

From Pedagogy to Practice: A Toolkit for Reflective and Ethical AI use in Textile Design Education

Co-developing values-led frameworks for critical AI engagement through creative collaboration

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Abstract:

Rapid developments in generative artificial intelligence (GenAI) are reshaping creative practice and raising urgent questions for art and design higher education. While much institutional discourse focuses on risk mitigation or technical adoption, there remains a need for pedagogical models that create space for critical, ethical, and creative engagement, allowing students to engage on their own terms, within existing curricula. This paper presents a cross-institutional collaboration between Nottingham Trent University, Norwich University of the Arts, and Chelsea College of Arts, University of the Arts London (UAL), funded by the QAA Collaborative Enhancement Fund (January 2024), which addressed this gap through the development of an open-access Art, Design & Artificial Intelligence: An Educator's Toolkit.

Using a live, industry-partnered project with Liberty Fabrics as a curricular testbed, this paper explores integration of GenAI across four stages of the creative process: Research, Idea Generation, Experimentation & Iteration, and Design

Communication. Project-based learning facilitated experimentation and reflection by Elton, Troup, Farley and Simonson
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undergraduate and postgraduate textile design students, generating qualitative insights through surveys, reflective documentation, and focus groups. Thematic analysis revealed that sustained student engagement depended on structured opportunities for ethical reflection, critical inquiry, and values-led discussion.

In response, the project developed two complementary values frameworks, one for educators and one for students; addressing creative enhancement, ethical and critical engagement, and future-ready practice. Rather than prescribing specific technologies, the toolkit offers a transferable pedagogical blueprint that foregrounds agency, adaptability, and ethical awareness. The paper contributes educator-facing insights into designing AI-literate creative curricula and positions art and design education as critical influencers in the development of ethical, creative AI practices.

Keywords: Artificial Intelligence, Textile Design, Education Toolkit, Creative Education, Creative Collaborative Research, Collaboration, Art & Design Pedagogy, Project-based Learning, Ethics.

1. Introduction: Designing for AI-literate, future-facing creative education

The emergence of generative AI tools has accelerated conversations around the future of creative education. From text-to-image platforms to large language models, these technologies are already reshaping design workflows, ideation practices, and professional expectations across the creative industries. For art and design educators, this presents both a challenge and an opportunity: how can we respond pedagogically—not only by introducing tools, but by equipping students with the critical, ethical, and adaptive mindsets needed to engage with AI meaningfully?

In response to this evolving context, the project discussed in this paper sought to develop and test pedagogical strategies that embed AI not just as a technical tool, but as a subject of critical engagement. The work was underpinned by a successful bid to the QAA Collaborative Enhancement Fund, secured in January 2024, which supported the creation of an openly accessible AI in design education toolkit. Prior to

submission of the QAA funding bid, Liberty Fabrics were approached through existing industry links with NTU Textile Design and agreed to be involved as an industry partner. Their interest lay in observing how GenAI might be meaningfully integrated into creative workflows from a pedagogically structured and critically informed standpoint, offering what might be described as a 'safe observational' position. This early industry commitment strengthened the funding application and arguably enhanced student engagement, as Liberty's aspirational brand presence helped legitimise and contextualise what was, at the time, a controversial and rapidly evolving technological landscape.

While much institutional discourse around AI focuses on innovation or threat mitigation, this project was grounded in values-based pedagogy and curriculum design theory. It aimed to answer the question: how can art and design educators meaningfully integrate AI into creative learning, while fostering criticality, ethics, and student agency? (Nussbaum, 2010; Biesta, 2013). Rather than approaching AI integration as a discrete unit of learning, the project explored how it could be embedded within a broader four-stage creative framework: Research, Idea Generation, Experimentation & Iteration, and Design Communication. This model scaffolded a cross-institutional live project testbed with final-year undergraduate and postgraduate textile design students, in partnership with Liberty Fabrics.

Within this shifting landscape, art and design educators face growing pressure to prepare students not only to use AI effectively, but to navigate its ethical, creative, and professional complexities (Selwyn, 2023; Knox, 2020).

