Designing with Ethics: Implementing an AI Ethics-Informed Motion Graphics Project in an Undergraduate Studio Course

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Abstract

Integrating generative AI into visual design education is a significant pedagogical strategy for enhancing students' creativity and technical skills. However, early AI implementations in design education often prioritize AI's pedagogical benefits on skill gains over essential ethical considerations, lacking engagement in ethical literacy in visual design discipline.
To address these concerns, this exploratory pilot study introduces a pedagogical approach integrating ethical touchpoints—tool-specific features prompting ethical reflection—into an AI-enhanced motion graphics project, fostering students' ethical awareness through using generative AI tools, underscoring the ethical learning in an AI-enhanced design workflow. To assess the learning outcomes, mixed-methods research was employed. The survey focused on assessing students' ethical reflections while they engaged with these generative AI tools in the motion graphic design project. The collected responses included quantitative data measuring students' understanding of AI ethics and qualitative data offering contextual insights into their learning experience in this project. The finding shows a positive result with suggestions to enhance this pedagogical approach.
By engaging students in ethically grounded AI design scenarios, this approach provides a reference for design educators seeking to balance AI-driven innovation with the imperative to cultivate ethical responsibility in design education.

Keywords: *AI, AI Ethics, Graphic Design, Pedagogy*

1. Introduction

The rapid advancement of generative artificial intelligence (AI) has transformed creative disciplines by enabling expanded creativity and enhanced efficiency. Design educators have increasingly integrated generative AI into design curricula, with findings showing that AI integration expands students' creativity and increases design productivity [1, 2]. However, the enthusiastic adoption of generative AI in design education often overshadows the development of AI ethical literacy [1, 3], leaving students without the knowledge to evaluate the ethical aspects of their AI-enhanced design practice. If left unaddressed, this gap can lead to ethical oversights in both academic and professional contexts. This highlights the importance of pairing AI ethics with technical instruction for design educators to ensure students develop AI ethics awareness and produce AI-generated content in a responsible approach [4, 5].

This paper presents an exploratory pilot study to develop students' ethical awareness in an AI-enhanced motion graphic design project. It focuses on major AI ethics, including transparency, human-AI collaboration, and reliability principles closely relevant to the visual design, where attribution, creative control, and output consistency are critical [1]. Given the limited scope of a single design project, which does not capture the broad spectrum of ethical issues associated with generative AI, concentrating on these three core AI ethics principles offers students a manageable and meaningful entry point for ethical reflection. This foundational awareness prepares students for broader ethical inquiry as they engage with new AI tools and contexts.

Through ethical "touchpoints", defined as tool-specific features within generative AI tools that prompt ethical reflections. This pedagogical approach engages students in ethical learning through an AI-enhanced, hands-on motion graphic design process. Using a mixed-methods survey, we assessed how this learning experience enhanced students' ethical awareness, yielding positive insights with mixed reflections that provide design educators with a reference for ethics-informed AI design practices.

2. Literature Review

2.1 A Brief Generative AI History

Over the past 70 years, AI has evolved from a rule-based system designed to assist human decision-making to today's deep generative models powered by neural networks and large datasets [7, 8]. A significant milestone came in 2014 with Generative Adversarial Networks (GANs) by Goodfellow et al. GANs marked a paradigm shift, indicating the advancement of AI from data classification toward automatic content generation to machine learning [9]. This breakthrough set the stage for a wave of innovation in generative models, including Variational Autoencoders (VAEs), Diffusion, and the Transformer architecture introduced by Vaswani et al. in 2017 [12].

Today, most cutting-edge generative AI tools—whether for text, images, or video, are built on one or more of these foundational models, including GANs, VAEs, Transformer, and Diffusion, producing the AI output that "cannot be distinguished from human craftsmanship" [13, p. 111].

2.2 Major Generative AI Models

Generative AI tools are powered by its underlying deep learning models, each with unique talents and limitations. For design educators, understanding these underlying models supports informed decisions when a tool-based approach is utilized for students to expand their creativity and address the ethical concerns each AI tool may raise.

