

Designing Human-Centred AI Education for Future Professionals

Professor Bernard Wong^{1,2}

¹Enterprise Strategy Consulting Inc, Australia

²Wentworth Institute of Higher Education, Australia

DOI: <https://doi.org/10.47772/IJRISS.2026.1026EDU0428>

Received: 25 June 2025; Accepted: 30 June 2026; Published: 12 July 2026

ABSTRACT

Artificial Intelligence (AI) is transforming higher education and reshaping the capabilities graduates require for professional practice. As AI becomes increasingly embedded in workplaces, universities must move beyond teaching AI tools and instead develop curricula that foster AI literacy, critical thinking, ethical reasoning and effective human–AI collaboration. However, there is limited guidance on how these capabilities can be systematically embedded across higher education programs.

This paper proposes the Human-Centred AI Education Framework, comprising five developmental stages: AI Awareness, AI-Assisted Learning, Critical Evaluation, Human–AI Collaboration, and Professional Practice. The framework provides a structured approach for integrating AI into teaching, learning and assessment while maintaining the central role of human judgement, accountability and responsible AI use.

The framework is demonstrated through a postgraduate project management subject in which students used Generative AI to support authentic learning activities. Classroom observations indicate that structured AI integration promotes critical evaluation, reflective practice and professional judgement by encouraging students to evaluate rather than simply accept AI-generated outputs.

The paper contributes a practical curriculum framework that can be adapted across disciplines to prepare graduates for responsible participation in AI-enabled professional environments while preserving the human-centred capabilities essential for lifelong learning and professional practice.

Keywords: Artificial Intelligence, Higher Education, Curriculum Design, Human–AI Collaboration, Graduate Capability

INTRODUCTION

Artificial Intelligence (AI) is transforming higher education and reshaping the capabilities graduates require for professional practice. Rapid advances in Generative AI technologies, including large language models and AI-assisted decision-support systems, are changing how students acquire knowledge, solve problems, collaborate with others and engage in learning activities [6][20][23]. Beyond the classroom, AI is increasingly embedded within professional environments, influencing decision-making, communication, planning, analysis and organisational performance across diverse disciplines [15][17][22]. As AI becomes an integral component of contemporary workplaces, universities are challenged to prepare graduates who can work effectively with intelligent systems while maintaining critical thinking, ethical reasoning, professional judgement and accountability [15][19][22].

The emergence of Generative AI has prompted widespread debate regarding its implications for teaching, learning and assessment. Early responses within higher education focused primarily on academic integrity, plagiarism detection and the appropriate use of AI-generated content [9], [5], [16]. More recently, attention has shifted towards understanding how AI can enhance learning through personalised support, intelligent tutoring, adaptive learning environments and collaborative knowledge construction [6][12][20][23]. While these developments present significant opportunities for educational innovation, they also raise important questions

regarding curriculum design, assessment validity, intellectual property, algorithmic bias, transparency and responsible AI governance [8][13][19].

These challenges extend beyond the adoption of new technologies. They require universities to reconsider the purpose of higher education and the capabilities graduates will require in AI-enabled workplaces. Contemporary graduates must not only understand how to use AI tools, but also develop the ability to critically evaluate AI-generated information, recognise the limitations of algorithmic recommendations, exercise contextual judgement and collaborate effectively with AI while remaining accountable for professional decisions [15][18][19]. Consequently, AI literacy should be viewed as one component of a broader set of graduate capabilities that also includes ethical reasoning, reflective practice, communication, leadership and lifelong learning [3][14][22].

Responding to these developments requires curriculum transformation rather than isolated technological adoption. Traditional curricula were largely designed for environments in which graduates independently searched for, analysed and communicated information. In contrast, AI-enabled workplaces increasingly require professionals to work alongside intelligent systems, interpret AI-generated insights and make complex decisions informed by both human expertise and machine intelligence [15][22]. Curriculum design must therefore move beyond teaching students how AI works and instead provide structured opportunities for students to develop progressively higher levels of AI capability throughout their educational journey. Principles of constructive alignment emphasise that intended learning outcomes, teaching activities and assessment should be intentionally aligned to support the development of graduate capabilities [2]. Similarly, the Technological Pedagogical Content Knowledge (TPACK) framework highlights the importance of integrating technology with pedagogy and disciplinary knowledge to achieve meaningful educational outcomes [11]. These perspectives suggest that AI should be embedded systematically within curriculum design rather than introduced as an isolated technological topic.

Assessment practices also require reconsideration. The widespread availability of Generative AI challenges traditional approaches that rely heavily on written assignments and completed artefacts as evidence of student learning [5][16]. Increasingly, educators advocate authentic assessment strategies that evaluate reasoning, reflection, professional judgement and decision-making processes rather than simply assessing final outputs [4][21]. Such approaches more closely reflect professional practice, where graduates are expected to collaborate with AI while remaining responsible for interpreting evidence, exercising ethical judgement and making informed decisions. Reflection, experiential learning and authentic professional engagement therefore become essential components of AI-enabled higher education [3][10][18].

Despite the rapid growth of research on Artificial Intelligence in higher education, significant gaps remain. Existing studies have largely focused on AI technologies, classroom applications, academic integrity, assessment redesign or institutional policy [5][7][9][11] [19][20][22][23]. Comparatively little attention has been given to curriculum frameworks that systematically integrate AI literacy, critical evaluation, human-AI collaboration, ethical reasoning and professional capability development across an entire program of study. Similarly, while international organisations have published important guidance on responsible AI, governance and learner capability [8][15][19], limited research has translated these principles into practical curriculum models that educators can implement across higher education disciplines.

To address this gap, this paper proposes the Human-Centred AI Education Framework, a curriculum model designed to support the progressive integration of Artificial Intelligence into higher education through five developmental stages: AI Awareness, AI-Assisted Learning, Critical Evaluation, Human-AI Collaboration and Professional Practice. Drawing upon educational theory, experiential learning, reflective practice, AI governance and responsible AI principles [2][3][10][11][18][19], the framework aligns curriculum design, teaching activities and assessment with the development of AI-enabled graduate capabilities. Rather than positioning AI as a replacement for human expertise, the framework emphasises the complementary relationship between Artificial Intelligence and human judgement, preparing graduates to use AI responsibly while maintaining professional accountability and ethical responsibility.