This paper explores a cross-institutional collaboration between Nottingham Trent University, Norwich University of the Arts, and Chelsea College of Arts UAL, supported by a successful QAA Collaborative Enhancement Fund bid awarded in January 2024. Together, the team co-designed and tested pedagogical strategies for embedding AI literacy, criticality, and values-based reflection into creative higher education. The result was an openly accessible AI in Design Education Toolkit, designed to support educators across disciplines.

This framework enabled structured exploration of approved GenAI tools such as Adobe Firefly and Microsoft Copilot, both of which promote transparent training data

and strong protection of Intellectual Property (IP), with terms and conditions preventing the re-use of students' inputted data to train their models. Students were guided through critical evaluations of tools, and discussions were embedded to address the risks of copyright infringement, algorithmic bias, and energy consumption. These conversations became key learning moments, often emerging organically during practice-based sessions (Facer & Selwyn, 2021; Williamson, 2022).

In response, the team developed two values discussion frameworks, one for educators and one for students, each organised under three themes: *AI as a Tool for Creative Enhancement*, *Ethical and Critical Engagement*, and *Future-Ready Design Practice*. The frameworks evolved into two 27-card printable decks designed to provoke conversation and aid workshop delivery. This tactile, adaptable format acknowledged the importance of human interaction, positioning AI not as a replacement for dialogue, but a catalyst for it.



Figure 1: Selection of 7 AI Value Spark Cards

This paper focuses on the educator-facing insights and curriculum strategy that emerged through the project. Rather than detailing student outcomes, it offers a replicable pedagogical model for embedding AI into art and design learning

environments with integrity, playfulness, and criticality. Drawing on theory in curriculum design, values-based learning, and critical digital literacy, it contributes to current debates on what future-ready education can, and should, look like.

By embedding AI within creative processes rather than as a standalone subject, and by foregrounding ethics and adaptability, this project positions art and design institutions as active shapers of digital futures, not passive responders to technological change.

2. Planning for toolkit development: curriculum as a test-bed

The objective of this cross-institutional collaboration was to produce an open-access toolkit for design educators responding to the pace of change in GenAI in curriculum and pedagogy. Responding to the aforementioned significant challenges posed by GenAI to creative industries and to a “high likelihood of abuse and misuse of GenAI tools in education” the aim was to equip educators and students to critically evaluate the practical and ethical limitations of GenAI (Giannakos et al, 2025, p. 2536).

Responding to an identified lack of research investigating transparent and documented use of AI in a project-based learning setting (Zheng et al, 2024), we derived our approach from project participants’ real experiences of design learning and teaching with GenAI. Having limited combined experience with the use of GenAI tools in Textile Design at the outset advantageously placed us in the position of our toolkit’s desired audience, enabling us to chart participating educators and students’ development of holistic competencies through authentic experience, reflection and adaptation (Chan, 2024). We would then use our experiences as a practical means of mapping out entry points for educators approaching a dialogic construction of “a responsible repertoire of AI literacy” with their own students (Heaton, 2025, p. 11).

To pilot our own approaches, we scaffolded a 3-month, industry-partnered project brief with a programme of sessions incorporating AI into textile design practice.

Project-based learning is a staple of art and design education, creating affordances for “creative, collaborative critical thinking, communication, concept understanding, innovative thinking, motivation, problem-solving, and self-confidence” (Yusri et al, 2024, p. 3356). This constructivist (Biggs, 1996) situated (Lave and Wenger, 1991)

approach to design learning allowed for a co-production of a practical and ethical understanding of GenAI between participating students and staff. 30 undergraduate and postgraduate students (12 at NTU, 10 at Chelsea College of Arts and 8 at Norwich University) self-selected to participate, and 10 members of university staff joined the project delivery. Students were briefed by our industry partner, Liberty Fabrics, to develop a portfolio of studio practice, research, development work and final outcomes. In addition to their own designs, deliverables included a sketchbook recording personal creative practice, and critically reflective technical documentation focussing on the learning experience of designing with AI. By grounding the toolkit in student and educator experiences of project-based design learning, we undertook, along with our students, to “explore, dialogue and make with AI to understand and enhance ... contemporary lifeworlds and evolving global realities,” (Heaton, 2025, 3).

