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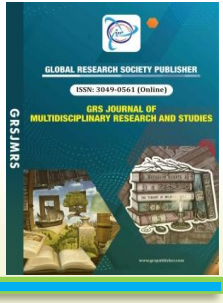

From Restriction to Reflection: Integrating TPACK and Artificial Intelligence in Lesson Plan Design for Hybrid Education Using Competency Based Education and Training Approach for Faculty Development

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Abstract: The Covid-19 post-pandemic educational landscape has intensified the demand for instructional designs that are pedagogically robust, technologically adaptable, and resilient to future disruptions. Despite of this fact, institutional responses to generative Artificial Intelligence (AI) in education frequently emphasize restriction rather than guided integration. This study reports on a Competency-based Education and Training (CBET) course for faculty development grounded in the Technological Pedagogical Content Knowledge (TPACK) framework. Participants redesigned a traditionally delivered lesson into hybrid and digitally resilient formats, culminating in AI-supported lesson plan development. Rather than prohibiting AI use, participants engaged in structured reflective practice documenting AI tools used; prompt strategies, humanisation of outputs, and pedagogical judgement. Data were collected through reflective narratives, survey feedback, artefacts analysis, and defended digital poster presentations evaluated by internal and external experts. Participants demonstrated progressive improvement in lesson alignment, pedagogical coherence, and technological integration across design phases. Reflective data indicated increased metacognitive awareness and professional judgement in AI use. Assessment redesign enabled transparent evaluation of competence, with participants articulating design rationale rather than merely presenting products. Guided integration of AI within a TPACK-aligned CBET framework supports authentic learning, professional judgement, and instructional resilience. Restrictive approaches to AI may undermine these outcomes. Assessment redesign, rather than tool prohibition, emerges as the critical determinant of educational integrity is discussed.

Keywords: *TPACK, Competency-Based Education and Training (CBET), Artificial Intelligence (AI) in Education, Hybrid Learning, Faculty Development, Assessment Redesign, Reflective Practice*.

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Introduction

The evolution of teaching and learning in higher education has shifted from content transmission toward competency development, requiring educators to integrate pedagogy, content, and technology meaningfully. The Technological Pedagogical Content Knowledge (TPACK) framework offers a conceptual foundation for this integration, emphasizing that effective teaching emerges from the dynamic interaction of these domains (Mishra et al., 2006 and Niess, 2011). Rather than from technology adoption alone. The COVID-19 pandemic exposed the fragility of traditional, classroom-dependent instructional models and underscored the necessity for digitally resilient lesson planning (Quezada et al., 2020). Yet, as generative AI tools become increasingly accessible, institutional responses often gravitate toward restriction and surveillance, driven by concerns about academic integrity rather than learning design efficacy (Amigud et al., 2025 and Dabis et al., 2024). Concurrently, the emergence of generative AI tools has provoked widespread concern regarding academic integrity, originality, and assessment validity (Palata et al., 2023). Institutional responses have often focused on restriction, detection, and punitive oversight.

The rapid integration of artificial intelligence (AI) into higher education has intensified long-standing debates about the role of technology in teaching, learning, and assessment (Maphalala et al., 2025 and Miller, 2024). While early educational technologies primarily functioned as content delivery or administrative tools, contemporary AI systems, particularly generative AI introduces qualitatively different affordances that directly influence instructional design, pedagogical decision-making, and learner cognition (Johri, 2022 and Crompton et al., 2024). These developments necessitate a reconceptualization of technology not merely as an adjunct to teaching, but as a core pedagogical partner within established educational frameworks such as Technological Pedagogical Content Knowledge (Mishra et al., 2006 and Niess, 2011). Within the TPACK framework, technology assumes educational value only when meaningfully aligned with pedagogy

and content (Mishra et al., 2006). However, studies consistently report that technology integration in faculty development remains tool-centric and compliance-driven, often resulting in superficial adoption rather than pedagogical transformation (Harris et al., 2009 and Blakely, 2015). The emergence of generative AI tools capable of producing lesson structures, learning activities, assessments, and instructional narratives has further complicated this landscape. Institutional responses have frequently emphasised restriction, detection, and punitive oversight, particularly in relation to academic integrity (Hristova, 2025)

