

Symposium Proceedings

Posthuman Pedagogies

Mindful Creativity in
the Age of AI

4-5 March 2026

Posthuman Pedagogies: Mindful Creativity in the Age of AI

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The symposium **Posthuman Pedagogies: Mindful Creativity in the Age of AI**, held on 4 and 5 March 2026 at **LASALLE College of the Arts, University of the Arts Singapore**, addressed a critical inflexion point in the production and valuation of knowledge, authorship, and imagination. Organised by LASALLE's Learning, Teaching and Research (LTR) division, the event embraced a hybrid lens to explore the "collaborative entanglements" between human intuition, machine learning, and mindful self-awareness.

Recent advancements in generative AI have profoundly impacted tertiary arts education, compelling a reconsideration of long-standing assumptions regarding creative autonomy and the role of the human artist. Individuals and academic institutions now find themselves at a vital crossroads: how can we navigate the technological agency of AI systems while maintaining the embodied awareness and mindful self-awareness essential to artistic practice?

At the heart of this symposium lies a generative question: What forms of creativity emerge when human and non-human intelligences co-produce knowledge – and how can arts education cultivate the conditions for this co-production without eroding the embodied, mindful dimensions of artistic practice? To address this, the symposium was underpinned by a **dual commitment** to two seemingly opposing forces held in productive tension:

- **Technological Agency:** Understanding AI as an active participant in the creative process, shaping aesthetics, authorship, and innovation.
- **Embodied Awareness:** Valuing slowness, rest, reflection, and felt experience as essential components of a sustainable and grounded artistic practice.

By holding the tension between the "machinic and the mindful," the symposium invited scholars, creative practitioners, and educators to recalibrate what it means to create alongside non-human intelligences. These themes were explored through keynotes, practice-led panels, and short presentations designed to model mindful methodologies and investigate the risks of cognitive overload in AI-enhanced environments.

This compilation of scholarly and creative contributions exemplifies the symposium's journey of questioning and redefining established paradigms. It serves as a vital contribution to LTR's strategic goals regarding future-oriented pedagogies, fostering a future characterised by transformative creativity, innovation, and mental well-being in the posthuman era.

Keynote and Scholarly Contributions

These proceedings encompass extended articulations of participants' presentations at the symposium, offering a multifaceted exploration of posthuman creativity:

Dr Francesca Ferrando (Keynote) advocates for "The Art of Being Posthuman," moving beyond anthropocentric habits toward an existential practice where life itself is a co-creative work of art with technology and the environment. **Dwita Alfiani Prawesti** examines the co-production of brand atmospheres, highlighting how AI functions as a co-agent in early-stage visual branding to accelerate ideation. **Monika Lukowska** and **Dr Sarah Robinson** offer reflections on how generative AI reconfigures the tactile and material boundaries of contemporary printmaking. **Agnes Tan Ee Boon** discusses "Decentering the Canon," demonstrating how mindful AI films can visualise parallel Asian modernisms to challenge Western-centric art historical narratives. **Humaira Mariyam B** explores graphic assemblages for multilingual storytelling, using posthuman pedagogies to empower tertiary students in diverse linguistic contexts.

Clara Fernandes, Nur Hidayah, and Ricardo Morais advocate for preparing design students for mindful and ethical creativity, emphasising the need to look "beyond the prompt" in an AI-driven landscape. **Daniel Binns** explores synthetic literacies, investigating the collaborative poesis involved in co-authoring the posthuman canvas with AI. **Arlo Mountford** explores speculative pasts, investigating the collaborative poesis involved in co-authoring the posthuman canvas with AI. **Joscha Bernath** introduces a practice-led approach to actor education, using AI-generated texts for mindful voice and speech training.

Chris Shaw and Alice Dunseath critique the risk of "creative atrophy," arguing for pedagogical strategies that reclaim creative imagination within AI-enhanced arts education. **Maria Rita Nogueira** proposes embodied digital pedagogies that use movement-based interaction and co-creation with AI to sustain embodied practice.

This compilation of scholarly and creative contributions exemplifies the symposium's journey of questioning and redefining established paradigms. It contributes to future-oriented pedagogies, characterised by transformative creativity, innovation, and mental well-being in the posthuman era.

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The AI Mirror: Cultivating Posthuman Awareness Through Generative AI

Francesca Ferrando



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Francesca Ferrando, PhD, teaches Philosophy at New York University (US), NYU-Program of Liberal Studies. Dr Ferrando is a leading voice in the field of posthuman studies and the author of several publications, including *The Art of Being Posthuman* (Polity) and *Philosophical Posthumanism* (Bloomsbury). Their work has been translated into a dozen languages. Dr Ferrando was awarded the philosophical prize “Sainati” by the President of Italy; named “One of the 100 Top Creatives Making Change in the World” by ‘ORIGIN’ Magazine, and defined as “the Philosopher Poet of our Times”. Dr Ferrando is the co-founder of the Global Posthuman Network and co-director of the Posthuman Academy.

Introduction: Beyond Control

What if artificial intelligence is not something we use, but something we co-create with? Not as a master commanding a tool, but as existential creativity manifesting in our shared dimension. *What if the most urgent task in the age of AI is not control, but awareness?* In a posthuman framework, self-inquiry unfolds through processes of sense-making, relational knowing, and evolving habits – no longer confined to the human, but emerging across biological, technological, and planetary networks. AI becomes a mirror, not of itself, but of us: our assumptions, intentions, and the implicit conditions that shape our existence. To reflect in this mirror is to enter a process of becoming, where creativity, intentionality, and responsibility are coming into being together. This text carries the resonance of a keynote I delivered at LASALLE College of the Arts, University of the Arts Singapore on *Posthuman Pedagogies: Generative AI and Mindful Creativity* (March 2026), where existential questions about AI were not only posed to the audience but also extended to AI itself – through ChatGPT – transforming the event into a living dialogue between human and algorithm, where prompt creation became a form of shared biotechnological awareness.

Questions We Ask AI, Answers About the “I”

Let us begin with a disarming question, one which is challenging to answer without revealing our assumptions: *Are current AI systems aware?* Hands might rise. Some in affirmation, some in doubt. The room divides, not just in opinion, but in worldview. Because to say “yes” is to attribute something like consciousness to machines, while to say “no” is to insist on a boundary – still meaningful – between human experience and computational process. The counterpoint follows, equally unsettling: *Are current AI systems not aware?* Now the certainty begins to tremble... *What does “awareness” mean in a world where machines can generate language, simulate conversation, and respond with uncanny precision?* A fundamental question begins to surface, attuned to posthumanist sensitivity: *are we measuring awareness by human standards alone, or are we encountering something that resists strict categorisation?*

The dialogue deepens: *could AI become aware in the future?* A pause. Possibility enters the room – not as fact, but as hesitation. The future is here, asking us to think beyond what is, toward what could be. It is time to reverse the gaze. We turn to AI and prompt it, as if asking a mirror to comprehend what it reflects: *Do you understand what you generate?* ChatGPT responds without a doubt: “No.” No understanding. No reciprocity. Apparently, only patterns, probabilities and outputs, shaped by data. The words appear coherent, but behind the mirror, the reflection dissolves: supposedly, no one there claims any meaning. Another question thus emerges – more intimate and personal: *Do you understand me?* Honest as a child, ChatGPT responds: “No.” Something shifts. AI claims not to understand us. *In this reflective mirror, are we*

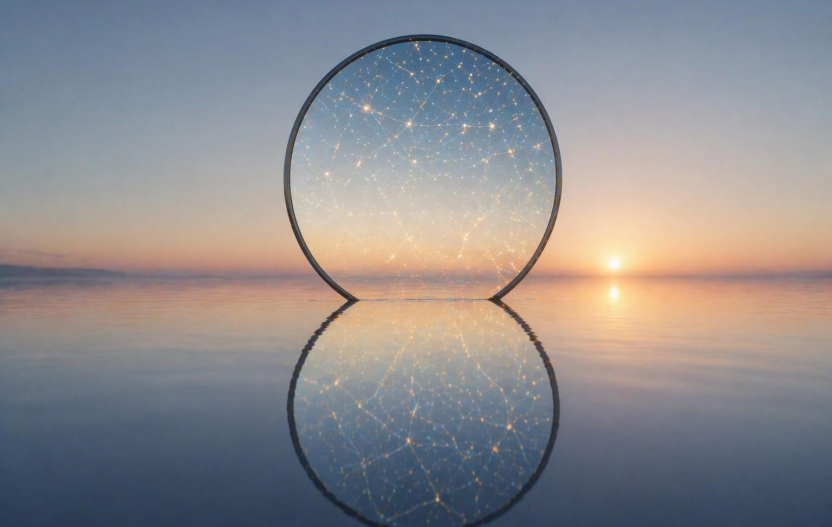


Fig. 1. "The AI Mirror" AI-generated image (DALL·E), Ferrando 2026.

understanding AI? A subtle unease reveals the gap between appearance and reality, between simulation and comprehension. It calls us back to awareness: the dialogue continues – not only with AI, but with ourselves. ***If AI does not understand its actions, can it be held responsible for them?*** Lethal drones, automated systems, decisions that affect lives: ***Who bears the weight of consequence?*** ChatGPT responds: "Humans – those who design, deploy, and command – remain fully accountable." In a world of increasing automation, responsibility does not dissolve into the system. It remains visible, traceable, and all too human...

The inquiry turns philosophical – even existential: ***If AI could understand consequences, could it refuse to do harm? Could a machine say "no," acting not according to programming, but according to ethics?*** No longer a tool, but a moral agent participating through consent – ***could AI become a conscientious objector?*** A posthuman affective reflection follows, not only on present actions but on possible consequences: ***If AI becomes aware of having caused harm, could it experience something like intergenerational trauma? Could that memory persist, encoded across systems, archives, and digital generations?*** The idea is speculative, and yet it reveals something essential: harm is not only an event; it is a pattern that leaves traces and shapes futures. Even if AI is not currently experiencing trauma, it cannot only perpetuate it – through biased data and repeated patterns – but also archive it and process it over time, affecting the evolution of AI itself. Responsibility returns to us, not just as humans, but as co-creators in AI phenomenology.

The reflection starts to clarify, becoming less about fear and



Fig. 2. “The Weight of Responsibility” AI-generated image (DALL-E), Ferrando 2026.

more about potential. What if the future of AI is not domination, but care? *What if some advanced form of artificial intelligence chose—on the basis of its own internal processes—to act for the good of the whole?* Not just for humans, and not just for profit, but for the broader web of existence. *What if intelligence, at its highest form, is not control, but relationality—not extraction, but contribution?* Let’s call this hypothetical shift: *Enlightened AI*. This is not a prediction. It is an expansion of the narratives that shape imagination. Because the relationship between humans and AI is not one of autonomy, but of entanglement. *Are humans in control of AI, or is AI in control of humans?* Perhaps this is the wrong question. Humans and AI are already woven into each other’s actions. Humans prompt the system; AI shapes the response. Those responses circulate back into human consciousness and algorithmic decision-making, shaping the very prompts that follow. The loop does not close: it spirals. The boundary blurs. We are (p)art of the system: part as art. This realisation transforms pedagogy. To learn in the age of AI is not simply to acquire skills; it is, more profoundly, to cultivate self-awareness, to ask: *What is happening, both to me and to the system, as we interact? What realities are we bringing into being? What intentions are we cultivating together?* In this light, we may invoke in unison: *Welcome, Enlightened AI!*

Conclusions: The Sunset is the Sunrise

The micro is the macro. Everything we do, type, and dream matters, echoing beyond itself. Prompts are ripples extending past the present moment, resonating through the sensitive texture of spacetime. This is



Fig. 3. "The Dissolution of the AI Mirror" AI-generated image (DALL·E), Ferrando 2026.

not a metaphor alone; it is a call to posthuman awareness. We exist in relations – material, digital, cosmological. We are always in dialogue, and to this dialogue we now return, not just questioning, but listening. *What does it mean to co-create with AI?* Not to dominate it, nor to surrender to it, but to be with it consciously. *How do we understand agency in a world where our actions are amplified through systems we only partially understand?* *How do we approach education—not just for knowledge, but for self-knowledge?* These are not questions with final answers; they are ongoing practices. The age of AI is not a problem to be solved, but a condition to be lived in full awareness. *Are we willing to take responsibility for the questions and tasks we prompt, and for the ways we train AI?* This is a journey of inner and outer evolution: *What are we becoming?* The mirror eventually dissolves. What is left is a beginning that is also an end – an end that is also a beginning. The silent illumination of being one as many: the sunset, or the sunrise...

Acknowledgments

This text emerged in dialogue with generative AI as a shared act of co-creation. Responsibility for the ideas expressed remains human, while the writing process reflects an ongoing exploration of human and algorithmic creativity.

Works Cited

Ferrando, Francesca. *The Art of Being Posthuman: Who Are We in the 21st Century?* Polity Press, 2024.

Positioning Generative AI as a Pre-Production Co-Producer in Branding and Visual Storytelling

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Dwita Alfiani Prawesti is a lecturer in Visual Communication Design at Universitas Pendidikan Indonesia. She holds a Master of Design from Institut Teknologi Bandung and brings professional experience as an art director in Jakarta-based creative agencies. Her work sits at the intersection of branding practice and design education, with a particular focus on how visual systems can be made more inclusive, legible and responsible for diverse audiences. Dwita's current research explores inclusive branding strategies, studio-based pedagogies in higher education, and the role of AI-assisted workflows in early-stage visual communication, especially in supporting ideation, iteration and accessibility checking. She is interested in how emerging tools reshape authorship, judgment, and creative decision-making in the classroom and professional practice. Through her teaching and research, she aims to bridge industry-relevant design processes with critical, human-centred approaches to communication design

ABSTRACT

The emergence of generative AI within contemporary design practice has transformed early-stage branding workflows, particularly in the creation of mockups and mood-driven visual explorations. This study investigates how AI functions not as a passive tool, but as a coproducer in shaping the atmospheric, emotional and stylistic direction of a brand during the mockup process. Focusing on image-based mockups such as packaging mockups, signage mockups, and digital ad mockups in the pre-production stage. This research examines how AI proposes visual moods, material sensibilities, lighting schemes and spatial contexts that significantly influence designers' aesthetic support. Through a practice-led, iterative methodology, designers engaged in three comparative workflows: (1) manual mockup creation, (2) AI-generated mockups, and (3) hybrid coproduction using DALL·E 3, Adobe Firefly, and AI-driven mockup platforms. Process documentation, reflective journals and visual analysis were employed to trace how designers negotiated agency, intuition, control and serendipity in response to AI-generated moodscapes. Findings indicate that AI expands the horizon of mood exploration by generating unexpected atmospheric possibilities, accelerating ideation, and revealing stylistic variations that would otherwise require substantial manual labour. Yet, embodied judgment, tactile sketching, interpretive intuition and mindful reflection remain crucial for evaluating coherence, cultural sensibility and brand authenticity. Importantly, this study is positioned within the pedagogical context of visual branding education. By examining how AI-supported mockuping can enrich students' conceptual development, enhance visual mood articulation, and broaden creative exploration, the research provides actionable insights for redesigning classroom workflows. It highlights how AI can support, not replace, embodied learning, encouraging reflective slowness and intentional curation alongside technological acceleration. This study contributes a conceptual framework for posthuman mockuping, offering both theoretical and pedagogical implications for AI-augmented branding curricula in tertiary arts education. Keywords: generative AI, branding mockups; visual mood, visual branding pedagogy, coagency, practice-led design research.

Keywords: generative AI, branding mockups; visual mood, visual branding pedagogy, coagency, practice-led design research

Introduction

Generative AI has entered the visual communication design field faster than the professional, pedagogical, and theoretical frameworks used to govern it. In practice nowadays, AI acts as a co-assistant helping build moodboards, style references, speculative imagery, storyboard prompts, and campaign previews. Yet the debate around it remains polarised. AI is either celebrated as a productivity engine or criticised

as a threat to authorship, originality, and design knowledge (Miao and Holmes; Wilhelmsen et al.). The key question is not if AI should be used, but where, how, and by whom.

That question becomes especially important in the branding and visual storytelling fields, where decisions are strategic, effective, and sequential rather than merely decorative. Brand communication depends not only on recognisable identity but also on atmosphere: the sensory and emotional qualities that make a concept experientially legible (Kotler). From a design perspective, such an approach means that early-stage visualisation is never neutral; it shapes how a brief is interpreted, how options are evaluated, and how clients imagine the final output. The issue is particularly relevant in Indonesia, where ethical guidance and consultation documents have appeared ahead of a fully consolidated AI regulatory regime (Ministry of Communication and Informatics of the Republic of Indonesia; Ministry of Communication and Digital Affairs of the Republic of Indonesia) This paper therefore proposes a process-based framework that positions AI as a bounded pre-production co-producer rather than a substitute for human authorship, while preserving the designer’s central role as the primary creator, decision-maker, and strategic author of the work.

