

FROM INDIVIDUAL TO INTERCONNECTED: AI-MEDIATED MICRO-STORIES AS A PEDAGOGICAL BRIDGE FOR RELATIONAL AND ETHICAL DESIGN LEARNING IN AUSTRALIA

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ABSTRACT

This paper outlines the development of an AI-assisted narrative framework using micro-stories, designed for the Australian design education context to support relational and ethical design learning. With increasing pressure to offer more courses in asynchronous modes to cater to self-paced learning, running a traditional studio, which is the backbone of reflective practice, is becoming challenging. We designed this study to utilise AI tools to integrate Indigenous-informed pedagogical principles into asynchronous learning environments as a means for relational and ethical design learning. Conversations and micro-stories, central to many Indigenous knowledge traditions, are often used as reflective and relational learning methods. We developed a narrative framework using micro-stories to humanise a technology-mediated design course, prompting students to use AI as a dialogic partner and to consider the ethical, social, and cultural dimensions of design while remaining aware of their own positionality.

The framework was developed under Senior Ngunnawal Elder oversight, with AI governance rules that explicitly prevent cultural simulation, fabrication, or the generation of restricted content. The paper reports the design and configuration of the framework, including boundary-preserving refusal and redirection patterns, and outlines a forthcoming comparative study between an AI-mediated and a non-AI narrative condition. At this stage, the contribution is conceptual and methodological: a governance-oriented approach to integrating Indigenous-informed relational principles into asynchronous studios while concentrating cultural oversight during design to reduce ongoing cultural load.

Keywords: Decolonisation, Indigenous pedagogy, AI-assisted storytelling, design education, asynchronous learning, relational design, micro-stories, dialogical conversation

1 INTRODUCTION

Many design programmes are moving to asynchronous and blended delivery. Most of those going online are still using old face-to-face teaching user-centred design (UCD) logic that frames design problems around individual users, discrete needs, and technical optimisation. At the same time, there is growing pressure to respond to equality, diversity and inclusion and indigenisation of design curricula. In this space, Indigenous-led studios demonstrate powerful ways of reconfiguring design education, but they are difficult to scale because Indigenous educators are significantly underrepresented in higher education and often carry a substantial “cultural load” and consultation fatigue.

This paper addresses the question of how an asynchronous, technology-rich design course can support Indigenous-informed, relational and ethical design learning without further overburdening Indigenous knowledge holders. At the same time, it explicitly avoids cultural appropriation, the representation of specific cultural knowledge, and any simulation of Indigenous voices by the AI system.

2 BACKGROUNDS

Design and technology programs have widely adopted UCD as a dominant paradigm, supporting systematic stakeholder engagement, iteration, and evaluation. However, critiques from Indigenous scholarship highlight how UCD’s focus on individual users, short timeframes and bounded problem spaces obscures broader relational, cultural and ecological dimensions of design situations. In parallel,

there is increasing recognition that efforts to “Indigenise” curricula must attend not only to content, but also to the labour and wellbeing of Indigenous staff and communities who are repeatedly asked to lead such initiatives. This study, therefore, situates our work at the intersection of UCD and its limitations, Indigenous-informed relational design pedagogies, the realities of cultural load and consultation fatigue, and emerging uses of artificial intelligence (AI) to scaffold reflective and dialogic learning in asynchronous settings.

2.1 Indigenous-informed relational design pedagogy

Across Aboriginal and Torres Strait Islander communities, conversations are often used as a mode of knowledge transmission, governance, and relationship-making, not as a supplementary teaching technique [1]. Story is inseparable from Country, kinship, and obligation, embedded within specific linguistic, cultural, and ecological contexts, and governed by protocols that determine who may tell which stories, when, and under what conditions [2]. Story thus functions as a living medium through which responsibilities to people, place, and more-than-human relations are articulated and renewed across generations. For non-Indigenous educators, this requires recognising that some stories are not public, meanings may be layered and restricted, and classroom practice must be guided by permission, cultural authority, and awareness of limits.

2.2 Using story-based approaches in design teaching

Within design education, we often use narrative and speculative scenarios to support ethical reasoning, future-oriented thinking, and critical engagement with context [3]. For non-Indigenous educators in predominantly non-Indigenous settings, the challenge is to draw on the pedagogical strengths of story-based approaches without appropriating Aboriginal or Torres Strait Islander stories, symbols, or voices [4]. A culturally safe approach focuses on relational and ethical principles informed by Indigenous pedagogical thinking, while making it explicit that classroom activities do not reproduce, simulate, or translate specific cultural narratives [5].

