ABSTRACT

Designing with Generative AI: Towards Technical, Ethical, and Critical Pedagogies in Interaction Design

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Designing with Generative AI: Towards Technical, Ethical, and Critical Pedagogies in Interaction Design

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Abstract

This paper reflects on some developing pedagogical approaches for introducing technical, ethical and critical engagement with generative artificial intelligence (GenAI) in interaction design (IxD) education. As GenAI reshapes creative practice, students must move beyond passive automation toward thoughtful and principled design approaches. Drawing on curriculum development from first year workshops in the Bachelors of Interaction Design at Auckland University of Technology (AUT), the author reflects on AI as a UX design paradigm, tool, and ethical subject. Case studies from workshops include introductions to GenAI and "vibe coding". In these sessions, first-year students engage with AI tools and methodologies developing foundational AI fluency, and critically examine concepts of authorship, bias in generative systems, and their own ethical positioning. The approaches aim to support lifelong learning and positions design education as a space for process-oriented, socially responsive, and critically engaged practice. This paper reflects on how GenAI can be critically and ethically integrated into first-year interaction design education through reflective and experiential learning. The work also offers practical insights for integrating generative AI into design curricula in ways that are technically rigorous and ethically grounded.

CCS Concepts

• **Human-centered computing**; • **Social and professional topics**; • **Applied computing - Education**;

Keywords

Generative AI, Interaction Design Education, Ethical Design Practice, Experiential Learning, Reflective Learning, Design Curriculum Innovation

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1 Introduction

Since the release of ChatGPT-3.5 in late 2022, generative AI has seen widespread adoption across creative industries and education [Abrusci et al., 2025, Melker et al., 2025]. In design, it supports concept generation, ideation, research and prototyping [Choudhury et al., 2025, Sreenivasan and Suresh, 2024]. Interaction Design (IxD), with its human-centred and systems-oriented focus, has integrated these tools in ways that reshape creative workflows and introduce new modes of human-computer interaction [Caschera et al., 2025, Koch et al., 2025, Muehlhaus and Steimle, 2024]. Designers now create UX for "intent-based outcome specification", where natural language prompts guide AI systems to produce desired results [Nielsen, 2023]. This shift raises questions around authorship, agency and the evolving role of the IxD designer [Wiberg and Stolterman Bergqvist, 2023]. AI's rapid development also brings socio-ecological concerns, including the devaluation of design labour, cognitive atrophy, and ethical issues around data use and environmental impact. These tensions position AI not only as a tool, but as a subject of critical inquiry in design education. To help design students navigate this uncertain socio-technological moment, research suggests more emphasis is needed on foundational thinking and ethical positioning in design [Omran Zailuddin et al., 2024]. Despite calls for more focus on how to meaningfully integrate GenAI into IxD pedagogy [Wu et al., 2024, York, 2023], there are a relative dearth of studies in this area. At AUT, the IxD programme draws on experiential and reflective learning theories [Boyd and Fales, 1983, Kolb, 2014], where students learn through doing and critically analysing their experiences. This approach builds on the author's previous research, including work on adaptive pedagogy during climate and COVID-19 disruptions [Smith-Harvey and Chiappin, 2023], and early experiments with AI in IxD education [Smith-Harvey, 2024]. This article extends these projects, detailing recent workshops and curriculum development in AUT's Bachelor of Interaction Design. It explores broader implications for design education and outlines challenges and opportunities as the programme evolves in response to ongoing technological shifts.

2 Case Studies From Curriculum

The workshops discussed here were delivered as part of a three-year Bachelor of Interaction Design degree in the School of Art and Design at Auckland University of Technology (AUT). This major provides a core pathway for students to specialise in interactive systems, human-centred design, experience design, and methodologies such as design thinking, the double diamond, and speculative frameworks. In the first year, students focus on creative problem solving, UX research, conceptual ideation, and UI design, supported

by project-based and studio learning. The bachelor's programmes across the school share the same assessment rubric which emphasises self-reflection, critical thinking, practical making, academic writing as well as professional skill development. All courses require students to maintain a digital workbook to document their critical thinking, methods in context and iterative process.