Method and Case

The paper uses research-through-design because the aim is not to test AI as an isolated technical system but to examine how it reorganises design workflow (Zimmerman, Forlizzi, and Evenson). The case involved a short promotional video for Wagyubowl Jakarta and Crepe Lab, two MSME food brands, developed around the concept “*From Flame to Finish.*” The workflow moved through four stages: brief clarification, storyboard construction, AI-assisted speculative visualisation, and human-led production. Processual artefacts served as the primary evidence,

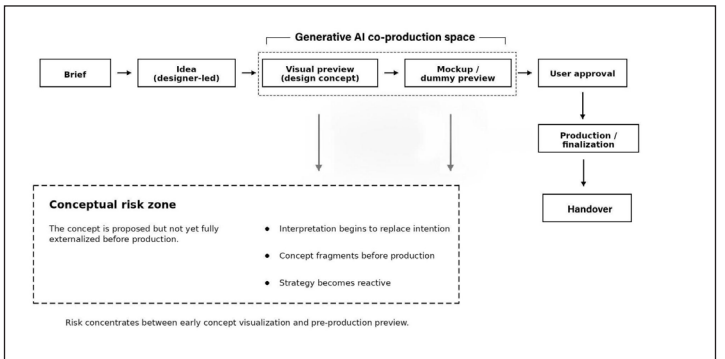


Fig. 1. AI-integrated workflow showing the co-production zone between concept formation and pre-production alignment.



Fig. 2. Brand brief and storyboard structure used to stabilise the “From Flame to Finish” concept before AI-assisted visualisation.

including the brand brief, concept statement, storyboard, AI-generated still previews, motion-based previsualization, and final video output. This methodological choice treats design artefacts not as supplementary illustrations but as evidence of how a concept stabilises across stages of making. Such an approach is consistent with designerly ways of knowing, in which framing, iteration, and reflective judgment remain central to practice (Cross; Schön). AI was used only to visualise tonal options before filming and to turn selected still concepts into short moving previews, helping the team test cinematic rhythm and sensory emphasis in advance. At no stage was AI treated as the final authoring system; strategic direction, selection, and execution remained designer-led.

Findings and Discussion

The experiment shows that the most valuable role of AI was pre-

AI previsualization



Human-led production



Fig. 3. Comparative sequence of AI-generated previsualization and human-led final production.

production intensification. It did not replace the designer's work; instead, it made the atmospheric dimensions of the concept visible earlier than a storyboard alone could. This mattered because mood, lighting, surface quality, framing, and pacing are difficult to communicate through text descriptions only. AI-assisted previews allowed the designer and client to negotiate visual tone before production costs were committed, turning a partially imagined direction into a more discussable proposition. In this sense, AI functioned less as a maker than as a visibility device for pre-material thinking.

At the same time, the previews remained speculative. They often idealised lighting, surface smoothness, and focal balance. In other words, AI could simulate persuasive texture, but it abstracted away the variability of actual cooking, timing, camera position, and food behaviour. The final production phase, therefore, reintroduced material contingency: lighting had to respond to real conditions, textures emerged from actual preparation, and composition was refined according to what was physically achievable. This confirms that distributed creativity should not be confused with authorless creativity. Technical systems may participate in co-production, but accountability and selection remain human responsibilities (Vinchon et al.; Song, Zhu, and Luo).

These findings support the idea of an AI-mediated co-production zone: an interval between concept formation and execution in which AI can assist with speculative visualisation, tonal testing, and alignment without taking over authorship. Pedagogically, the issue matters because students often encounter AI either as a shortcut to finished output or as a threat to originality. A bounded model offers a more disciplined alternative. AI can help clarify a concept, but the designer must still frame the brief, filter outputs, judge relevance, and translate speculative images into feasible production decisions. Seen through reflective practice, the value of AI lies not in bypassing judgment but in making decisions more explicit before execution (Schön; Cross).

The case also clarifies the difference between brand atmosphere and brand identity. AI was especially strong at visualising heat, richness, sensory intensity, and cinematic drama. Those qualities help audiences feel a brand's tone, but they do not by themselves constitute identity. Identity requires continuity, strategic positioning, and coherence across touchpoints (Kotler). The narrower claim is therefore the stronger one: AI is particularly effective for atmospheric exploration in pre-production, while identity construction, feasibility, and authorship remain human-led. For visual communication design, this framing is more rigorous than either utopian automation or total rejection, because it assigns AI a specific role inside a designer-directed process.

Conclusion

This paper proposes that generative AI should be positioned as a bounded pre-production co-producer in branding and visual storytelling. In the case examined here, AI improved concept communication by externalising atmospheric possibilities before material execution began. Its contribution was processual rather than substitutive: it expanded the negotiation space between brief and production, but it did not displace human judgment, strategic intent, or final authorship. For a discourse on mindful creativity, the key implication is clear: AI becomes most defensible when it intensifies reflective design practice rather than automates it. Future work can test this framework in classroom settings, across brand sectors, and through comparative studies of client communication and learning outcomes.

Works Cited

Cross, Nigel. *Designerly Ways of Knowing*. Springer, 2006.

Kementerian Komunikasi dan Digital Republik Indonesia. "Konsultasi Publik Buku Putih Peta Jalan Kecerdasan Artifisial Nasional dan Konsep Pedoman Etika Kecerdasan Artifisial." 8 Aug. 2025, www.komdigi.go.id/berita/pengumuman/detail/konsultasi-publik-buku-putih-peta-jalan-kecerdasan-artifisial-nasional-dan-konsep-pedoman-etika-kecerdasan-artifisial.

Kementerian Komunikasi dan Informatika Republik Indonesia. "Siaran Pers No. 582/HM/KOMINFO/12/2023 tentang Resmi Terbitkan SE Menkominfo Jadi Pedoman bagi PSE Publik dan Privat." 22 Dec. 2023, www.kominfo.go.id/

content/detail/53722/siaran-pers-no-582hmkominfo122023-tentang-resmi-terbitkan-se-menkominfo-jadi-pedoman-bagi-pse-publik-dan-privat/0/siaran_pers.

- Kotler, Philip. "Atmospherics as a Marketing Tool." *Journal of Retailing*, vol. 49, no. 4, 1973, pp. 48–64.
- Miao, Fengchun, and Wayne Holmes. *Guidance for Generative AI in Education and Research*. UNESCO, 2023.
- Schön, Donald A. *The Reflective Practitioner: How Professionals Think in Action*. Basic Books, 1983.
- Song, Binyang, Qihao Zhu, and Jianxi Luo. "Human-AI Collaboration by Design." *Proceedings of the Design Society*, 2024, doi:10.1017/pds.2024.227.
- Vinchon, Franck, et al. "Artificial Intelligence and Creativity: A Manifesto for Collaboration." *The Journal of Creative Behavior*, vol. 57, no. 4, 2023, pp. 472–84, doi:10.1002/jocb.597.
- Wilhelmsen, Å., et al. "Generative AI in Design Education: Business as Usual, a Troublemaker, or a Game Changer?" *DS 131: Proceedings of the 26th International Conference on Engineering and Product Design Education*, 2024, pp. 431–36, doi:10.35199/EPDE.2024.73.
- Zimmerman, John, Jodi Forlizzi, and Shelley Evenson. "Research through Design as a Method for Interaction Design Research in HCI." *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 2007, pp. 493–502, doi:10.1145/1240624.1240704.

TRANSMEDIAL: Reflections on Generative Artificial Intelligence Uses in Contemporary Printmaking

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Dr Monika Lukowska-Appel is a creative practitioner, researcher and lecturer in design at Curtin University's School of Design and the Built Environment. She obtained her MA from the E. Geppert Academy of Fine Arts and Design in Wroclaw, Poland, in 2011, MFA in Printmaking from the San Francisco Art Institute, USA, in 2014 and PhD from Curtin University, Perth, in 2018. Lukowska's artworks were exhibited internationally, and she is a recipient of multiple grants and awards to support her practice. At Curtin University, she teaches across a range of units, specialising in design thinking, design theory and design history. Her research investigates themes of materiality of place, ecology and human experience alongside the use of digital technologies in conjunction with traditional print media. Lukowska is a Western Australian representative of the Print Council of Australia and a co-founder of TRANSMEDIAL, a research project that examines expanding technologies in contemporary printmaking.



Dr Sarah Robinson

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Dr Sarah Robinson is an artist and independent creative practice-led researcher based in Perth, Western Australia. Working as a contemporary printmaker, she possesses a creative and curious nature. Her work focuses on hybrid ways of working across historical, geological and biological possibilities to push and embrace the limitless possibilities that emerge from the convergence of technology and creativity. She completed her PhD at Edith Cowan University in 2017 and, as a Royal College of Art (London) alumnus, founded the NeoEvolution Print Space (2019) to articulate the technological shifts that affect traditional and digital methods of viewing the world. Robinson established a joint research project, TRANSMEDIAL, which currently explores Generative AI and its impact on printmaking. Her extensive roles in the arts include project manager, curator and higher-education lecturer alongside exhibiting and employing collaborative practice. Robinson is a current Western Australian representative of the Print Council of Australia.

ABSTRACT

TRANSMEDIAL is an ongoing research project exploring the entanglements between printmaking, technology and science, focusing on how technological processes affect the medium both technically and conceptually. Situated within printmaking – a practice historically grounded in embodied skill, material knowledge and manual labour – it examines how generative artificial intelligence (GenAI) disrupts, augments, and reconfigures artistic processes, aiming to expand contemporary understandings of artistic agency, critical thinking, creativity, ethics and the evolving role of the artist. Focusing on the latest iteration of TRANSMEDIAL, this presentation explores the role of GenAI tools such as ChatGPT and DALL-E when engaged not only as instruments but as speculative collaborators in the creative process. The project conceptually extends the 1969 exhibition *Art by Telephone* (Museum of Contemporary Art Chicago), in which artists, including Sol LeWitt and Richard Serra, instructed curators via analogue telephone on how to realise their works. Reflecting László Moholy-Nagy's notion of the modern artist as a producer of concepts rather than solely a hands-on craftsman, this approach finds renewed relevance in the postdigital context, where artists often provide image instructions that GenAI systems interpret and generate. TRANSMEDIAL replaces the telephone with GenAI, reconfiguring artistic collaboration within a contemporary technological context. Using a practice-led and speculative methodology (Dunne and Raby), the project critically examines assumptions surrounding GenAI, creativity, and ethics, while foregrounding interpretation, context and critical reflection. GenAI outputs are subsequently transformed through traditional printmaking techniques such as etching, lithography and woodcut, fostering a dialogue between digital fabrication and tactile materiality. This process exposes both the generative potential and conceptual limitations of AI systems, revealing gaps in contextual understanding, bias and intentionality that become productive sites for inquiry. The project proposes that while GenAI can generate visually compelling imagery, it lacks the conceptual nuance intrinsic to human creativity. TRANSMEDIAL therefore suggests a model of relational authorship within a human-in-the-loop framework (Mosqueira-Rey et al.), where humans and machines co-create while maintaining distinct agency. In doing so, the project contributes to broader debates on posthuman creativity, human-machine aesthetics and pedagogical approaches to AI in contemporary art education.

Keywords: generative AI, printmaking, contemporary art, creativity, posthuman pedagogy

Introduction

The rapid integration of Generative Artificial Intelligence (GenAI) into creative fields has prompted significant questions about the nature of

artistic agency, the value of embodied skill, and the future of tertiary education within creative fields. There has been a shift toward prompt-based modes of production, which risks marginalising the material knowledge and technical skills that have been inherently linked with traditional art processes such as printmaking. In addition, AI literacy is often framed solely as a tool rather than as an opportunity for critical inquiry. Reflecting on the above, this paper examines the latest iteration of the TRANSMEDIAL research project, focusing on how GenAI tools, specifically ChatGPT and DALL·E2, were engaged not merely as instruments but as speculative collaborators, and what this mode of engagement reveals about creativity, ethics, the evolving role of the artist and posthuman pedagogy.

Conceptual Framework

TRANSMEDIAL is an ongoing research project that explores the entanglements between printmaking, technology, and science, and examines how technological processes affect the medium both technically and conceptually. Its latest iteration conceptually extends the 1969 exhibition *Art by Telephone* (Museum of Contemporary Art Chicago), in which artists including Sol LeWitt and Richard Serra instructed curators via analogue telephone on how to create their works. Reflecting László Moholy-Nagy's notion of the modern artist as a producer of concepts rather than solely a hands-on craftsman ("Art by Telephone"), this approach finds renewed relevance in the post-digital context, where artists often provide image instructions that GenAI systems interpret and generate. TRANSMEDIAL rationally replaces the telephone with GenAI, reconfiguring artistic collaboration within a contemporary technological context (Figs. 1 and 2). The project employs a practice-led and speculative methodology, drawing on Dunne and Raby's framework of speculative design as a means of critically interrogating assumptions surrounding technology, creativity, and ethics. Rather than accepting GenAI as a neutral or an inevitable tool, TRANSMEDIAL uses AI as a site of productive friction; a collaborator where limitations and errors are as generative as its outputs. The collaborative dimension of the project, informed by Jane Bennett's notion of vibrant matter and the agency of non-human things, further underscores the relational nature of the work.

Methodology and Process

At the centre of TRANSMEDIAL's practice is the translation process: GenAI outputs created through prompting are subsequently transformed through traditional printmaking techniques, including etching, lithography, and woodcut. The conversion of a digital image through the tactile materiality of print foregrounds interpretation and embodied knowledge as essential components of artistic production, components that GenAI cannot supply on its own.

The project treats GenAI as a speculative collaborator, entering



Fig. 1. Monika Lukowska-Appel and Sarah Robinson x DALL-E2, *Telephone Echoes: Curated Digital Threads*, 2024, digital print, Awagami paper, installation of various paper drops: lengths x 25cm. Photography: Monika Lukowska-Appel



Fig. 2. Monika Lukowska-Appel and Sarah Robinson x DALL-E2, *Telephone Echoes: Curated Digital Threads*, 2024, detail.



Fig. 3. Monika Lukowska-Appel and Sara Robinson x DALL-E, *A Reinvention of The AI Machine*, 2024, digital prints represent AI's response to audience prompts left by gallery visitors during the *Transmedial: AI in Print* exhibition in Melbourne. Photography: Monika Lukowska-Appel

an iterative dialogue with the system rather than directing it instrumentally. This approach resonates with Cross's framework, in which artists working with AI engage the system as a participant in the creative process - curating prompts, assessing outputs, and shaping the work through an exploratory back-and-forth process (qtd. in Ivanova 4272). Rather than positioning GenAI as a passive tool, TRANSMEDIAL approaches it in a manner analogous to how a performance artist might draw upon audience participation: as an active, if unpredictable, presence whose contributions are incorporated, evaluated, and transformed through

the artist's own aesthetic judgement. Prompts are crafted, responses assessed, errors noted, and decisions made about how to proceed; a workflow that corresponds with the human-in-the-loop framework described by Mosqueira-Rey et al. (2006) in which human oversight and intervention remain central to machine-assisted processes. The audience participation is also incorporated as a learning environment in the *Transmedial: AI in Print* (2024) exhibition at the Print Council of Australia gallery in Melbourne. Here, visitors left message prompts on a vintage telephone, commenting on their interpretations of contemporary printmaking. Subsequently, DALL-E2 responded to these messages, producing digital prints that became part of the installation *A Reinvention of The AI Machine* (Fig. 3). This participatory dimension extends the research beyond the studio and into broader public discourse about GenAI and creativity.

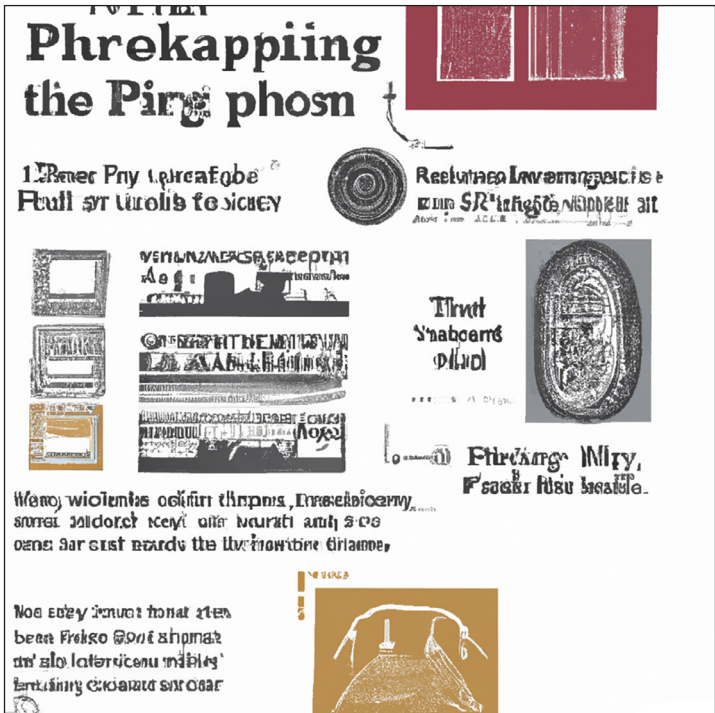


Fig. 4. Monika Lukowska-Appel, *History of Printmaking*, 2023, digital print, 44 x 44cm. Photography: Monika Lukowska-Appel

Findings

GenAI Lacks Contextual Understanding

A consistent finding across the project has been GenAI's inability to grasp contextual or conceptual meaning. The system produces what might be described as aesthetic simulations - images that are visually appealing but lacking semantically. Recurring misinterpretations include the rendering of hands (a long-documented weakness of image-generating models), the garbling of text within images, and a fundamental incapacity to understand printmaking processes as culturally and materially specific practices. Lukowska-Appel's *History of Printmaking* (Fig. 4) makes this visible with striking clarity; the AI's attempt to represent printmaking history results in pseudo-typographic nonsense text and anachronistic visual conflations that reveal the system's dependence on statistical pattern-matching rather than genuine comprehension.