The framework is illustrated through its implementation within a postgraduate project management subject at an Australian higher education institution. Project management provides an appropriate implementation context

because it requires graduates to integrate technical knowledge with leadership, stakeholder engagement, communication, governance and complex decision-making in authentic professional environments [17]. The implementation demonstrates how AI can be embedded within curriculum design to strengthen learning while preserving the human-centred capabilities that remain fundamental to professional practice.

This paper makes four principal contributions to higher education literature. First, it proposes a Human-Centred AI Education Framework that provides a structured curriculum model for embedding Artificial Intelligence across higher education programs. Second, it demonstrates how AI literacy, critical evaluation, ethical reasoning and human-AI collaboration can be developed progressively through aligned learning outcomes, teaching activities and assessment. Third, it illustrates the practical implementation of the framework through a postgraduate project management case study, providing evidence of its applicability within a professional discipline. Finally, it contributes to the growing discourse on curriculum transformation by providing educators with a practical model for preparing graduates for responsible participation in AI-enabled professional environments while preserving the human-centred capabilities that underpin effective professional practice.

LITERATURE REVIEW

Artificial Intelligence in Higher Education

Artificial Intelligence (AI) has emerged as one of the most significant developments influencing higher education in recent decades. The rapid adoption of Generative AI technologies such as ChatGPT, Claude, Gemini and Microsoft Copilot has fundamentally altered how students access information, generate ideas, solve problems and engage with learning activities [6][12][20][23]. Unlike earlier educational technologies that primarily supported content delivery or administrative functions, Generative AI actively participates in knowledge creation, content generation and decision support, creating new opportunities and challenges for both educators and learners.

Early applications of AI in higher education focused on intelligent tutoring systems, adaptive learning environments, automated assessment and learning analytics designed to personalise learning experiences and improve student outcomes [20][23]. Recent developments have significantly expanded these capabilities. Generative AI now assists students with brainstorming, summarising literature, producing written drafts, developing project artefacts, generating computer code and supporting reflective learning. For educators, AI offers opportunities to design learning materials, develop authentic case studies, automate routine administrative tasks and provide personalised feedback at scale [6][12].

These developments have prompted many universities to reconsider traditional approaches to teaching, learning and assessment. Rather than viewing AI solely as a technological innovation, higher education institutions increasingly recognise AI as a catalyst for broader educational transformation. Universities are therefore confronted with the challenge of preparing graduates who are capable not only of using AI technologies effectively but also of understanding their limitations, evaluating their outputs critically and applying them responsibly within professional contexts [6][15][19].

Despite these opportunities, significant concerns remain regarding academic integrity, assessment validity, misinformation, algorithmic bias, intellectual property, privacy and the potential erosion of critical thinking [5][9][19]. Consequently, there is growing consensus that higher education should move beyond debating whether AI should be permitted and instead focus on how AI can be integrated responsibly into curriculum design to enhance student learning while preserving academic standards.

Curriculum Design for AI-Enabled Learning

The widespread adoption of AI has prompted calls for substantial curriculum transformation across higher education. Traditional curricula were developed for environments in which graduates were expected to retrieve, analyse and communicate information independently. In contrast, AI-enabled workplaces increasingly require graduates to collaborate effectively with intelligent systems while exercising critical judgement, ethical reasoning and professional accountability [15][22].

This transition has significant implications for curriculum design. Rather than introducing AI through isolated elective subjects or technical training, many researchers argue that AI capabilities should be progressively embedded across programs of study. Such an approach enables students to develop AI literacy alongside disciplinary knowledge and professional competencies rather than treating AI as a standalone topic [7][11][15].

Educational theories such as constructive alignment emphasise that curriculum design should align learning outcomes, teaching activities and assessment to achieve intended graduate capabilities [2]. Within AI-enabled learning environments, this requires universities to reconsider not only what students learn, but also how they learn, how learning is assessed and how professional judgement is demonstrated [7][11]. Consequently, curriculum design must increasingly support authentic learning experiences that reflect contemporary workplace practices while encouraging students to critically engage with AI-generated information.

These developments suggest that curriculum transformation should focus less on teaching AI technologies themselves and more on developing graduates capable of working effectively with AI throughout their professional careers [1][14][22].

AI Literacy and Graduate Capability Development

As AI becomes increasingly embedded within society and professional practice, AI literacy has emerged as a fundamental graduate capability. AI literacy extends well beyond technical understanding of algorithms or software applications. It encompasses the ability to understand AI capabilities and limitations, critically evaluate AI-generated outputs, recognise bias and misinformation, appreciate ethical implications and exercise informed judgement when integrating AI into professional decision-making [7][15][19].

Contemporary research increasingly positions AI literacy as a multidisciplinary capability that combines digital literacy, critical thinking, ethical reasoning and professional responsibility. Graduates are expected not only to generate AI-assisted outputs but also to verify information, justify decisions, interpret context and maintain accountability for outcomes. Consequently, effective AI literacy requires students to understand when AI should be trusted, when it should be questioned and when human expertise must override algorithmic recommendations [7][14][15].

Universities therefore face the challenge of embedding AI literacy progressively throughout curricula rather than relying on isolated workshops or technology-focused subjects. Such an approach enables students to develop increasingly sophisticated capabilities as they progress through their programs while reinforcing disciplinary knowledge and professional competencies [1][2][14].

Human-AI Collaboration in Professional Education

Current research increasingly recognises that AI should augment rather than replace human expertise. Professional practice across disciplines continues to rely upon capabilities that remain uniquely human, including creativity, leadership, communication, ethical reasoning, contextual judgement and stakeholder engagement. Consequently, graduates require the ability to collaborate effectively with AI systems rather than simply operate AI technologies [15][22].

Human-AI collaboration represents a shift from technology-centred education towards partnership models in which AI supports, but does not replace, human decision-making. Within higher education this requires learning activities that encourage students to compare their own reasoning with AI-generated alternatives, evaluate the quality of AI recommendations and reflect upon the strengths and limitations of both human and machine-generated solutions [3][18].

Such approaches reinforce critical thinking and professional judgement while helping students develop confidence in exercising independent reasoning. Human-AI collaboration therefore represents an essential educational capability for graduates entering increasingly AI-enabled workplaces [3][4][18].

