

Exploring Artificial Intelligence Image Generation (AIIG) as Media in Teaching Health-Themed Vocabulary for English Foreign Learners: A Systematic Review

Khusnul Hanifah^{1*}

ABSTRACT

ABSTRACT The fact that Artificial Intelligence are widely available including Artificial Intelligence Image Generation (AIIG), it appears the belief that integrating AIIG as media in teaching vocabulary particularly in health-themed will greatly increasing learning experiences in educational contexts. This study examines the merits and demerits of AIIG as media in teaching vocabulary and to analyzes the challenges and solutions of integrating AIIG into teaching vocabulary in health-themed. This study employed a comprehensive literature review as its research approach. To collect the data, several criteria were created to determine the relevant journal selection. The findings of this study showed that AIIG as media in teaching vocabulary particularly in health-themed have merits and demerits when used like Increased the capacity for personalized learning experiences and save times and money, conversely, there are notable demerits like the quality and accuracy of AI-generated images can vary greatly; inaccuracies can foster misconceptions, particularly crucial in health education where misinformation can have serious consequences. Additionally, there are challenges when using AIIG as media in teaching vocabulary particularly in health-themed such as about integration into curricula and concerns over teacher-student interaction. The solution of these challenges is investing in training for educators, and fostering collaborative development processes. The limitation of this study is that it does not examine the extent of the effectiveness in using AIIG as media in teaching vocabulary. For further research, it is expected to test the effectiveness of using AIIG as media in teaching vocabulary.

Keywords: Artificial Intelligence, Teaching Media, Health-Themed, Vocabulary

33 Introduction

Teaching vocabulary is a fundamental component of language education because vocabulary mastery significantly influences students' overall academic success. Scholars argue that comprehension and production of language depend on robust vocabulary skills [1]. This multifaceted relationship emphasizes the need for educators to adopt effective teaching strategies tailored to their students' developmental stages and learning contexts.

The success of vocabulary teaching by teachers is still relatively low, and this is due to several factors that affect the overall quality of teaching. In today's digital era, the challenge of improving the quality of teaching is becoming increasingly complex. Many teachers have not fully integrated information and communication technology into their teaching process. Research shows that although there is awareness of using technology in learning, teachers' practical ability to apply it is still limited, which has an impact on students' vocabulary understanding [2].

In an effort to improve teachers' ability in teaching vocabulary in health-themed, one of them is by implementing the help of digital media such as artificial intelligence. This is proven

¹Universitas Muhammadiyah Malang

*Alamat korespondensi: khusnulhanifah21@gmail.com

by research conducted by Fannoni which states that the use of Artificial Intelligence (AI) in teaching vocabulary has proven to be very important and provides significant benefits for students in mastering English. First, AI enables contextual vocabulary learning, where students can learn new vocabulary because they can see and relate it to the context and visualizations available on the AI platform [3].

The fact that Artificial Intelligence are widely available and let teachers integrate AI into vocabulary instruction including Artificial Intelligence Image Generation (AIIG), it appears the belief that integrating AIIG as media in teaching vocabulary particularly vocabulary in health-themed will greatly increasing learning experiences in educational contexts. This study examines the merits and demerits of AIIG as media in teaching vocabulary and to analyzes the challenges and solutions of integrating AIIG into teaching vocabulary in health-themed.

34 Literature Review

AI image generation (AIIG) represents a transformative intersection of technology and creativity, with its foundations deeply rooted in sophisticated deep learning algorithms [4]. Image generation refers to the ability of AI systems to create new images based on learned patterns from existing datasets. This process often employs advanced machine learning techniques, particularly Generative Adversarial Networks (GANs), to enable the generation of realistic images, which has gained significant attention across various fields including art, medicine, and technology. The foundational framework for many generative models, including those utilized for image generation, originates from GANs, which utilize a two-part system comprising a generator and a discriminator. These components sequentially refine the output to produce images that become increasingly indistinguishable from real ones. Goodfellow et al. emphasized that GANs have continually demonstrated efficacy in generating high-resolution images, making them particularly notable in both research and practical applications [5]. Recent algorithms, such as those deployed in contexts like caption-to-image generation, have shown refined methods for aligning descriptions with visual representations, enhancing the contextual relevance of generated images.

Teaching media encompasses a variety of digital platforms and tools that educators utilize to facilitate and enhance the learning process [6]. Teaching media refers to a variety of tools and resources that educators employ to facilitate communication and the transmission of information between themselves and their students. Effective teaching media can encompass a wide array of forms, including visual aids, audio-visual materials, and digital technology, which allow educators to present content in a more interactive and engaging manner. For instance, using digital media in teaching has been associated with enhanced learning experiences as it caters to different learning styles and fosters better understanding among students [7].

Vocabulary is the core of language [8]. Through comprehending foreign words, students will understand the meaning of the words. Meanwhile, the definition of teaching English vocabulary can be understood as a teaching process that aims to improve students' knowledge and ability to use English vocabulary effectively. In this context, various strategies and approaches have been identified as important to support students in learning new vocabulary [9].

