

Visual Literacy Skills for Enhancing Students' Agency and Ethical AI Engagement in the Digital Age

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Abstract: -

The widespread use of AI (Artificial Intelligence) within educational environments has substantially changed how learners develop visual literacy skills. Traditionally, visual literacy- the ability to interpret, evaluate, create, and analyze the form and function of visual information- has now grown considerably because of the development of generative AIs. Through this study, I will discuss how AIs can assist learners in increasing their ability to utilize visual literacy while fostering learner agency and engaging ethically in a digital age. Systems such as DALL-E and Midjourney are helping students create, alter, and evaluate visual information, thus helping to promote both creativity and collaborative/interactive learning. In order to highlight this relationship between visual literacy and the use of AIs, a conceptual framework will be presented that merges both AIs and visual literacy development by displaying skill acquisition, critical thinking, feedback, and ethical awareness as overlapping components. Literature supports the use of AIs to increase participation in student learning, while requiring students to engage in critical thinking to evaluate the authenticity, bias, and ethics associated with visual information. Directly, the results of this study suggested that Artificial Intelligence is a force for redefining visual literacy by empowering students as creative producers and critical evaluators in an online learning environment.

Introduction:-

In today's digital age, visual communication has become the primary way to share information within education, society, and business. The use of images, videos, infographics, and other visual materials is becoming more common for communicating complex concepts in simpler and more accessible manners. Therefore, visual literacy (the ability to read, write, create and assess meaning from various types of visual data) has been identified as an essential skill for use by learners in the 21st century.

As advances in Artificial Intelligence (AI) continue to rapidly transform how we visually create and interpret visual content, learner engagement through visual will continue to shift from passive viewers of visual content

(audiences/viewers) to active creators and interpreters of visual information. Advances in technologies, such as DALL-E and Midjourney, allow a user to create virtually any image (realistic, context-specific) based on written words. Consequently, these technologies will create opportunities for non-designer/non-expert individuals to access tools that facilitate the creation of visual materials.

While access to visual technology will create opportunities for student engagement in visual production and interpretation, it also challenges the identification and assessment of authenticity, misinformation, and ethical use of AI-based visual content. As synthetic images and deepfakes become more prevalent within technology-assisted visual media content, the development of thinking critically and being able to evaluate the credibility of a visual source are critical skills for students in the rapidly evolving digital landscape.

Furthermore, recent conversations about educational institutions and individuals the new era of visual literacy will involve more than traditional use of visual literacy skills, but also competencies associated with visual literacy in the digital age, such as understanding how AI-based systems create visuals; the development of prompt-based visual creation; and the understanding of the ethical implications of digitally creating and sharing visual content. In order to be engaged in creating and defining visual knowledge, visual literacy in the digital age will also have a close relationship to student agency — engagement in the creation and defining of visual knowledge based on how an individual views the world.

Concept of Visual Literacy in the Age of Artificial Intelligence: -

Visual literacy and its meanings has gradually evolved from a focus on meaning in static images such as photographs, graphs, and illustrations to include an understanding of how images are created by intelligent systems (for example, DALL-E and Midjourney generate visually plausible images based on a text prompt by creating and using new, unique images). Now those who create, interpret and understand images that are created through intelligent systems need to understand the end product of image creation, as well as the computational process involved in producing the image.

Visual literacy in the age of artificial intelligence requires individuals to think critically when evaluating the difference between authentic and synthetic images. Use of artificial intelligence in producing images may be extremely useful but does not negate an individual's need to have the skills necessary to successfully identify manipulated images, deepfakes, and bias within images. Critical thinking skills and visual literacy enable individuals to determine the level of analytical awareness required to evaluate these images accurately.

Lastly, visual literacy in the AI context requires an understanding and appreciation of the ethical responsibilities associated with the use of artificial intelligence; e.g. to be responsible users of resources such as: false information, copyright infringement, and bias. Visual literacy that is conscious of ethical responsibility cannot only measure the impacts visually created from artificial intelligence on individuals but also on society.

Therefore, visual literacy in the age of artificial intelligence has transitioned from something that was once based strictly upon the interpretation of static images to an all-encompassing skill set that interacts with interpretation, creative design, critical analysis, understanding of technology, and ethical responsibility in a technologically creative, intelligent society.