In planning the programme of teaching sessions to complement students’ individual project work, we needed to create potential to explore a breadth and richness of entry points to engaging with GenAI in design practice. These entry points needed to be accessible to educators with no experience of AI use in their own practice. We identified the design cycle as a skeleton to pilot potential engagements with GenAI at all stages of a design process. Each of our institutions pooled ideas for AI-based talks and practical workshops across four stages of the design cycle: Research, Idea Generation, Experimentation and Iteration, and Design Communication. The resulting programme was facilitated across the three institutions.

Taught sessions involved guest academics and industry experts; including a seminar on AI bias, decoloniality and cultural appropriation, and a professional practice talk from a couture designer using GenAI in their work. Delivery commenced with an initial ‘AI Symposium’ of field experts, delivering a range of short talks aimed at situating students in an accessible overview of GenAI, framing possibilities and problematising limitations and ethical challenges. This symposium is referred to in the toolkit as an ‘AI Horizon Scan’, borrowing from the future thinking and policy development methodology wherein “a systematic examination of information sources to detect early signs of important developments” is made to “scan for broader trends, challenges and opportunities” (Hines et al, 2019).

Practical workshops introduced students to GenAI tools and created opportunities to test and critically reflect on their potential and limitations. These included sessions where students discussed their design concepts with AI 'musebots' or tested AI tools for refining colour palettes in their designs.



Figure 2: A Design Cycle Activity Page from 'Art, Design & Artificial Intelligence: An Educator's Toolkit'

3. Creative autonomy and the personal manifesto

Following the AI Symposium that launched the project, students were asked to write a personal design manifesto, a task prompted by the Liberty Fabrics team, who emphasised the importance of anchoring creative decisions in clearly defined values and principles. Positioned at the start of the project, the manifesto exercise invited students to define their personal creative intentions, ethical positions, and working priorities before engaging with any AI tools. This early provocation laid a critical foundation for navigating the four design stages, Research, Idea Generation, Experimentation & Iteration, and Design Communication, ensuring students approached the project with a sense of authorship and ethical clarity.

The personal manifesto served not only as a self-authored set of guiding principles, but also as a framework through which students could assess the relevance, value, and appropriateness of GenAI tools in their own creative journey. For instance, some students explicitly noted in their manifestos a desire to retain material authenticity or a handcrafted aesthetic, which led them to interrogate how (or if) GenAI could be meaningfully integrated without undermining their personal ethos. The value of manifesto writing as a pedagogical tool is well documented within art and design education. Atkinson (2017) positions it as a “performative space of possibility,” empowering students to claim agency within the constraints of a brief. Within the context of rapid AI adoption, the manifesto served as a valuable anchor, helping students articulate a critical stance on emerging technologies, rather than passively accepting them. This reflective exercise encouraged a more intentional, values-led approach to experimentation, prompting students to consider not just what AI could do, but what it should do in relation to their own creative ethos. Through their manifestos, students were not only able to navigate the four design stages with greater intentionality but also returned to their initial statements to reflect on how their thinking had evolved.

This reflexive dimension proved particularly valuable in helping students articulate how their engagement with GenAI either aligned with or challenged their original position. For many, this process gave shape to an emerging critical literacy, enabling them to view GenAI not as a neutral creative accelerator, but as a system colonised with assumptions, limitations and ethical implications. In this way, the personal manifesto activity supported students to locate their own creative and ethical stance, fostering both independence and awareness across the project lifecycle.

4. Selection Criteria and Peer Review Process

In order to align assessment of the Liberty project outcomes with the learning objectives of multiple participating programmes spanning undergraduate and postgraduate cohorts across three institutions a shared set of criteria was co-developed by the academic and educational development teams. These criteria served a dual function: they provided Liberty with a framework through which to

evaluate the creative and critical merit of the student work, and simultaneously mapped onto existing module learning outcomes to ensure academic validity and parity across courses. This was particularly important given the cross-institutional nature of the project, involving students enrolled on at least six different modules, each with distinct assessment strategies.

