Chapter 14
Do Anthropomorphic Graphics in Multimedia Learning Materials Help Learning by Capturing Learners' Attention?

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ABSTRACT

This article explores the impact of using anthropomorphic graphics in multimedia learning materials on learners' attention allocation and learning outcomes. Anthropomorphic graphics refer to images that possess human-like characteristics, meaning they are described and conceived based on human traits(Salles et al., 2020). In the context of multimedia education, the integration of anthropomorphic graphics has been widely discussed as a means to enhance learners' attention and overall learning outcomes. This paper reviews multiple studies, summarizing the role of anthropomorphic graphics in attracting and maintaining students' attention, and whether this can improve learning outcomes. The authors hold that while the effect of anthropomorphic graphics on final learning outcomes is unclear, they positively influence student attention, deepen understanding, and facilitate knowledge transfer. Despite the uncertain impact on outcomes, their potential to enhance learning

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effectiveness should not be overlooked.

I. INTRODUCTION

Artificial Intelligence (AI) has become a transformative force in today's world, bringing revolutionary changes to various fields, including education. The COVID-19 pandemic accelerated the shift towards remote and hybrid learning models, leading educational institutions to increasingly adopt digital tools and mobile applications to facilitate online education (Waang, 2023). These digital platforms, driven by AI, provide learning experiences that are significantly different from traditional methods, enhancing both accessibility and engagement for students.

AI is a broad field that encompasses subfields such as Human-Computer Interaction (HCI), intelligent systems, machine learning, deep learning, and more. Among these, HCI plays a crucial role in shaping the way intelligent systems interact with human users, including the design of intuitive and user-friendly interfaces (Zhang et al., 2018). In educational contexts, AI-driven tools need to focus on user interface design principles, visual learning variables, and overall user experience to ensure smooth interaction and engagement (Gong et al., 2017). The success of AI-based educational platforms relies not only on their technical sophistication but also on how effectively they engage students through well-designed interfaces (Guney, 2019).

One of the key concepts in interface design is ‘anthropomorphic design,’ where non-human elements are imbued with human-like characteristics (Lee et al., 2018). Anthropomorphism is not only prevalent in interface design but is also reflected in various ways across AI applications. For instance, robots and virtual assistants are often designed with human-like features to create a more intuitive and emotionally engaging user experience (Salles et al., 2020). This growing trend of anthropomorphism has raised important questions regarding its impact on user engagement, especially in the educational field. Research suggests that anthropomorphic elements can help build emotional connections with users, improving both user emotional experience, cognitive processes and learning outcomes (Blut et al., 2021; Y. Wang & Zheng, 2022).

Despite the widespread use of anthropomorphism in AI applications, there is relatively little research focusing on its impact within the field of education, specifically in multimedia learning environments. This study aims to fill that gap by exploring how anthropomorphic graphics influence learners' attention allocation in multimedia teaching materials. Attention allocation is critical to the learning process, as sustained attention is necessary for effective information processing and knowledge retention.

Therefore, this study seeks to address the following research question: