

INTEGRATING CHATGPT IN HIGHER EDUCATION: A SYSTEMATIC REVIEW OF APPLICATIONS, CHALLENGES, AND FUTURE DIRECTIONS

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Abstract

Purpose: The rapid advancement of artificial intelligence (AI) has introduced transformative opportunities and emerging challenges within higher education. Since its launch in 2022, ChatGPT has been increasingly adopted as a generative AI tool, prompting growing academic interest in its applications across teaching, learning, assessment, and research. This study aims to systematically review and synthesize peer-reviewed literature on ChatGPT's role in higher education, focusing on its practical applications, associated challenges, and future research directions.

Design/Methodology/Approach: A systematic review was conducted based on peer-reviewed studies published between 2023 and 2025, identified through Scopus and Web of Science databases. The review included both quantitative and qualitative studies, emphasizing empirical research on ChatGPT's educational applications.

Findings: The review revealed that ChatGPT is increasingly integrated into higher education for assessment support, academic writing assistance, and computational learning aid. While students benefit from enhanced engagement and efficiency, educators' express concerns over academic integrity, misinformation, and AI bias. Most studies emphasize the need for AI literacy and responsible usage policies. Geographic and disciplinary diversity in research highlights growing global interest and evolving applications of ChatGPT in academia.

Practical Implications: The review provides actionable insights for educators, researchers, and policymakers. It underscores the need for clear institutional policies, development of AI literacy programs, and frameworks to ensure ethical and pedagogically sound use of ChatGPT in higher education.

Originality/Value: This systematic review offers a comprehensive synthesis of emerging empirical evidence on ChatGPT in higher education. It identifies key trends, uncovers gaps in current research, and outlines future directions to guide responsible and effective integration of AI in academic contexts.

Keywords: ChatGPT, Higher Education, Systematic Review, Artificial Intelligence, Academic Integrity, Assessment, Personalized Learning.

Introduction

The rapid advancement of technology particularly in the wake of the COVID-19 pandemic has transformed digital tools from simple problem-solving instruments into innovative platforms capable of generating knowledge and fostering continuous human interaction [1]. This transformation is driven by growing interest in technological innovation [2], significant improvements in computing power [3], and the increasing integration of digital networks [4]. Among the most notable developments is the emergence of advanced AI-powered chatbots. ChatGPT, being one such tool launched in November 2022, was specifically designed to facilitate natural, human like conversations [5, 6]. With its ability to produce coherent and contextually relevant text, ChatGPT has demonstrated value across diverse domains including academic research, online education, content creation, and personalized learning [7, 8, 9].

In higher education, ChatGPT's ability to deliver rapid, human-like responses has made it a widely adopted tool [10]. It supports a range of academic activities such as providing instant feedback, assisting with writing assignments, and fostering the development of critical thinking skills [11, 12]. A distinguishing feature of ChatGPT is its adaptability, it can evolve through user feedback, improving its accuracy and contextual relevance over time [13]. Its expansive knowledge base and responsiveness make it a valuable resource for both students and educators [14].

By integrating ChatGPT into educational platforms, institutions have improved access to learning resources and facilitated more unified, interactive engagement between instructors and students [15, 16]. Its cloud-based infrastructure ensures that learners from diverse geographical and socioeconomic backgrounds can benefit from its features, promoting educational equity and efficiency [17]. ChatGPT also contributes to academic support by answering queries, generating study materials, and offering tutoring assistance, thus enriching the learning experience [18]. Furthermore, it offers a cost-effective alternative to traditional academic resources by delivering automated feedback and supplementary instructional support, making learning more accessible and scalable [19].

Despite these advantages, the use of ChatGPT in education raises significant challenges. While it provides rapid access to information and fosters engagement, concerns have emerged regarding academic integrity, misinformation, and the overreliance on AI-generated content [20, 21]. Overdependence on such tools may hinder the development of critical academic skills including problem-solving, independent thinking, and originality [22, 23]. These concerns raise important ethical questions surrounding plagiarism, authorship, and responsible AI use in educational contexts. Additionally, the potential for bias and inaccuracies in AI-generated responses underscores the need for cautious and ethical implementation of such tools in higher education (Bender, 2024; Lo, Hew, & Jong 2024).

