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REFRAMING THE LECTURER'S ROLE IN THE AGE OF GENERATIVE AI: TOWARDS A HUMAN–AI CO-TEACHING MODEL IN DESIGN EDUCATION

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Abstract:

Generative artificial intelligence (Gen-AI) has rapidly entered design studio practice, enabling students to produce visual concepts, models, and narratives with unprecedented speed and variety. While these tools expand creative possibilities, they simultaneously challenge traditional pedagogical assumptions regarding originality, authorship, and the role of the lecturer. This study explores the potential of Human–AI Co-Teaching Models in design studio pedagogy, focusing on how lecturers' roles evolve when Gen-AI becomes an active partner in the creative process. Using case studies from design studios in higher education, the research adopts a qualitative action-research approach with lecturers and students engaging in AI-augmented studio projects. Findings highlight a paradigm shift: the lecturer's role transitions from knowledge gatekeeper to critical guide, curator, and ethics negotiator. The paper proposes a framework for Human–AI Creative Pedagogy that balances efficiency and innovation with reflection, ethics, and critical thinking. Implications are offered for design education governance, studio assessment models, and lecturer training in the age of Gen-AI.

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Generative AI; Human-AI Co-Teaching; Design Education; Studio Pedagogy; Creative Pedagogy

Introduction

Shifts in the Design-Studio Paradigm

The emergence of generative artificial intelligence (Gen-AI) tools such as Midjourney, ChatGPT, RunwayML, and DALL-E has transformed the landscape of higher education design studios. Traditionally grounded in Schön's (1983, 1985) reflective practice model and the atelier tradition of critique-driven learning (Dutton, 1987), studio pedagogy emphasises iterative making, reflection-in-action, and guided critique by lecturers. Gen-AI intervenes within these traditions by automating ideation and visualisation at unprecedented velocities, bringing into question issues of originality, authorship, and the changing role of the lecturer. Early work acknowledges both possibilities such as augmented ideation, accessibility, and exposure to varied aesthetic styles and issues, including similarity in design outputs, ethical ambiguity, and over-reliance on algorithmic promptings (Raina & Lorusso, 2023; Xu et al., 2022). This research explores how lecturers in Malaysian design studios negotiate their pedagogical strategies for successfully incorporating Gen-AI so that student creativity, critical thinking, and ethical judgment are always at the forefront of learning outcomes.

Literature Review

Foundations of Studio Pedagogy

The studio model in architecture and design has traditionally emphasised project-based learning, dialogue, and continuous feedback. Dutton (1987) defined studio pedagogy as a socially situated process where knowledge is co-constructed through critique, conversation, and making, allowing students to develop professional judgement alongside technical skill. Schön advanced this perspective through his seminal works The Reflective Practitioner (1983) and The Design Studio: An Exploration of Its Traditions and Potentials (1985). Schön conceptualised design as a "conversation with the situation" and described two critical modes of learning: reflection-in-action which means thinking critically during the act of designing and reflection-on-action as retrospective critique after a design move. These concepts have deeply influenced design education worldwide. Goldschmidt (2014) contributed a methodological lens through Linkography, mapping chains of ideas that emerge during problem-solving, underscoring that creativity in studios is non-linear and iterative. Together, these foundational texts establish the reflective, iterative, critique-driven ethos of the studio that educators seek to protect even as new digital tools accelerate production.

Creativity research reinforces the need for iterative dialogue and reflection in design learning. Sawyer (2011) framed creativity as collaborative emergence, where innovation results from social interaction and iterative exchange rather than isolated insight. Braun & Clarke (2021), writing on reflexive thematic analysis, highlight that rigorous qualitative inquiry depends on recognising the researcher's or practitioner's interpretive role that is compatible with Schön's stance that designers construct meaning through reflection. In AI-mediated environments, these

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frameworks remind educators that human judgement, context sensitivity, and ethical reasoning must remain central even when generative systems speed up ideation.

