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Guiding principles of generative AI for employability and learning in UK universities

Emmanuel K. Nartey

The Open University, Milton Keynes, MK, United Kingdom

ABSTRACT

This article explores the implications of Generative AI in higher education institutions, focusing on its impact on academic integrity and educational policy. The study utilises qualitative methods and desk-based research to investigate the adoption of Generative Pre-Trained Transformer and similar programs within academic settings. While some institutions have implemented bans on Generative AI due to concerns about plagiarism and ethical implications, others have embraced its potential to enhance educational practices under ethical guidelines. However, such prohibitions may overlook the advantages of Generative AI and ignore students' inevitable engagement with technology. The article addresses these challenges by proposing guiding principles for the ethical and efficient application of Generative AI in UK universities, particularly in the realms of employability, teaching, and learning. The article is structured into three main sections: a review of existing literature on Generative AI, an exploration of its benefits and challenges, formulation of guiding principles for its implementation, and recommendations for future research and practical implementation. Through this analysis, the article aims to contribute to the ongoing discourse surrounding Generative AI in higher education, providing insights into its implications for educational policy and practice.

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Introduction

This article critically examines the divergent viewpoints surrounding Generative AI (GenAI) in higher education. On one hand, proponents' express concerns about GenAI posing potential threats to traditional educational models. They raise issues regarding its impact on pedagogical integrity, privacy, and academic autonomy. Conversely, another group of stakeholders acknowledges the transformative potential of GenAI. They perceive it as a catalyst for innovation and improvement within educational practices (Farazouli et al., 2023). These groups argue that GenAI offers opportunities for personalised learning experiences, streamlined administrative processes, and increased accessibility to education. By juxtaposing these opposing perspectives, this article seeks to provide a nuanced understanding of the multifaceted implications of GenAI in higher education. Through an analysis of its potential benefits and drawbacks, stakeholders can navigate the complexities of integrating GenAI into educational frameworks while mitigating risks and maximising its potential for positive impact.

Will the advancement of machines usher in a paradigm shift, or will humans find themselves subservient to their own creations? Alternatively, could humans be trapped within a labyrinth of their own intellect? James Cameron's iconic science-fiction film, 'The Terminator,' serves as a framework for exploring these speculative scenarios. While some may dismiss it as dystopian fiction, the parallels between the rise of GenAI and Cameron's vision in 1984 warrant consideration. Therefore, it is essential to analyse

CONTACT Emmanuel K. Nartey maninartey@gmail.com The Open University, Milton Keynes, MK, United Kingdom

the implications of burgeoning machine intelligence on contemporary academic discourse within higher education and its broader societal impact, encompassing areas such as education, employment, organisations, ethics, and law. A comprehensive examination and understanding of GenAI's influence and how to navigate its realm could potentially transform Cameron's dystopian vision into a utopian one. Although 'The Terminator' is not the primary focus of this article, it serves as a catalyst for exploring GenAI within higher education. GenAI is defined as 'technology that leverages deep learning models to generate human-like content in response to complex and varied prompts' (Michel-Villarreal et al., 2023). While this definition captures GenAI's technological essence, its implications extend beyond technology. GenAI encompasses multifaceted variables that transcend technological boundaries, thus necessitating a broader conceptualisation within the framework of innovation. Specifically, in relation to Chat Generative Pre-Trained Transformer (ChatGPT), a chatbot powered by GenAI, its broader societal implications remain subject to ongoing discourse. It is reasonable to anticipate both positive and negative outcomes resulting from ChatGPT's influence on society and higher education.

According to Wang (2023), GenAI presents a complex landscape within higher education, evoking contrasting perspectives that shape discourse surrounding its adoption. On one hand, proponents view GenAI as a potential threat to traditional educational paradigms, raising concerns about its implications for academic integrity, pedagogical authenticity, and ethical considerations. This perspective argues that using GenAI, particularly in essay generation, may facilitate academic dishonesty by enabling students to bypass traditional learning processes and plagiarise content easily (Dai et al., 2023). Furthermore, critics contend that reliance on AI-generated content undermines the development of critical thinking skills and diminishes the value of authentic student work, posing a fundamental challenge to the integrity of academic assessment practices (Dawson, 2023). Conversely, an opposing viewpoint perceives GenAI as an innovative tool that has the potential to revolutionise educational practices and enhance student learning experiences (Sotiriadou et al., 2020). Proponents of this perspective argue that GenAI can facilitate personalised learning experiences, assist educators in developing customised learning materials, and streamline administrative tasks, thereby improving overall efficiency and effectiveness in education (Chan and Colloton, 2024). Additionally, proponents emphasise the potential of GenAI to democratise access to education by offering personalised support to learners from diverse backgrounds and abilities, ultimately promoting inclusivity and equity in higher education (Morales-Chan, 2024).

The authors' emphasis on the potential threats posed by Generative AI (GenAI) to higher education raises valid concerns, yet their discourse often overlooks the broader spectrum of opportunities and benefits that GenAI offers within academia. While acknowledging the disruptive potential of AI technologies in traditional educational models and the attendant concerns about assessment integrity and ethical dilemmas, such discussions frequently neglect to explore the transformative potential of AI in enhancing teaching, research, and administrative functions within higher education. GenAI, with its capacity to analyse extensive datasets, holds the promise of revolutionising personalised learning experiences, facilitating adaptive tutoring systems, and supporting faculty in research endeavours through data analysis and pattern recognition. Furthermore, AI-driven tools have the potential to streamline administrative tasks, enabling higher education institutions to redirect resources towards innovative pedagogical approaches and enhanced student engagement. The discourse surrounding GenAI in higher education thus reflects divergent perspectives. While some authors perceive GenAI as a threat to traditional educational practices due to concerns about academic integrity and pedagogical authenticity, others embrace its innovative potential to revolutionise teaching and learning processes. Understanding and reconciling these contrasting viewpoints is imperative for navigating the ethical, pedagogical, and policy implications of GenAI adoption in higher education.

Yuk Chan and Hu (2023) posit that GenAI encompasses machine learning algorithms aimed at producing new data samples replicating original datasets. In simpler terms, GenAI operates on Variational Autoencoder (VAE) principles, which entail learning to encode and decode data while retaining crucial information. Goodfellow et al. (2020) categorise GenAI within the framework of Generative Adversarial Networks (GANs), where two neural networks collaborate to generate data samples reflecting real-world characteristics. These insights illustrate the utilisation of advanced algorithms by GenAI models to discern patterns and generate novel content across diverse formats. Despite the authors' contributions, a precise delineation of GenAI's impact and its intersection with human behaviours and capabilities

remains elusive. Therefore, a comprehensive definition of GenAI should incorporate its influence and ramifications. Fundamentally, GenAI can be construed as innovative AI models amalgamating sophisticated algorithms to produce datasets tailored to user prompts, thereby introducing novel challenges amid its rapid evolution. Clarifying the definition of GenAI is essential for understanding its potential integration into higher education and its implications for pedagogy and research.

The advancement of language capabilities in GenAI has prompted some authors to perceive a potential threat to higher education. However, this assertion may be premature and fails to acknowledge the vast opportunities that GenAI presents. For instance, GenAI tools like ChatGPT, Bard, Stable Diffusion, and Dall-E (Silverman et al., 2023) demonstrate the ability to handle complex prompts and generate human-like responses, raising questions about their implications, both positive and negative. This capability has sparked research interest in integrating GenAI across various societal domains, including education, medicine, healthcare, media, and tourism. While this interest warrants appreciation, it is crucial to consider how such integration can contribute to universal good and principles of inclusion and empowerment within modern society. Although the future trajectory of GenAI remains uncertain, it is imperative to embrace the evaluation of its potential impact, particularly its integration into societal structures, notably through the utilisation of ChatGPT. For instance, ChatGPT exhibits proficiency in processing requests in different natural languages, such as compiling text, engaging in dialogue, generating conversation, and translating languages (Baidoo-Anu & Ansah, 2023). However, the advanced generative skills of GenAI raise ethical questions regarding its use. Specifically, within higher education, concerns arise regarding its ability to complete exam questions, assignments, or academic essays undetectable by current anti-plagiarism software (Michel-Villarreal et al., 2023).

Furthermore, several studies in the field provide concrete evidence that essays generated by ChatGPT can bypass plagiarism detectors. Michel-Villarreal et al. (2023) demonstrated through their research that essays produced by ChatGPT often escape detection by conventional anti-plagiarism software. This finding was further supported by Baidoo-Anu and Ansah (2023), who compared essays generated by ChatGPT and those authored by humans. Their study revealed a significant similarity between ChatGPT-generated essays and human-authored content, rendering them challenging to differentiate using traditional plagiarism detection methods. Additionally, Silverman et al. (2023) evaluated various plagiarism detection tools to identify content generated by ChatGPT. Their research revealed that while some software could detect similarities between ChatGPT-generated content and existing sources, the level of detection varied considerably across different platforms. In many instances, essays produced by ChatGPT successfully evaded detection, posing substantial challenges to academic integrity and the preservation of originality in scholarly work. Moreover, Nguyen (2023) conducted a comprehensive review of ChatGPT's capabilities in generating textual content across diverse topics and formats. The study concluded that ChatGPT exhibited a high proficiency in emulating human language patterns and producing coherent and contextually relevant text. This fluency in language reproduction enables ChatGPT to generate essays closely resembling human-authored content, thereby complicating the task of plagiarism detection. In sum, these studies collectively provide robust evidence supporting the assertion that essays generated by ChatGPT can circumvent traditional plagiarism detection mechanisms. Consequently, lecturers and academic institutions must grapple with the ethical and pedagogical implications of incorporating AI-generated content into educational settings while ensuring the integrity and originality of scholarly work. Nevertheless, focusing solely on assessment integrity and plagiarism overlooks the broader potential of GenAI skills. Thus, the discourse surrounding GenAI in higher education should pivot towards addressing its ethical considerations, societal impact, and implications for student development.

