Research Article

# The imitation gAIme: Assessing the Integration and Pedagogical Implications of Generative AI in Art and Design Higher Education

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## Abstract

The recent democratisation of generative Artificial Intelligence (AI) tools, such as ChatGPT and Midjourney, has introduced significant ethical and pedagogical dilemmas within higher education, specifically regarding plagiarism, copyright, and academic integrity. While industry workflows are rapidly incorporating these technologies, creative education often fluctuates between institutional bans and curricular integration. This study investigates how higher education in Art and Design is adapting to the advent of generative AI. Using a three-dimensional methodology: pedagogical, instrumental, and logistical, the research performed a content analysis of curricula from the top 10 QS-ranked Art and Design institutions alongside an evaluation of industry-standard software. The findings reveal a substantial adoption gap; of the 645 programmes assessed, only 7% explicitly mention AI in their curricula. Furthermore, the study examines how software-based teaching, combined with adaptive AI, redefines creative workflows and identifies the infrastructure required for seamless institutional integration. Consequently, this paper proposes a framework for responsible AI integration designed to bridge the divide between industry advancement and pedagogical practice. The research concludes by discussing the transformative impact of generative AI on the fundamental concepts of originality, individuality, and creativity in the design process.

## Introduction

The recent democratisation of Artificial Intelligence (AI) has sparked intense debate over ethical concerns, policy gaps, and potential misuse, overshadowing its benefits. In academia, a dilemma arises regarding AI's impact on plagiarism, content appropriation, and copyright infringement [1]. A study revealed that a third of US college students used AI tools like ChatGPT for assignments [2], prompting educators to choose between a complete ban or full integration into curricula [2]. This binary approach overlooks the complexities of the situation. Moreover, the conversation about AI's influence seems limited to education, neglecting creative fields such as advertising, art, fashion, film, games, and music, which are also affected by generative AI. Organisations are already incorporating these tools into their workflows, underscoring the risks of ignoring or fearing AI in education [3]. Given the growing prominence of AI, the primary research question driving this investigation is: To what extent, and through what pedagogical and instrumental frameworks, can Art and Design higher education institutions effectively integrate generative AI to prepare students for an evolving professional landscape? (RQ).

This research explores best practices for creating a safe learning environment that enhances students' creative potential through AI. Building on Chan's [1] work, it focuses on three core dimensions. The first is pedagogical, examining curricular activities, issues related to generative AI, and ethical considerations in creative fields.

SHRINE PUBLISHERS
Crafting your Achievement

**Shrine Journal of Research and Sciences (SJRS)**

**ISSN: 3069-2032**

**Volume 3 Issue 3, 2026**

**Article Information**

Received date: March 05, 2026

Published date: March 12, 2026

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**DOI:** 10.65070/SJRS.2026.828

**Keywords**

Education; Creativity; Artificial Intelligence; Creative Industries; Training

The second dimension is instrumental, investigating AI tools and their integration into creative workflows to empower both students and educators. Finally, the logistical dimension addresses the necessary tools and infrastructure for seamless AI integration into the creative curriculum.

Ultimately, this study seeks to illuminate how generative AI can redefine creativity in education, helping students navigate concepts like originality and creative expression while equipping them with essential knowledge and skills for the future.

## Literature Review

The democratisation of artificial intelligence (AI) has sparked interest and concerns, with ethical dilemmas, policy gaps, and potential misuse igniting debates across various fields [4,5]. Education faces a new challenge regarding AI's impact on plagiarism, copyright infringement, and content appropriation [1,5]. A recent study by Intelligent.com [2] found that one-third of US college students reported using AI tools like ChatGPT for assignments, prompting contrasting responses from educators: either complete bans or full integration into curricula. This binary approach overlooks AI's potential for creative expression [6,7].

While discussions on AI and education often centre on plagiarism and academic integrity [5,8], the impact of AI extends beyond these concerns. Creative sectors such as advertising, art, fashion, film, games, and music are being transformed by generative AI, with organisations already integrating AI tools into their workflows, highlighting the risks of ignoring AI in creative education [9].

