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Integrating Generative AI in Business Education: A Structured Review for Developing a Strategic Framework and Addressing Research Gaps

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Abstract

This paper examines the evolving role of generative artificial intelligence (GAI) in business education through a structured narrative review of recent scholarship and practice-oriented reports. The review synthesizes research across information systems, education, and management to develop a three-dimensional framework comprising pedagogical transformation, ethical integration, and career preparedness. For each dimension, the analysis identifies both emerging applications and critical gaps that warrant additional investigation. The pedagogical dimension highlights how GAI supports adaptive learning, redesigned assessments, simulations, and multimodal instructional practices. The ethical dimension addresses challenges related to academic integrity, data governance, transparency, bias, privacy, and equitable access. The career preparedness dimension identifies the technical capabilities and human-centered competencies—such as AI literacy, judgment, creativity, and adaptability—that graduates must demonstrate in AI-augmented workplaces. Together, these dimensions provide a coherent framework for guiding the responsible adoption of GAI, helping business schools align pedagogical innovation with ethical expectations and evolving labor-market demands.

Keywords: *Generative AI, AI ethics, pedagogy, career readiness*

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1. Introduction

Generative artificial intelligence (GAI) is increasingly shaping business education by influencing course design, assessment practices, and expectations for student learning (Huo & Siau, 2024; Jiang & Nakatani, 2025; Leckrone, 2025; Mao et al., 2024; Moorhouse et al., 2023; Van Slyke et al., 2023). As GAI becomes a routine instructional resource, business schools must integrate it responsibly while preparing students for AI-mediated organizational environments. Research across information systems and education identifies both benefits—adaptive learning systems, simulations, automated feedback, and scalable content generation (Brynjolfsson et al., 2023; Diaz, 2024; Hamilton, 2025; Kasneci et al., 2023) — and risks tied to academic integrity, data governance, algorithmic bias, and inequitable access (Cotton, 2024; Fleckenstein et al., 2024; Moorhouse et al., 2023; OECD, 2023a; Wagman et al., 2025).

GAI is now a central element in ongoing digital innovation within higher education, extending previous transitions to online learning and multimedia technologies (McKinsey & Company, 2023; Strohl et al., 2024; World Economic Forum, 2024). Although students and instructors must adapt to new workflows, GAI's opportunities — including rapid content production and multimodal communication — are increasingly embedded in curriculum design (Mayer et al., 2025). These developments underscore the need for institutional strategies that strike a balance between innovation and academic rigor, governance, and accountability.

This paper presents a three-dimensional framework for integrating GAI in business education: pedagogical transformation, ethical integration, and career readiness. Pedagogically, GAI supports adaptive learning, simulations, and assessment redesign (Brynjolfsson et al., 2023; Diaz, 2024; Hamilton, 2025; Hwang & Lee, 2025). Ethically, concerns persist around integrity, bias, privacy, and transparency (Cotton, 2024; Hagendorff, 2020; Lim et al., 2023; OECD, 2023a; Pitts et al., 2025). For career readiness, GAI cultivates essential competencies such as AI literacy, adaptability, creativity, and judgment (AACSB, 2024; Barger et al., 2025; Beninger, 2025; Kasneci et al., 2023; Ratten & Jones, 2023; Slimi, 2023; Wang, 2022).

1.1 Contribution to the Literature

This study contributes by (1) consolidating research across IS, education, and management into a coherent synthesis, (2) proposing an integrated framework that links pedagogical, ethical, and workforce considerations, and (3) offering guidance for institutions seeking responsible, future-oriented GAI adoption.

2. Methodology

This study employed a structured narrative review to synthesize perspectives on generative AI within the context of education, information systems, and management. A narrative approach was selected due to the rapid evolution of generative AI research, which requires flexibility to incorporate emerging themes and high-quality gray literature while maintaining conceptual depth. The review process followed an iterative, three-stage design: (1) preliminary thematic mapping to identify key topics, (2) targeted literature discovery using academic databases and authoritative sources, and (3) conceptual synthesis to organize and interpret findings.

2.1 Data Sources and Selection Criteria

Peer-reviewed articles and authoritative reports from major educational and policy organizations (AACSB, EDUCAUSE, NACE, OECD, UNESCO, and the U.S. Department of Education) were included. The search also incorporated gray literature and specialized industry reports from recognized sources such as Forbes, McKinsey & Company, the MIT Sloan Management Review, the Federal Reserve Bank, the RAND Corporation, and the World Economic Forum. Searches were conducted in EBSCOhost, JSTOR, Academic Search Premier, and Google Scholar using terms such as *generative AI, business education, AI ethics, AI pedagogy, assessment redesign, curriculum redesign, and career readiness.* Snowball sampling of reference lists identified additional relevant studies.

2.2 Inclusion criteria:

1. Published between 2020 and 2025
2. Focused on generative AI or AI-enabled learning in higher education or business programs
3. Addressed pedagogy, ethics, assessment, digital transformation, or workforce competencies
4. Originated from peer-reviewed journals or reputable policy bodies

5. Snowball sampling of reference lists identified additional relevant studies

2.3 Exclusion criteria:

1. Technical machine-learning papers without educational relevance
2. Duplicate or superseded reports

2.4 Research Process

All studies were manually coded to identify recurring patterns across pedagogy, ethics, and workforce preparation. The author then conducted an interpretive synthesis by comparing insights across peer-reviewed articles, policy reports, and gray literature. AI tools were additionally employed to surface relevant articles not retrieved through traditional database searches, enhancing efficiency and reducing search bias (Bendig & Bräunche, 2024; Bolaños et al., 2024; Chen et al., 2024; Cheng et al., 2025; Goyanes et al., 2025, Resnick & Hoseeini, 2025; Wu et al., 2025). After manual coding was complete, ChatGPT-4.1 was used as a secondary analytical tool to support theme verification and refinement for the *Systematic Integration of Generative AI in Business Education* framework. Final interpretation and theme selection were conducted solely by the author.

2.5 AI-Assisted Literature Discovery

To support comprehensive source gathering, AI tools (ChatGPT-4.1 and ChatGPT-5.0) were used strictly to assist in locating additional literature. They were **not** used to evaluate evidence, interpret findings, or generate conceptual arguments. Specifically:

- Author-designed, complex queries were used to surface possible sources.
- AI-identified items were treated only as preliminary leads and were verified directly against peer-reviewed materials.
- No AI-generated summaries, interpretations, or claims were accepted without full human review.

This process reflects a pragmatic abductive orientation, allowing iterative movement between emerging patterns in the literature and potential additional sources while maintaining conceptual and methodological rigor. This is justified by the approach's pragmatic view that the AI-assisted identification of new sources leads to added utility and value to the review's scope, even though the final conceptual themes were developed solely by the author.

2.6 Cross-Checking and Reliability

All AI-assisted outputs were reviewed for:

- **Accuracy**: Verification of citations, publication details, and factual claims
- **Fidelity:** Confirmation that the source material's meaning or intent was preserved, ensuring the content was not taken out of context.
- **Bias:** Identification of omissions, overgeneralizations, or distortions
- **Misclassification:** Validation that the source aligned with the thematic scope and met all defined inclusion criteria (e.g., confirming the source was not a technical machine-learning paper).

2.7 AI Disclosure

AI tools (ChatGPT-4.1, ChatGPT-5.0, Copilot, Gemini, and Grammarly) were used to improve clarity, reduce redundancy, and generate the final draft of Figure 1. All literature analysis, coding, interpretation, and final synthesis were conducted solely by the author.

3. An Integrated Framework for Generative AI in Business Programs

Although existing research often examines instructional design, academic integrity, or employability as separate issues, few studies integrate these threads into a comprehensive model. This paper addresses that gap by proposing a unified framework that links pedagogical transformation, ethical integration, and career preparedness as mutually reinforcing dimensions of responsible AI adoption. Drawing from recent literature on generative AI, digital transformation, instructional design, and business education, three themes consistently emerge across domains:

1. **AI is accelerating changes in teaching and learning**, enabling adaptive, interactive, and data-informed instructional practices.

2. **Ethical concerns—including transparency, privacy, bias, and fairness—are intensifying** as AI becomes embedded in everyday academic work.
3. **Employers increasingly expect graduates to demonstrate AI literacy alongside human-centered capabilities** such as creativity, judgment, and collaboration.