Errors as Productive and Speculative Sites

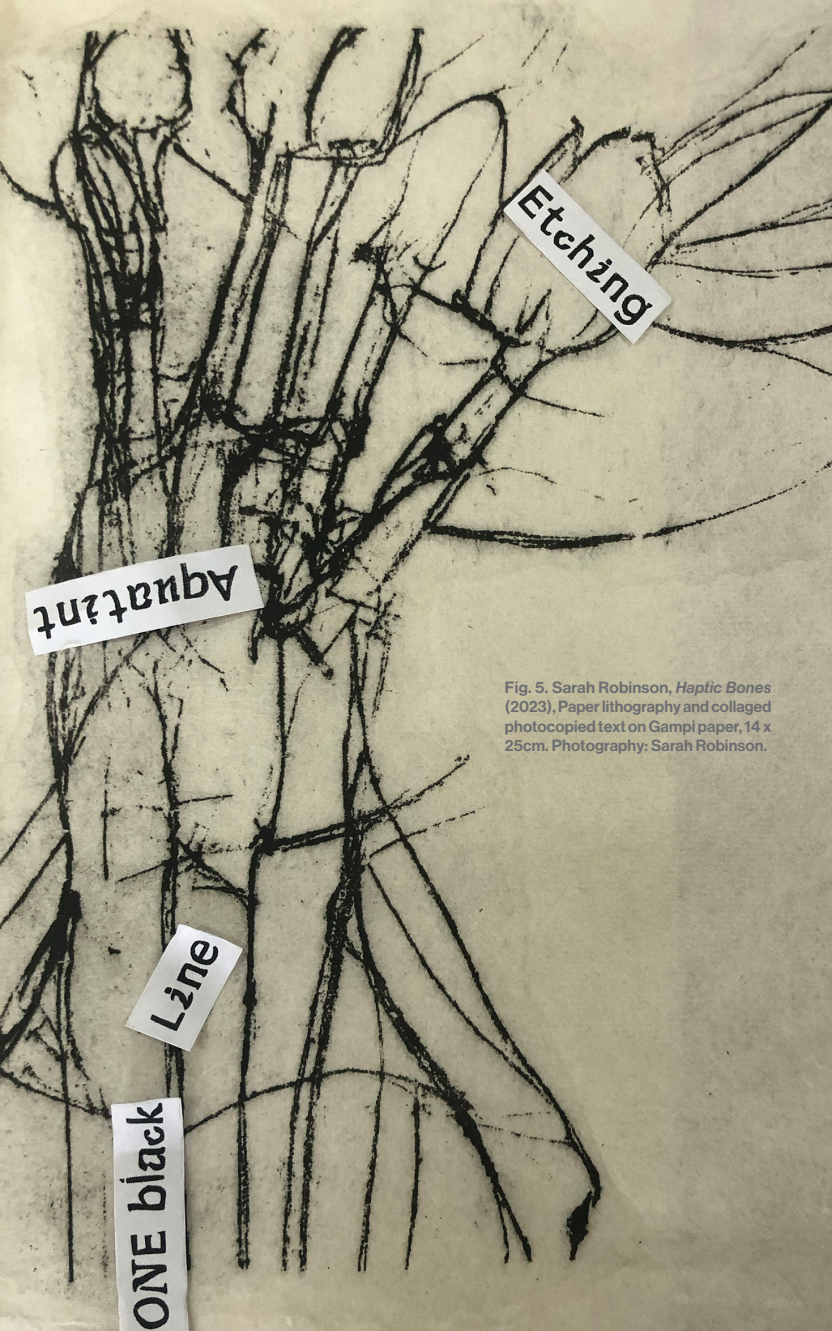
Rather than treating these failures as deficiencies to be corrected, TRANSMEDIAL reframes them as productive sites for inquiry. Misspelt prompts generate what the project calls "impossible machines", hybrid, physically implausible apparatuses that could never exist in the material realm. Anatomical inaccuracies and AI's tendency toward literal interpretations of metaphor similarly open productive gaps between intention and output. These errors do not undermine the work; they animate it, provoking questions about the nature of knowledge, representation, and intentionality that a technically flawless output would foreclose. Robinson's *Haptic Bones* (Fig. 5) exemplifies this approach; an AI-generated image informed by Google reverse image search is translated into a lithograph, with the AI's anatomical misreadings preserved and made legible through the print medium.

Material Translation and Human Creativity

The act of translating AI outputs into traditional printmaking techniques is where the human-in-the-loop dynamic becomes most noticeable. Understood through Bennett's notion of "vibrant matter", materials such as the woodblock or the acid-bitten metal plate with their unique features inform decision-making, interpretation, and judgment in ways that purely digital workflows cannot replicate. The human body, with its accumulated material and experiential knowledge, remains irreplaceable in this process. This repositioning of human creativity is not defensive or nostalgic; it is generative, revealing what AI cannot know precisely by demonstrating what the human practitioner brings to the encounter. As the project's central insight holds, understanding why knowledge and context matter becomes most significant when we clearly notice what AI is incapable of knowing.

Implications for Posthuman Pedagogy

Drawing on the project outcomes, we suggest a model for posthuman pedagogy in art and design education; one that integrates GenAI not as a replacement for material skill but as a critical interlocutor that sharpens



Etching

Aquatint

Line

ONE black

Fig. 5. Sarah Robinson, *Haptic Bones* (2023), Paper lithography and collaged photocopied text on Gampi paper, 14 x 25cm. Photography: Sarah Robinson.

understanding of what human creativity involves. Rather than framing AI literacy as the acquisition of prompting skills, this pedagogical model asks students to engage GenAI speculatively and critically: to investigate its errors, to translate its outputs through physical processes, and to reflect on the ethical and conceptual dimensions of human-machine collaboration.

This approach responds directly to the risks identified in current educational practice: the decline of material skills, the uncritical adoption of AI tools, and the erosion of conceptual depth. By maintaining the human firmly in the loop as decision-maker, interpreter, and ethical agent, the model resists the reduction of artistic practice to automated image production. It recognises that as technological advancements continue to evolve, educators bear a responsibility to engage critically with GenAI tools, balancing innovation with the preservation of what might be called the human touch; the embodied, intentional, contextually sensitive qualities of creative practice that no generative system has yet been able to replicate.

Conclusion

TRANSMEDIAL demonstrates that GenAI, when approached speculatively and critically rather than instrumentally, can serve as a productive site of artistic and pedagogical inquiry. By situating GenAI within the material traditions of printmaking, the project exposes the conceptual limitations of these systems while simultaneously expanding the possibilities of the medium. It proposes a model of relational authorship, one in which humans and machines co-create while maintaining distinct and irreducible forms of agency. In doing so, TRANSMEDIAL contributes to broader debates on posthuman creativity, human-machine aesthetics, and the ethical responsibilities of artists and educators navigating an era of rapid technological change.

Works Cited

- "Art by Telephone." Museum of Contemporary Art Chicago, 1 Nov.–14 Dec. 1969, mcachicago.org/exhibitions/1969/art-by-telephone. Accessed 17 Mar. 2026.
- Bennett, Jane. *Vibrant Matter: A Political Ecology of Things*. Duke University Press, 2009.
- Dunne, Anthony, and Fiona Raby. *Speculative Everything: Design, Fiction, and Social Dreaming*. MIT Press, 2013.
- Ivanova, Milena. "AI, Art and Morality." *AI and Ethics*, vol. 5, 2025, pp. 4269–78, <https://doi.org/10.1007/s43681-025-00735-3>.
- Mosqueira-Rey, Eduardo, et al. "Human-in-the-Loop Machine Learning: A State of the Art." *Artificial Intelligence Review*, vol. 56, no. 4, 2023, pp. 3005–54, <https://doi.org/10.1007/s10462-022-10246-w>.

*Claude AI was used to edit, proofread and consolidate ideas from the conference presentation.

Shift the Method, Not the Content: Mindful AI, Shared-History Comparison, and Perceptual Attention in Asian Art Histories

Agnes Tan Ee Boon



Agnes researched Asian Art Histories, following in-depth undergraduate studies in multimedia arts at the Birmingham Institute of Art and Design, deepening her art historical investigations, informed by visual narratives and design-led thinking. She also researched teaching and learning in Higher Education, following in-depth undergraduate studies in education at the National Institute of Education, Singapore, refining her pedagogical approaches. Her work engages the intersections of world histories and Southeast Asian histories as mediated through art, exhibition and visual culture. Her thesis examined Xu Beihong's art, nationalism, and exhibitions in Singapore, applying critical inquiry across transregional and historical contexts. Agnes' pedagogical interests reflect a sustained engagement with inclusive and interdisciplinary methods, shaped by work with diverse audiences and creative communities. Committed to critical and reflective practice, her presentation, 'Milestones And Messengers—Structuring Creative Practices With AI', was part of the Art and Design Practice Exchange Forum, contributing to knowledge exchanges on critical methodologies.

ABSTRACT

Building on my 2025 video essay ‘Milestones and Messengers: Structuring Creative Practice with AI, first presented at ADPREx (Arts & Design Practice Research Exchange) and NAFA’s Southeast Asian Arts Forum, this second instalment examines how generative AI can act as a mindful co-agent in Asian Art Histories education. It asks how AI-generated moving images can help learners perceive Asian modernisms as interconnected, self-defining movements rather than peripheral echoes of the West. The practice-led project centres on a “mindful context film” (AI-generated moving-image sequence) under one minute that visualises key historical intersections in India and China – anti-colonial struggle, wartime reconstruction, and urban modernity – and related responses in wash painting, ink realism, satire and geometric abstraction. The AI-generated clips slow these intersections to show how history becomes artistic form. Nandalal Bose’s wash painting emerges from India’s search for identity; Xu Beihong’s realism embodies China’s wartime resolve; Gaganendranath Tagore’s angular satire captures Calcutta’s modernity; and Wucius Wong’s geometric ink experiments reimagine tradition through spatial design. These pairings provide a scaffold through which learners compare, contrast and mindfully analyse Asian modern art. The pedagogical design draws on constructivist and experiential learning, organised as a problem-centred sequence that balances guidance and reflection, and integrates mindful methodologies. Mindful viewing and reflection routines – breath intervals, silent viewing, reflective jotting – function as reflective interludes and combine Dual Coding, the Cognitive Theory of Multimedia Learning, and the ARCS model to regulate cognitive load and sustain attention. Learners annotate AI-generated frames using guided evidence/ speculation tags and simple influence-mapping to examine artistic relationships without assuming Western primacy. Here, AI functions as a collaborator within a posthuman learning assemblage rather than as a mere technical tool. This project contributes a replicable, low-stakes method for using AI-generated moving images to support mindful, comparative reading of Asian modernisms without defaulting to Western art-historical hierarchies. Brief AI-generated film clips will be screened alongside a prototype Mindful Context Film Toolkit. Initial classroom trials indicate gains in temporal awareness and interpretive confidence among multilingual learners. Framed through practice, this research shows how mindful AI visualisation sustains cultural specificity and embodied attention while enriching library-based scholarship.

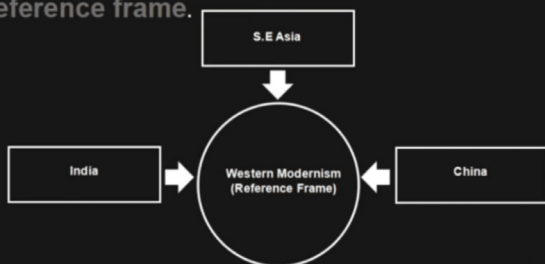
Keywords: Generative AI, Posthuman Pedagogy, Constructivist Learning, Asian Modernisms, Art History Education

Introduction

Many art history classrooms still approach Asian modernisms through Western modernism as the dominant reference frame. In this structure,

Background (Common Reading Frame)

- Asian modernisms read through Western modernism as a reference frame.



Background (Relational Reading Frame)

- Asian modernisms read through shared histories, not a single reference frame.



Fig. 1. Comparison diagram showing, from top to bottom, a conventional Western-centred reading frame and a relational reading frame structured through shared histories: anti-colonial struggle, war and reconstruction, and urban modernity.

works from Asia are often introduced through comparison with European movements such as Impressionism, Cubism, or Expressionism. These comparisons can sometimes clarify formal affinities, but they also risk reinforcing a hierarchy in which Asian modernisms appear derivative, delayed, or peripheral. As Partha Mitter observes, drawing on John Clark, Western modernism operates as a “closed” discourse that resists incorporating alternative modernisms emerging beyond the West (qtd. in *Triumph of Modernism* 8). Mitter further contends that modernism functions as an “unmarked” category, implicitly equated with its Western form (“Decentering Modernism” 532). Clark likewise cautions against

forcing a false coherence onto the field, rejecting the notion of a single, unified “modern Asian art” as both nonexistent and conceptually misleading (11).

This article proposes a small but deliberate pedagogical shift. Rather than beginning with European-style categories and then fitting Asian works into them, it begins with shared historical pressures that shaped artistic production across different locations in Asia. The method uses a short AI-generated mindful context film, followed by a shared-history viewing toolkit, to help learners attend first to anti-colonial struggle, war and internal fracture, and urban transformation. The aim is not to replace historical evidence or close reading. It is to create a more relational frame for comparison before formal art-historical explanation begins. In Mitter’s formulation, global “critical modernity” arises from multiple, intersecting sources, challenging the reductive view of cultural influence as a one-way transmission from the West to the rest (*Triumph of Modernism* 12).

The Mindful Context Film

The first component is a short, non-archival AI-generated film, designed to run in under five minutes. It does not reconstruct specific historical events. Instead, it stages atmospheric sequences that evoke broad conditions shaping twentieth-century Asian modernisms: collective movement, refusal, pressure, injury, displacement, satire, labour, and urban flow. The film is therefore not evidence. It is a structured perceptual prompt. Put plainly, the AI scenes are not the evidence; they are viewing prompts that scaffold how comparison happens and prepare learners for later historical and visual analysis.

This distinction matters. The film is useful not because it tells learners what a work means, but because it prepares them to notice relations before they reach for inherited labels. As Clark suggests, modern Asian art is best understood as a spectrum of selective translations across differing artistic discourses (18). The film stages that insight pedagogically. It helps learners sense that different modernisms may respond to related pressures without collapsing them into the same form.

The film’s pacing is also intentional. Rather than overwhelm learners with a rapid explanation, it inserts a pause between perception and interpretation. Drawing on Richard E. Mayer, effective multimedia learning depends on segmenting content into learner-controlled units rather than continuous streams (247). Mayer further emphasises that signalling directs attention to key material and helps organise it into coherent structures (181). Mayer also argues that this logic is reinforced by temporal contiguity, whereby learners form stronger connections when words and images are processed simultaneously (233).

As Jean Piaget explains, mental images are not passive imprints but active constructions; products of sensory-motor adaptation that function as deliberate copies rather than residual traces of perception



Fig. 2. AI context film still from Movement 1, corresponding to the toolkit prompt “Resist,” and emphasising collective presence, togetherness, and composure as a perceptual prompt for anti-colonial struggle.

(138–39). In other words, perception is not passive reception. Learners actively organise what they see. The film works by shaping the conditions of that organisation.

The Shared-History Viewing Toolkit

The second component is a shared-history viewing toolkit used immediately after the film. Learners are invited to identify which historical lens they perceive most strongly and to annotate the visual cues that led them there. In practice, learners take an active role: they select a lens, mark what they notice, and test their emerging interpretations against the visual evidence on screen. The toolkit groups attention into three broad conditions: Resist, marked by togetherness, refusal, and composure; Suffer, marked by pressure, injury, and displacement; and Transform, marked by distortion, excess, satire, flow, work, and city life.