A crucial question arises: How can educators in the creative field prepare themselves and their students for an increasingly AI-shaped professional landscape? This research aims to explore best practices for fostering a safe learning environment where students can leverage AI to enhance their creative potential.

Although research on AI in education is expanding, there remains a gap in understanding its specific impact on creative education. Some studies focus on AI's potential for personalised and adaptive learning [10], while others examine ethical considerations in assessment and automated grading [11]. However, the unique challenges and opportunities AI presents for fostering creativity remain underexplored. The debate over creativity and its relationship with AI is complex: some argue that AI stifles creativity by limiting exploration [12], while others see it as a tool for enhancing creativity through idea generation and inspiration [13,14]. Limited research has investigated pedagogical approaches to integrating AI into creative education, proposing uses such as brainstorming sessions, generating prompts, and providing feedback [13,14]. This research seeks to bridge a gap in existing literature by examining the impact of generative AI on creative education from a multidimensional perspective.

This study will propose a framework for effectively integrating AI into creative education by focusing on pedagogical approaches, appropriate tools, and logistical considerations. This framework can empower educators to prepare students for the future of innovative work in an AI-driven world. It is no secret that AI has been part of many recent conversations, and Arts and Design are no strangers to it. From photography competitions won by AI-generated images to high-fashion houses and magazines adopting AI-generated models, as well as the Cannes Film Festival awarding 'The Crow,' an AI-generated short movie [5], the debate has shifted from whether to embrace this technology to whether artists and designers are prepared for its rapid advances, possibilities, and risks. Amid global conflicts and the diverse applications of AI tools, the absence of guidelines facilitates the (mis)use of these technologies. Higher education must equip future professionals for this AI-driven landscape. The discourse around AI in the creative fields is intense, with many expressing concerns over unregulated use [5] and its implications for the future of creativity. Wingström et al. [15] point out that while creativity is defined in various ways, some attribute it to artefacts or communities, AI's role in the creative process is increasingly significant, as it can reduce repetitive tasks and provide diverse solutions and inspiration. However, there's concern that excessive reliance on AI could undermine the unique process of creativity by making it too predictable and repetitive [5], raising concerns about copyright infringement and devaluation of art [5]. Boden describes creativity as 'a puzzle, a paradox' (1999, n.p.), while other authors define it as the ability to produce novel and appropriate work through a complex cognitive process [16,17]. Creativity can be taught and nurtured, similar to other skills [18]. Beyond generating outputs, AI can also act as a collaborative partner in the design process [18], facilitating brainstorming and rapid prototyping. For the creative community, which relies on human emotion and interaction, using AI may appear hypocritical, as AI can mimic existing artistic styles with simple prompts [15]. Nonetheless, many creatives have incorporated AI into their processes and would not revert to previous methods. Supporters, like the founders of Midjourney, argue that such tools can enhance imagination, despite differing opinions within the creative community [5]. According to Przegalinska and Triantoro (2024):

Historically, creativity was seen as the exclusive domain of humans, an indication of our unique ability to imagine, innovate, and inspire. However, with the advent of advanced, generative AI systems, we are witnessing an interesting paradigm shift. AI systems, equipped with vast datasets and sophisticated algorithms, can now produce content that rivals, and in some cases surpasses, human-generated works in terms of complexity and aesthetic appeal. Rivalry, however, is not the direction. As we have underlined before, the intersection of human creativity and artificial intelligence is the exciting frontier, teeming with potential

and full of possibilities.

While this view of AI and creativity is optimistic and reflects the current creative landscape, it is crucial to address urgent questions about how AI and creativity can coexist under fair guidelines. If the Creative Industries become overly reliant on AI tools, this raises the question of whether policies should recognise AI tools as co-creators or include them in research frameworks [5]. Additionally, for Wingström et al. [15]:

Scientists often define creativity via an outcome that, in their domain, should be valuable and novel knowledge. Artists focus on the creativity process with a personal perspective and often see that all outcomes have intrinsic value. When we examined the creative processes in the context of AI, we found that AI is approached differently between the two domains. For scientists, AI was a capable but limited tool, whereas the artists more often recognised a co-creative, playful relationship with it (p. 178).