Generative AI and Creative Pedagogy in Higher Education

Generative artificial intelligence (Gen-AI) has emerged as both a technological innovation and a pedagogical disruptor in higher education, compelling design programmes to revisit long-standing traditions of studio-based learning, assessment models, and ethical frameworks. Shneiderman (2020) proposed a human-centred AI paradigm that prioritises reliability, transparency, and trustworthiness as the foundation for productive human–machine complementarity principles that resonate strongly with the iterative and reflective ethos of design studios. A growing body of empirical research explores the affordances and risks of Gen-AI in creative education. Zhang et al. (2023) observed that students often regard AI-driven visualisation and text-to-image tools as accelerators of ideation and rapid prototyping, increasing the diversity of early-stage concepts. Similarly, Li and Zhang (2022) confirmed that AI expedites exploratory phases of the design process but found students frequently exhibit insufficient interrogation of algorithmic bias, cultural homogenisation, and the epistemic opacity underlying AI-generated artefacts. Recent studies in art-and-design programmes further underline these dynamics. Yang and Shin (2025), analysing Gen-AI adoption in art and design curricula, reported improved student engagement and iterative exploration, yet cautioned that over-reliance on AI outputs can erode critical studio dialogue and diminish originality if lecturers do not deliberately scaffold reflective critique. Likewise, Oh (2024) highlighted growing tensions between efficiency-driven automation and the cultivation of tacit design skills, stressing the necessity of explicit lecturer intervention to preserve craft-based reasoning and disciplinary authenticity in design studios. Parallel pedagogical findings by Gonzalez and Ramirez (2023) emphasise that lecturers who adopt facilitative and reflective roles are better positioned to help students balance the speed and novelty of AI-assisted ideation with contextual relevance, ethical awareness, and critical reasoning. Adding a philosophical dimension, Gunkel (2022) frames AI as an active socio-technical actor rather than a neutral tool, thereby requiring educators to become mediators who guide students in interrogating algorithmic agency and socio-cultural implications. Collectively, these studies signal the need to reconceptualise the lecturer's role in AI-mediated studios from knowledge gatekeeper to adaptive co-learner, curator, and ethics negotiator, ensuring that technological acceleration does not compromise reflective learning or creative integrity. To understand how this reflective ethos has traditionally shaped studio learning, it is useful to revisit Donald A. Schön's foundational work on reflective practice, which continues to inform the evolving lecturer's role in AI-mediated design education.

Schön's Reflective Practice in Design Studios

Schön distinguished between reflection-in-action, which describes the real-time reframing and adjustment of decisions while designing, and reflection-on-action, referring to retrospective critique for ongoing improvement. In studio-based learning environments, Schön depicted lecturers as coaches and critics, orchestrating cycles of making, presenting, critique, and refinement that develop professional judgement alongside technical competence. In studio-based learning environments, Schön depicted lecturers as coaches and critics, orchestrating cycles of making, presenting, critique, and refinement that develop professional judgement alongside technical competence.

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In contemporary AI-mediated studios, Schön's model remains profoundly relevant:

i. Reflection-in-action now incorporates human-AI interaction, where students iteratively generate, assess, and adapt outputs produced by Gen-AI tools.
ii. Instructors are facilitators of reflective discussion that challenges students to question AI products for bias, creativity, cultural sensibleness, and ethical implications.
iii. His commitment to process-based learning and process-based assessment continues reformed assessment models that prize critical thinking and iterative inquiry above completed end-products

Extending Schön's reflective tradition to encompass human-AI co-agency reinforces the lecturer's evolving identity as curator, ethics negotiator, co-learner, and assessor which are roles that uphold deep learning, contextual sensitivity, and ethical judgement even as automation accelerates the act of making.

