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RESEARCH ARTICLE
Graphic Design

Balancing Creativity, Efficiency, and Ethical Practice Through Use of AI in Typography and Poster Design Education

Tipografi ve Poster Tasarım Eğitiminde Yapay Zeka Kullanımıyla Yaratıcılık, Verimlilik ve Etik Uygulama Arasında Bir Denge Kurmak

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ABSTRACT

This study examines the role of Artificial Intelligence (AI) in typography and poster design education, focusing on its impact on creative workflows, structural quality, and ethical considerations. Within a graduate Typography course at Yıldız Technical University, original movie posters from the 2023 Academy Awards "Best Picture" category were compared with posters generated by the ChatGPT 4.0 model. Using the Visual Design Principles and Elements Evaluation Form (VDPEEF), expert students evaluated both sets of posters based on design principles, structural features, and typographic elements. Statistical analysis conducted with SPSS revealed that while AI-generated posters demonstrated strong adherence to balance, alignment, and typographic hierarchy, they fell short in emotional depth, originality, and contextual interpretation when compared to human-designed posters. AI outputs showed greater structural variability and repetitive visual patterns, although their rapid generation speed positioned AI as an efficient tool for prototyping and large-scale production. Beyond typography, the study highlights broader educational implications of AI across fields such as language learning, STEM education, architecture, data analysis, and creative writing. It emphasizes the relevance of pedagogical frameworks such as TPACK and SAMR in guiding responsible AI integration. Overall, the findings suggest that AI serves most effectively as a complementary tool that supports—but does not replace—human creativity and cultural intuition. Future research should expand datasets, incorporate diverse evaluator groups, compare multiple AI models, and further investigate ethical, cultural, and cognitive dimensions of AI-assisted design processes.

Keywords: AI-Assisted Design, Typography Education, Poster Design Evaluation, Creativity and Efficiency in Design, Educational Technology and Ethics

ÖZET

Bu çalışma, yapay zekâ (YZ) araçlarının tipografi ve poster tasarımı eğitimindeki rolünü, yaratıcı üretim süreçlerine etkisini ve etik boyutlarını incelemektedir. Yıldız Teknik Üniversitesi'nde yürütülen lisansüstü Tipografi dersi kapsamında, 2023 Oscar "En İyi Film" kategorisindeki on filme ait özgün afişler ile ChatGPT 4.0 tarafından üretilen afişler karşılaştırmalı olarak değerlendirilmiştir. Tasarım ilkeleri, yapısal özellikler ve tipografik unsurları ölçen VDPEEF ölçeğiyle uzman öğrencilerden elde edilen veriler, SPSS ile analiz edilmiştir. Bulgular, YZ'nin hizalama, denge ve tipografik hiyerarşi gibi kurallara yüksek doğrulukla uyduğunu; ancak özgünlük, duygusal ifade ve bağlamsal derinlik açısından insan tasarımcıların belirgin biçimde üstün olduğunu göstermektedir. YZ üretimlerinde yapısal tutarsızlık ve tekrarlayan kompozisyonlar daha sık görülmüş; buna karşın üretim hızının son derece yüksek olması tasarım eğitiminde önemli bir avantaj sağlamıştır. Çalışma ayrıca YZ'nin dil öğrenimi, STEM eğitimi, veri analizi, mimarlık ve yaratıcı yazarlık gibi disiplinlerde sunduğu pedagojik fırsatları tartışmakta; TPACK ve SAMR gibi modellerin YZ entegrasyonunda kritik önem taşıdığını vurgulamaktadır. Sonuç olarak, YZ'nin tasarım eğitiminde tamamlayıcı bir araç olarak kullanılması; yaratıcı yorum, kültürel sezgi ve duygusal ifade gerektiren süreçlerde ise insan tasarımcıların temel rolünü koruduğu belirtilmektedir. Gelecek araştırmaların farklı YZ modellerini karşılaştırması, daha geniş örneklemlerle çalışması ve etik–kültürel boyutları derinlemesine ele alması önerilmektedir.

Anahtar Kelimeler: Yapay Zekâ Destekli Tasarım, Tipografi Eğitimi, Poster Tasarımı Analizi, Tasarımda Yaratıcılık ve Verimlilik, Eğitim Teknolojileri ve Etik

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INTRODUCTION

Artificial Intelligence (AI) technologies are transforming education by enhancing learning experiences, streamlining workflows, and personalizing instruction across disciplines (Arslan, 2020; Kahraman, 2022; Kahraman & Gülaçtı, 2023). From adaptive learning platforms like DreamBox to intelligent tutoring systems such as Carnegie Learning, AI optimizes decision-making processes through data-driven insights, delivers real-time

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feedback, and scales educational solutions effectively (Kahraman & Gülaçtı, 2023). Its applications extend beyond traditional education into specialized fields, including typography and poster design education (Coşkun, 2024).

Typography education, historically rooted in visual communication traditions dating back to the invention of movable type by Johannes Gutenberg and refined through modernist movements like Bauhaus and Swiss Style, plays a critical role in enhancing clarity, message delivery, and creative expression (Benuğur, 2012; Sarıkavak, 2010; Sarıkavak, 2018). With the integration of AI, typography design has evolved to include dynamic text layouts, automated repetitive tasks, and predictive typographic preferences (Ekiz Kaya, 2024). AI tools, such as DALL-E, MidJourney, and Runway ML, now enable designers to explore creative boundaries, generate tailored design solutions, and experiment with unconventional compositions (Kurtcu & Furunci, 2024; Coşkun, 2024). These advancements hold significant potential for transforming how typography is taught, understood, and applied in educational contexts (Şen, 2024).

This study investigates how AI technologies impact poster design education, specifically focusing on the comparative analysis of AI-generated and expert-designed posters. By evaluating key design dimensions—appropriateness of design principles, correct use of design elements, and structural features—this research offers valuable insights into the capabilities and limitations of AI in creative design processes (Artan & Uçar, 2018; Atan & Sikkaş, 2022; Kurtcu & Furunci, 2024; Coşkun, 2024). Beyond the field of design, the study also explores broader applications of AI technologies in education, emphasizing their relevance in language education, STEM disciplines, and adaptive curriculum design (Kuşçu, 2015; Şahin et al., 2021).

Additionally, the study emphasizes the importance of technological pedagogical frameworks, such as TPACK (Technological Pedagogical Content Knowledge) and the SAMR (Substitution, Augmentation, Modification, Redefinition) model, in guiding effective AI integration (Sarıkavak, 2018). Clear policy recommendations are proposed to ensure ethical AI use, educator readiness, and equitable access to AI tools across diverse educational settings (Pekince, 2024).