Both GANs and Diffusion models are widely used to generate new, high-fidelity output from users' text prompts [14, 20, 21, 22]. GANs operate through a binary neural network, the generator and the discriminator in adversarial processes, where the generator creates fake images and the discriminator judges if they're real, competing until the images look very realistic [9, 14, 15, 16]. In contrast, Diffusion models use a two-stage process. During the forward stage, data is progressively corrupted by adding noise. In the reverse stage, the model learns to reconstruct the original data by iteratively removing this noise, ultimately generating realistic samples [23]. VAEs, on the other hand, employ a probabilistic encoder-decoder architecture. As shown in Figure 1, the encoder compresses input data into a latent space—a compact, structured representation of essential features. The decoder then reconstructs the original data or generates new samples from this latent space [17, 18]. While GANs typically generate outputs faster, Diffusion models offer enhanced user-guided control, allowing for more precise manipulation of generated content [10]. Often, GANs and Diffusion Models are combined with VAEs to optimize results, leveraging the strengths of each approach for enhanced performance.

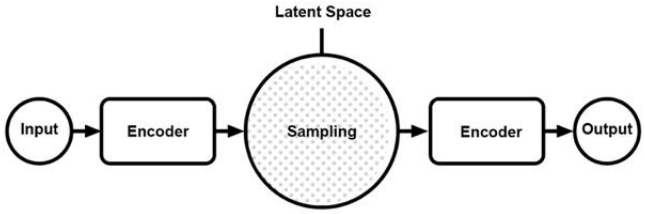

Fig. 1. VAEs architecture showing the generative process from Input to output.

Unlike these image-focused AI models, Transformers utilize a "self-attention" technique that understands text context and pays attention to the most vital words in a sentence [17]. This allows the model to weigh the importance of words based on context, efficiently capturing relationships between words regardless of their positions in the sentence [19]. This capability makes Transformers particularly effective at understanding and generating text that appears natural and contextually relevant, enabling applications like language translation, content creation, and chatbots [19].

Since 2018, various generative AI models have had a significant impact on AI applications, driven by advancements in training these large-scale deep learning models. During this period, generative AI tools have proliferated. For design educators, this diversity is not just about the advancement of AI models but also about pedagogical and ethical considerations. Understanding the implications of each underlying AI model enables educators to identify AI tools that not only enhance students' creativity in

visual design but also engage students critically with ethical considerations through the use of these tools.

2.3 Ethic in Generative AI

The varied generative AI models power AI tools, enabling transformative applications in multiple domains. These capacities, if not moderated responsibly, yield complex side effects—ethical dilemmas. Key ethical concerns include transparency and explainability, since AI's opaque decision-making processes hinder auditing and comprehension of outputs [24]. As AI outputs increasingly match the quality of human work and remain constrained by data limitations, issues such as authorship, academic integrity, privacy, misinformation, and the amplification of societal biases pose significant ethical risks [25, 26, 27, 28]. In professional contexts, the reliability and safety of AI-generated content further underscore the urgency for comprehensive ethical frameworks prioritizing fairness, transparency, and human rights [29]. In literature, scholars advocate multidisciplinary collaboration and dynamic governance to ensure AI's responsible innovation and beneficial societal impact, balancing productivity gains with risks such as misuse and proliferation of misleading content [30, 26].

2.4 Call for AI Ethical Study in Design Education

As AI ethics has received increasing attention in industry and scholarly research, it calls for the integration of AI ethics education in higher education. While design educators are integrating AI and appreciating its potential in graphic design, art, and architecture education, they also suggest that students should conduct balanced and responsible applications of AI. Das and Rani [1] emphasize that AI transforms designers into strategic advisors rather than replacing them, highlighting the necessity for design curricula to incorporate ethical considerations, ensuring students grasp both opportunities and responsibilities associated with AI-enhanced creativity. Similarly, Fathoni [3] identifies generative AI platforms like DALL·E and Midjourney as valuable for producing innovative and sustainable visuals but also warns of ethical concerns, particularly regarding academic integrity and potential misuse, suggesting controlled AI engagement to promote responsible practice. In architectural education, Jin et al. [5] demonstrate that integrating generative AI throughout design workflows enhances creativity and efficiency but requires guided instruction to ensure ethical engagement.

These design teaching cases serve as a wakeup call for developing a balanced integration of AI into design curricula, bridging technical applications and ethical considerations. As AI becomes increasingly embedded in creative design education, fostering ethical literacy in AI is essential to ensure thoughtful and responsible integration of AI technologies, particularly in higher education.

2.5 Ethic Touchpoints and Generative AI Tools in this Study

Due to the timely innovation and rapid development of AI, much of the current endeavor in teaching AI ethics within design education remains exploratory and theoretical. Integrating AI ethics into AI-enhanced design education is increasingly acknowledged. However, a systematic and actionable framework specifically designed for teaching AI ethics in visual design is rare in the scholarly literature. This gap arguably stems from the inherently multidisciplinary and interdisciplinary nature of AI ethics, involving diverse principles, perspectives, and dimensions. While scholars advocate that learning AI ethics should be practice-based, an innovative, tool-based teaching framework featuring ethics "touchpoints" is proposed to align with practice-based ethics learning, contributing to the urgency of integrating AI ethics into design education.