The convergence of these literatures paints a dual narrative of opportunity and disruption. Traditional studio ideals articulated by Dutton (1987), Schön (1983; 1985), Goldschmidt (2014), and Sawyer (2011) emphasise iterative making, dialogue, reflection, and tacit skill development as essential to cultivating professional judgement. Contemporary studies such as Xu et al. (2022); Li & Zhang (2022); Zhang et al. (2023); Gonzalez & Ramirez (2023); Yang & Shin (2025); and Oh (2024) demonstrate that Gen-AI expands ideation capacity, diversifies concept exploration, and accelerates prototyping but also risks bypassing reflection-in-action if integrated without pedagogical scaffolds. An integrative approach therefore requires upholding Schön's reflective-studio ethos emphasising reflection-in-action, critique-driven dialogue, and process-centred assessment while leveraging AI's computational creativity to enrich, rather than replace, human decision-making.

Methodology

This study employed a qualitative action-research design to investigate how lecturers' roles evolve when generative artificial intelligence (Gen-AI) is introduced into design-studio teaching. Conducted over two consecutive semesters (October 2024 - July 2025) at Universiti Malaysia Kelantan, the study involved 12 studio lecturers from Architecture, Product Design, and Visual Communication and 120 undergraduate students. Gen-AI tools (Midjourney, Runway ML, DALL-E, ChatGPT) were deliberately integrated at the ideation stage of studio projects to stimulate divergent exploration while preserving later craft-based processes. Weekly critiques required students to identify AI contributions and reflect on issues of bias, originality, and contextual appropriateness, framing AI outputs as conversation starters rather than final deliverables, an approach that is consistent with Schön's reflection-in-action model. Data were collected from lecturer reflective remarks, student focus-group discussions (six groups held mid and end semester), studio artefacts and critique transcripts, and non-participant classroom observations. Using Braun and Clarke's (2021) reflexive thematic-analysis protocol, transcripts and artefacts were coded inductively to identify patterns of lecturer role-shifts, student-AI interactions, and critique dynamics. Themes were refined collaboratively among lecturer-researchers and interpreted through the lenses of Schön's reflective practice and Xu et al.'s (2022) human-AI-collaboration framework. This design enabled a context-rich examination of pedagogical transformation within authentic studio environments.

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Findings

Themes presented below emerged inductively from lecturer reflective journals, student focus-group discussions, and classroom observations gathered across two action-research cycles, reflecting iterative changes to teaching practice as Gen-AI was integrated into studio projects. Thematic analysis revealed five interrelated lecturer roles that emerged as Gen-AI altered the dynamics of the design-studio: Curator, Critical Reflector, Ethics Negotiator, Co-Learner, and Process Assessor. These roles appeared consistently across lecturer journals, focus-group transcripts, and classroom observations, signifying a structural shift in studio facilitation rather than isolated behaviours.

Table 1: Emergent Lecturer Roles in AI-Mediated Design Studios

Role	Characteristics	Illustrative Practices Observed
Curator	Guides students in selecting, filtering, and contextualising AI-generated artefacts to support design intent and project relevance.	Lecturers prompted students to explain why certain AI-produced mood-board images were adopted or rejected for cultural fit.
Critical Reflector	Encourages reflection-in-action and reflection-on-action to interrogate algorithmic bias, contextual appropriateness, and originality of AI-augmented outputs.	During critiques, lecturers asked students to justify colour palettes or forms proposed by the model in relation to site context.
Ethics Negotiator	Mediates classroom discussions on authorship, ownership, originality, fairness, and responsible use of Gen-AI tools.	Lecturers required disclosure of AI contribution in design logs and debated issues of creative credit in final presentations.
Co-Learner	Positions self as a collaborator exploring unfamiliar AI tools alongside students, fostering shared discovery and resilience toward technological change.	Lecturers experimented live with prompt engineering during workshops, modelling open learning.
Process Assessor	Re-centres assessment on the design process from idea development, critique engagement, and reflective documentation, over polished final artefacts.	Rubrics were adjusted to award marks for documented iteration steps and AI-human decision points.

Table 1 provides a summary of these roles, their defining characteristics, and illustrative practices observed in classroom settings.

The first major finding concerns the shift from a traditional "knowledge-gatekeeper" stance to more facilitative roles. As AI-generated artefacts accelerated idea generation, students frequently brought dozens of variations to each critique. Lecturer reflective journals reported that guidance shifted from demonstrating technique to helping students filter, frame, and question the relevance of machine-produced concepts, a behaviour encapsulated in the Curator role (*see Table 1*). Focus-group discussions showed that students valued this curatorial guidance as essential for preventing "idea overload" and maintaining coherence between concept, brief, and context.

