



Navigating ethical considerations and implications of AI chatbots in higher education: A systematic review

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ABSTRACT

This systematic review explores the ethical challenges associated with the use of AI-based chatbots in higher education, focusing on their implications for students, educators, institutions, and administrative stakeholders. Following PRISMA guidelines, peer-reviewed literature published between 2014 and 2024 was systematically identified across eight major academic databases, yielding a total of 109 eligible studies. A thematic analysis of the included literature indicates that concerns related to academic integrity are most frequently discussed, alongside recurring issues involving data privacy and security, algorithmic bias, overreliance on automated systems, and the risk of inaccurate or misleading outputs. The findings further demonstrate considerable variation in institutional responses to AI chatbot adoption ranging from the development of formal governance structures and ethical guidelines to more cautious, selective implementation strategies, and, in some cases, restrictive or prohibitive policies. While many studies report positive outcomes associated with AI chatbots particularly in relation to student engagement, personalised learning support, and administrative efficiency, their expanding use raises complex ethical, regulatory, and governance challenges. Collectively, these findings highlight the need for clearer institutional policies, responsible implementation practices, and ongoing evaluation mechanisms. The review also identifies persistent gaps in empirical research and outlines priorities for future studies aimed at supporting the ethical, inclusive, and sustainable integration of AI chatbots in higher education.

1. Introduction

1.1. AI in education

Artificial Intelligence (AI) is increasingly being integrated into education, offering personalised learning experiences (Chen et al., 2020), intelligent tutoring systems, and automated administrative tasks, which has sparked significant interest in recent years (Zawacki-Richter, Marín et al., 2019; Zhai et al., 2021).

In higher education (HE), AI tools are reported to improve student comprehension, creativity, and critical thinking capabilities (Faisal, 2024; Grájeda et al., 2024). Studies report increased material understanding and more interactive learning experiences with AI-based platforms (Henny et al., 2024; Ngonso et al., 2025). However, challenges

include potential over-reliance on technology and ethical concerns (Henny et al., 2024; Ngonso et al., 2025). Students are generally willing to further their AI education despite their limited current knowledge (Almaraz-López et al., 2023). AI also supports students with neuro-developmental disorders with assisted tools that can improve learning outcomes (Barua et al., 2022). Although AI in education has limits, it offers the potential to transform education in ways that make it more human (Cope et al., 2021).

Collectively, the literature identifies several recurring ethical challenges associated with the use of AI chatbots in higher education, most notably threats to academic integrity, risks to data privacy and security, algorithmic bias and discrimination, the dissemination of inaccurate or misleading information, overreliance on automated systems, and concerns related to transparency, accountability, and equitable access.

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These challenges recur across disciplinary, institutional, and geographical contexts, underscoring the need for a consolidated and systematic examination of how they are addressed and managed in practice.

1.2. AI ethical dimensions in education

While AI presents numerous opportunities to enhance teaching and learning, it also raises ethical concerns regarding privacy, bias, and transparency (APOLZAN & Cimpineanu, 2024; Memarian & Doleck, 2023). Zeer, Siaj et al. (2023) raised key ethical concerns, including academic integrity, misleading and low-quality AI outputs, educational automation, data privacy, and negative impacts on human rights and educational equity. The following section examines the ethical concerns that affect the education systems of AI chatbots.

1.2.1. Privacy

Privacy rights are essential for safeguarding human dignity and autonomy. AI systems, reliant on extensive data collection, must prioritize secure processing and ethical standards throughout their data lifecycle, from acquisition to deletion. Legal frameworks and ethical guidelines must protect personal information, ensuring transparency and explicit consent for its use (UNESCO, 2022). Digital education transforms schools, teachers, and students into major producers of personal data, but third-party entities largely control this information, creating privacy risks due to the lack of autonomy for those generating the data (Huang, 2023). Advances in AI-driven processing and the growing use of big data in education have enhanced systems' ability to gather detailed insights about students, eroding clear distinctions around personal privacy boundaries (Ahmad, Iqbal et al., 2023). Sensitive data such as online activity logs, location records, and download histories generated during digital learning can be intelligently analysed to infer individual learning patterns, behavioural tendencies, and even personality traits, which are critical components of safeguarding student information (Ilci, 2020). Students' data is collected and analysed without clear consent processes or transparency around data access and storage (Alawneh et al., 2024).

1.2.2. Algorithmic bias

Algorithmic bias in educational AI systems is a growing concern, potentially impacting various student groups. Sources of bias include theoretical, methodological, and data-related factors (Ferrero & Barujel, 2019). Race/ethnicity, gender, nationality, socioeconomic status, and disability are among the categories affected (Baker & Hawn, 2021). Studies have shown that AI systems can perpetuate existing biases in areas such as admissions, grading, and resource allocation (Baker & Hawn, 2022; Radjabov & Ravshanov, 2024). A study found that models incorporating commonly used features to predict college-student success produce racially biased results (Gándara, Anahideh et al., 2024). Therefore, another study emphasises that fair use and protection of vulnerable individuals are crucial when deploying AI in HE (Slimi & Carballido, 2023). Moving forward, interdisciplinary collaboration and continuous vigilance are crucial to ensure AI contributes positively to educational settings while mitigating potential biases and promoting equity (Baker & Hawn, 2022; Barnes & Hutson, 2024).

1.2.3. Over-reliance on artificial intelligence

Reliance on educational AI chatbots becomes a compelling concern in HE. Students use chatbots for various tasks, including debugging code, enhancing conceptual understanding, and solving problems (Groothuijsen, van den Beemt et al., 2024). While chatbots offer benefits like personalised learning and increased engagement (Labadze et al., 2023; Segovia-García, 2024), they also raise concerns about declining code quality and reduced student collaboration (Groothuijsen, van den Beemt et al., 2024). It was also reported that adopting AI Chatbots in HE reduces human interaction and limits accessibility (Dempere, Modugu et al., 2023). Another study claimed that AI Chatbots can lead to feelings of laziness and dependency (Fitri, 2024). Despite these concerns,

students generally show trust in using AI chatbots for educational purposes (Wicaksono et al., 2024), though their impact on traditional assessment methods remains a subject of debate (Farazouli et al., 2024).

1.2.4. Access to misleading information

The rapid expansion of AI chatbots in HE has raised critical concerns about their role in disseminating misleading information, such as factual inaccuracies and hallucinations, which threaten academic rigour and ethical learning practices (Labadze et al., 2023; Tlili et al., 2023; Janéafik & Dusek, 2024). ChatGPT and other conversational AI agents can produce hallucinations and inaccurate results, requiring a critical approach by students and professors in HE (Salamin et al., 2023; Janéafik & Dusek, 2024). Another study identifies various types of errors and inaccuracies in large language models (LLMs) like ChatGPT, Bard, and Bing, including factual inaccuracies, misinformation, fabricated data, and deviations from the original topic (Kumar et al., 2023). Studies highlight the need for critical evaluation of AI-generated content and its integration into educational practices (McGrath et al., 2025; Pargman et al., 2024).

1.2.5. Establishment of academic integrity

The rapid adoption of generative AI tools like ChatGPT in HE has raised significant concerns about academic integrity (Gruenhagen, Sinclair, et al., 2024; Evangelista, 2025). Studies show that many students use AI chatbots for assessments without perceiving it as cheating (Gruenhagen, Sinclair, et al., 2024). Another study raised concerns about potential cheating by students via the use of ChatGPT (Gamage et al., 2023). Another study reported that students use ChatGPT to generate essays and other assignments that are not their own work, undermining the purpose of HE (Cotton, Cotton and Shipway 2024). AI language models like ChatGPT pose a major academic integrity concern for HE institutions due to their ability to generate coherent text that can avoid detection (Perkins, 2023). It can also lead to plagiarism, impede critical thinking, and erode originality (Khatri & Karki, 2023). Susnjak and McIntosh (2024) emphasized on ChatGPT's ability to generate realistic text raises concerns about its potential use for academic misconduct in online exams. To address these challenges, institutions need to develop clear policies on ethical AI use, redesign assessments to promote critical thinking, and implement advanced detection tools (Kasani et al., 2024; Evangelista, 2025). Some researchers propose focusing on authentic assessment methods to improve academic integrity while enhancing employability skills (Lehane & Wright, 2024). Ultimately, the key to maintaining academic integrity lies in adapting teaching practices, updating policies, and educating students on responsible AI use in academic contexts (Perkins, 2023, Sullivan et al., 2023).

The integration of AI in education requires careful consideration of these ethical issues and proper training for educators and students (Nguyen et al., 2023). Students' perceptions of AI tools vary across disciplines, with those in technology-focused fields showing greater privacy concerns (Irfan et al., 2023). Ethical considerations extend to the displacement of human educators and the need for transparency in AI-driven processes (Slimi & Carballido, 2023; Weber, 2020).

While AI's transformative potential in education from personalised learning to administrative efficiency is well-documented (Zawacki-Richter, Marín et al., 2019; Chen et al., 2020), its ethical complexities, including risks to privacy, algorithmic bias, and threats to academic integrity (Baker & Hawn, 2022; UNESCO, 2022, Gruenhagen, Sinclair, et al., 2024), underscore a pressing need for deeper inquiry. The tension between AI's benefits, such as enhanced cognitive development and accessibility (Barua et al., 2022; Harimurti et al., 2024), and its pitfalls, including misinformation, over-reliance, and equity challenges (Ferrero & Barujel, 2019, Labadze et al., 2023; Tlili et al., 2023), reveals critical gaps in understanding how institutions and stakeholders navigate these dualities. This dichotomy raises urgent questions about how ethical challenges are managed, how policies are evolving, and what

long-term impacts AI chatbots may have on educational ecosystems.

We find several examples of reviews on generative AI conducted in the recent past with the rapid dissemination of deep learning, chatbot technology and large language models. Ethical implications of technology embedded in technology has always been a pressing issue (Marín & Tur, 2024) and this has been compounded with the disruptive technology of generative AI. We note several (scoping or systematic) reviews (Olohunfunmi & Khairuddin, 2024; Batista et al., 2024; Yan et al., 2024) addressing the overall impact, challenges and opportunities as indicated by the deployment of generative AI or large language models, however to the best of our knowledge a review focusing primarily on the ethical concerns of chatbots, institutional responses and the implications of using chatbots on stakeholders in HE is missing.

1.3. Justification for the review and research gap

Despite the rapid spread of AI chatbots in higher education, ethical discussion about their use remains scattered and underdeveloped. Most existing reviews of generative AI and large language models focus on teaching effectiveness, adoption factors, technical performance, or broad opportunities and risks. These studies offer useful high-level perspectives, but they often treat ethics as a secondary concern or fold it into wider narratives of innovation and disruption. Consequently, there is still no coherent synthesis that places ethical challenges at the center of analysis, especially one that considers AI chatbots as distinct socio-technical systems situated within higher education settings.

Moreover, current reviews rarely integrate three critical dimensions simultaneously: (1) the specific ethical challenges posed by AI chatbots (e.g., academic integrity, privacy, bias, transparency, overreliance, and misinformation), (2) the concrete institutional responses adopted by higher education institutions to manage these challenges (e.g., policies, governance frameworks, bans, or strategic acceptance), and (3) the differentiated implications of chatbot use across key stakeholder groups, including students, educators, and administrative staff. The absence of this triangulated perspective limits the field's ability to move from descriptive concern to actionable governance and evidence-informed policy development.

Additionally, much of the existing literature remains either conceptual or narrowly scoped, with limited systematic comparison across studies, regions, and stakeholder roles. This has resulted in an incomplete understanding of how ethical risks are operationalised, contested, and mitigated in practice, particularly in the context of rapidly evolving generative AI technologies and uneven institutional preparedness.

This systematic review directly addresses these gaps by providing a comprehensive, ethics-centred synthesis of the literature on AI chatbots in higher education. By consolidating ethical challenges, mapping institutional responses, and analysing stakeholder-specific implications, the review offers an integrated evidence base to support responsible AI governance, inform policy design, and guide future empirical research. In doing so, it responds to the urgent need for clarity and coherence in an area where technological adoption is outpacing ethical and regulatory frameworks.

Existing research on AI and generative AI in higher education has established that AI tools, including chatbots, can enhance learning efficiency, personalization, and administrative support, while simultaneously raising broad concerns related to academic integrity, data privacy, bias, and pedagogical change. Prior systematic and scoping reviews have primarily examined adoption trends, pedagogical impacts, technological affordances, or general opportunities and challenges associated with AI or large language models in education. However, what remains insufficiently understood is how ethical issues specifically manifest in the use of AI chatbots as interactive, decision-influencing systems within higher education, how institutions are responding to these ethical challenges in practice, and how these dynamics differentially affect key stakeholder groups such as students, educators, and administrative staff. In particular, existing reviews rarely consolidate

ethical challenges, institutional governance responses, and stakeholder implications within a single analytical framework, nor do they systematically distinguish chatbot-specific concerns from broader AI debates. This review uniquely contributes by providing an ethics-centred, chatbot-focused synthesis of the literature that integrates these three dimensions. By systematically mapping ethical challenges, institutional responses, and stakeholder impacts, this review moves beyond descriptive accounts of AI adoption to offer a structured evidence base that supports responsible governance, policy development, and future empirical research in higher education.

Existing systematic and scoping reviews on artificial intelligence in higher education have established a broad understanding of AI adoption trends, pedagogical applications, technological capabilities, and associated opportunities and challenges. These reviews have been instrumental in demonstrating the potential of AI and large language models to enhance learning, assessment, and administrative efficiency. However, ethical considerations are typically addressed as secondary or dispersed themes within wider discussions of innovation and disruption, rather than as a central analytical focus. What remains insufficiently explored is how ethical challenges specifically emerge through the use of AI chatbots as interactive, decision-influencing systems in higher education, how institutions are responding to these challenges in practice, and how such responses differentially affect key stakeholder groups, including students, educators, and administrative staff.

This review uniquely contributes beyond existing AI and AI-in-education reviews by adopting an ethics-centred, chatbot-focused perspective that integrates three dimensions rarely examined together: ethical challenges, institutional responses, and stakeholder-level implications. By systematically synthesising evidence across these dimensions, the review moves beyond descriptive accounts of AI adoption to provide a consolidated and actionable evidence base that supports responsible governance, policy development, and future empirical research on AI chatbots in higher education. Therefore, the following research questions were formed to address these gaps.

RQ1: What are the ethical challenges associated with the use of AI chatbots in higher education institutions?

RQ2: How are HE institutions responding to and addressing the ethical challenges posed by AI chatbots?

RQ3: What are the implications of AI chatbot usage on students in higher education?

RQ4: What are the implications of AI chatbot usage on educators in higher education?

RQ5: What are the implications of AI chatbot usage on administrative staff in higher education?

RQ6: What future research directions have been proposed regarding the impact of AI chatbots in higher education?

2. Background and related research

2.1. AI chatbots

Chatbots, software programs using artificial intelligence to converse with humans, have evolved significantly since their inception (Albayrak et al., 2018). Modern chatbots utilise natural language processing and machine learning to understand and respond to user queries across various sectors, including customer service, healthcare, education, and e-commerce (Du & Daniel, 2024). They offer benefits such as 24/7 availability, personalised interactions, and operational efficiency (Yetişensoy and Karaduman, 2024).

Recent research highlights the growing development and application of AI-powered chatbots across various domains. These conversational agents are being utilised in health promotion (Aggarwal et al., 2023), mental health interventions (Boucher et al., 2021), language learning (Zhai & Wibowo, 2022), and tourism (Benaddi et al., 2024). The education sector is exploring chatbots as virtual teaching assistants and

personalised learning tools (Labadze et al., 2023). Chatbots are designed to engage in natural language conversations, leveraging AI techniques such as natural language processing and machine learning (Lin et al., 2023). Key focus areas in chatbot development include improving their ability to draw inferences from multiple data sources and provide customised solutions (Pantano & Pizzi, 2020). Researchers have proposed frameworks for designing effective chatbots, emphasising the importance of building relational and persuasive capacities (Zhang et al., 2020).

2.2. Developments in AI chatbots in HE

The development of AI chatbots in higher education can be understood as a progression through distinct phases, evolving from early rule-based administrative systems, through adaptive tutoring and learning support tools, to contemporary generative AI chatbots that raise fundamentally new ethical, pedagogical, and governance challenges. The evolution of AI chatbots can be clearly distinguished between a pre-LLM era and a post-LLM era, reflecting a fundamental shift in underlying architectures, capabilities, and implications. Pre-LLM chatbots, spanning from the 1960s to the late 2010s, were primarily rule-based or retrieval-driven systems, exemplified by early conversational agents such as ELIZA (Weizenbaum, 1966) and later AIML-based chatbots. These systems relied on predefined scripts, decision trees, and pattern matching, enabling limited interaction within narrowly defined domains, including administrative support and basic tutoring in educational contexts (Okonkwo & Ade-Ibijola, 2021; Winkler & Söllner, 2018). While effective for structured tasks such as FAQs or course information delivery, pre-LLM chatbots lacked contextual understanding, adaptability, and generative reasoning, resulting in constrained user experiences and minimal ethical risk beyond data privacy and automation concerns. In contrast, the post-LLM era, emerging prominently after 2020 with models such as GPT-3, GPT-4, and ChatGPT, is characterised by transformer-based architectures trained on large-scale corpora, enabling context-aware, generative, and open-ended dialogue (Brown et al., 2020; OpenAI, 2023; Wu et al., 2023). These advances have transformed chatbots into multi-functional conversational agents capable of content generation, reasoning support, and personalised interaction across both general-purpose and educational settings (Holmes et al., 2022; Kuhail et al., 2023). However, this shift has also introduced qualitatively new ethical challenges, including academic integrity risks, hallucinated outputs, algorithmic bias, over-reliance, and reduced transparency in decision-making processes (Bender et al., 2021; Cotton et al., 2024; Selwyn, 2022b). Distinguishing between these two eras is therefore critical for understanding why contemporary AI chatbots pose fundamentally different ethical, pedagogical, and governance challenges compared to their pre-LLM predecessors.