Assessment in the Age of Artificial Intelligence

The emergence of Generative AI has challenged many traditional approaches to assessment within higher education. Assessment tasks that rely primarily upon written reports or artefacts can now be completed with substantial AI assistance, raising important questions regarding authenticity, academic integrity and the validity of existing assessment practices [5][16].

In response, educators increasingly advocate authentic assessment approaches that evaluate students' reasoning, reflection, decision-making processes and professional judgement rather than simply assessing final outputs. Oral presentations, reflective journals, portfolios, project-based learning, simulations and collaborative activities have become increasingly important strategies for evaluating student learning within AI-enabled environments [4][21].

Rather than attempting to prohibit AI use, contemporary assessment approaches seek to make AI use transparent while evaluating students' ability to critically interpret, justify and improve AI-generated outputs. Such assessment strategies more closely resemble professional practice, where graduates are expected to use AI responsibly while remaining accountable for decisions and outcomes [1][4][21].

Responsible AI and Educational Governance

Alongside technological innovation, responsible AI has become an important consideration for higher education institutions. International organisations including UNESCO, the OECD, NIST and ISO have emphasised the importance of transparency, accountability, fairness, privacy, human oversight and ethical governance when deploying AI systems [8][13][15] [19].

These principles are equally relevant within educational environments. Universities have responsibilities not only to teach students how to use AI effectively but also to cultivate ethical awareness and responsible professional behaviour. Students must understand issues relating to bias, misinformation, intellectual property, data privacy and algorithmic accountability while recognising that responsibility for professional decisions ultimately remains with human practitioners [8][13][15] [19].

Although substantial literature now examines AI adoption, AI literacy, assessment redesign and responsible AI, comparatively little research has proposed an integrated curriculum framework that systematically develops these capabilities across a program of study. Existing research frequently focuses on individual technologies, isolated teaching interventions or assessment practices rather than providing educators with a comprehensive model for curriculum design [6][16][20][23].

This gap provides the foundation for the Human-Centred AI Education Framework proposed in the following section. The framework seeks to integrate AI literacy, curriculum design, authentic assessment, human-AI collaboration and responsible AI governance into a coherent educational model capable of preparing graduates for AI-enabled professional practice [2][11][18].

Human-Centred Ai Education Framework

The literature review identifies several important developments shaping higher education. First, Artificial Intelligence is transforming teaching, learning, assessment and professional practice across disciplines [6][15][20][23]. Second, universities are increasingly expected to prepare graduates who possess not only disciplinary expertise but also AI literacy, critical thinking, ethical reasoning and the ability to collaborate effectively with intelligent systems [14][15][19][22]. Third, while existing research has examined AI adoption, assessment redesign and responsible AI [20][23], relatively few studies provide educators with a comprehensive curriculum framework for systematically developing these capabilities across an academic program [2][11].

To address this gap, this paper proposes the Human-Centred AI Education Framework.

The Human-Centred AI Education Framework was derived through an integrative synthesis of the literature

reviewed in this paper, drawing upon research on Artificial Intelligence in higher education, curriculum design, constructive alignment, experiential learning, authentic assessment and responsible AI governance. Rather than adopting an existing educational model, the framework combines complementary principles from these domains to address the identified gap in the literature: the absence of a practical curriculum model that progressively develops AI literacy, critical evaluation, human–AI collaboration and professional capability across higher education programs.

The framework adopts a staged developmental structure that progresses from foundational AI awareness to authentic professional practice. Each stage builds upon the capabilities established in the preceding stage, progressively developing students' confidence, competence and autonomy in applying Artificial Intelligence while reinforcing ethical responsibility, critical judgement and accountability for professional decision-making.

The framework therefore provides a structured approach for embedding Artificial Intelligence within higher education curricula while preserving the central role of human judgement, ethical reasoning, professional accountability and lifelong learning [3][15][18][19]. Rather than positioning AI as a standalone technical topic, the framework integrates AI progressively throughout teaching, learning and assessment so that students develop increasingly sophisticated capabilities as they advance through their programs of study [1][2][7][11].

The framework is informed by principles of AI literacy, responsible AI governance, authentic learning and experiential education [3][8][10][13][15][18][19]. It adopts a developmental approach in which students progress through five interconnected stages: AI Awareness, AI-Assisted Learning, Critical Evaluation, Human-AI Collaboration and Professional Practice. Each stage builds upon the capabilities developed in earlier stages while introducing greater complexity, autonomy and professional responsibility [2][4][11].

The framework is intended to be discipline-independent and adaptable across higher education. Although it is demonstrated in this paper through a postgraduate project management subject, the framework may also be applied within business, engineering, information technology, health, law and other professionally oriented disciplines where graduates are expected to integrate AI into complex decision-making and workplace practice [1][14][15][22].

The framework is designed as a progressive developmental model. During the AI Awareness stage, students develop an understanding of AI technologies, their capabilities and limitations, and the ethical and governance issues associated with their use. This stage establishes the foundation for responsible AI use by introducing concepts such as transparency, accountability, bias, privacy and intellectual property [8][13][15][19].

The second stage, AI-Assisted Learning, positions AI as a learning partner rather than a replacement for human thinking. Students begin incorporating AI into learning activities to support idea generation, research, problem solving and content development. Importantly, AI is introduced as a tool for enhancing learning while students remain responsible for interpreting, validating and contextualising AI-generated information [6][7][11][12].

The Critical Evaluation stage represents the transition from AI use to AI judgement. Students are required to evaluate the quality, accuracy and relevance of AI-generated outputs, compare alternative solutions and identify limitations, assumptions and potential bias. Rather than accepting AI recommendations uncritically, students develop the analytical skills necessary to determine when AI should be trusted and when professional judgement must prevail [3][9][18].

Building upon these capabilities, the Human-AI Collaboration stage emphasises collaborative decision-making between humans and AI systems. Learning activities simulate professional environments in which AI supports planning, communication, analysis and decision making while students retain responsibility for interpreting evidence, engaging stakeholders and exercising contextual judgement. This stage reflects contemporary workplace practice, where AI increasingly augments rather than replaces professional expertise [15][17][18][22].

The final stage, Professional Practice, integrates the preceding stages within authentic disciplinary contexts. Students apply AI in complex workplace scenarios through capstone projects, industry case studies or work-

integrated learning experiences. Assessment emphasises responsible AI use, governance, ethical reasoning, professional accountability and reflective practice, ensuring that graduates are prepared to participate confidently in AI-enabled professional environments [1][3][4][10][21].

