



The Effect of ChatGPT on Academic Work among University Students: A Systematic Literature Review

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Abstract: The rapid rise of ChatGPT and other generative artificial intelligence (AI) tools has significantly reshaped academic practices in higher education, influencing how students learn, write, and engage with knowledge. Despite widespread adoption, concerns remain regarding academic integrity, originality, and learning quality. This study systematically reviews the impact of ChatGPT on university students' academic work using the PRISMA framework. A comprehensive Scopus database search was conducted using keywords related to ChatGPT, generative AI, academic work, and higher education. From 2,825 initial records, filtering by year, subject area, document type, publication stage, and language yielded 405 English-language journal articles. Eighty high quality studies with at least 30 citations were selected for full review. Findings indicate that ChatGPT enhances academic productivity, writing quality, and conceptual understanding by offering immediate feedback and accessible learning support. Interactive use promotes self-directed learning and motivation, while passive reliance may hinder creativity and critical thinking. Significant ethical concerns including plagiarism, fabricated content, and misrepresentation of authorship were consistently reported, underscoring the need for institutional guidance. The review concludes that ChatGPT can effectively support academic work when embedded within clear ethical and pedagogical frameworks. Universities should adopt responsible integration strategies, including AI governance policies, assessment redesign, and digital ethics training, to ensure that generative AI enhances rather than undermines academic integrity and intellectual development.

Keywords: ChatGPT, Generative Artificial Intelligence, Academic Work, University Students, Higher Education, Learning Motivation, Academic Integrity, AI Ethics, Assessment, PRISMA Framework.

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1. Introduction

1.1 Context

The introduction of ChatGPT, a generative artificial intelligence (AI) model developed by OpenAI, has profoundly transformed the landscape of higher education. Since its public release in late 2022, ChatGPT has been rapidly adopted by university students for a variety of academic purposes including writing assignments, programming assistance, research support, and language learning (Groothuisen et al., 2024; Rezai et al., 2024). Its conversational and context-aware

capabilities allow users to generate coherent essays, debug code, summarize research papers, and seek personalized explanations.

In higher education, these tools are increasingly used as academic companions that can enhance productivity and understanding (Alshammari & Alshammari, 2024; Ngo et al., 2024). However, the rise of ChatGPT has also triggered debates around academic integrity, originality, and learning depth, as its use blurs the boundary between human-authored and machine-generated work (Duah & McGivern, 2024). While educators recognize ChatGPT's potential to improve feedback systems and assessment efficiency (Banihashem et al., 2024; Lee & Moore,

2024), they also express concerns over plagiarism, dependency, and ethical misuse (Gruenhagen et al., 2024; Niloy, Akter, et al., 2024).

Consequently, research on the effect of ChatGPT in academic settings has become essential to understanding how this technology supports or undermines learning outcomes, influences student motivation and creativity, and affects teaching practices in higher education institutions globally.

1.2 Terminology

For the purpose of this review, several key terms are defined. *ChatGPT* refers to a chat generative pretrained transformer, based on large language models capable of generating human-like text through deep learning techniques (Baber et al., 2023).

Generative Artificial Intelligence (GenAI) is an AI systems that produce original content, including text, images, or code, by learning from vast datasets (Lee & Moore, 2024). *Academic Work* encompasses all tasks and activities conducted by university students as part of their formal education — such as essay writing, project development, data analysis, assessments, and research (Almassaad et al., 2024).

Academic Integrity refers to commitment to ethical principles in learning and assessment, emphasizing honesty, originality, and transparency (Duah & McGivern, 2024). These definitions are consistent with recent studies focusing on ChatGPT in higher education contexts, ensuring conceptual clarity throughout this review.

1.3 Motivation

The rapid incorporation of ChatGPT into academic practices has motivated researchers to examine its dual role as both an enabler and a disruptor of student learning. Empirical evidence suggests that ChatGPT can enhance student engagement, comprehension, and efficiency, particularly for non-native English speakers and students in programming or writing-intensive disciplines (Sun et al., 2024). For instance, students reported improved grammar, vocabulary, and language fluency when using ChatGPT as an interactive language tutor (Rezai et al., 2023; Kohnke, 2023). Similarly, ChatGPT-assisted learning in STEM fields has improved conceptual understanding and problem-solving abilities (Groothuijsen et al., 2024).