Over time, ethical concerns in AI-driven education have shifted in tandem with technological paradigms. Early rule-based tutoring systems, such as Carbonell's *SCHOLAR* (Carbonell, 1970), were relatively transparent in their decision-making processes but nonetheless raised early concerns regarding fairness, pedagogical appropriateness, and the need for sustained human oversight. As educational AI evolved through data-driven and machine-learning approaches, ethical attention expanded to issues of student data privacy, algorithmic bias, and the growing opacity of automated decision-making, with scholars warning that complex neural systems can generate outcomes that are difficult to interpret, audit, or contest (Baker & Hawn, 2022; Zawacki-Richter et al., 2019). Recent systematic reviews identify privacy risks, bias, surveillance, and lack of transparency as central ethical challenges in AI-enabled educational environments (Bond, 2024). Most recently, the emergence of generative AI and large language models has intensified ethical scrutiny, introducing acute concerns related to academic integrity, AI-assisted plagiarism, hallucinated or misleading content, and persistent inequities in access and representation (Bender et al., 2021; Cotton et al., 2024; Selwyn, 2022b). This progression illustrates how

increasing system autonomy and generative capacity have broadened ethical considerations over time, necessitating continual reassessment of governance frameworks in higher education.

AI chatbots have transformed higher education by enhancing student engagement, administrative efficiency, and personalised learning. Early applications in the 1990s and 2000s focused on rule-based systems for answering frequently asked questions (FAQs), such as enrollment procedures or course schedules. These systems, while limited in scope, reduced administrative workloads and improved student access to basic information (Winkler & Söllner, 2018). However, their reliance on rigid scripts restricted adaptability to complex queries. The 2010s marked a shift toward adaptive tutoring systems, driven by advances in natural language processing (NLP). For instance, Jill Watson, an AI teaching assistant developed at Georgia Tech, demonstrated the potential of chatbots to support large online classes by answering student questions in real time, mimicking human instructors (Goel & Polepeddi, 2018, pp. 120–143). This era also saw the rise of intelligent tutoring systems that personalised feedback based on student performance, fostering self-paced learning (VanLehn, 2011). Such systems leveraged machine learning to analyse student data and predict learning gaps, though their effectiveness depended on high-quality training datasets (Hobert & Meyer von Wolff, 2019).

A critical milestone occurred in the mid-2010s with the integration of NLP breakthroughs, such as transformer architectures, into educational chatbots. Platforms like OpenAI's GPT-2 and later GPT-3 enabled dynamic, context-aware interactions, allowing chatbots to generate essays, solve problems, and simulate academic debates (Kuhail, Alturki et al., 2023). Universities began deploying chatbots like Deakin Genie (Australia) and StaRI (UK) to provide 24/7 student support, including mental health resources and career advice (Alexander et al., 2019). These tools improved retention rates by addressing student needs proactively (Popenici & Kerr, 2017).

The COVID-19 pandemic accelerated adoption, with institutions like Carnegie Mellon University and the University of Leeds using chatbots to streamline remote learning and virtual campus services (Kennelly & Donnelly, 2023). Post-2020, generative AI chatbots like ChatGPT sparked debates on academic integrity, prompting universities to develop AI ethics frameworks and detection tools (Cotton, Cotton and Shipway 2024). Concurrently, chatbots evolved to support multimodal interactions, combining text, voice, and visual aids to assist students with disabilities (Holmes, Porayska-Pomsta et al., 2022).

Studies indicate positive perceptions among students and educators, with chatbots seen as useful for task assistance, immediate feedback, and personalised learning (Saihi et al., 2024; Schei et al., 2024). Benefits include research support, automated grading, and enhanced student services (Dempere, Modugu et al., 2023). Factors influencing chatbot adoption include perceived trust, performance expectancy, and habit (Rahim et al., 2022). Chatbots are primarily used for teaching, customer service, and mental health support (Anjulo Lambebo & Chen, 2024). The integration of chatbots can facilitate knowledge acquisition, enhance motivation, and support self-directed learning (Bravo & Cruz-Bohorquez, 2024). Today, AI chatbots in higher education focus on ethical AI use, bias mitigation, and personalised lifelong learning. These advancements emphasize the growing role of chatbots as collaborative partners in education, though challenges around data privacy and algorithmic transparency persist (Selwyn, 2022a).

2.3. AI ethical concerns in HE and academia

In the context of AI in education, classical normative ethical theories, consequentialism, deontology, and virtue ethics offer complementary lenses for evaluating emerging moral issues associated with AI-enabled systems. Consequentialist (utilitarian) approaches assess AI-driven educational practices based on their outcomes, prioritising the maximisation of overall benefits such as enhanced learning efficiency while minimising harms, including bias, inequity, and exclusion (Angeline &

Saravanan, 2025; Wilson, 2025). In contrast, deontological ethics emphasises adherence to moral duties and principles, framing obligations such as student privacy, informed consent, and academic honesty as non-negotiable ethical requirements regardless of potential benefits (UNESCO, 2022; Wilson, 2025). Virtue ethics shifts the focus toward moral character, arguing that the design and use of AI in education should cultivate virtues such as honesty, fairness, responsibility, and critical judgment among both educators and learners (Wilson, 2025). Together, these frameworks provide a structured foundation for evaluating ethical challenges related to academic integrity, algorithmic bias, transparency, and student autonomy, supporting principled decision-making in the governance and deployment of AI technologies in higher education (Angeline & Saravanan, 2025; UNESCO, 2022).

The integration of AI in HE has sparked significant scholarly debate about its ethical implications, particularly concerning equity, transparency, and human agency. Recent systematic and scoping reviews have underscored the breadth of these challenges in the era of generative AI (Olohunfunmi & Khairuddin, 2024; Batista et al., 2024). Our review aligns with these broader analyses but provides a specific focus on the manifestation of these issues within chatbot applications.

A prominent concern is algorithmic bias, where AI systems trained on historically skewed datasets risk perpetuating inequalities. Our findings on this theme echo the broader concerns identified in the systematic review by Yan et al. (2024), but we provide a specific focus on its manifestation within chatbot applications for admissions, grading, or student support. For example, Bender, Gebru et al. (2021) highlight how large language models, such as GPT-3, may amplify societal biases, disadvantaging marginalized groups in academic settings. Similarly, studies reveal that predictive analytics tools used for student retention often disproportionately flag underrepresented students as “at-risk,” reinforcing stereotypes rather than addressing systemic barriers (Holmes, Porayska-Pomsta et al., 2022).

Data privacy emerges as another critical issue. AI-driven platforms in higher education frequently collect vast amounts of student data, from learning behaviors to biometric information, raising questions about consent and ownership. Zawacki-Richter, Marín et al. (2019) argue that institutional policies often lag behind technological advancements, leaving gaps in safeguarding sensitive information. The commercialisation of student data by third-party AI vendors further complicates privacy concerns, as highlighted in critiques of learning management systems (LMS) that monetize user analytics (Selwyn, 2022a).

The lack of transparency and explainability in AI decision-making processes also draws scrutiny. Many AI tools, particularly those using deep learning, operate as “black boxes,” making it difficult for educators and students to understand how outcomes like automated grades or career recommendations are generated (Alexander et al., 2019). This opacity undermines accountability as institutions struggle to audit or contest flawed algorithmic decisions. For instance, Cotton, Cotton and Shipway (2024) note that students subjected to AI-driven plagiarism detection systems often receive punitive outcomes without clear avenues to challenge erroneous results.

Academic integrity and authorship controversies have intensified with the rise of generative AI tools like ChatGPT. Researchers warn that the unchecked use of such technologies could erode critical thinking skills and devalue original scholarship (Cotton, Cotton and Shipway 2024). While some institutions adopt AI detection software to combat plagiarism, these tools themselves face criticism for inaccuracy and bias, particularly against non-native English speakers (Benaddi et al., 2024).

Moreover, the dehumanisation of education through AI automation is a recurring theme. Critics argue that over-reliance on chatbots for student interaction or tutoring risks reducing education to transactional exchanges, stripping away the mentorship and empathy central to learning (Selwyn, 2022a). Holmes, Porayska-Pomsta et al. (2022) caution that AI tools designed for mental health support, while scalable, cannot replace human counselors’ nuanced understanding of student well-being.

2.4. Policies and frameworks of AI in HE

In response to these ethical challenges, the governance of AI in higher education has become a critical area of focus for institutions and policymakers. This extends beyond simple usage guidelines to encompass a multi-layered approach involving institutional governance, national and international regulation, and strategic policy-making.

At the institutional level, governance refers to the formal structures, policies, and processes established to oversee the ethical development, procurement, and deployment of AI technologies. As noted by Wang, Dang et al. (2024), universities are adopting cautious approaches, developing internal policies to address ethical usage and data privacy. Resources provided often include syllabus templates, workshops, and consultations. However, a recent systematic review on AI governance in HE highlights a significant gap between the theoretical discussion of ethical principles and their practical implementation, with most institutions still in the early stages of creating comprehensive frameworks (Tzimas & Demetriadis, 2021; Zhu et al., 2025). This reality underscores the critique that institutional policies often lag behind technological advancements (Zawacki-Richter, Marín et al., 2019).

Beyond the institution, national and regional regulations provide a broader legal context. Frameworks like the European Union’s General Data Protection Regulation (GDPR) and the proposed AI Act set legal precedents for data protection, transparency, and risk management that directly impact how HEIs can use AI chatbots. These regulations mandate accountability and require institutions to conduct impact assessments before deploying high-risk AI systems.

Strategic policy-making, therefore, involves aligning institutional practices with these external regulatory demands while also fostering innovation. This requires a proactive, rather than reactive, stance. Ethical AI implementation is not merely a matter of compliance but a political and pedagogical act that reflects an institution’s core values (Selwyn, 2022a). The field remains nascent, with studies exploring various theoretical perspectives and methodologies (McGrath et al., 2025). Existing studies often discuss AI policies in general terms but lack detailed analyses of how institutions are actively creating robust governance structures that account for chatbot-specific concerns. Furthermore, there is an ongoing tension between university-wide principles and the need for context-specific policies that can adapt to the diverse ways generative AI is used across different disciplines (Bearman et al., 2023). Furthermore, while educators and administrative staff play a crucial role in managing AI-driven changes, there is insufficient research on their perspectives, challenges, and adaptive strategies in response to chatbot usage in HE settings. Additionally, although some policy discussions have emerged, they remain fragmented, with no comprehensive studies synthesising institutional best practices or evaluating their effectiveness in mitigating risks. This lack of focused research necessitates further exploration into the ethical implications, institutional responses, stakeholder impacts, and future directions of AI chatbot deployment in HE, as outlined in the proposed research questions.

3. Methodology

This study adopts a systematic review approach to examine the ethical considerations and implications of integrating AI chatbots into higher education. The review aims to identify the ethical challenges related to the use of AI chatbots within higher education institutions (RQ1), assess how these institutions are responding to and managing such challenges (RQ2), and explore the implications of AI chatbot use for students (RQ3), educators (RQ4), and administrators (RQ5). In addition, the study examines proposed future research directions related to the impact of AI chatbots in higher education (RQ6).

3.1. Search strategy and data sources

A comprehensive search of the literature was carried out across eight major academic databases, namely Scopus, Google Scholar, ScienceDirect, IEEE Xplore, PubMed, Taylor & Francis, ProQuest, and Emerald. To ensure both relevance and currency, the search focused on studies published between 2014 and 2024. These databases were chosen because they are widely regarded as reliable sources of high-quality, peer-reviewed research spanning education, technology, and related interdisciplinary areas. The selected timeframe reflects an important phase in the development of AI in education, particularly chatbots, during which these technologies moved from early experimentation toward broader adoption. Throughout this period, AI capabilities advanced rapidly, alongside a noticeable change in how universities and colleges began using these tools to support teaching, learning, and assessment. To maintain consistency across databases, the search queries were adjusted as needed to align with the specific syntax requirements of each platform.

The overall strategy focused on combining keywords related to AI chatbots, ethics, and higher education. To ensure transparency and reproducibility, we present the full search strategy for two representative databases (Scopus and IEEE Xplore). These examples show the complete structure of the search, including controlled vocabulary, free-text terms, Boolean operators, and limits. The same search concepts were then applied across the remaining databases, with minor adaptations to account for differences in database syntax, indexing, and search functions.

3.2. Scopus

TITLE-ABS-KEY (chatbot* OR "generative AI" OR ChatGPT).
 AND TITLE-ABS-KEY ("ethical issues" OR ethics OR "ethical challenges").
 AND TITLE-ABS-KEY ("higher education" OR universit* OR college*).
 AND PUBYEAR >2013 AND PUBYEAR <2025.
 TITLE-ABS-KEY (chatbot* OR "generative AI" OR ChatGPT).
 AND TITLE-ABS-KEY ("institutional responses" OR polic* OR guideline* OR strateg*).
 AND TITLE-ABS-KEY ("higher education" OR universit* OR college*).
 AND PUBYEAR >2013 AND PUBYEAR <2025.
 IEEE Xplore.
 (chatbot* OR "generative AI" OR ChatGPT).
 AND ("ethical issues" OR ethics OR "ethical challenges")
 AND ("higher education" OR universities OR colleges).
 (chatbot* OR "generative AI" OR ChatGPT).
 AND ("institutional responses" OR policies OR guidelines OR strategies).
 AND ("higher education" OR universities OR colleges).

As is common in systematic and structured literature reviews, database search results may vary over time due to continuous indexing and database updates. The reported search strings reflect the strategy used at the time of the review and are provided to ensure methodological transparency rather than exact reproducibility of record counts.

3.3. Eligibility criteria

Predefined inclusion and exclusion criteria were applied to determine the eligibility of studies for this review. Studies were included if they were published between 2014 and 2024, appeared in peer-reviewed journals or conference proceedings, and explicitly examined the use of AI chatbots and their associated ethical issues within higher education contexts. The scope was limited to universities and colleges, with students, educators, and administrative staff considered the primary stakeholder groups.

Studies were excluded if they focused on educational settings outside higher education (for example, primary or secondary schools), did not engage directly with ethical considerations, or consisted of non-academic sources such as blog posts, opinion pieces, or news articles. Publications released prior to 2014 and studies not written in English were also excluded. Together, these criteria were intended to ensure that the review was based on methodologically robust and contextually relevant literature.

Inclusion criteria were applied using explicit decision rules. Studies were required to focus on AI chatbots or conversational AI tools used in higher education and to include a clear discussion of ethical issues. Studies that partially met these criteria were treated as borderline cases. For these studies, full texts were independently reviewed by three reviewers with particular attention to whether ethical implications of AI chatbot use in higher education were explicitly addressed. Disagreements regarding eligibility were discussed among reviewers until consensus was reached.

3.4. Study selection and screening process

A two-stage screening process was followed, using the PRISMA flow diagram as a conceptual guide. Database searches were conducted between July and August 2024. All retrieved references were imported into Covidence, where the platform's automated deduplication function was used to identify and remove duplicate records.

Title and abstract screening was then carried out independently by three reviewers using the predefined inclusion criteria. Studies deemed potentially eligible proceeded to full-text review, which was also conducted independently by the same reviewers. Any disagreements regarding study eligibility at either screening stage were resolved through discussion until consensus was achieved, which ensured a consistent application of the inclusion criteria throughout the screening process. This rigorous procedure identified 4943 references in total, distributed as follows: Scopus (n = 1154), Google Scholar (n = 1089), Science Direct (n = 951), IEEE Xplore (n = 477), PubMed (n = 374), Taylor & Francis (n = 332), ProQuest (n = 306), Emerald (n = 260).

Removing 2524 duplicates, 2419 records remained for title and abstract screening. Of these, 2062 were excluded based on relevance, leaving 357 studies for full-text review. Following full-text assessment, 248 studies were excluded for reasons such as lack of ethical discussion, not higher education, or the full publication in a non-English language. The final dataset for this review includes 109 studies.

This review was conducted and reported in line with the PRISMA 2020 guidelines. The checklist informed the reporting of each stage of the review process, including the search strategy, study selection, data extraction, and synthesis of findings. During manuscript preparation, individual PRISMA items were systematically reviewed to ensure that relevant information was reported where appropriate. The study selection process is documented using a PRISMA flow diagram (Fig. 1). In cases where specific PRISMA items such as formal risk-of-bias assessment were not applicable due to the scope and design of the review, this is explicitly acknowledged and justified in Section 3.5.