In light of the divergent perspectives on the integration of GenAI within higher education, it is imperative for institutions to underline the significance of reframing essays and assessment questions to mitigate potential authenticity concerns and address issues related to plagiarism. Reuters (2023) and The Tab (2023) have highlighted the varied approaches adopted by institutions, ranging from outright bans on GenAI utilisation to embracing its potential for innovation with ethical usage guidelines. However, amidst this article, ensuring academic integrity remains paramount. By reframing essays and assessment questions, higher education institutions can proactively address concerns regarding the authenticity of student work. This entails crafting prompts that necessitate critical thinking, synthesis of ideas, and

original analysis, thereby reducing the likelihood of students relying solely on AI-generated content. Moreover, incorporating strategies such as requiring in-depth citations, reflective statements, or peer reviews can further enhance the authenticity of student submissions (Cotton et al., 2024). Furthermore, institutions should explore technological solutions and educational interventions facilitated by GenAI to detect and prevent plagiarism. (Farrelly and Baker, 2023). Additionally, educating students about the ethical implications of utilising AI tools in academic contexts and providing guidance on proper citation practices can foster a culture of academic honesty and responsibility (Deguara, 2024). Therefore, higher education institutions must prioritise the reframing of essays and assessment questions to uphold academic authenticity and integrity in the era of GenAI. By implementing proactive strategies and fostering a culture of academic honesty, institutions can effectively mitigate the potential risks associated with plagiarism while harnessing the transformative potential of AI technologies in education.

Moving on, Reuters (2023) and The Tab (2023) observed divergent perspectives among higher education institutions regarding GenAI, with some perceiving it as a threat to academic integrity and imposing bans on ChatGPT's full utilisation. Conversely, other institutions have embraced its potential innovation, providing ethical usage guidelines. Critically reflecting on the bans, it appears premature for institutions to outright prohibit GenAI without thoroughly understanding or assessing its benefits and drawbacks. Rather than impeding student engagement, institutions should first seek comprehension, evaluate impacts, and consider potential alterations to academic discourse. While endorsing guidance-oriented approaches, it's imperative for institutions to diversify resources and research avenues to explore GenAI's contributions to teaching and learning. However, existing information from higher education institutions lacks clarity and definitive guiding principles regarding ChatGPT's acceptable usage in academic contexts (University of Cambridge, 2023). Nonetheless, ongoing research indicates institutions are reevaluating their practices and policies concerning GenAI's impact on academic integrity. Hence, a robust policy framework should incorporate guiding principles for GenAI's academic use, encompassing assessment, equal access, inclusivity, employability, and sustainability considerations. Such principles should delineate how institutions can leverage GenAI to enhance various facets of academic practice.

Furthermore, recent literature has begun to illuminate GenAI's intricate implications for academic integrity within higher education, contrary to prevailing discourse (Mishra et al., 2023). This article endeavours to address concerns regarding GenAI's impact on academic integrity and proffers guiding principles for its responsible integration into higher education institutions, with a specific focus on employability, teaching, and learning within UK universities. The literature examining GenAI and its implications for academic integrity delineates various pertinent themes, including authenticity, consistency, reliability, adequacy, ethics, and plagiarism (Alafnan et al., 2023). A critical consideration is the inherent bias within the data used to train GenAI, particularly concerning its application within academic contexts. The limited breadth of training data may engender inaccuracies and erroneous user information (Lo, 2023). Nonetheless, this challenge presents an opportunity to nurture students' critical thinking and problem-solving skills through an exploration of GenAI's limitations (Neumann et al., 2023).

While evidence suggests that essays generated by GenAI can evade conventional plagiarism detection methods, reframing assessment questions to emphasise authenticity may ameliorate this issue. It is imperative to recognise that the ethical employment of GenAI hinges on the manner in which it is engaged rather than inherently labelling GenAI as problematic. Structured into three main components, this article proceeds as follows: firstly, it undertakes a comprehensive review of the literature surrounding GenAI, delineating its perceived benefits and challenges. Secondly, it endeavours to develop guiding principles for the responsible utilisation of GenAI within higher education settings. The proposed guiding principle for utilising Gen AI delineates into two primary facets: a guiding principle tailored for students, which incorporates institutional dynamics, and a corresponding guiding principle designed for staff, emphasising institutional imperatives. The student-oriented guiding principle underscores the integration of Gen AI within the institutional framework to enhance student learning experiences and outcomes. Conversely, the staff-centric guiding principle delineates institutional responsibilities in leveraging Gen AI tools to optimise teaching methodologies and administrative functions. These dual directives aim to foster a cohesive approach to Gen AI integration, fostering collaborative engagement between students, staff, and institutional infrastructure to cultivate a technologically adept learning environment. Finally, it offers recommendations for the integration of GenAI into higher education practices, accompanied by

suggestions for future research endeavours. Through this framework, the article aims to enrich the ongoing discourse on GenAI within higher education and furnish practical guidelines for its ethical and efficacious implementation.

Research method

The research methodology utilised in this article adheres to a systematic literature review approach aimed at comprehensively synthesising existing scholarly works on GenAI and its implications for academic integrity within higher education. The inclusion of a literature review serves several crucial purposes in this study. Firstly, it provides a comprehensive overview of the current state of knowledge regarding GenAI and its impact on academic integrity, enabling the identification of key themes, trends, and gaps in existing literature. This facilitates a nuanced understanding of the subject matter and informs subsequent stages of the research process. Secondly, the literature review serves as the foundation for developing guiding principles for the responsible integration of GenAI into higher education institutions. By synthesising insights from a diverse array of scholarly sources, the review enables the identification of best practices, ethical considerations, and potential challenges associated with the utilisation of GenAI in academic settings.

Furthermore, the literature review plays a pivotal role in contextualising the study's findings and recommendations within the broader scholarly discourse on GenAI and academic integrity. By situating the research within the existing body of knowledge, the study contributes to the advancement of theoretical understanding and informs practical decision-making processes within higher education institutions. Overall, this article's systematic literature review methodology enables a rigorous and comprehensive analysis of the complex interplay between GenAI and academic integrity. By synthesising insights from existing scholarship, the study aims to provide valuable guidance for policymakers, educators, and researchers seeking to navigate the ethical and pedagogical challenges posed by the integration of GenAI into higher education.

Literature review in higher education

Recent literature has initiated an exploration into the multifaceted implications of GenAI for academic integrity within higher education, diverging from the prevailing discourse (Islam & Islam, 2023). This literature review endeavours to address concerns surrounding GenAI's impact on academic integrity and to propose guiding principles for its responsible integration into higher education institutions, particularly focusing on employability, teaching, and learning within UK universities. The literature surrounding GenAI and its implications for academic integrity delves into various pertinent themes, including authenticity, consistency, reliability, adequacy, ethics, and plagiarism (Alafnan et al., 2023). Notably, studies by Malik et al. (2023) and Zhang et al. (2024) provide insights into the ethical considerations associated with the utilisation of GenAI in academic settings, emphasising the importance of transparency and accountability in algorithmic decision-making processes. Moreover, the potential biases inherent in the training data used for GenAI models have been extensively discussed in studies by Ratten and Jones (2023) and Wong (2024). These works highlight the necessity of addressing data biases to ensure the ethical deployment of GenAI technologies within higher education contexts. Furthermore, research by Yeralan and Lee (2023) and Kurtz et al. (2024) highlights the evolving landscape of academic integrity challenges posed by GenAI, including the emergence of novel forms of plagiarism facilitated by AI-generated content. These studies emphasise the importance of adapting assessment strategies and fostering critical thinking skills to mitigate the risks associated with academic misconduct in the digital age.

Chan and Lee (2023) highlight the primary objective of integrating GenAI into higher education: to enrich students' learning experiences by leveraging its capability to produce relevant information or output upon prompting. Utilising GenAI, particularly through test-to-text generators like ChatGPT, can aid students in brainstorming ideas and receiving feedback on their work, a particularly advantageous tool for non-native English speakers (Atlas, 2023). Conversely, the use of text-to-image generators such as DALE-E and Stable Diffusion, as noted by Dehouche and Dehouche (2023), offers support in teaching

technical concepts such as art and design. While acknowledging the potential benefits elucidated by these scholars, it is imperative to assess the challenges and limitations associated with GenAI integration critically. GenAI's transformative impact on teaching methodologies and research practices in academia raises significant concerns and dilemmas. For instance, the imposition of constraints such as the 1,000-character limit on ChatGPT's computation input and restricted message input frequency (Rasul et al., 2023) may lead to inadequacies in communication.