Table 1: Human-Centred Ai Education Framework

Stage	Purpose	Teaching and Learning Activities	Assessment Focus	Graduate Capabilities Developed
AI Awareness	Develop foundational understanding of AI capabilities, limitations, ethics and governance.	AI demonstrations, ethics discussions, case studies, evaluation of AI successes and failures.	Reflection, AI awareness quizzes, ethical analysis.	AI literacy, ethical awareness, digital confidence, governance understanding.
AI-Assisted Learning	Introduce AI as a learning partner that supports knowledge construction and problem solving.	AI-assisted brainstorming, literature reviews, content generation, discipline-specific learning activities.	AI-supported assignments with disclosure and reflection.	Digital capability, information literacy, productivity, responsible AI use.
Critical Evaluation	Develop students' ability to critically analyse and improve AI-generated outputs.	Comparison of student and AI-generated work, verification of sources, bias identification, evidence-based critique.	Critical evaluation reports, reflective analysis, peer review.	Critical thinking, analytical reasoning, evidence evaluation, professional judgement.
Human-AI Collaboration	Develop effective collaboration between human expertise and AI-supported decision making.	Authentic workplace simulations, collaborative projects, scenario-based learning, decision support activities.	Problem-based learning, collaborative projects, oral presentations.	Communication, teamwork, leadership, contextual judgement, decision making.
Professional Practice	Apply AI responsibly within authentic professional environments.	Capstone projects, work-integrated learning, industry case studies, governance and risk analysis.	Authentic workplace assessment, professional portfolios, reflective practice.	Professional capability, ethical leadership, governance, lifelong learning and responsible AI practice.

The Human-Centred AI Education Framework aligns curriculum design with progressively developing graduate capabilities rather than focusing solely on AI technologies. The framework supports constructive alignment by linking intended learning outcomes, teaching activities and assessment with the knowledge, skills and professional behaviours expected of graduates [2]. AI therefore becomes embedded throughout the educational experience as a means of strengthening learning rather than replacing disciplinary expertise [7][11].

Unlike technology-centred approaches that emphasise software proficiency, the proposed framework places human judgement, ethical reasoning, critical evaluation and professional responsibility at the centre of curriculum design. AI is positioned as a cognitive partner that enhances learning, supports professional decision-

making and prepares graduates for increasingly AI-enabled workplaces while preserving the uniquely human capabilities that remain essential for professional success [14][15][18][19][22].

The following section illustrates the practical implementation of the Human-Centred AI Education Framework through a postgraduate project management subject. Project management provides an authentic educational context because it requires complex decision-making, stakeholder engagement, collaboration, governance and professional judgement, making it well suited to demonstrate how the framework can be applied in practice [10][17].

Framework Implementation in Project Management Education

To demonstrate the practical application of the Human-Centred AI Education Framework, the framework was implemented within a postgraduate Project Management subject delivered at an Australian higher education institution. Project management was selected as the implementation context because it requires students to integrate technical knowledge with leadership, communication, stakeholder engagement, ethical reasoning and professional judgement [17]. These characteristics make project management particularly well suited to exploring how Artificial Intelligence can support learning while preserving the human-centred capabilities required for professional practice [15][22].

The postgraduate class comprised eleven students from diverse professional and cultural backgrounds, reflecting the multidisciplinary and international nature of contemporary higher education. The subject was designed to develop students' capabilities in project planning, stakeholder management, project governance, communication, leadership and decision-making [17]. Rather than introducing AI as a standalone topic, the Human-Centred AI Education Framework was embedded throughout teaching, learning activities and assessment to progressively develop AI literacy, critical evaluation and responsible AI practice [2][7][11].

The observations presented in this section are based on instructor observations, classroom discussions, student reflections and assessment artefacts collected throughout the delivery of the subject. They are intended to illustrate the practical application of the Human-Centred AI Education Framework rather than provide formal measures of learning effectiveness or generalisable research findings.

Curriculum Implementation

Implementation followed the five developmental stages of the proposed framework.

The subject commenced with the AI Awareness stage, where students were introduced to the capabilities, limitations and ethical implications of Generative AI. Classroom discussions examined current applications of AI within professional practice together with emerging issues relating to bias, transparency, privacy, intellectual property and governance. Students explored examples of both successful and unsuccessful AI implementation, encouraging them to view AI as a decision-support technology requiring informed human oversight rather than an autonomous decision maker [8][13][15][19].

The second stage, AI-Assisted Learning, encouraged students to incorporate Generative AI into routine learning activities. Students used AI to support brainstorming, develop preliminary project documentation, summarise background information and explore alternative approaches to project planning. Throughout these activities, AI was positioned as a learning partner that could enhance productivity and creativity while students remained responsible for validating information and interpreting project-specific contexts [6][7][11][12].

During the Critical Evaluation stage, learning activities shifted from generating AI-supported outputs towards evaluating their quality. Students were required to compare AI-generated artefacts with independently developed work, identify factual inaccuracies, recognise unsupported assumptions and evaluate the appropriateness of AI recommendations within specific organisational contexts. Reflection activities encouraged students to consider both the strengths and limitations of AI-generated responses while reinforcing the importance of professional judgement [3][9][18].

The Human-AI Collaboration stage introduced more complex learning activities that simulated professional practice. Students combined their own disciplinary knowledge with AI-generated recommendations when undertaking stakeholder analysis, project communication planning, decision-making exercises and risk management activities. Rather than accepting AI outputs uncritically, students were expected to justify why particular recommendations should be adopted, modified or rejected based upon project objectives, organisational context and stakeholder needs [15][17][18][22].

Finally, the Professional Practice stage integrated all previous learning through authentic project activities. Students completed project planning and governance exercises that required them to apply AI responsibly while demonstrating leadership, communication, ethical reasoning and accountability. Reflection formed an important component of this stage, requiring students to evaluate how AI influenced their decision-making and identify circumstances in which human judgement remained essential [3][4][10][18][21].

Authentic Learning Activities

Learning activities were intentionally designed to mirror contemporary professional practice rather than traditional classroom exercises, consistent with experiential learning and authentic assessment principles [4][10][21]. Students used Generative AI to support the development of project charters, stakeholder analyses, communication plans, risk registers and project reports. These artefacts reflected documentation commonly produced within professional project environments, allowing students to experience how AI might be incorporated into workplace practice [17].