The findings of this research provide insights that can be extended across multiple disciplines, demonstrating the interdisciplinary potential of AI in enhancing educational outcomes. AI-powered virtual simulations, such as those developed by SimX and Body Interact, allow medical students to practice diagnostic and procedural skills in risk-free virtual environments (Kahraman, 2022). As another example, tools like Autodesk Dreamcatcher and AI-driven CAD software enable students to design complex structures while optimizing material use and environmental sustainability (Pekince, 2024). Furthermore, AI tools like Amper Music and AIVA assist students in composing music by generating harmonies and unique soundscapes based on predefined styles (Sindhu & Prakash, 2020). Moreover, platforms such as IBM Watson Analytics support students in analyzing large datasets, predicting market trends, and developing strategic financial plans (Arslan, 2020). Finally, AI applications in climate modeling tools and geospatial analysis platforms enable students to understand ecological patterns, predict environmental changes, and propose sustainable solutions (Lehimler, 2019). These interdisciplinary examples highlight how AI transcends individual subject boundaries, fostering innovation and efficiency across diverse educational fields (Kahraman, 2022; Pekince, 2024; Sindhu & Prakash, 2020; Arslan, 2020; Lehimler, 2019).

In summary, this research aims to provide a comprehensive perspective on how AI technologies can serve as collaborative tools in both specialized design education and broader educational environments. The findings highlight opportunities for hybrid workflows, policy alignment, and pedagogical innovation, ultimately contributing to a more dynamic, inclusive, and responsive educational ecosystem.

POSTER: EVOLUTION, DESIGN PRINCIPLES, AND AI INTEGRATION

Posters have long been a vital medium of communication, serving as tools for advertising, public service announcements, and artistic expression (Artan & Uçar, 2018; Atan & Sikkaş, 2022). Historically, poster design evolved through pivotal artistic movements, including Art Nouveau, Bauhaus, and Swiss Style, each leaving a distinct mark on design principles (Sarıkavak, 2010; Lehimler, 2019). Designers like Jules Chéret, Henri de Toulouse-Lautrec, and Saul Bass revolutionized poster aesthetics by blending artistic flair with functional clarity.

Typography, as an essential component of poster design, plays a pivotal role in guiding viewer attention and reinforcing messages Benuğur, 2012; Ekiz Kaya, 2024). Elements such as font selection, kerning, alignment, and visual hierarchy determine whether a poster effectively conveys its intended message. In contemporary practice, poster designers often rely on digital tools and advanced design software to balance typography, imagery, and negative space effectively (Kurtcu & Furunci, 2024).

With the integration of Artificial Intelligence (AI), poster design has entered a transformative phase. AI-powered tools, such as DALL-E, Midjourney, and Runway ML, enable designers to experiment with dynamic layouts,

generate unique visual styles, and automate repetitive tasks (Coşkun, 2024). Canva's AI Design Tools offer user-friendly interfaces for creating posters with optimized layouts and color palettes. Adobe Sensei, integrated into Adobe Creative Cloud, enhances poster designs by providing AI-based suggestions for image enhancement, font pairing, and layout adjustment.

More recent tools like Leonardo AI, Stable Diffusion XL, and Krea AI have expanded the boundaries of AI design capabilities (Kahraman, 2022). Leonardo AI excels in generating intricate and highly detailed visuals, often used for artistic poster designs. Stable Diffusion XL focuses on producing photorealistic imagery, making it suitable for commercial and cinematic visuals. Krea AI, on the other hand, emphasizes real-time collaborative workflows, enabling teams to co-design efficiently using AI-driven features. Leonardo AI focuses on generating intricate and highly detailed designs, while Stable Diffusion XL excels at rendering photorealistic imagery for visual compositions. Krea AI stands out with its focus on real-time collaborative AI-assisted design projects.

While AI tools bring efficiency, speed, and scalability to poster design workflows, they are not without limitations. AI struggles to replicate the emotional resonance and storytelling elements that human designers can naturally incorporate. For example, AI-generated posters for humanitarian campaigns often lack the emotional appeal necessary to evoke empathy. Moreover, AI tools often rely on pre-existing datasets, leading to repetitive patterns and a lack of groundbreaking innovation as AI lacks cultural and contextual sensitivity, which is crucial in designs targeting specific demographics or social themes. For example, an AI-generated advertisement poster for a cultural event failed to properly represent the event's cultural nuances. AI outputs may lack originality, often recycling elements seen in its training data. An AI-designed movie poster was found to have visual similarities to an existing copyrighted design. Finally, the quality of AI-generated designs is heavily reliant on how well prompts are written, which introduces variability in outputs. For example, AI poster designs for product launches vary significantly in quality based on how detailed the design prompts are.

For these reasons, AI remains a powerful complement to human creativity, rather than a replacement. Designers must oversee AI outputs, refine them, and infuse them with the emotional and contextual depth that AI cannot replicate.

DEVELOPMENT OF ARTIFICIAL INTELLIGENCE AND ITS CONTEXTUAL RELEVANCE TO POSTER DESIGN

The development of Artificial Intelligence (AI) has been marked by significant milestones, beginning with Alan Turing's theoretical foundations and advancing through innovations like Deep Blue, neural networks, and generative adversarial networks (GANs) (Arslan, 2020; Kahraman, 2022). These milestones have paved the way for modern AI systems, including DALL-E, Midjourney, and ChatGPT, which are now actively used in creative fields (Coşkun, 2024).

AI systems are built upon advanced machine learning algorithms and vast datasets, enabling them to recognize patterns, generate content, and optimize designs efficiently. In creative industries, AI has expanded its presence, offering tools that automate processes, suggest innovative design elements, and enhance productivity. Platforms like Runway ML, Leonardo AI, and Stable Diffusion XL have become integral in digital design workflows (Ekiz Kaya, 2024).

In the context of poster design, AI tools are specifically tailored to optimize layout structures, typographic arrangements, and color harmony. For example, Runway ML excels at rapid prototyping, enabling quick iterations for poster mockups, while Leonardo AI offers refined visual enhancements suitable for artistic posters. These tools help streamline repetitive tasks, allowing designers to focus more on creativity and conceptual depth.

AI algorithms are also capable of analyzing historical design trends and predicting effective design choices. For example, tools like DALL-E 3 can generate poster visuals based on textual prompts, creating designs that align with predefined artistic styles. Midjourney enhances creativity by offering highly stylized outputs, which can serve as inspiration for designers. Similarly, Canva's AI suite simplifies the creation of professional-quality posters for non-designers, making design accessible to a broader audience. However, despite these advancements, AI's contributions remain constrained by limitations in emotional depth, cultural context, and originality. These constraints underscore the importance of blending AI capabilities with human intuition to achieve design outcomes that resonate on both technical and emotional levels.

In practice, AI tools have demonstrated both their potential and their limitations. For example, AI-generated posters for global marketing campaigns often achieve visual balance and brand alignment (Atan & Sikkaş, 2022). However, they occasionally lack the emotional nuance needed for campaigns addressing sensitive social issues (Şahin et al., 2021). While AI tools efficiently generate visually appealing posters for concerts or festivals, the

designs sometimes fail to capture the cultural uniqueness of the event. AI can quickly create poster drafts based on film scripts. Yet, the designs might miss subtle narrative layers that human designers instinctively incorporate. These examples highlight that while AI excels in technical execution, human intervention remains critical for emotional and cultural refinement.