2.5.1 Ethic Touchpoints

Touchpoint, a term commonly used in service design, refers to a point of interaction between a service provider and its customers [31]. In this paper, the term is adapted to describe structured features within generative AI tools that prompt ethical reflection. For instance, Adobe Firefly's feature that uses users' sketches as a compositional guide for AI output serves as a touchpoint, prompting students to reflect on human involvement in AI creation. By leveraging these touchpoints embedded in these AI

tools, the project fosters students' understanding of AI ethics through a structured, hands-on AI design experience.

2.5.2 Generative AI Tools Used in the Project

ChatGPT is a transformer-based AI tool widely used for brainstorming [32]. However, research shows that ChatGPT may raise ethical concerns around diminished human responsibility and the temptation for students to present AI-generated content as their own without proper attribution [33]. These ethical concerns position ChatGPT as a touchpoint that prompts students to reflect transparency, a core AI ethic outlined in Ethics by Design for Artificial Intelligence [34]. Rather than addressing ethics by abstract lectures alone, requiring students to document ChatGPT's use during brainstorming and reflect on their interaction with the tool fosters critical ethical thinking about transparency in AI applications, which helps students internalize transparency not just as a requirement, but as a core design value, fostering a more thoughtful and responsible integration of AI into their creative practice [27].

Built on the Diffusion model, Adobe Firefly is a text-to-image AI platform effective for prototype visualization and conceptual planning, significantly aiding storyboarding and keyframe development [35, 36]. Within design education, primary ethical concerns focus on intellectual property rights and authorship, particularly the unauthorized replication of unique artistic styles [37]. Lucas [38] highlighted that Adobe Firefly allows users to upload their own sketches to serve as compositional guides for the AI's generative output. This functionality allows students to infuse their original, manually drafted work into the AI-enhanced design process, thereby preserving their intentionality and personal control in AI output. This feature provides a pedagogical opportunity for educators to discuss AI ethics related to the human-involved AI design approach, oft-mentioned in many related works. Choosing a tool like Adobe Firefly, which supports human integration, enables educators to intensify the awareness of AI design ethics by promoting more responsible applications of AI in visual design.

Runway ML employs Transformer and Diffusion model tailored for generating video, motion graphics, and filmmaking [39]. However, Runway ML often produces videos with unexpected distortions, unrealistic movements, and unnatural transitions between frames due to the complexity of maintaining temporal coherence in AI-generated sequences [43, 44, 40]. At an ethical level, such inconsistencies may mislead viewers, especially in contexts where precision is critical, such as education, medical training, or scientific communication. To address this challenge, the Runway Gen-3 model introduced a key improvement: the "First Frame and Last Frame" feature, which helps create more consistent visual outputs. This function allows users to generate 3–5 seconds of video between two self-specified keyframes—images that are uploaded and designed by the user. When keyframes developed in Adobe Firefly share consistent visual structure and composition, this feature can significantly minimize distortions in the generated sequence. Moreover, by iteratively generating short clips between multiple keyframe pairs, users can assemble coherent AI-enhanced footage that reflects intentional human input while reducing visual artifacts.

In the context of AI ethics instruction, these features serve as valuable ethical touchpoints, encouraging students to reflect on key ethical principles. By engaging with these touchpoints, students are prompted to recognize that AI integration in design education is not solely a technical objective but also an ethical responsibility in AI-augmented design practices.

3. Method

3.1 Developing an Ethic-informed Motion Graphic Design Project

As AI tools become more prevalent across academic disciplines, the need for AI ethics education has grown increasingly urgent. To address this, we conducted an exploratory pilot study aimed at enhancing students' ethical awareness in a senior-level motion graphic design project. Motion graphics, which blends graphic design and animation, is commonly used to create dynamic visual content such as title sequences for films or television. In this 4-week-long project, students engaged in a task of creating an AI-enhanced short introduction title sequence for a self-chosen TV show or documentary. Initially, students needed to use generative AI to create video footage. They then

applied traditional motion graphic techniques using Adobe After Effects to integrate dynamic elements such as typography, audio, and scene transitions into their final title sequence productions.