This study positions AI not as a threat to pedagogical authenticity, but as a cognitive scaffold that can support instructional design when embedded within guided, reflective, and competency-based learning environments (Lee et al., 2025 and Lang, 2024). Generative AI systems possess several features directly relevant to lesson planning: rapid ideation, adaptive structuring of learning outcomes, alignment of assessments with objectives, generation of multimodal instructional strategies, and responsiveness to contextual prompts (Heston 2023 and Kadaruddin, 2023). When leveraged appropriately, these features can enhance educators' capacity to redesign lessons for diverse delivery modes, including hybrid and digitally resilient formats required during disruptions such as the COVID-19 pandemic (Zhang, 2024). Nevertheless, the pedagogical value of AI is neither automatic nor neutral. AI-generated outputs reflect probabilistic patterning rather than contextual understanding, professional judgement, or disciplinary nuance (West et al., 2023). Without deliberate human mediation, AI-assisted lesson plans risk becoming generic, misaligned with learner needs, or pedagogically incoherent (Lammert et al., 2024, Turvey et al., 2025). Consequently, the critical competence for educators is not the ability to generate AI-produced artefacts, but the capacity to interrogate, adapt, humanise, and justify AI-supported instructional designs. This emphasis aligns closely with the principles of Competency-Based Education and Training (CBET), which prioritise observable performance, reflective practice, and authentic assessment (Walter, 2024 and Muttaqin, 2022).

Despite growing scholarly interest in AI in education, empirical studies examining faculty development models that intentionally embed AI within lesson planning and assessment redesign remain limited (Chan et al., 2025 and Ding, 2025). Existing literature predominantly focuses on student use of AI, ethical considerations, or detection technologies, with comparatively less attention to how educators develop pedagogical judgement through structured AI engagement (Kizilcec, 2024). Moreover, few studies explicitly examine how assessment strategies must evolve to validly evaluate learning outcomes when AI tools are permitted rather than prohibited (Weng, 2024). To address this gap, the present study examines a structured faculty development course grounded in CBET and TPACK, in which participants were guided through three iterative lesson planning phases: (1) traditional face-to-face lesson design, (2) hybrid lesson redesign, and (3) AI-supported digital lesson planning. Rather than restricting AI use, participants were explicitly encouraged to employ AI tools for lesson design while being required to document prompts, critically evaluate AI outputs, contextualise and humanise generated content, and defend pedagogical decisions through reflective assignments and expert-reviewed presentations (ElSayary, 2025). The study further explores how assessment was deliberately redesigned to capture instructional competence, reflective judgement, and ethical AI engagement. Assessment modalities included artefact-based evaluation, reflective documentation of AI use, and a digital poster presentation defended before two evaluators, an internal subject matter expert and an external AI and e-learning expert. This approach reframes academic integrity not as a function of tool restriction, but as an outcome of transparency, defensible reasoning, and professional accountability.

By foregrounding AI as a pedagogically situated technology within the TPACK framework, this study contributes to emerging scholarship on responsible AI integration in education. It argues that the critical question is not whether AI should be used in lesson planning, but how educators can be trained and assessed to use AI thoughtfully, reflectively, and competently in ways that enhance teaching quality, learning continuity, and instructional resilience. The current manuscript discusses such deficit-oriented approaches by arguing that AI is not a shortcut around learning, but a catalyst for deeper cognitive engagement and academically organised approach when used deliberately. Within a CBET-informed faculty development course, participants were not only permitted but guided to use AI tools to redesign lesson plans, first for traditional delivery, then for hybrid contexts, and finally for digitally resilient scenarios responsive to future disruptions.

Methodology

Study Design

This study employed a mixed-methods educational design (Table 1), with qualitative data forming the primary analytic lens and quantitative survey descriptors providing contextual support. The intervention was embedded within a faculty development course focused on lesson planning, hybrid learning, and digital resilience.

Participants and Context

Participants were faculty members teaching across diverse disciplines in higher education. All participants had prior experience with traditional face-to-face teaching but variable exposure to hybrid teaching and AI-assisted instructional design. Participation in the course and associated study activities was based on the personal interest, first come first serve and participation in a pre-course workshop on development of lesson plan using Team Based Learning (TBL) method. This workshop aimed to revisit lesson plan for learning objective and outcome, students' centred and self-directed collaborative learning and conservative approach to lesson planning digitalized with Individual Readiness Assurance Test (IRAT) and Team Readiness Assurance Test (TRAT).