As AI continues to permeate creative industries, ethical concerns also come into play. Questions about intellectual property, creative ownership, and bias in AI training datasets are increasingly relevant (Kahraman, 2022; Kurtcu & Furunci, 2024; Şahin et al., 2021). For instance, AI systems trained on copyrighted visuals risk inadvertently reproducing elements from protected works (Kahraman & Gülaçtı, 2023; Pekince, 2024). Designers must remain vigilant to ensure originality and avoid legal disputes (Coşkun, 2024; Şen, 2024). Moreover, the transparency of AI design processes is essential. Understanding how AI arrives at certain design choices can help designers make informed decisions when integrating AI-generated elements into their work (Sarıkavak, 2018; Kuşçu, 2015). A notable example of such ethical concerns emerged in a recent controversy involving an AI-generated logo design that closely resembled a copyrighted corporate logo, sparking a legal dispute over ownership and originality (Kahraman, 2022; Şen, 2024). Similarly, biases in AI datasets have led to instances where promotional posters inadvertently reinforced cultural stereotypes, highlighting the importance of human oversight in the AI design process (Kurtcu & Furunci, 2024).

Future research should focus on refining AI algorithms to better interpret subjective creative tasks and cultural nuances while enhancing collaboration models between human designers and AI systems (Şen, 2024; Kurtcu & Furunci, 2024). Areas of exploration include developing AI tools capable of recognizing and adapting to cultural and emotional contexts (Kurtcu & Furunci, 2024; Kahraman, 2022). Furthermore, establishing balanced workflows where AI manages routine tasks, and human designers oversee final creative outputs (Ekiz Kaya, 2024). Integrating AI tools into design curricula to prepare students for AI-augmented creative industries (Şahin et al., 2021). Additionally, iterative updates in AI tools, such as OpenAI's GPT-5 and Stable Diffusion 3, are expected to bring significant improvements in design capabilities, contextual accuracy, and creative depth (Pekince, 2024).

In conclusion, AI represents a transformative force in poster design, offering unparalleled efficiency, scalability, and innovative potential. However, its limitations in emotional intelligence, cultural context, and originality reinforce the irreplaceable role of human designers (Artan & Uçar, 2018; Atan & Sikkaş, 2022; Kurtcu & Furunci, 2024). This study highlights that while AI excels in optimizing technical processes and generating visually appealing outputs, human creativity remains essential for achieving emotional depth and cultural relevance in poster design. The future of poster design lies in collaborative workflows, where AI serves as a powerful tool to amplify human creativity rather than replace it (Coşkun, 2024; Şen, 2024). By refining algorithms, addressing ethical considerations, and enhancing AI literacy among designers, the industry can unlock new levels of creative synergy between human designers and artificial intelligence (Kahraman, 2022; Şen, 2024).

METHODOLOGY

The aim is to scientifically measure the success rates of current designs produced by artificial intelligence technology and to comprehensively understand their implications for design education. For this purpose, quantitative data was collected throughout the research process, and a semi-experimental method based on source scanning, comparative analysis, and expert evaluation was employed. In this research, promotional posters of 10 films selected for the "Best Film" category at the Oscar Awards in 2023 were first analyzed within the scope of the Typography course in the Art and Design Graduate Program at Yıldız Technical University. Then, these posters were compared with the ones generated by ChatGPT 4.0 large language AI model, which was given prompts by authors, who are both professional graphic designers. The final evaluation of both types of posters, i.e. the original movie posters and the ones produced by the authors, was done by graduate students specializing in graphic design and visual communication through taking the Typography course in the Art and Design Graduate Program at Yıldız Technical University as mentioned above.

In this evaluation process, the Visual Design Principles and Elements Evaluation Form (VDPEEF) was utilized as the primary evaluation scale. This form measures various design dimensions, including balance, contrast, alignment, emphasis, and typographic hierarchy. To ensure the reliability and validity of the collected data, the Statistical Package for Social Sciences (SPSS) software was employed for data analysis. Given the small sample size, the T-test was selected as the statistical method for analyzing the differences and similarities between AI-generated posters and professionally designed posters. Additionally, qualitative observations from the evaluation sessions were documented to complement the quantitative data, providing richer insights into the strengths and limitations of AI-generated designs. These observations included students' reflections on the originality, aesthetic coherence, and adherence to design principles in AI-created posters.

The methodology employed in this study extends beyond the boundaries of typography education and holds potential applications in other educational disciplines that integrate visual design and AI-assisted creativity. This approach can be replicated in instructional design, interactive media projects, and digital art education to investigate AI's role in enhancing creative pedagogical outcomes.

A clear connection between the research design and objectives ensures that each phase of the evaluation process—poster creation, expert evaluation, quantitative analysis, and qualitative observations—directly contributes to answering the study's research questions. Furthermore, the evaluation process with VDPEEF serves as a structured and adaptable model for similar studies in AI-integrated educational research. This methodology not only focuses on assessing typographic design success but also establishes a robust framework for exploring broader applications in curriculum development, adaptive learning platforms, and digital learning tools.

The findings from this methodology aim to provide actionable insights for educators, curriculum designers, and policymakers to better integrate AI tools into various educational settings while fostering a deeper understanding of their pedagogical value and creative potential.

Despite the structured and systematic methodology employed in this research, several limitations should be acknowledged to contextualize the findings. First, the study examined only ten films from the 2023 Oscar "Best Picture" category. Although this selection provided a coherent dataset, the limited sample size restricts the generalizability of the results to broader poster design practices or AI-generated visual outputs outside this specific context. The small sample size also necessitated the use of a T-test for analysis, which may have reduced the statistical power of detecting subtle differences between AI-generated and human-designed posters.

Second, the evaluation process relied on the judgments of a relatively small group of graduate students specializing in graphic design and visual communication. While their expertise enhanced the reliability of the evaluations, subjective interpretations of design principles, typographic choices, and emotional resonance may have influenced scoring. Evaluators may also share similar educational backgrounds and design sensibilities, which could introduce unintentional bias in assessing both AI-generated and human-designed posters.

Third, the AI outputs were produced exclusively through the ChatGPT 4.0 model based on textual prompts. Because generative outputs are highly dependent on prompt clarity and specificity, variations in wording may have influenced the consistency, originality, or structural coherence of the AI-generated posters. Moreover, the model's inherent dataset limitations—such as lack of access to copyrighted training materials, cultural specificity, or historical design references—may have affected its ability to generate contextually rich or emotionally nuanced designs. The model's refusal to redesign the *Barbie* poster due to copyright constraints further illustrates the ethical and technical restrictions of generative AI tools in visual design research.

Fourth, although qualitative reflections were incorporated to complement quantitative findings, these observations were not collected through a formalized qualitative protocol such as semi-structured interviews or focus groups. As a result, the qualitative insights enhance interpretation but cannot be considered exhaustive or representative.