This shifts the educator's focus from the final artefact to the student's ability to navigate and steer the AI-driven creative journey. This perspective aligns with the growing recognition of co-creativity, in which the value lies in the interaction between humans and machines. The authors also point out that creatives are not only more prone to publicly recognising the value of AI in their processes but also consider AI to be creative in its own right [15]. Moreover, authors Przegalinska and Triantoro (2024) also emphasise the importance of co-creativity and argue that 'in a world where a piece of art or a groundbreaking solution can be co-created with AI, society must grapple with the shifting sands of ownership and value attribution.

The debate is also crucial because it raises many questions about authorship, copyright infringement, and where the already fine line between inspiration and copying can be pushed. Several lawsuits have been filed against AI companies for copyright infringement and wrongful use of images available on the web. For Amankwah-Amoah et al. [19]:

Ethical dilemmas loom large, with questions about plagiarism, copyright, and authenticity challenging conventional norms. As consumer behaviour shifts, particularly with growing interest in generative AI, societal expectations transform, prompting introspection on whether people will discern or even care if a work of art is AI-generated. The burgeoning investment in generative AI technology adds another layer to the narrative (p. 6).

Recent cases in the creative industries include Andersen, McKernan, and Ortiz v. DeviantArt, Midjourney, and Stability AI, and Getty Images v. Stability AI [5]. For Amankwah-Amoah et al. [19], AI is not a threat to creativity and must be seen as 'a transformative force, not as a replacement for creativity but as a catalyst for collaboration' (p.4). Yet the authors also caution about the balance between companies using AI-generated content without consulting practitioners and the possible impact on employment for the creative community [19].

On the other hand, Vinchon et al. [20] compare the current paradigm to Josef Schumpeter's 'creative destruction' concept. The authors argue that although many media outlets have reported on AI replacing the workforce across different fields, this will not apply to 'higher-level jobs, including those that utilise creative thinking' [20] (p. 178).

From smaller artists who fear being replaced by AI tools that can be used by anyone and established creators who seem torn on the subject of AI-generated creativity, the winners always seem to be the companies behind these tools [5] that benefit from the lack of clear guidelines and rules applied to such a powerful and fast-paced area.

For educators, establishing a healthy relationship with AI is both a concern and a necessity, as researchers and practitioners explore. Although some have already begun integrating AI into the learning process [21], the learning outcomes remain uncertain. The programmes have yet to fully frame the possibilities of AI within creative education. Education needs to respond to the new generation of creators, who are exploring new territory in fairness and transparency, ethical practice, the fair use of others' work, and the security of their own work [19]. This also means that educators must understand the technology itself and be aware of its rapid shifts to best support students and prepare them for the possibilities and challenges they will undoubtedly face with AI.

Yet education also plays a crucial role in identifying sources of creativity, inspiration, and creative research more broadly. For designers, this also means conducting in-depth research into complex problems through empathy and critical thinking [21]. The authors also point out the initial difficulty of forming these complex concepts and the knowledge they require, as well as the usefulness of AI in education, noting that many tools collect information and transform initial ideas into deeper concepts [21]. Education needs to clearly define the limits of ethical AI use and, therefore, show students how to fairly and transparently incorporate such tools into their craft without compromising their own research process or the depth of their knowledge of the artistic and design fields. For Piskopani et al. [5], 'prompting could become a new artistic skill' (2023) (p. 2), but just how creativity techniques can be implemented, and how to use these prompts, should also be taught.