Practically, this involves using fictional scenarios clearly framed as invented, yet grounded in real-world ethical tensions around power, accountability, and environmental and social impact. These scenarios require students to attend to who is affected by design decisions, whose expertise and authority are relevant, what harms might arise, and what accountability looks like over time. Relational principles, listening, consent, respect, reciprocity, and responsibility can be taught explicitly and woven into assessment criteria, reflective prompts, and studio critique. Educators can translate ethical values into design criteria. Reciprocity informs shared benefit and fair access; care for Country shapes environmental limits and lifecycle thinking; accountability operates through governance, consent, and review mechanisms.

2.3 Cultural fatigue

Aboriginal and Torres Strait Islander educators across Australian universities and schools carry substantial ‘cultural load’ in the form of uncompensated responsibilities, including committee representation, cultural education of non-Indigenous colleagues, ceremonial obligations, and pastoral support [6]. Approximately 39% of First Nations university staff report “high cultural load”, contributing to vicarious trauma, compassion fatigue, and burnout from “working between two worlds” [7].

This under-representation concentrates the workload on available Indigenous educators, creating unsustainable demands that intersect with broader ‘consultation and research fatigue’ from repeated over-consultation across sectors, delivering minimal benefit or structural change. Which makes elder-led studio models such as UTS’s four-year collaboration embedding Gadigal Elders and Indigenous scholars in final-year design teaching, which demonstrates pedagogical best practice [8], challenging to replicate.

AI-supported pedagogy may alleviate unsustainable demands on knowledge holders while maintaining relational, place-based, protocol-governed principles central to Indigenous pedagogies, provided rigorous Indigenous leadership governs implementation. The ‘Out of the Black Box’ report argues that when AI is designed ‘by’ or ‘with’ Indigenous communities, grounded in regional protocols, governed by Indigenous data sovereignty and cultural and intellectual property principles, and maintaining “Custodians in the loop”, technology can encode agreed governance as “rules-as-code”, automating routine pedagogical tasks while preserving Indigenous authority over sensitive knowledge [9].

3 COURSE DESIGN FRAMEWORK

In response to this context, we designed and configured an AI-assisted narrative framework for integration into an asynchronous design course for students accustomed to UCD-oriented methods. The framework has been implemented within the learning platform and tested by the teaching team, with student delivery scheduled for the following semester. The framework uses generative AI as a dialogic partner that prompts students to engage with bounded fictional scenarios, interrogate their positionality, and explore relational and ethical implications before proposing interventions. Contextual reference materials were drawn from publicly available, education-oriented resources or sources with clearly articulated permission pathways [10]. No sacred content, no invented lore, no simulated Dreaming narratives.

The framework operates under Aboriginal cultural oversight from Aunty Dr Caroline Hughes AM, a respected Senior Ngunnawal Elder. Oversight focused on ethical framing, boundary protection, and the avoidance of cultural misrepresentation, and did not extend to the provision of cultural content. The full acknowledgement appears at the end of this paper.

3.1 Fictional Persona as a Pedagogical Scaffold

The framework uses a fictional persona, May Harper, as a teaching case. May is an older Ngunnawal woman living on Ngunnawal Country who intends to remain in her home owing to mobility limitations. The persona, her setting, and the place-based elements of her case (including her home and her connection to a patch of yam daisies) were developed under cultural oversight and approved for use within this framework.

A specific persona, rather than a generic user profile, serves a defined pedagogical purpose. Generic profiles invite assumption-based design, allowing students to project cultural imaginaries into the brief. A specific, carefully framed case supports empathetic, constraint-based thinking and accountable decision-making by requiring engagement with concrete circumstances. Students engage with May as a single teaching case, not as a representative of the Ngunnawal community, identity, or cultural knowledge.

3.2 Narrative Framework for AI-Assisted Reflection

The teaching module uses a hierarchical narrative structure: cultural anchor, user case, story arcs, and micro-stories within each arc.

