Students

Feedback gathered from students provided further insights into the differences between the two types of visual aids in terms of student engagement:

Infographics: Many students expressed a preference for infographics, citing the clear and organized format as a key reason for their higher levels of engagement. Students appreciated the way the infographics provided both textual and visual explanations, helping them understand and remember language rules. Several students mentioned that they found it easier to participate in group discussions because the infographic offered a concrete reference point for understanding the lesson content.

Additionally, students reported feeling more confident when completing assignments or activities because the infographic allowed them to easily recall language concepts. For example, students working with an infographic on past tense forms were able to refer to the visual representations of verb conjugations, helping them remember the rules and apply them correctly in sentences.

Images: While students who worked with images also acknowledged the helpfulness of visual aids, many expressed difficulty in using the images to grasp more complex language concepts. Several students mentioned that they enjoyed the images for basic vocabulary learning but struggled when it came to more abstract language features, such as grammar rules or idiomatic expressions. Some students indicated frustration when they could not understand how the images related to more complex elements of language, and this often led to disengagement in the latter part of the lesson.

CONCLUSION

The study concludes that infographics are significantly more effective than static images in enhancing language comprehension and retention among elementary students, as shown by a marked improvement in test scores and recall rates. Students exposed to infographics showed greater gains—from 62.5% to 82.5% in comprehension and 33% in retention—compared to those using images, who improved from 60% to 73.5% in comprehension and 24% in retention. These results affirm that infographics, by integrating visual and textual elements in a structured format, reduce cognitive load and foster deeper understanding, especially for abstract linguistic concepts. The findings carry strong pedagogical implications, suggesting that well-designed infographics should be integrated into language instruction to promote active learning and support the mastery of complex material. While images remain useful for vocabulary acquisition, their limited structure makes them less suitable for conveying grammar or nuanced expressions. Future studies should explore long-term impacts, design variations, and learner feedback to further optimize the use of visual aids in diverse classroom contexts.

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