3.5. Data extraction

We created a standardized Microsoft Excel spreadsheet to record the key characteristics and findings of each included study. The extracted data included bibliographic information such as author/s, year of publication, and citation, along with contextual details such as the country of focus and publication source. Thematic variables covered the specific ethical challenges identified, including data privacy, algorithmic bias, and academic integrity concerns; institutional responses such as policy implementation and training programs; stakeholder implications for students, faculty, and administrative staff; and recommended future research directions.

Two researchers independently extracted data from a pilot subset of

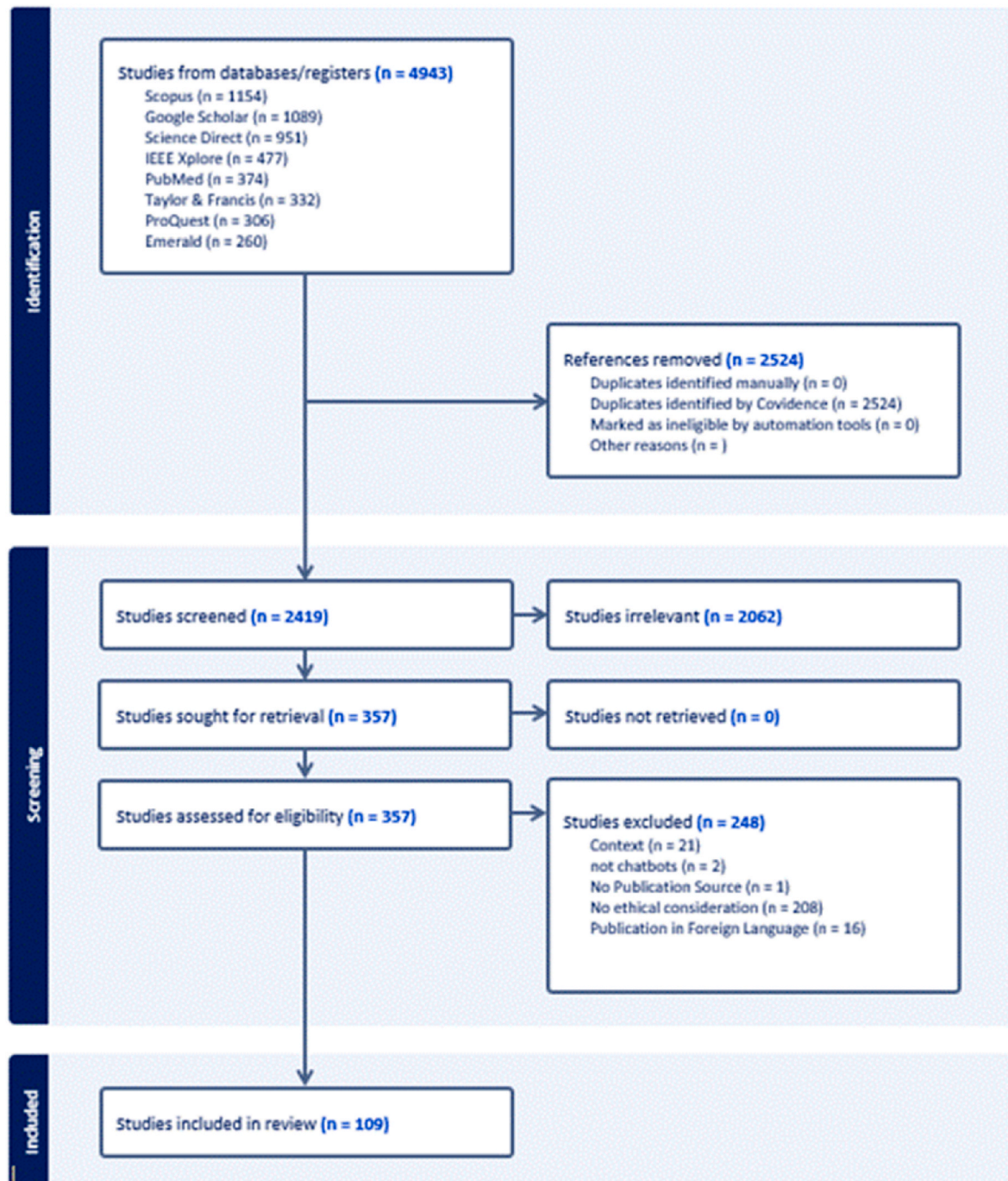


Fig. 1. Prisma flow diagram.

articles and compared their results to ensure consistency. After resolving minor ambiguities, the finalized coding scheme was applied to all included studies. Only three discrepancies occurred during the entire data extraction phase, and these were resolved through discussion.

3.6. Data synthesis and analysis

To synthesize the extracted data, we conducted a manual thematic analysis informed by the approach outlined by Clarke and Braun (2017). The analysis began with a period of familiarization, during which all extracted data were read repeatedly to develop an overall understanding of the material. Initial codes were then generated to capture recurring concepts and ethical issues across the included studies. These codes were

iteratively reviewed and compared, and subsequently grouped into broader thematic categories. Where overlap or redundancy was identified, codes were merged or refined to strengthen the coherence of the analytical framework.

The resulting themes were examined across the full dataset to ensure that they accurately reflected the underlying data, were conceptually distinct, and remained closely aligned with the review's research questions. Two researchers independently contributed to the coding and theme development process, with differences discussed and resolved through consensus. Codes were not treated as mutually exclusive, and allowed individual studies to inform multiple themes where appropriate. The final thematic structure was refined through ongoing discussion and iterative validation among the reviewers.

Given the interdisciplinary and heterogeneous nature of the included literature which included empirical, qualitative, conceptual, policy, and theoretical studies a formal quality appraisal tool (such as CASP or MMAT) was not applied. The primary aim of this review was to map and synthesize ethical issues and perspectives related to AI chatbot use in higher education, rather than to evaluate methodological quality or intervention effectiveness. As a result, the application of a single standardized appraisal framework was not considered appropriate for the range of study designs included which is consistent with prior methodological guidance indicating that formal inter-rater reliability statistics are not a requirement in thematic analysis (Neuendorf, 2018).

To reduce the risk of bias, the review was limited to peer-reviewed sources, and multiple reviewers were involved throughout study selection, data extraction, and thematic analysis. The multi-stage screening and review process further strengthened the trustworthiness of the findings.

3.7. Tools and software

We used Covidence to manage and document the systematic screening process, including the removal of duplicate records and the tracking of exclusion decisions. The platform's interface supported transparent collaboration among reviewers and enabled efficient resolution of conflicts. Microsoft Excel was used as the primary tool for data extraction and provided a standardized template for recording publication details and thematic categories. This approach ensured consistency in data handling and maintained a clear audit trail for each study, from initial identification through final inclusion in the review.

4. Results

The analysis of the 109 papers reveals a steady increase in research on AI ethics in higher education. The grouped bar chart (Fig. 2) shows a clear trend in this area of research. Earlier years, including 2018, 2020, and 2021, showed minimal research activity, which suggests that ethical concerns related to chatbots in academic institutions were still in the early stages of development. In contrast, there was a clear rise in publications in 2023, with 48 papers, followed by an even larger increase in 2024, with 58 papers. This growth reflects a heightened recognition of ethical challenges such as data privacy, bias in AI-driven decision-making, academic integrity, and the role of AI in student assessment.

The majority of journal articles (89 papers, 81.65%) compared to

conference publications (20 papers, 18.35%) indicates that researchers are increasingly engaging in more in-depth theoretical and empirical investigations of AI ethics, rather than limiting discussions to conference-based outputs.

Research on AI ethics in higher education reflects a broad international scope, with studies originating from more than 40 countries. Despite this wide geographic spread, contributions are uneven across regions. The United States emerges as the most active contributor with 16 publications, followed closely by China with 13. India, the United Kingdom, and Australia each contribute six studies. Together, these countries account for a substantial portion of the literature, while the remaining publications are distributed across a diverse set of other nations.

RQ1: What are the ethical challenges associated with the use of AI chatbots in HE institutions?

We systematically reviewed all 109 papers to identify the ethical challenges they reported. This review revealed ten distinct themes, and the frequency of each is shown in Fig. 3.

Across the reviewed literature, academic integrity and misconduct emerged as the most frequently discussed ethical challenge, appearing in 73 references, including studies by Fegade et al. (2023), Ahadi et al. (2023), and Ali et al. (2024). These discussions focus largely on issues such as cheating, plagiarism, and broader forms of academic dishonesty, particularly in relation to the misuse of AI tools in coursework and assessment. As AI-based text generation systems continue to advance, concerns have intensified that students may submit AI-generated work as their own. This raises fundamental questions about fairness, academic integrity, and the extent to which learning outcomes are genuinely achieved. A consolidated overview of findings across individual citations is provided in Table 1.

Privacy and data security represent another major area of concern, addressed in 43 studies, including those by Adiguzel et al. (2023), Lo (2023), and Nguyen et al. (2024). This theme highlights risks related to the collection, storage, and processing of personal data within AI-driven educational platforms. Given the large volumes of student and faculty data involved, fears surrounding data misuse and confidentiality are common. These concerns are closely linked to issues of trust, particularly where users are uncertain about how their data are monitored or handled. In addition, informed consent and transparency remain central to this debate, as many AI systems provide limited clarity regarding their data practices.

A further ethical challenge identified in the literature is the

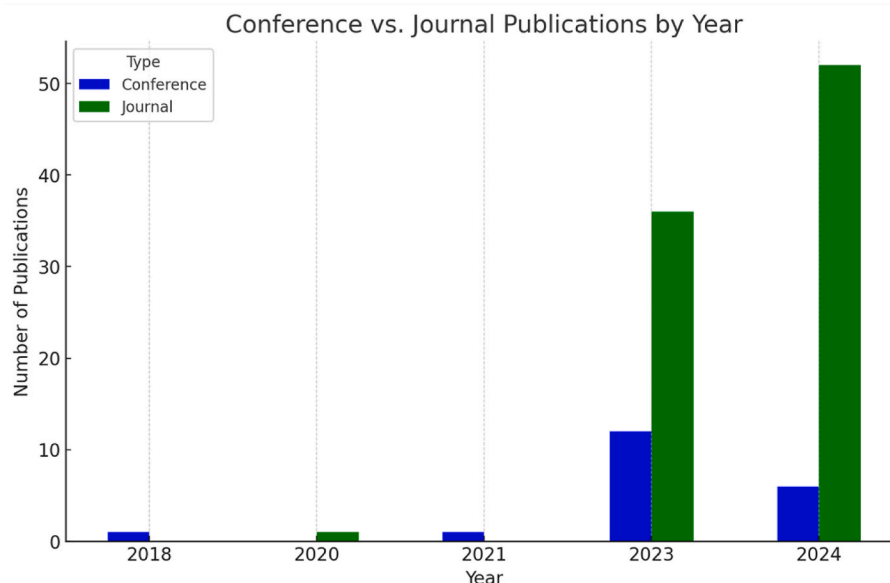


Fig. 2. Journal and conference publications by year.

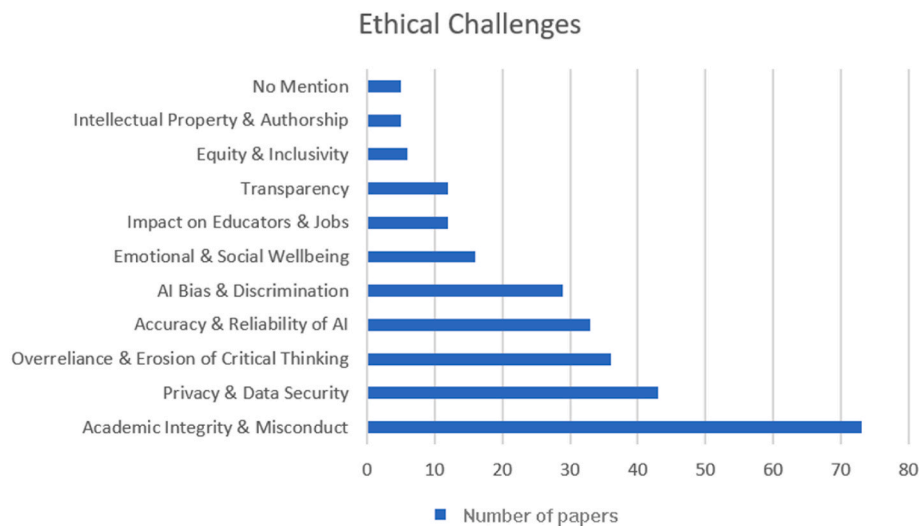


Fig. 3. Ethical challenges.

overreliance on AI tools and the potential erosion of critical thinking, which appears in 36 references, including [Fegade et al. \(2023\)](#) and [Gunawan et al. \(2024\)](#). These studies suggest that increasing dependence on AI-generated content may discourage independent thinking and intellectual engagement. When students rely heavily on AI for answers, they may bypass essential cognitive processes required for deep learning, resulting in weaker problem-solving and analytical skills. This concern is particularly significant in higher education, where critical reasoning and complex analysis are core expectations.

Concerns related to the accuracy and reliability of AI systems were identified in 33 studies (e.g., [Ahadi et al., 2023](#); [Silva et al., 2024](#)). This theme addresses the risks of misinformation, unreliable outputs, and AI hallucinations, where systems generate incorrect or misleading information. Because AI models lack true contextual understanding, they may produce responses that are incomplete or inaccurate. Such limitations become problematic when students rely on these outputs for academic purposes, especially in complex subject areas where nuance and contextual judgment are required.

AI bias and discrimination also feature prominently in the literature, with 29 references addressing this issue, including work by [Aguilera-Hermida \(2024\)](#), [Padilla et al. \(2023\)](#), and [Nguyen et al. \(2024\)](#). These studies highlight concerns that AI systems may reinforce stereotypes or reproduce discriminatory patterns embedded in their training data. When models are trained on datasets that reflect limited cultural or demographic perspectives, they may fail to accommodate diverse educational contexts, potentially resulting in biased or unequal learning experiences.

The emotional and social wellbeing of students and educators is another area explored in the literature, appearing in 16 studies (e.g., [Chiu et al., 2023](#); [Xie & Ding, 2023](#)). This theme examines the psychosocial implications of AI integration in education, including reduced human interaction, social isolation, and increased anxiety among students and faculty. As AI tools become more embedded in learning environments, concerns have been raised about their impact on interpersonal relationships and emotional engagement. Reduced opportunities for collaboration and community-building may weaken the social dimensions traditionally associated with higher education.

Beyond student learning, several studies address the impact of AI on educators and employment, with 12 references discussing potential job displacement and changes to teaching roles (e.g., [Adiguzel et al., 2023](#); [Rudolph et al., 2024](#)). While AI offers benefits such as automation and personalised feedback, these studies express concern that its growing role in content delivery and assessment could reduce the demand for educators or significantly alter professional responsibilities. Such shifts

raise ethical and practical questions about the future role of human educators in AI-supported classrooms.

Transparency is also emphasized as a critical ethical requirement, appearing in 12 references, including [George and Wooden \(2023\)](#) and [Lo \(2023\)](#). This theme focuses on the need for explainable AI systems that allow users to understand how decisions and outputs are generated. A lack of transparency can undermine trust, particularly in the absence of clear governance structures or accountability mechanisms. As a result, many scholars and policymakers advocate for stronger regulatory frameworks and ethical guidelines to support responsible AI use in education.

Closely connected to discussions of bias is the theme of equity and inclusivity, which is addressed in six studies (e.g., [Ahadi et al., 2023](#); [Wang et al., 2023](#)). This theme highlights the importance of equitable access to AI tools, addressing language barriers, and reducing disparities in AI literacy. Poorly designed AI systems may exclude non-English speakers, students with disabilities, or learners from disadvantaged backgrounds, thereby widening existing educational inequalities. While AI bias concerns how unfair outcomes are produced, equity and inclusivity focus more directly on who has access to, and benefits from, AI technologies.

Intellectual property and authorship concerns are discussed in five studies (e.g., [Sales de Aguiar, 2024](#); [Silva et al., 2024](#)). These works examine questions surrounding copyright ownership and originality in the context of AI-generated academic content. As AI tools become more sophisticated, they challenge traditional understandings of authorship and raise concerns about intellectual property rights and potential violations. Ongoing debates within universities and policy circles reflect uncertainty over how AI-assisted work should be attributed and governed.

Finally, five papers focus primarily on cost-benefit analyses of AI in education without explicitly addressing ethical challenges (e.g., [Anyanwu et al., 2024](#); [Wu & Yu, 2024](#)). Although these studies contribute to the broader discussion on AI adoption in higher education, they do not engage directly with ethical considerations.

In the results figures, a “No Mention” category is used to capture studies that did not explicitly address the specific theme being examined. This classification usually reflects differences in study scope, as some papers focused on other dimensions of AI chatbot use, such as technical design, pedagogical applications, or adoption factors, rather than the ethical issue or stakeholder group linked to a particular research question. Therefore, placement in the “No Mention” category should not be interpreted as a lack of relevance to AI chatbots in higher education, but instead indicates that the theme fell outside the study’s

Table 1
Ethical challenges.