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A second cluster of findings emphasises critical reflection and ethics. Classroom observations documented how lecturers deliberately paused critiques to discuss why certain AI suggestions were adopted, encouraging reflective engagement in line with Schön's (1983, 1985) studio ethos. This corresponds to the Critical Reflector role, as defined in Table 1, where lecturers guided students in interrogating algorithmic bias, contextual fit, and originality.

Simultaneously, the Ethics Negotiator role surfaced during conversations on authorship, originality, and bias. Focus-group participants expressed uncertainty about ownership; lecturers addressed this by modelling transparent attribution and prompting debate over the limits of acceptable AI assistance (see examples in Table 1). These discussions proved pivotal in maintaining reflective studio culture despite the accelerated production cycle.
Finally, findings reveal a re-orientation of lecturer identity toward shared learning and process assessment. Many lecturers described themselves as "learning alongside students", demonstrating prompt-engineering techniques live in class. This reflects the Co-Learner role (as summarised in Table 1), where lecturers positioned themselves as fellow explorers to reduce hierarchy and build collective confidence with unfamiliar tools.

Concurrently, several programmes modified rubrics to prioritise process-centred evidence such as documentation of iteration steps, rationale for prompt choices, and integration of critique feedback. These shifts illustrate the Process Assessor role (refer to Table 1), which emphasises iterative reasoning and AI–human decision-making over the polished final artefact. Together, these five roles form a cohesive pedagogical framework for AI-mediated design education, signalling a systemic adaptation of studio teaching, rather than a set of isolated coping strategies. Collectively, these developments suggest that Gen-AI adoption catalyses a fundamental shift in how lecturers define and evaluate creativity in studio education.

These developments suggest that Gen-AI adoption catalyses a fundamental redefinition of how lecturers facilitate, mediate, and evaluate creativity in studio education. While prior studies have explored AI's technical potential in accelerating ideation or generating content, little was known about how lecturer identities and pedagogical roles evolve in real studio environments when AI becomes embedded in the design process. This study addresses that gap by articulating five emergent lecturer roles and mapping them onto reflective practices, ethical mediation, and assessment strategies. In doing so, it contributes an empirically grounded, role-based framework that clarifies the how and why of educator adaptation in AI-enhanced learning contexts.

Discussion

Re-positioning of Lecturer Identity in AI-Mediated Studios

This study aimed to explore how lecturer roles evolve in AI-mediated design studios. The findings show a fundamental repositioning of the lecturer from knowledge gatekeeper to dynamic learning facilitator. This confirms Gonzalez and Ramirez's (2023) claim that educators in AI-rich contexts must act as curators and reflective guides. Here, lecturers enacted the Curator role by filtering AI-generated outputs for relevance and clarity, and the Critical Reflector role by guiding students through layered, dialogic critique. Together, these functions sustained a human-centred pedagogical ethos, even as workflows were accelerated. Unlike prior research that positioned AI primarily as a tool, this study frames AI as a co-agent in learning, prompting educators to co-construct meaning with students and machines alike.

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Reflection-in-Action and Ethical Mediation

These findings extend Schön's (1983, 1985) reflective-practice framework by embedding reflection-in-action within human-AI interactions. Ethical mediation emerged not as an add-on but as a central pedagogical process. Lecturers frequently paused critiques to interrogate why students adopted specific AI-generated forms, prompting critical evaluation of originality, cultural relevance, and bias. The Ethics Negotiator role reflects this shift, reinforcing students' ability to make responsible creative choices in a rapidly evolving digital landscape.

This aligns with global policy initiatives. For instance, UNESCO's Recommendation on the Ethics of AI (2021) and the OECD's AI in Education guidelines (2023) emphasise transparency, human oversight, and inclusion, principles enacted through classroom practices observed in this study. By embedding ethics into critique-based learning, lecturers not only upheld academic integrity but also nurtured critical digital citizenship.