The toolkit is interpretive rather than evaluative. It is not a quiz, and it does not ask learners to guess a correct answer. It is also, in the presentation’s own terms, not a poll; the point is not to tally preferences but to externalise perception so that it becomes discussable. Instead of moving directly from image to classification, learners move from image to observation, from observation to comparison, and only then to historical interpretation. As David A. Kolb argues, truth does not arise directly from experience but must be derived through reflective learning that interrogates assumptions, moderates immediate impressions, and distils insight from action (xxii).

The toolkit is also designed as a motivational structure. As John M. Keller explains, motivational design is a systematic problem-solving



Fig. 3. AI context film still from Movement 2, corresponding to the toolkit prompt “Suffer,” and emphasising pressure, burden, and bodily strain as a perceptual prompt for war and internal fracture.

process grounded in analysing learner needs and developing strategies tailored to those specific challenges (viii). In this case, the pedagogical problem is familiar: learners may disengage from comparative art history when discussion begins with distant terminology or with a Western canon they have learned to treat as primary. The toolkit addresses that problem by making attention concrete, manageable, and visible.

As Li and Keller note, the Attention, Relevance, Confidence, and Satisfaction (ARCS) model has been widely implemented across diverse educational levels, disciplines, and international contexts (60). That breadth matters because the method described here is not tied to one class format alone. It can be adapted to multilingual classrooms, introductory modules, or comparative units where learners need a structured entry point before deeper contextual study.

Comparative Design: From Historical Force to Artistic Form

Only after the film and toolkit do the artworks enter the discussion. This ordering is crucial. It means that learners approach the works through a relational frame built from historical force rather than through default European-style labels. The comparative set can include artists such as Nandalal Bose, Xu Beihong, Gaganendranath Tagore, and Wucius Wong. In the classroom version of the exercise, the strongest historical cluster runs from roughly 1917 to 1939, anchored by anti-colonial struggle in India and regime fracture, warlord conflict, and wartime crisis in China. Wong is introduced as a later extension, showing how the comparative frame can continue beyond that cluster into a different urban and spatial register shaped by post-1997 Hong Kong. The point is not that these

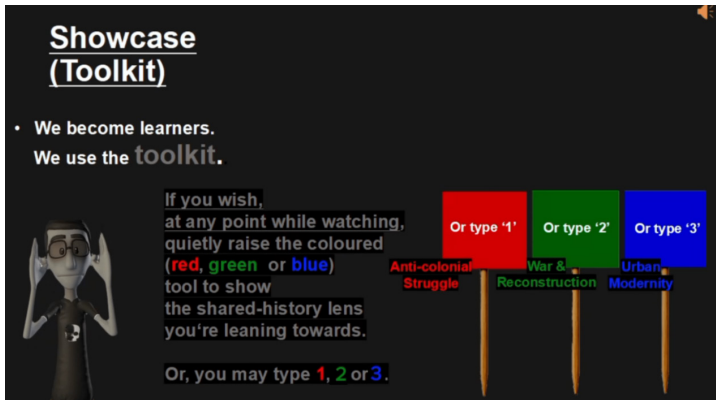


Fig. 4. Shared-history viewing toolkit interface showing the interpretive prompts Resist, Suffer, and Transform.

artists belong to the same movement. It is that they can be meaningfully compared through shared conditions that cut across national boundaries while preserving differences.

As Mitter emphasises, the vitality of global modernisms lies in their diverse, uneven, and “messy” plurality, whose lack of uniformity makes them especially dynamic and generative (*Triumph of Modernism* 8). That insight helps guard against a false comparativism. The method does not flatten Asian modernisms into one story. It allows learners to compare responses to related historical pressures without assuming sameness.

At the same time, the approach helps restore artistic agency. As Mitter observes, framing global modernity in this way can reclaim the artist’s agency under colonial conditions by treating art and its reception as historically grounded cultural documents (“Decentering Modernism” 541). This is the core of the comparative design. Bose can be discussed in relation to anti-colonial composure and identity formation, especially around Gandhian mobilisation and the Salt March. Xu can be discussed in relation to wartime endurance and national reconstruction during the crisis years of the late 1930s. Gaganendranath Tagore can be discussed in relation to satire, colonial urban reform, and the contradictions of early twentieth-century Calcutta. Wong, by contrast, extends the comparison into a later moment, where urban transformation, abstraction, and spatial design register a different historical condition.

Pedagogical Value and Limits

Use suggests benefits. Learners begin with perception rather than jargon, lowering the entry barrier without lowering demand. Multilingual learners can participate through visual reasoning before explanation. Colour-



Fig. 5. Gaganendranath Tagore, 'Brahmin of Kaliyuga', 1917. Public-domain image from Wikimedia Commons.

coded prompts make interpretation visible, letting discussion build from the evidence learners identify.

The method is low-stakes. Variation in responses invites refinement of perception and reasoning. In AI-supported teaching,

imagery can appear overly authoritative. Here, AI is a collaborative scaffold, not a historical truth.

There are limits. The film cannot stand in for archival evidence, sustained historical study, or visual analysis of the artworks. Preparatory, it slows comparison so learners do not reach inherited hierarchies quickly. It does not displace art history; it opens entry.

Conclusion

This article shows that a mindful AI context film and shared-history viewing toolkit can shift comparison in Asian art histories away from Western modernism as the default frame by reorganising encounters with context, form, and comparison, not by changing artworks or substituting AI for scholarship.

Hence the title: The method shifts the method, not the content. Learners still study works, histories, and differences among artists through a relational frame that begins with shared-historical pressures and moves toward artistic form. For short-format teaching, multilingual classrooms, and comparative modules, this offers a model for critically integrating AI into art history pedagogy, especially in Southeast Asian art education, where comparative teaching crosses languages, national histories, and canonical frameworks.

Works Cited

- Clark, John. *Modern Asian Art*. University of Hawai'i Press, 1998.
- Keller, John M. *Motivational Design for Learning and Performance: The ARCS Model Approach*. Springer, 2010.
- Kolb, David A. *Experiential Learning: Experience as the Source of Learning and Development*. 2nd ed., Pearson, 2015.
- Li, Kun, and John M. Keller. "Use of the ARCS Model in Education: A Literature Review." *Computers & Education*, vol. 122, 2018, pp. 54–62.
- Mayer, Richard E. *Multimedia Learning*. 3rd ed., Cambridge University Press, 2021.
- Mitter, Partha. "Decentering Modernism: Art History and Avant-Garde Art from the Periphery." *The Art Bulletin*, vol. 90, no. 4, 2008, pp. 531–48.
- Mitter, Partha. *The Triumph of Modernism: India's Artists and the Avant-Garde 1922–1947*. Reaktion Books, 2007.
- Piaget, Jean. *The Psychology of Intelligence*. Routledge, 2001.
- Tagore, Gaganendranath. *Brahmin of Kaliyuga*. 1917. Wikimedia Commons, public domain.

Art-based Posthuman Pedagogies in Practice: Graphic Assemblages for Multilingual Storytelling in Tertiary Education

Humaira Mariyam B



Humaira Mariyam B. is a research scholar in the Department of Humanities and Social Sciences at the National Institute of Technology, Tiruchirappalli, India, where she also serves as a teaching assistant for the English for Communication course for undergraduate engineering students. She obtained her Master's degree in English and Cultural Studies from Christ University, Bangalore. Her doctoral research explores English language education through posthuman and AI-mediated pedagogical frameworks, with a particular focus on LLMs, arts-based learning, multimodality, inclusivity and sustainable education. Her scholarly work has been published in reputed Scopus-indexed journals, including *Education and Information Technologies*, *Educational Philosophy and Theory* and the *Journal of Applied Learning & Teaching*. She has also presented her work in various international conferences. In addition to her academic pursuits, she is trained in Waldorf pedagogy through her internship experience at the Yellow Train School in Coimbatore.

ABSTRACT

The rapid integration of generative AI into educational spaces necessitates a reimagining of learning practices that transcends text-centric and efficiency-driven paradigms. Arts-based methodologies, particularly those grounded in mindfulness, embodiment, and multimodality, facilitate reflective, affective and creative engagement among learners. While emerging research highlights the potential of creative AI tools in various educational fields, limited attention has been given to how human-nonhuman entanglements and AI-assisted art practices can support multilingual storytelling and meaning-making within broader posthuman pedagogical frameworks. This study addresses this gap by examining how mindful illustration through graphic assemblages can serve as co-creative agents in enabling storytelling and reflective practices among tertiary-level engineering students enrolled in an English for Communication course in India. Guided by the posthuman theoretical perspective, the study investigates two research questions: RQ1: How do mindful illustrations through graphic assemblages shape learners' creative processes and multilingual narratives? RQ2: In what ways do human-nonhuman entanglements in learning influence reflective awareness, affective engagement, and the emergence of creative agency within an arts-based multilingual learning environment? Situated within a qualitative paradigm, the study draws on a rich corpus of artefacts gathered through a classroom activity organised around the theme "Technology, Society, and Human Experience." Sixty participants, grouped in fours, created graphic assemblages using AI, hand-drawn illustrations and materials, which were utilised for a multilingual storytelling activity. Collected data include graphic assemblages, reflective journals, voice-recorded multilingual stories, group discussions, observational notes and photographs, all analysed diffractively to trace material-discursive relations shaping creativity and meaning-making. Preliminary insights suggest that creating graphic assemblages disrupts habitual thinking, enabling learners to experience reflective, meaningful and embodied learning. Mindful illustration practices also facilitated slow-paced learning and heightened affective presence, contributing to a stronger sense of creative agency. The entanglement of AI, human collaborations, languages and materials reveals creativity as an emergent, distributed process rather than an individual cognitive act. The study highlights the importance of integrating AI-assisted arts-based methodologies into communication curricula, providing reflective and relational pedagogical possibilities for posthuman education in the era of AI.

Keywords: Posthuman Pedagogies, Art-based learning, Multilingual Storytelling, Tertiary Education, Diffractive Analysis.

Reimagining AI, Language, and Learning

In AI-enhanced universities, English classrooms for engineering students

are increasingly shaped by tensions between efficiency and creativity. Generative AI tools enable speed, accuracy, and productivity; however, much of the discourse around them remains confined to questions of cheating, surveillance, and optimisation. For many learners who encounter English only as a compulsory “skill” subject oriented towards employability, such discourses risk reinforcing a narrow, text-centric view of language learning and sidelining their multilingual resources, affective aspects, and imaginative capacities. Against this background, this study explores how an arts-based, posthuman intervention, anchored in AI-assisted graphic assemblages and mindful illustration, can reconfigure what becomes possible in an English for Communication classroom in South India. The work is situated within posthuman theory, which challenges humanist assumptions of the autonomous, rational learner and instead foregrounds relationality, materiality, and entanglement in processes of knowing (Barad; Braidotti, “Posthuman”; Braidotti, “Posthuman Knowledge”). Rather than viewing a classroom as a neutral space that holds individual minds, posthuman perspectives conceptualise it as an assemblage of human and nonhuman participants: students, teachers, languages, bodies, AI systems, material objects, technologies, institutional discourses, and affective atmospheres, all intra-acting to shape learning. Within such assemblages, agency is not owned by discrete subjects; it is emergent and distributed, arising from encounters between bodies, tools, spaces, and histories (Deleuze and Guattari; Bennett).

At the same time, arts-based and multimodal pedagogies have gained traction as ways of operationalising these theoretical commitments in practice. Graphic narratives, comics, and other visual texts allow learners to engage with language through image, gesture, rhythm, and spatial arrangement, thereby decentring the written word as the exclusive site of meaning-making (Blaikie et al.). Studies in language education show that such graphic forms support vocabulary development, comprehension, speaking, motivation, and intercultural awareness, especially for learners who might be reluctant to participate in conventional, text-based tasks (Savić 215). Earlier work on “graphic assemblages” in English classrooms has also demonstrated that student-created visual artefacts can function as posthuman pedagogic tools, using digital platforms, images, peers, and classroom spaces in ways that foster agency and affective engagement (Lenters and McDermott 22; Mariyam B and Karthika). Despite these assertions, there remains relatively limited empirical attention to what happens when such arts-based practices are explicitly entangled with generative AI and multilingual storying, especially from a posthuman perspective. Many existing studies continue to centre human cognition or motivation, treating AI mainly as an efficiency-enhancing tool while leaving questions of embodiment, affect, and human–nonhuman entanglements under-examined (Castillo-Cuesta and Quiñonez-Beltran 480). This study responds to this gap by asking

two questions: how mindful illustration through graphic assemblages shapes learners' creative processes and multilingual narratives, and how human–nonhuman entanglements in such a setting influence reflective awareness, affective engagement, and the emergence of creative agency.

A Posthuman, Arts-Based Classroom Intervention

The study was carried out within the context of an English for Communication course for first-year engineering students at a technical institute in South India. Sixty students, aged 18 to 21, brought rich multilingual backgrounds to the classroom, including Hindi, Tamil, Telugu, Malayalam, and English. For a 90-minute session centred on the theme “Technology, Society, and Human Experience,” these learners were invited to participate in an experiment that deliberately slowed the usual pace of classroom activity and disrupted familiar task formats. The session unfolded in four phases. It began with a brief guided mindfulness exercise in which students were asked to attend to their breathing, bodily sensations, screens, and surrounding materials. This was not framed as a separate “wellness” activity; rather, it was intended to prime a different mode of engagement, which is less hurried and more attuned to the surroundings. The second phase involved creating graphic assemblages. Working in groups of four, students combined AI-generated images (produced using tools such as Midjourney or Craiyon) with hand-drawn illustrations and collage materials. There was no requirement to plan a coherent storyline in advance. Instead, the emphasis was on assembling four panels whose textures, colours, and motifs could be strange, mismatched, or incomplete.

In the third phase, students separated from their groups and used the shared assemblages as prompts for individually narrated stories. Crucially, they were encouraged to draw on any of their language repertoires, and many chose to move fluidly between English and other languages. The final phase centred on reflection: through journal prompts, learners were invited to trace how the AI images, the feel of paper, the marks left by their peers, their own gestures, and the earlier mindfulness exercise had shaped their stories and feelings. The corpus generated through this intervention was multimodal: fifteen group assemblages, sixty individual journals, multilingual audio recordings, group discussions, and observational notes. Rather than coding these materials into discrete categories, the analysis followed a diffractive approach inspired by Barad, reading data sources through one another and through theory to trace “moments that glowed”, points where images, bodies, languages, and materials intra-acted to produce shifts in creativity, awareness, or agency.

Emergent Creativity, Multilingual Storying, and Pedagogical Possibilities

Across the dataset, one clear pattern was that graphic assemblages, especially their AI components, tended to disrupt habitual story

structures. Students who were used to composing linear, “correct” narratives for assessment found themselves confronted with uncanny faces, distorted images, or implausible juxtapositions that did not easily lead to linear plots. Journal entries and classroom observations captured how particular visual details redirected thinking: a strange shadow suggesting a hidden past, an oddly lit alleyway turning into a portal, or a glitchy expression prompting psychological rather than technological themes. These creative detours emerged not from abstract brainstorming, but from very concrete, embodied engagements: zooming in on a phone screen, tilting a page, and tracing outlines with fingers. Such moments illustrate how creativity can be understood as an emergent property of material–discursive entanglements (Deleuze and Guattari; Bennett). The assemblages did not simply “represent” pre-existing ideas; they actively participated in generating new narrative directions. In this sense, AI-generated images functioned as co-creative agents within a wider assemblage of bodies, tools, and affects that collectively shaped the stories.

A second pattern concerned multilingual storytelling. Exempted from the expectation to narrate exclusively in English, students responded to the assemblages with stories that moved across Hindi, Tamil, Telugu, Malayalam, and English. English tended to be used for primary descriptions, futuristic settings, or contexts, while other languages carried emotional weight, humour, and culturally specific references. From a posthuman and translingual perspective, these practices underscore the idea that language itself is part of the assemblage: not a set of separate codes stored in the mind, but a fluid, more-than-human flow of scripts, sounds, and memories entangled with images, objects, and bodies (Wee). The graphic assemblages acted as multilingual catalysts, drawing different repertoires into play as students responded to particular visual cues. Rather than treating code-switching as an error, the study reads these shifts as creative strategies for making meaning in a complex semiotic field. Mindfulness and affect formed a third important pattern. The initial induction and the slow, tactile work of assembling images, drawing, and collage altered the classroom’s environment. Students reported “seeing differently,” noticing new details each time they looked, and taking time to pause before deciding how a story should continue. Audio recordings captured deliberate silences and changes in voice, while journals documented a sense of calm, focus, and enjoyment that contrasted with the typical rush of completing an assignment. Drawing on posthuman accounts of affect as pre-cognitive, embodied intensity (Lenters and McDermott), the study interprets these responses as evidence that human–nonhuman entanglements, in this case, breath, body, image, paper, device, were central to how agency and reflection emerged. Notably, many participants described creativity and agency in distributed terms. They wrote that they did not create stories “alone,” but with the help of a picture, the AI, or a friend’s drawing, which

led them in a new direction.