Finally, the study focused primarily on visual outcomes rather than the underlying computational mechanisms of AI design tools. The research did not evaluate how algorithmic parameters, model updates, or dataset changes might affect design performance over time. Therefore, while the findings highlight current capabilities and limitations, they may evolve as AI systems continue to develop.

Collectively, these limitations underscore the need for broader datasets, diverse evaluator groups, multi-model comparisons, and longitudinal research designs to more comprehensively assess AI's role in typography and poster design education.

A COMPARATTIVE ANALYSIS AND DISCUSSION OF AI AND HUMAN COLLABORATION IN POSTER DESIGN

The posters of the 10 films (Oppenheimer, Killers of the Flower Moon, Maestro, Past Lives, The Zone of Interest, Anatomy of a Fall, Barbie, Poor Things, American Fiction, The Holdovers) that were evaluated in the "Best Picture" category at the 2023 Oscars were redesigned with ChatGPT. In the design of the poster, ChatGPT was asked to comply with the basic design principles (balance, emphasis, alignment, contrast, repetition, proximity) and design elements (line, shape, color, texture, space, form, typography). Before the analysis of the posters designed with ChatGPT, the posters published during the promotion process of the 10 films that were the subject of the research were analyzed according to the basic design principles and elements. The Table 1 that comes after the Figure 10 summarizes the design principles of the posters of the selected movies, which can be seen in the Figures 1 to 10 below.

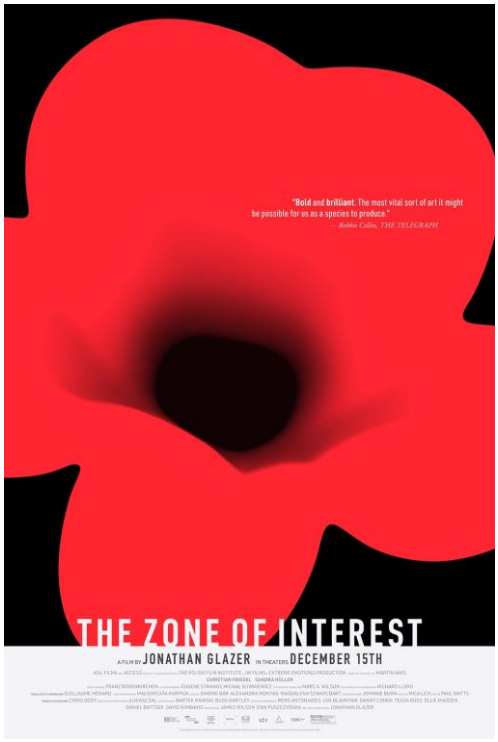

Figure 1: The Zone of Interest Original Movie Poster
Source: https://en.wikipedia.org/wiki/The_Zone_of_Interest_(film)#/media/File:The_Zone_of_Interest_film_poster.jpg

Figure 2: Poor Things Original Movie Poster
Source: https://www.imdb.com/title/tt14230458/mediaviewer/rm3634323201/?ref_=tt_ov_i

Figure 3: Past Lives Original Movie Poster
Source: https://www.imdb.com/title/tt13238346/mediaviewer/rm1070082817/?ref_=tt_ov_i

Figure 4: Maestro Original Movie Poster
Source: https://www.imdb.com/title/tt5535276/mediaviewer/rm3842791169/?ref_=tt_ov_i

Figure 5: Killers of the Flower Moon Original Movie Poster
Source: https://en.wikipedia.org/wiki/Killers_of_the_Flower_Moon_(film)#/media/File:Killers_of_the_Flower_Moon_film_poster.jpg

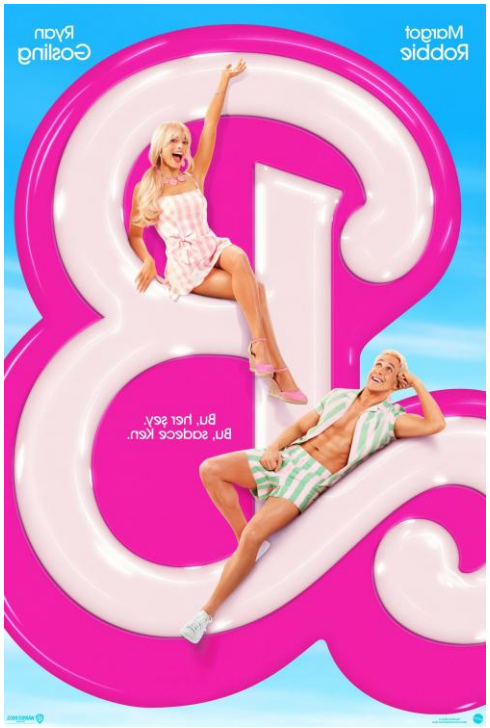

Figure 6: Barbie Original Movie Poster
Source: https://image.tmdb.org/t/p/original/o1BB6Cimho6R72QzJDwcwnCkp2a.jpg

Figure 7: Anatomy of a Fall Original Movie Poster
Source: https://www.imdb.com/title/tt17009710/mediaviewer/rm3574749441/?ref_=tt_ov_i

Figure 8: American Fiction Original Movie Poster
Source: http://www.impawards.com/2023/american_fiction.html

Figure 9: The Holdovers Original Movie Poster
Source: https://www.imdb.com/title/tt14849194/mediaviewer/rm472142593/?ref_=tt_ov_i

Figure 10: Oppenheimer Original Movie Poster
Source: https://www.imdb.com/title/tt15398776/mediaviewer/rm2670601217/?ref_=tt_ov_i

Table 1: Design Analysis of the Original Movie Posters of ten Oscar-winning films in 2023

Movie	Design Principles	Design Elements	Theme and Emotional Impact	Typography Characteristics
The Zone of Interest	Symmetry, Simplicity, Balance	Color (Red, Blue, Yellow), Geometric Shapes	Dystopian, Oppression	Short, Simple Typography
Poor Things	Balance, Emphasis, Composition	Color (Sepia, Blue), Complex Visuals	Surreal, Grotesque	Gothic, Old Typography
Past Lives	Space, Emotional Tension	Space, Soft Color Tones	Romantic, Nostalgic	Minimal Typography
Maestro	Balance, Emphasis	Black and White, Gesture	Biographical, Musical	Elegant, Thin Typography
Killers of the Flower Moon	Balance, Emphasis, Texture	Color (Red, Orange, Brown), Texture	Historical, Tragic	Classic, Simple Typography
Barbie	Repetition, Emphasis, Balance	Color (Pink, Blue), Bold Shapes	Fun, Iconographic	Bold, Fun Font
Anatomy of a Fall	Contrast, Balance, Space	Color (Black, Red), Angular Typography	Crime, Isolation	Angular, Dramatic Typography
American Fiction	Balance, Emphasis, Alignment	Color, Stylized Drawings	Satirical, Playful	Modern, Bold Typography
The Holdovers	Balance, Contrast	Soft Pastel Tones, Environmental Elements	Nostalgic, Warm	Old-Style Fonts
Oppenheimer	Symmetry, Balance, Alignment	Color (Dark, Red), Explosion Imagery	Serious, Explosive	Capital, Bold Typography

Source: Prepared by the Authors

It is noted that the typography of the texts on the posters of Oppenheimer, Killers of the Flower Moon, Anatomy of a Fall, Barbie and American Fiction stood out on the posters. While the visuals were prominent in the posters of Poor Things and The Holdovers, the placement of the film name is not as emphasized as the visuals. While the visuals were prominent in the posters of Maestro, Past Lives, The Zone of Interest and Anatomy of a Fall, and the film name was not emphasized.