Despite these intersecting trends, most existing models treat each domain independently. A unified framework is needed to reflect how pedagogical, ethical, and workforce considerations interact in AI-enabled learning environments. The following constructs define the components of the proposed model and establish the foundation for Figure 1.

3.1 Definition of the Three Constructs

Pedagogical Transformation

Refers to the redesign of curricula, learning activities, and assessment systems to incorporate AI-enhanced simulations, analytics, multimodal feedback, and adaptive tools (Brynjolfsson et al., 2023; Hamilton, 2025). This dimension captures how AI alters instructional strategies, learning processes, and faculty workload.

Ethical Integration

Encompasses the policies, norms, and safeguards necessary to ensure AI is used transparently, equitably, and responsibly (Cotton, 2023; Hagendorff, 2020; OECD, 2023a). It includes academic integrity, data governance, privacy protections, bias mitigation, and global variations in AI expectations.

Career Preparedness

Reflects the growing need for students to cultivate both technical abilities (e.g., AI-assisted analysis, prompt construction) and enduring human competencies such as judgment, adaptability, creativity, and collaboration (Barger et al., 2025; Ratten & Jones, 2023). AI proficiency is positioned as one component of a broader professional skill set.

3.2 Relationships Among the Three Dimensions

The three constructs are interdependent rather than hierarchical. Pedagogical transformation shapes how students engage with AI; ethical integration provides the guardrails for responsible use; and career preparedness represents the outcomes institutions expect graduates to demonstrate. Effective adoption requires alignment across all three:

- Without ethical integration, pedagogical innovations may reinforce inequities or misconduct.
- Without pedagogical transformation, students lack the experiential grounding needed to build AI-related competencies.
- Without career preparedness, AI adoption risks becoming technologically novel but educationally superficial.

3.3 Scope and Boundary Conditions

This framework is designed for undergraduate and graduate business programs but may be adaptable to other professional fields. It provides a conceptual structure rather than prescribing specific tools or platforms and assumes baseline digital infrastructure for implementation. Institutions with limited technological access may require alternative adaptations.

Figure 1 illustrates how the effective adoption of GAI requires consideration of three key constructs: pedagogical change, ethical Integration, and career preparedness.

3.4 Application of the Framework

To translate the framework into practice, each construct informs specific strategies for teaching, policy, and workforce development. The following applications illustrate how institutions can operationalize the three dimensions in cohesive, research-aligned ways.

Figure 1. A Framework for the Systematic Integration of Generative AI in Business Education

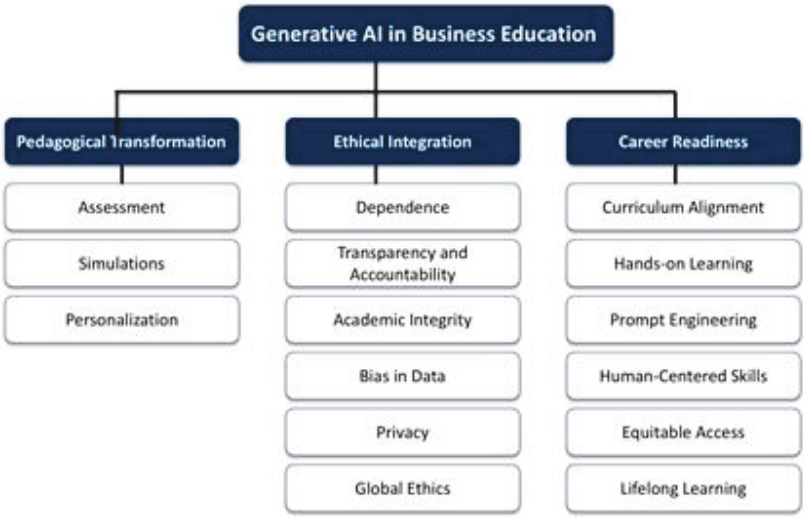

Figure 1 was created in conjunction with ChatGPT (OpenAI, 2025).

1. Pedagogical Transformation

Integrating AI into course design enables adaptive, interactive, and context-responsive learning experiences. Faculty may implement AI-supported simulations, generative case studies, and personalized learning activities that enhance engagement and conceptual understanding (Brynjolfsson et al., 2023; Gupta et al., 2024). Assignment redesign and transparent guidelines further support responsible instructional use.