Course Design and Intervention

The faculty development course was structured around three sequential lesson design phases (Figure 1 and Table 2), each mapped to CBET principles and the TPACK framework:

1. **Phase 1: Traditional Lesson Plan Design**

Participants designed a lesson plan for face-to-face classroom delivery within their disciplinary context, focusing on learning outcomes, instructional strategies, and assessment alignment.

2. **Phase 2: Hybrid Lesson Redesign**

Participants redesigned the same lesson for a hybrid delivery model, integrating synchronous and asynchronous components, learner engagement strategies, and appropriate educational technologies.

3. **Phase 3: AI-Supported Digital Redesign**

Participants were introduced to generative AI tools for lesson plan development. AI use was explicitly permitted and scaffolded. Participants were required to:

- Declare AI tools used
- Document prompts and iterations
- Critically analyse AI-generated outputs
- Modify and contextualize outputs ("humanisation")
- Justify pedagogical decisions

Each phase involved hands-on design tasks, peer discussion, facilitator feedback, and reflective practice. This phased approach emphasized performance, reflection, and judgement, consistent with CBET.

AI Integration Strategy

Participants were explicitly permitted to use AI tools during the final phase (Figure 2). However, AI use was framed as a cognitive and design aid, not a replacement for professional judgement. Participants were required to document:

- AI tools used
- Prompts employed
- Iterative refinement of prompts
- Modifications made to humanise AI-generated outputs
- Pedagogical justifications for accepting or rejecting AI suggestions

Assessment Design

Assessment was redesigned to align with CBET principles progressively moving from traditional to AI integrated and included (Table 3 and Figure 3):

- Redesigned assessment for lesson plans (Figure 4)
- A reflective written assignment on AI use (Appendix 1)
- A digital poster presentation
- Oral defence of design decisions

Each poster presentation was evaluated independently by:

- An internal subject matter expert in education
- An external examiner with expertise in AI and e-learning

Data Collection

Data sources included:

- Structured reflective narratives (Appendix 1)
- End-of-course survey feedback (Appendix 2)
- Lesson plan artefacts across phases
- Assessment rubrics and evaluator feedback

Data Analysis

Qualitative data were analysed thematically, focusing on participants' perceptions of AI use, cognitive engagement, and professional growth. Artefact analysis examined alignment between learning outcomes, pedagogy, technology, and assessment across phases. Survey data were analysed descriptively.

Table 1. Data sources and analytical approaches a mixed method data analysis methodology

Data Source	Type	Analytical Method
Reflective narratives	Qualitative	Thematic analysis
Lesson plan artefacts	Qualitative	Alignment and coherence review
Survey feedback	Quantitative	Descriptive statistics
Evaluator feedback	Qualitative	Comparative judgement

Table 2. Course phases aligned with TPACK and CBET principles in transforming from conventional to AI generated lesson plan

Course Phase	Design Focus	TPACK Emphasis	CBET Performance Task
Phase 1	Traditional lesson planning	Pedagogical-Content Knowledge	Design of face-to-face lesson plan
Phase 2	Hybrid redesign	Technological-Pedagogical Knowledge	Redesign for blended delivery
Phase 3	AI-supported redesign	Integrated TPACK	Digitally resilient lesson plan with AI critique

Table 3. Assessment blueprint in a AI generated lesson plan evaluation of participants' performance

Assessment Component	Purpose	Evidence of Competence	Evaluator
Lesson plan submissions	Demonstrate design progression	Alignment, coherence, adaptability	Course facilitators
Reflective AI assignment	Evaluate metacognitive engagement	Prompt use, critique, humanisation	Course facilitators
Digital poster presentation	Synthesize learning	Design rationale, judgement	Internal expert
Oral defence	Validate authenticity	Professional reasoning and	External AI expert

		adaptability	

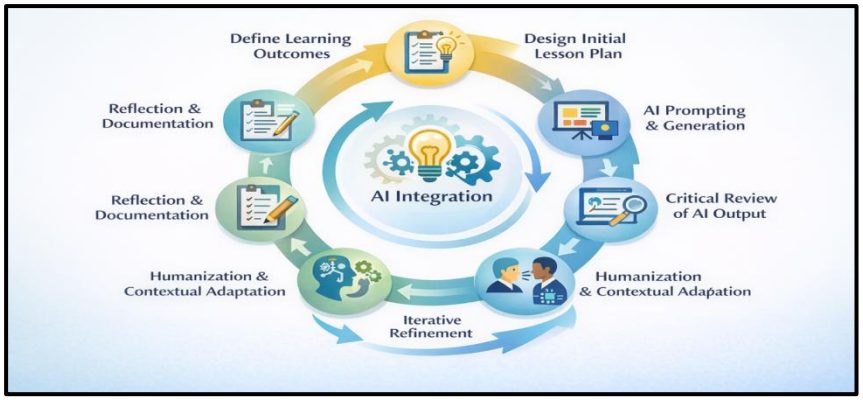

Figure 1: Guidelines for AI integrated cycle for lesson plan design from traditional to AI generated as adopted by the participants