Theme Name	All Related Papers	No.
Academic Integrity & Misconduct	(Ahadi et al., 2023; Ali et al., 2024; Almahasees et al., 2024; Fegade et al., 2023); (Aure & Cuenca, 2024); (Awad & Moosa, 2024; Bouteraa et al., 2024; Bego, 2023; Chen & Huang, 2023; Cheng et al., 2024); (Chiu, 2024); (Chiu et al., 2023; Duah & McGivern, 2024; Dube et al., 2024; Duong et al., 2023; Lo, 2023); (Duran, 2024); (Espartinez, 2024); (Fuchs & Aguilos, 2023; Gruenhagen, Sinclair, et al., 2024; Guillén-Yparrea & Hernández-Rodríguez, 2024; Gunawan et al., 2024; Hamam, 2021; Hasanein & Sobaih, 2023; Hidayat-ur-Rehman & Ibrahim, 2023; Huallpa, 2023; Ibrahim et al., 2023; Ifelebuegu et al., 2023; Ilieva et al., 2023; Imran & Almusharraf, 2023; Jagadeesh, Ali, & Athish, 2023; Kiryakova & Angelova, 2023; Kooli, 2023; Lai et al., 2024; Lee et al., 2024; Maita et al., 2024; Meyer et al., 2023; Michel-Villarreal et al., 2023; Nam & Bai, 2023; Nguyen et al., 2024; Nikolic et al., 2023; Niloy et al., 2024; Okoye et al., 2024; Oliveira, 2023; Oqaidi et al., 2024; Padilla et al., 2023; Parviz, 2024; Perna et al., 2024; Phutela et al., 2024; Rudolph et al., 2023; Rudolph et al., 2024; Sales de Aguiar, 2024; Sarsam et al., 2023; Sekwatlakwatla & Malele, 2023; Shabunina et al., 2023; Silva et al., 2024; Spivakovsky et al., 2023; Srinivasan et al., 2024; Stöhr et al., 2024; Tayan et al., 2024; Tossell et al., 2024; Vargas-Murillo et al., 2023; Williams, 2024; Xia et al., 2024; Xie & Ding, 2023; Yang et al., 2024; Zeb et al., 2024; Özer, 2024); (Aguilera-Hermida, 2024); (Awal, 2024), (Abbas et al., 2024; Arista et al., 2023; Soodan et al., 2024)	73
Privacy & Data Security	(Adiguzel et al., 2023; Ali et al., 2024; Almahasees et al., 2024; Antony & Ramnath, 2023; George & Wooden, 2023; Alshahrani et al., 2024; Lo, 2023; Dakakni & Safa, 2023; Cisneros et al., 2023; Dube et al., 2024; Gruenhagen, Sinclair, et al., 2024; Hamam, 2021; Hasanein & Sobaih, 2023; Hidayat-ur-Rehman & Ibrahim, 2023; Huallpa, 2023; Padilla et al., 2023; Jo, 2024; Jose & Jose, 2024; Kayali et al., 2023; Kooli, 2023; Lee et al., 2024; Maita et al., 2024; Nguyen et al., 2024; Oqaidi et al., 2024; Ifelebuegu et al., 2023; Özer, 2024; Parviz, 2024; Polyportis, 2024; Riapina, 2024; Rudolph et al., 2024; Sarsam et al., 2023; Silva et al., 2024; Spivakovsky et al., 2023; Shabunina et al., 2023; Williams, 2024; Yang et al., 2024; Zeb et al., 2024; Samala et al., 2024; Soodan et al., 2024; Yang & Li, 2024; Arista et al., 2023; Abulibdeh et al., 2024; Slomp et al., 2024)	43
Overreliance & Erosion of Critical Thinking	(Adiguzel et al., 2023; Ahmad et al., 2024; Alshahrani et al., 2024; Dube et al., 2024; Fegade et al., 2023); (Duran, 2024); (Gunawan et al., 2024; Hasanein & Sobaih, 2023; Huallpa, 2023; Imran & Almusharraf, 2023; Jose & Jose, 2024; Kiryakova & Angelova, 2023; Kooli, 2023; Maita et al., 2024; Meyer et al., 2023; Michel-Villarreal et al., 2023; Guillén-Yparrea & Hernández-Rodríguez, 2024; Nam & Bai, 2023; Nikolic et al., 2023; Oliveira, 2023; Phutela et al., 2024; Ifelebuegu et al., 2023; Özer, 2024; Parviz, 2024; Rudolph et al., 2023; Shabunina et al., 2023; Silva et al., 2024; Tayan et al., 2024; Vargas-Murillo et al., 2023; Xie & Ding, 2023; Yang et al., 2024; Ghorashi et al., 2023; Samala et al., 2024; Yang & Li, 2024; Abbas et al., 2024; Abulibdeh et al., 2024)	36
Accuracy & Reliability of AI	(Adiguzel et al., 2023); (Aguilera-Hermida, 2024); (Ahadi et al., 2023; Ali et al., 2024;	33

Table 1 (continued)

Theme Name	All Related Papers	No.
AI Bias & Discrimination	Almahasees et al., 2024; Alnaqbi & Fouda, 2023; Chiu et al., 2023; Cisneros et al., 2023; Dube et al., 2024; Farrelly & Baker, 2023; Frick, 2024; Ghorashi et al., 2023; Gruenhagen, Sinclair, et al., 2024; Ifelebuegu et al., 2023; Kooli, 2023; Lee et al., 2024; Lo, 2023; Meyer et al., 2023; Nikolic et al., 2023; Padilla et al., 2023; Parviz, 2024; Rudolph et al., 2023, 2024; Sales de Aguiar, 2024; Sarsam et al., 2023; Shabunina et al., 2023; Sijing & Lan, 2018; Silva et al., 2024; Spivakovsky et al., 2023; Vargas-Murillo et al., 2023; Williams, 2024; Xie & Ding, 2023; Zeb et al., 2024)	29
Emotional & Social Wellbeing	(Adiguzel et al., 2023); (Aguilera-Hermida, 2024); (Abulibdeh et al., 2024; Ahadi et al., 2023; Ali et al., 2024; Almahasees et al., 2024; Alshahrani et al., 2024; Arista et al., 2023; George & Wooden, 2023; Ifelebuegu et al., 2023; Jagadeesh et al., 2023; Kooli, 2023; Lo, 2023; Nguyen et al., 2024; Oqaidi et al., 2024; Padilla et al., 2023; Phutela et al., 2024; Rudolph et al., 2024; Sales de Aguiar, 2024; Sarsam et al., 2023; Sijing & Lan, 2018; Silva et al., 2024; Slomp et al., 2024; Soodan et al., 2024; Wang et al., 2023; Williams, 2024; Yang et al., 2024; Yang & Li, 2024; Zeb et al., 2024)	16
Impact on Educators & Jobs	(Adiguzel et al., 2023; Alshahrani et al., 2024; Lo, 2023; Chen et al., 2024; Caccavale et al., 2024; Jose & Jose, 2024; Kooli, 2023; Rudolph et al., 2024; Ifelebuegu et al., 2023; Özer, 2024; Katsamakias et al., 2024; Yang et al., 2024)	12
Transparency	(Adiguzel et al., 2023; Chang et al., 2023; Chen et al., 2023b; George & Wooden, 2023; Guillén-Yparrea & Hernández-Rodríguez, 2024; Jagadeesh et al., 2023; Lo, 2023; Nguyen et al., 2024; Oqaidi et al., 2024; Riapina, 2024; Rudolph et al., 2023; Rudolph et al., 2024)	12
Equity & Inclusivity	(Ahadi et al., 2023; Alshahrani et al., 2024; Kanont et al., 2024; Sijing & Lan, 2018; Wang et al., 2023; Özer, 2024)	6
Intellectual Property & Authorship	(Adiguzel et al., 2023; George & Wooden, 2023; Nam & Bai, 2023; Sales de Aguiar, 2024; Silva et al., 2024)	5
No Mention	(Anyanwu et al., 2024; Chen et al., 2023a; Klímová & Ibna Seraj, 2023; Wu & Yu, 2024; Yang & Li, 2024)	5

primary focus.

RQ2- How are HE institutions responding to and addressing the ethical challenges posed by AI chatbots?

Based on the analysis of the 109 papers, we examined how higher education institutions are responding to the growing presence of AI. Through a systematic review of each study, five major themes were identified that capture different institutional actions related to AI adoption, as shown in Fig. 4. An overview of the corresponding studies is also presented in Table 2.

Rather than responding in ad hoc ways, many higher education institutions have addressed the challenges of AI adoption through formal structures. In 34 papers, including those by Fegade et al. (2023) and Chang et al. (2023), this response takes the form of policies, guidelines, and institutional frameworks. These studies describe the use of mechanisms such as codes of conduct, oversight committees, and AI detection

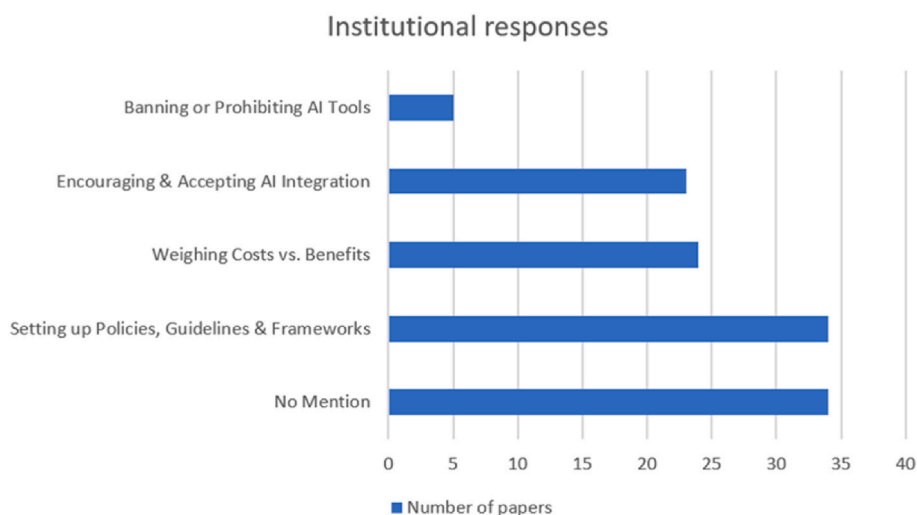


Fig. 4. Institutional responses.

tools to guide responsible AI use. As AI becomes increasingly embedded in academic practices, institutions are encouraged to clarify regulations related to ethical concerns, intellectual property, and data privacy. Consistent with the findings under RQ1, many of the skeptical, ethical, and pedagogical challenges identified particularly issues related to academic integrity, overuse, and bias are addressed through institutional responses, which helps explain the high frequency of studies within this theme.

Beyond formal governance structures, several studies focus on how institutions weigh the advantages and risks associated with AI adoption. This cost–benefit perspective appears in 24 references, including [Awad and Moosa \(2023\)](#) and [Crawford et al. \(2024\)](#). Rather than viewing AI as an unqualified benefit, these works describe a stance of cautious optimism, acknowledging its potential to improve academic outcomes while also highlighting ethical, privacy, and academic misconduct concerns. To manage these tensions, many authors recommend structured risk–benefit analyses, transparent policy discussions, and continuous evaluation of AI’s pedagogical impact.

Support for AI integration is also evident across a substantial portion of the literature. Represented in 23 papers, such as those by [Kanont et al. \(2024\)](#) and [Wang et al. \(2023\)](#), this perspective reflects active efforts by educators and administrators to incorporate AI into teaching practices, learning processes, and administrative workflows. Institutions aligned with this approach often emphasize AI’s capacity to enhance creativity, efficiency, and accessibility. At the same time, these studies stress that meaningful integration depends on professional development initiatives and ongoing support to ensure responsible and effective use by both faculty and students.

Not all institutional responses take the form of adoption or cautious experimentation. In five studies, including [Arista et al. \(2023\)](#) and [Tayan et al. \(2024\)](#), institutions are reported to have chosen to ban or strongly discourage the use of certain AI tools. These restrictions most often target text generators and automated essay-writing applications and are justified by concerns about academic dishonesty, reduced critical thinking, and data privacy risks. Advocates of this approach argue that limiting AI use helps maintain academic rigor and ensures that assessment practices more accurately reflect students’ own learning and effort.

Despite the range of institutional responses identified, a considerable number of studies do not explicitly address how higher education institutions are managing AI-related ethical challenges. In total, 34 papers, including those by [Ahadi et al. \(2023\)](#) and [Wu and Yu \(2024\)](#), fall into this category. Many of these works concentrate on technical design issues or pedagogical applications of AI, such as system development or classroom use, without engaging with institutional policies or

governance strategies. While these studies contribute to broader discussions on AI in education, they offer limited insight into how universities and colleges are actively responding to AI-related opportunities and challenges.

RQ3- What are the implications of AI chatbot usage on students in Higher Education?

Based on a systematic review of the included papers, we examined how AI affects students’ experiences in higher education. Through this process, six recurring themes related to learners emerged, as summarized in [Fig. 5](#) and [Table 3](#).

Across the reviewed literature, the strongest emphasis is placed on how AI can enhance learning and student engagement. This theme appears in 91 studies, including [Adiguzel et al. \(2023\)](#) and [Chen et al., 2023b](#). In these papers, AI-driven tools are described as supporting student motivation, enabling faster and more targeted feedback, and addressing diverse learning needs, including those related to disabilities. Adaptive learning systems and AI-powered tutoring are frequently highlighted as particularly promising, as they offer personalized instruction that may improve both engagement and academic performance.

Alongside these potential benefits, the literature also raises substantial concerns about academic misconduct and integrity. Identified in 56 studies, this theme is explored by authors such as [Fegade et al. \(2023\)](#) and [Awad and Moosa \(2024\)](#). These works examine how AI technologies, when insufficiently regulated, may facilitate cheating or plagiarism, with common examples including automated essay generators and fabricated or “hallucinated” references. Although AI is often viewed as a helpful educational aid, many authors warn that it also introduces new risks to academic honesty. This finding is consistent with RQ1, where academic integrity similarly emerged as a key ethical challenge.

Attention is also drawn to issues of bias, inaccuracy, and misinformation associated with AI systems. Discussed in 19 studies, including [Arista et al. \(2023\)](#) and [Chen et al. \(2024\)](#), this theme reflects concerns that AI-generated outputs may be misleading or biased, potentially reinforcing harmful stereotypes or providing incorrect information to students. To address these risks, authors frequently emphasize the importance of transparent algorithms and strong data governance practices.

Another area of concern relates to students’ increasing dependence on AI tools. In 16 papers, including [Fegade et al. \(2023\)](#) and [Ahmad et al. \(2024\)](#), researchers highlight the risk of overreliance on AI and the possible erosion of critical thinking skills. These studies suggest that

Table 2
Institutional responses.

Theme Name	All Related Papers	No.
Setting up Policies, Guidelines & Frameworks	(Abbas et al., 2024; Cain et al., 2023; Chang et al., 2023; Dakakni & Safa, 2023; Duah & McGivern, 2024; Fegade et al., 2023; George & Wooden, 2023; Gruenhagen, Sinclair, et al., 2024; Guillén-Yparrea & Hernández-Rodríguez, 2024; Ibrahim et al., 2023; Ifelebuegu et al., 2023; Ilieva et al., 2023; Jagadeesh et al., 2023; Lai et al., 2024; Lee et al., 2024; Maita et al., 2024; Meyer et al., 2023; Michel-Villarreal et al., 2023; Nam & Bai, 2023; Niloy et al., 2024; Oqaidi et al., 2024; Parviz, 2024; Perna et al., 2024; Polyportis, 2024; Rudolph et al., 2024; Samala et al., 2024; Silva et al., 2024; Tayan et al., 2024; Vargas-Murillo et al., 2023; Williams, 2024; Xia et al., 2024; Xie & Ding, 2023; Yang et al., 2024; Zeb et al., 2024)	34
Weighing Costs vs. Benefits	(Adiguzel et al., 2023; Awad & Moosa, 2023; Bego, 2023; Caccavale et al., 2024; Chen et al., 2024; Chiu, 2024; Chiu et al., 2023; Lo, 2023; Crawford et al., 2024; Hasanein & Sobaih, 2023; Hidayat-ur-Rehman & Ibrahim, 2023; Frick, 2024; Sijing & Lan, 2018; Lai et al., 2024; Jagadeesh et al., 2023; Maita et al., 2024; Nikolic et al., 2023; Phutela et al., 2024; Ifelebuegu et al., 2023; Rudolph et al., 2024; Sarsam et al., 2023; Chen et al., 2023b; Ghorashi et al., 2023; Kayali et al., 2023) (Anyanwu et al., 2024); (Aure & Cuenca, 2024); (Alshahrani et al., 2024; Chen et al., 2020; Dube et al., 2024; Hamam, 2021; Kanont et al., 2024; Katsamakakos et al., 2024; Kiryakova & Angelova, 2023; Klímová & Ibna Seraj, 2023; Niloy et al., 2024; Pallivathukul et al., 2024; Phutela et al., 2024; Polyportis, 2024; Riapina, 2024; Sekwatlakwatla & Malele, 2023; Slomp et al., 2024; Soodan et al., 2024; Stöhr et al., 2024; Tossell et al., 2024; Wang et al., 2023; Özer, 2024); (Espartinez, 2024)	24
Encouraging & Accepting AI Integration	(Adiguzel et al., 2023; Arista et al., 2023; Fegade et al., 2023; Maita et al., 2024; Tayan et al., 2024)	23
Banning or Prohibiting AI Tools	(Abulibdeh et al., 2024); (Aguilera-Hermida, 2024); (Ahadi et al., 2023; Ahmad & Ahmed, 2024; Ali et al., 2024; Almahasees et al., 2024; Alnaqbi & Fouda, 2023; Antony & Ramnath, 2023); (Awal, 2024); (Bouteraa et al., 2024; Cheng et al., 2024; Duong et al., 2023); (Duran, 2024); (Fuchs & Aguilos, 2023; Imran & Almusharraf, 2023; Padilla et al., 2023; Jo, 2024; Jose & Jose, 2024; Kooli, 2023; Mendez et al., 2020; Nguyen et al., 2024; Okoye et al., 2024; Oliveira, 2023; Rudolph et al., 2023; Sales de Aguiar, 2024; Shabunina et al., 2023; Spivakovsky et al., 2023; Srinivasan et al., 2024; Wu & Yu, 2024; Yang & Li, 2024; Chen & Huang, 2023; Cisneros et al., 2023; Gunawan et al., 2024; Huallpa, 2023)	5
No Mention	(Abulibdeh et al., 2024); (Aguilera-Hermida, 2024); (Ahadi et al., 2023; Ahmad & Ahmed, 2024; Ali et al., 2024; Almahasees et al., 2024; Alnaqbi & Fouda, 2023; Antony & Ramnath, 2023); (Awal, 2024); (Bouteraa et al., 2024; Cheng et al., 2024; Duong et al., 2023); (Duran, 2024); (Fuchs & Aguilos, 2023; Imran & Almusharraf, 2023; Padilla et al., 2023; Jo, 2024; Jose & Jose, 2024; Kooli, 2023; Mendez et al., 2020; Nguyen et al., 2024; Okoye et al., 2024; Oliveira, 2023; Rudolph et al., 2023; Sales de Aguiar, 2024; Shabunina et al., 2023; Spivakovsky et al., 2023; Srinivasan et al., 2024; Wu & Yu, 2024; Yang & Li, 2024; Chen & Huang, 2023; Cisneros et al., 2023; Gunawan et al., 2024; Huallpa, 2023)	34

heavy reliance on AI-generated solutions may reduce students' capacity for independent reasoning, complex analysis, and creative thinking. As a response, authors advocate for balanced approaches to AI integration that continue to promote intellectual effort and critical inquiry.