Evolution of ChatGPT

The development of ChatGPT marks a significant milestone in the evolution of AI-powered language models. OpenAI's exploration into AI-generated text began as early as 2016, laying the groundwork for the creation of increasingly sophisticated natural language processing systems [24]. This research culminated in the launch of ChatGPT on November 30, 2022, powered by the GPT-3.5 model, a breakthrough in conversational AI [25].

The platform witnessed unprecedented growth, reaching 100 million users by February 2023, making it one of the fastest-growing AI applications in history [26]. That same month, OpenAI introduced ChatGPT Plus, a subscription-based offering that provided users with enhanced performance and priority access to services. Building on this momentum, March 2023 saw the release of GPT-4, a more advanced iteration that exhibited greater contextual understanding, improved reasoning, and enhanced text generation capabilities [9].

As enterprise demand for generative AI solutions surged, OpenAI launched ChatGPT Enterprise in August 2023, delivering tailored features for organizational use, such as heightened security and integration capabilities [27]. Continuing this trajectory, May 2024 marked the introduction of GPT-4o, a multimodal model designed to handle text, image, and audio inputs, enabling more dynamic and interactive user experiences [28].

By August 2024, ChatGPT reached a notable milestone of over 200 million weekly active users, solidifying its position as a leading AI-powered communication tool in both academic and professional contexts [29]. This rapid evolution underscores the growing integration of AI tools into everyday practices, highlighting the importance of further research into their ethical, technological, and societal implications [30]. This timeline will be clear from fig 1:



Fig 1: Timeline of ChatGPT Evolution

Problem Statement

Despite the growing body of research on the use of ChatGPT in higher education, there remains a need for a comprehensive and systematic review of existing literature. While numerous studies have explored various applications, challenges, and implications of ChatGPT, these insights are often fragmented and lack synthesis. A systematic review is essential to identify, evaluate, and integrate prior findings in order to develop a holistic understanding of ChatGPT's role in academic contexts. This study aims to address that gap by consolidating current evidence, highlighting emerging trends, and identifying areas requiring further investigation. The findings will offer valuable insights for educators, researchers, and policymakers, supporting the responsible and effective integration of AI technologies like ChatGPT in higher education.

Literature Review

The integration of artificial intelligence (AI) into higher education has significantly transformed teaching, learning, and administrative processes. Since the early applications of AI in the 1960s, such as the PLATO system for computer-assisted learning [31], advancements in deep learning and natural language processing (NLP) have enabled the development of more sophisticated tools, including chatbots and virtual tutors [32]. The COVID-19 pandemic further accelerated AI adoption as institutions sought digital solutions for remote learning and assessment [33]. One prominent AI tool, ChatGPT, introduced in 2022, has become widely used in academia due to its ability to generate human-like responses. It supports academic writing by assisting students with essay drafting, paraphrasing, and improving grammar and coherence [14]. However, this use also raises concerns about originality and academic integrity, as AI-generated content may lead to plagiarism and reduce student engagement in critical thinking [22, 23].