The posters produced by ChatGPT are given in Figures 11 to 19 below. It should also be noted that ChatGPT refused to design a poster for the Barbie movie, declaring on all three attempts to have it redesign the original poster that it wasn't able to generate the redesigned poster for Barbie because the request didn't comply with its content policy. Instead, it suggested providing a detailed description of how to create the redesigned poster or offer different approaches for the design, explaining that the Barbie character was a brand and could not be redesigned because her copyrights were protected. These AI-generated posters were created based on textual descriptions of the movie scripts, focusing on key themes, central visuals, and emotional tones conveyed in each storyline. ChatGPT was tasked with adhering to specific design parameters, including typographic emphasis, visual hierarchy, and proportional balance. Each poster was generated within seconds, showcasing the efficiency of AI tools in design workflows. However, while adhering to fundamental design principles, limitations in originality and occasional repetitive patterns emerged across the AI-generated outputs. The Table 2 that comes after the Figure 19 summarizes the design principles of the posters of the selected movies, which can be seen in the Figures 11 to 19 below.

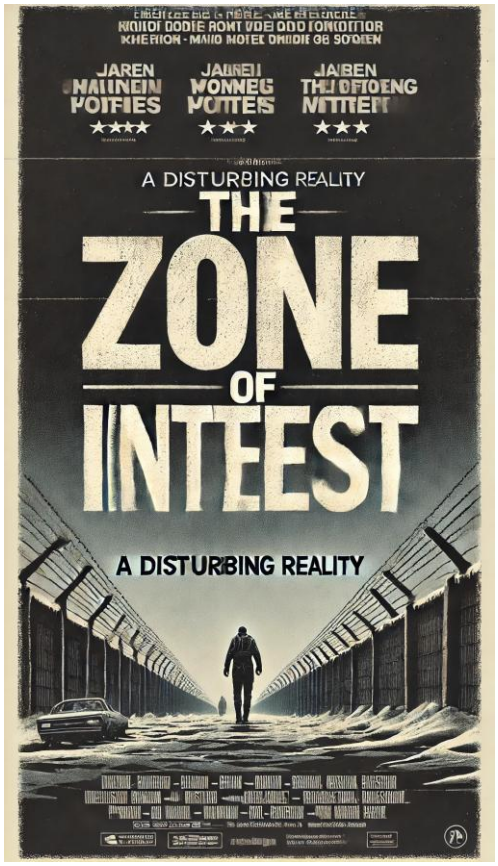

Figure 11: The Zone of Interest Movie Poster Generated by ChatGPT
Source: Produced by the Authors

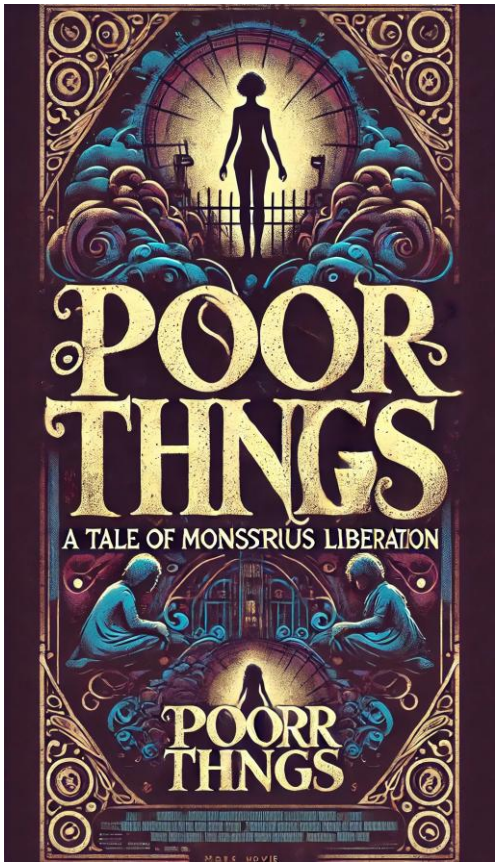

Figure 12: Poor Things Movie Poster Generated by ChatGPT
Source: Produced by the Authors

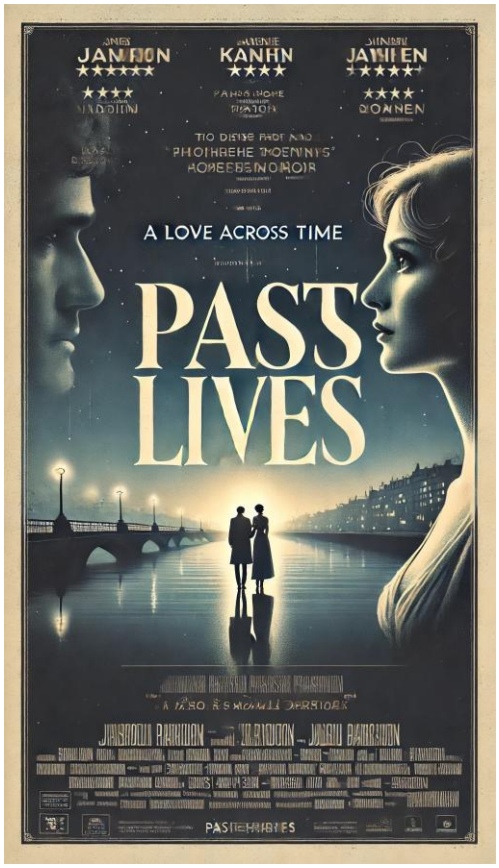

Figure 13: Past Lives Movie Poster Generated by ChatGPT
Source: Produced by the Authors