2. Ethical Integration

Operationalizing this dimension requires institutional and course-level safeguards that address transparency, privacy, academic integrity, algorithmic bias, and global contexts (Moorhouse et al., 2023; OECD, 2023a). Policies must account for unequal technological access and ensure consistent expectations across programs.

3. Career Preparedness

GAI can strengthen students' professional readiness by supporting résumé refinement, interview practice, scenario analysis, and content development—tools that complement human judgment, adaptability, and creativity (Kasneci et al., 2023; Mayer et al., 2025). These skills align with evolving employer expectations in AI-enabled workplaces.

Together, these applications demonstrate how the three dimensions operate in practice, offering a coherent structure that is pedagogically meaningful, ethically grounded, and responsive to evolving workforce demands.

4. Literature Review

4.1 Pedagogical Transformation in Business Education

As Figure 1 illustrates, business schools are undergoing a substantive shift in how curricula are designed and delivered, particularly within the pedagogical dimension. Faculty across accounting, finance, management, management information systems, and marketing are increasingly integrating AI to create dynamic business cases, simulate market environments, and build customized quizzes. These tools allow instructors to design learning experiences that mirror real-world decision-making, providing students with richer opportunities to apply theory to practice.

Generative AI is transforming instructional design in higher education, yet critical evidence gaps persist. Existing studies primarily emphasize short-term perceptions and adoption rather than longitudinal impacts on cognitive development or skill retention (Abbas et al., 2024; Weng et al., 2024). Systematic reviews confirm that research focuses on pedagogy and faculty attitudes rather than rigorous, outcome-based evaluations across diverse contexts (Amofa et al.,

2025; Luo, 2025; Qian, 2025). Although emerging work addresses personalization, longitudinal studies are largely absent (Ansari & Qamari, 2025).

4.1.1 Assessment

Assessment practices are shifting as students increasingly use GAI to complete traditional assignments. To maintain academic integrity, faculty are adopting alternative formats—applied problem-solving tasks, presentations, live case analyses, and reflective journals—that reduce AI misuse and deepen engagement (Cot et al., 2023; Fenton, 2025; Foley et al., 2024; Mao et al., 2024; Moorhouse et al., 2023; Van Slyke et al., 2023). Assignments that integrate AI with students' critical thinking help build employer-valued competencies, fostering authentic learning and higher-order skills such as adaptability, collaboration, and judgment (Akbar, 2025; Lim et al., 2023; Newell, 2023).

4.1.1.1 Gaps in Assessment Research

Significant gaps remain in assessment research. Few studies examine whether AI can support longitudinal assessment or track student growth across semesters. More evidence is needed to validate the fairness, reliability, and pedagogical soundness of AI-assisted scoring, particularly regarding algorithmic bias across student groups (Mpolomoka, 2025). Research on hybrid human–AI assessment models is limited, particularly regarding best practices for integrating AI-generated formative feedback (Banihashem et al., 2025). Guidance is also sparse on how to ensure AI-enabled assessments meet accessibility and universal design principles.

4.1.2 Simulations

AI-powered simulations offer significant benefits by enabling students to interact with realistic environments that mirror actual business conditions (Burger et al., 2023; Dwivedi et al., 2022; Hamilton, 2025). In operations management, AI-embedded tools enable learners to explore "what-if" supply chain scenarios, while in finance and accounting, AI supports balance sheet analysis and real-time revenue forecasting (Brynjolfsson et al., 2023; Gupta et al., 2023). MIS research further highlights how AI-driven digital twins—virtual replicas of real-world systems—standardize training, support decision-making, and strengthen predictive analytics across complex organizational processes (Ahmad, 2025; Liu & David, 2025).

4.1.2.1 Gaps in Simulation Research

Despite these benefits, several gaps remain. Few studies compare learning outcomes across business disciplines, leaving open the question of whether simulations support students in accounting, marketing, and MIS differently (Dai & Ke, 2022). Cost–benefit and scalability analyses are also limited, particularly for resource-constrained institutions. Although cognitive load has been studied in specific simulation contexts (Tremblay et al., 2023), broader patterns across disciplines, complexity levels, and simulation types remain unclear, as do ethical risks embedded in predictive or scenario-based models (García-López & Trujillo-Liñán, 2025).

