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An Investigation Leveraging Infographics to Enhance Student Comprehension in Higher Education

Si Min, Tan[1*], Pei Kian, Teo[1]

[1] Faculty of Art and Design, Southern University College, Johor Bahru, Malaysia

*Corresponding Author: smtan@sc.edu.my

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Abstract: *With the progression of digitalization, the integration of information and communication technology has become essential in facilitating the learning process. Among these tools, infographics have gained significant popularity and are recognized as highly effective by educators. Designed to facilitate the efficient and effective communication of knowledge, infographics present information in a visually engaging manner, enabling learners to comprehend key concepts at a glance, particularly in higher education. This study investigates the use infographics to enhance student comprehension in higher education. A qualitative research design was employed, with data collected through interviews with 10 participants. Thematic analysis was conducted to identify key themes and insights. The findings underscore the potential of infographics to significantly enhance student comprehension by simplifying complex information, fostering clarity, and aiding in the retention of core concepts.*

Keywords: Infographics, Comprehension, Visual Learning

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1. Introduction

In today's digital age, students must adapt to a learning environment that increasingly relies on graphic data representations to capture their attention (Safdar et al., 2012; Vartiainen et al., 2016). Visual communication has proven to be more effective than verbal communication, as the human brain processes visual information more efficiently (Agustini et al., 2020; Damyanov & Tsankov, 2018). In higher education, infographics served as effective instructional tools by presenting essential information in a concise and visually engaging manner, thereby enhancing students' comprehension and retention of the material.

Infographics, a term derived from the combination of "information" and "graphics. It utilizes visuals such as graphics and imagery to effectively present facts, data, and information on a specific topic in a concise and comprehensible manner (Calimeris & Kosack, 2024). These visual tools, which combine text and schematics to represent data, have been increasingly employed across diverse fields, including education (Adnan et al., 2024), public health (Mohamadpour et al., 2024), economics (Calimeris & Kosack, 2024), and marketing (Chandra, 2023).

A critical aspect of infographics is the dynamic relationship between text and visual elements. As He at al., (2024) noted, this is particularly evident in circular visualizations, where textual descriptions may be integrated within the graphics or positioned adjacent to the visual

representation. Infographics provide an effective communication medium that facilitates the dissemination of vital information (Cullen et al., 2024). They incorporate various graphic elements, such as typography, colour, and layout, to enhance visual appeal and comprehension (Fragou & Papadopoulou, 2020). Additionally, infographics utilize comprehensive design elements, including maps, tables, and diagrams, to effectively present content within its context, making them valuable tools for education.

Infographics are especially effective for conveying complex information. The key distinguishing feature of infographics, compared to other types of visualization, is their ability to present information in a clear layout and simplify its communication, regardless of the complexity or intensity of the content (Ozdamlı et al., 2016). Mustafa (2021) further clarified infographics as a "visual and reduced narration of complex information and data through drawings, icons and illustrations with the aim of enhancing the understanding of the recipient and communicating the meaning in an interesting and attractive way."

The creation of teaching and learning materials has become increasingly critical for students at all levels of education (Ahmad et al., 2022). Furthermore, Li et al. (2014) argued that infographics aim to present complex and intensive information in a more understandable and visual manner. Lapum and St-Amant (2016) explained that infographics, understood as a visual translation of data, organize and present information to receivers using a visual language, telling or supporting a story.

2. Methodology

This study employed a qualitative research methodology to gain insights from students regarding their perceptions of infographics and their role in enhancing student comprehension. The primary criterion for selecting the ten participants was that they are enrolled in higher education. Semi-structured interviews were chosen as the most suitable data collection method, as they allow for an in-depth exploration of students' views on how infographics can improve their understanding of complex concepts. Thematic coding was utilized for data analysis, which is particularly effective for examining interviewees' perspectives in qualitative research.

3. Result

This section presented the findings of the study, which demonstrated the effectiveness of infographics in enhancing students' comprehension and streamlining their learning process. The results indicated that students recognize the value of visuals, such as graphics and imagery, in simplifying complex information and reducing monotony in learning.

3.1 Infographics Enhance Students' Knowledge Absorption

In this study found that infographics effectively combine information with visuals, enhancing the student's comprehension. Infographics have the potential to simplify complex information, presenting it in a more accessible format. By distilling intricate concepts into concise and clear visual representations, infographics enable students to quickly grasp key points and facilitating faster comprehension.