The case studies come from two 30-point, 13-week first year studio courses that integrate design practice, technical skills, and academic and critical writing. While students are introduced to tools like Figma, the curriculum remains open to emerging technologies. AI integration is guided by AUT's institutional strategy, which highlights ethics, equity, and the need to prepare graduates for AI-integrated workplaces through practical guidance and curriculum integration (see: https://www.aut.ac.nz/about/ai-at-aut).

2.1 Case Study 1: Introduction to GenAI (Foundational Knowledge)

In the first year of the Interaction Design degree at AUT, students are introduced to GenAI as a foundational topic. It is firstly framed as a tool and medium that can support academic and design tasks when used appropriately. Staff outline acceptable uses such as ideation, instructional support and feedback, and students are required to cite their GenAI use in APA 7th style, including prompts. AUT's licensed version of Microsoft Co-Pilot is recommended to safeguard intellectual property. Ethical considerations are also addressed, including system bias, sensitivities around Māori and indigenous knowledge, and restrictions on using GenAI for final written submissions.

Lectures present AI as an interdisciplinary field, covering Large Language Learning Models (LLMs), agentic systems and broader machine learning contexts. Students share their experiences and views through group discussions and forums, creating space for open dialogue around ethical and appropriate use. These conversations also touch on AI's environmental impact, helping to demystify its technical and ecological dimensions.

Further discipline-specific sessions introduce generative AI as a new paradigm in UX and UI design. Students explore how AI can generate images, text and prototypes, and are introduced to relevant tools. Throughout, the focus remains on critical reflection, encouraging students to consider their own values and positioning without prescribing views of 'right' and 'wrong'.

In initial workshops, students are introduced to practical techniques for working with GenAI, focusing on prompting and iteration. They explore styles such as zero-shot, few-shot, role-based and contextual prompting, with prompt iteration compared to their iterative design practice. Students experiment with tasks that require thoughtful prompting input and clear parameters, with reflection on their experiences and outputs generated through GenAI. These activities are linked to broader discussions about changing paradigms in UX and interaction design, including the rise of agentic AI and outcome specification.

Subsequent workshops position GenAI as a tool for academic and design research. Students work in groups to explore IxD topics, using AI to assist with sourcing and analysis. AI is optional, and its limitations, reliability and environmental impact are openly discussed. Brainstorming begins as a non-digital social activity and is later extended to include iterative engagement with LLMs. Students learn to ask targeted questions to generate diverse ideas, recognising the importance of thoughtful input and iteration. Reflections in digital workbooks from these foundational workshops show varied responses. Some students found GenAI useful for early ideation, while others expressed concern about overreliance and the need to retain human judgement.

2.2 Case Study 1 Insights: GenAI Fluency for Ideation and Concerns for Cognitive and Creative Processes

From the students' reflections on the foundational GenAI workshops in their digital workbooks, GenAIs usefulness as an ideation tool can be observed. One noted AI was "a good starting point and can help point me in the right direction as to where to start researching and ideating". Another was surprised by AUT's support for its use but also acknowledged "how much it can help in terms of ideation and that I think is what the uni supports." [see: Figure 1]. These reflections from the students indicate a perceived usefulness of GenAI in relation to coming up with ideas and giving them a place to start on design tasks and projects. This supports one of the aims of the pedagogical approach, to develop foundational fluency in terms of structured and iterative prompting to use GenAI as a design tool.

While students saw the perceived value of GenAI for some use cases, concerns were also highlighted over what they saw as risks to their own cognitive and creative processes. One of the students who saw the benefit for ideation, also made a comment in the same reflection that they also did not think it would "satisfy me in quality for it to be my final decisions. I think I will only use AI when I really need to." [see: Figure 1]. This reflection indicates a position that although GenAI can be useful for creating ideas, human levels of discernment and cognitive rigour are needed to come up with in-depth and quality work. Further to this, students demonstrated anxieties around their use of GenAI, highlighting worries that they may become overly reliant on the use of GenAI to undertake cognitive tasks (e.g. ". . .im a little worried how reliant im becoming when using this ngl").