For many, this means that AI-generated tools should be built 'ethically', with mechanisms to ensure fairness and transparency, and to avoid legal issues with other creators [5]. To some extent, a

few platforms have shown efforts to make this happen, and have already addressed some of these issues through best practices sections and revised terms of use [5], but not all companies seem worried about the biases caused by using other artists and designers works and styles to feed their algorithms, many more efforts and policies need to be put in place. For Piskopani et al. [5]:

Responsible Innovation (RI) can provide an opportunity for people that are often excluded from these discussions to be heard and to influence legislation and policies. AI-generated art can challenge people's values and their perception of the world, but using RI principles to engage artists, critics and audience in the debate could contribute to identify social implications and potential risks of generative AI-based art (p. 4).

Rather than using AI in a disingenuous manner, AI-powered work needs to be thoroughly disclosed, explained, and communicated transparently to enable better understanding among all parties involved and safer use of the technology through greater literacy on the subject [8].

Educators must ensure that students and themselves understand technology to better prepare the younger generations. Curricula should include AI literacy, covering the AI umbrella (i.e., robotics, deep learning), the fields impacted by it, and the fundamentals of ethics in creativity and AI's influence [21]. Concepts of collective creativity and co-creation powered by AI should also be critically assessed and included in school activities and evaluations. While AI is a powerful tool for creators, it remains an assistant to humans and cannot replace them in critical roles [20]. Thus, pathways to work transparently and responsibly with AI should be integrated into education to prepare young people for its evolution, rather than to fear it.

## Methodology

This research investigates the potential impact of generative AI on creative education and how educators can best prepare students for this evolving landscape. The methodology adopts a three-pronged approach that focuses on the pedagogical, instrumental, and logistical dimensions. The first dimension, pedagogical, examines the perspectives of educators and students, particularly within Design programmes. It explores how AI is perceived in the creative process, addressing concerns about plagiarism, originality, ethical considerations, and existing pedagogical approaches that integrate or discuss AI in the classroom. A content analysis of creative curriculum materials from various institutions will identify approaches to teaching creativity in relation to emerging technologies, while recognising the limitations of relying exclusively on publicly available data, which may not capture the 'hidden curriculum' within private Virtual Learning Environments (VLEs).

The second dimension, instrumental, focuses on case studies of prominent generative AI tools used in creative industries. This part evaluates their functionality, applications across creative fields, and suitability for educational settings, using hands-on experimentation to understand their capabilities and potential impact on student learning.

The third dimension, logistical, explores the infrastructure requirements for integrating AI tools into creative education. This includes examining hardware and software needs, technical support considerations, and accessibility challenges, alongside reviewing examples of Higher Education institutions that have successfully implemented AI tools in their creative programmes, highlighting the tools used and the challenges and successes faced during implementation.

## Results

As previously stated, the results section will consist of three main sections of the methods approach, starting with the pedagogical approach of this research and the content analysis of AI-related curricula for higher-ranked higher education institutions in Arts and Design.

### 10 Best Arts and Design Higher Education Institutions: Content Analysis on AI preparedness

This research begins with an examination of the pedagogical approach in creative fields, particularly Design programmes, to assess perceptions of AI in the creative process. The QS World University Rankings (QSWU) and Times Higher Education (THE) rankings in Art & Design for 2024 were compared, revealing only one school in common in their top 10. The THE ranking featured only US-based institutions, leading to the selection of the QSWU ranking. The selection of the top 10 QS-ranked institutions is grounded in the concept of pedagogical leadership, as these elite institutions often serve as trendsetters in creative education and possess significant resources to integrate new technologies [22,23]. Their preparedness serves as a benchmark for global design education. The low 7% mention rate of AI within these leading schools indicates a systemic preparedness gap, suggesting that the broader Art and Design education sector, with fewer resources, is likely even further behind in adapting to advancing technologies. Table 1 lists the 10 highest-ranked institutions on the QSWU website in Art & Design, detailing their rank, score, programmes assessed, AI-related curriculum mentions, and additional findings (Table 1).