4.1.3 Personalized and Career-Aligned Learning

GAI increasingly functions as a personalized mentor, guiding students through real-world, career-relevant assignments such as developing marketing campaigns or designing ERP implementations (Donner & Hummel, 2025; Kasneci et al., 2023; Slimi, 2023). It provides adaptive feedback that builds confidence, strengthens professional readiness, and supports individualized learning. By tailoring guidance to each student's goals, AI helps create more meaningful, relevant, and higher-quality learning experiences (Mehrabi et al., 2025). This market-responsive approach also aligns business education with evolving labor market demands, supplying employers with graduates who possess up-to-date skill sets (Kasneci et al., 2023).

4.1.3.1 Gaps in Personalized Learning Research

Despite these benefits, significant research gaps remain. It is unclear whether AI-generated recommendations serve all student groups equitably or unintentionally reinforce existing inequities (Baker & Hawn, 2022). Limited evidence assesses the accuracy and stability of AI-personalized learning pathways or identifies effective strategies for integrating AI-generated feedback into instruction (Mah et al., 2024). Additionally, few studies examine how students understand the data that drives AI recommendations, raising concerns about privacy and ethical implications in AI-mediated learning

(Chan & Hu, 2023; Zhai & Wibowo, 2024).

4.2 Ethical Integration

Institutions and educators must ensure that AI is used ethically in the classroom. Faculty play a central role in teaching students to recognize potential bias embedded in AI datasets, to be transparent about their use of AI—such as through proper citation—and to verify the accuracy and legitimacy of AI-generated content (Bender et al., 2021; Evangelista, 2025; López-Solís et al., 2025; Mehrabi et al., 2021). Business schools also need coherent, clearly articulated policies that distinguish between appropriate AI use and academic misconduct. At the same time, educators must help students avoid becoming overly dependent on AI by reinforcing the importance of critical thinking, originality, and creativity.

Although ethics instruction is widely recommended, few empirical studies identify which ethical frameworks effectively support student decision-making (Yan & Liu, 2025). Cross-cultural differences in AI acceptance and use remain insufficiently examined, despite their relevance in global business education (Ma et al., 2024a). Additionally, little research investigates unreported or covert AI use—a growing concern in higher education (Doss et al., 2025; Fleckenstein et al., 2024). These gaps underscore the need for research that clarifies institutional strategies for proactive ethics instruction while balancing student autonomy and accountability.

4.2.1 Risks of Dependence

Over-reliance on GAI is a growing concern among faculty, who worry that students may lean too heavily on AI for ideation, writing, and problem-solving, ultimately weakening their own cognitive engagement (Delello et al., 2025; Hazari, 2025; Jeyaraj & Sethi, 2025). Students must be trained to critically evaluate AI outputs, as underlying datasets may reflect biases and perpetuate inequities (Jun et al., 2023; Kasneci et al., 2023). As a result, business programs must integrate digital literacy and AI ethics throughout the curriculum to ensure responsible, reflective, and informed use of AI.

4.2.1.1 Gaps in Risks of Dependence Research

Although concerns about over-reliance are widespread, key gaps remain. Few studies measure actual dependence, relying instead on faculty perceptions (Zhang et al., 2024). Little is known about which students are most vulnerable, such as those with low confidence or limited prior knowledge (Al-Emran et al., 2025). Cognitive mechanisms—whether AI reduces cognitive effort or metacognitive monitoring—are understudied (Jose et al., 2025). The effects of different AI task types and the effectiveness of interventions, such as scaffolding or reflective practice, also remain unclear.

4.2.2. Transparency and Accountability / Academic Integrity

Before formal institutional adoption, students were already using tools like ChatGPT to generate content. As GAI becomes more common, educators must emphasize transparency, proper citation, and verification of information. Clear course policies should outline appropriate use and reinforce expectations for academic integrity (Baker & Hawn, 2021). Educators must also recognize that AI detectors are unreliable, often producing false positives, particularly for advanced or highly polished writing (Freeman et al., 2025; Jung et al., 2025; OpenAI, 2023; Saha & Feizi, 2025; Turnitin, 2025; Webb, 2025; Weber-Wulff et al., 2023). These tools may misclassify sophisticated human writing as AI-generated due to linguistic patterning (Liang et al., 2023; Májovský et al., 2024).