Another student reflected on their preference for manual research over using GenAI. They felt that GenAI's speed removed the chance for accidental discoveries and learning through human error. Their concern centred on the over-emphasis on efficiency, and a fear that AI might diminish the raw, unpredictable aspects of the creative design process that make it meaningful [see: Figure 2].

These student reflections show a growing awareness of how and when to use GenAI in their design practice. The more critical and reflective analyses of their GenAI use support that the experiential and reflective nature of the workshops encouraged students to think critically about their engagement with these tools. Rather than being told what is right or wrong, they were invited to explore the complexities of GenAI through questioning and discussion, developing their own positions. These reflections align to the institution and programmes emphasis on ethical and critical self-reflection, and suggest that students are beginning to engage with ethical dimensions of GenAI.

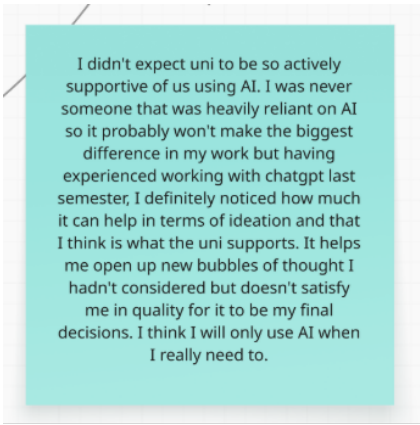

Figure 1: Student reflections on benefits and personal position on AI use. Image supplied by author.

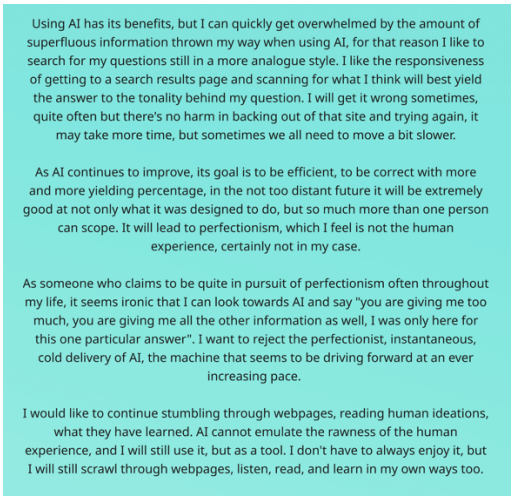

Figure 2: Student reflections on limitation of AI in the research and creative process. Image supplied by author.

2.3 Case Study 2: Vibe Coding & Vibe Design

A notable development in GenAI for interaction design is the rise of 'vibe coding' and 'vibe design'. Vibe coding, introduced by Andrej Karpathy, involves using natural language to instruct chatbots to generate code and build digital applications [Fawz et al., 2025] Jakob Nielsen [Nielsen, 2025] later coined 'vibe design' to speculate how UX designers can use these tools, potentially shifting from manual wireframing and UI design to AI-assisted prototyping. Platforms like Figma, Framer, and Lovable now support these methods, enabling non-coding designers to quickly prototype complex interfaces [Li et al., 2025, Ray, 2025].

To prepare students for this evolving space, vibe design is introduced in first-year courses. Building on earlier lessons in prompting and prototyping, students use AI tools to generate websites and applications, while reflecting on ethical and creative implications.

Class discussions explore how vibe design affects design practice, including trade-offs such as reduced control and spontaneity. Students consider the skills needed to work effectively with these tools and the human qualities that remain essential. The focus remains on critical engagement, with students reflecting on AI's role in their process and how to balance the affordances of vibe design with authenticity and intention.