**Table 1:** Assessment of the QSWU top 10 worldwide schools under the subject of Art & Design.

| Higher Education Institutions (HEI) / Provenance | QS World Ranking 2024 and score (0/100 pts) | Programmes assessed (undergraduate, graduate, doctorate) | Programmes that mention AI-related content in the curriculum | Notes |
|---|---|---|---|---|
| Royal College of Art (London, UK) | 1st / 98.5 | 32 | 1 programme (Computer Science Programme) which is not part of the Arts & Humanities field. | Although AI is not directly mentioned in any curriculum other than the Computer Science Programme, projects such as the Laboratory for Artificial Intelligence in Design (AiDLab) and Inclusive AI are endorsed by the HEI. |
| University of the Arts London (London, UK) | 2nd / 93.7 | 208 | 19 programmes (of which 10 are outside the field of Arts & Humanities and related to Computer Sciences, Business and Sciences). | Artificial intelligence is highlighted as a faculty interest and a topic for student projects, but these were not counted as in-curriculum mentions. |
| The New School (New York, USA) | 3rd / 92.3 | 126 (49 within Parsons School of Design) | 13 (mostly from Computer Sciences programmes, but also from Communications, Fashion and Design.) | Certificate Programme in AI for Creativity and Leadership. |
| Rhode Island School of Design (RISD) (Providence, USA) | 4th / 91.7 | 32 | 0 | Some articles discuss AI usage by faculty and student projects at RISD, which accepts portfolios with AI-generated works if applicants mention and justify them. |
| Massachusetts Institute of Technology (MIT) (Cambridge, USA) | 5th / 85.3 | 25 (20 at the School of Humanities, Arts and Social Sciences and 5 from the School of Architecture and Planning) | 5 (only considering the Schools of Humanities and Architecture). | The theme of Artificial Intelligence is prominent in the curricula of other schools, such as Engineering, Sloan, and Science, but is less emphasised in the Humanities and Architecture schools. |
| Pratt Institute (New York City, USA) | 6th / 85.1 | 63 (over 5 Schools) | 0 programme, but 3 separate course units mention AI. | Only 3 courses mention AI, including one minor, and the website has an official statement on AI. |

| | | | | |
|---|---|---|---|---|
| Politecnico di Milano (Milan, Italy) | 7th / 83.8 | 76 (over 4 schools) | 1 programme is called 'Artificial Intelligence' | The Politecnico di Milano states on its website that it aims to "form the next generation of experts on Artificial Intelligence" and has a notable history in the field, having introduced its first AI course in 1989 within the Electronic Engineering program. Today, AI courses are part of every master's degree, preparing students for diverse professional roles. The university also offers three MOOCs on AI and has several research groups dedicated to the topic. |
| Aalto University (Espoo, Finland) | 8th / 82.9 | 110 | 6 | Five of the programs focus on Computer Sciences, while one is in the Arts and Design field. AI is also noted in the news and events section of the website. |
| Design Academy Eindhoven (Eindhoven, Netherlands) | 9th / 82.2 | 6 (DAE also proposes a foundation year and a pre-master programme that were not counted here) | 0 | Five programs are in Computer Sciences and one in Arts and Design, with AI mentioned in the news section. |
| School of the Art Institute of Chicago (Chicago, USA) | 10th / 81 | 44 (17 undergraduate, 27 graduate programmes over 22 departments) | 0 | While some graduation works involve AI, the program curricula and department descriptions do not acknowledge it as a topic of interest. |

A total of 10 schools were assessed for information about their curricula on the institutions' websites. As only publicly available data was used, the results may underrepresent the actual level of AI engagement, with only 7% (45 of 645 programmes) mentioning AI. This suggests a significant lack of transparency and institutional commitment, particularly in craft-based schools that may lag in adopting new technologies compared to tech-focused institutions like Politecnico di Milano and MIT.

For example, Pratt Institute had no programmes mentioning AI, though three course units did. RISD, while not mentioning AI in its curriculum, allows AI-generated portfolios with submission guidelines, indicating a need for greater transparency across all institutions. Despite showcasing student AI projects, little is noted about curriculum improvements to incorporate AI, indicating a disconnect between academic validation and industry reality.