Cultural anchors are publicly available principles about place and relationships, drawn from educational sources rather than from cultural oversight. An example is the principle that plants can carry memory and relational significance in connection with Country. Anchors orient students toward relational rather than purely functional readings and reduce stereotype drift by providing stable interpretive reference points.

The AI introduces the user case, then unfolds a sequence of story arcs that address thematic dimensions of May's life: connection to place, mobility, community relationships, and trust in technology. Within each arc, the AI presents micro-stories of approximately 80 to 200 words depicting a single everyday moment, for example, May's difficulty bending to tend the patch of yam daisies near her home, a routine that connects her to family memory.

After each micro-story, the AI prompts students with focused reflective questions about emotional priorities, environmental barriers, or implicit assumptions. The AI uses student responses to shape the next narrative segment, staying within the predefined anchors and approved frame. It does not generate cultural elaboration beyond what is given.

The conversational agent is built using the *LangChain* open-source framework [11] with content sourced from publicly available materials.

3.3 AI Governance: Boundary-Preserving Responses

The AI is configured with explicit boundary-preserving rules. The configuration encodes patterns for refusal, redirection, and explanation to ensure that the system does not fabricate cultural content, speculate about ceremony or law, or reward students for seeking culturally inappropriate details.

When a student requests cultural elaboration beyond the approved corpus, the AI affirms that some knowledge is not public, clarifies that the module uses only educationally available resources, and redirects the student toward reflection on why the request was made and what assumptions it reveals. Refusal functions both as ethical protection and as a teaching moment that surfaces the limits of design

knowledge. Table 1 summarises the division of what is generated by AI, what is templated, and what is manually authored.

Table 1. Division of labour

Element	Authored by	Generated at run-time	Reviewed under cultural oversight
Cultural anchors	Teaching team, public sources	No	No
Persona	Teaching team	No	Yes
Persona setting and place-based elements	Teaching team	No	Yes
Story arc themes	Teaching team	No	No
Micro-stories within arcs	AI generates within constraints	Yes, within approved frame	Framework reviewed; individual-generated stories not reviewed
Reflective prompts	AI tailors within team templates	Yes, within approved frame	Framework reviewed
Refusal and redirection patterns	Teaching team (oversight-informed)	No	Yes

This division means cultural oversight was consulted once, during framework development, to approve the static elements and the governance rules. The framework then runs asynchronously across student cohorts without reconsulting cultural oversight for each interaction. This is the operational basis of the load reduction described earlier. The framework does not eliminate consultation; it concentrates it during design and protects it from being re-extracted at each delivery.

4 METHOD

4.1 Participants

Fifty students enrolled in an undergraduate design studio were allocated to two parallel conditions: twenty-five to an AI-assisted version and twenty-five to a non-AI version. Both conditions used the same syllabus, assessment criteria, and learning outcomes. The only systematic difference was the presence or absence of AI-mediated narrative prompts.

4.2 Conditions

In the AI condition, narrative prompts were integrated into an asynchronous studio sequence. Students interacted with fictional scenarios via the AI agent, which asked follow-up questions, encouraged explicit articulation of assumptions, and redirected culturally inappropriate queries toward ethical and methodological reflection. In the non-AI condition, students worked with the same narrative content presented as static reading material and completed parallel reflective activities through written journal entries and structured peer discussion.

The comparison condition is not a "no-narrative" control. Both conditions receive the same narrative content. The difference lies in the medium of reflective engagement: dialogic and AI-mediated in one condition, written and peer-mediated in the other. This design allows observed differences to be attributed to the mode of reflective scaffolding rather than to the presence of narrative content.

4.3 Operational Definition

We analyse three constructs in students' work: empathy, relational thinking, and ethical awareness. Each construct is operationalised through observable features in reflective journals, design artefacts, and recorded AI interactions, rather than self-report alone.

Empathy is operationalised as how specifically and concretely a student responds to May's situation. Higher-empathy responses refer to particular details of her life (for example, the patch of yam daisies, the layout of her home, her routines, and her stated values) and treat her expressed preferences as constraints on design rather than problems to be fixed. Responses that refer only to generic figures such as "the user" or "older people," without concrete, contextual detail, are coded as lower empathy[12].