Issues surrounding privacy and data security also feature prominently in the literature. Appearing in 15 studies, such as Arista et al. (2023) and Ali et al. (2024), this theme focuses on risks associated with AI-driven educational platforms, including unauthorized data collection, unintended data sharing, and broader concerns about surveillance. While recognizing the advantages of personalised learning, these works stress the need for careful data governance and informed consent to protect student privacy.

Students' emotional responses to AI receive comparatively less

attention but remain an important consideration. Seven studies, including Mendez et al. (2020) and Stöhr et al. (2024), report mixed or negative attitudes toward AI, with students expressing skepticism, discomfort, or anxiety. These reactions are often linked to reduced human interaction or perceptions of AI as intrusive. Although less frequently discussed than other themes, such emotional responses highlight the importance of introducing AI tools in ways that support student wellbeing.

Finally, few studies do not directly address student-specific implications of AI use. Ten studies, including Bouteraa et al. (2024) and Alshahrani et al. (2024), focus instead on broader institutional responses or technical developments. As a result, they offer limited insight into students' direct experiences with AI in higher education.

RQ4-What are the implications of AI chatbot usage on educators in Higher Education?

Drawing on the 109 papers reviewed, we examined how AI is shaping faculty roles and responsibilities in higher education. Through a systematic review of each study, six themes related to teaching practices, job security, and professional development were identified. The frequency of these themes is illustrated in Fig. 6, while a comprehensive list of the relevant papers is provided in Table 4.

Across the literature, faculty experiences with AI are most often discussed in relation to teaching enhancement and pedagogical innovation, a theme that appears in 37 papers, including Adiguzel et al. (2023) and Kayali et al. (2023). These studies show how AI can assist with lesson planning, enrich classroom interactions, and support new instructional approaches such as gamified content and adaptive learning modules. Many faculty members describe AI as a collaborative partner that supports course design, delivers real-time feedback, and enables more personalised learning pathways. At the same time, the literature consistently emphasises that successful implementation depends on institutional support and faculty willingness to experiment with new pedagogical strategies.

In addition to pedagogical opportunities, the growing use of AI has raised concerns about increased monitoring and academic misconduct, which are discussed in 28 papers, including Almahasees et al. (2024) and Gruenhagen, Sinclair, et al. (2024). These studies highlight the dual role of AI as both a tool for detecting misconduct and a technology that may facilitate it. As AI systems become more sophisticated, faculty are expected to take greater responsibility for monitoring AI-generated outputs, revising assessment formats, and maintaining fair and secure evaluation practices. While many educators value AI's ability to flag plagiarism or irregular patterns, they also acknowledge the added difficulty of verifying originality and preserving academic integrity.

Questions about the future of faculty roles also emerge in the literature, with 19 papers, including Fegade et al. (2023) and Chang et al. (2023), expressing concern about AI-driven job displacement. Automation of tasks such as grading, content delivery, and even lecture generation has prompted worries that teaching positions may be reduced or reshaped. Although these studies recognize that AI can streamline certain academic responsibilities, they caution that excessive reliance on automation could diminish the importance of human mentorship, disciplinary judgment, and professional expertise if AI is not carefully integrated.

In contrast, a more optimistic perspective is reflected in the theme of freed or reallocated workload, which appears in 12 papers, such as Adiguzel et al. (2023) and Samala et al. (2024). This literature explores how AI can reduce the burden of administrative tasks, especially grading and recordkeeping, which allows faculty to devote more time to higher-level teaching activities and research. Proponents argue that automating routine tasks enables educators to focus more on mentorship, curriculum design, and individualized student engagement.

Faculty professional development and training is also emphasized in 12 studies, including Gunawan et al. (2024) and Nguyen et al. (2024).

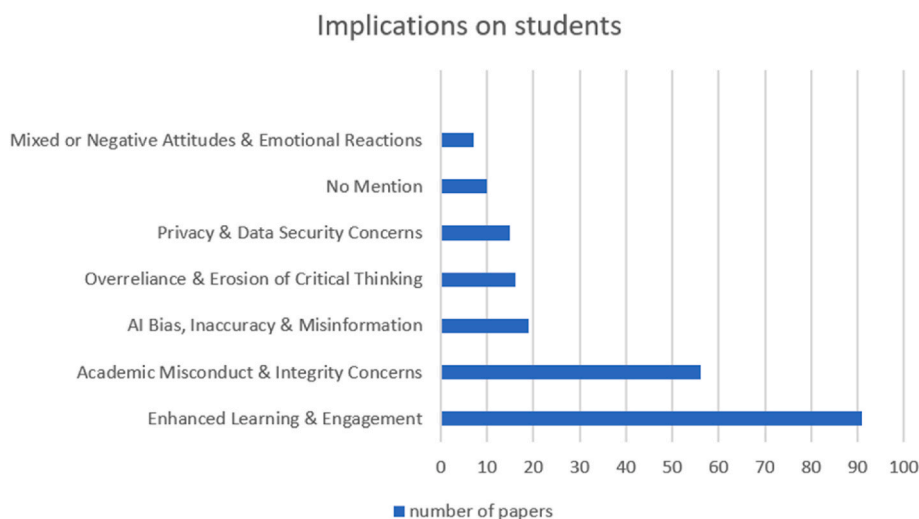


Fig. 5. Implications on students.

These papers note that many educators currently lack sufficient familiarity with advanced AI tools and therefore require structured training to use them effectively. Recommended approaches include workshops, certification programs, and ongoing support networks to help faculty confidently integrate AI into teaching, assessment, and research practices.

AI adoption is also discussed as a driver for curriculum development and collaboration. Identified in 12 studies, such as [Abulibdeh et al. \(2024\)](#) and [Katsamakos et al. \(2024\)](#), this theme highlights how AI encourages cooperation across departments and, in some cases, across institutions. Faculty, instructional designers, and technologists are often described as working together to develop AI-enhanced curricula. These collaborative efforts are associated with the creation of innovative course content, interdisciplinary modules, and shared educational resources that extend beyond individual classrooms.

Despite the breadth of these discussions, a portion of the literature does not directly address faculty-specific implications of AI. A total of 35 papers, including [Aguilera-Hermida \(2024\)](#) and [Caccavale et al. \(2024\)](#), focus instead on student experiences, institutional strategies, or technical developments. While these studies contribute to broader debates about AI in higher education, they provide limited insight into how teaching practices and faculty roles are being shaped by AI adoption.

RQ5- What are the implications of AI chatbot usage on administrative staff in Higher Education?

Based on the review of the 109 papers, we examined how AI use in higher education may influence the roles of administrative staff. By systematically screening each study for references to administrative responsibilities, job security, governance practices, and collaborative efforts, four themes were identified. These findings are summarized in [Fig. 7](#), with a detailed list of the corresponding papers provided in [Table 5](#).

In many of the papers reviewed, attention is drawn to the role administrative staff play in shaping how AI is governed within higher education. Issues related to policy, governance, and ethical oversight appear in 21 studies, including [George and Wooden \(2023\)](#) and [Rudolph et al. \(2024\)](#). These papers often describe administrators as being responsible for putting institutional rules and ethical guidelines into practice, usually in collaboration with academic leadership. Rather than treating AI governance as a purely technical task, the literature frames it as an ongoing administrative responsibility that involves strategic decision-making, compliance with data protection laws, and consideration of equity and institutional values.

At the same time, several studies express concern about what increased automation might mean for administrative jobs. Thirteen papers, such as [Fegade et al. \(2023\)](#) and [George and Wooden \(2023\)](#), note fears that AI systems used for tasks like scheduling, data entry, or financial aid processing could eventually reduce the need for certain roles. While efficiency gains are often acknowledged, these studies warn that an overreliance on automation particularly when driven by cost-cutting may come at the expense of human expertise and the personalized support that administrators provide.

Other authors take a more positive view of these changes. Also discussed in 13 papers, including [Adiguzel et al. \(2023\)](#) and [Rudolph et al. \(2023\)](#), is the idea that AI can reduce administrative workload rather than eliminate jobs altogether. By automating routine and repetitive tasks, AI may allow staff to redirect their time toward more strategic or student-focused activities. From this perspective, AI is seen as reshaping administrative work, not replacing it.

There is also some discussion of how AI implementation depends on collaboration within institutions. Five studies, including [Gunawan et al. \(2024\)](#) and [Pernaa et al. \(2024\)](#), describe AI initiatives that require administrators to work closely with IT teams and faculty. These papers suggest that successful implementation often involves trial and adjustment, shared responsibility, and coordination across departments, rather than top-down deployment.

Despite these discussions, most of the literature does not directly address administrative implications. A total of 77 papers, such as those by [Arista et al. \(2023\)](#) and [Kooli \(2023\)](#), focus mainly on students, faculty, or technical developments and say little about administrative roles. As a result, issues such as enrollment management, budgeting, or resource allocation in the context of AI remain underexplored.

RQ6- What future research directions have been proposed regarding the impact of AI chatbots in HE?

Looking across the 109 papers, we gathered the suggestions authors made about future directions for AI in higher education. Each article's recommendations were reviewed in detail, which led to the identification of seven recurring themes. These themes range from calls for further empirical research to more practical guidance on curriculum design. The frequency of each theme is shown in [Fig. 8](#), with the full list of studies provided in [Table 6](#).

Across the literature, the most common suggestion for future work is the need for extended empirical research, which is mentioned in 66 papers. Many authors argue that existing findings would benefit from larger sample sizes, more diverse participant groups, and the use of

Table 3
Implications on students.

Theme Name	All Related Papers	No.
Enhanced Learning & Engagement	(Adiguzel et al., 2023); (Aguilera-Hermida, 2024); (Ahadi et al., 2023; Ahmad et al., 2024; Ali et al., 2024; Almahasees et al., 2024; Alnaqbi & Fouda, 2023; Antony & Ramnath, 2023; Anyanwu et al., 2024; Arista et al., 2023); (Aure & Cuenca, 2024); (Awad & Moosa, 2024); (Awal, 2024); (Bego, 2023; Caccavale et al., 2024; Chang et al., 2023; Chen et al., 2020; Chen et al., 2023b; (Chiu, 2024); (Chiu et al., 2023; Crawforda et al., 2024; Duah & McGivern, 2024; Dube et al., 2024; Duong et al., 2023; Lo, 2023); (Duran, 2024); (Espartinez, 2024); (Frick, 2024; Fuchs & Aguilos, 2023; Ghorashi et al., 2023; Gruenhagen, Sinclair, et al., 2024; Gunawan et al., 2024; Hamam, 2021; Hasanein & Sobaih, 2023; Huallpa, 2023; Ilieva et al., 2023; Imran & Almusharraf, 2023; Jo, 2024; Jose & Jose, 2024; Kanont et al., 2024; Katsamakos et al., 2024; Kayali et al., 2023; Klímová & Ibna Seraj, 2023; Kooli, 2023; Lai et al., 2024; Jagadeesh et al., 2023; Maita et al., 2024; Mendez et al., 2020; Meyer et al., 2023; Michel-Villarreal et al., 2023; Guillén-Yparrea & Hernández-Rodríguez, 2024; Phutela et al., 2024; Nam & Bai, 2023; Nguyen et al., 2024; Nikolic et al., 2023; Niloy et al., 2024; Okoye et al., 2024; Oliveira, 2023; Oqaidi et al., 2024; Ifelebuegu et al., 2023; Özer, 2024; Parviz, 2024; Pernaa et al., 2024; Polyportis, 2024; Riapina, 2024; Rudolph et al., 2024; Rudolph et al., 2023; Samala et al., 2024; Sarsam et al., 2023; Sekwatlakwatla & Malele, 2023; Silva et al., 2024; Spivakovsky et al., 2023; Srinivasan et al., 2024; Stöhr et al., 2024; Tayan et al., 2024; Tossell et al., 2024; Shabunina et al., 2023; Vargas-Murillo et al., 2023; Wang et al., 2023; Williams, 2024; Wu & Yu, 2024; Xie & Ding, 2023; Yang & Li, 2024; Yang et al., 2024; Zeb et al., 2024; Abulibdeh et al., 2024; George & Wooden, 2023; Alshahrani et al., 2024; Ibrahim et al., 2023; Sijing & Lan, 2018; Soodan et al., 2024)	91
Academic Misconduct & Integrity Concerns	(Abulibdeh et al., 2024; Adiguzel et al., 2023; Arista et al., 2023; Fegade et al., 2023); (Aguilera-Hermida, 2024); (Ahadi et al., 2023; Ali et al., 2024; Awad & Moosa, 2024); (Awal, 2024); (Bego, 2023; Chen et al., 2023b; Cheng et al., 2024); (Chiu, 2024); (Chiu et al., 2023; Lo, 2023; Dakakni & Safa, 2023; Dube et al., 2024; Fuchs & Aguilos, 2023; Ghorashi et al., 2023; Gruenhagen, Sinclair, et al., 2024; Hamam, 2021; Hasanein & Sobaih, 2023; Huallpa, 2023; Imran & Almusharraf, 2023; Jo, 2024; Jose & Jose, 2024; Lai et al., 2024; Jagadeesh et al., 2023; Maita et al., 2024; Meyer et al., 2023; Guillén-Yparrea & Hernández-Rodríguez, 2024; Phutela et al., 2024; Nikolic et al., 2023; Niloy et al., 2024; Ifelebuegu et al., 2023; Parviz, 2024; Pernaa et al., 2024; Riapina, 2024; Rudolph et al., 2024; Rudolph et al., 2023; Samala et al., 2024; Sarsam et al., 2023; Silva et al., 2024; Spivakovsky et al., 2023; Srinivasan et al., 2024; Tayan et al., 2024; Tossell et al., 2024; Vargas-Murillo et al., 2023; Williams, 2024; Yang et al., 2024; Zeb et al., 2024; Bouteraa et al., 2024; Cain et al., 2023; Farrelly & Baker, 2023; Ibrahim et al., 2023; Xia et al., 2024)	56
AI Bias, Inaccuracy & Misinformation	(Abulibdeh et al., 2024; Arista et al., 2023; Fegade et al., 2023); (Aguilera-Hermida,	19

Table 3 (continued)

Theme Name	All Related Papers	No.
Overreliance & Erosion of Critical Thinking	(2024); (Ali et al., 2024; Caccavale et al., 2024; Chen et al., 2024; Farrelly & Baker, 2023; Frick, 2024; Ghorashi et al., 2023; Gruenhagen, Sinclair, et al., 2024; Kayali et al., 2023; Kooli, 2023; Meyer et al., 2023; Nguyen et al., 2024; Pallivathukal et al., 2024; Phutela et al., 2024; Sijing & Lan, 2018; Zeb et al., 2024)	16
Privacy & Data Security Concerns	(Fegade et al., 2023; Abbas et al., 2024; Ahmad et al., 2024); (Awal, 2024); (Ahadi et al., 2023; Hamam, 2021; Hasanein & Sobaih, 2023; Huallpa, 2023; Jagadeesh et al., 2023; Kooli, 2023; Meyer et al., 2023; Nam & Bai, 2023; Nikolic et al., 2023; Phutela et al., 2024; Samala et al., 2024; Silva et al., 2024)	15
Mixed or Negative Attitudes & Emotional Reactions	(Abulibdeh et al., 2024; Ali et al., 2024; Alnaqbi & Fouda, 2023; Alshahrani et al., 2024; Antony & Ramnath, 2023; Arista et al., 2023; Cisneros et al., 2023; Gruenhagen, Sinclair, et al., 2024; Hamam, 2021; Hasanein & Sobaih, 2023; Huallpa, 2023; Ibrahim et al., 2023; Soodan et al., 2024; Williams, 2024; Zeb et al., 2024)	7
No Mention	(Cisneros et al., 2023; Mendez et al., 2020; Polyportis, 2024; Stöhr et al., 2024; Bouteraa et al., 2024; Alshahrani et al., 2024; Crawforda et al., 2024)	10

longitudinal or mixed-methods approaches. Studies such as [Arista et al. \(2023\)](#) and [Fegade et al. \(2023\)](#) stress the importance of repeated or broader measurements to better understand how AI integration develops over time and across different educational contexts.