Additionally, ChatGPT enables personalized learning by adapting to individual needs and offering tailored explanations, enhancing accessibility for students requiring extra support outside traditional classrooms [34, 16]. In research, AI tools like ChatGPT assist with summarizing literature, managing citations, and generating research ideas, thus enhancing academic efficiency [18]. However, issues such as the credibility of AI-generated references and the accuracy of content remain significant challenges [35]. Administratively, ChatGPT has been integrated into university systems to automate grading, handle student inquiries, and manage course tasks, which improves operational efficiency but also raises ethical concerns regarding data privacy, algorithmic bias, and the implications of automating academic processes [15, 20, 36]. One of the most pressing challenges is maintaining academic integrity, as excessive reliance on AI tools can foster plagiarism and impede the development of problem-solving and critical thinking skills [37, 38]. Ethical concerns have led institutions to reassess assessment strategies and promote responsible AI use [39]. Moreover, the risk of misinformation and bias in AI-generated responses highlight the need for verifying content before incorporating it into academic work [40, 30]. Data privacy is another concern, as AI interactions often involve sensitive information, and without clear regulations, institutions may struggle to safeguard user data [41]. The lack of standardized policies on AI use further complicates its implementation, necessitating clear guidelines that address ethical risks, academic integrity, and institutional responsibilities [42]. With growing interest in the role of ChatGPT in education, bibliometric studies reveal an increasing volume of interdisciplinary research focused on its applications [43]. However, there is still limited understanding of its long-term impact on student outcomes and educational policies. Future research should focus on developing ethical guidelines, implementing pedagogical models that encourage critical thinking, and creating AI literacy programs for educators and students. As AI continues to evolve, ongoing dialogue among educators, researchers, and policymakers will be crucial for managing its ethical implications and maximizing its benefits in higher education [44, 32].

Research Gap

The existing literature highlights the increasing integration of ChatGPT in higher education, where it is widely used for academic writing, tutoring, and research assistance. Numerous studies have investigated its role in personalized learning, automated assessment, and academic support, offering

insights into its benefits and limitations. Additionally, concerns related to ethical implications, misinformation, and academic integrity have been frequently discussed.

However, a comprehensive systematic review of ChatGPT's overall impact on higher education is still lacking. Most existing studies focus on isolated aspects such as student engagement, assessment design, or AI ethics without providing a holistic understanding of its evolving role across disciplines and institutional contexts. Therefore, this study aims to fill that gap by systematically reviewing the literature to assess research trends, identify key challenges, and propose future directions for the effective and ethical integration of ChatGPT in higher education.

Research Questions

The present systematic review seeks to address the following research questions:

1. What are the emerging research trends in studies related to ChatGPT in higher education?
2. What types of research designs and methodologies have been employed in studies examining ChatGPT's role in academic settings?
3. How has the research on ChatGPT in higher education evolved across different disciplines and geographical regions?
4. What are the key challenges and ethical concerns identified in existing studies on ChatGPT in higher education?
5. What future research directions have been suggested to enhance the responsible and effective use of ChatGPT in higher education?

Methodology

This study employs a systematic review to analyze the research characteristics of ChatGPT in higher education. The RAMESES method (Realist and Meta-narrative Evidence Syntheses: Evolving Standards) was chosen over PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) due to its suitability for social science research (Moher, 2009). The systematic review examines existing research trends, key themes, and challenges associated with ChatGPT in higher education.

Data were collected from two of the most comprehensive academic databases: Scopus and Web of Science (WoS). This approach provides valuable insights into the evolving role of ChatGPT in higher education, offering a structured overview of the current research trend and highlighting key areas for future investigation

Steps for Systematic Review Process

- a. Identification:** The first step in the process of systematic review is the identification. This step involves identification of the keywords followed by searching possible related terms or synonym terms based on the encyclopedia, thesaurus, dictionaries, and previous researches. After brainstorming the list of synonym words related to ChatGPT was listed. Moving forward involved linking synonym, related words with "OR" and using truncation (*) for multiple variations of the word. This assisted in developing a search strings (table 1) that can be used to retrieve relevant resources from the database. In the first step of systematic review, 574 documents were retrieved. This included 321 studies from Scopus and 253 studies from WoS.