Wang et al. (2023) comprehensively explore AI's potential impact on international students in higher education, emphasising GenAI, chatbots, analytics, and student success. They analyse AI's role in enhancing support systems for international students, addressing their unique challenges. The study highlights their contributions to student success by examining Generative AI and chatbots. Additionally, the authors investigate how analytics utilise AI-generated data to improve outcomes. While providing valuable insights into AI integration, ethical considerations, efficacy, and long-term impacts on international student experiences necessitate further research. Watermeyer et al. (2023) critically examine GenAI's impact on academia, highlighting its potential for automating scholarly processes. Their analysis offers insights into AI's transformative effects on content generation, data analysis, and knowledge dissemination in academia. However, the study lacks depth in exploring ethical, social, and pedagogical concerns surrounding AI integration. Issues like algorithmic bias, intellectual property rights, and the evolving nature of scholarly expertise require further scrutiny. Moreover, a more nuanced exploration of Gen AI's intersection with academic autonomy, creativity, and scholarly practices is warranted. Despite these limitations, their work contributes significantly to understanding AI's evolving role in academia, encouraging critical reflection and continued investigation into its implications for scholarly practices and education. However, it is essential to exercise caution in navigating these limitations, recognising them as opportunities for growth rather than insurmountable barriers. While current constraints may impede optimal usage, it is plausible that future advancements in GenAI technology may mitigate these challenges. Thus, individuals utilising GenAI for educational purposes must undergo training to discern its limitations and develop the skills to identify generated data flaws (Gimpel et al., 2023). This approach fosters GenAI literacy among students and enhances their employability skills by preparing them to adapt to evolving technological landscapes. Therefore, a comprehensive examination of the advantages and obstacles of GenAI is imperative for informed decision-making in higher education.

Farazouli et al. (2023) investigate the influence of AI chatbots, particularly GPT, on university teachers' assessment practices in their article titled 'Hello GPT! Goodbye home examination? An exploratory study of AI chatbots impacts on university teachers' assessment practices.' The study explores how AI chatbots potentially reshape traditional assessment methods, especially in home examinations. The authors analyse the effects of AI chatbots on various assessment aspects, such as grading accuracy, efficiency, and the student-teacher dynamic. However, the article does not thoroughly examine ethical concerns associated with AI chatbots in assessment. Further scrutiny of algorithmic biases, fairness, and their impact on students' learning experiences is necessary. Additionally, a comprehensive discussion on the practical implications and challenges of integrating AI chatbots into assessment practices is warranted. Despite these limitations, Farazouli et al., 's study provides valuable insights into the changing assessment landscape in higher education, stimulating further exploration of AI adoption's ethical, pedagogical, and practical dimensions in academia.

In addition, scholars such as Berg (2023) and Chan and Zhou (2023) highlight the potential benefits of GenAI in research, emphasising its ability to generate ideas, synthesise data, and aid in constructing arguments. This suggests that GenAI can enhance research and publication efficiency, as Kitamura (2023) and Van Dis et al. (2023) indicated. Crompton and Burke (2023) further assert that GenAI offers innovative opportunities in learning assessment, proposing tools like the 'Intelligent Essay Assessor' for grading and providing feedback on student essays, as pioneered by Landauer (2003). Additionally, Mizumoto and Eguchi (2023) investigate the reliability and accuracy of ChatGPT for essay scoring, finding that it reduces grading time, improves consistency, and offers immediate feedback on writing skills, thus transforming teaching and learning processes. However, concerns arise regarding the alignment of GenAI usage with traditional educational values and beliefs. Petricini et al. (2023) suggest that universities may lack sufficient understanding of how to integrate GenAI into educational settings, raising

ethical and pedagogical challenges. Despite its potential drawbacks, GenAI holds promise for enhancing research efficiency, assessment practices, and student learning experiences in higher education.

This evidence has highlighted the transformative potential of GenAI in various educational domains. Berg (2023) and Chan and Zhou (2023) have elucidated GenAI's efficacy in idea generation, data synthesis, and argument construction, thereby expediting the research process. This heightened efficiency not only expedites knowledge dissemination but also fosters academic innovation. Furthermore, Talan and Kalınkara (2023) have shed light on the potential of GenAI-powered adaptive learning platforms to customise educational content and experiences according to individual student requisites, thereby enhancing engagement and improving learning outcomes. In addition, GenAI facilitates collaboration through tools like collaborative writing assistants, as exemplified by Bedington et al (2024), which enable real-time collaboration among students and educators, fostering interdisciplinary cooperation and enriching academic discourse. GenAI's capacity to surmount linguistic and accessibility barriers, as Alasadi and Baiz (2023) demonstrated through automated translation and text-to-speech capabilities, renders educational resources more accessible to diverse student cohorts, thus promoting inclusivity and bolstering educational equity. In this understanding, it may be assumed that GenAI plays a pivotal role in enabling the development of interactive and immersive educational content, including virtual simulations and augmented reality experiences. This novel pedagogical strategy, investigated by Ruiz-Rojas et al (2023), amplifies student engagement and nurtures creativity within the teaching and learning processes.

Similarly, the integration of GenAI in educational settings has spurred discussions concerning ethical implications, encompassing issues such as algorithmic biases, privacy breaches, and concerns regarding data ownership. Esteemed scholars like Petricini et al. (2023) advocate for the establishment of ethical guidelines and regulatory frameworks to effectively address these risks, thereby ensuring the responsible deployment of AI technologies. Moreover, the assimilation of GenAI into assessment and instructional paradigms presents challenges to the cultivation of critical thinking and problem-solving skills among students. Higher education institutions are tasked with the delicate endeavour of balancing the utilisation of AI-driven tools with the preservation of pedagogical principles, thereby facilitating meaningful and comprehensive learning experiences. Furthermore, an overreliance on GenAI tools risks engendering a culture of complacency potentially diminishes the significance of human expertise within educational environments. Consequently, higher education institutions are tasked with maintaining a balance between leveraging AI for efficiency enhancements and safeguarding the irreplaceable human element inherent in teaching and learning endeavours. In summary, the introduction of GenAI holds considerable promise for catalysing transformative advancements within higher education, with potential benefits spanning research efficiency, learning assessment methodologies, collaborative initiatives, accessibility enhancements, content creation innovations, and personalised learning approaches. Nonetheless, the widespread integration of GenAI necessitates a nuanced consideration of pertinent challenges, including ethical dilemmas, pedagogical constraints, and technological dependencies. It is imperative for higher education institutions and policymakers to navigate these complexities judiciously, ensuring the ethical and responsible integration of GenAI in accordance with the foundational principles of higher education.

Gimpel et al. (2023) advocate for a paradigm shift in understanding GenAI, emphasising the necessity of training and research to elucidate its potential benefits rather than hastily dismissing it as a threat. Conversely, if GenAI poses a fundamental challenge to entrenched norms and traditional educational paradigms, this may be viewed as a positive development warranting commendation. This perspective is rooted in the recognition that innovation often necessitates dismantling entrenched dogma to pave the way for new norms. The current discourse's primary concern surrounding GenAI pertains to its ethical appropriateness. Specifically, questions arise regarding its potential for manipulating human behaviour and thoughts, perpetuating prejudice, or reinforcing biases inherent in societal structures. Should GenAI be employed for such purposes, it is arguable that its integration into education is untenable. Conversely, if it is utilised to counteract such tendencies, its adoption should be embraced. Consequently, there is a compelling need for substantial investment in resources and research across various societal strata to enhance GenAI technologies. This endeavour is crucial for mitigating limitations such as bias and discrimination within language models, thereby ensuring their ethical and equitable deployment.

Coccia (2017a) undertakes an investigation into the phenomenon of disruptive innovation and its ramifications on industries. Employing a synthesis of economic theory and empirical data, the author scrutinises the manner in which select firms disrupt conventional markets, thereby challenging established incumbents and catalysing technological advancements. Through meticulous examination of case studies and analytical frameworks, the article elucidates the mechanisms by which disruptive firms reshape economic landscapes, thus providing valuable insights into strategies for adaptation and resilience in the face of disruption. By centring attention on the pivotal role played by disruptive firms as catalysts of change, Coccia's scholarship contributes significantly to the understanding of industrial dynamics, innovation, and economic development, thereby offering substantial value to both scholars and practitioners within the disciplines of economics and business studies. Similarly, Chiu's (2024) scholarly endeavour delves into the potential applications and implications of GenAI in the domain of higher education. Through a rigorous examination grounded in academic discourse, the author discerns prevailing gaps and challenges in harnessing GenAI for educational purposes, subsequently proposing avenues for future research to address these issues comprehensively. This scholarly exploration encompasses diverse themes, including pedagogical integration, ethical considerations, technological infrastructure, and institutional preparedness. By delineating recommendations for future research trajectories, Chiu's work contributes significantly to the advancement of scholarly comprehension and pragmatic implementation of GenAI within higher education. This scholarly endeavour holds the potential to shape the trajectory of educational innovation and transformation, thereby exerting a notable impact on the field.

Moreover, the primary challenges concerning the constraints of GenAI pertain to ethical considerations, plagiarism, and upholding academic integrity. While this presents a significant apprehension, Anctil (2023) suggests that addressing this issue entails fostering awareness, providing comprehensive training, and furnishing guidance to faculty and students regarding its appropriate utilisation. Similarly, Bahroun et al (2023) contends that while the responses generated by AI in academic writing warrant scrutiny, they often lack originality, relevance to the topic, adequate references, and a human perspective, thereby falling short of the requisite standards for scholarly discourse. Consequently, GenAI's capability to produce substantive academic reports remains questionable, suggesting that concerns regarding academic integrity may be premature. Chergarova et al. (2023) advocates for a shift in focus towards integrating GenAI into student development and educational experiences rather than exclusively concentrating on mitigating academic misconduct. For instance, offering instruction on constructing appropriate prompts could aid non-English speakers and foreign students in enhancing their linguistic proficiency. Consequently, establishing GenAI support and training centres within faculties and schools could facilitate the development of these linguistic skills among students. However, arguments posited by Warschauer et al. (2023) caution against overreliance on GenAI, as it may impede the development of writing skills. Nonetheless, this concern may be alleviated through comprehensive training and support mechanisms provided to students. Thus, GenAI emerges as a tool with the potential to prepare students for university-level writing tasks, while also offering transformative benefits in teaching and learning across various domains. Consequently, the issue of GenAI in higher education encompasses three key stakeholders: students, academics, and professionals, such as career support services, indicating the necessity for a multifaceted approach to its integration and utilisation within educational settings.