The collaboratively designed criteria focused on creativity, critical reflection, and pedagogical insight reflecting both the educational intent of the project and the developmental goals of the emerging AI in Design Education Toolkit. The final selection criteria used by Liberty Fabrics to identify the six finalists who would feature as case students within the resulting toolkit were:

1. **Demonstrates a pioneering, innovative, or experimental approach** to the use of AI in the design process, including how the creative approach evolved through interaction with GenAI tools.
2. **Presentation is critically reflective**, clearly articulating how creative risks were taken and evaluating whether they failed or succeeded in influencing the final outcome.
3. **Contributes to sector understanding**, supporting the development of beneficial methods, skills, or pedagogical insights into how AI can be meaningfully integrated into learning and teaching within the design disciplines.

In addition to the formal review process conducted by Liberty, the project also incorporated a student-led peer selection stage. After presenting their work individually to peers, all 30 participants were invited to cast a vote for the project they felt best embodied the brief's emphasis on critical engagement, experimentation, and personal design values. This element introduced a democratic layer to the process, reinforcing the project's ethos of student agency and shared ownership of learning. It also offered students the opportunity to reflect on and assess the work of their peers through the lens of the agreed criteria, further embedding a values-led approach to GenAI engagement.

The dual-layered assessment approach, expert industry evaluation and peer voting, reflected best practices in constructively aligned assessment (Biggs & Tang, 2011) while also encouraging students to engage in evaluative judgment (Tai et al., 2018). By designing the criteria to be both rigorous and values-based, the project modelled how assessment in creative education can support the integration of future-facing tools without undermining student autonomy or disciplinary nuance.

This emphasis on student reflection and agency naturally carried through into the project's wider approach to evaluation. Having actively participated in a pre-project perspective stance survey, and with values and feedback embedded throughout the project sessions, students were primed to engage meaningfully with mid-point & end of project reviews. Rather than seeing feedback as a one-directional exercise, many students came to view their input as a mechanism to shape the toolkit itself, helping future learners navigate similar creative and ethical decisions when using GenAI. This sense of ownership helped foster a productive feedback culture that enriched both learning and toolkit development.

5. Data collection & reflective practice

Short surveys were fielded at the end of each session or workshop, with separate question sets for tutors facilitating and for students participating. Questions were designed to facilitate critical reflection on the part of participating students and educators, and to base our eventual toolkit in an evaluation of student and staff experiences. A set of 7 student questions were partially adapted from Brookfield's 1995 Critical Incident Questionnaire (Brookfield, 1995) to facilitate open-ended reflection on the events of each session. In addition to investigating students' perceptions of the efficacy & ethics of GenAI use, they prompted students to reflect on perceived learning gains and practical applications of GenAI in their project work. Tutor questions were similarly modelled to provide evaluations of the tested sessions and activities that could later be included in the toolkit. Responses were collected from 30 participating students and 10 participating tutors.

Standard Student Questions:

1. What was new or surprising for you in the session?
2. What did you find most puzzling or confusing in the session?
3. What will you take away from this session to use in this project? If nothing, why not?
4. On a scale from 1-5, how much have you learnt about AI in this session?
Please expand on your answer.
5. On a scale from 1-5, how has this session impacted on your confidence to use AI?

Standard Staff Questions:

1. What surprised you most about how students engaged with this session?
2. What do you think worked well, and what will you do as a result?
3. What didn't work so well? How would you do things differently?
4. How much have you learnt about students use of AI? Please expand on your answer.

Following the students' completion of all sessions and submission of their project outcomes, a focus group was conducted with 6 student representatives from across the three institutions. Students were prompted to discuss any changes in their perspectives on AI, knowledge and skills they had gained as a result of their project work, their critical evaluations of AI in the context of the design process, advice they'd have for future students, and how the project had affected their confidence and professional skills.