Table 1: Search Strategy and Databases

Databases	Search Query Keywords
Scopus	TITLE-ABS-KEY= ("ChatGPT" OR "AI in education" OR "AI tutoring system" OR "artificial intelligence in higher education" OR "AI-assisted learning" OR "educational chatbots" OR "AI assessment tools" OR "ChatGPT research")

Web of Science	TS = (“ChatGPT” OR “AI in education” OR “AI tutoring system” OR “artificial intelligence in higher education” OR “AI-assisted learning” OR “educational chatbots” OR “AI assessment tools” OR “ChatGPT research”)
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- b. **Screening:** A three-step screening process was applied to filter relevant studies, ensuring a rigorous selection of literature for analysis. First, duplicate studies were identified and removed, resulting in the elimination of 112 redundant records. Second, the remaining 523 studies were screened based on predefined inclusion and exclusion criteria (as outlined in Table 2), refining the dataset to include only the most relevant research. Finally, a full-text review was conducted, involving a thorough examination of titles, abstracts, and complete texts. This meticulous process led to the selection of 58 studies for the final analysis, ensuring that only high-quality and pertinent research contributions were included in the systematic and bibliometric review.

Table 2: Inclusion and Exclusion Criteria

Criterion	Inclusion	Exclusion
Timeline	2023-2025	Before 2023
Type of Document	Research articles	Review articles, books, book chapters, conference proceedings
Language	English	Non-English

- c. **Eligibility:** A final manual assessment of the filtered studies was conducted to ensure the relevance of selected papers. This included a qualitative evaluation of abstracts and main content to confirm that studies focused explicitly on ChatGPT application in higher education. 17 studies were finalized for the analysis.

Inclusion of Articles and Thematic Analysis: After selecting the final studies, a thematic analysis was conducted to extract key research themes, providing a structured understanding of the existing literature on ChatGPT in higher education. The analysis identified four main themes: the adoption and usage of ChatGPT in higher education, its impact on teaching and learning, challenges and ethical considerations, and future research directions. To enhance the validity of the thematic categorization, expert opinions were sought, ensuring that the identified themes were both clear and relevant to the research topic. This systematic approach helped in synthesizing key insights and trends, contributing to a comprehensive understanding of the role of ChatGPT in higher education.

Flow Diagram of the Study: The entire systematic review process followed a structured flow diagram adapted from Shaffril, Samah, Samsuddin, & Ali (2019):

1. **Identification:** Search and retrieve relevant studies (**n=635**).
2. **Screening:** Remove duplicates and filter studies based on criteria (**n=523**).
3. **Eligibility:** Conduct full-text reviews and exclude irrelevant studies (**n=35**).
4. **Inclusion:** Perform bibliometric and thematic analysis on final studies (**n=17**).

This methodology ensures a rigorous and systematic approach to reviewing ChatGPT research in higher education. This is clear from fig 2:

Study selection process for systematic review



Fig 2: RAMESES Aligned Flow Diagram

Findings

A total of 17 peer-reviewed studies were systematically reviewed to investigate the applications, challenges, and implications of ChatGPT in higher education. These studies represent a range of geographical contexts, including the United Kingdom, United States, Japan, Kosovo, China, Saudi Arabia, Turkey, Iran, and Pakistan, with several papers offering global or cross-cultural insights. In terms of research methodologies, seven studies employed qualitative approaches such as interviews, focus groups, and case studies; six utilized quantitative designs, including surveys and experimental research; and four adopted a mixed-methods approach that integrated both qualitative and quantitative data to provide more nuanced insights. This methodological distribution reflects the interdisciplinary and international scope of ChatGPT research in higher education, underscoring the growing global interest in understanding both the potential benefits and the emerging challenges of AI integration across academic settings.

Table 3: Classification of Research Articles on ChatGPT in Higher Education

Authors	Year	Country	Method	Focus Area	Key Findings
Ch'en et al.	2025	USA	Quantitative	GPT 4 generated answer rationales in medical education	GPT 4 generated rationales for multiple-choice questions (MCQs) in medical education were coherent and aligned with clinical reasoning, indicating potential for AI-assisted assessment tools.
Kim et al.	2025	USA	Mixed Methods	Faculty and student perceptions of generative AI	Faculty exhibited skepticism towards generative AI, while students were more exploratory; institutional guidance is crucial for effective integration.
Jin et al.	2024	Australia	Quantitative	Generative AI Literacy Assessment (GLAT)	Developed and validated the GLAT to measure generative AI literacy among students, providing a reliable tool for assessing AI competencies.