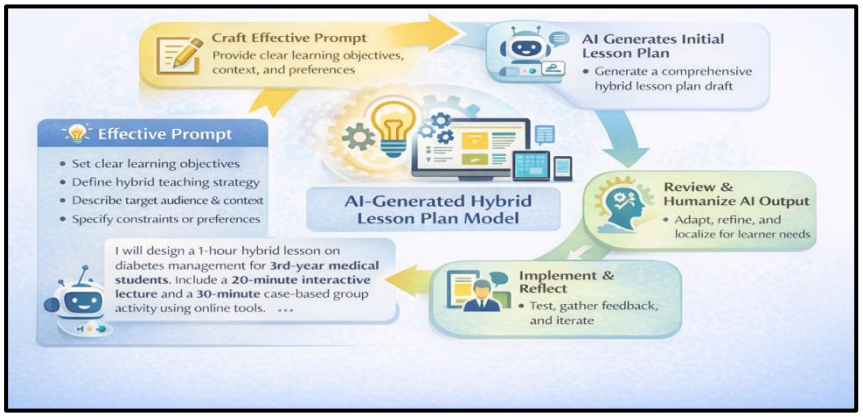

Figure 2: Model for AI-generated hybrid lesson plan provided to participants for deliberate use of AI fed with effective prompt

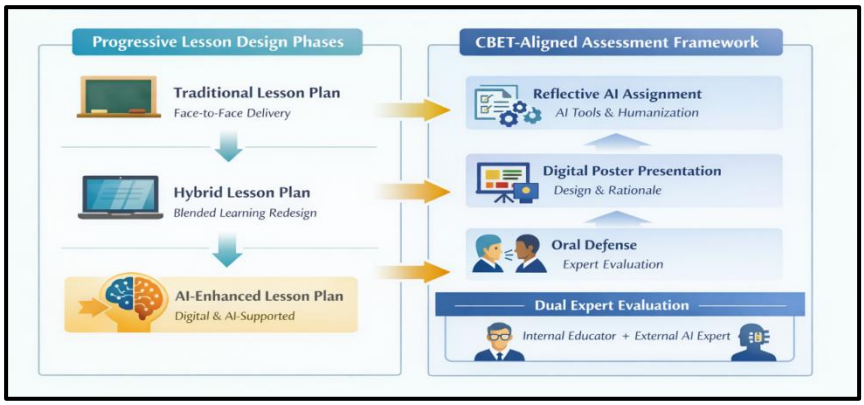

Figure 3: Progressive lesson design through competency-based education and training framework for assessment of AI integration

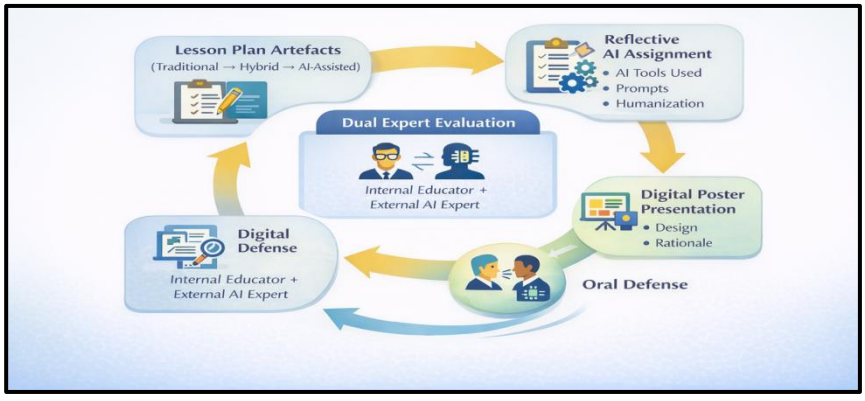

Figure 4: A modified assessment approach for evaluation of performance of lesson plan using AI

Result

Qualitative Analysis

1. Thematic analysis of Lesson Plan Designs Incorporating Technology

One-on-one interview and analysis of lesson plan artefacts demonstrated progressive improvement across design phases as under (Table 4).