6. Results: from teaching to toolkit

Qualitative data from survey results and the focus group transcripts were coded thematically, partly informed by the use of Microsoft CoPilot to identify emerging patterns and points of emphasis. In collating tutor and student reflections, it became apparent that our initial conception of the toolkit as a series of activity examples required a theoretical underpinning. The insights drawn through this process helped reframe the toolkit as not only a pedagogical resource, but also a provocation for deeper values-led engagement with GenAI in creative education. The data showed a

number of students reflecting on the implications of bias and appropriation in AI image generator outputs, for example:

“My project being underpinned by Irish history has already led me to discover how AI can have quite a colonial bias and has given me some offensive outcomes recently so I think it doesn’t take long working with AI to realise it has these problems.”

“I gained a new perspective on artisan appropriation, and how generating AI images in a certain style or to replicate a certain technique is appropriating those who traditionally make them. The suggestion that all technological advancements do this to an extent was particularly interesting.”

Reflections were complex and many, and it was determined that the nuance and variety of critical considerations from students and staff could be used to support future approaches to curriculum planning and discussion. Given that “successful implementation of any educational design involves the dynamic interplay between theoretical frameworks and practical application,” we assumed once again the perspective of an educator planning a curriculum to respond to technology developing in real time (Farrow et al, 2024, p. 2). The realisation was that both curriculum design and student experimentation would be better supported to centre ethical, responsible and critical engagement with GenAI if a framework of values were included in the toolkit, along with entry points for practical AI use.

From themes identified in qualitative data, a set of theoretical values for AI use in design practice were developed. The values were grouped into sub-sections to frame the broader picture of GenAI in design education: AI as a tool for creative enhancement, ethical and critical engagement, and future-ready design practice. These included values such as ‘human creativity first’, ‘transparency and responsible AI use’, and ‘process over output’. Two sets of reflective prompts were then developed: Values for Design Teaching, and Values for Design Learning. In the case of the Values for Design Teaching, it was envisioned that prompts would be used by tutors and academics to support the development of curriculum. The Values for Design Learning are designed to prompt classroom discussion and individual student

reflection. To facilitate the use of these value frameworks in sessions and meetings, they have been designed as sets of printable flashcards.

To form the practical section of the toolkit, the pilot programme of sessions and activities were re-situated in the design cycle and adapted into a series of 12 activity examples. Some additional activity ideas were derived from students' own experimentations with GenAI workflows in their projects, such as 'Image to Image', an activity based on the work of students who explored the potential for machine randomness to develop iterations of their works in process, whilst continuing to centre their own design decisions and identity. To future-proof the toolkit and encourage individual decision-making when it comes to tool selection and use, specific platforms are not recommended. The intention is not that the design cycle activities are exactly replicated by educators using the toolkit, but that they can be considered as a springboard into practical curriculum design. Each activity includes an objective, a brief description, an example of relevant student work, and quoted student and tutor reflections. Activities are also mapped back to the values frameworks, to support a critical and reflective approach to practical teaching.

By grounding activities in the four-stage design cycle, the project created a pedagogical scaffold that is transferable across creative disciplines, not tied to textile-specific processes or tools. Although tutors needed to rapidly upskill as GenAI platforms evolved during the project, the framework provided a clear structure through which sessions could be designed, adapted and that constructively aligned to module learning outcomes across the institutions. This approach enabled the project team to analyse how AI engagement unfolded across different phases of creative learning, generating robust, evidence-based insights that directly informed the structure of the resulting toolkit.

When it comes to the use of AI tools in the creative process, we see an evolving tension between the authorial identity of our students and the requirements of industry AI adoption. It should be noted that the students involved in this project were drawn to the work by an interest in emergent technology, and by the involvement of Liberty Fabrics as a renowned employer in Textile Design. The students upon whose reflections this toolkit is based therefore represent a specific subset of stakeholders in creative HE. Whilst participating students were often sceptical of the role of AI in

design, with some concluding the project with heightened criticality and increased confidence in their own human and analogue design skills, they were at the very least open to exploration of the technology, perhaps especially for industry preparedness. In sessions following the publication of the toolkit, some of the educators involved in the project-based work have seen a vastly different reception of AI tools by broader groups of students, some of whom have refused to engage with any platform on ethical grounds. The tension between the specific directive of an industry brief and the affordances for a designers' own creative identity to manifest in the work have always existed but are thrown into sharper relief by the inclusion of AI tools in the process. Situating AI exploration within an authentic industry context helped students recognise that the emphasis was not on mastering software, but on engaging critically and reflectively with emerging technologies, an experience of value to any creative discipline. These insights ultimately shaped a toolkit intended for widespread use across art and design HE, offering educators a structured, theoretically grounded and practically tested route into teaching with GenAI.