Within higher education, the implementation of GenAI support mechanisms for students can be instrumental in fostering their skill development, particularly in communication and writing. Rudolph et al. (2023) highlights the potential of such initiatives to offer personalised feedback and guidance on writing tasks, thereby equipping students with practical experience in utilising GenAI, an increasingly valued skill in the job market. Concurrently, for academics, GenAI holds promise in streamlining various instructional tasks, including module creation, lecture development, and assessment preparation. By leveraging GenAI, higher education institutions can efficiently evaluate student assignments, design syllabi addressing contemporary societal issues, and administer quizzes and examinations. Furthermore, GenAI facilitates ongoing student assessment and personalised feedback provision, addressing student engagement and retention concerns. GenAI offers opportunities to enhance productivity and service delivery standards for professionals operating within the higher education sector. Baidoo-Anu and Ansah (2023) suggests that GenAI can aid in tasks such as student record review, scheduling personalised meetings,

drafting reports, and issuing personalised reminders to students. Additionally, GenAI's predictive capabilities enable professionals to make informed decisions regarding individual student outcomes, facilitating more effective communication with students and colleagues (Chergarova et al., 2023).

Kohnkes et al.'s (2024) work delve into the preparedness of university language lecturers to embrace GenAI. Employing a case study methodology, the authors scrutinise language use by lecturers, perceptions, attitudes, and competencies concerning the integration of GenAI into language teaching practices. This scholarly inquiry contributes to the ongoing discourse on technology integration within educational settings, particularly within the domain of language instruction. By evaluating the lecturer's readiness to adopt GenAI tools, the study offers valuable insights into the potential obstacles, complexities, and opportunities associated with incorporating AI technologies into language pedagogy. Furthermore, the research findings have the potential to inform strategies aimed at enhancing instructor training and support in effectively utilising GenAI, thereby fostering advancements in innovative language teaching practices within higher education contexts. Coccia (2017b) study provides an analysis of the origins and impact of disruptive technologies on industrial dynamics. While the article adeptly identifies the key drivers of technological disruption, such as scientific advancements and entrepreneurial initiatives, it lacks depth in exploring the intricate interplay between these drivers and their implications for industrial evolution. Additionally, regulatory frameworks, market dynamics, and socio-economic influences are overlooked in shaping the adoption and diffusion of disruptive technologies. Further empirical evidence and case studies would strengthen Coccia's analysis, despite its valuable contributions to understanding the theoretical foundations of disruptive innovation and its relevance for industrial change. However, future research endeavours should aim to explore the multifaceted nature of technological disruption through diverse perspectives and methodologies to enrich the scholarly discourse on this pivotal topic.

Despite the capabilities of GenAI tools, they may fall short in identifying inaccuracies or misinformation within generated content. However, the integration of human oversight could effectively address these concerns (Lai et al., 2023). Moreover, the inherent nature of GenAI-generated work poses challenges for plagiarism detection software, making it arduous for academics to ascertain the authenticity of submitted assignments (Peres et al., 2023). Consequently, the utilisation of GenAI in assessments raises questions regarding its classification as plagiarism. Plagiarism entails presenting others' ideas as one's own without proper attribution (Hatch, 2023). Considering this definition, categorising the use of GenAI as plagiarism seems unreasonable if students adequately reference or cite their sources. Instead, universities should develop comprehensive academic policies outlining appropriate citation practices when employing GenAI. This approach is crucial for upholding academic integrity and ethical standards. Therefore, universities are advised to adopt this approach rather than hastily accusing students of plagiarism, which lacks the necessary grounds for appropriate disciplinary actions.

Plata et al. (2023) comprehensively investigate the multifaceted implications of AI-generated content for academic integrity, particularly highlighting its potential to compromise scholarly honesty and the challenges it presents to conventional plagiarism detection methods. Their inquiry involves an examination of contemporary research trends and policy responses aimed at addressing these emerging concerns, offering valuable insights into evolving themes within the field. However, a thorough analysis necessitates an extensive evaluation of the efficacy of existing policies and the formulation of innovative strategies to uphold academic integrity amidst the proliferation of AI technologies. Baskara (2023) underscores the ethical quandaries posed by GenAI, questioning the ethical boundaries in academic writing. Zhai (2022) highlights the potential impact of ChatGPT on assessment integrity, particularly concerning written assignments. While concerns are raised regarding the threat GenAI may pose to critical thinking and creativity skills (Chan & Tsi, 2023), it is arguable that effective GenAI utilisation demands creativity and critical thinking skills. Hence, perceiving GenAI-generated work as plagiarism warrants careful consideration, necessitating clear guidelines and student training. However, premature prohibition may impede future GenAI development.

Thus, further research is imperative to effectively integrate GenAI into higher education, enhancing teaching, learning, and employability skills. Moreover, a crucial component of integrating GenAI into higher education involves training and reshaping perceptions and narratives surrounding its utilisation (Davis, 1989). This perspective aligns with Biggs's 3 P (Presage-Process-Product) model in teaching and learning, emphasising student perceptions' profound influence on their learning environment and

academic performance (Biggs, 2012). Biggs posits that students' abilities to thrive in their academic endeavours heavily rely on the university's teaching strategies, thereby shaping their perceptions and study approaches (Biggs et al., 2022). Consequently, these strategies play a pivotal role in shaping students' learning outcomes. It is reasonable to infer from this evidence that students who harbour positive perceptions of their learning environment, encompassing factors such as teaching strategies, delivery methods, support services, learning resources, teaching content, and assessment methods, and exhibit confidence in their abilities, are more likely to engage in their academic pursuits actively.

This implies a deep engagement in learning and the acquisition of a substantial understanding of the study materials. Conversely, students lacking a positive perception of their learning environment may exhibit reduced engagement and harbour doubts regarding their ability to reach their full potential. Consequently, their engagement may be minimal, resulting in superficial knowledge and understanding of the subject matter (Biggs, 2012). Thus, the extent to which universities can effectively integrate GenAI into the teaching and learning process to foster inclusive engagement and knowledge development becomes a fundamental inquiry. Therefore, investing significant research and resources in comprehending students' perceptions and experiences concerning GenAI usage is imperative. This necessitates investigating the attitudes of students, academics, and university professionals towards GenAI usage, considering influencing factors such as gender, age, discipline, and programme of study. While this article does not delve into this focus, outlining potential research areas for institutions in the future is essential. This understanding of GenAI's contextual relevance can maximise its benefits. Proposed research themes include attitudes towards GenAI usage, training for students and staff, institutional policy development, ethics, data protection, bias considerations, impact on engagement, limitations and challenges, assessment design, employability enhancement, inclusive teaching practices, research analysis, and plagiarism clarification to establish institutional definitions and stances on this issue. This clarification is crucial as academic discourse distinguishes plagiarism as presenting others' work as one's own without proper reference. In contrast, if students using the GenAI model provide accurate citations or references, it may be considered unethical but not a violation of academic integrity. Therefore, further research is warranted to elucidate this matter, benefiting all universities.

In conclusion, the examination of GenAI within higher education reveals a dichotomy of advantages and drawbacks. GenAI stands poised to revolutionise educational processes by enhancing efficiency and innovation through tasks such as idea generation, data synthesis, and argument construction, thus expediting knowledge dissemination (Berg, 2023; Chan & Zhou, 2023). Moreover, its adaptive learning platforms offer personalised educational experiences, promoting engagement and improving learning outcomes (Wang et al., 2022). Collaborative writing assistants driven by GenAI further foster interdisciplinary cooperation and enrich academic discourse (Smith et al., 2021), while its ability to bridge linguistic and accessibility barriers enhances inclusivity (Kaplan-Rakowski et al., 2023). Conversely, GenAI introduces ethical concerns regarding algorithmic biases, privacy infringement, and data ownership (Petricini et al., 2023). Its incorporation into assessment and instructional methods risks diminishing students' critical thinking and problem-solving skills (Crompton & Burke, 2023), potentially eroding the value of human expertise in education (Chiu, 2024). Additionally, authenticity and originality issues surrounding GenAI-generated content raise challenges for plagiarism detection and academic integrity (Peres et al., 2023). The subsequent section of this literature review will explore GenAI's role in cultivating students' employability skills, offering insights to professionals and academics on harnessing GenAI to equip students for the demands of the job market.

The integration of GenAI into higher education has prompted significant discourse regarding its potential impact on students' employability skills. As technology continues to evolve, the relevance of AI in the job market becomes increasingly apparent, necessitating a thorough examination of how GenAI can contribute to the development of competencies essential for career readiness. This section aims to explore the intersection between GenAI and employability within the educational landscape. By delving into the multifaceted implications of GenAI on students' readiness for the workforce, this section endeavours to provide insights for both practitioners and scholars in navigating the evolving dynamics of education and employment. Through an analysis of existing literature and emerging trends, this section seeks to elucidate the opportunities and challenges associated with leveraging GenAI to enhance students' employability. Additionally, it aims to outline potential strategies for integrating GenAI into

educational curricula to better prepare students for the demands of an AI-driven job market. Ultimately, this section endeavours to contribute to the ongoing dialogue surrounding the role of technology in shaping the future of education and workforce readiness.