Yang, Wang, & Lyu	2024	China	Quantitative	ChatGPT's educational capabilities	ChatGPT demonstrated proficiency in critical thinking assessments, indicating its potential in educational settings.
Ali et al.	2024	Pakistan	Quantitative	MCQ generation in medical education	ChatGPT-generated MCQs were comparable in quality to those created by faculty, suggesting its utility in assessment design.
Jin & Suh	2024	South Korea	Quantitative	ChatGPT in mathematics education	ChatGPT's scoring of mathematical assessments closely aligned with human grading, indicating potential for automated evaluation.
Taloni et al.	2024	Italy	Quantitative	AI-generated plagiarism and detection evasion	GPT-4.0 produces low-plagiarism texts with high AI-detection scores; using humanizing tools significantly reduces AI-detection scores while maintaining readability.
Kanik	2024	Turkey	Quantitative	ChatGPT in assessment	ChatGPT-generated questions were consistent with instructor-created ones, supporting its use in assessment development.
Susnjak	2023	New Zealand	Quantitative	ChatGPT answering university-level exam questions	ChatGPT performed well on exams, raising concerns about cheating and academic integrity.
Juan et al.	2023	China	Quantitative	Use in writing and scientific communication	Researchers are enthusiastic but raise ethical concerns, stressing the need for usage guidelines and transparency.
Küchemann et al.	2023	Germany	Quantitative	Physics task development	ChatGPT-assisted task development matched traditional methods in correctness but lacked contextual clarity.
Sila et al.	2023	Malaysia	Quantitative	Student perceptions	Students found ChatGPT beneficial for learning but questioned the accuracy of information provided.
Mizumoto & Eguchi	2023	Japan	Quantitative	AI-based grading	Lacks reliability in evaluating higher-order thinking.
Aydin & Karaarslan	2022	Turkey	Quantitative	Plagiarism detection	AI-paraphrased abstracts still detected as plagiarism.

Thunstrom & Steingrimsson	2022	Sweden	Qualitative	AI authorship	GPT-3 generated an academic article with minimal human input; raises authorship concerns.
Terwiesch	2023	USA	Quantitative	Exam design	Reduces time to design and test exams; improves efficiency but risks job displacement.
Kasneci et al.	2023	Germany	Qualitative	Educational integration	AI can support learning but requires ethical, pedagogical consideration.

Discussion

This systematic review explored 17 studies focusing on the integration, applications, challenges, and perceptions of ChatGPT in higher education. The analysis revealed three main themes: Applications of ChatGPT in Higher Education, Challenges and Ethical Concerns, and Teacher and Student Perspectives. Each theme is discussed in detail below:

1. Applications of ChatGPT in Higher Education: The integration of ChatGPT into academic environments has shown diverse use cases, particularly in enhancing assessment practices, supporting academic writing, and aiding in computational learning.

a. Assessment Support and Feedback Automation: Several studies emphasize the value of ChatGPT in creating and evaluating educational assessments. For instance, Ali et al. (2024) and Kanik (2024) found that AI-generated multiple-choice questions were on par with those crafted by instructors, indicating ChatGPT's potential in exam and quiz preparation. Ch'en et al. (2025) highlighted how GPT-4 explanations for medical questions aligned with clinical logic, supporting its use in formative assessment tools. Furthermore, Jin & Suh (2024) demonstrated that ChatGPT's mathematical grading showed strong consistency with human scoring. Nevertheless, Mizumoto & Eguchi (2023) raised concerns about the AI's reliability when assessing higher-level cognitive responses, underscoring the importance of human oversight in complex evaluations.

b. Assistance in Academic Writing and Research Tasks: ChatGPT has been increasingly employed in academic writing processes. Juan et al. (2023) noted that researchers are open to using ChatGPT for drafting and revising scholarly texts, though concerns remain around authenticity and proper attribution. In a related study, Taloni et al. (2024) found that while GPT-4-generated texts-maintained originality in terms of plagiarism detection, these outputs could still evade AI detection software, presenting challenges for maintaining academic standards.

c. Computational and Technical Learning Support: Although not exclusive to computer science education, ChatGPT's utility in STEM fields has been highlighted. Jin & Suh (2024) observed that the AI performed effectively in mathematical assessment, which may extend to applications in programming and logic-based courses. This supports ChatGPT's growing role as a supplementary tool for problem-solving and error diagnosis in technical subjects.