Phase 1: Conventional lesson plans were largely content-driven, with limited learner engagement strategies and minimal alignment between outcomes and assessment.

Phase 2: Redesigned digitalized lesson plan showed increased integration of active learning strategies, clearer alignment of learning outcomes with instructional activities, and purposeful use of technology.

Phase 3: AI generated lesson plans, exhibited greater structural coherence, more explicit articulation of learning outcomes, increased variety of instructional strategies and improved assessment alignment (Table 5). Participants frequently used AI-generated outputs as initial drafts, reviewed by substantial modification based on their subject matter expertise to contextualize content for their learners.

2. Engagement with AI as a Reflective Design Tool (Appendix 1)

i) **Reflective Narratives of AI Supported Tools:** It was revealed that participants did not perceive AI as replacing their professional role. Instead, AI was described as a starting point for design thinking, a tool for generating alternatives and the means of identifying gaps in their own planning. Many participants reported iterative prompt refinement, rejecting generic outputs and adjusting tone, complexity, and pedagogy to suit their teaching context (Figure 2). This process enhanced awareness of pedagogical decision-making and instructional intent.

ii) **Metacognitive Development and Professional Judgement**

Participants consistently reflected increased metacognitive awareness of lesson design processes. Reflections highlighted a shift from focusing on content coverage to prioritizing learner engagement, assessment alignment, and delivery modality. Several participants explicitly noted that documenting prompts and defending AI use required them to articulate *why* specific design decisions were made, strengthening instructional judgement.

3. Progressive Development of Instructional Design Competence

Observation of lesson plan artefacts revealed clear progression across phases. Traditional lesson plans frequently emphasised content delivery, while hybrid redesigns demonstrated improved alignment with learner engagement learning strategies and assessment methods. AI-supported lesson plans showed increased structural coherence, clarity of learning outcomes, and diversification of instructional strategies (Table 5 and Figure 4).

Quantitative Analysis

Assessment as a Catalyst for Authentic Performance

Digital poster presentations with oral defences as modification to assess participants' performance (Figure 4) were completed by all participants. Evaluator rating using rubric feedback emphasized participants' ability to justify pedagogical choices, critically evaluate AI-generated content and demonstrated adaptability across teaching modalities designs (Table 3 and Figure 4). Inter-evaluator agreement was high, with both evaluators consistently identifying reflective depth and contextual adaptation as markers of competence rather than technical sophistication.

Survey Findings

The online survey (Appendix 2) results indicated strong participant endorsement of the course lesson plan generated by AI. Participants expressed greater confidence in designing hybrid and digitally resilient lessons integrated with AI (Table 5 and Figure 5).

Table 4: Alignment of survey items to qualitative themes and analytic codes developed from one-on-one interview

Item No.	Survey Item Focus	Primary Theme	Analytic Code(s)	Illustrative Analytic Lens
1	Teaching context	Contextual Use of AI	Teaching Context	Setting, learner level, modality
2	Purpose of AI use	AI as Design Scaffold	Design Function	Idea generation, structuring, alignment
3	Stage of engagement	Design Process	Temporal Positioning	Planning vs refinement vs review
4	Iterative prompting	Iterative Human–AI Interaction	Prompt Refinement	Iteration, trial-and-error, refinement
5	Rejection/ modification	Professional Filtering	Critical Appraisal	Rejection, adaptation, selectivity
6	SME-led humanisation	Humanised Expertise	SME Dominance	Expertise override, contextual judgement
7	Contextual adaptation	Contextualisation	Pedagogical	Learner fit, curriculum

			Adaptation	alignment
8	Metacognitive awareness	Metacognitive Development	Pedagogical Awareness	Self-monitoring, reflective awareness
9	Pedagogical shift	Instructional Reframing	Alignment Shift	Outcomes–assessment–activity coherence
10	Professional judgement	AI Positioning	Role Boundary	AI as support vs replacement
11	Reflective insight (open)	Reflective Sense-Making	Justified Modification	Explanation, rationale, defence of decisions
12	Forward action	Transformative Practice	Future Action	Practice change, sustained integration