3.2 Ethical Touchpoints in the AI tools

The motion graphic design project integrated generative AI tools—ChatGPT, Adobe Firefly, and Runway ML — across three phases: brainstorming, storyboarding and keyframe development, and video footage output. Each tool was selected for its specific features, which served as ethical touchpoints to prompt reflection on three major AI ethics principles: transparency, human-AI collaboration, and reliability. The table below summarizes the design process, the generative AI tools used, ethical touchpoints, ethical reflections, and pedagogical strategies employed to foster ethical awareness in each phase.

Design Process	Brainstorming →	Storyboard / Keyframe development →	Video Output
Generative AI Tool	ChatGPT	Adobe Firefly	Runway ML
Ethical Touchpoint	Idea Generation	Sketches as Compositional Guide	First & Last Frame Feature
Reflection on AI Ethics	Transparency	Human-AI collaboration	Reliability
Pedagogical Strategy	Report on AI Use; Lecture on Transparency.	Class Discussion on Human-AI Collaboration and Concerns in Copyright, and Originality.	Class Critique Session on AI Reliability

Table 1. Integration of generative AI tools and corresponding ethical touchpoints across the motion graphic design workflow.

In brainstorming, students used ChatGPT to generate and refine creative ideas. The ethical touchpoint—idea generation—can prompt the ethical reflection of transparency, as AI-generated text and ideas can obscure authorship. Students documented ChatGPT's contributions to promote attribution awareness. A lecture on AI transparency encouraged critical reflection on intellectual honesty in AI-assisted work.

During storyboarding and keyframe development, students utilized Adobe Firefly's feature to generate AI images using their sketches as a compositional guide - an ethical touchpoint that highlights human-AI collaboration, ensuring students retain creative control through human-centered AI creation. By adjusting settings such as lighting and color, students tailored AI outputs to align with their intended vision. A class discussion, inspired by Adobe's emphasis on human participation in the AI creation process, reinforced students' responsibility in AI-enhanced design. The discussion also addressed concerns about copyright and originality, further emphasizing ethical considerations in the creative process.

In the final phase, students used Runway ML's "First Frame and Last Frame" feature to generate video clips from the keyframes developed using Adobe Firefly. This touchpoint focused on reliability, as controlling keyframes reduced AI randomness and visual artifacts. A critique session on AI reliability guided students to reflect on the value and importance of AI output accuracy in design and other fields where precision is mandatory.

After generating AI video footage, students imported the clips into Adobe After Effects, a traditional motion graphics tool, adding typography, sound, and transitions. This integration of AI tools with traditional methods, paired with embedded ethical reflections, enabled students to engage deeply with both the creative and ethical dimensions of AI-assisted design.

3.3 Post Project Survey

This exploratory pilot study involved a cohort of 14 senior design students, providing a foundation for larger-scale research. A survey was administered to evaluate learning outcomes related to AI ethics in the motion graphic design project. It included Likert-scale questions to quantify students' ethical

reflections and open-ended responses for contextual insights, combining quantitative and qualitative data to assess their learning experience.

4. Finding and Discussion

Survey data revealed several key trends, including students' opinions about the effectiveness of AI ethics learning in this approach and reflection on transparency, human-AI collaboration, and reliability. What should be disclosed is that 10 out of 14 (72%) students reported moderate to high familiarity with major AI ethics concepts. Four students (28.6%) identified as "very familiar," 6 (42.9%) as "moderately familiar," while the remaining four students were split between "somewhat familiar" (14.3%) and "not familiar" (14.3%).

4.1 Transparency

After documenting the interaction with ChatGPT, students responded with a reinforced ethical awareness of transparency. 64% of students (9 out of 14) agreed or strongly agreed that this approach improved their understanding of AI transparency. Additionally, 79% (11 out of 14) recognized the importance of documenting AI usage in an AI-enhanced design project, indicating that the transparency principle resonated broadly across the cohort. Students' open-ended responses further contextualize this quantitative trend. One student emphasized the value of integrity, stating: "Being honest about your work is critical in our industry. Transparency is key." Another noted its professional relevance, commenting, "This ethic helps with designer and customer relationships to be transparent." The third student reflected on personal growth, saying, "Learning ethics helps me set boundaries with my generative work," demonstrating how the touchpoint and report-writing method encouraged deeper ethical reflection and supported the development of a responsible, creative identity.