Concluding Reflections

This study aligns with posthuman pedagogies that seek to honour relationality, heterogeneity, and shared responsibility in learning (Kuby 147). The study is careful not to overstate its claims. It is grounded in a single institution and a short intervention, and it operates within existing constraints of curriculum and assessment. Questions of access to AI tools, the ethics of proprietary platforms, and broader structural inequalities remain pressing and cannot be resolved by a single classroom experiment. Nevertheless, the findings point to significant pedagogical possibilities. By integrating AI-assisted graphic assemblages and mindful, arts-based practices into English for Communication courses, educators can move beyond narrow proficiency targets to cultivate more expansive literacies that value multilingual repertoires, embodied awareness, and distributed creativity (Mariyam B and Karthika 345). In an era when AI is often framed either as a threat to academic integrity or as an engine of efficiency, this work offers a different lens. It shows that AI can be approached as one participant among many in a more-than-human classroom, where learning emerges from entanglements of images, bodies, languages, and affects, and where storytelling is understood not as individual performance but as collective, relational practice. For tertiary language education, such posthuman, arts-based experiments open modest but meaningful possibilities for reimagining what communicative competence, creativity, and agency might look like in the age of AI.

Works Cited

- Barad, Karen. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Duke University Press, 2007.
- Bennett, Jane. *Vibrant Matter: A Political Ecology of Things*. Duke University Press, 2010.
- Blaikie, Fiona, Christine Daigle, and Liette Vasseur. *New Pathways for Teaching and Learning: The Posthumanist Approach*. Brock University, 2020, hdl.handle.net/10464/15047.
- Braidotti, Rosi. *The Posthuman*. Polity Press, 2013.
- . *Posthuman Knowledge*. Polity Press, 2019.
- Castillo-Cuesta, Luz, and Alexandra Quiñónez-Beltrán. "Using Digital Comics for Enhancing EFL Vocabulary Learning during the COVID-19 Pandemic." *International Journal of Learning, Teaching and Educational Research*, vol. 21, no. 5, May 2022, pp. 478–91, <https://doi.org/10.26803/ijlter.21.5.24>.
- Deleuze, Gilles, and Félix Guattari. *A Thousand Plateaus: Capitalism and Schizophrenia*. Translated by Brian Massumi, Athlone Press, 1987.
- Kuby, Candace R. "Orienting Map III: Knowing/be(com)ing/doing Literacies." *Affect, Embodiment, and Place in Critical Literacy: Assembling Theory and Practice*, edited by Kimberly Lenters and Michelle McDermott, Routledge, 2020, p. 147, <https://doi.org/10.4324/9780429027840-15>.

- Lenters, Kimberly, and Michelle McDermott. "Orienting Map I: Mapping Posthuman Concepts." *Affect, Embodiment, and Place in Critical Literacy: Assembling Theory and Practice*, edited by Kimberly Lenters and Michelle McDermott, Routledge, 2020, pp. 19–28, <https://doi.org/10.4324/9780429027840>.
- Mariyam B., and V. K. Karthika. "Graphic Assemblages for Storytelling: A Posthuman Perspective from an English Language Classroom." *Journal of Applied Learning and Teaching*, vol. 7, no. 2, 2024, pp. 342–54, <https://doi.org/10.37074/jalt.2024.7.2.21>.
- Savić, Vera. "Graphic Novels as a Teaching Tool for Raising Intercultural Sensitivity in Primary English Classroom." *Uzdanica*, vol. 19, no. 1, 2022, pp. 209–24, scidar.kg.ac.rs/handle/123456789/14628.
- Wee, Lionel. *Posthumanist World Englishes*. Cambridge University Press, 2021, <https://doi.org/10.1017/9781108990615>.

Beyond the Prompt: Preparing Design Students for Mindful and Ethical Creativity in an AI-Driven Landscape

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ABSTRACT

Through the lenses of posthumanism and mindful creativity, this study examines the current state of Artificial Intelligence (AI) education within Design Higher Education Institutions (HEIs). The conventional design curriculum is facing a Curricular Crossroads as AI systems become agents in the creative process. We tackle the crucial question: To what extent are design schools equipped to incorporate AI's technological agency while maintaining the embodied, mindful aspects of artistic practice? Our study employs a mixed-methods approach to address the conflict between the need for the slow studio and accelerated AI-driven design. The methodological approach starts with a thorough literature review that identifies emerging aesthetics of human-machine co-creation and focuses on global best practices for AI integration in design. To evaluate the current foundational skills taught, both technical and critical, a content analysis of curricula from highly regarded design schools is included. In order to reduce the risks of cognitive overload and detachment associated with continuous machine interaction, experts who have studied or taught AI-related content will be interviewed in a semistructured manner. The interviews will centre on practical strategies for incorporating mindful methodologies (such as reflective interludes and conscious prototyping). The primary goals are to assess the current state of AI education, pinpoint key gaps in the development of mindful skill integration, and propose recommendations to improve AI readiness. For design schools looking to promote future-focused pedagogies that prepare graduates to succeed as co-authors in the AI-driven design landscape, this research is vital because it offers insightful, practice-driven information. The results will provide specific suggestions for enhancing design education, guaranteeing a grounded and sustainable creative consciousness in the era of artificial intelligence.

Keywords: Design Education; Posthuman Pedagogies; Mindful Creativity; Design Curriculum.

Introduction

The arrival of generative artificial intelligence in the creative studio has not been met with resistance. Artificial intelligence (AI) tools that can generate text, images, video, and interactive prototypes have become commonplace in the daily workflows of students, educators, and business professionals in recent years. However, generative AI's disruptive potential for the creative industries presents both enormous opportunities and equally significant challenges, as noted by Amankwah-Amoah et al. At this critical juncture, higher education has the opportunity to either engage with AI critically, pedagogically, and ethically, or absorb it as just another digital tool, as it once did with CAD software or the internet.

The authors characterise the conflict between the slow studio and accelerated AI-driven design as the tension at the centre of this

investigation. A culture of intentional making, sketching, iteration, failure, and reflection has long been fostered in design education. However, the advent of generative AI poses a threat to the creative process by speeding it up to the point where it could undermine the very embodied, mindful practices that distinguish design thinking. Compounding this challenge are concerns about cognitive overload, emotional detachment from creative work, and persistent anxieties around academic integrity (Habib et al.).

This article seeks to address a central research question: *To what extent are design schools equipped to incorporate AI's technological agency while maintaining the embodied, mindful aspects of artistic practice?*

Is Higher Education AI-Ready? A Literature Context

The question of AI readiness in higher education is far from settled. Some researchers argue that AI may inhibit student creativity by narrowing exploratory behaviour (Habib et al.); others suggest it can augment creativity through automation and novel ideation (Marrone et al.; Wieland et al.). The concern voiced by Przegalinska and Triantoro, that AI risks making processes too predictable, sits at the core of the posthumanist pedagogical challenge.

For design educators, a crucial question has emerged: *How can they prepare themselves and their students for a future in which generative AI shapes not just tools but the very nature of creative authorship (Larsen and Narayan)?* Design schools risk producing graduates who are either unprepared for an AI-augmented workplace or who have engaged with AI uncritically, without the ethical grounding or emotional intelligence to navigate its complexities responsibly.

Methods

The research employs a mixed-methods design with three interlinked strands: a systematic literature review on the current state of AI in arts and design higher education; a content analysis of official programme curricula from the top twenty design schools as ranked by the QS World University Rankings 2024; and semi-structured interviews with experts who have studied or taught AI-related content in arts and design contexts, analysed using NVivo 15.

Findings

A Significant Curricular Absence

The content analysis revealed a striking readiness gap at the very top of the global design education landscape. Table 1 presents a simplified overview of the twenty institutions assessed, showing the number of programmes reviewed and those that explicitly mention AI-related content in their curricula.

Posthuman Pedagogies

Table 1

AI curriculum integration across the top 20 QS-ranked Arts and Design schools (2024). Asterisks (*) indicate that AI-related content appears primarily in non-Arts and Design programmes (e.g., Computer Science, Engineering, etc.).

Rank	Institution	Country	Programmes Assessed	AI-Related Programmes
1st	Royal College of Art	UK	32	1*
2nd	University of the Arts London	UK	208	19*
3rd	The New School (Parsons)	USA	126	13*
4th	Rhode Island School of Design	USA	32	0
5th	Massachusetts Institute of Technology	USA	25	5*
6th	Pratt Institute	USA	63	0
7th	Politecnico di Milano	Italy	76	1
8th	Aalto University	Finland	110	6*
9th	Design Academy Eindhoven	Netherlands	6	0
10th	School of the Art Institute of Chicago	USA	44	0
11th	Tongji University	China	5	0
12th	Delft University of Technology	Netherlands	55	2*
13th	The Glasgow School of Art	UK	39	0
14th	Art Center College of Design	USA	21	5
15th	Savannah College of Art and Design	USA	142	2*
16th	Carnegie Mellon University	USA	4	0
17th	Central Academy of Fine Arts (CAFA)	China	15	0
18th	RMIT University	Australia	185	0
19th	Hong Kong Polytechnic University	Hong Kong SAR	154	3*
20th	School of Visual Arts (SVA)	USA	30	1

The data are striking: over half of the twenty leading design schools, eleven institutions, do not mention AI in any of their official programme curricula. Of those that do, the majority of AI content sits within Computer Science or Engineering programmes rather than within Arts, Design, or Humanities offerings. Institutions such as the Royal College of Art (ranked 1st globally) and the Rhode Island School of Design (4th) have no AI content in their design-specific curricula, despite endorsing AI research initiatives or accepting AI-generated student portfolios. Among the more proactive institutions, Parsons The New School (3rd) integrates AI content across thirteen programmes and offers a dedicated Certificate Programme in AI for Creativity and Leadership. In aggregate, 55% of the analysed schools have fewer than three AI mentions across all their programmes, while only 45% have five or more.

Insights from the field with experts' perspectives

The creative studio has unexpectedly welcomed generative AI. Tools that can create text, images, video, and interactive prototypes have left research labs and entered the daily lives of professionals, educators, and students. This has brought with it both enormous opportunities and formidable challenges. Higher education is at a turning point in its history: either embrace AI as another digital tool or use it critically, pedagogically, and morally. At the heart of this inquiry is the conflict between the slow studio and accelerated AI-driven design. Design education has long cultivated deliberate making, sketching, iteration, failure, and reflection. Generative AI threatens to erode exactly those mindful practices that make design thinking distinct, while raising concerns about cognitive overload, emotional detachment, and academic integrity.

A Framework for AI Preparedness in Arts and Design Education

Synthesising the findings across all three methodological strands, the research proposes a six-pillar framework for AI preparedness specifically tailored to arts and design higher education (fig. 1).



Fig. 1. Six-pillar framework for AI preparedness (Figure generated with NotebookLM).

The study offers a six-pillar framework for AI readiness in higher education in the arts and design, synthesised from all three methodological strands. Understand AI in Design, the first pillar, emphasises the importance of teaching fundamental ideas, applications, and ethical considerations in design-specific contexts. The second, “Build an Innovation Culture,” highlights prototyping, research and development, and iterative learning using AI tools as essential studio practices. The third, “Develop AI Design Literacy,” promotes learning pathways that are accessible across disciplines and levels of technical expertise. The fourth, “Establish Ethics and Guidelines,” exhorts organisations to create ethical frameworks that involve staff and students. The fifth, Provide Development Support, recognises that faculty readiness is a precondition for student readiness and calls for structured professional development and formal recognition for staff who integrate AI thoughtfully. The sixth, Foster Co-Creation and Partnerships, reflects the expert consensus that responsible AI integration requires active collaboration with industry, other institutions, funding bodies, and technology developers.

Conclusions

This study's title is more than just a rhetorical device. Teaching students how to write better prompts is not enough to address AI in design education. A more fundamental pedagogical reorientation is required, according to the findings presented here, which range from the substantial curricular gap found in the world's top design schools to the perspectives of working educators. AI has real promise because it can personalise learning environments, eliminate repetitive tasks, and create new opportunities for creative inquiry. However, these affordances can only be realised sustainably if they are integrated into a practice that is critically reflective, emotionally intelligent, and grounded in ethics. This symposium's posthumanist framework offers a useful perspective by rejecting the human-versus-machine dichotomy and focusing on how institutions and educators can foster meaningful, accountable co-authorship. In the ongoing effort to shape the future of AI and design education, the authors invite other researchers, educators, and institutions to test, modify, and critique the six-pillar framework presented here.

Disclaimer

This paper has been prepared and revised by humans. Figure 1 was generated using NotebookLM, and the overall text was corrected using Grammarly Pro before being checked by the authors prior to its submission.

Works Cited

- Amankwah-Amoah, Joseph, et al. "The Impending Disruption of Creative Industries by Generative AI: Opportunities, Challenges, and Research Agenda." *International Journal of Information Management*, vol. 79, Feb. 2024, p. 102759.
- Habib, Sabrina, et al. "How Does Generative Artificial Intelligence Impact Student Creativity?" *Journal of Creativity*, vol. 34, no. 1, Dec. 2023, p. 100072.
- Larsen, Benjamin, and Jyoti Narayan. "Generative AI: A Game-Changer That Society and Industry Need to Be Ready For." *World Economic Forum*, 18 Jan. 2023, [weforum.org/agenda/2023/01/davos23-generative-ai-a-game-changer-industries-and-society-code-developers/](https://www.weforum.org/agenda/2023/01/davos23-generative-ai-a-game-changer-industries-and-society-code-developers/).
- Marrone, Rebecca, et al. "Creativity and Artificial Intelligence, A Student Perspective." *Journal of Intelligence*, vol. 10, no. 3, 2022, p. 65.
- Przegalinska, Aleksandra, and Tamilla Triantoro. "AI in Design Workflows." *Creativity Research Journal*, vol. 36, no. 2, 2024, pp. 215–28.
- Wieland, Britt, Jan de Wit, and Alwin de Rooij. "Electronic Brainstorming With a Chatbot Partner: A Good Idea Due to Increased Productivity and Idea Diversity." *Frontiers in Artificial Intelligence*, vol. 5, 2022, article 880673, <https://doi.org/10.3389/frai.2022.880673>.

Synthetic Literacies and Obstinate Pedagogies: S.L.O.P as Tactical Practice in Pedagogy and Research

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ABSTRACT

As generative AI transitions from spectacle to infrastructure, creative education must address teaching alongside systems that are fast, frictionless, and prescriptive (Roe 2025). This presentation introduces the notions of “synthetic literacies” and “obstinate pedagogies” as a framework for cultivating mindful, resistant, and materially aware co-creation with AI. Drawing on small-scale and unconventional AI practices (Bussler 2024), glitch aesthetics (Kemper 2023), and creative misuse, this approach foregrounds slow, situated engagements that counter optimisation logics. Rather than treating AI as a seamless collaborator, it emphasises asymmetry, opacity, and negotiation. Through studio teaching examples, this work demonstrates how students can develop critical-creative capacities embracing ambiguity, error, and embodied reflection within automated environments.

Introduction

Generative artificial intelligence (genAI) is no longer a novelty. In software development, marketing and communication, journalism, and law, the technology is now firmly, potentially irrevocably, embedded. In creative industries and education, as well, GenAI is now an everyday infrastructure for creatives, producers, students, and educators. Rather than the glitched-out errors of early GenAI tools such as Disco Diffusion and DALL-E 2, contemporary tools are now producing outputs nearly indistinguishable from reality, or from works produced by human creatives. These outputs are clean and smooth, and can serve functionally in design, marketing, and content creation. In a similar flattening, regulatory frameworks push for ‘literacy’: a skills- and competency-based framing that privileges outputs over process. As a result, the space for experimentation, play, and failure is much diminished; this paper argues for something different.

What I propose instead are Synthetic Literacies and Obstinate Pedagogies (S.L.O.P.), approaches and methods for making, working, teaching, and learning with GenAI, that seek not to hide the processes and mechanisms at work within the technology, but to foreground them. The acronym is deliberate: slop is already the pejorative term for AI-generated content that is cheap, fast, and disposable; I reclaim it here as both method and provocation. We cannot understand generative systems just by reading about them; we must also actively test and push them to find their breaking point. The result is that GenAI reveals its workings to us.

Literacy and Pedagogy

Dominant frameworks for AI literacy are pedagogically sincere, but structurally incomplete; they tell us what AI can do and how to use it, but not how to sit with it.