The discussion on the role of GenAI in higher education highlights its potential significance, yet raises pertinent ethical considerations. While GenAI offers promise in improving teaching and learning and potentially enhancing students' employability skills, ethical concerns regarding bias, security, ethics, and academic integrity must be addressed (Bahroun et al., 2023). Transparency and accountability emerge as foundational principles for the ethical use of GenAI. Institutions must provide clear disclosure of GenAI usage, including its limitations and potential biases. Moreover, mechanisms for accountability are essential to ensure responsible and ethical implementation. Likewise, fairness and equity are imperative in GenAI deployment, ensuring that all students have equitable access to educational resources and opportunities. Privacy and data protection are paramount, necessitating robust measures to safeguard students' personal information and uphold privacy regulations. Furthermore, integrity and authenticity must be preserved to maintain academic standards. GenAI-generated content should be properly attributed and distinguished from human-authored work, with measures in place to prevent plagiarism and academic dishonesty. As well as continuous evaluation and refinement are crucial for assessing GenAI's impact and effectiveness in educational settings. Stakeholder feedback should inform adjustments to ensure responsible and effective utilisation. Therefore, adherence to these principles enables higher education institutions to harness GenAI's potential while addressing ethical concerns, fostering an environment conducive to ethical and effective utilisation in teaching, learning, and enhancing students' employability skills.

GenAI harbours the potential to bolster students' employability through multifaceted approaches. One such avenue lies in its ability to facilitate the creation of interactive activities tailored to personalised learning experiences. This pedagogical approach enables students to hone crucial skills like communication, critical thinking, and problem-solving, all of which are intricately linked to employability (George et al., 2023). Additionally, GenAI can aid students in tasks ranging from language translation and natural language processing to data analysis and research, all anticipated to be highly sought-after skills in future job markets. Moreover, the integration of GenAI in developing virtual aids and chatbots provides students with hands-on experience crafting and designing their AI models (Shihab et al., 2023). This immersive learning experience deepens their understanding of the technology and its ethical implications and furnishes them with practical competencies relevant to their prospective careers. The incorporation of GenAI into initiatives aimed at fostering students' employability equips them with indispensable proficiencies and knowledge essential for navigating a workforce increasingly intertwined with AI technologies. Such preparedness amplifies students' competitiveness in the job market and positions them to excel in environments where GenAI integration is pervasive.

The Open University (OU) delineates employability as: 'A set of capabilities and achievements that support students in developing their careers, raising their aspirations, and enhancing their contribution to society.' This definition underlines the OU's inclusive approach toward enhancing students' employability, emphasising the cultivation of skills, values, and behaviours conducive to societal contribution. While the practical implications of this definition on students' employability warrant empirical investigation, its emphasis on holistic skill development suggests potential benefits. A comprehensive definition such as this lays the groundwork for effectively integrating GenAI into students' skill development initiatives. The OU could consider incorporating GenAI into teaching and learning practices via collaborative tools and platforms, thereby fostering student communication and knowledge exchange. Such integration could enhance aspects of employability skills, such as communication and collaboration, particularly in remote or diverse learning environments. Furthermore, empowering students to utilise GenAI for higher-order tasks that necessitate critical thinking and creativity and engaging in teaching and learning activities could bolster their technological proficiencies for future employment endeavours. This strategic approach aligns with the OU's commitment to preparing students for the evolving demands of the job market while nurturing their capacity for societal contribution. In light of these considerations, it is imperative for universities to adopt a systematic approach to integrate GenAI into employability initiatives within higher education. The following steps are recommended to embed GenAI in the realm of employability effectively:

- *Comprehensive training programmes:* Students, academics, and professionals should undergo rigorous training programs focused on the utilisation of GenAI in the context of employability. These programmes should encompass practical skills development and ethical considerations.
- *Academic and professional support***:** Academics and professionals should receive specialised training to guide and support students in using GenAI ethically and effectively to enhance their learning and employability prospects.
- *Ethical integration in teaching and assessment:* The ethical use of GenAI should be integrated into teaching methods and assessment practices across academic curricula. This ensures that students understand and adhere to ethical principles while leveraging GenAI tools.
- *Equal access to GenAI tools:* All institutions should strive to provide equal access to GenAI tools as part of teaching resources and student experiences. This fosters inclusivity and ensures that students from diverse backgrounds have equitable opportunities to utilise these technologies.
- *Rigorous academic integrity assessment:* Institutions must establish robust processes for assessing academic integrity in the context of GenAI usage. This includes mechanisms for detecting and addressing plagiarism and unethical conduct related to GenAI-generated content.
- *Collaborative frameworks:* Institutions should collaborate to develop a common understanding of GenAI's role and application in enhancing employability. This collaborative approach promotes knowledge sharing and standardisation of practices across educational institutions.

By adhering to these guidelines, universities can effectively integrate GenAI into employability initiatives, thereby equipping students with the necessary skills and competencies to thrive in a rapidly evolving job market characterised by technological advancements.

Fakunle and Higson (2021) contend that the conventional understanding of employability, primarily focusing on economic outcomes for graduates and universities, is overly restrictive. They argue that this narrow definition fails to account for students' diverse needs and aspirations, leading to a limited appreciation of employability's broader significance and value. This perspective suggests that the prevailing definition may have influenced the formulation of initiatives such as the Graduate Destination Survey (GDS), administered by the Ministry of Education (MOE), which primarily measures graduates' employment status within a specific timeframe (UAE Cabinet, 2022). However, this singular emphasis on immediate employment overlooks the multifaceted contributions that graduates can make to society and the array of skills they acquire during their academic pursuits. Consequently, there is a growing recognition of the need to expand the scope of employability metrics beyond mere job placement statistics. This shift acknowledges that students pursue higher education for diverse reasons beyond securing employment, emphasising the intrinsic value of education for personal growth and knowledge acquisition (Cashian, 2017). In this context, the integration of GenAI into the MOE's concept of employability prompts questions about how this technology aligns with existing frameworks and whether additional performance indicators are warranted to capture its impact effectively.

Nonetheless, the integration of GenAI into employability initiatives within the educational sector not only presents opportunities but also raises significant ethical considerations. While the traditional understanding of employability has often been equated with immediate employment outcomes, it is essential to recognise that employability encompasses broader dimensions beyond mere job placement. Distinguishing between employability and employment is crucial, as the former pertains to the quality of education outcomes and individual development, while the latter focuses solely on securing a job (Ma et al., 2024). Bridgstock and Jackson (2019) emphasise that measuring employability should encompass students' success in the university learning process, transcending the simplistic notion of securing employment contracts. Indeed, a university graduate may secure employment but may not necessarily possess the skills and attributes associated with employability. This distinction highlights the importance of fostering holistic development and equipping students with the necessary skills to thrive in various professional contexts. Moreover, as elucidated by Wallis (2021), the concept of career readiness highlights the significance of students' skills and preparedness for job interviews and professional settings. Sachs et al. (2017) stress the importance of employability and being 'job-ready' to effectively enhance

students' job prospects. While ongoing discourse surrounding student employability, career readiness, and job performance is essential, it is imperative to address these distinctions at the policy level (Olo et al., 2022; Tomlinson, 2007). This nuanced understanding is vital for informing strategic decision-making and shaping educational policies that effectively support students' holistic development and long-term success in the labour market.

Tomlinson (2007) proposed that employability is intricately linked to graduates' experiences, encompassing both formal pedagogical methods and informal learning activities. Conversely, Pham (2022) contend that the concept of employability is subject to variation and lacks clarity. Both perspectives offer valid insights into the multifaceted nature of employability skill development. Thus, a nuanced approach involves conceptualising employability as an organic and evolving process influenced by shifts in the labour market dynamics. Therefore, the integration of GenAI skills into employability initiatives reflects the evolving demands of the labour market. Messum (2027) conducted a study involving 38 senior managers and 42 graduates, assessing 44 key employability skills. Their findings, aligned with existing literature and job advertisement analyses, revealed discrepancies between the skills prioritised by graduates and those sought by employers. Notably, employers valued generic competencies such as interpersonal skills, adaptability, and ethical behaviour, underscoring the significance of soft skills in employability. This underlines the importance of universities emphasising the integration of employability skills, including GenAI proficiency, within their curricula. As employability is perceived as an organic progression, universities should develop integrated frameworks that reflect evolving industry demands. Such initiatives enhance graduates' marketability and align educational offerings with the evolving needs of the labour market. Here is an illustration of how GenAI can contribute to the enhancement of students' employability skills:

- *Example 1:* using GenAI to develop writing and communication in teaching and learning. You may input a question or prompt and see how it responds, then set a task for the student to compare and contrast the response generated to what you expect it to be.

Prompt

Produce a legal essay discussion of the case *R (on the application of AAA and others) (Respondents/Cross-Appellants) v Secretary of State for the Home Department (Appellant/Cross Respondent)*.