A distinguishing feature of the implementation was that students completed major project activities independently before generating AI-assisted alternatives. This approach enabled direct comparison between human-generated and AI-generated outputs, encouraging students to identify differences in reasoning, contextual understanding, stakeholder awareness and professional judgement [3][18].

For example, students first prepared project charters manually before producing AI-assisted versions using Generative AI. Comparative evaluation demonstrated that AI frequently generated well-structured and comprehensive documentation but often lacked contextual understanding of organisational priorities, stakeholder relationships and project constraints. Students recognised that although AI improved efficiency, successful project initiation continued to require human judgement and contextual interpretation [9][18].

A similar pattern emerged during project risk management activities. AI effectively identified common project risks and proposed standard mitigation strategies. However, students observed that organisational culture, historical experience, stakeholder relationships and emerging risks unique to individual projects were frequently overlooked. These activities reinforced the importance of combining AI-generated insights with professional expertise rather than relying solely upon algorithmic recommendations [15][17][18].

Assessment Design

Assessment was redesigned to reflect the educational philosophy underpinning the Human-Centred AI Education Framework. Rather than evaluating only completed project artefacts, assessment emphasised the reasoning processes students used when interacting with AI. Students were expected to disclose how AI had been used, critically evaluate AI-generated outputs and justify their final decisions through evidence-based reflection [4][21].

This approach shifted the emphasis from product-oriented assessment towards process-oriented learning. Reflection, critical evaluation and professional judgement became central assessment criteria alongside technical competence [3][18][21]. Students were therefore assessed not on whether they used AI, but on how effectively they integrated AI into professional decision-making while maintaining responsibility for the quality and integrity of their work [5][16].

The assessment strategy also encouraged transparency in AI use. Students documented the prompts they used, explained why AI-generated recommendations were accepted or rejected and reflected upon the strengths and

limitations of AI throughout the project lifecycle. Such practices promoted academic integrity while helping students develop responsible AI behaviours consistent with contemporary professional expectations [5][16][19].

Education Observations

Although the implementation was exploratory and based on a relatively small cohort, several educational observations emerged.

First, students rapidly adopted AI as a productivity tool but initially demonstrated a tendency to accept AI-generated responses without sufficient questioning. Structured comparison activities encouraged students to move beyond passive acceptance towards critical evaluation and evidence-based reasoning, consistent with the development of AI literacy and reflective practice [7][15][18].

Second, reflective learning activities significantly increased students' awareness of the limitations of AI. Students recognised that while AI frequently produced comprehensive and persuasive responses, professional judgement remained necessary to interpret organisational context, evaluate stakeholder interests and resolve competing priorities [3][18].

Third, authentic project activities provided meaningful opportunities for students to develop confidence in collaborating with AI while maintaining responsibility for final decisions. Rather than viewing AI as a replacement for human expertise, students increasingly perceived AI as a cognitive partner capable of augmenting learning and supporting professional practice [6][15][22].

Finally, the implementation demonstrated that embedding AI progressively throughout teaching and assessment was more effective than treating AI as a standalone topic. The staged approach enabled students to develop AI literacy, critical evaluation skills and responsible professional behaviours simultaneously with disciplinary knowledge, consistent with principles of constructive alignment and curriculum integration [2][7][11].

Overall, the implementation suggests that the Human-Centred AI Education Framework provides a practical model for embedding AI within higher education curricula. Although demonstrated through project management education, the staged approach is sufficiently flexible to be adapted across disciplines where graduates must combine disciplinary expertise with AI-enabled professional practice [1][2][14][22]. Future research involving larger student cohorts and multiple disciplinary contexts will assist in evaluating the broader effectiveness and transferability of the framework.

DISCUSSION

The rapid emergence of Artificial Intelligence presents one of the most significant curriculum challenges facing higher education. While AI technologies are increasingly integrated into professional practice, universities must determine how graduates can develop the capabilities required to work effectively with intelligent systems while maintaining ethical responsibility, critical judgement and professional accountability [15][19][20][22][23]. The findings of this study suggest that AI should not be viewed simply as another educational technology but as a catalyst for broader curriculum transformation [2][7][11].

The Human-Centred AI Education Framework responds to this challenge by positioning AI as an integral component of curriculum design rather than a standalone subject or optional learning tool. The framework proposes that AI capability should be developed progressively through structured learning experiences that integrate AI literacy, critical evaluation, human-AI collaboration and authentic professional practice [2][4][10][11]. This developmental approach extends existing research that has primarily focused on AI adoption, assessment integrity or individual classroom interventions [5][6][9][16][20][23] by providing educators with a coherent curriculum model for embedding AI across programs of study.

A central finding of this study is that AI literacy alone is insufficient preparation for contemporary professional practice. Students must also develop the ability to critically evaluate AI-generated information, recognise the limitations of algorithmic recommendations and exercise professional judgement within complex and uncertain

contexts [7][15][18][19]. Throughout the implementation, students frequently observed that AI-generated outputs were technically competent and well-structured but often lacked contextual understanding, organisational awareness and stakeholder sensitivity. These observations reinforce the growing consensus within the literature that human expertise remains essential for interpreting AI-generated information and making responsible professional decisions [3][9][15][18].

The framework also demonstrates the importance of positioning AI as a collaborative partner rather than a replacement for human thinking. Rather than discouraging AI use, learning activities encouraged students to compare their own reasoning with AI-generated alternatives, evaluate differences in quality and justify the decisions they ultimately adopted. Such activities promoted reflective practice while reinforcing students' confidence in exercising independent professional judgement [3][18]. This approach aligns with contemporary perspectives that view effective human-AI collaboration as one of the defining capabilities required of future graduates [14][15][22].

Another important contribution of the framework relates to curriculum design. Many institutional responses to Generative AI have focused on developing policies governing AI use or redesigning individual assessments [5][16][19]. While these initiatives remain important, the findings suggest that sustainable educational change requires a more comprehensive curriculum approach. AI capability should be progressively developed across multiple subjects through aligned learning outcomes, teaching activities and assessment strategies, consistent with principles of constructive alignment and technology-integrated curriculum design [2][11]. Such an approach enables students to develop increasingly sophisticated capabilities over time while integrating AI use within disciplinary knowledge and professional practice [1][7][14].