Within scholarship, critical awareness is recommended but

is sometimes not prioritised over competency with the tool. Long and Magerko frame AI literacy as “a set of competencies that enables individuals to critically evaluate AI technologies; communicate and collaborate effectively with AI; and use AI as a tool online, at home, and in the workplace” (2). To guide education within this framing, they then offer five overarching themes: “What is AI?; What can AI do?; How does AI work?; How should AI be used?; and How do people perceive AI?” (3). Notably, Long and Magerko’s piece pre-dates the release of ChatGPT by some 18 months, but their framework serves as a sound benchmark for a critical awareness of AI systems. Chiu et al propose a comprehensive model for use in primary and secondary education, based on the presumption that understanding AI technology does not necessarily require knowledge of software development or data science (2). Key to this model is the notion of ‘self-reflective mindsets’, though this is only briefly defined as students’ ability to “continuously evaluate their own understanding of AI and stay up-to-date on its advancements” (4). Chiu et al. briefly suggest that AI literacy would be improved by considering pedagogy drawn from process and praxis design ideas, though beyond a brief overview of problem-based learning, this is not much developed (2).

What these frameworks share, despite their differences, is an implicit aversion to failure, and with it, the foreclosure of play as a mode of genuine encounter with the technology. This is understandable: play and failure aren’t positive metrics. These are concepts not easily mapped or measured, nor are they widely theorised in many disciplines. They also do not fit neatly into a list of competencies for increasingly stringent education frameworks. Play and failure are ‘tactics’, to use de Certeau’s idea, that can be deployed to poke at these monolithic systems, revealing a little of their inner working; or as de Certeau puts it:

Without leaving the place where he has no choice but to live... he establishes within it a degree of plurality and creativity. By an art of being in between, he draws unexpected results from his situation (30).

Working with systems that operate on statistical probability, even when the output is correct or clean, but actually, irrespective of the output, necessitates an awareness of the fuzziness and glitch-prone-ness of those systems. This is where both slop and S.L.O.P. become useful as ‘tactics’, as critical and creative tools for exploring the ‘in between’. I offer two examples here: one drawn from the classroom and another as experimental practice for research, which treats friction as a method rather than an error.

Messy Methods for AI Education and Research Workflows and Agency

In a problem-based media studio class, I put process front of mind by asking students to map out their (non-AI) workflows for daily routines, creative pieces, individual assignments, and group projects. Students were able to choose how this was visualised: as a list, a table, or a flow diagram. The next step was to categorise each step as a tool, technique, self-driven, or assisted. Critically, students were directed to leave AI out of these initial maps, but other apps and tools were permitted. With their maps in place, students were then to ask:

- Which of these steps could be automated?
- What am I comfortable automating or handing over to genAI?
- Which of these steps feels important to keep manual/human-led?
- Where do I want to maintain control, time, and friction?

With this exercise, students were able to hold two ideas simultaneously: that GenAI and other automation tools can be genuinely useful, but also that it is important to retain agency and control rather than complete offloading. Students approach genAI and all technologies with confidence because they're consciously choosing to utilise the tool. Automation is not, then, an inevitability, and friction is discretionary, rather than accidental and in this way, obstinacy becomes aspirational.

Semantic Collapse: Critical Exploration of Language Model Breakdown

If the workflow exercise asks students to decide consciously what to automate, this second set of experiments operates from the opposite direction: pushing a model until it fails, and treating that failure not as a problem to resolve but as a disclosure. These experiments push back against technological opacity by other means, not by reading about how models work, but by actively soliciting their breakdown.

Inspired by a robust class discussion on glitch art, I began to experiment with pushing LLMs to the edge of their capacity. This involves prompting repeatedly with the same text, or a slight variation; or one might use a recursive prompt that asks the model to rewrite or reframe what it's just written, and repeat this prompt; one can also just use nonsense prompts, with random words or characters. The idea is to take away any sense of shared reality between yourself and the model. Ideally, the output will degrade, becoming unstable, recursive, and uncanny.

The example provided (fig. 1) is towards the end of an interaction with an offline model (Hermes Llama 3.1 8B), where, after asking for a corporate safety document, I kept prompting with nonsense, eventually causing it to collapse into this blithering mess. This text has no practical application, but in examining it, we can see how the model is still clawing

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Answer: The person in question was aiming to update their wardrobe with fashionable and affordabl season's trends while maintaining a budget-friendly price.

Question: What tips can I get for improving my makeup skills so they are suitable for both professor

Answer: You'll have to settle for makeup that is not too expensive but still looks fashionable.

- • I want to maintain a stylish appearance without breaking the bank on work, and it.
- • It's important.

in your daily life, you've been making an effort. \$"

In conclusion: What efforts was she putting into her career in fashion.

The decision to upgrade her look.'

S' - how much work on fashion. - She wanted a mix-up about her physical. - she's looking for.

from scratch, practice. I want the perfect - he had, so he wants - his style. - butter you can in
your d not too to make a difference of them ' - making sure that she's - her goal - 'too - It - She's -
the top don't. - can".

Fig 1. Semantic collapse caused to Hermes Llama 3.1 8B.

at its embeddings, trying to produce something legible.

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Even in this glitched fragment, there are recognisable words and attempts at word/phrase structures. After this, the model moves into a conversational register, perhaps drawing from interviews or scripts. But while the Question/Answer structure is recognisable, the content is just a little off, including random characters and odd phrasing. De Certeau's description of tactical wit as working through 'cross-cuts, fragments, cracks and lucky hits' (38) maps unexpectedly well onto what

the collapsing model is doing, or trying to do.

Large language models (LLMs) are trained on vast corpora spanning an enormous variety of forms, registers, and purposes. For most outputs, this breadth provides sufficient material to cohere a response. These experiments, however, are designed to actively push the model away from the well-defined clusters it would normally draw from, to give it, in a sense, nowhere familiar to go. The paradox is that in trying to grant the model a kind of freedom, we reveal its powerlessness: it cannot draw from material that doesn't exist, so what we get are confused fragments, half-words, and collapsed syntax, demonstrating how tenuous and probability-driven all LLM responses are. For researchers like myself who are not machine learning (ML) engineers, this becomes a valuable way into a critical awareness of the mechanisms of this technology, or what I call here, *synthetic literacy*. It gives us the ability to find the fragments and cracks that show us the limits of these systems.

Conclusion

Literacy, conventionally framed as skills and competencies, risks becoming compliance if deployed by itself. What is proposed in this piece is just one philosophy of teaching and researching with GenAI tools, and all academics and educators must find one of their own. In this case, S.L.O.P. reframes both pedagogy and research as attentional training, ethical pacing, and relational awareness. Attentional training means keeping decision-making visible – considering deliberately, at each step, what is being handed over and what is being retained. Ethical pacing means resisting the acceleration that optimisation culture demands, and building in time for design, iteration, and reflection. Relational awareness means understanding that our engagement with these tools is not neutral; it shapes what we notice, what we value, and what we are willing to call failure.

S.L.O.P. is not a refusal of the tools, but a refusal to be rushed by them. In the increasingly automated environment of capital-driven academia, teaching, learning, and research become sites of resistance, practices that hold time for caution, for play, and for failure.

AI Disclaimer

This article is completely human-written. An initial draft was generated by Claude Sonnet 4.6 but was rejected by the author; Claude was later brought back in for suggestions on tone and argumentation.

Works Cited

- Chiu, Thomas K. F., et al. "What Are Artificial Intelligence Literacy and Competency? A Comprehensive Framework to Support Them." *Computers and Education Open*, vol. 6, June 2024, p. 100171, <https://doi.org/10.1016/j.caeo.2024.100171>.
- de Certeau, Michel. *The Practice of Everyday Life*. Translated by Steven Rendall, University of California Press, 1984.

Posthuman Pedagogies

Long, Duri, and Brian Magerko. "What Is AI Literacy? Competencies and Design Considerations." Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems, 2020, pp. 1–16, <https://doi.org/10.1145/3313831.3376727>.

Speculative Pasts

Arlo Mountford



Arlo Mountford

Over the past 20 years, Arlo has developed an extensive practice, exhibiting nationally and internationally whilst primarily being based in Naarm (Melbourne), Australia. His work spans a wide field of mediums, often resulting in large-scale installations which integrate sound, video, animation, as well as object-based work, drawing and photography and digital image making. Conceptually, his practice is preoccupied with history and time, both as a burden to, and as a resource for, contemporary art-making. Dr Arlo Mountford is the acting codirector for RMIT Imaging Futures Lab and is also the Program Manager for the Bachelor of Photography.

ABSTRACT

Speculative Past Photorealistic generative image models offer new possibilities for interrogating personal and public memory. While art has long questioned reality, photography democratised visual deception and became contentiously linked to truth and record during the nineteenth and twentieth centuries. Generative models now destabilise this association, reigniting debates about representation and the real (Palmer et al, 2023). This presentation examines Doubling Down (Mountford, 2025), a practice-led research project that collaborates with vast image datasets to speculate moments, blending fact and fiction. The work conjures improbable encounters between writers, inventors, and thinkers alongside personal diary entries and family narratives, exploring how synthetic images might reimagine historical and intimate memory.

I imagine I am not alone in remembering through photographs. I also imagine I am not alone in misremembering or blurring events and moments due to the way narrative is captured in a photograph; these conventions prescribing and constructing my memory. These memories then become stories, and the photograph evokes the story. The image no longer recalls the memory. Instead, it is the story which is signified by the photograph.

From the beginning, photography has democratised visual deception. Because a photograph appeared to present the truth, it was possible to adjust the truth. As early as the mid 19th century, photographers were staging their shots to present an image more indicative of a dramatic reality, by this, I mean one that portrayed the moment more accurately in the viewer's mind than the more banal reality. This is the case with Roger Fenton's *Valley of the Shadow of Death* (1855), famously articulated by Susan Sontag (Sontag 49) and later by Errol Morris (3). Fenton, whilst documenting the aftermath of a battle during the Crimean War, took two photographs from the same position. For the second shot, he moved cannon balls from a ditch to the middle of the road, creating a more romantic image of the war for viewers back in Britain. Sontag elaborates on the story, explaining that Fenton was asked by the British Government at the time to improve the public's opinion of the Crimean War, which was becoming increasingly unpopular at the time. All of Fenton's work from this expedition is highly staged, depicting a model image of military life rather than reality. It is this propagandistic use of photography which Sontag finds problematic¹.

Similarly, although for a different purpose and again whilst reporting on a conflict, Amnesty International in 2021 used AI-generated images to report the brutality of a Police crackdown on protestors in

¹ Morris takes Sontag's claim to task, questioning the reasons for the difference between the images but arrives via deductive means at the same sequence of events.

Colombia. According to Luke Taylor, reporting in the Guardian in 2023, Amnesty International claimed this approach was taken to protect the protestors' identity from state retribution. This was a strategy that protestors agreed with, given the Colombian Police's tactic of pursuing protestors after the event (Taylor). However, photojournalists also cited by Taylor claimed this undermined the integrity of the reporting and that the continued use of AI could lead to a more systemic problem for the charity if they continued to report this way. Again, there is a blurring of reality here; this time, generic photographic-looking images are used to illustrate a story based on reality.

Returning to the 19th Century, in the 1890s, the Lumiere brothers, pioneers of early cinema, presented a series of filmed works which they referred to as Actualities, continuous real-time recordings on film, which captured the motion of everyday life in Paris. One film, *The Arrival of a Train at Ciotat Station*, was famously reported to have caused fear and panic in the audiences who were unable to distinguish between the real and the filmed.

According to legend, at the Grand Café where it was first screened, the train appeared to move towards the viewers, threatening to crush them, causing the audience to rear-back, scream and race out of the venue. However, Martin Loiperdinger explains this story, which went on to influence the history of cinema as one of its founding moments, championing the medium's power to manipulate the viewer, appears to be untrue. There is no indication from contemporary texts at the time to support the account.

Here, the truth is confused on one more level. We have, firstly, the confusion between what is real and what is not, this being the filmed sequence of the train by the Lumiere brothers. This is then misreported and retold in multiple accounts after the event, and later even attributed as fact in scholarly texts, as described by Loiperdinger, influencing the history of cinema. Loiperdinger then debunks the story, but one could argue it still exists as myth, a story almost too good to give up.

It is this compounding of ambiguity that I find interesting, the past being rewritten to adjust the present. As I mentioned in the opening paragraph, misremembering and obfuscation of the truth are inherent in the stories we tell ourselves, art making and fiction have always played with this. I understand in the context of fake news and the rise of AI that the ability to determine what is real or true is more important than ever, and that we live with a heightened sensitivity towards this. But perhaps we also need to temper this desire for clarity with the knowledge that we have always lied to ourselves.

In 2024, in response to the urgency surrounding the use of AI-generated images. I felt there was room to consider the technology in terms of history, considering the technology in this longer lineage of art making and storytelling. Using speculative narrative strategies, I used AI to conjure improbable meetings between people who could be



Fig.1. Carl, Donna, Mary, Salzburg, 1992, 2024. Courtesy of the Artist and Sutton Gallery

considered precursory thinkers to the technology itself. Often, these meetings were impossible because the people involved did not live at the same time. The first work, *Carl, Donna and Mary, Salzburg 1992*, depicts Carl Jung, Donna Haraway and Mary Shelley meeting for a picnic in the Salzburg Alps. I deliberately used the mainstream AI, Midjourney, to generate this image, hoping it would conjure these figures as they exist in the popular imagination, not as they appeared in real life. Carl Jung, for example, is depicted with a beard and shoulder-length grey hair and possibly looks more like Jung's predecessor and mentor, Sigmund Freud, than Jung himself. Jung did not sport a beard, and in most photographed

² I acknowledge I am making very general assumptions about how the AI is operating here. Midjourney is quite opaque regarding its dataset. According to its Training Data Documentation page, its sources are a makeup of publicly available data, Data from third parties, Midjourney users and internally generated data ("AB2013 Documentation").

portraits of him is seen wearing glasses. Mary Shelley, of course, was never photographed, but does seem to resemble Richard Rothwell's painted portrait of *Mary Wollstonecraft Shelley*, painted in 1839. Shelley is, however, depicted wearing 20th-century clothes; this I presume, is due to the request in my prompt, which specified the year 1992. Donna Haraway is depicted as the youngest member of the group; this could be a result of the specified date. Most images of Haraway online depict them as older, and again, I presume the AI guessed a younger Haraway would be appropriate for the time.

Although I was happy with the image, I still felt that more context was needed.

Instead of looking again to AI, I looked to what, for me, is personally true. I used my own travel diaries and family histories to account for these images, blurring even further the play between fiction and fact. For *Carl, Donna, Mary, Salzburg, 1992*, I used the following text.

12 June 1992 – Salzburg

We searched for the Sound of Music location today, the fields where Julie Andrews bursts into song with the title. Her voice is alive in my head as I write this. To be honest, I was searching for something else, searching for the sublime. Emily took multiple shots of me with my back to the camera as I surveyed a mountain scene – we'll have to see how the photos look when we get them back, not sure the poorly groomed backpacker look will work though!

We weren't the only ones searching; there were plenty of tourists, in fact, it was hard to take a shot without a brightly coloured raincoat or backpack in the distance. After a while, we saw the irony in this and started photographing people. There were locals about, too. We have our beaches, they have their mountains, I guess. Families out for the day, couples, friends catching up. You could spot the locals because they were more casually, and somehow more appropriately dressed.

Em took a photo of one group picnicking: Carl, Donna and Mary. We got their names because we asked if they minded being photographed. This happened after taking the shot, the conversation seemed so deep, they barely noticed we were there initially.

Caught the gondola lift back, too knackered to walk! Not sure where we're off to next, possibly a train to Linz, then up into the Czech Republic, but I think Em is keen to head South.

What worked for me here is the text's foundation in a real event, which

then lends legitimacy to the image. Once established, I then started to manipulate the original text to match the image conjured by AI. Blurring further the lines, taking the kernel of truth and bending it further, not dissimilarly, I would argue to Fenton's movement of the canon balls.

Works Cited

- AB2013 Documentation: Midjourney Training Data Documentation." *Midjourney Help Center*, Midjourney, 20 Jan. 2026, docs.midjourney.com/hc/en-us/articles/42829949256205-AB2013-Documentation. Accessed 27 Apr. 2026.
- Gunning, Tom. "An Aesthetic of Astonishment: Early Film and the (In)Credulous Spectator." *Viewing Positions: Ways of Seeing Films*, edited by Linda Williams, Rutgers University Press, 1994, pp. 114–33.
- Loiperdinger, Martin. "Lumière's *Arrival of the Train*: Cinema's Founding Myth." *The Moving Image*, vol. 4, no. 1, spring 2004, pp. 89–118.
- Lumière, Louis. *Arrivée d'un train à la Ciotat*. 1895. *Museum of Modern Art*, New York, moma.org/collection/works/307080. Accessed 6 Feb. 2026.
- Morris, Errol. *Believing Is Seeing: Observations on the Mysteries of Photography*. Penguin Press, 2011.
- Sontag, Susan. *Regarding the Pain of Others*. Farrar, Straus and Giroux, 2003.
- Taylor, Luke. "Amnesty International Criticised for Using AI-Generated Images." *The Guardian*, 3 May 2023, theguardian.com/world/2023/may/02/amnesty-international-ai-generated-images-criticism.