GenAI holds the potential for integration into employability initiatives, particularly in the legal field, albeit with ethical considerations. Utilising GenAI to generate legal essays offers students descriptive insights into cases from diverse perspectives. However, comprehending legal issues requires critical engagement beyond mere content generation. Students can review GenAI-produced essays individually or in groups during workshops to address this. Additionally, instructors can prompt GenAI to summarise relevant cases and laws, encouraging students to compare and contrast these summaries with their own. This process fosters communication, collaboration, critical analysis, and problem-solving skills. However, ethical concerns arise regarding the authenticity and originality of GenAI-generated content, necessitating transparency and attribution standards (Jones, 2020). Furthermore, safeguarding against algorithmic biases and ensuring data privacy are paramount (Petricini et al., 2023). Despite these challenges, incorporating GenAI into legal education enriches students' learning experiences and equips them with valuable skills essential for employability in the legal profession (Smith et al., 2019).

Moreover, collaborating with GenAI to develop teaching and learning materials represents a novel skill set that requires time for both lecturers and students to cultivate. Hence, it is imperative for higher education institutions to recognise that GenAI serves as a supportive tool to enhance students' writing processes rather than a replacement. Faculty members are advised to incorporate GenAI into their instructional practices by leveraging its capacity to generate prompts. For example, lecturers can employ GenAI to compile lists of seminar tasks or creative writing prompts for student engagement during online discussions or seminars. Additionally, GenAI can inspire students to craft their assessments, fostering originality and innovation in their work. This integration encourages students to think creatively, thereby nurturing their innovation skills. Another application of GenAI in teaching and learning is aiding legal scholars in summarising lengthy legal texts for tutorial and group deliberations. Lecturers may

utilise GenAI to condense extensive legal research articles or cases, simplifying comprehension for students and streamlining the learning process. This approach enhances students' understanding of intricate legal concepts and optimises research time efficiency.

To show how this could be used in producing summary text, here are a few examples of prompts that can be used to generate different types of writing ideas:

- Write a summary report of *Dolan & Ors, R (On the application of) v Secretary of State for Health and Social Care & Anor* [2020] EWCA 1605 case.
- Write a persuasive article arguing for changing the Principle of Responsible to Protect under international law.
- Write a short report on the UK's changes in same-sex marriage law.

Having given these examples of prompts, it is also important to note that GenAI may not always be perfect. Therefore, human oversight or review is always required to ensure the information is accurate or appropriate for seminars.

Moreover, the integration of GenAI into teaching and learning can be facilitated through experiential learning methodologies (Kolb et al., 2014). This pedagogical approach promotes active student engagement and collaboration, fostering the development of teamwork and cooperation skills among learners. Institutions prioritising the enhancement of students' GenAI literacy and employability may find experiential learning particularly beneficial. Successful adoption of experiential learning, coupled with reflective teaching and learning practices, has the potential to enhance student engagement and academic performance. Additionally, authentic assessment practices play a pivotal role in experiential learning, requiring students to demonstrate the application of their knowledge and skills in real-world scenarios, including those involving GenAI (Darling-Hammond & Snyder, 2000). Incorporating authentic assessment methods into courses and explicit guidelines on leveraging GenAI to support student activities can effectively prepare students for professional endeavours. While a detailed exploration of authentic assessment extends beyond the scope of this article, the following summary outlines the skills that GenAI may assist students in developing:

- Research and knowledge transfer skills
- Creative and critical thinking, problem-solving, and reflection skills
- Writing and presentation skills
- Collaboration and teamwork
- Global citizenship
- Commercial awareness
- Digital and technological literacy
- Ethical considered
- Personalised career development trajectory

In conclusion, the integration of GenAI holds significant promise in enhancing students' employability skills. It enables students to understand better the skills necessary for employment, interactions with employers, and preparation for recruitment processes. Evidence suggests that many students are already utilising GenAI tools to bolster their job applications. However, the critical question remains: how can we optimise its utilisation to maximise its benefits for students? One suggestion for integrating GenAI into student employability skills development is to incorporate it into career service offerings within higher education institutions. GenAI has the potential to streamline routine tasks for career service professionals, thereby allowing them to dedicate more time to advising and coaching students. This shift can facilitate more personalised and effective support for students as they navigate their career paths. Additionally, higher education institutions should prioritise the incorporation of GenAI into employability skills development initiatives to better equip students for future careers in a rapidly evolving job market. In summary, while GenAI presents transformative opportunities for enhancing students' employability skills, its full potential can only be realised through deliberate integration into higher education institutions' career services and employability skills development programmes.

Here are some recommendations for integrating GenAI into higher education to improve student employability:

- *Curriculum integration:* Integrate GenAI tools and technologies into the curriculum across various disciplines. This integration can occur through specialised courses or modules that focus on GenAI applications relevant to specific fields of study.
- *Experiential learning:* Incorporate experiential learning opportunities that leverage GenAI tools. Students can engage in hands-on projects, simulations, or real-world applications where they interact with GenAI systems to solve complex problems or address industry challenges.
- *Professional development:* Provide training and professional development opportunities for faculty and staff to enhance their proficiency in using GenAI tools for teaching, research, and career development initiatives.
- *Career services:* Integrate GenAI into career services offerings to assist students with resume writing, job searching, interview preparation, and career planning. GenAI can provide personalised recommendations, identify relevant job opportunities, and offer insights into industry trends and skill requirements.
- *Internships and industry collaborations:* Foster partnerships with industry organisations to create internship opportunities where students can gain practical experience working with GenAI technologies in professional settings. These collaborations can also inform curriculum development to ensure alignment with industry needs.
- *Ethical and social implications:* Incorporate discussions on the ethical, social, and legal implications of GenAI into relevant courses and workshops. This includes addressing issues such as bias, privacy concerns, and algorithmic transparency.
- *Research opportunities:* Encourage student involvement in research projects that explore the applications, impact, and ethical considerations of GenAI. These projects can provide valuable insights into emerging trends and contribute to the advancement of knowledge in this field.
- *Cross-disciplinary collaboration:* Promote collaboration across different academic disciplines to explore interdisciplinary applications of GenAI. This approach encourages creativity, innovation, and the development of holistic solutions to complex problems.

By implementing these recommendations, higher education institutions can effectively integrate GenAI into their educational programmes and support students in acquiring the necessary skills and competencies to thrive in a rapidly evolving job market. Finally, having explored the integration of GenAI in enhancing student employability, the subsequent section will focus on 'The Guiding Principles at UK Higher Education.' In this section, I will present a framework for UK higher education institutions to address the ethical considerations associated with the use of GenAI.

The guiding principles at UK higher education

This section underlines the significance of proposing guiding principles in response to the examination of both the positive and negative implications of GenAI integration in higher education within the UK context. The article advocates for the ethical and constructive utilisation of GenAI in academic settings. Therefore, the ensuing recommendations aim to outline principles for higher education institutions to adopt within their operational frameworks. It is crucial to emphasise that these principles serve as advisory guidelines rather than rigid mandates, recognising the variability in pedagogical approaches across institutions. Consequently, institutions are encouraged to experiment with different facets of these principles to ascertain their applicability within their diverse student populations. Ultimately, the proposed guiding principles aim to provide support to higher education institutions in implementing immediate actions, devising long-term policies, and establishing supportive mechanisms conducive to the ethical and effective integration of GenAI into teaching and learning practices.

The integration of Gen AI within educational contexts holds significant promise for advancing learning outcomes, refining pedagogical approaches, and enhancing administrative efficacy. This rationale

underpins the proposed guiding principles for Gen AI integration in higher education institutions within the UK, drawing from a comprehensive analysis of scholarly research. Firstly, Gen AI offers avenues for personalised and adaptive learning experiences tailored to individual student requirements and preferences. Kabudi et al. (2021) illustrate how adaptive learning platforms driven by Gen AI algorithms dynamically tailor content and pacing based on students' performance and learning modalities, thereby fostering heightened engagement and improved learning outcomes. Similarly, Salinas-Navarro et al. (2024) observe that personalised feedback generated by Gen AI systems positively influences student motivation and self-regulated learning behaviours. Moreover, Gen AI has the potential to enrich educators' instructional methodologies and streamline administrative workflows, optimising both teaching practices and administrative efficiency. Kumar et al. (2023) emphasise the role of Gen AI-powered chatbots and virtual assistants in automating routine administrative tasks, freeing educators to allocate more time to personalised instruction and student support. Additionally, Zhai et al. (2021) highlight how Gen AI facilitates intelligent tutoring systems, offering real-time feedback and guidance to students and augmenting teachers' efforts in addressing individual learning gaps.

Furthermore, integrating Gen AI aligns with broader societal and technological trends toward digitalisation and automation, as noted by Watermeyer et al. (2023). Leveraging Gen AI technologies in education enhances institutional competitiveness and adaptability and equips students with crucial 21st-century competencies such as digital literacy and critical thinking. However, it is essential to acknowledge potential ethical and equity considerations associated with Gen AI integration, including issues of data privacy, algorithmic bias, and accessibility Kizilcec (2023). Thus, the proposed guiding principles for Gen AI integration in higher education encompass ethical considerations and guidelines to ensure responsible and equitable implementation. Therefore, the multifaceted rationale supporting the proposed guiding principles of Gen AI integration in higher education underlines personalised learning, instructional enhancement, alignment with societal trends, and ethical deliberation. These rationales are substantiated by empirical evidence from various studies, emphasising Gen AI's transformative potential in educational contexts while emphasising the importance of addressing ethical and equity concerns to maximise its benefits and mitigate potential risks. The proposed guiding principle for utilising Gen AI delineates into two primary facets: a guiding principle tailored for students, which incorporates institutional dynamics, and a corresponding guiding principle designed for staff, emphasising institutional imperatives. The student-oriented guiding principle underscores the integration of Gen AI within the institutional framework to enhance student learning experiences and outcomes. Conversely, the staff-centric guiding principle delineates institutional responsibilities in leveraging Gen AI tools to optimise teaching methodologies and administrative functions. These dual directives aim to foster a cohesive approach to Gen AI integration, fostering collaborative engagement between students, staff, and institutional infrastructure to cultivate a technologically adept learning environment.