Another frequently discussed direction concerns ethical and policy development, identified in 28 papers, including [Adiguzel et al. \(2023\)](#) and [Maita et al. \(2024\)](#). These studies emphasize the need for clearer frameworks, regulations, and institutional guidelines to support responsible AI use. Preventing unethical practices, protecting data privacy, and safeguarding academic integrity are recurring priorities. This focus aligns closely with the findings of RQ1 and reinforces the central aim of this review, which is to examine ethical challenges associated with chatbot technologies and how they might be addressed through future interventions.

Several papers also highlight the importance of cross-cultural and multi-context research. Appearing in 18 studies, such as [Espartinez \(2024\)](#) and [Gunawan et al. \(2024\)](#), this theme points to the value of examining AI adoption across different cultural, disciplinary, and institutional settings. Authors argue that broader geographic and contextual coverage is necessary to capture global perspectives and to understand how social and cultural factors shape the role of AI in higher education. Multi-university and international collaborations are often proposed as a way to achieve this.

Student-focused investigations are discussed in 16 papers and concentrate on how learners perceive, use, and respond to AI tools. These studies explore issues such as motivation, engagement, and learning outcomes, often considering differences across demographic groups, academic disciplines, or levels of study. Examples include [Aguilera-Hermida \(2024\)](#) and [Chen et al., 2023b](#), which examine how AI influences student experiences in diverse educational contexts.

Pedagogical and curricular innovation is another area identified for future research, appearing in 13 papers. These studies envision new approaches to teaching and course design supported by AI, including

Implications on Educators

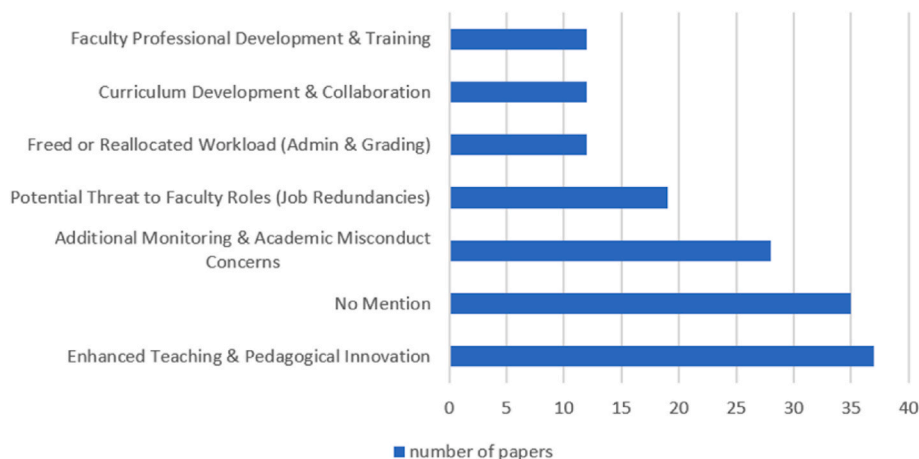


Fig. 6. Implications on educators.

adaptive learning systems, multimodal learning support, and emerging “smart university” models. Research by [Abulibdeh et al. \(2024\)](#) and [Tayan et al. \(2024\)](#) highlights future-oriented frameworks that aim to integrate AI technologies with established educational principles rather than replace them.

The role of faculty and educators is also emphasized in 11 papers. These studies underline the importance of professional development, faculty readiness, and institutional support in ensuring effective AI adoption. Authors such as [Antony and Ramnath \(2023\)](#) and [Özer \(2024\)](#) suggest that training initiatives and ongoing dialogue can help educators use AI more confidently while maintaining core pedagogical values.

A smaller group of studies, nine in total, focus on negative implications and possible mitigation strategies. Concerns raised include academic misconduct, overreliance on automated tools, and psychological stress. For example, [Abbas et al. \(2024\)](#) and [Awal \(2024\)](#) discuss policy measures and support mechanisms designed to reduce harm and ensure that AI enhances rather than undermines the educational process.

Finally, 18 papers, including [Ahadi et al. \(2023\)](#) and [Cain et al. \(2023\)](#), do not provide explicit future research directions. These studies tend to describe current AI applications or technical features without outlining recommendations for extending or deepening research on existing implementations.

5. Discussion

This systematic review has examined the ethical considerations and implications of AI chatbot integration in higher education. Situated within a rapidly expanding body of literature on generative AI (e.g., [Olohunfunmi & Khairuddin, 2024](#); [Batista et al., 2024](#)), our findings contribute a focused analysis of the ethical challenges, institutional responses, stakeholder implications and future research directions specific to chatbot technologies in education. We noticed a peak in the volume of publications that coincided with the advent of ChatGPT, which reflect an urgent need within the academic community to understand the rise of Generative AI based technologies, particularly in educational contexts.

A summary of our main findings showcases the following; addressing RQ1, academic integrity and data privacy emerged as the standout ethical themes and the impact of such ethical challenges was discussed in RQ2 from an institutional viewpoint. We also studied the footprint of these challenges across all the important stakeholders; students, teachers and administration (RQ3, RQ4 and RQ5 respectively) and we also deliberated over the future research directions as extracted from our pool of papers (RQ6).

Furthermore, the thematic findings reveal that core concerns revolve

around data privacy, algorithmic bias, academic integrity, and dependency on automated systems. Crucially, our review also highlights a significant gap between the recognition of these challenges and the maturity of institutional governance and policy frameworks needed to manage them effectively. The discussion hereunder situates these findings within broader scholarly and regulatory debates, critically analyzing the implications for practice, policy, and future research.

5.1. Data privacy and surveillance

The findings of this review underscore that data privacy is not a peripheral issue but a central ethical challenge in the deployment of AI chatbots in HE. Identified as the second most frequent concern in our analysis of 109 papers (RQ1, [Fig. 3](#)), the theme of “Privacy & Data Security” highlights a significant tension between the technology’s potential for personalization and the risk of pervasive surveillance. AI chatbots, by design, require vast amounts of student data to function effectively, whilst our findings indicate widespread concern in the literature about how this data is collected, stored, and used.

This apprehension is further reflected in the direct implications for students (RQ3), where privacy concerns were explicitly noted as a negative outcome. The lack of transparent data governance policies, a point raised in the literature we reviewed ([Ahmad et al., 2023](#); [Ili, 2020](#); [UNESCO, 2022](#)) can compromise student autonomy and the principle of informed consent. As institutions increasingly rely on third-party vendors, they risk outsourcing critical ethical decisions about data handling, which raises questions about accountability, particularly in the event of a data breach. The prevalence of this theme suggests a critical need for institutions to prioritize the development of clear, robust data protection policies that align with legal frameworks like GDPR and build trust with the university community.

This lack of clarity on how to effectively handle data privacy brings up serious ethical concerns. As noted by [Zawacki-Richter et al. \(2019\)](#), institutions must ensure compliance with legal frameworks such as the General Data Protection Regulation (GDPR) ([Li et al., 2023](#)), but the findings from our review and the papers studied suggest that current implementations often fall short. In many cases, students are expected to use digital learning platforms that monitor their activity, but they are not always given a clear choice to opt out or provide explicit consent, which makes it hard to know whether their participation is truly voluntary. Such dynamics may compromise student autonomy and contradict principles of informed consent.

Furthermore, the use of third-party vendors and cloud-based solutions introduces another layer of complexity. Institutions often lack the

Table 4
Implications on educators.

Theme Name	All Related Papers	No
Enhanced Teaching & Pedagogical Innovation	(Adiguzel et al., 2023; Ahadi et al., 2023; Ali et al., 2024; Cheng et al., 2024; Chiu et al., 2023; Hamam, 2021; Hasanein & Sobaih, 2023; Hidayat-ur-Rehman & Ibrahim, 2023; Ilieva et al., 2023; Imran & Almusharraf, 2023; Jo, 2024; Jose & Jose, 2024; Kayali et al., 2023; Kiryakova & Angelova, 2023; Klímová & Ibna Seraj, 2023; Lai et al., 2024; Lee et al., 2024; Maita et al., 2024; Meyer et al., 2023; Michel-Villarreal et al., 2023; Phutela et al., 2024; Nikolic et al., 2023; Niloy et al., 2024; Oqaidi et al., 2024; Ifelebuegu et al., 2023; Parviz, 2024; Rudolph et al., 2024; Rudolph et al., 2023; Samala et al., 2024; Sekwatlakwatla & Malele, 2023; Spivakovsky et al., 2023; Vargas-Murillo et al., 2023; Yang et al., 2024; Anyanwu et al., 2024); (Aure & Cuenca, 2024); (George & Wooden, 2023; Yang & Li, 2024)	37
Additional Monitoring & Academic Misconduct Concerns	(Almahasees et al., 2024; Arista et al., 2023; Cain et al., 2023; Duah & McGivern, 2024; Farrelly & Baker, 2023; Frick, 2024; Ghorashi et al., 2023; Gruenhagen, Sinclair, et al., 2024; Hasanein & Sobaih, 2023; Hidayat-ur-Rehman & Ibrahim, 2023; Huallpa, 2023; Ibrahim et al., 2023; Ifelebuegu et al., 2023; Kiryakova & Angelova, 2023; Lee et al., 2024; Nam & Bai, 2023; Nguyen et al., 2024; Nikolic et al., 2023; Niloy et al., 2024; Pernaa et al., 2024; Phutela et al., 2024; Rudolph et al., 2024; Silva et al., 2024; Slomp et al., 2024; Tayan et al., 2024; Yang et al., 2024; Zeb et al., 2024); (Espartinez, 2024)	28
Potential Threat to Faculty Roles (Job Redundancies)	(Fegade et al., 2023; Abulibdeh et al., 2024; Adiguzel et al., 2023; Ahadi et al., 2023; George & Wooden, 2023; Chang et al., 2023; Chen et al., 2023b; Chiu et al., 2023; Jagadeesh et al., 2023; Jose & Jose, 2024; Kooli, 2023; Sijing & Lan, 2018; Mendez et al., 2020; Michel-Villarreal et al., 2023; Nam & Bai, 2023; Zeb et al., 2024; Xie & Ding, 2023; Yang et al., 2024; Arista et al., 2023)	19
Freed or Reallocated Workload (Admin & Grading)	(Abbas et al., 2024; Adiguzel et al., 2023; Ali et al., 2024; Chiu et al., 2023; Jagadeesh et al., 2023; Jo, 2024; Maita et al., 2024; Rudolph et al., 2023; Samala et al., 2024; Shabunina et al., 2023; Soodan et al., 2024; Tayan et al., 2024)	12
Curriculum Development & Collaboration	(Abbas et al., 2024; Abulibdeh et al., 2024; Katsamakos et al., 2024; Kayali et al., 2023; Kooli, 2023; Maita et al., 2024; Oqaidi et al., 2024; Pernaa et al., 2024; Riapina, 2024; Sijing & Lan, 2018; Xia et al., 2024; Xie & Ding, 2023)	12
Faculty Professional Development & Training	(Chiu et al., 2023; Gunawan et al., 2024; Meyer et al., 2023; Nguyen et al., 2024; Pallivathukal et al., 2024; Phutela et al., 2024; Riapina, 2024; Slomp et al., 2024; Xia et al., 2024; Yang et al., 2024; Özer, 2024); (Espartinez, 2024)	12
No Mention	(Aguilera-Hermida, 2024); (Ahmad et al., 2024; Alnaqbi & Fouda, 2023; Antony & Ramnath, 2023; Awad & Moosa, 2024); (Awal, 2024); (Alshahrani et al., 2024; Bego, 2023; Bouteraa et al., 2024; Chen et al., 2020; Chen et al., 2024; Chen & Huang, 2023; Cisneros et al., 2023; Dube et al., 2024; Duong et al., 2023); (Duran, 2024); (Crawforda et al., 2024; Dakakni & Safa, 2023; Fuchs & Aguilos, 2023; Padilla et al., 2023; Kanont et al., 2024; Okoye et al.,	35

Table 4 (continued)

Theme Name	All Related Papers	No
	2024; Oliveira, 2023; Polyportis, 2024; Sarsam et al., 2023; Srinivasan et al., 2024; Stöhr et al., 2024; Tossell et al., 2024; Sales de Aguiar, 2024; Wang et al., 2023; Williams, 2024; Wu & Yu, 2024; Lo, 2023; Caccavale et al., 2024); (Chiu, 2024)	

technical expertise to assess the data practices of these vendors, thereby outsourcing critical ethical decisions. This raises questions about institutional accountability, particularly when data breaches or unethical data mining practices occur. We witness a nearly exponential growth in similar violations across several universities in countries such as China and Vietnam (Li et al., 2023; Almugamisi, 2025).

5.2. Misinformation, algorithmic bias and fairness

A common thread that emerged with respect to the inaccuracy of chatbot or generative technology was the prospect of receiving output that is misleading, biased, or not fair. Our systematic review confirms that the integrity of information provided by chatbots is a major concern for the academic community: the themes "Accuracy & Reliability of AI" and "AI Bias & Discrimination" emerged as two of the top five ethical challenges in our analysis (RQ1, Fig. 3), collectively appearing in over 60 of the 109 papers. This indicates a deep-seated apprehension that chatbots can disseminate misleading, factually incorrect, or biased information, thereby undermining the core academic mission of fostering critical and accurate knowledge. The usual pitfalls of information emerging from such technology is mostly whether it is factual, relevant or fabricated (Alier et al., 2024). There has recently been a push to develop systems that integrate large language models and generativeAI and counter inaccurate information through a series of layers such as information retrieval, prompting, credibility scoring and evidence analysis (Talaver & Vakaliuk, 2025). The presence of algorithmic bias in AI systems is a well-documented concern, and this review confirms its relevance in HE chatbot applications. In our review this predicament was expressed not only as a general ethical dilemma by the authors discussing research in chatbot technology but also as an implication to student learning (RQ1, RQ3). These ethical challenges have direct implications for student learning (RQ3), where exposure to biased or inaccurate content was identified as a significant risk. Bias can manifest in multiple ways through training data that reflects existing social inequalities, through opaque algorithmic processes, or through the unequal representation of student demographics in system design and testing (Baker & Hawn, 2022; Gándara et al., 2024). Educational AI systems have sometimes treated students from minority or less-represented groups unfairly, either by misjudging their performance or providing them with fewer opportunities. For example, prediction models used to assess student success have been found to exhibit racial and socioeconomic biases. Chatbots using these biased models might unknowingly treat students differently, reinforcing unfair ideas or offering unequal support based on mistaken assumptions.

This issue is compounded by a lack of "Transparency," another key ethical challenge identified in our review (RQ1). Not being able to understand how AI makes its decisions makes these problems even worse: when students and educators cannot understand how chatbot recommendations are generated, there is little opportunity to question or contest them, which erodes trust, undermines confidence in educational systems, and can contribute to a sense of disempowerment among users. A more transparent approach to algorithmic design and a commitment to inclusive training data are essential to address these concerns.

To address these concerns about transparency and fairness, a promising trend in the broader field of AI is the development of explainable AI (xAI). From the literature in general, we see several

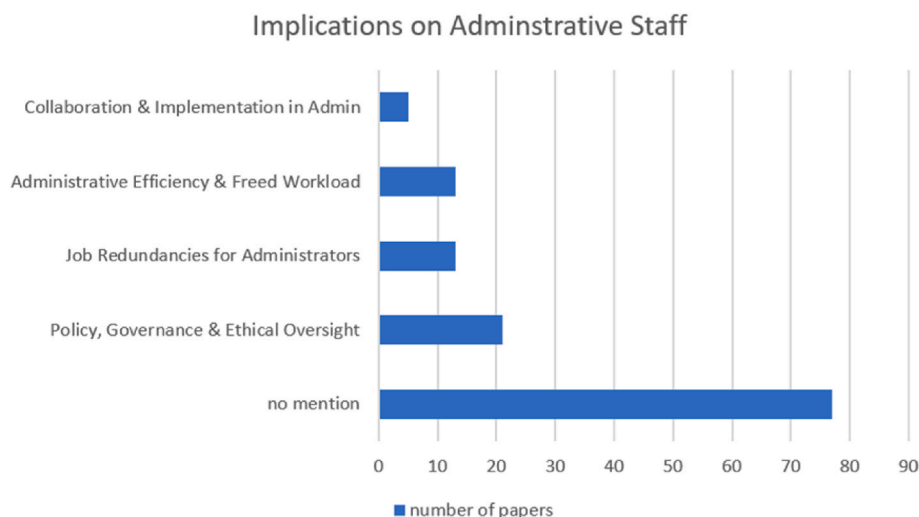


Fig. 7. Implications on administrative staff.

examples of how the integration of explainable AI (xAI) is improving the efficacy, usability and satisfaction of chatbots in education and other domains hence leading to an improved sense and perception of fairness (Kingchang et al., 2024). We see several scenarios of the implementation of explainable AI in chatbot responses and prompting (see Fig. 9 showing combinations of justifications from the AI agent (Wilkinson et al., 2021)). As illustrated by research on recommender systems (Fig. 9), xAI aims to make algorithmic reasoning visible to the user, a feature that could be adapted for educational chatbots to build user trust and enable critical evaluation of AI-generated content. This can also extend to other techniques such as knowledge graphs, generative adversarial networks, additional prompting and explanations and visualisations (Kovari, 2025).