HEIs must enhance learning quality and align courses with job market demands as AI becomes an integral aspect of the industry. Current graduates are not adequately prepared for the challenges and opportunities AI presents. Thus, the next phase of research will explore case studies of AI-generated tools successfully integrated into Computer-Aided Design (CAD) software, particularly Adobe Photoshop, Illustrator, and CLO, to better prepare students for the professional market.

## Case studies of AI implementation in existing software used in the creative industries

This section explores the instrumental dimension of this study, focusing on case studies of key generative AI tools used in creative industries: Adobe Photoshop, Adobe Illustrator, and CLO. Although their applications differ, all three have been utilised by digital creators for years before incorporating AI-generated options.

## Adobe Photoshop and Illustrator X AI: a case study

In 2016, Adobe launched Adobe Sensei, described as 'a framework and set of intelligent services for dramatically improving the design and delivery of digital experiences' [34]. Adobe Sensei GenAI is now presented as their 'generative AI for Adobe Experience Cloud [...] your co-pilot to help you connect with more customers' for generating personalised content, humanising conversational experiences, and creating audiences and journeys with increased productivity [34]. In 2022, Adobe Firefly was introduced, utilising Adobe Sensei to enhance generative AI features in Adobe creative apps like Photoshop, Illustrator, and Lightroom (Table 2).

**Table 2:** AI-generated features recently added to Adobe software vs. Opportunities and Challenges.

<table>
<tr><th></th><th>Feature Name with Description link</th><th>Opportunity</th><th></th><th>Challenge</th></tr>
<tr><td rowspan="11">PHOTOSHOP</td><td rowspan="4">Generative Fill</td><td colspan="3">Resources</td></tr>
<tr><td>The company no longer requires users to download as many apps as before; the AI tools are embedded in the existing software.</td><td></td><td>AI-powered features can be computationally intensive and require powerful hardware.</td></tr>
<tr><td colspan="3">User Acceptance</td></tr>
<tr><td>Prompts can now be used to define what needs to be done to the image, and fewer tools are required to use or learn.</td><td></td><td>The interface for AI tools needs to be intuitive and user-friendly to maximise their effectiveness.</td></tr>
<tr><td>Spot Healing Brush tool</td><td colspan="3">Ethical Considerations</td></tr>
<tr><td>Remove tool</td><td colspan="3" rowspan="7">Excessive reliance on AI tools can hinder the development of essential image editing skills. AI-generated designs raise questions about authorship, ownership, and copyright.</td></tr>
<tr><td>Generate Image</td></tr>
<tr><td>Generative Expand</td></tr>
<tr><td>Sky Replacement</td></tr>
<tr><td>Curvature Pen tool</td></tr>
<tr><td>Generate Background Content-Aware Fill</td></tr>
<tr><td>Match Font Neural Filters</td></tr>
</table>

| | | |
|---|---|---|
| | Smart Objects | Excessive reliance on AI tools can hinder the development of essential image editing skills. AI-generated designs raise questions about authorship, ownership, and copyright. |
| | Match Font Neural Filters | |
| | Smart Filters | |
| | Preserve Details 2.0 | |
| ILLUSTRATOR | Generative Recolor | |
| | Puppet Warp | |
| | Text to Vector Graphic | |
| | Curvature tool | |
| | Text to Pattern | |
| | Global Editing | |
| | Generative Shape Fill | |

The adoption of AI-generated tools like Generative Fill shifts the pedagogical focus from technical mastery to the student's ability to 'steer' the creative process. These tools necessitate a fundamental shift in design pedagogy, moving students from technical execution (e.g., manual masking) to artistic curation. Educators are using tools like 'Generative Fill' for rapid prototyping, allowing students to quickly explore multiple visual directions. However, a challenge is 'prompt fatigue,' where students may settle for the first AI result rather than iterating. Thus, the approach must focus on creative prompting, teaching students to deconstruct AI outputs to refine them and retain essential image-editing skills [24]. The integration of AI into Adobe apps marks a significant milestone, offering a user-friendly approach to tedious tasks. However, this evolution raises ethical concerns that need to be addressed while fostering AI literacy and exploring its innovative potential.