Assessment redesign also emerged as a critical consideration. Traditional assessment methods frequently evaluate the quality of completed artefacts without considering the reasoning processes used to produce them [5][16]. However, in AI-enabled learning environments, the ability to critically interpret, verify and improve AI-generated outputs may be more valuable than producing unaided work. The implementation therefore shifted assessment towards evaluating reflection, justification, professional judgement and responsible AI use, consistent with principles of authentic and educative assessment [4][21]. This approach aligns assessment more closely with workplace expectations, where graduates are increasingly expected to collaborate with AI while remaining accountable for final decisions [17][22].

The findings also highlight the growing importance of ethical reasoning and responsible AI governance within higher education. As students increasingly rely upon AI-supported decision-making, universities have an important role in developing awareness of bias, misinformation, transparency, privacy, intellectual property and accountability [8][13][19]. Rather than treating these issues as peripheral considerations, the Human-Centred AI Education Framework embeds ethical reasoning throughout each stage of learning, reinforcing that responsibility for professional decisions remains with human practitioners regardless of the sophistication of AI systems [15][18].

Although the framework was demonstrated through a postgraduate project management subject, its underlying educational principles extend beyond a single discipline. The five-stage developmental model is applicable wherever graduates must combine disciplinary expertise with AI-supported decision-making. Disciplines such as business, engineering, information technology, health sciences, law and education increasingly require graduates to exercise critical judgement while interacting with AI systems [1][14][15][22]. Consequently, the framework provides a flexible curriculum model capable of supporting AI integration across a wide range of professional programs.

More broadly, the study contributes to the emerging body of scholarship examining curriculum transformation in response to Artificial Intelligence. Existing research has made important contributions to understanding AI technologies, student behaviour, assessment integrity and AI literacy [23]. This paper extends that literature by proposing a practical curriculum framework that integrates these individual elements into a coherent educational model grounded in curriculum theory, experiential learning, reflective practice and authentic assessment [2][4][10][11][18]. Rather than focusing on isolated classroom interventions, the Human-Centred AI Education Framework demonstrates how universities can systematically develop graduate capabilities that combine

technological proficiency with ethical responsibility, critical thinking and professional judgement.

As Artificial Intelligence continues to reshape higher education and professional practice, universities will increasingly be judged not by whether they incorporate AI into teaching, but by how effectively they prepare graduates to use AI responsibly throughout their professional careers [14][15][22]. The Human-Centred AI Education Framework provides one possible model for achieving this objective by embedding AI within curriculum design while preserving the human-centred capabilities that remain fundamental to effective professional practice [1][2][11].

Practical Implications for Higher Education

The Human-Centred AI Education Framework has practical implications for curriculum design, teaching practice, assessment, academic governance and institutional strategy. As Artificial Intelligence becomes increasingly embedded within professional practice, universities must move beyond isolated classroom experimentation and develop institution-wide approaches that prepare graduates for responsible participation in AI-enabled workplaces [15][19][20][22].

Curriculum Design

The findings suggest that AI should be embedded progressively throughout academic programs rather than delivered through standalone subjects or short training sessions. Curriculum designers should integrate AI capability development across multiple stages of learning so that students gradually develop AI literacy, critical evaluation, ethical reasoning and professional judgement alongside disciplinary knowledge [1][7] [14][15].

The proposed framework supports curriculum mapping by aligning graduate capabilities with learning outcomes, teaching activities and assessment. This enables universities to systematically scaffold AI capability development across an entire degree rather than concentrating AI learning within a single subject. Such an approach also provides greater flexibility for adapting curricula as AI technologies continue to evolve, consistent with principles of constructive alignment and technology-integrated curriculum design [2][11].

Teaching and Learning

The framework encourages educators to reposition AI from being viewed solely as an assessment challenge to becoming an active learning partner. Rather than prohibiting AI, educators can design learning activities that encourage students to explore, evaluate and improve AI-generated outputs through reflection and critical analysis [3][6][12][18].

Authentic learning activities provide particularly valuable opportunities for students to develop confidence in using AI responsibly. Workplace simulations, industry case studies, collaborative projects and problem-based learning activities enable students to experience how AI supports professional practice while reinforcing that responsibility for decisions remains with the individual practitioner [4][10][21].

Educators also have an important role in modelling responsible AI use by demonstrating effective prompting, source verification, critical questioning and ethical decision-making. Such practices encourage students to regard AI as an intellectual partner rather than an unquestioned authority [7][15][19].

Assessment Design

Assessment represents one of the most significant challenges associated with the adoption of Generative AI. Traditional assessment approaches that focus primarily on completed artefacts may no longer provide reliable evidence of individual student capability when AI can produce sophisticated written outputs [5][9][16].

The Human-Centred AI Education Framework supports a shift towards authentic assessment that evaluates reasoning, reflection, professional judgement and decision-making processes. Students should be encouraged to document how AI contributed to their work, critically evaluate AI-generated recommendations and justify the decisions they ultimately make. Such approaches maintain academic integrity while more closely reflecting

contemporary professional practice [4][21].

Assessment should therefore recognise AI as a legitimate component of learning while ensuring that students continue to demonstrate independent judgement, ethical awareness and disciplinary competence [5][16][21].

Academic Governance and Institutional Policy

The increasing use of AI within higher education requires institutions to establish clear governance arrangements that promote responsible AI use while supporting educational innovation. Universities should develop policies that provide guidance on transparency, academic integrity, intellectual property, privacy, data security and ethical AI use without unnecessarily restricting legitimate educational applications [8][13] [15][19].

Institutional AI policies should also support consistency across programs by providing common expectations regarding AI disclosure, acceptable use and assessment design. At the same time, policies should remain sufficiently flexible to accommodate the rapidly evolving nature of AI technologies and disciplinary requirements [15][19].

Professional development for academic staff is equally important. Many educators continue to develop their own understanding of AI technologies while simultaneously redesigning curriculum and assessment. Ongoing staff development programs can assist academics in developing confidence in integrating AI into teaching while maintaining educational quality and academic standards [6][7][11].

Graduate Employability

Employers increasingly expect graduates to possess capabilities that extend beyond technical proficiency in AI tools. Graduates must demonstrate the ability to critically interpret AI-generated information, communicate effectively, collaborate within multidisciplinary teams, exercise ethical judgement and make informed professional decisions [15][17] [22].