Despite positive feedback, 21.4% (3 out of 14) did not agree, revealing mixed reflections. One student stated, "If one wanted to use a source like ChatGPT unethically, a report would not stop them." This perspective suggests that some students remained resistant to AI or that others completed the report as a procedural task without fully internalizing transparency as an ethical mindset. A correlation task pairing students' backgrounds with their open-ended answers suggests that two students with decent art skills who were transferring from art majors left negative comments. As AI's capacity to simulate artists' work and styles continues to grow, the voice from the art community against AI will not come as a surprise to anyone. This also aligns with Wang's assumption [11], in which Wang found that prior art background significantly affects the perception of AI technology. For educators, this mixed reflection presents a challenge in cultivating a critical, self-aware approach to AI use among design students. As AI applications grow within design education, sustained engagement with their practical benefits might gradually ease resistance to AI, particularly through regular exposure to ethical AI use. To address skepticism and ensure deeper engagement, instructors could complement the report with case-based discussions or seminars, framing transparency as a means to protect originality rather than merely as an ethical principle. Integrating these reflections into critique sessions could further cultivate a critical, self-aware approach to AI use among design students.

4.2 human-AI Collaboration

Using the ethical touchpoint in Adobe Firefly proved effective. Survey results showed that 71% of students (10 out of 14) reported a better understanding of the value of AI-generated content and the significance of humans remaining central decision-makers during AI creation. Students' comments, such as "AI shouldn't carry the whole load" and "heavily modify generated content to ensure originality," reflect their engagement with the ethical principle of human involvement in AI, validating the touchpoint's role in supporting AI ethics learning through hands-on design practice.

However, 29% of students (4 out of 14) did not endorse human-AI collaboration, raising cautionary signals. Some expressed outright dismissal of AI's role in design, with one student stating, "I strongly believe in human-made work to show talent and abilities, and I feel the rise of AI threatens that," and another noting that AI "caused lazy work." Survey IDs revealed that these negative responses came from the same group of students who also questioned transparency (Section 4.1). The skeptical reflections highlight the need for a more intentional pedagogical framework to address students with

differing views on AI. A workshop showcasing AI's role as a supportive tool in graphic design, combined with a portfolio-based seminar tailored to highlight AI-assisted work in creative fields, may help students, especially those with traditional art backgrounds. Reframing AI as an ally that boosts their creative agency while expanding design opportunities can help foster a shift in perspective over time. As AI applications grow within design education, sustained engagement with their practical benefits may gradually ease resistance, particularly through regular exposure to the ethical use of AI.

4.3 Reliability

After storyboarding, the project transitioned to video generation, where Runway ML's "First Frame and Last Frame" feature served as an ethical touchpoint emphasizing the principle of reliability. Survey results indicated a positive learning outcome: 85% of students (12 out of 14) reported a better understanding of the importance of quality control and reliability in AI-generated content. This suggests that the ethical touchpoint feature fostered ethical reflection on the need for consistent AI outputs, particularly in fields where precision is critical, and inconsistent results could undermine communication effectiveness and trust.

However, qualitative feedback revealed a more nuanced perspective. Half of the students (7 out of 14) expressed concerns about inconsistent video outputs, such as unnatural transitions or distortions, which led to frustration. While students grasped the conceptual importance of reliability, their direct experiences with unpredictable results from Runway ML highlighted the practical challenges of randomness in AI generation. These findings underscore that many generative tools, still evolving, lack robust quality control mechanisms. This reinforces reliability as a critical ethical concern, not only in theory but also in practice, emphasizing the necessity of human oversight in AI-assisted design workflows to ensure ethical and consistent outcomes.

5. Limitations

As an exploratory pilot study, this research is based on a small sample size of 14 participants, limiting the generalizability of this findings to broader design education contexts. The study focuses three key ethical touchpoints —transparency, human-AI collaboration, and reliability —tied explicitly to the AI tools used in the project. Despite its effectiveness in ethics learning, this tool-focused approach does not capture other important ethical considerations in generative AI, such as algorithmic bias or the impact of AI technologies on sustainability. Future research with larger student cohorts and including a broader range of ethical considerations within the design domain could enhance the model's applicability and strengthen its educational value for integrating AI ethics in design education.

6. Conclusion

This research introduces a pedagogical model emphasizing ethical touchpoints—specific features within generative AI tools designed to prompt student reflection on ethical considerations. This ethics-informed approach serves as a practical framework for design educators seeking to integrate AI literacy with ethical awareness, addressing an essential need as generative AI increasingly influences design education and professional practice.

Findings from this exploratory study indicate that the ethical touchpoints model effectively enhances students' understanding of AI ethics within visual design contexts. However, the study also identifies areas for improvement, notably addressing skepticism from students hesitant about AI integration. Despite these challenges and the limitations posed by the small sample size (n = 14), the model offers a robust foundation for further development. It provides valuable insights for educators aiming to foster ethically informed designers, a critical goal in the rapidly evolving landscape of AI-driven design education.

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