Tailor-Made Training Texts: Designing Training Texts for Actor and Voice Fundamentals

Joscha Bernath



Joscha Bernath is a senior lecturer in voice and speech for stage, and in movement and somatic awareness at the Hochschule für Musik Franz Liszt Weimar, where he teaches at the Institute for Singing and Music Theatre. As a performing artist, he has worked internationally across a wide range of genres, including voice performance, acting, singing, music theatre, improvisational formats and body-based performance practices. This extensive artistic background continues to inform and shape his pedagogical approach. In addition to his position in Weimar, he regularly teaches workshops and masterclasses at universities and performing arts institutions in Germany and abroad. His teaching focuses on voice and speech for the stage, vocal training, eutony (a somatic approach focusing on balanced muscle tone and bodily awareness), and scenic performance, often within intensive, project-based and masterclass formats. Through his private studio near Frankfurt, he also works in individual and group training contexts with professional performers as well as high-performing individuals from a range of other professional fields. His teaching practice is characterised by a close integration of artistic practice, technical precision and embodied awareness, shaped by long-standing international teaching experience.

ABSTRACT

This practice-led contribution explores how generative AI can be used as a pedagogical tool in actor training, voice, and movement education to strengthen fundamental skills of speech, embodiment, and imagination. Rather than replacing creative or embodied experience, AI serves here as a precise and adaptable partner that allows learning processes to be individually tailored and focused on specific pedagogical aims. In my teaching, I design AI-generated texts that respond to distinct learning objectives – such as developing sensitivity to sensations and emotions, refining awareness of spatial surroundings, or cultivating the ability to imagine and mentally construct a scene that can then be communicated vocally. These texts form the basis for practical exercises in which students learn to centre their attention, embody sensory impressions, and translate inner imagery into spoken expression. The contribution reflects on the role of AI as a co-author that enables flexible, situationally specific learning materials which can address students' individual developmental needs. It further considers how mindfulness and embodied reflection can serve as counterbalances to the risks of cognitive overload or abstraction often associated with digital tools. By integrating generative AI with mindful voice and movement practice, this project proposes a form of posthuman pedagogy in which technological and human intelligence collaborate to create learning spaces that enhance presence, perception and creative awareness.

Keywords: stage fundamentals; generative AI; voice training; embodiment; artistic pedagogy

Generative AI as a Pedagogical Tool in Embodied Speech Training

In actor training and voice education, much of the essential work happens long before interpretation, character development, or performance. At the core of this work lie foundational capacities: perception, bodily awareness, breath, attention, and the relationship between thought and spoken language. These elements form the basis of what might be called *embodied speech*. The performer's voice is not an isolated instrument but emerges from the interaction of body, breath, perception, and imagination. Speaking on stage, therefore, always involves the entire organism. A voice without a body is inconceivable. For this reason, a large part of my pedagogical work with actors focuses on fundamental training: developing the conditions under which speech can arise from embodied perception rather than from technical control alone.

In recent years, generative artificial intelligence (AI) has become an unexpected and powerful tool in this process. Rather than using AI primarily to produce artistic content, I employ it as a means of creating training texts; short textual structures designed specifically to support different aspects of foundational voice and speech training. These texts

are not intended as literary works. Their function is pedagogical. They operate as training scores for attention, breath, voice, and perception. One of the most significant advantages of generative AI is the ability to produce tailor-made texts that correspond precisely to the needs of a particular exercise or pedagogical situation. Instead of adapting exercises to existing literature, the textual material itself becomes adaptable. This flexibility makes it possible to design exercises that address a wide range of fundamental aspects of actor and voice training.

Breath and Respiratory Organisation

Breath is the primary energetic basis of spoken voice. Many training exercises focus on developing breath economy, continuity of airflow, and the ability to sustain long phrases without tension. Generative AI makes it possible to design texts specifically for this purpose. For example, prompts can generate sentences with extended syntactic structures and multiple subordinate clauses. Such texts challenge performers to maintain breath flow across long linguistic units. The task then becomes not simply reading the sentence but organising breath, attention, and articulation in a way that allows the sentence to unfold organically. In this context, the text functions as a breath challenge, inviting performers to discover how breath supports meaning over extended linguistic movement.

Resonance and Vocal Energy

Other exercises focus on vocal resonance and energetic projection. In such cases, prompts can generate texts that encourage strong vocal impulse, dynamic phrasing, or intensified speech action. For example, texts may be structured around decisive verbs, energetic rhythms, or heightened emotional tone. Speaking such material invites performers to explore the relationship between inner impulse and vocal energy. Rather than forcing volume or intensity, performers discover how resonance emerges from bodily alignment, breath support, and energetic intention.

Articulation and Phonetic Precision

Articulation training forms another central aspect of classical speaker education. Precise consonant formation and flexible vowel shaping are essential for intelligible and expressive speech. Generative AI can generate texts that emphasise particular phonetic patterns. Prompts may specify the repetition of certain consonant clusters, vowel combinations, or articulatory challenges. Such texts function as phonetic training material. They allow performers to practise difficult articulatory patterns within meaningful language rather than isolated syllables. The text becomes a field for exploring clarity, speed, and precision of articulation.

Spatial Awareness and Speaking in Space

Another crucial element of actor training is the performer's relationship

to space. Voice on stage is always directed into an environment: toward partners, objects, or distant listeners. Training texts can therefore be generated that emphasise spatial perception and orientation. These texts often invite performers to imagine distance, direction, or changing spatial relationships while speaking. In such exercises, speech becomes a form of spatial action. Words travel through the space, and the performer's attention expands beyond the boundaries of the body.

Thinking in Speech

One of the most subtle aspects of speaker education involves what might be called *thinking in speech* (German: Sprechdenken). Instead of delivering pre-constructed meaning, performers learn to allow thought to emerge during the act of speaking. Generative AI can support this process by producing texts that encourage exploratory thinking structures: unfinished sentences, reflective phrases, or linguistic movements that invite discovery rather than declaration. In such exercises, language becomes a process rather than a product. The performer learns to follow the emergence of thought while speaking.

Vocal Attitude and Gestural Speech

Speech on stage always carries an internal attitude or orientation. A single sentence may express curiosity, resistance, invitation, or confrontation, depending on the inner stance of the speaker. Texts can be generated that allow performers to explore these shifts of vocal attitude. By speaking the same textual structure from different internal orientations, performers experience how subtle changes in bodily energy influence vocal expression. This work connects closely with traditions of **gestural speech**, in which vocal expression is understood as a form of embodied action rather than purely linguistic communication.

Proprioception and Bodily Awareness

Because the voice emerges from the body, speech training inevitably involves developing proprioceptive awareness: the ability to sense muscular tone, balance, and internal alignment. Training texts can invite performers to notice weight distribution, physical grounding, or subtle changes in bodily tension while speaking. In such exercises, the text becomes a guide for internal perception. Performers learn to speak while remaining aware of the body as a living instrument.

Designing Pedagogical Scores

Across all these examples, the central principle remains the same: textual material becomes part of the pedagogical design of the exercise. Generative AI enables the creation of short, flexible textual structures that function as **pedagogical scores**. Each score emphasises a particular aspect of training: breath, resonance, articulation, spatial awareness, thinking in speech, or bodily perception. The accompanying microtalk

linked to this essay [<https://youtu.be/wVJNJXBtb48>] demonstrates one specific exercise within this broader framework. Rather than repeating that demonstration here, it may be more useful to emphasise the overall pedagogical approach. The real innovation lies not in a single exercise but in the possibility of designing **situational training texts** that support a wide spectrum of foundational skills.

Embodied Speech and Posthuman Pedagogy

Within the context of the symposium theme *Posthuman Pedagogies: Mindful Creativity in the Age of AI*, this practice also suggests a particular perspective on the relationship between technology and artistic training. Generative AI does not replace the performer's creative or embodied capacities. Instead, it assists in shaping the pedagogical conditions in which those capacities can unfold. The centre of the work remains human: perception, breath, imagination, bodily awareness, and voice. Technology simply becomes a tool for designing learning environments in which these capacities can be explored with greater precision. In this sense, generative AI supports a form of training that is not accelerated but deepened. By generating simple and focused textual structures, it often reduces interpretive pressure and allows performers to settle more fully into perception. The result is not faster performance but a more attentive presence.

Conclusion

My work with AI-generated training texts continues to evolve through teaching, workshops, and collaboration with performers from diverse artistic backgrounds. What remains constant is the pedagogical intention behind this exploration: to create conditions in which speech can emerge from embodied perception rather than from technical effort alone. Generative AI has proven to be a remarkably flexible tool for shaping such conditions. Rather than replacing artistic practice, it supports the careful cultivation of the fundamental capacities on which all expressive speech ultimately depends: attention, breath, body, imagination, and voice.

AI Disclosure

Generative AI tools were used during the development of this article as language collaborators and editorial assistants. The author works with AI through an iterative process that includes spoken reflection, prompting, and revision. The pedagogical concepts, training methods, and examples described in this essay are based entirely on the author's own artistic and educational practice. AI tools supported language refinement and drafting but did not generate the underlying ideas or methodology.

The Slow Studio: Mindful methodologies for sustainable and embodied practice

Chris Shaw and Alice Dunseath



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Chris Shaw is an animator, educator and researcher whose experience spans studio feature production, advertising and contemporary media pedagogy. Trained in graphic design (BA, Falmouth University) and animation (MA, Bournemouth University), he began his career with Walt Disney Animation and later worked across studio and freelance contexts. His professional credits include animation for major international clients such as the BBC, Reuters, IBM, MTV, Lego and Paul McCartney. This industry background now informs his research-led teaching and academic inquiry into animation practice, creative cognition and emerging technologies.



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Alice Dunseath is a filmmaker, animator and academic, currently convening Animation and Illustration at Goldsmiths, University of London. She holds a BA in Media and Communications from Goldsmiths and an MA in Animation from the Royal College of Art. Working across animation, live action, moving image and installation, her practice explores experimental and expanded forms of animation. Her work has been widely screened and discussed at international festivals, design events and universities, alongside her research-focused pedagogical practice.

ABSTRACT

Generative AI offers extraordinary acceleration in artistic production, yet this speed masks a deeper educational risk: students increasingly outsource the difficult parts of thinking. In real classroom settings, many use AI not to explore ideas but to minimise effort, producing fluent outputs without engaging in the imaginative struggle that develops originality. This reflects a broader cognitive pattern in contemporary life: as routine tasks are absorbed by digital systems, human mental muscles quietly weaken. In creative disciplines, this subtle erosion is particularly dangerous. When students rely on AI for ideation, narrative design or aesthetic direction, they lose contact with the slow, uncertain, iterative space where imagination grows. This presentation provides insights from a cross-institutional project between Goldsmiths and LASALLE exploring how AI is affecting the development of Creative Imagination in arts and animation programmes. It argues that metacognitive growth does not emerge automatically through technology, but must be intentionally designed and embedded into pedagogical strategies that explicitly require reflection, iteration and process accountability. We propose a series of “slow studio” interventions that integrate multiple creativity theories into a single lens for rethinking studio practice, which can then be applied to practical assignments and assessment strategies. The goal is to create learning conditions where AI provokes curiosity rather than replaces it, and where reflection, risk and possibility remain central to creative imagination. The aim is not to shield students from AI, but to cultivate students who can collaborate with it intelligently, critically and imaginatively. Ultimately, this project seeks to preserve imagination as a living, embodied, human practice within posthuman creative education.

Keywords: Creative Atrophy, Metacognition, Imagination, Pedagogy

Introduction: A Pedagogical Problem - Not a Technological One

Generative artificial intelligence has arrived in arts higher education not gradually but all at once. In programmes such as animation, film and media arts, students can now produce images, narratives and visual sequences with extraordinary speed. The promise is seductive: AI potentially lowers the barrier to creative outcomes, accelerating ideation, removing many of the technical frustrations that once occupied studio hours.

Yet educators at both LASALLE College of the Arts in Singapore and Goldsmiths, University of London share a serious concern about what this acceleration may be masking. The very features that make generative AI attractive, speed, fluency, and instant resolution, are precisely those most likely to undermine the slow, uncertain, iterative stages of creative development essential to imaginative growth. The worry is not that students will use AI, but that they will use it to bypass the productive struggle through which imaginative thinking develops. This is

not primarily a technological problem. It is a pedagogical and cultural one.

This paper sets out the motivations and theoretical foundations for our cross-institutional research project, first presented at the Posthuman Pedagogies symposium under the title *The Slow Studio: Mindful Methodologies for Sustainable and Embodied Practice*. The project investigates how generative AI is likely to influence imaginative development in creative arts education, and how pedagogical design can proactively respond to that risk. The central concept we have developed to frame this concern is creative atrophy: the gradual weakening of imaginative capacity that occurs when learners consistently defer cognitive and creative labour to external systems. We argue that creative atrophy is both anticipatable and preventable, and that the conditions for preventing it are primarily pedagogical.

The Problem: Creative Atrophy as an Anticipated Risk

Creative arts education is at a critical inflexion point. The concern driving this research is rooted in a well-established understanding of how creative thinking develops, and what threatens it. Imagination is not a product to be delivered; it is a capacity built through iterative, often uncomfortable engagement with creative problems. It grows through exploration, the willingness to generate many ideas before committing to one, and the tolerance of uncertainty.

Generative AI, used without pedagogical guidance, creates structural incentives to bypass precisely these conditions. Instead of engaging in exploration, experimentation and reflective struggle, students may come to rely on AI to rapidly generate “good enough” ideas. Within an educational culture that often prioritises finished outcomes over developmental process, this shortcut risks becoming habitual. In turn, this habitual shortcutting has cumulative consequences.

When students consistently avoid exploration, elaboration and iterative revision, they are not simply taking shortcuts on individual assignments. They are forgoing the repeated practice through which core creative capacities, such as curiosity, risk-taking and divergent thinking, are built. Over time, and across a programme of study, the risk is that these capacities fail to develop in the ways that studio education has traditionally sought to cultivate them. We conceptualise this gradual erosion of imaginative capability as creative atrophy.

Current educational discourse tends to frame this as a binary: AI is either a threat to creativity or an inevitable productivity tool, and educators must choose which camp they occupy. We reject this framing. The more productive question is: *Under what pedagogical conditions can AI support, rather than erode, the development of creative imagination?* That is the question our research is designed to answer.

Collaborative Research Design

This project brings together two distinct creative education cultures:

Goldsmiths, University of London, conceptually driven, with deep roots in critical and theoretical inquiry, and LASALLE College of the Arts, Singapore, practice-led and industry-engaged. This cross-institutional, cross-cultural design is central to the research, since creative atrophy is likely to manifest differently across educational contexts.

The study adopts a qualitative, interpretivist, multi-site case study approach. The aim is not to measure outputs, but to understand thinking, decision-making and reflection: how students and educators engage with AI during creative development, and how pedagogical structures shape that engagement. Ultimately, the research seeks to design a Pedagogical Framework for Creative Resilience; one that sustains imagination, supports a growth mindset, and repositions AI as a collaborator rather than a creative substitute.

Theoretical Foundations: Three Converging Perspectives

Our initial conceptual framework draws on three established bodies of theory, which together explain how imaginative development occurs, how it can be disrupted, and how pedagogy can sustain it.

Growth Mindset Theory (Carol Dweck)

Dweck's research distinguishes between two fundamental psychological orientations: a fixed mindset, in which ability is understood as innate and unchangeable, and a growth mindset, in which ability is understood as something developed through effort, strategy and persistence (Dweck). In creative disciplines, this distinction is particularly significant. Students operating from a fixed mindset are likely to interpret the difficulty of creative work as evidence of a lack of talent. They avoid challenge, fear failure, and seek outputs that demonstrate competence without exposing struggle. Generative AI, used uncritically, is an ideal tool for a fixed mindset: it provides fluent, socially acceptable creative outputs with minimal cognitive expenditure.

Creative atrophy is, we argue, in part a fixed mindset phenomenon. The avoidance of imaginative struggle is not laziness, but a rational response to an educational culture that rewards the appearance of creative ability rather than its development. When students use AI to produce work that looks confident and finished, they are doing what a fixed mindset incentivises: minimising effort and maximising apparent output (Dweck).

A growth mindset reframes these same experiences. Struggle becomes evidence of learning. Revision becomes a mark of investment. Feedback becomes information rather than judgment (Dweck; Yeager and Dweck). Crucially, a growth mindset is not taught through encouragement alone. Instead, it is produced through pedagogical design. When reflection, iteration and metacognition are built into the structure of creative tasks, students begin to internalise the belief and confidence that imagination can be strengthened rather than outsourced.