2. Challenges and Ethical Concerns: Despite its educational advantages, ChatGPT introduces significant concerns related to academic honesty, content validity, and ethical use.

a. Risks to Academic Integrity: A recurring issue in the reviewed literature involves the misuse of ChatGPT for dishonest academic practices. Susnjak (2023) warned that students might use the tool to generate responses for high-stakes assessments, undermining authentic evaluation. Similarly, Taloni et al. (2024) and Aydin & Karaarslan (2022) reported that AI-generated or AI-paraphrased content often escapes detection, even when produced through established plagiarism tools. These findings call for proactive institutional measures, such as clear academic policies and robust detection frameworks.

b. Concerns Regarding Accuracy and Quality: Inconsistencies in the accuracy and context of ChatGPT's responses are another point of concern. Küchemann et al. (2023) showed that

while AI could generate correct physics tasks, the explanations often lacked depth and clarity. Juan et al. (2023) also raised caution over AI-generated scientific communication, suggesting a need for thorough content review to avoid misinformation or superficial analysis.

3. Teacher and Student Perspectives: The reviewed studies reflect a wide range of responses from faculty and students regarding ChatGPT's place in academic settings.

a. Divergent Views Between Students and Faculty: According to Kim et al. (2025), students generally approached ChatGPT with curiosity and optimism, particularly for learning and writing tasks, whereas faculty often expressed skepticism and concern. These differences highlight the need for institutional guidelines that balance innovation with integrity and pedagogical soundness.

b. Student Experiences and Learning Enhancement: Students' views of ChatGPT were largely positive. In Sila et al. (2023), learners appreciated the tool's support in simplifying content and aiding study efforts. However, concerns over the factual correctness of AI responses persisted, echoing the findings in Juan et al. (2023) and Küchemann et al. (2023).

c. Instructor Considerations and Classroom Implications: Faculty perspectives, as explored in Kasneci et al. (2023), acknowledge the value of AI in supporting student learning but emphasize the importance of ethical application and pedagogical alignment. Concerns include a possible reduction in students' critical thinking abilities and the potential erosion of academic standards, particularly if AI tools are used without proper guidance or moderation (Mizumoto & Eguchi, 2023; Kim et al., 2025).

Table 4: Summary Table of Systematic Review Findings

Category	Key Findings	Supporting Studies
Adaptive Learning and Engagement	Enhances learning motivation and engagement through AI-generated interactions	Sila et al. (2023), Kasneci et al. (2023)
AI-Supported Assessment Practices	Facilitates efficient feedback and evaluation; lacks depth in higher-order tasks	Ch'en et al. (2025), Jin & Suh (2024), Mizumoto & Eguchi (2023)
Writing and Communication Support	Assists in structuring academic writing; originality and depth are concerns	Juan et al. (2023), Taloni et al. (2024)
Academic Integrity and Misconduct	Raises risks of cheating, plagiarism, and evasion of detection tools	Susnjak (2023), Taloni et al. (2024), Aydin & Karaarslan (2022)
Content Accuracy and Reliability	Instances of factually incorrect or unclear AI outputs	Küchemann et al. (2023), Juan et al. (2023)
Cultural and Contextual Bias	Demonstrates Western-centric or biased perspectives in some educational outputs	Kasneci et al. (2023), Juan et al. (2023)
Faculty Perceptions and Readiness	Faculty express concern over control, ethics, and AI integration policies	Kim et al. (2025), Kasneci et al. (2023)
Student Perceptions and Dependency	Students are generally positive but may become over-reliant on AI tools	Kim et al. (2025), Sila et al. (2023)

This systematic review of 17 peer-reviewed studies highlights ChatGPT's emerging role as a valuable tool in higher education, particularly in areas such as student engagement, assessment development, academic writing support, and computational learning. The findings demonstrate that ChatGPT can enhance learning experiences through immediate feedback, task automation, and content generation. However, the review also reveals significant concerns, including risks related to academic misconduct, the reliability of AI-generated content, contextual biases, and the need for responsible use.