Table 5: Participant endorsement of lesson planning approaches across three modalities (n = 8)

Outcome Measure	Traditional Lesson Planning	Digital Lesson Planning	AI-Supported Lesson Planning
Instructional design clarity	4/8 (50%)	6/8 (75%)	7/8 (87.5%)
Learning enhancement	3/8 (37.5%)	6/8 (75%)	7/8 (87.5%)
Assessment transparency and accountability	4/8 (50%)	6/8 (75%)	8/8 (100%)

Note: Percentages above reflect participant perceptions following iterative redesign of the same lesson across traditional, digital, and AI-supported modalities rather than outcomes from separate comparison groups.

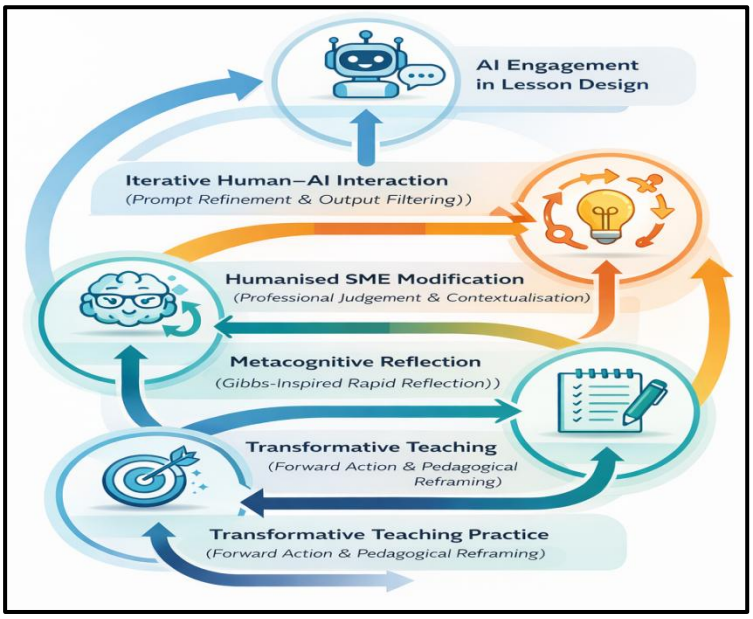

Figure 5: Structured CBET AI generated hybrid reflective lesson design process infographic

Discussion

This study examined the integration of artificial intelligence (AI) into lesson planning within a TPACK-aligned, faculty development with competency-based education and training, with particular emphasis on reflective practice, assessment redesign, and instructional judgement. Drawing on qualitative reflections, thematic analysis of interviews and artefact data, and quantitative assessment and survey results, the findings demonstrate that guided AI integration, embedded within authentic assessment enhance pedagogical competence without compromising academic integrity. The discussion synthesises these findings across four interrelated themes.

AI as a Catalyst for Pedagogical Reasoning

A consistent qualitative finding was that participants perceived AI not as a content automation tool but as a stimulus for pedagogical reasoning. Interviews and reflective narratives indicated that AI-generated lesson plans served as provisional artefacts that prompted educators to reconsider learning outcomes, instructional sequencing, and learner engagement strategies (see table 5). Participants frequently described AI outputs as "starting points" that required critical review and contextual adaptation rather than ready-to-use solutions. This pattern highlights that faculty development initiatives achieve pedagogical impact only when AI is framed as a catalyst for instructional decision-making and reflective practice, rather than as a tool for automation or compliance (Harris, 2009). From a CBET perspective, meaningful AI integration requires a shift from tool-centred adoption to performance-oriented faculty development that emphasises observable teaching competence, reflective judgement, and

authentic instructional outcomes (Blakely, 2015). In alignment with accreditation standards, the pedagogical value of AI is realised not through restriction or surveillance but through faculty development models that promote informed, ethical, and outcomes-aligned integration of AI into teaching and assessment. (Hristova, 2025)

Artefact analysis reinforced these perceptions. Early AI-supported lesson plans often reflected generic structures, while later iterations showed greater alignment with disciplinary context, learner needs, and assessment strategies. This progression suggests that AI functioned as a cognitive scaffold, supporting ideation and structure while preserving the educator's role in pedagogical decision-making. Within the TPACK framework, technology gained pedagogical value only through its interaction with content knowledge and instructional intent, rather than through standalone technical proficiency.