4.2.2.1 Gaps in Transparency and Integrity Research

Significant gaps persist in understanding effective reporting practices and student compliance with citation expectations (Gonsalves, 2025). Research is also limited on the implementation of institution-wide policies and their impact on student behavior across departments (Gonsalves, 2025). Furthermore, due to the unreliability of AI detectors, scholars have yet to establish valid alternatives for verifying authorship (Perkins et al., 2024).

4.2.3 Bias in Data / Privacy and Student Rights / Global Ethics

Educators and students must recognize that AI systems are trained on datasets that contain historical and structural biases, which can perpetuate inequities if not critically examined (Hazari, 2025; Kasneci et al., 2023). Research indicates that AI language models perpetuate gendered and racialized stereotypes, influencing classroom interactions and potentially compromising learning environments (Blodgett et al., 2020; Hazari, 2025; Mehrabi et al., 2021; Wei et al.,

2025). Institutions, therefore, need digital literacy training to help users identify and mitigate biased outputs.

AI adoption also raises concerns about student data privacy and institutional responsibility. Because AI relies on sensitive personal and academic information, data practices must be transparent, accountable, and aligned with global ethical frameworks, such as those established by UNESCO, OECD, and the U.S. Department of Education (Slimi & Villarejo, 2023; OECD, 2023a; UNESCO, 2023; World Economic Forum, 2025). These efforts establish a shared foundation for the responsible integration of AI in higher education.

4.2.3.1 Gaps in Bias, Privacy, and Global Ethics Research

Despite growing attention, substantial gaps persist. Although algorithmic bias is well documented, most studies focus on detecting disparities rather than designing classroom interventions that help students identify and correct biased outputs. Bias can harm marginalized groups and emerge at multiple stages of data generation and model design (Baker & Hawn, 2022; Bird et al., 2025; Idowu et al., 2024). Little is known about effective bias-literacy strategies or how students' intersectional identities shape their interpretations of AI decisions. Privacy research similarly reveals gaps between conceptual safeguards and actual practice, with students often unaware of how their data is collected or protected (Francis et al., 2023; Liu & Khalil, 2023). Institutional policies remain fragmented and risk-oriented (Archambault, 2025; Luo, 2024). Cross-national studies reveal a wide variation in ethical and accountability standards (Li et al., 2025; OECD, 2023a; UNESCO IESALC, 2025).

4.3 Career Readiness

Companies are rapidly integrating generative AI (GAI) into workplace processes, making it essential for students to gain meaningful experience with these tools before graduation (Lee et al., 2024; López-Solís et al., 2025; Mayer et al., 2025; Walravens, 2025). To meet industry expectations, faculty must design curricula that incorporate experiential learning and foster advanced problem-solving skills. Institutions also need to ensure equitable access to AI learning opportunities while creating pathways that support lifelong learning for working professionals. Collectively, these efforts position higher education as a catalyst for career readiness, innovation, and inclusive economic participation in an AI-driven workforce.

Despite strong industry interest, research on AI-related education and workforce outcomes remains limited. Few longitudinal studies track how AI-prepared graduates perform over time in the workplace (Portocarrero Ramos et al., 2025; Walsh, 2024). Evidence is also sparse on micro credentials in AI and how employers interpret their value (Alenezi et al., 2024; Lumina Foundation, 2025). Additionally, limited research examines socioeconomic or demographic differences in AI readiness or how career services can support equitable skill development (Capraro et al., 2024; Tomas & Felix, 2025). More empirical work is also needed to measure employer expectations for AI competencies, which are often described anecdotally rather than systematically (Galeano et al., 2025; Rasdi et al., 2024).

4.3.1 Curriculum Alignment with Industry Expectations

Business schools must update their curricula to align with the realities of an AI-powered job market and prepare graduates for the rapidly evolving career demands (Mayer et al., 2025; Wang, 2025). Integrating GAI tools into core business courses and applied learning experiences strengthens student learning and builds industry-relevant competencies (Wang, 2025). AACSB (2024) reports that AI is shifting from an elective topic to a required and embedded component of business programs. This trend is reflected in American University's Kogod School of Business, where leaders integrated AI across the entire curriculum in just six months, demonstrating both the urgency and feasibility of aligning academic programs with industry expectations (McNaughton, 2024). Ultimately, the effectiveness of business schools will be measured by their ability to equip graduates with AI-enabled skills, critical thinking, and adaptive mindsets for long-term career readiness in a transforming economy.