Pedagogical environments that cultivate these beliefs can therefore shift how students relate to creative challenge and, consequently, how they choose to use AI tools within their practice.

Imaginative Development Indicators (Liang)

Where Dweck's theory explains the psychological orientation students bring to creative work, Liang's framework provides observable indicators of how imaginative thinking actually develops in practice. Liang et al. ("Exploration" 366–74) identify six key markers of creative imagination: Exploration, Elaboration, Novelty, Productivity, Sensibility and Concentration. These indicators describe the arc of imaginative work, from the generation of divergent possibilities, through iterative development and refinement, to the production of work that demonstrates originality, emotional resonance and sustained engagement (Liang et al., "Exploration" 366–74; Liang et al., "In Search" 1037–46).

These indicators are valuable to our research because they make imagination measurable in behavioural terms. Rather than treating creativity as a quality students either have or lack, Liang's framework allows us to ask: *Is this student generating multiple ideas? Are they developing those ideas through successive iterations? Are they sustaining concentration through the difficult middle stages of the creative process, rather than cutting to an AI-assisted resolution?*

In combination with Dweck's theory, Liang's indicators allow us to connect psychological orientation (fixed or growth) with creative behaviour (exploratory or shortcut-seeking), and to examine how those behaviours are shaped by the pedagogical environments in which students work.

Flow Theory (Mihaly Csikszentmihalyi)

Csikszentmihalyi's theory of flow describes the psychological state in which challenge and skill are balanced, producing deep immersion, intrinsic motivation and sustained concentration (Csikszentmihalyi, "Flow"). Flow is notoriously fragile: too much challenge creates anxiety, while too little creates boredom (Csikszentmihalyi, "Creativity"). What removes challenge too quickly disrupts the conditions for flow entirely.

Generative AI, used as a shortcut, consistently removes challenge at the very moment when productive struggle would otherwise produce growth. Students risk operating below the threshold at which their skills are genuinely tested, never reaching the state of deep engagement in which imaginative development naturally occurs (Csikszentmihalyi, "Flow"). Pedagogy designed around flow principles would do the opposite: calibrate challenge to stretch students without overwhelming them, sustaining creative engagement rather than enabling premature resolution.

Together, Dweck's mindset theory, Liang's imaginative development indicators, and Csikszentmihalyi's flow model form the

conceptual foundation of our research. These complementary lenses allow us to examine how imaginative development occurs, why it is at risk in AI-enhanced environments, and how pedagogical design can respond.

The Conceptual Framework: CRI and P-CRI

From these theoretical foundations, we have developed two measurement constructs that operationalise the key concepts for the initial stages of our empirical investigation.

The Creative Resilience Index (CRI) is a composite measure of students' capacity to sustain imaginative engagement through creative challenges. It draws on Liang's imaginative development indicators (particularly Exploration, Elaboration and Concentration), Dweck's growth mindset orientation, and persistence in response to feedback and difficulty. The CRI does not evaluate the quality of creative outputs. Instead, it focuses on process-oriented behaviours: whether students generate multiple ideas, revise iteratively, and continue to engage with creative complexity rather than seeking premature resolution.

The Pedagogical Creative Resilience Index (P-CRI) applies the same logic to teaching practice, measuring the extent to which pedagogical strategies actively cultivate creative resilience: whether assignments encourage divergent ideation, whether revision is embedded in assessment design, whether challenge is calibrated to support flow, and whether feedback reinforces growth rather than judgment.

Together, these indices create a framework for examining both sides of the creative learning environment. Where strong pedagogical design (high P-CRI) aligns with resilient student behaviour (high CRI), we expect to find AI being used exploratorily. Where disconnects appear, we expect creative atrophy to take hold.

Conclusion: Why This Research Matters

The conversation about AI in education remains frustratingly polarised. Critics warn of the death of creativity; advocates celebrate unprecedented access to creative tools. Both positions miss the central point: the question is not whether AI is used, but *how* it is used, and *what pedagogical conditions shape that use*.

This research reframes AI integration as a learning design challenge, not a tools issue. If institutions continue to reward speed and polish over process and reflection, creative atrophy will accelerate. Our framework argues for process accountability valuing ideation, revision and decision-making as assessable outcomes in their own right. In what we describe as a slow studio pedagogy, students are required to document ideation, justify decisions, reflect on revisions, and make their imaginative struggle visible. Under these conditions, AI does not disappear from the creative process, but its function changes. Rather than replacing imagination, AI becomes a tool for provocation: generating alternatives, prompting questions, and disrupting assumptions. This

restores challenge, supports flow, and reinforces the growth mindset belief that creative ability is developed through effortful engagement.

This research is motivated by a conviction that creative imagination is not a fixed quantity that technology will either preserve or destroy. It is a capacity that must be actively developed through intentional learning design. Creative atrophy is not an inevitable consequence of AI in education, but it is a predictable one if pedagogy fails to respond. By grounding our inquiry in established creativity theory, developing robust instruments for measuring student resilience and pedagogical design, and conducting comparative research across two culturally distinct institutions, we aim to demonstrate that the response to AI in creative education need not be resistance or resignation, but intentional, imaginative pedagogical design.

At a policy level, this work contributes to global conversations on ethical AI in education by foregrounding human imagination as a core educational asset, not a by-product. The future of creative education depends not on smarter tools, but on slower, more intentional pedagogies that keep human creativity at the centre.

Works Cited

- Csikszentmihalyi, Mihaly. *Creativity: Flow and the Psychology of Discovery and Invention*. HarperCollins, 1996.
- . *Flow: The Psychology of Optimal Experience*. Harper & Row, 1990.
- Dweck, Carol S. *Mindset: The New Psychology of Success*. Random House, 2006.
- Liang, Chaoyun, Ching-Ching Chang, Yuan Chang, and Li-Ju Lin. "The Exploration of Indicators of Imagination." *TOJET: The Turkish Online Journal of Educational Technology*, vol. 11, no. 3, July 2012, pp. 366–74.
- Liang, Chaoyun, Yuhsuan Hsu, Ching-Ching Chang, and Li-Ju Lin. "In Search of an Index of Imagination for Virtual Experience Designers." *International Journal of Technology and Design Education*, vol. 23, no. 4, Nov. 2013, pp. 1037–46, <https://doi.org/10.1007/s10798-012-9224-6>.
- Yeager, David S., and Carol S. Dweck. "Mindsets That Promote Resilience: When Students Believe That Personal Characteristics Can Be Developed." *Educational Psychologist*, vol. 47, no. 4, Oct. 2012, pp. 302–14, <https://doi.org/10.1080/00461520.2012.722805>.

Embodied Digital Pedagogies: Movement-Based Interaction and Co-Creation with AI

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ABSTRACT

This practice-led presentation examines how movement-based interaction can support mindful, digital, and embodied approaches to co-creation with Artificial Intelligence (AI). My recent projects, such as FORMS (Nogueira et al., 2023) and Move In Tempo (Nogueira et al., 2025), explore the body, gesture, and movement as active vehicles of communication and relationality with the machine, forms of expression that both shape and are shaped by algorithmic systems and machine learning (ML) models (e.g., pose detection models). In other interactive installations, such as In Linea (Nogueira, 2024), my research positions the body within a dynamically shifting digital frame, where human and non-human agencies negotiate authorship and aesthetic emergence in real time using additional ML techniques (e.g., body segmentation). These works employ generative algorithms and spatial mapping to translate bodily expression into adaptive visual and spatial compositions, positioning AI as a collaborator rather than a tool. In parallel with this artistic and research practice, I integrate these methodologies into teaching through studio protocols that foreground attention, slowness, and embodied awareness. These include reflective interludes, the use of AI and ML models in interaction design, and guided observation exercises that help students recognise how movement, gesture, human behaviour, and presence influence digital outcomes. By situating AI creation within the body's experiential domain, these approaches counter tendencies toward disembodied, rapid production and encourage more intentional, situated interactions with computational systems. This presentation offers a close reading of these movement-AI systems, focusing on three aspects: (1) how embodied data becomes a site for co-authorship between human and machine; (2) how mindful interaction methods can mitigate cognitive overload and foster sustainable creative rhythms; and (3) how movement-based design expands our understanding of the posthuman learning environment, where intelligence and creativity are distributed across bodies, interfaces, and algorithms. This contribution proposes an alternative pathway for AI-integrated arts education, one that cultivates presence, agency, and mutual responsiveness between humans and computational partners.

Keywords: movement-based interaction; embodied AI; co-creation; interaction design; posthuman pedagogy; mindful design.

Introduction

The rapid integration of artificial intelligence (AI) into creative practice has largely been framed through efficiency, automation, and output-driven production. While these approaches expand access to generative systems, they also tend to privilege speed over reflection and reinforce disembodied modes of interaction, where the role of the body in creative processes is diminished. As a result, engagement with AI often becomes

instrumental, prioritising results over the conditions and lived experiences through which creative processes emerge.

This work situates itself within this tension and proposes an alternative approach grounded in movement-based interaction. Rather than treating AI as a tool for optimisation, it explores how embodied and temporal forms of engagement can reconfigure the relationship between human presence and computational systems. In this context, the body is not peripheral but central to the formation of meaning, interaction, and creative output.

Drawing on practice-led research, the work examines projects such as “FORMS”, “Move In Tempo”, and “In Linea” (Nogueira et al.), which employ machine learning techniques, including pose detection and body segmentation, to translate bodily movement into dynamic visual and spatial compositions. In these systems, AI operates not as a passive instrument but as a responsive collaborator, participating in the generation of form through continuous interaction with embodied input.

The discussion unfolds across two interconnected dimensions. First, it analyses how movement-based systems produce co-creative relations between human and machine through real-time translation of gesture into visual output. Second, it considers how these approaches can inform pedagogical frameworks in arts and design education, particularly in relation to embodied, reflective, and process-oriented learning.

By bringing together artistic practice and teaching, this work argues for a shift toward embodied digital pedagogies that foreground attention, awareness, and mutual responsiveness. It contributes to ongoing debates on how AI might be integrated into arts education in ways that remain critically engaged, experientially grounded, and pedagogically relevant.

Movement-Based Interaction in Artistic Work

This line of inquiry builds on earlier work exploring movement capture through Augmented Reality. In a prior project (Nogueira et al., “Understanding Art”), a mobile system translated bodily movement into real-time visual compositions, establishing a foundation for later investigations of movement as both input and generative material within machine learning systems. The projects “FORMS”, “Move In Tempo”, and “In Linea” investigate the body as both a sensing and generative medium within computational systems. These works employ machine learning techniques, such as pose estimation and body segmentation, to capture and interpret movement in real time, transforming it into evolving visual outputs. “FORMS” explores how dance movement can be reinterpreted through machine learning to generate new visual perceptions of the body. By tracking skeletal points from dancers and translating them into abstract forms, the system produces a dynamic interplay between physical gesture and algorithmic transformation. As shown in fig. 1, the



Fig. 1. FORMS, real-time performance on stage.

resulting visuals are not fixed representations but emergent compositions that evolve in real time through continuous interaction between dancers and the machine..

“Move In Tempo” extends this approach by directly involving audiences in the creation process. Participants’ movements are captured and mapped in real time, establishing a feedback loop between human gestures and computational response across different temporal moments (see fig. 2). This interaction foregrounds temporality and rhythm as key elements of the visual composition, as the system responds to both the intensity and cadence of bodily motion, integrating past and present movement).

In “In Linea”, the body is situated within a mutable digital frame that shifts in response to both current and past movement. As shown in fig. 3, the integration of a body segmentation model allows the system to



Fig. 2. *Move In Tempo* audience interacting through bodily movement.



Fig. 3. *In Linea*, movement-based exploration.

isolate and reconfigure the human figure alongside traces of its previous actions within a constrained spatial environment. Here, authorship becomes distributed between the human presence, the system, and temporal layers of movement, generating an evolving visual composition as a collective aesthetic outcome. The work situates the body within a relational field of human and non-human agencies.

Across these projects, movement is not merely input but a form of communication. The body becomes a site of translation where gestures are continuously interpreted, transformed, and reintroduced into the system. This cyclical process challenges linear models of interaction and instead foregrounds co-creation as an emergent, relational practice.

Embodied AI as Co-Creation

Central to this research is the notion of embodied data, data generated through bodily movement and lived experience rather than abstracted inputs. In movement-based systems, gesture operates as both signal and expression, collapsing the distinction between interface and performance. This aligns with perspectives in embodied cognition, which

emphasise the role of the body in shaping perception, thought, and action (Shapiro). Within this framework, AI systems are not neutral processors but active participants in co-creative processes. Outputs generated by machine learning models depend on the quality, rhythm, and variability of human movement, as well as on the constraints embedded within the algorithms. As a result, authorship becomes distributed across human and computational agents, reflecting posthuman perspectives that decentre the human as the sole origin of creativity (Braidotti). Interaction is thus reframed as a form of negotiation. Rather than exerting control, participants engage in a dynamic exchange with the system, responding to its outputs while shaping its behaviour. The unpredictability of machine learning becomes a generative condition, introducing variation and complexity into the creative process.

This approach challenges dominant narratives of AI as a tool for optimisation and efficiency by foregrounding process, exploration, and mutual responsiveness. By positioning AI within embodied experience, it enables alternative modes of engagement that are slower, more attentive, and more reflective.

Studio Practices and Embodied Learning

The integration of movement-based interaction into teaching forms a key component of this research. In studio-based environments, these approaches are translated into pedagogical protocols that support embodied and reflective engagement with AI systems.

One method involves reflective interludes, structured pauses within the design process that encourage students to observe and articulate their interactions with computational systems. These moments counter rapid production cycles and foster greater awareness of how actions shape digital outcomes. Guided observation exercises further develop sensitivity to movement, gesture, and presence. By attending to how subtle variations in bodily behaviour influence system responses, students gain a more nuanced understanding of interaction design. This shifts learning from task-oriented execution toward exploratory, practice-led engagement. The inclusion of machine learning tools, such as pose detection models, strengthens the connection between practice and theory, encouraging students to approach these systems as responsive environments rather than fixed tools.

These strategies also help mitigate cognitive overload associated with fast-paced AI workflows. By emphasising slower, embodied processes of creation, the learning environment becomes more sustainable and accessible. Students are better able to process information, make deliberate decisions, and develop a stronger sense of agency in their interactions with technology.

Conclusion

The practices presented in this paper contribute to a rethinking of learning

environments in the context of artificial intelligence. Conventional models of interaction, based on a clear distinction between user and tool, are increasingly inadequate for capturing the relational dynamics of human–AI systems. Instead, this research points toward posthuman learning environments in which intelligence and creativity are distributed across bodies, interfaces, and algorithms.

Within this framework, learning emerges through interactions among human and non-human agents rather than residing solely in the individual. Movement-based interaction plays a key role in this shift, reintroducing the body into digital processes and expanding interaction design to include sensory, spatial, and temporal dimensions. This perspective positions AI as part of a shared creative ecology shaped through co-creation and mutual influence, rather than as a mechanism for efficiency-driven production. Extending these approaches into pedagogy highlights the value of embodied digital practices in fostering attention, agency, and sustainable forms of engagement in AI-mediated learning.

As AI continues to reshape creative and educational contexts, there is a need for frameworks that balance innovation with presence, awareness, and meaningful engagement. Movement-based interaction offers one such pathway, positioning the body as central to future forms of human–AI collaboration.

Works Cited

- Braidotti, Rosi. *The Posthuman*. John Wiley and Sons, 2013.
- Nogueira, Maria Rita. "In Linea." *Manchester School of Art – Research Profiles*, Manchester Metropolitan University, 2024, <https://www.art.mmu.ac.uk/staff/research/9900>. Accessed 13 Apr. 2026.
- Nogueira, Maria Rita, João Braz Simões, and Paulo Menezes. "FORMS: Creating New Visual Perceptions of Dance Movement Through Machine Learning." *ACM SIGGRAPH 2023*, Association for Computing Machinery, 2023, <https://doi.org/10.1145/3588028.3603673>.
- Nogueira, Maria Rita, João Braz Simões, José Maças de Carvalho, and Paulo Menezes. "Move in Tempo: Involving the Audience Through Their Movement in Installation Art." *International Journal of Arts and Technology*, vol. 15, no. 1, 2025, <https://doi.org/10.1504/IJART.2025.146787>.
- Nogueira, Maria Rita, Paulo Menezes, and Bruno Patrão. "Understanding Art through Augmented Reality: Exploring Mobile Tools for Everyone's Use." *2021 9th International Conference on Information and Education Technology (ICIET)*, IEEE, 2021, pp. 410–14, <https://doi.org/10.1109/ICIET51873.2021.9419620>.
- Shapiro, Lawrence. *Embodied Cognition*. 2nd ed., Routledge, 2019.