Reflective Accountability and the Development of Instructional Judgement

Thematic analysis revealed that reflective accountability was central to participants' learning. Requiring participants to document AI prompts, critique generated outputs, and justify modifications fostered heightened metacognitive awareness of instructional choices. Reflection was embedded within the design process rather than treated as a post-hoc activity, enabling participants to articulate the reasoning underlying their pedagogical decisions. Participants reported that this requirement shifted their focus from producing a polished lesson plan to demonstrating why particular strategies were pedagogically appropriate. The reflective process exposed assumptions about teaching practices and encouraged deliberate alignment between learning outcomes, pedagogy, and assessment. This finding aligns with CBET principles, which emphasise observable performance and professional reasoning over task completion. Thus, the educational value of AI lies not in automated content generation but in educators' competence to critically interrogate and humanise

AI-supported instructional designs (Lammert et al., 2024, Turvey et al., 2025), a stance that closely reflects CBET's emphasis on observable performance, reflective practice, and authentic assessment (Walter, 2024 and Muttaqin, 2022). The digital poster presentation and oral defence further reinforced this reflective accountability. Knowing that lesson plans would be examined by expert evaluators influenced how critically participants engaged with AI-generated content. This assessment design encouraged transparency and defensibility, positioning reflection as evidence of competence rather than a compliance exercise.

Assessment Redesign as the Foundation for Ethical AI Use

A key contribution of this study demonstrates that assessment redesign in an integrated AI is not seen as a restriction rather an enabled function of ethical and authentic AI engagement. The assessment framework shifted evaluative emphasis from detecting AI use to examining how AI was employed, adapted, and justified (Fartușnic, et al., 2025) By requiring artefact progression, reflective documentation, and expert-reviewed presentations, the assessment design made AI use explicit and pedagogically accountable. Quantitative ratings from digital poster presentations supported this interpretation. Participants achieved consistently strong scores in areas related to instructional coherence, outcome–assessment alignment, and justification of pedagogical choices. Evaluators placed greater emphasis on reasoning quality and contextual adaptation than on technical sophistication. Qualitative feedback highlighted transparency of AI use and clarity of instructional intent as key indicators of competence (Sebler, 2025). This approach contrasts with detection-based models of academic integrity, which may encourage concealment and surface-level compliance. Instead, the assessment framework promoted openness and professional responsibility, reframing integrity as an outcome of transparent reasoning and defensible practice.

Triangulation of Qualitative and Quantitative Evidence

The convergence of findings across data sources strengthens the credibility of the study. Themes identified through interviews and reflective narratives were mirrored in artefact development and supported by quantitative survey and assessment data. Online survey results, comprising multiple-choice items, 4-point Likert scales, and short essay responses, indicated strong participant endorsement of the course design and assessment approach (see table5). Participants reported increased confidence in hybrid lesson planning, reduced anxiety regarding AI use, and clearer understanding of technology's pedagogical role. The multiple-choice and the Likert scale design encouraged decisive responses, revealing generally positive perceptions of guided AI integration. Short essay responses provided further insight, revealing shifts in mindset from apprehension toward informed experimentation. Together, these findings suggest that observed changes reflected meaningful learning rather than isolated perceptions.

Implications for Assessment in AI-Rich Contexts

From an assessment perspective, the study contributes to emerging discourse on authentic and programmatic assessment in the age of AI (Miserandino, 2025) The use of artefact progression, reflective documentation, expert evaluation, and oral defence aligns assessment with professional practice realities. The dual-evaluator model combining disciplinary and AI expertise enhanced judgement validity and recognised the multidimensional nature of AI-supported instructional work. Importantly, the assessment framework shifted evaluative focus from product originality to reasoning quality, supporting transparency and trust. This finding reinforces arguments that academic integrity in AI-rich environments is best sustained through assessment design that foregrounds judgement and accountability rather than surveillance (Evangelista, 2025).

Output of Study

Study Outputs and institutional Implications

Beyond enhancing faculty competence in AI usability, ethics, and contextual judgment, a key output of this study was the development of a comprehensive, accreditation-aligned institutional framework. This framework includes an institutional AI policy, clearly defined operational procedures, monitoring checklists and student-use rubrics, and a structured faculty development module to support consistent, ethical, and pedagogically sound integration of AI across teaching, learning, and assessment. Collectively, these outputs position the institution to respond proactively to evolving accreditation expectations, including those articulated in the WFME Continuing Professional Development (CPD) standards, which explicitly acknowledge the educational use of artificial intelligence and large language models and emphasize their responsible, quality-assured application.