The vibe design activity presented in class asks students to read the blog post from Jakob Nielsen on Vibe Design [Nielsen, 2025] and then explore natural language coding for ideas around their studio project (a recipe website). This is followed by written reflections to some select prompts centred on positives and negatives of the approach, ethical issues, and skills needed. Student reflections on the vibe design workshop revealed both appreciation for its potential and concern about its limitations. A key topic of interest for students that can be observed in their reflections are discussions of authenticity and aesthetics.

2.4 Case Study 2 Insights: Design Authenticity, Aesthetic Judgement, and Ethical Awareness

One student described the translation of natural language into code as "very nifty", but noted that AI-generated content often lacked cohesive aesthetic choices. They observed that while AI may understand how to build something, it does not necessarily know how to make it look good. This led to a reflection on the importance of aesthetics in usability and user experience, suggesting that this will remain a key area where human designers are needed [see: Figure 3]. The student also saw value in using AI for complex prototyping tasks, but preferred it as a companion offering contextual advice, rather than as a tool that takes over the entire process. These reflections echo previous insights which suggest some students are developing technical nous for using GenAI to achieve outcomes, while simultaneously indicating an emerging critical and discerning approach, aligning to the educational approaches core aims.

Another student indicates how vibe design could help with ideation for structure of digital product design and other interactive approaches, but states "the rest of the design is very bad in terms of visual and functionality" [see: Figure 4]. The same student says that prompting is an important skill to develop to create more detailed and controlled prototypes using the "vibe" method. These statements further highlight that the developing approach for teaching GenAI is influencing students fostering more technical fluency and understanding of what is needed to successfully utilise these approaches (such as prompting), as well as burgeoning critical positions in identifying where these methods are currently lacking (such as the visual aesthetics).

Furthermore, other students raised ethical concerns about vibe design, suggesting it could undermine creative integrity and remove the human touch from the design process; "this could cause issues for creative integrity as it is made by AI. this also takes away the human touch of designing a website" [see: Figure 5]. They emphasised the importance of fostering human-centred skills to counter the impersonal feel of AI-generated outputs.

Lovable made this. It doesn't look bad, it also doesn't look good. It looks like something that a year 7 ui designer would proudly upload to Behance.

- I also feel like with AI generating content, there's a lack of cohesive/good aesthetic choice in the background. I feel like even if the AI technically 'knows' how to make something, it doesn't necessarily know how to make it look *good*.
    - I also think that aesthetic choice and aesthetic usability will become a big sticking point for staying with human designers. It feels like the advanced step from importing templates into your design

Figure 3: Student 1 reflections on vibe design workshop. Image supplied by author.

Figure 4: Student 2 reflections on vibe design workshop. Image supplied by author.

Positives and negatives of this approach. What works and what doesn't?

- The positive outcome of this is that you can spend more time on what you want in your website, the negative aspects is the AI can get the wring impression of what you want your website to look like and how you want your idea portrayed.

Ethical issues? What problems could there be for people, non-humans, society, rights and protections?

- this could cause issues for creative integrity as it is made by AI. this also takes away the human touch of designing a webiste

What skills you need to improve on/foster for this approach to design?

- I would need to have more targeted prompts so that the website is more what I wanted it to look like

What human skills do you need to "lean into"?

- the human skills that need leaned into would be the use of user feedback and user flow, without having this feedback and human knowledge there would be no flow in the webiste

Figure 5: Student 3 reflections on vibe design workshop. Image supplied by author.

These student reflections on the vibe design workshop reveal some sentiments about this emerging approach. Through experience and reflection, students begin to understand their own responses and develop a sense of when, how, or whether to use the technique. These nuanced sentiments indicate a more distanced, reflective, and ethical stance developing for some students, provoked in part by the workshop's emphasis on critical reflection on experiences. This ethical positioning could be strengthened further by integration of more structured debates or reflective writing tasks into curriculum to deepen this engagement across the board and assist them to articulate their ethical stance.