The Human-Centred AI Education Framework addresses these expectations by integrating AI capability development with broader graduate attributes including critical thinking, communication, leadership, ethical reasoning and lifelong learning. Rather than producing graduates who simply know how to use AI software, the framework seeks to develop professionals who understand when AI should be used, how AI-generated information should be evaluated and where human judgement remains essential [1][14][22].

This approach aligns more closely with the capabilities required within contemporary workplaces, where AI increasingly augments professional practice rather than replacing professional responsibility [15][17][22].

Accreditation and Quality Assurance

Professional accreditation bodies are increasingly recognising the impact of Artificial Intelligence on graduate capability requirements. Higher education providers will therefore need to demonstrate not only that AI is incorporated within curricula but also that graduates can use AI responsibly, ethically and effectively within professional contexts [15][17][22].

The Human-Centred AI Education Framework provides a structured approach that supports curriculum documentation, constructive alignment and assurance of learning. By explicitly mapping learning outcomes, teaching activities and assessment to progressive AI capability development, universities can provide clearer evidence that graduates are prepared for AI-enabled professional practice while maintaining disciplinary standards and ethical responsibility [1][2].

More broadly, the framework contributes to quality assurance by offering educators a repeatable curriculum model that can be adapted across disciplines while remaining responsive to continuing technological change [2][7][11][14].

Limitations And Future Research

This study presents a Human-Centred AI Education Framework that seeks to support the systematic integration of Artificial Intelligence into higher education curricula. While the framework provides a practical model for curriculum design and has been demonstrated through its implementation within a postgraduate project management subject, several limitations should be acknowledged [2][11].

First, the framework was implemented within a single Australian higher education institution and evaluated through one postgraduate subject involving a relatively small cohort of eleven students. Although the implementation provided valuable educational insights, the findings cannot be assumed to represent the experiences of students from other institutions, disciplines or educational contexts. Larger studies involving more diverse student populations would provide greater confidence regarding the generalisability of the framework.

Second, the study is based primarily on qualitative classroom observations, reflective learning activities and educator experiences rather than formal quantitative measurement of learning outcomes. The purpose of the implementation was to explore how the framework could be incorporated into curriculum design rather than to evaluate its effectiveness through controlled experimental methods. Future research should incorporate mixed-methods approaches that combine qualitative observations with quantitative measures of student learning, AI literacy, critical thinking and graduate capability development [1] [7][14][15][18].

Third, the framework was demonstrated within project management education because the discipline provides authentic opportunities for complex decision-making, stakeholder engagement, governance and leadership [17]. While these characteristics make project management an appropriate implementation context, further research is required to evaluate the framework across other professional disciplines including business, engineering, information technology, law, health sciences and education. Comparative studies across disciplines would provide valuable evidence regarding the adaptability and transferability of the framework [1][15][22].

The rapid pace of AI development also represents an important limitation. Artificial Intelligence technologies continue to evolve rapidly, with new models, capabilities and workplace applications emerging frequently [15][19][20]. Consequently, curriculum frameworks should be viewed as adaptable rather than static. The Human-Centred AI Education Framework is intended to provide enduring educational principles centred on AI literacy, critical evaluation, ethical reasoning, human-AI collaboration and professional judgement rather than focusing on any particular AI technology or software platform [8] [13][15][19].

Future research could extend this work in several important directions. Longitudinal studies could examine how students' AI literacy, critical thinking and professional judgement develop throughout an entire degree program. Such research would provide valuable evidence regarding the effectiveness of progressive curriculum integration compared with isolated AI learning experiences [2][7][14].

Further investigation is also required into assessment practices within AI-enabled learning environments. Future studies could explore the effectiveness of authentic assessment strategies, reflective portfolios, oral examinations, workplace simulations and AI disclosure models in evaluating graduate capability while maintaining academic integrity [3][4][5][16][18][21].

Another important area for future research involves the perspectives of employers, professional accreditation bodies and industry partners. As AI becomes increasingly integrated into professional practice, understanding employer expectations regarding AI capability, ethical reasoning and human judgement will assist universities in ensuring that curriculum design remains aligned with workforce requirements [1][14][15][17][22].

Institutional implementation also warrants further investigation. Comparative studies involving multiple universities could examine the organisational factors that support successful curriculum transformation, including academic leadership, staff capability development, institutional AI governance, policy frameworks and quality assurance processes. Such research would assist higher education providers in developing institution-wide approaches to responsible AI integration [2] [13][11][15][19].

Finally, future research should seek to validate and refine the Human-Centred AI Education Framework through

empirical studies involving larger student cohorts, multiple institutions and diverse disciplinary contexts. Such studies would strengthen the evidence base for the framework while supporting its continued evolution as Artificial Intelligence transforms higher education and professional practice [6][15][20][22] [23].

The Human-Centred AI Education Framework should therefore be regarded as an evolving curriculum model that provides a foundation for future scholarship and educational innovation. Continued research will enable the framework to be refined, validated and adapted to meet the changing needs of students, educators and employers within increasingly AI-enabled learning and professional environments [2] [7][11][14].

CONCLUSION

Artificial Intelligence is fundamentally reshaping higher education and professional practice, requiring universities to reconsider how graduates are prepared for increasingly AI-enabled workplaces [15][19][20] [22][23]. While significant attention has been given to AI technologies, academic integrity and classroom experimentation [5][9][16], comparatively less emphasis has been placed on curriculum models that systematically develop the capabilities required for responsible human-AI collaboration [2][11]. Preparing graduates for the future therefore requires more than teaching students how to use AI tools; it requires universities to redesign curricula that foster critical thinking, ethical reasoning, professional judgement and lifelong learning alongside AI literacy [3][7][14] [18].

This paper addressed that challenge by proposing the Human-Centred AI Education Framework, a curriculum model that supports the progressive integration of Artificial Intelligence into higher education through five developmental stages: AI Awareness, AI-Assisted Learning, Critical Evaluation, Human-AI Collaboration and Professional Practice. Rather than positioning AI as a separate area of study, the framework embeds AI within teaching, learning and assessment while maintaining the central role of human judgement, accountability and responsible professional practice [2][8][11][13][15][19].