35 Research Methods

Contents of method study is among others paradigm research, approach, technique data collection, and data analysis (adjusted with need in research). Times New Roman font, size 12, spacing 1.0 (single), justified. This research is Qualitative research. The method used in this research is a systematic literature review (SLR) method that collects and critically analyzes multi-

ple research studies or papers through a systematic process. To collect the data, several criteria were created to determine the relevant journal selection. The first criteria is the relevance to topics of Artificial Intelligence Image Generation (AIIG) in teaching vocabulary. Second, the journal selected should be published in leading journal databases such as ERIC and Scopus. Last but not least, the search period for journal articles limited to publication that published in the period of 2015 - 2024, in order to get rich data of the relevant research on the subject.

Table 2: The list of articles to answer the research questions

RQ's	Sources
The merits and demerits of Artificial Intelligence as media in Teaching Vocabulary in health-themed	(Jomaa et al., 2024), (Alilo, 2025), (Wen et al., 2024), Silitonga et al. (2024).
Challenges in using Artificial Intelligence Image Generation as media in Teaching Vocabulary in health-themed	(Teng et al., 2022), (Wen et al., 2024), (Menekşe, 2023).
Solutions to overcome the problem of using Artificial Intelligence as media in Teaching Vocabulary in health-themed	(Johnson et al., 2024), (Nagi et al., 2023), (Pan et al., 2024), (Liu et al., 2024).

36 Result and Discussion

In this study has been analyzed, there are various merits and demerits in the usage of AIIG as media in teaching in teaching vocabulary particularly in health-themed. The use of AI image generation in English vocabulary learning has various the merits. The first is the ability to present attractive visualizations that are in accordance with the words being taught, making it easier for students to understand the meaning of vocabulary[10], especially for concrete nouns such as "mountain", "train", or "apple". The resulting images also support students' memory because they associate words with visual forms. In addition, teachers can adjust images according to cultural context, lesson themes, or student interests, making the learning process more personal and enjoyable. The use of AI also saves time and money because teachers do not need to search for images from other sources or pay for licenses[11]. No need to manually search for images or buy stock photos, AI can create custom images instantly.

However, there are some demerits that need to be considered. Images generated by AI are not always accurate and can deviate from the actual meaning or context of the word [12]. This can lead to misunderstandings, especially when used for abstract words such as "justice" or "hope", which are difficult to visualize. In addition, AI can produce images that are biased or contain certain stereotypes if not properly controlled[13]. Dependence on technology is also a challenge, because not all learning environments have adequate internet access or devices. On the other hand, there are also ethical considerations such as the potential for copyright infringement if AI is trained from the work of artists without permission. Therefore, although AI image generation can be an effective tool in vocabulary learning, its use must still be accompanied by teacher supervision and adapted to the right learning context.

There are some challenges in using Artificial Intelligence Image Generation as media in Teaching Vocabulary in health-themed. The First is the need for educators to effectively integrate AI tools into existing curricula. Many teachers find themselves overwhelmed by the rapid advancements in AI, leading to uncertainty about how to adapt their teaching methodologies. Menekşe emphasizes that while AI can enhance the learning experience, educators may struggle to keep pace with evolving technologies, creating a disconnect between teach-

ing methodologies and contemporary educational needs[14]. Moreover, the efficacy of AI-generated content for vocabulary acquisition remains a concern. Alilo's research highlights that while AI-assisted learning offers personalized vocabulary instruction, students have expressed apprehensions about the potential reduction of direct teacher engagement, which is crucial in language acquisition [15]. As AI tools provide instant feedback, the risk of students becoming overly dependent on technology without developing their critical thinking and interpretative skills is a significant consideration. Thus, while AI can transform vocabulary teaching through adaptive learning algorithms and tailored content, a balance must be struck to ensure that it augments rather than supplants traditional pedagogical approaches.

In addressing these challenges, several solutions can be proposed. Educational institutions should prioritize training programs that equip teachers with the necessary skills to utilize AI tools effectively in their teaching practices. Pan et al. discuss the importance of incorporating AI with existing learning frameworks and advocate for an updated curriculum that embraces digital tools while mitigating their drawbacks [16]. Additionally, the implementation of AI-assisted vocabulary learning systems should be complemented by teacher oversight to preserve the essential human element in education. Systems can be designed to analyze individual learning patterns, as noted by Luo et al., thus adjusting the learning experience while allowing teachers to guide and support students through the learning process [17].

37 Conclusion

AIIG as media in teaching vocabulary particularly in health-themed have merits and demerits when used like Increased the capacity for personalized learning experiences and also save times and money, conversely, there are notable demerits like the quality and accuracy of AI-generated images can inaccuracies can foster misconceptions, particularly crucial in health education where misinformation can have serious consequences. Additionally, there are challenges when using AIIG as media in teaching vocabulary particularly in health-themed such as about integration into curricula and concerns over teacher-student interaction. The solutions of these challenges are investing in training for educators, and fostering collaborative development processes. The limitation of this study is that it does not examine the extent of the effectiveness in using AIIG as media in teaching vocabulary. For further research, it is expected to test the effectiveness of using AIIG as media in teaching vocabulary

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