Visual Literacy in AI Era:-

Recent research shows how visual literacy has changed from being a passive understanding of images to knowing how they are created, altered, and shared. In his article "Re)Defining Visual Literacy for the Age of Generative Artificial Intelligence," Brumberger (2025) states that new skills are needed for learners, such as understanding prompts, algorithms, and evaluating the credibility of AI-created images. In this way, visual literacy has become more complex, incorporating cognitive, creative, and ethical components.

Other studies indicate that by using generative AI tools, users can make hyperrealistic images from written prompts, which means that learners need to be able to evaluate the credibility and message of digital images.

AI Tools and Student Agency:-

There are numerous studies that demonstrate how AI technologies can improve student agency (students' ability to take an active role in developing and controlling their own learning). Research shows that (e.g., DALL-E and Midjourney) technologies have allowed students to create visual media instead of simply consuming the visual media produced by others.

In the field of digital education, research suggests that AI technology can assist with:

Creative expression

Independent learning

Visual experimentation

Designing content specific to individual learners.

Nevertheless, researchers warn that student agency should be tempered by guidance; thus, students will rely less on automated processes.

Ethical AI Engagement In Visual Literacy: -

The current investigation of artificial intelligence (AI) and visual literacy is heavily focused on ethical engagement. The rise in the use of AI-created images poses new problems for misinformation, deepfakes, copyright, and bias concerning the produced content.

Researchers believe that the learner should possess:

The ability to identify digitally enhanced or synthetic visuals

Knowledge of ethical situations regarding AI-generated visual materials

Accountability for the use and distribution of digital visual content

Thus, ethical visual literacy is regarded as vital to responsible involvement in AI-centric environments.

AI Literacy and Visual Literacy Integration:-

Recent research has indicated that there is a significant relationship between AI literacy and Visual Literacy. AI literacy refers to the way in which individuals comprehensively perceive and comprehend how an artificial intelligence system will be developed and/or used, and visual literacy is understanding how to interpret and develop visual representations. The combination of AI literacy with Visual Literacy will produce a skill set which is essential for today's education system.

Research indicates that individuals who wish to learn need to:

Understand the method of how an AI system creates images.

Determine whether visual representations produced from an algorithm have any bias in them.

Evaluate and critique the representation of images produced from AI.

Effectively utilize an AI device to communicate.

This interconnection will provide individuals with both the technical and critical skills needed for success.

AI as a Learning Support Tool:-

Research has shown that AI serves as a very productive educational support system. Using AI tools, students can generate graphics, simplify complex topics and receive immediate feedback on their work. Studies warn, however, that too much dependence on AI could cause decreased independent thinking without regulation.

As a result, education researchers are recommending a balanced approach in which AI is considered to be a facilitator and not a substitute for human creativity or human judgment.

Review of Related Literature:-

Significant interest has been paid to the development of Visual Literacy within the framework of Artificial Intelligence (AI) as a part of recent advancements in education research. Scholars and educators around the globe are beginning to realize that AI is influencing not only how visual content is produced but also how learners understand, assess, and interact with digital visual information.

Evolution of Visual Literacy In the Digital and AI Era:-

Visual literacy has historically been defined as the ability to interpret and create meaning from visual images (i.e., photographs, diagrams, illustrations, etc.); however, recent studies indicate that the traditional definition of visual literacy is changing owing to the emergence of artificial intelligence (AI) technologies. Specifically, Brumberger (2025), in (Re)defining Visual Literacy for the Age of Generative Artificial Intelligence, notes that the meaning of visual literacy has expanded to include knowledge of AI-generated material, prompt-based image generation, and the algorithmic processes associated with visual creation. This change represents a move away from passive interpretation and toward active and critical engagement with visual materials.

The use of generative AI tools continues to gain prominence in the field of visual content generation according to an expanding body of literature. Generative AI tools such as DALL E or Midjourney allow users to construct very complex visuals from simple textual inputs. It has been reported in multiple studies that generative AI tools on the enhancement of creativity, access to high-quality visual learning materials and the increased level of interaction experienced when creating visual representations of their ideas. However, if proper guidance is not provided, the overuse of AI tools may hinder independent and creative conceptualization/creation by users.