Co-Learning, Process-Centred Assessment, and Creative Integrity

A third major finding concerns the redefinition of assessment and learning hierarchies. The adoption of a Co-Learner stance allowed lecturers to model uncertainty, adaptability, and prompt exploration in real time. This pedagogical humility flattened power dynamics and encouraged a participatory culture of experimentation, resonating with Yang and Shin's (2025) argument that instructor vulnerability enhances dialogue-rich learning. Several lecturers reported feeling re-invigorated in their teaching practice, highlighting implications for professional identity and educator wellbeing.

Concurrently, assessment practices shifted from output-centred to process-centred evaluation. Through the Process Assessor role, lecturers prioritised reasoning, iteration documentation, and critique responsiveness over final artefact quality. This supports Nguyen et al.'s (2022) call for assessment models that value transparency, reflection, and creative resilience which are crucial competencies in AI-supported environments. Rather than threatening creativity, this shift reframed it as an iterative, ethical, and dialogic process.

Implications for Studio Pedagogy and Future Research

Together, these five roles represent a systemic pedagogical framework, rather than piecemeal adaptations. Theoretically, this framework contributes to the field by articulating how lecturer identity, responsibility, and evaluative norms shift when AI becomes a co-creative agent in studio teaching. It integrates reflection, ethics, co-agency, and assessment into a cohesive structure that advances pedagogical theory in both design education and AI-enhanced learning. Practically, the findings support embedding structured reflection mechanisms such as critique dialogue logs, AI-prompt rationale journals, and transparent process rubrics to prevent metacognitive erosion in fast-paced AI workflows. Future research should investigate the framework's applicability across disciplines and institutions, and whether it cultivates sustained creative judgement, ethical reflexivity, and student design agency over time.

Conclusion

Contribution to Understanding Lecturer Role Transformation

This study contributes new empirical evidence to the growing scholarship on AI-mediated design education by documenting how lecturers' identities and practices evolve when generative-AI tools are integrated into studio pedagogy. Across two action-research cycles,

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five recurring roles emerged: Curator, Critical Reflector, Ethics Negotiator, Co-Learner, and Process Assessor, which together describe the shift from a traditional knowledge-gatekeeper stance to a facilitative, reflective, and ethically attuned model of teaching. These roles help explain how educators can sustain the reflective ethos of the studio while embracing the accelerated ideation afforded by AI technologies. Importantly, the five-role framework offers a conceptual bridge between reflective-practice pedagogy and human-AI co-agency in creative education, allowing educators to reconcile emerging technologies with long-standing studio values.

Pedagogical and Policy Implications

The role-based framework outlined here offers practical guidance for educators and programme leaders designing curricula in which human-AI collaboration is no longer optional but pedagogically central. Pedagogically, the findings underscore the value of process-centred assessment that rewards iterative reasoning, critique engagement, and transparent documentation of AI-human decision-making, thereby safeguarding creative integrity and critical judgement.

At the institutional level, the results highlight the importance of equipping lecturers with digital-pedagogy and ethical-AI training so they can confidently assume roles such as Ethics Negotiator and Curator, mediating complex issues of authorship, originality, and algorithmic bias. This aligns with Tan and Lim's (2023) call for robust academic-integrity frameworks tailored to AI-enhanced learning environments.

Future Research Directions

While this study affirms that reflective studio culture can coexist with the rapid ideation cycles of generative AI, it is not without limitations. The research was conducted at a single Malaysian design university, focused primarily on communication and architectural design programmes, and relied on qualitative methods. Cultural, institutional, and disciplinary norms may have influenced how roles were enacted and interpreted. Future research should explore the student-side impact of these pedagogical shifts. Longitudinal, multi-institutional studies are needed to assess how lecturer role transformations affect outcomes such as creative confidence, ethical reasoning, and originality of student design work. Cross-cultural comparisons would also enhance understanding of how the five-role framework translates into different studio traditions, educational infrastructures, and policy contexts.

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