3 DISCUSSION & CONCLUSION

The reflections presented here suggest that the in-development experiential and reflective approaches by the author and staff at AUT are starting to help students with engaging with GenAI on technical as well as ethical and critical levels. This is evident in the digital workbook reflections which highlight that some students are beginning to evidence understanding of what skills are needed to use GenAI for design (such as prompting and iteration), as well as growing awareness of their own ethical positioning and critical issues for IxD. These include the concerns around cognitive and creative processes being affected by an over reliance on GenAI, along with questions about design authenticity and importance of human aesthetic taste in GenAI processes.

Both workshops encouraged hands-on engagement with new tools, supported by reflection to help students assess their experiences, form positions, and decide how these techniques might fit into their future practice. Across the introduction to GenAI and vibe design workshops, students generally responded well to provocations and practical experimentation. Many reflected critically, especially on issues of authorship, voice and authenticity, though few considered bias in AI systems from the student work sampled. Given AUT's post-colonial context in Aotearoa New Zealand, this

gap highlights the need to better support students in identifying and questioning bias. More discussions of GenAI's implications for non-western and indigenous knowledge, as well as the founding constitutional agreement of New Zealand (Te Tiriti o Waitangi/The Treaty of Waitangi) signed between the British Crown and Māori chiefs needs further emphasis. AI education in Aotearoa needs to consider these context-specific ethical considerations, alongside more general conversations.

The curriculum's flexibility, with no pre-specified AI technologies, enabled rapid integration of emerging tools such as vibe coding and vibe design. This adaptability supports experiential learning with fast-changing AI technologies, although conversely, does lead to issues of plannability and lack of ability to go deep with specific technical skills. Future directions could explore co-learning models where students and educators engage with new systems together, and a shift towards process-led, open-ended problem solving in the curriculum.

A key challenge is balancing technical skill development with critical reflection. Students need to learn prompting, iteration and context engineering, while also considering when and why to use AI responsibly. Clear messaging is essential to help students develop their own ethical frameworks. Supporting this requires staff development in ethical theory, and collaboration across the School of Art and Design to develop frameworks to guide students through these complex discussions. Such examples could include debates in class, along with more structured pieces of writing required for assessment such as ethical positioning statements.

Other challenges include concerns around cognitive atrophy and over-reliance on GenAI, and the lack of clarity around appropriate use in academic and design contexts. More work is needed to define these boundaries with staff and students. Currently, there is exposure and introduction to GenAI alongside critical questioning, but the line between what is ethical or 'good' use is somewhat unclear. Enhancements in this space could be through providing students with exemplars of what ethical use looks like in practice, alongside the aforementioned ethical positioning statement framework. Another issue tied to this lack of clarity is that although some students are engaging critically and reflectively with GenAI (as shown in the student examples here), this is not indicative across all students. Many are simply documenting their use of GenAI, without the reflective or critical questioning required to show true depth of thinking. There is scope to help scaffold these reflective approaches in future classes through more structured reflective written, spoken, or debated methods.

There is strong potential to build on this first-year work in later stages of the programme. By developing students' technical GenAI skills alongside intentional, reflective practice, educators can help shape a design philosophy grounded in skill, responsibility, and adaptability. Systems thinking and ethical deployment of AI, including training bespoke GPT models, open new creative possibilities, while IxD/UX specific methods such as user research with synthetic users could be fruitful and necessary skills for students to explore. It is also important to address student anxiety around automation. Many students worry about being replaced or left behind by GenAI, so it is vital to reinforce the value of human skills such as empathy, judgement, aesthetic taste, communication and leadership.

Going forward, the staff in interaction design at AUT are looking to adapt with AI, and develop more established pedagogical approaches for engaging with GenAI now and in future including languaging for prompting, critical thinking, and ethics. There is scope for IxD researchers to undertake more rigorous scholarship including comparative quantitative research to gather and analyse data on students' GenAI application proficiencies and critical thinking before and after these types of teaching approaches, longitudinal studies, and empirical research with student participants to more fully investigate how GenAI is being used and understood in IxD education.

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