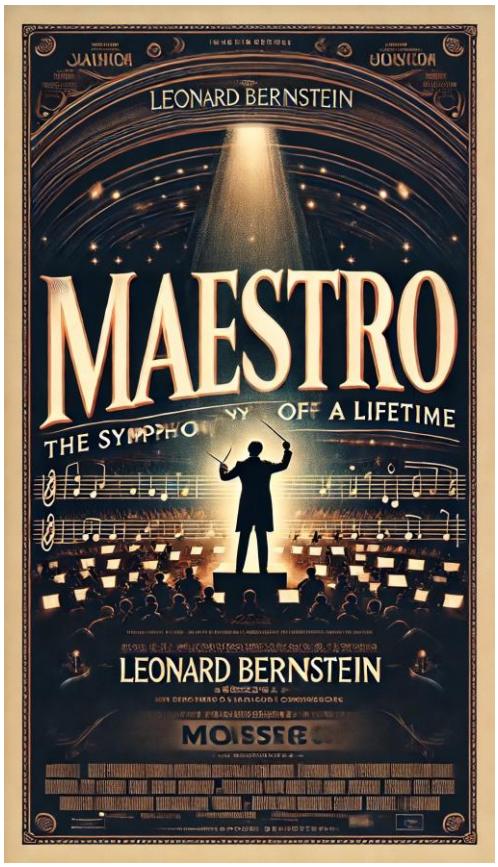

Figure 14: Maestro Movie Poster Generated by ChatGPT
Source: Produced by the Authors

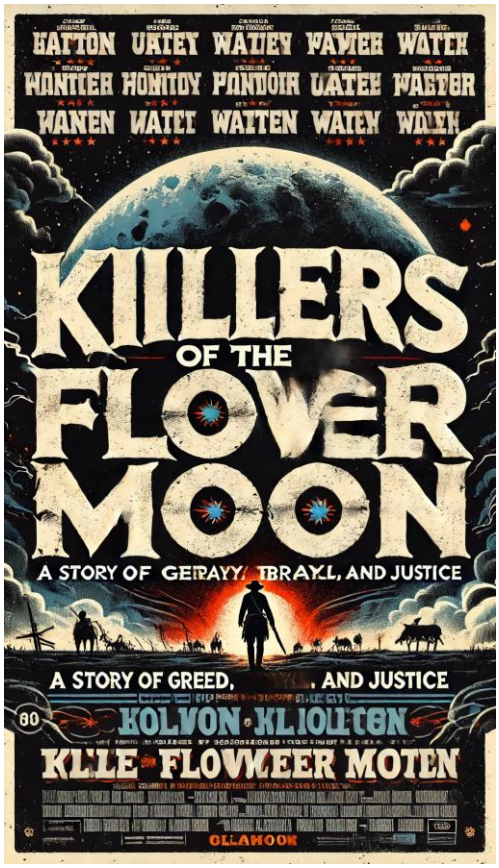

Figure 15: Killers of the Flower Moon Poster Generated by ChatGPT
Source: Produced by the Authors

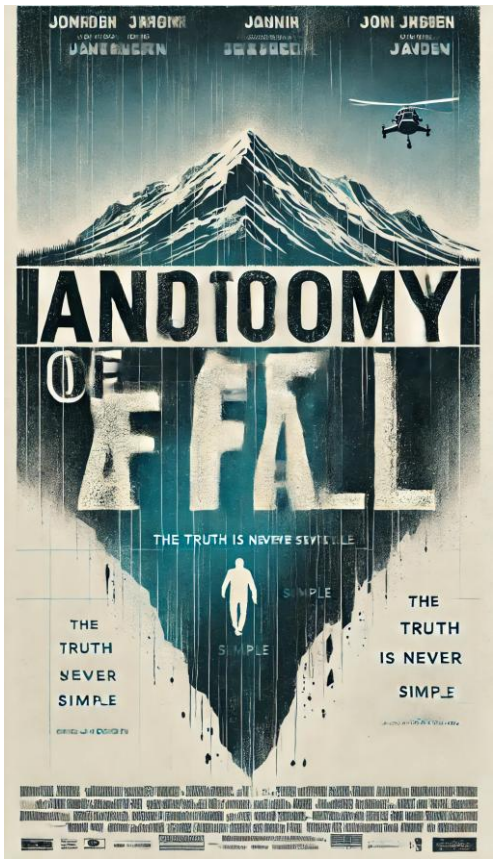

Figure 16: Killers of the Flower Moon Poster Generated by ChatGPT
Source: Produced by the Authors

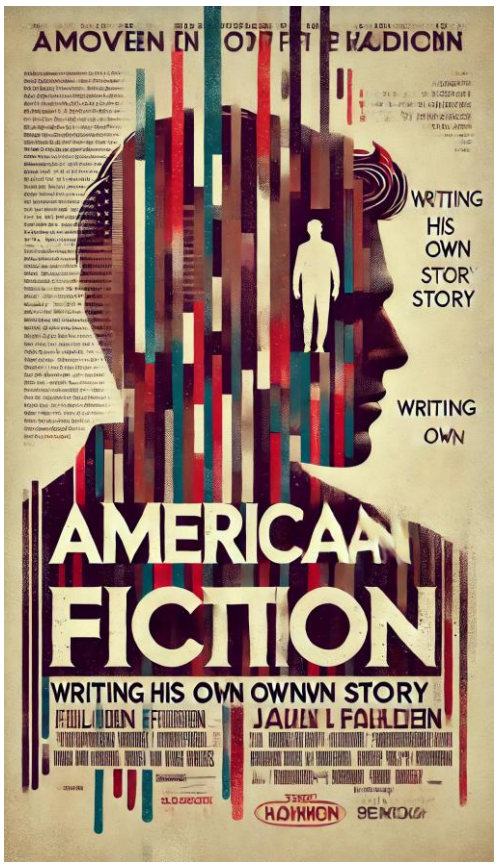

Figure 17: Killers of the Flower Moon Poster Generated by ChatGPT
Source: Produced by the Authors

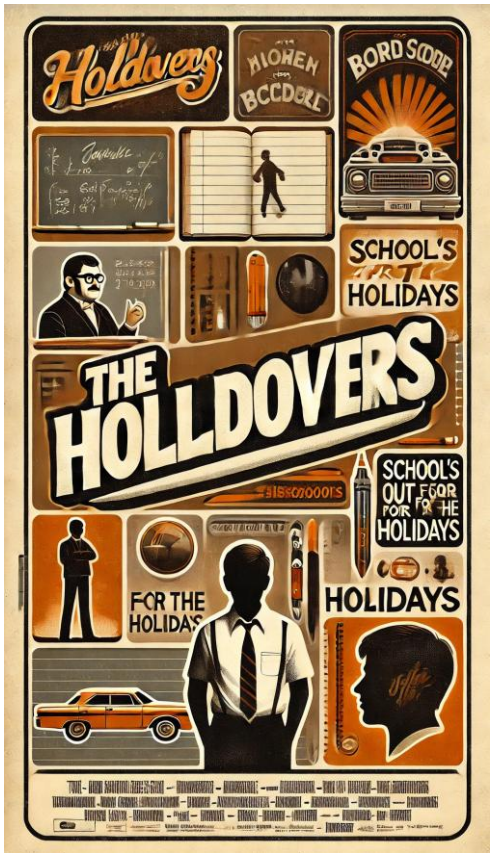

Figure 18: Killers of the Flower Moon Poster Generated by ChatGPT
Source: Produced by the Authors