7. Conclusion: Openness and exchange

As generative AI tools continue to evolve, creative educators face a pressing need to respond, without rushing to prescribe rigid methods or technologically determinant solutions. The project and resulting toolkit outlined in this paper deliberately resisted a one-size-fits-all approach. Instead, it prioritised the design of pedagogical conditions in which students could critically engage with AI, test its capabilities, and reflect on its implications in relation to their own creative identity.

The collaborative nature of this research created conditions for the openness, rigour and exchange of ideas required by the global implications of AI adoption in design. The creative responsibility of artists and designers as arbiters of visual culture requires us to engage with emergent technologies in the most informed and ethical way possible. As creative and critical communities preparing new generations of designers, it is paramount that any approach to AI in curriculum foregrounds this responsibility. Pooling our institutional expertise on GenAI with regard to bias,

positionality and decoloniality, sustainability and intellectual property improved the balance and robustness of our individual approaches. Not only did students have the opportunity to create networks of inquiry within and beyond their individual cohorts, educators were able to share and strengthen lesson plans, activity ideas and the framing of nuanced discussions. The opportunity to meet at regular intervals throughout the project allowed for frank and open reflection on experiences of teaching with AI, fostering critical and reflective teaching practice. Tutor reflections included in the toolkit make some of these conversations more widely available:

“As AI becomes increasingly embedded in creative industries, understanding intellectual property rights and ethical design practices is crucial for graduates entering the workforce. Each AI tool operates under distinct terms and conditions regarding data ownership and usage, making it imperative for graduates to be fully aware of potential risks. Some platforms, such as Microsoft Copilot and Adobe Firefly, market themselves as “clean” or “ethical” AI, claiming their datasets consist solely of material for which they own the copyright or is freely available. Additionally, their outputs are not used to further train or refine the AI itself, distinguishing them from tools like ChatGPT and MidJourney, which continuously evolve based on user inputs. However, the trade-off with closed systems is that their lack of continual self-improvement often results in less intuitive outputs compared to more openly trained models. Therefore, it was paramount to provide students with objective, transparent information, enabling them to make informed decisions about which AI platforms to engage with.”

The toolkit, however, is not a living document, it is limited as a static representation of this collaboration. Future iterations could include a live space for reflection and discussion amongst a wider community of design educators, and we would encourage cross-institutional discussion and collaboration wherever possible when it comes to developing and iterating an approach to GenAI in design teaching.

By embedding GenAI exploration within a structured creative process and framing discussions through values-based prompts, the project created a space in which

students felt able to develop their own informed stance. For some, AI became a powerful tool for ideation and iteration. For others, working with AI sharpened their awareness of what they valued in handmade or material-led creative practice. In both cases, the educational aim was not to promote AI use uncritically, but to ensure students encountered it as a live, complex and timely issue—supported by the chance to learn relevant tools and to reflect on their use within meaningful contexts.