5.3. Academic integrity and assessment

The challenge that AI chatbots pose to academic integrity emerged as the single most dominant theme in this review, identified as the primary ethical concern in 73 of the 109 papers (RQ1, Fig. 3), and traversed multiple research questions as a critical implication for both students and educators (RQ1, RQ3, RQ4). This finding demonstrates a clear and widespread anxiety within the higher education community about the potential for AI-facilitated academic misconduct. The concern is not abstract; it emerges directly in student practices and institutional responses, as several studies document students' use of AI tools to complete assignments, generate essays, and even respond to examination questions (Cotton et al., 2024; Gruenhagen, Sinclair, et al., 2024). While some students perceive such use as a form of legitimate academic assistance, educators and administrators frequently regard it as academic misconduct, creating longstanding discrepancy in perceptions across stakeholder groups.

This discrepancy highlights a gap in students' ethical literacy and underscores the need for clearer institutional policies governing acceptable AI use. Many institutions currently lack formal or consistent guidelines, leaving students to navigate a grey area independently and contributing to growing tensions between innovation and regulation. As a result, institutions face the complex challenge of balancing the potential benefits of generative AI with the safeguarding of academic standards. While some universities have formulated assessment policies to restrict or regulate AI use, others have actively encouraged the integration of generative AI within assessment practices, including analysing chatbot outputs and incorporating them into academic discourse. These divergent approaches further illustrate the unsettled nature of institutional responses to AI-enabled learning.

Compounding these challenges are the practical difficulties associated with detecting AI-generated content. Traditional plagiarism detection tools are often ill-equipped to identify such material, and the intensifying evolution of generative AI models continues to outrun institutional regulatory responses. This has intensified calls for a fundamental rethinking of assessment design, with greater emphasis on critical thinking, authentic learning outcomes, and process-based evaluation that AI systems cannot easily replicate. At the same time, the technological landscape is evolving in response to these integrity concerns. Just as generative AI has introduced new risks, AI-enabled detection tools have emerged as potential countermeasures. The integration of AI writing detection within established plagiarism-checking platforms such as Turnitin (Fig. 10; Baron, 2024) illustrates a growing technological "battle" within higher education. Empirical studies indicate that AI detection tools such as Turnitin and ZeroGPT demonstrate high recognition accuracy in identifying content generated by AI systems (Chaka, 2024; Malik & Amjad, 2025). Together, these developments suggest that while technological solutions may support academic integrity, a durable response will require a combination of policy clarity, enhanced ethical literacy, and a strategic redesign of assessment practices to ensure integrity and meaningful learning in the age of generative AI.

5.4. Over-reliance on AI and its impact on human roles

A significant point of tension revealed in our analysis is the dual nature of AI's impact on human roles in higher education. On the one hand, AI chatbots are frequently framed as tools for efficiency, workload relief, and teaching support; on the other, they are perceived as a threat to human connection, professional identity, and job security. This duality is evident across multiple findings in the review. The ethical theme of "Overreliance & Erosion of Critical Thinking" emerged as a major concern (RQ1), with direct consequences for students who may become overly dependent on AI systems (RQ3). At the same time, the literature illustrates broader anxieties about over-reliance on AI in areas traditionally supported by human interaction, accompanied by implicit concerns regarding job displacement for educators and administrative staff (RQ1, RQ4, RQ5).

The implications for staff are notably divided. For both educators (RQ4) and administrators (RQ5), our findings reveal a near-even split between optimism surrounding a "Freed or Reallocated Workload" and fears of a "Potential Threat to Faculty Roles" or "Job Redundancies." While chatbot technologies are increasingly used to handle student inquiries, provide academic guidance, and offer mental health support,

Table 5
Implications on administrative staff.

Theme Name	All Related Papers	No.
Policy, Governance & Ethical Oversight	(Abulibdeh et al., 2024); (Aure & Cuenca, 2024); (George & Wooden, 2023; Cain et al., 2023; Chiu et al., 2023; Imran & Almusharraf, 2023; Kayali et al., 2023; Maita et al., 2024; Michel-Villarreal et al., 2023; Phutela et al., 2024; Nguyen et al., 2024; Oqaidi et al., 2024; Parviz, 2024; Pernaa et al., 2024; Riapina, 2024; Rudolph et al., 2023, 2024; Sales de Aguiar, 2024; Vargas-Murillo et al., 2023; Spivakovsky et al., 2023; Hasanein & Sobaih, 2023)	21
Job Redundancies for Administrators	(Abulibdeh et al., 2024; Adiguzel et al., 2023; Chen et al., 2023b; Fegade et al., 2023; George & Wooden, 2023; Hamam, 2021; Ifelebuegu et al., 2023; Michel-Villarreal et al., 2023; Nam & Bai, 2023; Parviz, 2024; Rudolph et al., 2023; Rudolph et al., 2024; Özer, 2024)	13
Administrative Efficiency & Freed Workload	(Adiguzel et al., 2023; Chiu et al., 2023; Gunawan et al., 2024; Ifelebuegu et al., 2023; Jo, 2024; Kiryakova & Angelova, 2023; Maita et al., 2024; Michel-Villarreal et al., 2023; Nam & Bai, 2023; Oqaidi et al., 2024; Rudolph et al., 2023; Rudolph et al., 2024; Vargas-Murillo et al., 2023)	13
Collaboration & Implementation in Admin	(Gunawan et al., 2024; Pernaa et al., 2024; Phutela et al., 2024; Riapina, 2024; Sales de Aguiar, 2024)	5
No Mention	(Abbas et al., 2024; Arista et al., 2023); (Aguilera-Hermida, 2024); (Ahadi et al., 2023; Ahmad et al., 2024; Ali et al., 2024; Almahasees et al., 2024; Alnaqbi & Fouda, 2023; Antony & Ramnath, 2023; Anyanwu et al., 2024; Awad & Moosa, 2024); (Awal, 2024); (Alshahrani et al., 2024; Bego, 2023; Bouteraa et al., 2024; Caccavale et al., 2024; Chang et al., 2023; Chen et al., 2020; Chen et al., 2024; Chen & Huang, 2023; Cheng et al., 2024); (Chiu, 2024); (Cisneros et al., 2023; Crawford et al., 2024; Dakakni & Safa, 2023; Duah & McGivern, 2024; Dube et al., 2024; Duong et al., 2023; Lo, 2023); (Duran, 2024); (Slomp et al., 2024); (Espartinez, 2024); (Farrelly & Baker, 2023; Frick, 2024; Fuchs & Aguilos, 2023; Pallivathukal et al., 2024; Ghorashi et al., 2023; Gruenhagen, Sinclair, et al., 2024; Hidayat-ur-Rehman & Ibrahim, 2023; Hualpa, 2023; Ibrahim et al., 2023; Ilieva et al., 2023; Padilla et al., 2023; Jose & Jose, 2024; Kanont et al., 2024; Katsamakos et al., 2024; Klímová & Ibna Seraj, 2023; Kooli, 2023; Sijing & Lan, 2018; Lai et al., 2024; Lee et al., 2024; Jagadeesh et al., 2023; Mendez et al., 2020; Meyer et al., 2023; Guillén-Yparrea & Hernández-Rodríguez, 2024; Nikolic et al., 2023; Niloy et al., 2024; Okoye et al., 2024; Oliveira, 2023; Polyportis, 2024; Samala et al., 2024; Sarsam et al., 2023; Sekwatlakwatla & Malele, 2023; Silva et al., 2024; Soodan et al., 2024; Srinivasan et al., 2024; Stöhr et al., 2024; Tayan et al., 2024; Tossell et al., 2024; Shabunina et al., 2023; Wang et al., 2023; Williams, 2024; Wu & Yu, 2024; Xie & Ding, 2023; Xia et al., 2024; Yang & Li, 2024; Zeb et al., 2024)	77

thereby enhancing institutional efficiency, these benefits are counter-balanced by concerns about diminishing human contact and the risk of student isolation (Dempere et al., 2023; Groothuisen et al., 2024). Such reductions in interpersonal engagement may negatively affect students' wellbeing and the relational dimensions of learning (RQ1).

Empirical examples from the literature illustrate this tension in practice. Some universities, such as Oxford and Imperial, have explored the use of AI tools to support administrative functions, respond to

student queries, and even inform pedagogical strategies (Achinewhu-Nworgu, 2024). In other educational contexts, including primary education in the UAE, generative AI has been adopted as a supportive tool for teachers (Hashem et al., 2024). However, research from Hong Kong suggests that both students and educators remain cautious and skeptical about fully integrating generative AI into education, largely due to the perceived necessity of social presence and personal communication in effective teaching and learning (Chan & Tsi, 2024).

The aforementioned findings highlight that the potential displacement of human educators and administrative staff is not merely theoretical. As institutions seek to reduce costs and scale operations, there is a growing temptation to automate social and human-facing functions that traditionally rely on empathy, contextual awareness, and professional judgment. Such shifts risk weakening the quality of educational support and eroding the personal relationships that are central to meaningful educational experiences. Ethically, this raises fundamental questions about whether AI chatbots should function as supplements to, or substitutes for, human engagement. Institutions must therefore carefully consider the pedagogical and psychological implications of replacing face-to-face interactions with AI-mediated communication. Overall, the literature suggests that significant uncertainty remains regarding whether agents, robots, or chatbots can effectively replace human teachers and administrators across the education sector, reinforcing the need for cautious, human-centred approaches to AI integration.

5.5. Institutional readiness and policy gaps

A significant finding of this review is the apparent lack of immediate and timely institutional readiness to manage the ethical challenges posed by AI chatbots. While our analysis of institutional responses (RQ2) shows that many HEIs are actively setting up policies and weighing the costs versus benefits of AI integration, these actions often appear reactive rather than part of a comprehensive, proactive governance strategy.

The prevalence of 'Weighing Costs vs. Benefits' as an institutional response, as identified in our results, suggests that many HEIs are still in a preliminary, strategic-planning phase rather than an advanced stage of implementing comprehensive governance structures. Despite the rapid integration of these tools, most HE institutions remain in the early stages of developing comprehensive AI policies. The review reveals a patchwork of guidelines, workshops, and informal practices, with little coherence or enforcement (Evangelista, 2025; Wang et al., 2024). This aligns with broader research indicating a disconnect between the espousal of ethical principles and their practical implementation in institutional governance frameworks (Tzimas & Demetriadis, 2021; Zhu et al., 2025). Other related systematic research also informs that while institutions are readily incorporating generativeAI and establishing clear responsibilities across educators, students and administrators, there is an absence of an ongoing evaluation and monitoring of the impact of this disruptive integration (Jin, Yan, et al., 2025). There are some inklings of frameworks referring to the integration of generativeAI, such as the "Embrace, Enable, Exploit, Experiment" model indicated in (Shailendra et al., 2024). This model extends itself to not only the implementation of generativeAI in the curriculum but also its ensuing evaluation. Other models (Zhai et al., 2021a) have tried to discern teacher involvement in the new era of generativeAI across different roles (Observer, Adopter, Collaborator, and Innovator). Educational institutions understand that whilst students can use generativeAI to attain completion across mandatory course or subject requirements such as assessments, the benefits of generativeAI and chatbot technology can also reflect and span across their integration in the actual curriculum. Nevertheless, despite these gaps in overarching policy and systematic evaluation, several institutions and educators are proactively experimenting with generative AI integration, both pedagogically and technologically. Some universities and educational organisations are

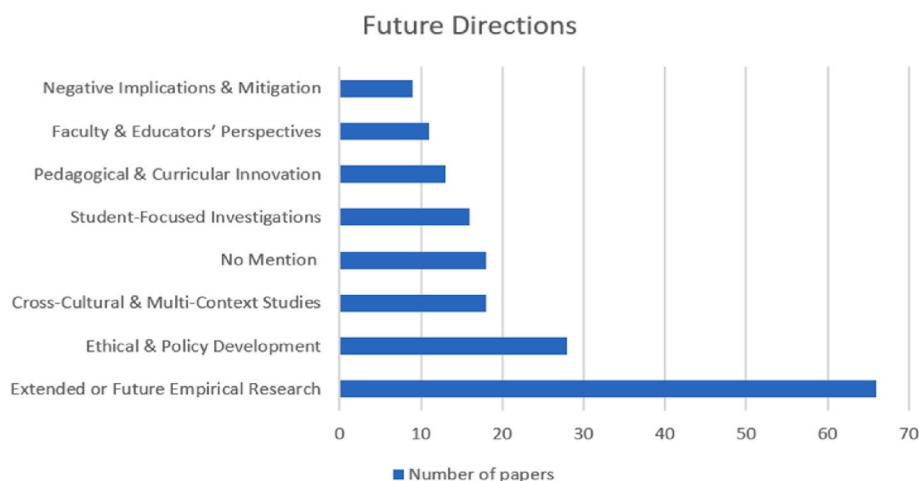


Fig. 8. Future directions.

utilising generativeAI, GPT API's and other prompt exercises as a key aspect of their assessment pedagogy to teach either Computer Science or Programming (Hazzan & Erez, 2024, March; Denny et al., 2024; Wang et al., 2024). This also extends to the use of AI tools for prototyping and programming such as ChatGPT or customised tools such as CS50 Duck (Liu et al., 2024) developed using Large Language Models.

When clear policies are missing, students and staff may become confused about what is acceptable, leading to inconsistent practices. Furthermore, policies that do exist tend to focus on proscription rather than responsible use, missing an opportunity to foster ethical AI literacy. Effective governance requires moving beyond simple rules to create a culture of ethical engagement with AI, a process that necessitates a participatory approach involving students, educators, and administrators. Policy development that is purely top-down, without input from those most affected, risks being ineffective and failing to build the trust necessary for successful and ethical AI integration.

5.6. Technological acceptance

Our review indicates that there is an apparent mismatch expressed over the large-scale acceptance of generativeAI technology in general but specifically chatbots (evident across the results from RQ1, RQ2, RQ4, RQ5). Although some revolutionary research highlights the promise in the technology there are also serious apprehensions around several negative factors such as the loss of employment and the possibility of accessing misleading, biased or incorrect information. Research also highlights how educational institutions (primarily universities) can be placed in four varying profiles related to their acceptance of generativeAI (Ioko et al., 2024), from a complete ban to a more relaxed, inclusive or neutral stance. Similar findings have been showcased in the domain of business organisations, where chatGPT was met with promise but caution at the same time (Bies et al., 2024). We have earlier discussed the need of monitoring the deployment of chatbot technology in education; our findings call for clear evaluation and acceptance determination frameworks, such as in (Yilmaz et al., 2024) where an acceptance scale for generativeAI was developed. These evaluation methodologies can be tailored and applied in higher education to ensure the successful long term implementation of generativeAI across curriculum.

5.7. Implications, future research directions and actionable insights

The ethical challenges indicated in the review can be linked to both ethical theory or frameworks as well as prior research (Soehardjo, D. W. A. et al., 2024). The former can be closely linked to morality and virtue or essentially doing the right thing in a pedagogical context

(deontology). Academic integrity, privacy and transparency are directly associated with student honesty, consent and fairness. The latter relates to ethical theoretical concerns which can also be result or outcome based (utilitarianism) with tension between short term and long term benefits of chatbots. Success now can cause harm later (in relation to learning quality and student independence for example). This can lead to the emergence of contract cheating or bypassing AI detection tools. Our review shows that the pedagogical effectiveness of chatbots is closely coupled with the ethical implications of the technology and we claim this is a key stand out feature of our review in comparison to other similar reviews on the topic.

As a broader vision, it is also interesting to note the interaction amongst the various ethical challenges. Over reliance by students on chatbot technology to solve educational tasks can cloud moral judgement and hence determination of academic integrity (Zhai, C. et al., 2024). Overuse can also lead students to ignore issues around misinformation (or hallucinations and incorrect feedback). On the other hand, misinformation once advertised and understood may cause students to lower their acceptance of chatbot technology (Jin, L. et al., 2025). Chatbots pretuned on specific datasets (a bias) may compromise certain student populations reducing acceptance on both student and institute level. We have already commented on the challenges faced by larger bodies to incorporate chatbots at a wider scale; as issues around data privacy, misinformation and bias all can lead to slower incorporation at a broader level such as at departments, colleges and universities. Chatbot adoption can hence be expected to go through phases, probably offset by an initial novelty effect. Challenges encountered towards integration of chatbot technology distinctly impact students, educators and institutions.