The Connection Between AI Literacy and Visual Literacy

Recent research has begun to investigate the correlation between visual literacy and AI literacy. Visual Literacy is the ability to interpret visual information; Whereas AI Literacy involves understanding how AI systems function. There is a growing body of research showing that these two forms of literacy are becoming increasingly interconnected within modern education practices. Students must possess a fundamental understanding of how AI creates visual media, how the algorithms behind AI media affect the creation of that media and possess the ability to critically assess information created by an AI system for accuracy and/or bias.

Critical Thinking and Ethical Considerations Associated with AI Generated Visuals

The ethical considerations associated with the use of AI-generated visuals is another theme prevalent throughout the literature. Researchers point out that there are many concerns surrounding the production of AI-generated media including the spread of misinformation, deep fakes, and biased representations. For these reasons researchers suggest that students need to develop critical evaluation skills to differentiate between authentic and manipulated visuals before they can use them in their own work. As such, the ability to critically evaluate the visual information created using AI is considered to be one of the most important forms of digital literacy for ensuring that students will utilize AI technologies responsibly in communication and education.

The Enhancement of Student Agency Through AI-Supported Learning

A number of studies have also examined how students are able to exercise their agency through the creation of content by using AI tools to produce their own visual representations for communicating their ideas. Students using AI systems have the opportunity to experiment, design, and visually express their ideas with an increased sense of autonomy and participation in their learning environment. However, researchers caution that if students are not properly guided in their use of AI technology, they may be overly reliant on the AI systems to think and create for them rather than allowing the AI tools to serve as an additional resource to their own creativity and problem-solving skills.

Research Gap:-

Existing research has identified three elements of visual literacy; however, very few studies investigate the visual literacy skill set, as well as AI tools and ethical considerations, all together in an integrated manner. More rigorous

models are required to articulate the potential for AI's use to enhance students' creativity, critical thinking, and ethical responsibilities.

Conclusion:-

Artificial Intelligence (AI) has completely changed how educational and digital environments are defined and practiced. Visual literacy has typically been associated with interpreting and understanding visual information, while with increased artificial intelligence use, visual literacy now refers to a more complex and multi-dimensional skill that involves creating, critically analyzing, and ethically evaluating both human-generated visuals and machine-generated visuals.

Tools, such as DALL-E and Midjourney, have facilitated this transformation of visual literacy by allowing learners to generate, manipulate, and interact with visual content in new ways. These advancements lead to increased engagement, creativity, and participation, ultimately leading to increased agency on the part of learners in their educational processes.

In conclusion, AI is a powerful application that has not only enhanced visual literacy skills but has also fundamentally changed how learners are interacting with visual information. This has shifted the role of students from being passive consumers of visual information to active creators and critical evaluators of that information. The research suggests that with appropriate ethical consideration, critical thinking, and responsible technology use, AI will significantly improve visual literacy skills through providing a more diverse learning environment than ever possible in history.

References:-

- Brumberger, E. (2025). The re-conceptualization of the notion of visual literacy within the context of generative AI: A new perspective on the definition of visual literacy. *Journal of Visual Literacy*. DOI:10.1080/1051144X.2025.2566593
- Mishra, P., & Koehler, M. J. (2006). Developing a Framework for Teacher Knowledge, that incorporates a Teacher's knowledge of Technology, Pedagogy and Content. *Teachers College Record*, 108(6), 1017-1054.
- Ng, D. T. K., Leung, J. K. L., Su, J., & Qiao, M. S. (2021). Defining AI Literacy and Teaching of AI Literacy and How to Evaluate AI Literacy-laced content and Teaching Methods, as well as Ethical Issues in AI Literacy and AI Learning. *Educational Technology and Society*, 24(1), 1-13.
- Kong, S. C., & Yang, X. (2023). How Generative AI can be leveraged in Education to Enhance Visual Learning (Utilizing Generative AI in Education to Improve Visual Learning). *Computers and Education: Artificial Intelligence*.
- Zhang, L., & Aslan, A. (2024). AI and Education. A Systematic Review of Visual and Creative Learning Applications for AI in Education. *Educational Research Review*.

- Wang, Y., & Cheng, X. (2024). Ethical Considerations Associated with AI-generated Visuals in Digital Education or Learning Environments. Computers and Education Open.
- UNESCO (2023). Generative AI in Education and Research Guidance Document Published by UNESCO.

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