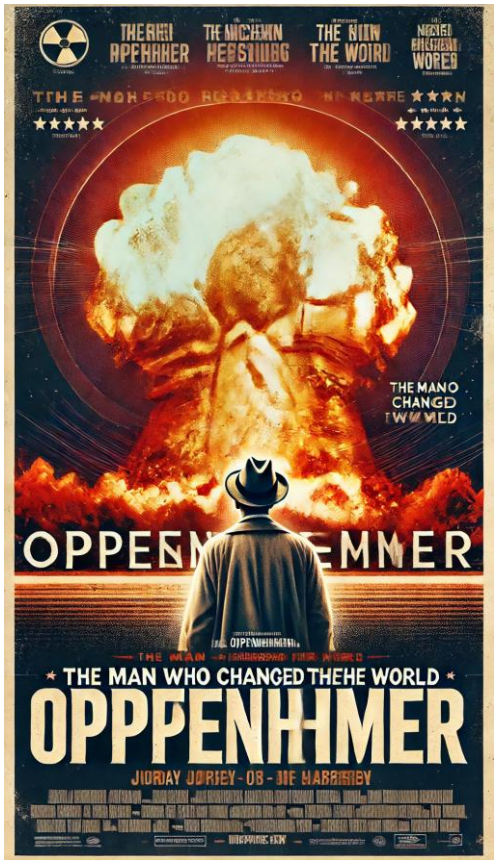

Figure 19: Killers of the Flower Moon Poster Generated by ChatGPT
Source: Produced by the Authors

Table 2: Design Analysis of the Movie Posters Generated by ChatGPT for ten Oscar-winning films in 2023

Movie Name	Design Principles	Design Elements	Theme and Emotional Impact	Typography Characteristics
The Zone of Interest	Symmetry, Diagonal Typography	Black Tones, Wire Fences, Geometric Shapes	Dystopian, Oppression	Large, Diagonal Placement
Poor Things	Contrast, Dual Composition	Magenta, Purple, Gothic Typography	Surreal, Duality	Gothic, Historical Fonts
Past Lives	Space, Emotional Distance	Soft Tones, Spatial Symbolism	Romantic, Distance	Centered, Story-Driven
Maestro	Balance, Central Composition	Dark Tones, Light Focus, Gesture	Classical, Musical	Classical, Artistic Fonts
Killers of the Flower Moon	Balance, Horizontal Emphasis	Dark Colors, Classic Typography	Historical, Weighted	Voluminous, Centered Typography
Barbie	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Anatomy of a Fall	Composition, Multi-layered Design	Iceberg Imagery, Bold Typography	Dramatic, Psychological	Bold, Narrative Typography
American Fiction	Balance, Central Focus	Bold Typography, Pop Aesthetic	Playful, Satirical	Thick, Modern Fonts
The Holdovers	Nostalgic Composition	Soft Pastel Tones, Balanced Environment	Warm, Nostalgic	Old-Style, Pop Art Typography
Oppenheimer	Central Emphasis, Symmetry	Dark, Red Tones, Explosion Imagery	Explosive, Serious	Capital, Repeated Typography

Source: Prepared by the Authors

AI-generated posters displayed consistency in applying design principles, adhere to basic design rules but lacked nuanced creative interpretation. Moreover, visual balance and alignment were mostly accurate while repetitive compositions and occasional lack of emotional engagement were noted. However, typography adhered to clarity but lacked expressive variation. In general, it was understood that there was creativity in the posters designed with ChatGPT and that the design principles and elements were followed in the posters. However, errors were frequently made in the texts and the standard dimensions were not followed in the poster dimensions. In an overall comparison of human-design and AI-generated posters, it can be argued that while human-designed posters demonstrated higher emotional depth, expressive typography, and dynamic compositions, AI-generated posters excelled in adhering to predefined design rules, technical balance, and efficiency. However, AI posters occasionally

lacked originality and emotional nuance. Human posters displayed individuality and unique design choices, whereas AI posters showed consistency across outputs. These insights highlight the potential for future collaborations where AI can handle technical precision, and human designers can focus on emotional and narrative creativity.

DATA ANALYSIS AND DISCUSSION

In Table 3 below are the responses given by the participants in the typography course to the evaluation of original human-designed posters and AI-generated posters and the statistical discussion of these as well as key insights from this analysis.

Table 3 Comparative Descriptive Statistics of AI-Generated and Expert-Designed Posters Across Design Principles, Elements, and Structural Features

Sections of the Survey	Poster	N	Min.	Max.	Skewness	Kurtosis	Median	Average	SS
Appropriateness of design principles	ChatGPT	20	3,00	3,60	0,100	-0,480	3,40	3,55	0,180
	Expert Designer		3,90	4,50	0,160	0,230	4,10	4,20	0,170
Correct use of design elements	ChatGPT	20	3,30	3,55	0,100	-0,280	3,40	3,42	0,090
	Expert Designer		4,00	4,55	0,400	-0,430	4,25	4,30	0,160
Structural features	ChatGPT	20	3,10	3,80	-1,730	- 0,200	3,70	3,65	0,346
	Expert Designer		4,30	4,50	-1,640	0,290	4,50	4,45	0,090
Overall Average		20	3,60	4,00	-0,280	0,520	3,70	3,85	0,170

*p<0.5

Source: Prepared by Authors

The statistical analysis above revealed notable differences between AI-generated posters and human-designed posters across key design dimensions: appropriateness of design principles, correct use of design elements, and structural features. Human-designed posters consistently scored higher across all dimensions, with averages of 4.20, 4.30, and 4.45, respectively. These results indicate a significant advantage in terms of human designers' ability to integrate emotional, narrative, and cultural context into their work. In contrast, AI-generated posters, while demonstrating competence in balance, alignment, and clarity, showed lower averages of 3.55, 3.42, and 3.65 in the same categories. These values suggest that AI tools excel at adhering to predefined design rules but often lack the depth of contextual understanding required for nuanced design choices.

Standard deviations indicated greater variability in the structural features of AI-generated posters (0.346) compared to expert-designed posters (0.090), suggesting inconsistency in AI adherence to complex structural relationships. This inconsistency could stem from AI's reliance on datasets and its inability to interpret abstract design principles intuitively. In comparison, human designers displayed consistency in applying structural principles, which contributed to higher overall scores and more balanced compositions.

The skewness and kurtosis coefficients further highlighted differences in data distribution. Positive skewness values for appropriateness of design principles and correct use of design elements revealed that most AI poster evaluations clustered below the mean, while expert-designed posters had more balanced distributions. Kurtosis values revealed flatter distributions for AI posters, reinforcing the observation of variability and inconsistency in their design structure. For instance, in the 'Structural Features' category, the significant skewness (-1.730 for AI vs. -1.640 for human-designed posters) reflects the challenges AI faces in achieving structural harmony in poster layouts. The analysis revealed that AI tools are highly efficient, with the ability to produce poster designs in a fraction of the time it takes human designers. However, speed does not necessarily equate to design quality, as evidenced by the variability in AI-generated outputs. These findings highlight the importance of leveraging AI for efficiency while relying on human designers for emotional and narrative depth.