Building on the findings of this review, several opportunities for future research are recommended (RQ6). In line with the evidence synthesized, we propose a research agenda that is both methodologically grounded and structured around key stakeholders in the higher education ecosystem, with the aim of generating actionable insights that can directly inform policy, practice, and technological development.

First, there is a pressing need for empirical studies that examine how students, educators, and administrators perceive and interact with AI chatbots in real-world educational settings. Qualitative approaches, including interviews, ethnographic studies, and in-depth case analyses, are particularly well suited to capturing the lived experiences, ethical dilemmas, and sense-making processes of different stakeholder groups. Such work would deepen understanding of how AI chatbots are actually used, interpreted, and negotiated in everyday academic practice.

Second, longitudinal research designs are required to explore the longer-term impacts of AI chatbot use on student learning outcomes, academic integrity, and institutional culture. While short-term benefits

Table 6
Future directions.

Theme Name	All Related Papers	No.
Extended or Future Empirical Research	(Arista et al., 2023; Fegade et al., 2023; Alnaqbi & Fouda, 2023; Antony & Ramnath, 2023; Anyanwu et al., 2024; Aure & Cuenca, 2024; Bouteraa et al., 2024; Caccavale et al., 2024; Chen et al., 2023b; Chiu, 2024; Crawford et al., 2024; Dakakni & Safa, 2023; Dube et al., 2024; Espartinez, 2024; Ghorashi et al., 2023; Gunawan et al., 2024; Hasanein & Sobaih, 2023; Huallpa, 2023; Ilieva et al., 2023; Jo, 2024; Kanont et al., 2024; Katsamakos et al., 2024; Kayali et al., 2023; Klímová & Ibna Seraj, 2023; Lai et al., 2024; Lee et al., 2024; Jagadeesh et al., 2023; Mendez et al., 2020; Meyer et al., 2023; Michel-Villarreal et al., 2023; Guillén-Yparrea & Hernández-Rodríguez, 2024; Phutela et al., 2024; Nam & Bai, 2023; Nguyen et al., 2024; Niloy et al., 2024; Nikolic et al., 2023; Okoye et al., 2024; Oqaidi et al., 2024; Parviz, 2024; Perna et al., 2024; Polyportis, 2024; Rudolph et al., 2023; Sales de Aguiar, 2024; Samala et al., 2024; Sarsam et al., 2023; Sekwatlakwatla & Malele, 2023; Silva et al., 2024; Soodan et al., 2024; Spivakovsky et al., 2023; Srinivasan et al., 2024; Stöhr et al., 2024; Tayan et al., 2024; Tossell et al., 2024; Shabunina et al., 2023; Wang et al., 2023; Wu & Yu, 2024; Xia et al., 2024; Yang & Li, 2024; Yang et al., 2024; Duong et al., 2023; Hidayat-ur-Rehman & Ibrahim, 2023; Padilla et al., 2023; Jose & Jose, 2024; Sijing & Lan, 2018; Oliveira, 2023; Ali et al., 2024)	66
Ethical & Policy Development	(Adiguzel et al., 2023; Ahmad et al., 2024; Alshahrani et al., 2024; Awad & Moosa, 2023; Cisneros et al., 2023; Ifelebuegu et al., 2023; Ilieva et al., 2023; Imran & Almusharraf, 2023; Jagadeesh et al., 2023; Kiryakova & Angelova, 2023; Kooli, 2023; Lo, 2023; Maita et al., 2024; Nam & Bai, 2023; Nguyen et al., 2024; Nikolic et al., 2023; Riapina, 2024; Samala et al., 2024; Williams, 2024; Xia et al., 2024; Yang et al., 2024), (Duran, 2024), (Hidayat-ur-Rehman & Ibrahim, 2023; Oliveira, 2023; Padilla et al., 2023; Rudolph et al., 2024; Sijing & Lan, 2018; Özer, 2024)	28
Cross-Cultural & Multi-Context Studies	(Espartinez, 2024; Fegade et al., 2023; Gunawan et al., 2024; Hidayat-ur-Rehman & Ibrahim, 2023; Huallpa, 2023; Ilieva et al., 2023; Lee et al., 2024; Nam & Bai, 2023; Nguyen et al., 2024; Niloy et al., 2024; Okoye et al., 2024; Perna et al., 2024; Sekwatlakwatla & Malele, 2023; Srinivasan et al., 2024; Stöhr et al., 2024; Wang et al., 2023; Yang et al., 2024; Yang & Li, 2024)	18
Student-Focused Investigations	(Aguilera-Hermida, 2024; Chen et al., 2023b; Gruenhagen, Sinclair, et al., 2024; Hasanein & Sobaih, 2023; Katsamakos et al., 2024; Lai et al., 2024; Maita et al., 2024; Guillén-Yparrea & Hernández-Rodríguez, 2024; Nam & Bai, 2023; Nguyen et al., 2024; Oqaidi et al., 2024; Parviz, 2024; Polyportis, 2024; Lo, 2023; Pallivathukal et al., 2024; Jose & Jose, 2024)	16
Pedagogical & Curricular Innovation	(Abulibdeh et al., 2024; Duong et al., 2023; George & Wooden, 2023; Kayali et al., 2023; Klímová & Ibna Seraj, 2023; Maita et al., 2024; Mendez et al., 2020; Tayan et al., 2024), (Duran, 2024), (Pallivathukal et al., 2024; Jose & Jose, 2024; Oliveira, 2023; Özer, 2024)	13
Faculty & Educators' Perspectives	(Antony & Ramnath, 2023; Anyanwu et al., 2024; Caccavale et al., 2024; Chen et al., 2024; Chiu, 2024; Jo, 2024; Maita et al., 2024; Rudolph et al., 2023; Rudolph et al., 2024; Spivakovsky et al., 2023; Özer, 2024)	11
Negative Implications & Mitigation	(Abbas et al., 2024; Ahmad et al., 2024; Almahasees et al., 2024; Awal, 2024; Bego, 2023;	9

Table 6 (continued)

Theme Name	All Related Papers	No.
No Mention	Imran & Almusharraf, 2023; Kooli, 2023; Silva et al., 2024; Soodan et al., 2024) (Ahadi et al., 2023; Cain et al., 2023; Chang et al., 2023; Chen & Huang, 2023; Chen et al., 2020; Cheng et al., 2024; Chiu et al., 2023; Duah & McGivern, 2024; Slomp et al., 2024; Farrelly & Baker, 2023; Frick, 2024; Fuchs & Aguilos, 2023; Hamam, 2021; Ibrahim et al., 2023; Jose & Jose, 2024; Vargas-Murillo et al., 2023; Xie & Ding, 2023; Zeb et al., 2024)	18

are often reported, sustained use may give rise to unintended consequences that only become visible over time. Emerging work has begun to examine whether motivation and pedagogical immersion can be maintained when using generative AI tools; for example, Liu and Reinders (2025) report generally positive outcomes in a six-week language-learning intervention using ChatGPT. Extending such studies over longer periods would provide more robust evidence on durability, dependency, and educational value.

Third, comparative and cross-cultural research is essential to understand how ethical concerns manifest across different educational systems. Variations in data protection regimes, cultural norms, institutional values, and regulatory environments may significantly shape how AI chatbots are perceived, trusted, and governed (Globig et al., 2024). Cross-national studies could therefore inform the development of more culturally responsive and globally relevant ethical and governance guidelines.

Fourth, design-oriented research should explore how ethical principles can be embedded into AI chatbot systems from the outset. This includes participatory design approaches that actively involve students, educators, and administrators in the co-creation of educational chatbots, as well as technical research aimed at enhancing transparency, explainability, and fairness in algorithmic decision-making. Such work is critical for ensuring that ethical considerations are not retrofitted but are integral to system development.

Finally, policy- and governance-focused research is needed to evaluate the effectiveness of existing institutional frameworks for managing AI ethics in higher education. Key questions remain regarding whether current policies are adequate, how they are implemented and enforced in practice, and which best practices can be scaled across institutions. Addressing these issues will require close collaboration between researchers, policymakers, and practitioners.

Reflecting these priorities, future research can be organised around the following stakeholder groups.

5.7.1. For institutional leaders and policymakers

- Develop and validate comprehensive AI governance frameworks that are both robust and adaptable, including models for ongoing monitoring and evaluation of AI tools' ethical and pedagogical impact, to support a shift from reactive policy-making to proactive, strategic governance.
- Investigate the long-term return on investment (ROI) of developing bespoke, in-house AI chatbots versus licensing third-party solutions, with particular attention to data sovereignty and ethical alignment, to inform fiscally sustainable and responsible procurement decisions.
- Conduct comparative policy analyses across national and cultural contexts to identify best practices for regulating AI in higher education and balancing innovation with ethical safeguards.

5.7.2. For educators and curriculum designers

- Develop and validate authentic assessment models that leverage AI as a collaborative tool rather than proscribing its use, such as

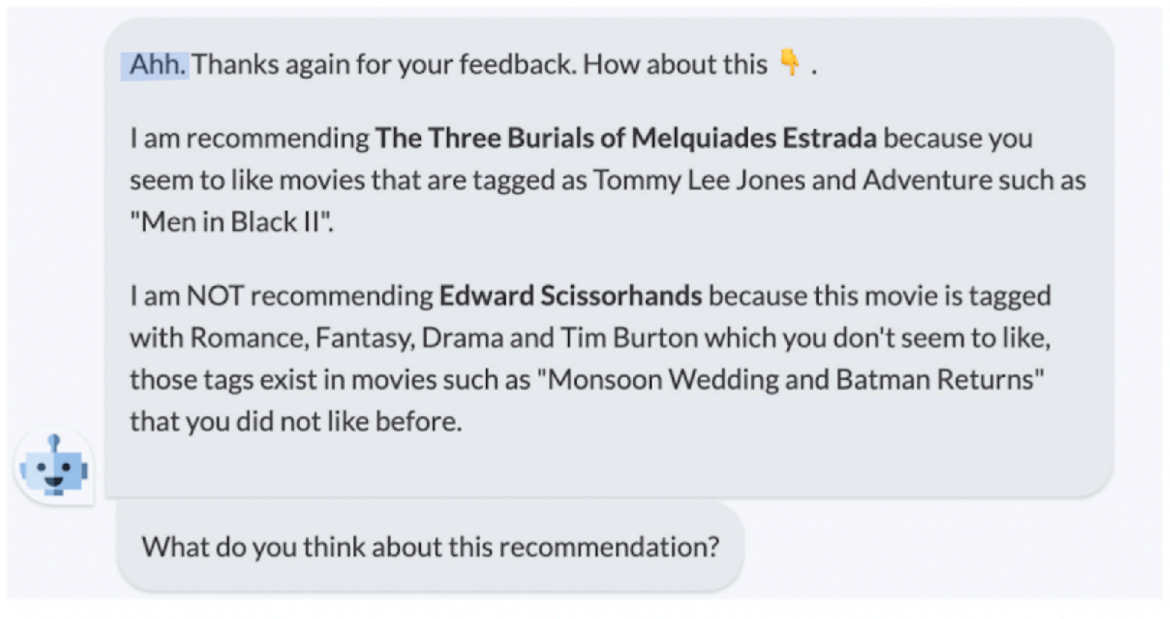


Fig. 9. Chatbot simulating xAI - combinations of justifications from (Wilkinson et al., 2021).

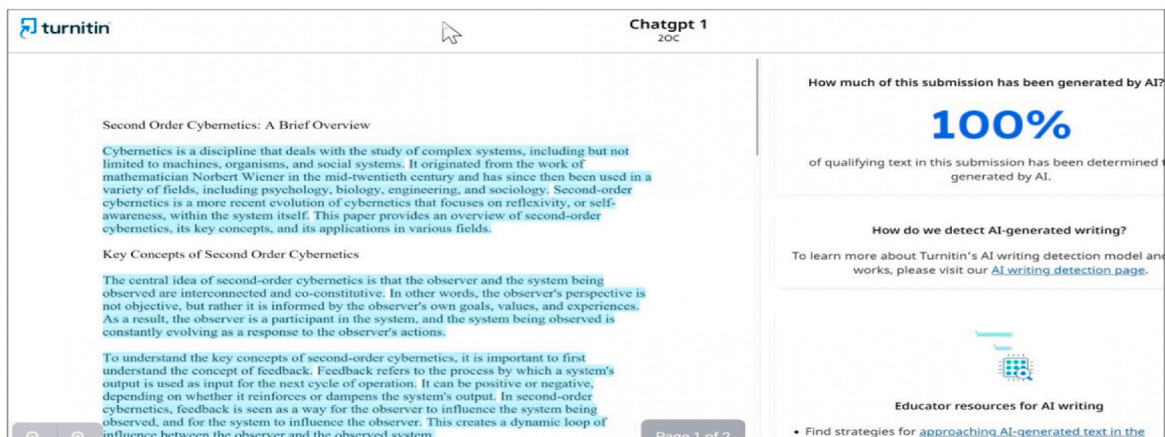


Fig. 10. Turnitin AI check from (Baron, 2024).

assessments requiring students to critically evaluate, refine, or build upon AI-generated content.

- Conduct ethnographic or longitudinal studies examining the long-term impact of AI chatbot integration on student–educator relationships and classroom dynamics, ensuring that technology enhances rather than diminishes the human-centred nature of education.
- Design and evaluate professional development programmes aimed at strengthening educators' AI literacy, including pedagogical strategies for teaching with AI and the capacity to critically assess AI tools.

5.7.3. For AI developers and researchers

- Engage in participatory design studies that involve students, educators, and administrators in the co-creation of educational chatbots, helping to embed ethical principles from the earliest stages of development.
- Advance the development of transparent and explainable AI (xAI) for educational applications, focusing on chatbot interfaces that can clearly articulate the reasoning behind their outputs and disclose potential biases in training data.

- Investigate methods for mitigating algorithmic bias in chatbot training data, particularly for underrepresented student populations and non-English speakers, to promote equity and inclusive educational support.

In conclusion, the ethical integration of AI chatbots in higher education is a complex but crucial endeavor. Addressing this challenge requires interdisciplinary, multi-stakeholder, and context-sensitive research approaches to ensure that AI technologies function as instruments of equity, empowerment, and educational excellence rather than sources of new ethical risk.

6. Conclusion

Our systematic review has explored the complex ethical landscape surrounding the integration of AI chatbots in higher education. The findings indicate that while these technologies offer substantial benefits in terms of personalised learning, administrative efficiency, and round-the-clock support, they also introduce profound ethical challenges that demand careful consideration.

Foremost among these challenges is the issue of data privacy.

Students often engage with AI chatbots without full awareness of how their data is collected, used, and potentially shared with third parties. The lack of transparency in data handling practices undermines trust and exposes institutions to legal and ethical risks. Similarly, algorithmic bias in AI systems poses a threat to equity and inclusion, particularly when systems are trained on data that fails to represent diverse student populations.

Academic integrity is also at stake. As students increasingly rely on AI tools for completing coursework, institutions must develop clear and consistent guidelines to differentiate between acceptable assistance and misconduct. To address this, assessment strategies need to be redesigned to focus more on encouraging critical thinking and creativity, rather than simply repeating learned material. Equally important is the human dimension of education. While AI chatbots can enhance access to information and streamline support services, they must not replace the empathy, mentorship, and interpersonal connections that define effective teaching and learning. Institutions should therefore approach AI adoption as a complement to, rather than a replacement for, human interaction.

Finally, the review underscores the urgent need for coherent institutional policies. Ethical AI integration cannot be achieved through ad hoc initiatives or reactive measures. It requires a proactive, inclusive, and iterative approach that engages all stakeholders in the design, implementation, and governance of AI systems in education.

By synthesising current research and highlighting critical gaps, this paper contributes to a growing body of knowledge on the ethical implications of AI in education. It offers a roadmap for institutions seeking to harness the potential of AI chatbots while safeguarding the values and integrity of higher learning.

7. Limitations

While this review provides a comprehensive synthesis of the ethical considerations associated with AI chatbot use in higher education, it is not without limitations. First, the review was restricted to studies published in English, which may have excluded relevant research conducted in other languages and cultural contexts. This language bias could limit the generalisability of the findings, particularly given the global nature of higher education and AI adoption. Second, although the review included peer-reviewed journal articles, conference proceedings, and institutional reports, it did not comprehensively incorporate grey literature, such as internal policy documents or unpublished case studies. These sources could offer valuable insights into real-world institutional practices and challenges that are not captured in formal academic publications. Finally, the rapidly evolving nature of AI technology poses a challenge for any review. New chatbot applications, regulatory developments, and ethical frameworks are continuously emerging, potentially rendering some findings outdated. The dynamic nature of the field means that this review offers a snapshot in time rather than a definitive or exhaustive account of the ethical landscape.

CRedit authorship contribution statement

Ons Al-Shamaileh: Writing – review & editing, Writing – original draft, Visualization, Methodology, Funding acquisition, Formal analysis, Conceptualization. **Ramy Hammady:** Writing – review & editing, Writing – original draft, Conceptualization. **Mahmoud Abdelrahman:** Writing – review & editing, Writing – original draft, Conceptualization. **Omar Mubin:** Writing – review & editing, Writing – original draft.

Declaration of generative AI and AI-assisted technologies in the writing process

ChatGPT was used solely to improve the language and clarity of the manuscript; after using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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