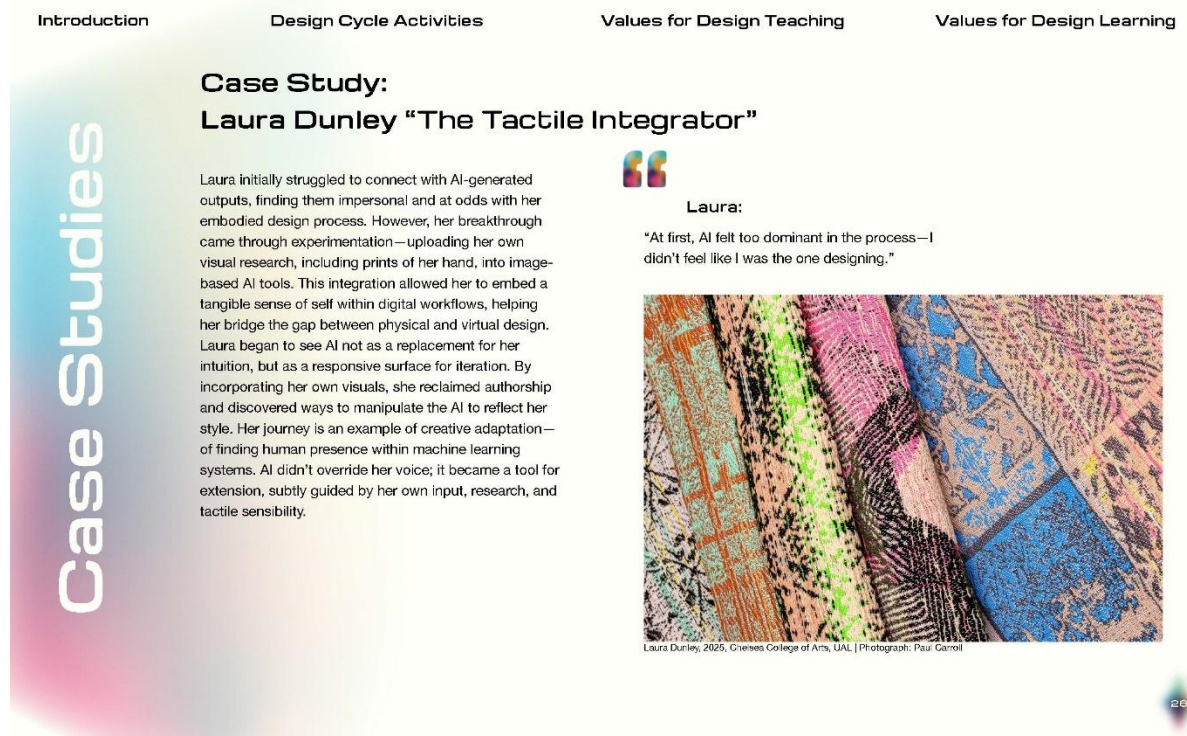


Figure 3: A Case Study Page from 'Art, Design & Artificial Intelligence: An Educator's Toolkit'

Posthuman design discourses explore entanglements between humans and nonhumans, often ‘decentering’ the human in favour of an inclusion nonhuman participation in design (Nicenboim et. al., 2025). The concept of authorship in the emergent context of AI-generated art and design presents ethical, legal and philosophical challenges contested in ongoing litigation and academic debate, as in Sueur et. al. 2024, who “critically examine the prevailing norms of personhood and human-centric authorship,” positing authorship as a “continuum that reflects the degree of consciousness and intentionality of the creator,” be they human, animal or machine (Sueur et. al., 2024). The question of authorship is problematised, made

complex and subjective by the involvement of AI tools, and we see our students grapple with this nuance in conversation and practice. In a recent 2026 session based on a toolkit activity, one student said the involvement of AI tools in the textile design process made them “question what it means to be human”. Amidst this re-evaluation of the concepts of authorship, creativity, intentionality and indexical value in design practice, this project created a space for students to embody and interrogate entanglements themselves.

The resulting *Art, Design & Artificial Intelligence: An Educators Toolkit* offers an open-access model for embedding these types of encounters into creative curricula. Grounded in practice, informed by student and staff feedback, and aligned with values-based educational principles, it aims to help educators across disciplines facilitate ethical, creative and future-facing conversations about AI. Rather than dictating answers, the toolkit provides ways in, offering practical, thoughtful guidance to support students in becoming confident, critically literate, and adaptable contributors to the future of design.

Disclosure statement

All materials included in this article represent the work of the authors, and anything cited or paraphrased within the text is included in the reference list. The work has not been previously published, nor is it being considered for publication elsewhere. There are no potential conflicts of interest that influenced the authors in reporting our findings completely and honestly.

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