

The role of guided and unguided merging of generative artificial intelligence in design education to enhance the creative productivity of applied design students

Dr. Sally Esmail Eraky

Lecturer in Faculty of Applied Arts, Department of Interior design and furniture.

6th of October University –Egypt, sallyeraky@gmail.com

Dr. Abir Aly Eldesouky Ibrahim Salem

Lecturer in Faculty of Applied Arts, Advertising Department, 6th of October University –Egypt, abeer.salem.art@o6u.edu.eg

Abstract:

Amid rapid transitions toward digital technologies, significant challenges have emerged in the use of artificial intelligence tools and techniques within higher education—particularly in teaching applied design across various disciplines in the field of applied arts. For students, AI tools have become an engaging and widely accessible experience, while for faculty, they remain a complex and sometimes ambiguous domain requiring thoughtful with In accordance with the nature of each specialty and without harming the fundamentals of traditional applied design teaching methodologies. Despite concerns, AI applications have become easy to access and widely used by students, raising debates about their effectiveness in applied design education. Academically, these tools may threaten the quality of the educational process and hinder the ability to assess students' creative development and understanding of the design process. Therefore, integrating generative AI into applied design curricula must be governed by clear guidelines, overseen by faculty, in terms of appropriate stages of use and program selection—ensuring fairness in evaluation. This leads to the need for a general framework to guide future curriculum development incorporating generative AI.

Research Problem: This study seeks to solve the following research questions: To what extent can artificial intelligence applications be employed to improve the quality of the applied design teaching process? What is the role of artificial intelligence and its applications in developing the creative and innovative aspects and enhancing students' creative productivity? How can the use of artificial intelligence tools and techniques be regulated and integrated into the development of applied design teaching?

Research Objectives: Identify the potentials of artificial intelligence and its applications in the development of teaching and education in applied design. Determine the roles it can play for students to develop and enhance their creative aspects. Establish a general framework for regulating the integration of the potentials of artificial intelligence in teaching and education in applied design to achieve maximum benefit from its use, without harming the natural stages of creative education and their outcomes.

Research Hypotheses: Artificial intelligence and its applications pose risks to the quality of creative growth for students of applied design. Maximum benefit can be achieved if a regulated framework for its use and integration into the teaching and learning process of design is established. The use of artificial intelligence by students will have positive repercussions on the development of their creative and innovative aspects, provided that mechanisms and regulations are established for its integration into the education, monitoring, and evaluation processes at all stages of design. Artificial intelligence can be utilized in the evaluation, monitoring, and improvement of students' creative productivity.

Research Methodology: Descriptive Experimental Method: For a sample of works by students at the Faculty of Applied Arts, October 6 University, specializing in Interior Design and Furniture, in two courses: Architecture 1 (Unsupervised Experiment) and Commercial Buildings 2 (Supervised Experiment), to identify the positives and negatives of the outputs with the aim of validating the research hypotheses, answering the research problem, and achieving its objectives. Inductive and Deductive Method: Using a questionnaire as one of the data collection tools, which is directed at students of the Faculty of Applied Arts, October 6 University, across different departments, aimed at surveying their opinions regarding the extent of benefit derived from using artificial intelligence applications and tools in teaching applied design.

Search results: The integration of artificial intelligence technologies into applied design education is essential and beneficial to enhance the creative productivity of students. The processes of integrating artificial intelligence into the curricula for teaching applied design must be constrained by guidelines and directed by faculty members, whether in the timing of the phases used in the design process or the types of

programs used, to ensure fair assessment among students. Artificial intelligence should be included in the courses descriptions for teaching applied design through a specific strategy. Continuous training for both faculty members and students on artificial intelligence techniques and related command engineering is necessary. Artificial intelligence can be utilized in the evaluation, monitoring, and improvement of students' creative productivity when guidelines for its use are established.

Recommendations: The necessity of readiness to develop the education of applied design in accordance with the developments in AI technologies in the field of design. Adopt AI as a contemporary learning strategy in applied design education. Develop updated teaching strategies incorporating AI into design courses tools. Train faculty to effectively use AI tools to enhance teaching quality. Establish an ethical charter for AI use in design to protect intellectual property rights. Update design curricula to align with the age of AI, empowering students to utilize its tools to ensure design quality.

Paper History:

Paper received May 28, 2025, Accepted July 26, 2025, Published on line September 1, 2025

Keywords:

Artificial Intelligence, Generative Artificial Intelligence, Applied Design, Creative Productivity.