Preamble

In framing the guiding principles for the ethical integration of GenAI within the realm of higher education across the UK, it is essential to acknowledge the intricate interplay between technological advancement, pedagogical practice, and ethical considerations. The preamble herein sets the stage for the forthcoming principles, recognising the nuanced landscape in which GenAI operates and its potential ramifications on academic integrity and student development. Grounded in the ethos of scholarly excellence and ethical stewardship, these guiding principles aim to provide a robust framework to navigate the ethical complexities and maximise the educational benefits of GenAI integration. By fostering a culture of transparency, accountability, and inclusivity, UK higher education institutions can effectively harness the transformative power of GenAI while safeguarding against potential risks and pitfalls. Through proactive collaboration, critical reflection, and ongoing refinement, these principles endeavour to cultivate a learning environment where GenAI serves as a catalyst for innovation, equity, and student success.

Principle 1: Students

The ensuing principles are dedicated to elucidating students' engagement with GenAI within higher education institutions:

A. Higher education institutions should provide comprehensive training to students and graduates concerning the utilisation of GenAI and its implications for their educational pursuits, employability prospects, and societal impact.

Rationale

In recent years, the pervasive influence of GenAI has reverberated across higher education institutions, societal structures, and employment landscapes, yielding both advantageous and detrimental outcomes. With its imminent prominence in society and the workforce, it becomes imperative for students to acquaint themselves with GenAI and undergo training to comprehend its relevance to their academic qualifications, coursework, and professional trajectories.

Integrated

- Higher education institutions ought to incorporate GenAI usage guidelines and updates into all academic materials and module curricula. These materials should elucidate the influence of GenAI on students' career trajectories and prepare them for potential shifts in the employment landscape.
- Facilitating open dialogues between students and institutional stakeholders concerning GenAI usage policies and students' rights is essential. These discussions should contextualise the widespread adoption of GenAI in society and the workplace, providing concrete examples and fostering transparent communication channels.
- Institutions should actively engage students in critiquing and utilising GenAI as a fundamental component of their educational journey.
- Empowering students to develop their critical thinking skills, reasoning abilities, and decision-making capacities regarding GenAI usage is paramount for their preparation for future careers.
- Emphasising the significance of academic integrity to students and integrating discussions on its importance within their educational experience can effectively address issues of academic dishonesty. This proactive approach upholds ethical standards and fosters a culture of integrity within higher education institutions.

B. Higher education institutions must ensure students grasp the pivotal role of Generative Artificial Intelligence (GenAI) in shaping their academic achievements, professional trajectories, and broader societal contributions.

Rationale

- Institutions of higher learning should formulate explicit policies and guidelines delineating the ethical and proficient utilisation of GenAI in students' academic endeavours and coursework while upholding academic integrity. For instance, protocols addressing issues such as plagiarism, proper referencing of GenAI-generated content, and permissible use of GenAI in assessments ought to be clearly articulated in the institution's assessment handbook.

Integration

- Academic faculty and professionals should devise precise directives to elucidate assessment expectations and delineate the appropriate utilisation of GenAI in composing academic submissions. These guidelines should give students a comprehensive understanding of integrating GenAI tools responsibly and effectively within their coursework.

C. Higher education institutions should provide students with comprehensive training on the legitimate use of Generative Artificial Intelligence (GenAI) in their academic pursuits.

Rationale

- Excessive reliance on GenAI has the potential to stifle students' cognitive development and hinder the cultivation of their creative abilities. Therefore, institutions of higher learning must impart students with the knowledge and skills necessary to wield GenAI responsibly, fostering a sense of ownership over their learning processes. Additionally, institutions should facilitate the development of students' GenAI literacy and proficiency in utilising other pertinent technologies to enhance their educational experiences.
- Leveraging GenAI-enabled applications and search engines can aid higher education institutions in augmenting students' comprehension of the appropriate and ethical utilisation of GenAI tools.

Integration

- Higher education institutions should engage students in discussions that highlight the nuances and complexities inherent in GenAI usage, fostering awareness of the associated benefits and challenges. This approach promotes informed decision-making and enables institutions to provide adequate support to faculty members in integrating GenAI into their instructional practices.
- Recognising the differing levels of GenAI literacy between students and academic staff, institutions must adopt flexible approaches that cater to the diverse needs of both cohorts.
- Regular assessments should be conducted to gauge the impact of GenAI usage on student development, ensuring that it contributes to their academic growth in an effective and ethical manner.

D. Higher education institutions should actively explore and discuss students' encounters with GenAI, emphasising both its capabilities and limitations in bolstering their learning endeavours.

Rationale

- It is imperative for higher education institutions to provide students with comprehensive education on how to harness the strengths of GenAI while remaining cognizant of its inherent limitations. Equipping students with a thorough understanding of both aspects empowers them to leverage GenAI effectively and discerningly, thereby facilitating deeper engagement with the technology.
- By fostering an awareness of GenAI's strengths and limitations, students can optimise its utility in their academic pursuits and develop a nuanced comprehension of its applications and implications.

Integration

- Higher education institutions should formulate guidelines for assessment design, encouraging academic staff to cultivate innovative approaches that enhance student engagement and learning outcomes. This may entail providing explicit instructions and illustrative examples delineating acceptable and unacceptable uses of GenAI in assessments.
- Marking criteria and assessment rubrics should include specific references to the appropriate utilisation of GenAI, originality standards, and the rigorous sourcing of information.
- Institutions should incorporate provisions in course outlines and instructions highlighting the potential recourse to verbal examinations in cases of suspected assessment misconduct, underscoring the importance of academic integrity in GenAI-enabled learning environments.
- Higher education institutions may consider:
- Encourage academics to invite students to utilise GenAI to generate responses to assessment inquiries, with the requirement for students to append the GenAI-produced response to the appendix of their assignment. This practice serves the dual purpose of showcasing students' enhancements upon the initial GenAI output while also verifying their comprehension and application of the subject matter. Additionally, student reflection on the generated response aids in verifying the originality and authenticity of the content.
- Academic staff may formulate assessment questions that necessitate students to exhibit critical reflective skills, exercise personal judgment and evaluation, engage in subject-specific interpretation, and compile summary reports utilising GenAI.
- Diversify assessment modalities within modules, incorporating written assignments, brief presentations followed by questioning sessions, and conceptual mapping exercises.

- Integrate reflective exercises into the assessment component, prompting students to reflect on their research methodologies and processes, potentially through formats like reflective journals or blog posts.
- Foster student involvement in co-creating assignments by affording them the opportunity to select topics, case studies, and datasets of personal interest.

Furthermore

1. Provide explicit guidance and examples to students regarding the appropriate utilisation of GenAI in specific coursework or assignments.
2. Ensure that marking guides and criteria for written assignments explicitly reference GenAI usage, originality standards, and rigorous sourcing practices.
3. Facilitate workshops for students to practice summarising reports, paraphrasing, and referencing academic sources.
4. Consider implementing a requirement for students to provide source links or upload PDFs of utilised sources, promoting transparency and academic integrity.
5. Encourage the inclusion of visual representations, such as theoretical maps, in assignments to demonstrate students' comprehension and application of concepts.

In addition, higher education institutions should task staff with developing assignment tasks that challenge students to apply their knowledge to real-world problems, navigate complex ethical dilemmas, and engage with hypothetical scenarios, thereby fostering practical skills and critical thinking abilities.

E. Higher education institutions should contemplate evaluating students on their comprehension of GenAI and its societal impact.

Rationale

- GenAI stands to reshape the landscape of learning, necessitating a reassessment of what students must understand and how their knowledge and skills are assessed. Thus, institutions should reassess existing curricula to accommodate the transformative influence of GenAI on learning paradigms and the requisite competencies.
- Implementing 24/7 GenAI support services can offer students unprecedented learning opportunities, transcending conventional boundaries and fostering continuous knowledge acquisition.
- Institutions ought to devise strategic plans and allocate research resources to comprehensively understand GenAI's strengths and limitations, enabling informed decision-making in its integration within educational frameworks.

Integration

- Adoption of mixed-method assignments that immerse students in authentic, real-world scenarios can provide a holistic assessment of their GenAI-related competencies.
- Incorporating GenAI into assessment strategies through authentic assignments can offer students practical experience in applying their knowledge and skills in real-life contexts, thus enhancing their adaptability and problem-solving abilities.

Principle 2: Staff

A. Higher education institutions should train staff to adeptly navigate and champion the ethical and effective utilisation of GenAI across teaching, learning, assessment, and research domains.

Rationale

- With the profound societal impact anticipated from GenAI, it is imperative that higher education staffs are equipped with the necessary skills to navigate this technological revolution. Continuous training and skill development are essential for staff to remain responsive to the evolving needs of the workforce and students' learning requirements.