Limitations and Future Directions

The study was conducted within a single institutional context with a limited cohort, which may limit generalisability. However, the depth of qualitative data and triangulation across data sources enhance transferability. Future research could examine longitudinal impacts on teaching practice and learner outcomes, as well as comparative studies contrasting restrictive versus guided AI approaches.

Conclusion

Restrictive approaches to AI often assume misuse and incentivize concealment. In contrast, this study illustrates that assessment redesign, emphasizing reflection, defence, and expert evaluation creates conditions for ethical and productive AI use. The requirement to explain prompts, critique on outputs, and defend decisions positioned AI as a tool for professional growth rather than academic risk. Overall, the findings indicate that when AI is embedded within a TPACK-aligned, competency-based course and evaluated through reflective and authentic assessment, it enhances instructional competence rather than undermines integrity. The study underscores that the challenge of AI in education is pedagogical rather than technological. By redesigning assessment to foreground judgement, transparency, and professional reasoning, educators can move beyond restriction toward sustainable and ethically grounded AI integration in teaching and learning.

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Appendices

Appendix 1: Rapid Reflective Practice Template for AI-Supported Lesson Design

Reflection Stage	Guiding Prompt	Participant Reflection (Short Narrative)
1. Description	How was AI used in the lesson design process? At what stage and for what purpose?	
2. Feelings	What were your initial reactions when engaging with AI as a design support tool?	
3. Evaluation	What aspects of the AI output were useful? What required rejection, adaptation, or refinement?	
4. Analysis (Humanised Iteration using SME)	How did you iteratively modify AI-generated outputs using your subject matter expertise, knowledge of learners, and pedagogical judgement? Why were specific suggestions accepted, revised, or discarded?	
5. Conclusion (Professional Judgement)	What did this process reveal about your role as an educator and AI as a reflective design partner rather than an authority?	
6. Action Plan	What one or two specific actions will you take when using AI in future lesson or curriculum design?	
Optional Comment	How the iterative and integrative prompt from your professional expertise shaped the AI generated lesson plan design	

Appendix 2: Short CBET AI generated lesson plan developed for online survey feedback

No	Focus Area	Google Form Question	Response Type
1	Teaching Context	In which teaching context did you use AI for lesson design?	Multiple choice (Preclinical / Clinical / Skills / Hybrid / Online)
2	Purpose of Use	For what purpose(s) did you primarily use AI?	Checkboxes (Idea generation / Structuring content / Assessment alignment / Learner engagement / Review and refinement)
3	Stage of Engagement	At what stage of lesson design did you mainly engage with AI?	Multiple choice (Initial planning / Iterative refinement traditional/ Iterative refinement digital/ Final review)
4	Iterative Prompting	I refined or modified my prompts iteratively to improve AI outputs.	4-Point Likert Scale (Strongly disagree → Strongly agree)
5	Output Rejection	I rejected or substantially modified AI-generated outputs that did not suit my teaching context.	4-Point Likert Scale (Strongly disagree → Strongly agree)
6	SME-Led Humanisation	My subject matter expertise played a key role in shaping the final lesson beyond AI-generated drafts.	4-Point Likert Scale (Strongly disagree → Strongly agree)
7	Contextual Adaptation	I adapted AI outputs to better match learner level, curriculum requirements, or delivery modality.	4-Point Likert Scale (Strongly disagree → Strongly agree)
8	Metacognitive Awareness	Using AI increased my awareness of my own pedagogical decision-making integrated with technology.	4-Point Likert Scale (Strongly disagree → Strongly agree)
9	Pedagogical Shift	AI usability better my focus initially on content coverage to alignment between outcomes, activities, and assessment.	4-Point Likert Scale (Strongly disagree → Strongly agree)
10	Professional Judgement	I viewed AI as a reflective design support tool rather than a replacement for my professional role.	4-Point Likert Scale (Strongly disagree → Strongly agree)
11	Key Reflective Insight	I modified AI-generated content using my professional judgement.	Yes/No /Short Answer If yes, briefly describe one way you modified
12	Forward Action	Is there any action plan you decided for your future lesson design practice when using AI?	Yes/No /Short Answer If yes what action plan you have decided to do differently