Student A: "I personally believe that infographics can simplify a lot of complex information into very simple information, allowing us to absorb the knowledge more quickly, immediately grasp the key points, and avoid other complex elements" (SA2023)

Student B: “Utilizing infographics enables students to comprehend efficiently and effectively.” (SB2023)

Student J: “I think infographics are a great way because they have many simple icons that allow me to understand the content at a glance, adding memory points.” (SJ2023)

Moreover, infographics are a useful learning tool for those who prefer not to browse multiple platforms or extensive literature to gather information. When presented with infographics that include detailed and comprehensive data, students can immediately grasp the intended message.

Student E: “For example, if I need to categorize certain content, it becomes easier to do so with infographics. This is because the overall content of a book can be quite extensive, while infographics can immediately convey the essence of the content.” (SE2023)

Student F further explained that infographics are a helpful learning tool in her academic journey. She has created infographics to enhance her understanding of the content presented in related course texts and materials. This highlights how students utilize infographics as a tool for summarizing and enhancing their comprehension of academic content.

Student F: “In my bachelor's degree journey, I usually summarize the key points of the materials I search for and create simple infographics. This helps me to better understand the content expressed in related course texts or materials." (SF2023)

The findings of this study demonstrate that infographics play a vital role in enhancing students' comprehension during the learning process. Infographics have the capacity to simplify complex information into a visual format, enabling students to quickly grasp key concepts. Additionally, students emphasized that infographics helped them categorize content, reduce information overload, and avoid monotony in their learning process. Overall, infographics served as a valuable resource for students seeking efficient and engaging ways to absorb information.

3.2 Infographics as an Effective Alternative for Streamlined Learning

The findings of this study reveal that students recognize the effectiveness of utilizing visuals, including graphics and imagery, as a method for presenting facts, data, and information on specific topics. This aligns with the assertion by Calimeris and Kosack (2024), who highlighted that visual elements facilitate the delivery of content in a concise and comprehensible manner, thereby enhancing understanding and engagement among students.

Student C: “When I come across infographics that already contain detailed and comprehensive data, I can immediately understand what they are conveying. This makes the learning process less monotonous” (SC2023)

Student H further underscores the value placed on concise, visual communication, emphasizing how brief and direct visual elements can enhance comprehension and engagement. Mustafa (2021) further clarified infographics as a visual and reduced narration of complex information and data with the aim of enhancing the understanding and communicating the meaning in an interesting and attractive way.

Student H: “I enjoy visuals accompanied by brief descriptions, ideally with just a sentence or two. Having images without additional explanations works best for me.” (SH2023)

Student I emphasizes how infographics can make learning more engaging and dynamic by incorporating visuals, which helps prevent monotony and enhances the learning experience

Student I: “Learning through images is also a viable method, indicating that conveying information is not limited solely to text.” (SI2023)

Additionally, student G emphasized the role of visuals in stimulating student associations. This underscores how visual elements in infographics can trigger associations and inferences, further enhancing students' understanding of the content.

Student G: “Association refers to the idea that an image may depict a person engaged in a certain action, allowing us to infer what the eventual outcome of that action might be." (SG2023)

The investigation of this study revealed that students recognized the importance of using visuals, such as graphics and imagery, to present information in a clear and concise manner. Therefore, infographics helped simplify complex concepts, making them easier to understand and more engaging for students. Moreover, the findings showed that infographics reduce monotony, aid in categorizing content, and stimulate associations, making learning more dynamic. Overall, infographics served as a powerful tool for streamlining learning and improving students' ability to absorb and retain information.

4. Conclusion

This study has investigated the infographic served as potential learning material tool for enhancing student comprehension in higher education. The findings underscored the significant role of visual element in simplifying complex information, fostering clarity, and improving knowledge retention. Infographics, by combining text and visuals, have proven to be effective in presenting information in a more accessible and engaging format. Students highlighted the benefits of infographics in quickly grasping key concepts, categorizing content, and avoiding information overload. Furthermore, infographics were seen as an effective alternative to traditional learning methods, offering a dynamic and engaging approach that enhances the learning experience.

Given the increasing reliance on digital tools in modern education, the findings of this study advocate for the broader adoption of infographics in educational system. Educators and institutions should consider integrating infographics into their teaching strategies to promote better comprehension, retention, and engagement. Future research could explore the long-term effects of infographic usage on student learning outcomes and investigate the potential for further innovation in infographic design to optimize their educational impact.

In conclusion, infographics have emerged as a powerful tool for enhancing student comprehension in higher education. Their ability to simplify complex information, improve engagement, and aid in the retention of core concepts makes them a valuable resource in the modern learning environment.

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