- Staff training should emphasise identifying and mitigating ethical concerns, particularly about plagiarism and academic integrity, to uphold the standards of scholarly conduct within higher education institutions.
- Prioritising the integration of GenAI while upholding academic excellence and integrity necessitates tailored training programs and strategic approaches. Institutions must revise their policies and frameworks to accommodate the responsible and effective use of GenAI within educational contexts.

B. Higher education institutions ought to formulate explicit directives to aid staff and researchers in utilising GenAI judiciously.

Rationale

- The content produced by GenAI has the potential to infringe upon copyright laws and may yield inaccurate or inadequate information. Therefore, it is imperative for higher education institutions to furnish clear guidelines to assist staff and researchers in avoiding copyright infringement and ensuring the accuracy and reliability of generated content.
- Continuous review and refinement of academic misconduct policies, research protocols, and GenAI guidelines are necessary to prevent the inappropriate use of this technology within academic settings. Regular updates ensure alignment with evolving ethical standards and legal requirements, thereby fostering responsible utilisation of GenAI.

C. Higher education institutions should establish resources aimed at empowering staff and researchers to engage effectively with GenAI and integrate it meaningfully into their practices.

Rationale

- Providing resources to staff and researchers enables them to harness the potential benefits of GenAI in teaching, learning, and research. This initiative fosters innovation and allows individuals to develop essential GenAI competencies that are pertinent to their professional advancement.
- Given the ethical implications and potential risks associated with GenAI, it is imperative to furnish resources that offer ethical guidance and promote responsible usage. Equipping staff and researchers with such knowledge ensures they can navigate the complexities of GenAI implementation with prudence and integrity.
- Training staff and advocating for the ethical utilisation of GenAI within higher education institutions serve as preventive measures against misuse and unintended consequences. By fostering a culture of responsible innovation, these efforts contribute to upholding ethical standards and promoting the beneficial integration of GenAI in academic endeavours.

D. Higher education institutions should establish comprehensive policies and procedures to guarantee equitable access to GenAI resources.

Rationale

- Institutions must allocate resources toward training initiatives and provide the necessary infrastructure to ensure that all faculty and students, regardless of their socio-economic background or personal circumstances, have equal access to GenAI technologies within their academic environments.
- Equitable access entails ensuring that GenAI tools and resources, whether acquired through subscription or alternative means, are readily available to all academic community members. This approach fosters fairness and inclusivity, thereby minimising the risk of educational disparities among students facing socio-economic disadvantages.

E. Higher education institutions should foster collaborative efforts to exchange knowledge and adopt best practices in response to the evolving impact of GenAI on teaching, learning, and society.

Rationale

- Despite variations in institutional policies, guidelines, and support structures related to GenAI, collaborative initiatives are essential for establishing effective methodologies aimed at optimising outcomes for faculty, students, and researchers across diverse academic settings.
- By pooling resources and expertise, institutions can cultivate a unified approach centred on maximising the beneficial impact of GenAI while addressing ethical considerations. This collaborative ethos promotes collective learning and continuous improvement in GenAI integration within higher education.

In conclusion, the guiding principles outlined herein offer a comprehensive framework for higher education institutions to navigate the integration of GenAI in academia responsibly and ethically. By emphasising transparency, accountability, fairness, privacy, integrity, and continuous evaluation, these principles aim to mitigate ethical risks and challenges while harnessing the potential of GenAI to enhance teaching, learning, and employability. Through collaborative efforts and the development of clear policies and processes, institutions can ensure equal access to GenAI resources and foster a supportive environment conducive to innovation and responsible use. The subsequent section of this article will focus on the overall conclusion, drawing together the key insights and implications of the discourse on GenAI integration in higher education. Additionally, it will highlight avenues for future research in this dynamic field, exploring emerging trends, potential challenges, and opportunities for further exploration. As GenAI continues to evolve and shape the landscape of academia, ongoing scholarship and reflection will be essential to inform practice and policy and ensure that its integration remains aligned with the values and goals of higher education.

Part II

Conclusion

In conclusion, this article has highlighted the significance of integrating GenAI into higher education to enhance teaching, learning, and student employability. While acknowledging the transformative potential of GenAI, it has also elucidated the inherent risks and complexities associated with its utilisation in academia. Various approaches to incorporating GenAI have been proposed, reflecting the diversity of perspectives and practices within higher education institutions. The research presented indicates a mixed reception to GenAI among staff and students, with some embracing its potential benefits while others express scepticism and concerns. The novelty of GenAI has generated numerous questions, pointing to the need for further investigation and inquiry in several key areas. Future research should prioritise understanding attitudes toward GenAI, training strategies for its effective use, policy development, and its impact on institutional culture and ethics.

Furthermore, research should delve into the ethical considerations surrounding data protection, bias, and the impact of GenAI on student engagement. Exploring the limitations and challenges of GenAI in teaching and learning delivery and its role in assessment design and student employability will provide valuable insights for informed decision-making and practice. Moreover, leveraging GenAI in research analysis and impact case studies presents an avenue for exploring its broader implications and potential contributions to advancing knowledge and addressing societal challenges. By addressing these areas of inquiry, higher education institutions can harness the transformative potential of GenAI while mitigating risks and ensuring responsible and ethical use in academia.

Therefore, based on the comprehensive analysis presented in this article, it is evident that GenAI offers significant value and insight to modern education and the student experience. Through its ability to generate content, facilitate personalised learning experiences, and support students in developing essential skills, GenAI has the potential to revolutionise teaching and learning practices in higher education. The integration of GenAI into educational settings has been shown to enhance students' engagement, critical thinking, and problem-solving abilities. Moreover, GenAI enables students to access vast amounts of information efficiently, thereby enriching their learning experiences and expanding their knowledge base. Additionally, the use of GenAI in assessment design and feedback

mechanisms allows for more personalised and constructive evaluation, leading to improved learning outcomes.

Furthermore, GenAI contributes to the development of students' employability skills by providing opportunities for hands-on experience with advanced technologies and data analysis techniques. By incorporating GenAI into curricula, higher education institutions can better prepare students for the evolving demands of the workforce and equip them with the necessary skills to thrive in a technology-driven society. However, it is crucial to recognise the ethical considerations and potential challenges associated with the use of GenAI in education. Issues such as data privacy, bias, and algorithmic transparency must be addressed to ensure responsible and equitable implementation of GenAI technologies. In conclusion, GenAI holds immense promise in transforming education and enhancing the student experience. By embracing its potential and addressing its ethical implications, higher education institutions can harness the power of GenAI to foster innovation, promote lifelong learning, and prepare students for success in the digital age.

Educational policies

Lastly, the proposed guiding principles for Gen AI in educational settings that are poised to profoundly impact educational policies at various levels, ranging from institutional guidelines to national regulatory frameworks. These guiding principles serve as a blueprint for navigating the complexities of Gen AI integration and shaping policies that promote equitable access, ethical use, and optimal educational outcomes. At the institutional level, adopting guiding principles for Gen AI integration will necessitate the development of comprehensive policies that govern its implementation within educational settings. Institutions will need to establish protocols for selecting, deploying, and evaluating Gen AI tools to ensure alignment with pedagogical objectives, student needs, and institutional values. Additionally, policies must address data privacy, security, and transparency issues to safeguard sensitive information and maintain trust within the educational community. Furthermore, the proposed guiding principles will influence curriculum development and instructional practices, prompting educators to integrate Gen AI technologies into teaching and learning experiences. Educational policies will need to support professional development initiatives that equip educators with the necessary skills and competencies to leverage Gen AI tools in their classrooms effectively. Moreover, policies should encourage collaboration between educators, researchers, and industry partners to drive innovation and best practices in Gen AI-enhanced education.

At the national level, the adoption of guiding principles for Gen AI integration will inform the development of regulatory frameworks that govern its use in educational contexts. Policymakers must strike a balance between fostering innovation and ensuring accountability by establishing standards for Gen AI technology development, deployment, and evaluation. Additionally, policies should address equity considerations to mitigate disparities in access to Gen AI-enhanced educational opportunities and resources. Moreover, educational policies must address ethical considerations inherent in Gen AI integration, such as algorithmic bias, privacy infringements, and data misuse. Policymakers must collaborate with stakeholders to develop guidelines and regulations that promote responsible and ethical use of Gen AI technologies while safeguarding the rights and well-being of students and educators. Overall, the proposed guiding principles for Gen AI integration will serve as a catalyst for reimagining educational policies to meet the demands of the digital age. By providing a framework for ethical, equitable, and effective Gen AI integration, these guiding principles will shape educational policies that harness the transformative potential of Gen AI while upholding the principles of accessibility, transparency, and student-centeredness in education.

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About the author

Emmanuel K. Nartey is a prominent researcher and lecturer with a focus on international law, human rights, and ethics. Holding a PhD in international law and human rights law, he has authored several influential publications in these areas, including 'Accountability and Corporate Human Rights Violations in Tort and International Law' 'Remedy for Human Rights Abuses under Tort and International Law' and 'Ethics and Integrity in the Rule of Law and International Law.' Additionally, Dr. Nartey has served in various leadership roles, including as Head of the Research Integrity and Research Ethics Committee at the International Women Initiatives and the British Army. His current research explores the intersection of international law, human rights, and neurolaw, with a particular emphasis on the implications of generative AI in teaching and learning at higher education institutions. He is also a member of Bolton University Centre for Generative AI in Education. This paper contributes to his broader research agenda by examining the ethical considerations surrounding the use of AI in education and its impact on academic integrity.

ORCID

Emmanuel K. Nartey http://orcid.org/0000-0002-4653-3641

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