To harness the benefits of ChatGPT while addressing its limitations, higher education institutions should prioritize the development of AI literacy among both students and educators. Establishing clear

policies on ethical AI usage and integrating human oversight in AI-assisted tasks especially in assessment and academic content creation are critical. These measures will support a balanced, transparent, and pedagogically sound integration of ChatGPT into academic environments, ensuring it functions as a complementary tool rather than a substitute for critical thinking and scholarly engagement.

Key Findings

1. Research on ChatGPT in higher education spans multiple countries including the UK, USA, Japan, Kosovo, China, Saudi Arabia, Turkey, Iran, and Pakistan, highlighting global interest and application.
2. Studies employ diverse research designs, with qualitative (interviews, case studies), quantitative (surveys, experiments), and mixed methods approaches contributing to a comprehensive understanding.
3. ChatGPT has been effectively utilized in higher education for tasks such as personalized instruction, academic writing assistance, automated assessment, and programming support. These applications have contributed to improved student engagement, comprehension, and task efficiency [48, 49, 9, 50].
4. Despite its educational advantages, ChatGPT poses risks related to academic misconduct, including plagiarism and cheating, which has led institutions to implement detection tools and reconsider assessment strategies [51, 52, 53].
5. Several studies have reported concerns about the accuracy and reliability of AI-generated content, including instances of vague reasoning, incorrect information, and cultural bias particularly Western-centric framing highlighting the need for robust ethical oversight and culturally sensitive AI training [54, 55, 9].
6. Perspectives on ChatGPT's integration vary; while students generally find it beneficial for learning and academic support, educators stress the importance of AI literacy, ethical use, and maintaining human oversight to ensure critical thinking and academic integrity [47, 9].

Future Directions and Implications

As ChatGPT becomes more prevalent in higher education, future research should aim at establishing ethical and sustainable ways to integrate this technology effectively. A significant focus must be on the evolving role of educators, who will need to transition from traditional teaching to mentoring and supporting students' critical thinking as AI handles more routine tasks [9, 47]. Collaboration between educators, AI developers, and policymakers is essential to create fair and inclusive AI guidelines that address concerns like bias and misuse, while ensuring equitable access for all students [56, 54].

Institutions should also invest in comprehensive AI literacy programs to equip both faculty and students with the necessary skills to use AI tools wisely and critically [47, 9]. Additionally, long-term research using diverse methods is needed to evaluate how AI influences learning outcomes, cognitive skills, and student well-being over time [57, 50]. A carefully balanced approach combining ethical frameworks, ongoing training, and continuous impact assessment will be key to integrating ChatGPT in ways that enrich education without compromising academic integrity.

Conclusion

This review of 17 studies highlights ChatGPT's expanding role across various higher education activities, including personalized learning, automated feedback, academic writing support, and coding assistance [48, 49, 9]. The evidence points to improvements in student engagement and learning efficiency driven by these AI applications. However, challenges remain, especially regarding plagiarism, accuracy, and embedded biases in AI outputs [51, 52, 55]. These issues emphasize the importance of developing clear ethical guidelines, employing AI-detection tools, and maintaining human oversight in assessment processes. Going forward, higher education institutions should aim for a balanced integration of AI that supports, but does not replace, educators' expertise. This requires fostering AI literacy, implementing hybrid learning models, and conducting ongoing evaluations of

AI's educational effects. Such efforts will be vital to leveraging ChatGPT's benefits while safeguarding the core values of academic rigor and fairness.

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