## CLO X AI: A Case Study

CLO is a Korean company specialising in 3D fashion design software, founded in 2009 as 'CLO Virtual Fashion' [34]. Its software is used by brands like Hugo Boss, Levi's, Adidas, and Under Armour [36; 40], as well as by creatives in 3D modelling and animation.

Recently, the software has begun integrating AI elements to enhance its capabilities. This examination will focus on the current state of AI integration in CLO and its potential industry impact. Despite making progress, CLO's AI implementation is still in its early stages compared to other software. Currently, it offers three AI-driven features, detailed in Table 3.

**Table 3:** AI-generated features recently added to CLO software vs. Opportunities and Challenges.

<table>
<tr><th rowspan="2">Feature's name</th><th rowspan="2">Description</th><th>Opportunity</th><th>Challenge</th></tr>
<tr><td colspan="2">Data Quality</td></tr>
<tr><td rowspan="5">AI Texture Generator (v. 7.3)</td><td rowspan="5">Textures can be auto-generated with prompts instead of using software or web downloads, and then applied to 3D meshes or 2D patterns.</td><td>Data quality is crucial for AI models to perform accurately.</td><td>Collecting high-quality data for fashion-specific applications can be challenging.</td></tr>
<tr><td colspan="2">Resources</td></tr>
<tr><td rowspan="3">No additional software is required besides normal updates.</td><td rowspan="3">Training complex AI models demands high computational power.</td></tr>
<tr><td colspan="2">User Acceptance</td></tr>
<tr><td rowspan="2">CLO users have embraced the AI features, encouraging the company to add more options.</td><td rowspan="2">Designers may resist AI tools if they view them as a threat to their creativity or control over the design process.</td></tr>
<tr><td>AI Graphic Generator (v. 7.3)</td><td>Graphics can be generated automatically using various prompts and added to 3D meshes or 2D patterns.</td></tr>
<tr><td rowspan="2">Avatar Face-Generator / Auto-convert to face (beta 7.3 version/no longer available)</td><td rowspan="2">Using a few prompts, photorealistic images of people can be generated and then directly converted into the avatars' skins. The same tool can be used with real photographs for more human-like avatars.</td><td colspan="2">Ethical Considerations</td></tr>
<tr><td colspan="2">AI algorithms can perpetuate biases in the training data, leading to unfair or discriminatory outcomes.</td></tr>
</table>

CLO has quickly embraced AI, but its implementation is still developing compared to other software. The primary AI-driven feature is the AI Texture Generator, which helps with material sourcing by allowing students to create bespoke digital textiles from prompts, freeing them to focus on garment construction and problem-solving. An effective pedagogical approach involves AI co-creation workflows that require students to justify the originality of AI-generated textures in their collections. However, the digital divide presents a challenge, as these features need high-performance hardware, potentially disadvantaging students without access. Educators should offer creative labs where students can experiment with CLO without grading pressures

The AI graphics generator works similarly, while a third feature, the AI face generator with Auto-convert to Avatar, was tested in the Beta version of software 7.3 but is unavailable in version 2024.1. These features use machine learning algorithms to analyse input images for realistic textures, improving the design process and reducing the need for multiple software programs.

Though the integration of AI into CLO has transformed the design process and shows great potential, challenges related to data quality, user resources, acceptance, and ethics need to be addressed (Table 2). Research and development should aim to expand AI capabilities for a more efficient design platform. The shift from industry to educational integration is critical for professional preparedness [25]. As software like Adobe and CLO incorporate AI, higher education must transition from a descriptive understanding to a functional, ethical integration [26]. If this scaffolding is not provided, graduates may have strong manual skills but lack the algorithmic knowledge and ethical discernment necessary to manage AI-augmented workflows [27,28]. The next section discusses how institutions can adapt to these changes.