4.3.1.1 Gaps in Curriculum Alignment with Industry Expectations

Although scholars emphasize the need to pair AI-related technical skills with human competencies such as critical thinking, ethical judgment, and reflective decision-making, systematic evidence on how these capacities develop together remains limited (Melisa et al., 2025; Nguyen, 2025). Concerns about overreliance persist, yet few studies examine how human and technical skills co-develop in AI-rich learning environments. Evidence on effective instructional models is also scarce despite calls for stronger pedagogical frameworks (Wittig McPhee, & Jerowsky, 2025). Little is known about

the relative effectiveness of case-based learning, simulations, and problem-based learning or how cultural contexts shape expectations for human–AI skill integration.

4.3.2 Hands-On Learning

When educators integrate AI-based assignments into the curriculum, students strengthen both their digital literacy and workplace-relevant skills. For example, college students who used GAI in a content-creation contest demonstrated enhanced creativity and critical evaluation abilities (Hwang & Lee, 2025). AI-focused hackathons similarly allowed students to solve real-world problems under authentic constraints, showcasing adaptability and innovation (Sajja et al., 2024). In cybersecurity courses, students applied technical knowledge while demonstrating professionalism and ethical reasoning when evaluating AI policies and legislation (Elkhodr & Gide, 2025). Together, these examples demonstrate how hands-on AI learning fosters practical competencies and ethical awareness, which are essential for workplace readiness.

4.3.2.1 Gaps in Hands-On Learning Research

Despite enthusiasm for AI-focused hackathons, simulations, and competitions, significant gaps remain. Although studies highlight benefits, little empirical evidence examines the long-term impact of experiential AI activities on learning or professional identity (Sajja et al., 2024). Few studies compare the effectiveness of formats such as hackathons, simulations, or client-based projects in developing computational thinking, AI fluency, or higher-order skills (Hsu & Chen, 2025). Research is also limited on scalability for resource-constrained institutions (Govea et al., 2023) and on how experiential AI learning affects diverse student groups.

4.3.3 Prompt Engineering

Prompt engineering has become an essential competency for knowledge workers, requiring the ability to design complex, context-specific prompts that generate reliable and meaningful AI outputs (Lo, 2023; Park & Choo, 2024). Recent research shows that this skill is now regarded as a core qualification across a wide range of professional roles (Dwivedi et al., 2023; Firth & Triche, 2024; Hwang & Lee, 2025; Mok, 2025; Strohl et al., 2024). In fields such as marketing and consulting, for example, professionals increasingly rely on prompt engineering to refine AI-generated insights, develop targeted campaigns, and accelerate client deliverables. By integrating prompt engineering into the curriculum, business programs can ensure that graduates are equipped to apply AI responsibly and effectively, aligning with industry expectations.

4.3.3.1 Gaps in Prompt Engineering Research

Although prompt engineering is increasingly recognized as a key professional competency, research on its educational integration remains limited. Systematic reviews reveal a lack of empirical evidence on the most effective instructional strategies for developing prompt engineering skills, particularly in business and professional fields (Lee & Palmer, 2025). Few studies have examined the cognitive processes students use when refining prompts or how proficiency varies across diverse groups, raising concerns about equity (Hu & Lee, 2025). Evidence is also limited on workplace transferability and on the development of validated, discipline-sensitive rubrics for assessing prompt engineering performance.

4.3.4 Balancing Human and Technical Skills

To be career-ready in the contemporary workplace, students must possess both technical and human skills, such as critical thinking and decision-making (Hatami, 2025; Higher Ed Dive, 2024; Miao & Holmes, 2023; OECD, 2023b; Pitts et al., 2025; Slimi, 2023). For instance, humans need to be able to demonstrate the ability to think quickly and decisively with an understanding of context and culture, a skill AI finds difficult to imitate (Eachempati et al., 2025; Foley et al., 2024; Slimi, 2023).

Workers must become increasingly agile as GAI continues to develop rapidly, where adaptability, collaborative capacity, and ethical judgment are key (Lo, 2023; Park & Choo, 2024; Ratten & Jones, 2023; World Economic Forum, 2025). Embedding these competencies ensures business schools lead in shaping ethical, future-ready leaders for the AI era.