References:

- 1- Coeckelbergh, M. (2024). AI ethics (H. A. Ghanem, Trans.). Hindawi Foundation. (Original work published in English)
- 2- Sonkol, R. (2023). ChatGPT artificial intelligence model. Al-Asala Publishing and Distribution.
- 3- Bonnet, A. (1993). Artificial intelligence: Reality and future (A. S. Farghali, Trans.). World of Knowledge Series.
- 4- Al-Ghamdi, M. F. (2024). Artificial intelligence in education (1st ed.). Al-Olwah Network.
- 5- Lotfy, M. H. M., et al. (2023). Ethics guide for using AI applications in scientific research. Arab Federation for Libraries and Information.
- 6- Habib, M. M. (n.d.). Psychology of artificial intelligence – A comprehensive vision. Al-Husseiny Publishing and Distribution.
- 7- Fadlallah, H. R. (2023). Effectiveness of smartphone-based AI applications in developing tech competencies among information systems students and their relation to labor market skills. *Egyptian Journal of Specialized Studies*, 40(2).
- 8- Ali, N. (2024). Employing AI applications in interactive digital advertising design: A case study on second-year graphic and advertising arts students. *International Arab Journal of Information Technology and Data*, 4(2).
- 9- Saudi Data & AI Authority. (2025). Generative AI: Promising horizons for a better future. <https://sdaia.gov.sa>
- 10- Allaq, K., & Ramadan, B. (2024). Outcomes of an applied experiment using AI in literature review development: The Scopus platform model. In *Conference of the College of Arts, University of Baghdad: AI and the Possibility of Transformation in the Humanities (Iraq)*.
- 11- Papanek, V. (1985). *Design for the Real World: Human Ecology and Social Change*. Thames & Hudson.
- 12- Ambrose, G., & Harris, P. (2010). *Design Thinking*. AVA Publishing.
- 13- Bayazit, N. (2004). Investigating Design: A Review of Forty Years of Design Research. *Design Issues*, 20(1), 16–29.
- 14- Russell, S., & Norvig, P. (2021). *Artificial Intelligence: A Modern Approach* (4th ed.). Pearson.
- 15- Goodfellow, I., Bengio, Y., & Courville, A. (2016). *Deep Learning*. MIT Press.
- 16- Poole, D., & Mackworth, A. (2017). *Artificial Intelligence: Foundations of Computational Agents* (2nd ed.). Cambridge University Press.
- 17- Goodfellow, I. et al. (2014). Generative Adversarial Networks. arXiv:1406.2661
- 18- Brown, T. et al. (2020). Language Models are Few-Shot Learners. arXiv:2005.14165
- 19- Bommasani, R. et al. (2021). On the Opportunities and Risks of Foundation Models. Stanford HAI
- 20- Ramesh, A. et al. (2022). Hierarchical Text-Conditional Image Generation with CLIP Latents. arXiv:2204.06125
- 21- Floridi, L., & Chiriatti, M. (2020). GPT-3: Its Nature, Scope, Limits, and Consequences. *Minds and Machines*, 30(4), 681–694
- 22- OpenAI (2023). GPT-4 Technical Report. OpenAI
- 23- Marwa Hussien Mohamed, and others - Adaptive Learning Systems based on ILOs of Courses - WSEAS TRANSACTIONS on SYSTEMS and CONTROL ,Volume 18, 2023.
- 24- Irbite & Strode, 2021. Artificial Intelligence Vs Designer: The Impact of Artificial Intelligence on

Design Practice, Society Integration Education, Proceedings of the International Scientific Conference. Volume IV, May 28th-29th, 2021. 539-549.

- 25- Arjumant Rauf, Sadaf Nadeem, Laiba Tahir, - Integrating Artificial Intelligence into Curriculum Design - Multidisciplinary Journal of Emerging Needs of Curriculum, VOL: 01 NO: 02 2024.
- 26- Liu Yufei and others, Review of the Application of Artificial Intelligence in Education, International Journal of Innovation, Creativity and Change. Volume 12, Issue 8, 2020.
- 27- Nitin Liladhar Rane, and others, Education 4.0 and 5.0: integrating Artificial Intelligence (AI) for personalized and adaptive learning, Journal Of Artificial Intelligence And Robotics, Jan-Mar 2024, VOL. 1, ISSUE 1, pp. 29-43.
- 28- Hamid Reza Saeidnia, and Marcel Ausloos, Integrating Artificial Intelligence into Design Thinking: A Comprehensive Examination of the Principles and Potentialities of AI for Design Thinking Framework, Publisher homepage: InfoScience Trends I (2024) NO 02; VOL 01: 01-09.
- 29- Xiaojing Weng and others, Integrating Artificial Intelligence and Computational Thinking in Educational Contexts: A Systematic Review of Instructional Design and Student Learning Outcomes, Journal of Educational Computing Research 2024, Vol. 62(6) 1640–1670.

CITATION

Sally Eraky, Abir Salem (2025), The role of guided and unguided merging of generative artificial intelligence in design education to enhance the creative productivity of applied design students, International Design Journal, Vol. 15 No. 4, (September 2025) pp 465-481