The framework was demonstrated through its implementation within a postgraduate project management subject, illustrating how authentic learning activities, reflective practice and curriculum-aligned assessment can support the development of AI-enabled graduate capabilities, [3][4][10][17][18][21]. Although project management provided the implementation context, the framework was intentionally designed to be transferable across higher education disciplines in which graduates are expected to combine disciplinary expertise with AI-supported decision-making [1][14][15][22]. The implementation demonstrated that students benefited most when AI was used not to replace independent thinking but to stimulate critical evaluation, reflection and collaborative problem solving [3][9][18].

This study makes four principal contributions to the higher education literature. First, it proposes a structured Human-Centred AI Education Framework that provides educators with a practical model for embedding Artificial Intelligence across curriculum design [2][11]. Second, it demonstrates how AI literacy, critical evaluation, human-AI collaboration and ethical reasoning can be developed progressively through authentic learning experiences [3][7][10][18]. Third, it illustrates the practical implementation of the framework through a postgraduate project management case study, providing an example of curriculum innovation within a professional discipline [17]. Finally, it contributes to the growing discussion on curriculum transformation by demonstrating how universities can prepare graduates for AI-enabled professional practice while preserving the human-centred capabilities that remain essential for effective decision-making, leadership and professional responsibility [14][15][19][22].

The findings suggest that the future of higher education lies not in replacing traditional educational principles with Artificial Intelligence, but in thoughtfully integrating AI into curriculum design in ways that strengthen learning, enhance professional capability and reinforce responsible human judgement [2] [3][11][18]. Universities have an important opportunity to prepare graduates who are confident in working with AI while remaining capable of questioning, interpreting and governing its use within complex professional environments [1][7][14][15][19]. Achieving this objective requires curriculum transformation that extends beyond individual technologies and focuses instead on developing adaptable, reflective and ethically responsible professionals [14][22].

As Artificial Intelligence continues to evolve, the challenge facing higher education will no longer be whether AI should be incorporated into teaching and learning, but how universities can ensure that graduates are equipped to collaborate effectively with intelligent systems while retaining the uniquely human qualities that underpin professional excellence [15][20][22]. The Human-Centred AI Education Framework provides one practical model for supporting this transformation and offers a foundation for future research into curriculum design, assessment innovation and graduate capability development within the emerging AI-enabled educational landscape [1] [2] [4] [11] [21].

REFERENCES

1. Australian Qualifications Framework Council. (2013). Australian Qualifications Framework (2nd ed.). Adelaide, SA, Australia: AQF Council.
2. Biggs, J., Tang, C., & Kennedy, G. (2022). Teaching for Quality Learning at University (5th ed.). Maidenhead, U.K.: Open University Press.
3. Boud, D., Keogh, R., & Walker, D. (Eds.). (1985). Reflection: Turning Experience into Learning. London, U.K.: Kogan Page.
4. Boud, D., & Falchikov, N. (Eds.). (2007). Rethinking Assessment in Higher Education: Learning for the Longer Term. London, U.K.: Routledge.
5. Cotton, D. R. E., Cotton, P. A., & Shipway, J. R. (2024). Chatting and cheating? Ensuring academic integrity in the era of ChatGPT. *Innovations in Education and Teaching International*, 61(2), 228–239. <https://doi.org/10.1080/14703297.2023.2190148>
6. Crompton, H., & Burke, D. (2023). Artificial intelligence in higher education: The state of the field. *International Journal of Educational Technology in Higher Education*, 20, Article 22. <https://doi.org/10.1186/s41239-023-00392-8>
7. European Commission. (2017). European Framework for the Digital Competence of Educators (DigCompEdu). Luxembourg: Publications Office of the European Union.
8. International Organization for Standardization. (2023). ISO/IEC 42001:2023 Information Technology—Artificial Intelligence—Management System. Geneva, Switzerland: ISO.
9. Kasneci, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., et al. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and Individual Differences*, 103, Article 102274. <https://doi.org/10.1016/j.lindif.2023.102274>
10. Kolb, D. A. (1984). *Experiential Learning: Experience as the Source of Learning and Development*. Englewood Cliffs, NJ, USA: Prentice-Hall.
11. Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017–1054. <https://doi.org/10.1111/j.1467-9620.2006.00684.x>
12. Mollick, E., & Mollick, L. (2024). Instructors as Innovators: A Future-Focused Approach to New AI Learning Opportunities, with Prompts. arXiv preprint arXiv:2407.05181. <https://doi.org/10.48550/arXiv.2407.05181>
13. National Institute of Standards and Technology. (2023). Artificial Intelligence Risk Management Framework (AI RMF 1.0). Gaithersburg, MD, USA: NIST.
14. Organisation for Economic Co-operation and Development. (2019). *OECD Learning Compass 2030: A Series of Concept Notes*. Paris, France: OECD Publishing.
15. Organisation for Economic Co-operation and Development. (2026). *Empowering Learners for the Age of AI*. Paris, France: OECD Publishing.
16. Perkins, M. (2023). Academic integrity considerations of AI large language models in the post-pandemic era. *Journal of University Teaching and Learning Practice*, 20(2), 1–12. <https://doi.org/10.53761/1.20.02.07>
17. Project Management Institute. (2024). *Pulse of the Profession® 2024: AI and Project Management*. Newtown Square, PA, USA: Project Management Institute.
18. Schön, D. A. (1983). *The Reflective Practitioner: How Professionals Think in Action*. New York, NY, USA: Basic Books.
19. UNESCO. (2023). *Guidance for Generative AI in Education and Research*. Paris, France: United Nations Educational, Scientific and Cultural Organization.

20. Wang, S., Wang, F., Zhu, Z., Wang, J., Tran, T., & Du, Z. (2024). Artificial intelligence in education: A systematic literature review. *Expert Systems with Applications*, 252, Article 124167. <https://doi.org/10.1016/j.eswa.2024.124167>
21. Wiggins, G. (1998). *Educative Assessment: Designing Assessments to Inform and Improve Student Performance*. San Francisco, CA, USA: Jossey-Bass.
22. World Economic Forum. (2025). *The Future of Jobs Report 2025*. Geneva, Switzerland: World Economic Forum.
23. Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education—Where are the educators? *International Journal of Educational Technology in Higher Education*, 16, Article 39. <https://doi.org/10.1186/s41239-019-0171-0>