Relational thinking is operationalised as the number and kinds of relationships considered in framing and concept development. Higher-relational responses recognise parties beyond the primary user (for

example, family, community, more-than-human relations, Country), describe how different parties might benefit or contribute, and consider how design decisions may affect these relationships over time, including any accountability or governance arrangements. Responses that frame the task purely as meeting an individual user's needs, with little or no reference to broader relationships or responsibilities, are coded as lower-relational thinking[13].

Ethical awareness is operationalised as the extent to which a student explicitly reflects on assumptions, limits, and boundaries in their work. Higher-ethical responses name the student's own position (for example, aspects of their cultural background or experience that may shape how they see May), acknowledge where they do not have enough information and avoid speculating beyond it, identify cultural or other sensitive areas as outside the scope of the brief, and state what remains uncertain or unknown, in line with work on reflexivity and positionality in qualitative and design research. Responses that treat assumptions as facts, fail to acknowledge knowledge gaps, or ignore potential cultural boundaries are coded as indicating lower ethical awareness [14, 15].

The three constructs are related rather than strictly separate. Coding, therefore, allows multiple constructs to be assigned to the same excerpt, and any overlaps are retained for analysis rather than collapsed.

4.4 Data Collection and Analysis

Data sources include pre-course and exit questionnaires, student reflective journals, design artefacts (briefs, problem framings, concept portfolios), engagement indicators, AI interaction logs for the AI cohort, and short focus groups with volunteers from both conditions.

Questionnaire and engagement data are summarised using descriptive statistics, with non-parametric comparison between cohorts. The small sample ($n = 25$ per condition) means quantitative results are treated as supporting evidence rather than the primary basis for claims.

Journals, artefacts, focus group transcripts, and AI interaction logs are analysed using reflexive thematic analysis[16], anchored to the operational definitions in Section 4.3. Two coders work independently on a stratified sample, with disagreements resolved through reflexive discussion. Rigour is supported through triangulation across data sources and member reflection. Coding pays specific attention to language, indicating cultural overreach or recognition of cultural boundaries.

5 FINDINGS (OBSERVATIONS FROM FRAMEWORK DEVELOPMENT)

The framework has been developed, approved under cultural oversight, and integrated into the learning platform. Delivery is scheduled for the following semester, with data collection and analysis completed before the conference. Findings on student learning will be presented at the conference. What we report here are observations from development.

5.1 Cultural time and the approval process

Aboriginal cultural oversight is governed by relational accountability, not by project deadlines. Approval moves when the engagement is ready, not when a calendar says it should. This is not a delay to be managed; it is what taking oversight seriously requires, and any attempt to compress it would have contradicted the principles the framework claims to embed.

The implications run deeper than scheduling. Programs proposing AI-assisted Indigenous-informed pedagogy need to plan for this. Approval timelines cannot be reliably predicted from institutional planning frames, and the cost of doing the work properly arrives long before delivery.

This sharpens the cultural load argument. The load on Indigenous educators is not only produced by repeated requests for content. It is also produced by the labour of operating across two systems of time at once, one that treats duration as a commitment and one that treats it as a matter of engagement. The framework concentrates this labour during design but does not erase it.

5.2 Operational readiness

The boundary-preserving AI behaviours described earlier have been tested during development. Test prompts seeking cultural elaboration beyond the approved corpus consistently produced refusal responses aligned with the design rules. No students have yet interacted with the deployed module, so this is reportable as configuration evidence rather than learning evidence.

6 CONCLUSIONS

This study proposes and implements an AI-assisted narrative framework for asynchronous design education informed by Indigenous pedagogical principles of relationality, reflection, and responsibility, while constraining AI-generated content to a corpus developed and approved under cultural oversight. The contribution at this stage is conceptual and methodological, showing how stringent AI governance can support relational and reflective design reasoning without positioning the framework or its AI as a source of cultural authority. The framework was developed by non-Indigenous educators under Senior Elder oversight, which establishes the ethical legitimacy of this specific framework, persona, and corpus, but does not transfer cultural authority to the teaching team or generalise to other communities or contexts. Educators considering similar work should expect to undertake their own oversight process, paced by the relationships that make oversight possible rather than by institutional timelines. We submit this work at this stage to invite critical feedback on design, ethics, and governance before making stronger claims based on completed data. The forthcoming analysis will examine whether the framework supports relational and reflective design learning without increasing cultural load or reproducing extractive dynamics.

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