## Existing applications of AI in Creative Education and proposed recommendations

A recent article by Design Week discusses how UK universities are adapting to AI in Arts and Design courses [29]. It highlights the Russell Group's five principles for using generative AI in education, which include promoting AI literacy among students and staff, ensuring ethical use, maintaining academic integrity, and sharing best practices as technology evolves [30]. In the U.S., Ringling College of Art and Design has launched an AI Undergraduate Certificate Programme to help students navigate AI's impact on creative industries [31]. This trend emphasises equipping students with the skills to effectively use AI tools in their fields.

As AI initiatives grow, the need for AI literacy in creative universities becomes more urgent. The study presents four key recommendations:

a) Build AI literacy among faculty and staff, alongside responsible AI practices.

b) Revise curricula to include clear guidelines for AI tool usage across academic contexts.

c) Learn from software companies by integrating AI into the creative workflow.

d) Establish Creative AI labs for students and faculty to collaborate on AI in the Creative Industries, funded by cross-departmental grants, providing a low-pressure environment for exploration.

For a detailed model, see Table 4.

**Table 4:** Proposed recommendations for Institutional AI Integration in Art and Design.

| Recommendation | Practical Implementation Model | Opportunity |
|---|---|---|
| 1. Faculty AI Literacy | Mandatory faculty staff workshops and Continuing Professional Development (CPD) focused on AI co-creation workflows, prompting as an artistic skill, and navigating AI-driven ethical dilemmas. | Funded through institutional teaching and learning enhancement budgets; integrated into annual staff reviews. |
| 2. Curricular Transparency | Validation Revision where AI-literacy as a learning outcome in course handbooks and assessment rubrics is explicitly included. | Led by Departmental Heads and Quality Assurance teams to ensure rapid validation cycles. |
| 3. Instrumental Integration | Industry-Aligned training with hands-on training and AI-embedded tools (e.g. Adobe Sensei and CLO). | Educational partnerships with software providers to ensure access to the latest generative features. |
| 4. Creative AI Labs | Interdisciplinary playgrounds (Experimental spaces within labs) where students test the pitfalls/mistakes of/with AI without grade-related pressure. | Funded via cross-departmental grants (e.g., Arts & Computer Science cross funding) supported by interdisciplinary playground infrastructure. |

The recommendations in Table 4 address the institutional preparedness gap and adoption crisis identified earlier. By moving from ad-hoc classroom experiments to formalised cross-departmental creative labs and mandatory faculty development, Higher Education Institutions can adopt a proactive stance toward generative AI. This approach caters to AI co-creation while maintaining ethical integrity and creative depth. Additionally, it must address digital access inequalities to prevent the reinforcement of socioeconomic hierarchies. Ultimately, this framework serves as a roadmap for aligning pedagogical philosophies with rapid technological shifts, making structural changes essential for the relevance and rigour of creative higher education in an AI-enhanced landscape [32-42].

## Conclusion

This paper explores the impact of generative AI tools on Arts and Design education and how higher education institutions (HEIs) can prepare students for this evolving landscape. Our findings indicate that AI presents both challenges and opportunities in creative education. AI tools can enhance creativity, streamline repetitive tasks, and offer new avenues for exploration. However, educators must navigate ethical concerns about originality and misuse, which require appropriate training and resources.

Research focused on the creative disciplines within the QSWU's top 10 HEIs through content analysis of curricula. Future studies should examine AI's impact across a broader range of schools and creative fields and track students' experiences with AI integration. We recommend developing pedagogical frameworks and training programs to help faculty integrate AI responsibly.

Collaboration between educators, technology specialists, students, and creative professionals is essential for implementing responsible AI practices. Institutions need to invest in infrastructure and resources to support AI integration. Additionally, we emphasise the importance of addressing the digital divide, as institutions and students with financial means to access high-cost tools gain a competitive edge, potentially exacerbating socio-economic inequalities in the creative industries.

## Statement on Artificial Intelligence Usage

Throughout the preparation of this work, the authors employed Grammarly to improve the language and flow of the text. Following the use of this tool/service, the authors thoroughly reviewed and edited the content as necessary, assuming full responsibility for the publication.

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