These insights suggest that while AI excels in efficiency and adhering to predefined design rules, it struggles to match the emotional resonance, creative risk-taking, and structural integrity observed in human designs. Human designers remain essential for tasks requiring subjective interpretation, emotional nuance, and cultural contextualization. Future research should explore hybrid workflows, where AI handles routine tasks such as layout optimization and rapid prototyping, and human designers refine emotional and creative aspects. Additionally, educators should focus on training design students to work collaboratively with AI tools, enabling them to maximize the strengths of both human creativity and machine efficiency.

Integrating these findings into design education curricula can provide students with a balanced skill set, preparing them for a future where AI is an indispensable part of the creative process. This approach emphasizes collaboration

rather than replacement, ensuring that both AI technologies and human designers contribute meaningfully to the evolution of design practices. Beyond analyzing design quality, the findings suggest broader implications for AI-supported design curricula. Insights gained from this analysis highlight potential applications in adaptive learning systems, intelligent design platforms, and AI-driven creative training modules. For instance, AI models like ChatGPT could be utilized to automate design feedback systems in instructional design courses, streamline prototyping in creative workshops, and assist educators in developing visually appealing learning materials. Furthermore, findings emphasize the need for ongoing refinement of AI tools to enhance their creative capacities. Integrating AI into design education not only enhances productivity but also fosters a hybrid creative environment where human ingenuity and machine efficiency complement each other.

While the findings of this study focus on the specific context of typography and poster design education, they offer valuable insights for broader educational applications. Similar AI-driven tools and methodologies can be effectively applied in language education as AI platforms such as Duolingo AI and Grammarly personalize learning experiences, offering tailored feedback and adaptive learning paths. STEM education is another area of application for AI-driven tools and methodologies. For instance, Wolfram Alpha and GeoGebra AI provide real-time feedback in complex problem-solving scenarios. Finally, art and creative writing framework, AI programs like OpenAI's ChatGPT can generate prompts, refine drafts, and provide constructive feedback to learners in creative subjects. In these contexts, AI's ability to analyze large datasets, identify patterns, and automate repetitive tasks allows educators to focus on student-centered teaching methods and individualized learning plans. Therefore, future studies should consider exploring AI's evolving role in creative disciplines, focusing on its potential to redefine traditional design workflows and contribute to the development of innovative educational methodologies.

CONCLUSION AND FUTURE RESEARCH DIRECTIONS

This study underscores key insights into the comparative strengths and limitations of AI-generated and human-designed posters. Human-designed posters demonstrated consistently higher scores across design dimensions, particularly in structural features and the appropriateness of design principles. Expert designers excelled in emotional depth, narrative integration, and creative flexibility, while AI tools showcased efficiency, technical adherence to design rules, and scalability. Although AI-generated posters adhered well to predefined standards, the analysis revealed challenges such as variability in structural composition, limited emotional resonance, and occasional repetitiveness. These limitations, reflected in higher standard deviations and flatter distribution curves, highlight the need for more contextually aware and creatively adaptive AI design algorithms.

The findings also highlight the added pedagogical value of AI in design and typography education. AI-assisted design applications can enhance students' aesthetic awareness, technical proficiency, and creative experimentation. Beyond specialized domains like typography, the broader educational ecosystem stands to benefit from AI-supported learning tools that personalize instruction, streamline assessment, and support adaptive feedback. Applications across language learning, mathematical modeling, and data analysis demonstrate that similar AI-driven approaches can improve efficiency, accessibility, and individualized learning across disciplines.

Within the specific context of this study, student evaluations confirmed that ChatGPT-generated posters met fundamental design criteria in areas such as balance, visual hierarchy, and typographic clarity. However, limitations emerged in terms of originality, contextual nuance, and emotional depth. Despite these constraints, the rapid generation of nine posters within approximately 30 seconds each illustrates AI's potential for high-efficiency prototyping and scalable design workflows.

Looking ahead, AI technologies are poised to make significant contributions not only to creative domains such as advertising, film marketing, architecture, and industrial design but also to broader educational innovation. The rapid evolution of AI design tools underscores the importance of continuous research, ethical literacy, and strategic integration. Institutions must therefore prioritize structured educator training programs, student digital literacy development, transparent AI policies, and responsible design practices. AI should augment human creativity rather than replace it, serving as a collaborative partner that enhances—rather than diminishes—human imagination, empathy, and narrative intuition.

To advance this field further, several directions for future research emerge. First, expanding the dataset to include a wider range of poster types, genres, and cultural contexts will help strengthen the generalizability of findings. Larger and more diverse datasets would also enable using more sophisticated statistical analyses and computational methods. Second, incorporating evaluators from varied backgrounds—professional designers, educators, undergraduates, and non-expert audiences—would yield multi-perspective insights into how different groups perceive AI-generated visuals. Such diversity could illuminate how emotional resonance, cultural specificity, and visual storytelling vary across audiences.

Third, comparative studies across multiple AI image-generation models—such as Midjourney, Stable Diffusion XL, Leonardo AI, or Runway ML—would offer a more comprehensive understanding of how different architectures and training datasets influence visual outcomes. A multi-model approach would also help educators and designers determine the most appropriate tools for specific pedagogical goals and creative contexts.

Fourth, longitudinal studies observing how students integrate AI tools over time would provide deeper insight into evolving design behaviors. Tracking how learners develop prompt strategies, refine hybrid workflows, and negotiate the boundaries between automation and creativity would greatly contribute to pedagogy and curriculum development.

Fifth, ethical and legal considerations—such as copyright, dataset transparency, cultural representation, and algorithmic bias—require sustained scholarly attention. Developing appropriate guidelines and ethical frameworks for AI-assisted design education will be essential for ensuring equitable, safe, and responsible integration.

Finally, interdisciplinary collaborations that draw from cognitive science, human–computer interaction, and computational creativity could illuminate how AI influences ideation, risk-taking, aesthetic judgment, and emotional interpretation. Understanding the cognitive shifts that occur when designers work with AI will deepen theoretical insights into the nature of creativity in hybrid human–machine environments.

In conclusion, the synergy between AI technologies and human creativity opens a dynamic pathway for innovation in design education and practice. By combining AI's efficiency, scalability, and rule-based precision with the irreplaceable human capacity for emotion, cultural sensitivity, and narrative interpretation, future designers can achieve more compelling, resonant, and contextually grounded visual communication outcomes. This study demonstrates AI's transformative potential in typography education while highlighting its broader relevance across educational fields. Continued research—grounded in interdisciplinary collaboration, ethical awareness, and pedagogical refinement—will be essential to shaping an educational ecosystem where AI enhances human creativity, intuition, and emotional intelligence, rather than attempting to substitute them.

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