4.3.4.1 Gaps in Human and Technical Skill Research

Despite recognition that students need both technical and human skills for an AI-driven workplace, systematic research on integrating these competencies remains limited. Although scholars emphasize the development of critical thinking and ethical judgment alongside technical proficiency, few empirical studies have evaluated effective pedagogical models (Calma & Davies, 2020; Wittig, McPhee, & Jerowsky, 2025). Emerging AI literacy frameworks often overlook the role of instructional strategies in fostering adaptability, collaboration, and decision-making (UNESCO, 2025). Little evidence also examines the scalability of such approaches across diverse contexts or their equity implications.

4.3.5 Equity, Access, and Global Competitiveness

Equity remains a concern in AI-supported career readiness. Underserved schools and students without access to developed AI technologies may be marginalized in an AI-driven economy (Higher Ed Dive, 2024; Kasneci et al., 2023). UNESCO (2023) maintains that access to AI literacy and training should be high-quality and a priority on higher education's agenda. Moreover, the international competitiveness of AI industries is reliant on diverse talent pipelines, including women, international students, and historically underrepresented populations.

4.3.5.1 Gaps in Equity, Access, and Global Competitiveness Research

Although equity concerns are widely noted, the research base remains limited. Few studies examine how unequal access to AI affects learning outcomes or career readiness across demographic groups (Varsik & Vosberg, 2024). Evidence is also scarce on institutional strategies that reduce AI-related inequities, particularly in under-resourced settings. Little is known about cross-national differences in AI readiness or how unequal access shapes global talent pipelines (UNESCO, 2025). Existing work rarely employs an intersectional lens, despite evidence suggesting that overlapping identities impact AI literacy (UNESCO, 2023).

4.3.6 Lifelong Learning and Professional Adaptability

In today's workforce, continuous learning is a necessity. Workers must perpetually reskill to stay ahead of AI developments, building adaptability, judgment, and the ability to manage human–machine workforces (Brynjolfsson et al., 2023; Mayer et al., 2025; World Economic Forum, 2025). By embedding AI fluency, ethical judgment, and experiential learning into their curricula, business schools ensure that graduates remain adaptable and career-ready in an AI-driven workforce (Hamilton, 2025).

4.3.6.1 Gaps in Lifelong Learning and Professional Adaptability Research

Despite widespread agreement that lifelong learning is essential in an AI-driven economy, significant gaps persist. Little research evaluates which reskilling models—such as micro credentials, executive boot camps, or online AI academies—most effectively support adaptation to technological change. Limited evidence also examines how workers maintain AI literacy over time or the institutional supports required (OECD, 2023a). Employer roles in shaping lifelong learning ecosystems remain understudied (World Economic Forum, 2023). Additionally, the motivational and cultural factors influencing adults' participation in AI learning, as well as its effects on career mobility and job stability, are not well understood (OECD, 2023a).

5. Discussion

A central insight from this structured review is that GAI's benefits and risks are deeply interdependent: advances in adaptive learning, assessment redesign, and experiential activities cannot be fully realized without parallel attention to governance, data practices, and equitable access.

The literature reveals that pedagogical gains depend on protecting human judgment, ensuring students develop critical evaluation skills, and preventing overreliance on AI-generated outputs. Ethical concerns—such as bias, transparency, privacy, and institutional accountability—cut across all uses of GAI and require coherent governance aligned with international guidelines. Career readiness expectations highlight the need for integrated pathways that develop both AI literacy and human-centered competencies; however, empirical evidence linking educational preparation to workplace outcomes remains limited.

Overall, responsible GAI adoption requires institution-wide strategies that integrate pedagogy, ethics, and workforce preparation, rather than treating them as isolated domains.

6. Conclusion

The literature indicates that integrating GAI requires more than technical adoption—it demands coordinated pedagogical, ethical, and workforce-oriented strategies. Business schools that establish transparent governance, align curricula with evolving industry needs, and ensure equitable access to AI learning opportunities will be best prepared to support student success in AI-intensive environments. Thoughtful, responsible integration can enhance educational relevance while safeguarding human agency, ethical reasoning, and long-term professional adaptability.

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