Nevertheless, concerns persist regarding the ethical and cognitive implications of its use. Studies show that excessive reliance on ChatGPT can hinder critical thinking, reduce creativity, and promote academic dishonesty (Naidu & Sevnarayan, 2023; Niloy, Bari, et al., 2024; Stojanov, 2023). Additionally, educators emphasize the lack of clear institutional guidelines, inconsistent policy enforcement, and potential data

privacy and plagiarism detection challenges (Jin et al., 2025).

These findings highlight a pressing need to synthesize the existing body of research to determine whether ChatGPT serves primarily as a pedagogical aid or a threat to academic integrity among university students.

1.4 Objectives and Research Questions

The aim of this work is to provide a comprehensive review of the influence of ChatGPT on higher education, with a particular focus on students' academic performance, learning behavior, and engagement. As generative AI tools become increasingly integrated into educational settings, it is essential to critically examine their pedagogical impact, ethical implications, and overall contribution to the learning experience. This study seeks to evaluate not only the reported benefits of ChatGPT use in academia but also the emerging challenges and risks that accompany its adoption.

Furthermore, this work aims to categorize the documented effects of ChatGPT into positive, negative, and neutral outcomes, thereby offering a balanced perspective on its role within academic contexts. By systematically reviewing existing literature, the study also identifies gaps in current research and proposes directions for responsible and sustainable integration of ChatGPT and similar AI systems into higher education.

To achieve these objectives, this work addresses the following research questions:

RQ1: What are the reported effects of ChatGPT on academic work among university students?

RQ2: How does ChatGPT influence students' learning patterns, motivation, and creativity?

RQ3: What ethical and academic integrity challenges arise from ChatGPT-assisted academic tasks?

RQ4: What are the existing research gaps and future directions concerning the use of ChatGPT in higher education?

The remainder of this paper is structured as follows: Section 2 presents the methodology of the review and the inclusion criteria for relevant studies. Section 3 synthesizes findings and discusses the reported effects of ChatGPT in academic contexts. Section 4 concludes the study by summarizing implications for educators, policymakers, and researchers.

2. Literature Review

The advent of generative artificial intelligence (AI), particularly ChatGPT, has catalyzed a significant shift in

academic practices, prompting extensive scholarly investigation into its implications for higher education. This review synthesizes the current body of literature, structured around the core themes of ChatGPT's impact on academic productivity and learning outcomes, its influence on student motivation and cognitive engagement, the associated ethical and integrity challenges, and the identified gaps guiding future research.

A dominant finding across studies is the role of ChatGPT as a cognitive and productivity amplifier. Research consistently indicates that students utilize ChatGPT to enhance academic efficiency, comprehension, and task execution. In technical disciplines such as programming and engineering, ChatGPT aids in debugging code, explaining complex concepts, and fostering problem-solving skills (Silva et al., 2024; Sun et al., 2024). In humanities and writing-intensive courses, it serves as a tool for structuring arguments, improving grammar, and refining academic language, especially benefiting non-native English speakers (Banihashem et al., 2024; Rezaei et al., 2023). Frameworks like the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Technology Acceptance Model (TAM) identify performance expectancy, perceived usefulness, and habit as key drivers of student adoption (Habibi et al., 2023; Strzelecki, 2024). This suggests that ChatGPT's value is largely perceived through its immediate utility in completing academic tasks. However, a critical caveat emerges: this utility can lead to overreliance, where students may bypass deep analytical processes, potentially compromising the development of independent critical thinking and original thought (Valova et al., 2024; Kizilcec et al., 2024).

The influence of ChatGPT on learning patterns, motivation, and creativity is context-dependent. A substantial stream of literature highlights its potential to foster intrinsic motivation, self-directed learning, and engagement. The interactive, conversational nature of ChatGPT aligns with constructivist learning principles, encouraging exploratory inquiry and active knowledge construction (Hmoud et al., 2024; Lai et al., 2023). In language learning, for instance, it can stimulate creativity and communication fluency by providing real-time, contextualized feedback (Cai et al., 2024). Studies note that when used as an interactive partner, ChatGPT can increase task enjoyment, reduce learning anxiety, and promote sustained study effort (Pesovski et al., 2024). Conversely, when used passively as a content generator, it poses a clear risk to creativity and critical synthesis. The act of uncritically adopting AI-generated outputs can stifle original ideation and deep cognitive engagement, turning a potential pedagogical aid into a crutch (Polyportis, 2024; Niloy, Bari, et al., 2024). Thus, the tool's impact on motivation and creativity is not inherent but is mediated by the pedagogical design and intentionality of its use.

Perhaps the most urgent and widely discussed theme in the literature revolves around ethical and academic integrity challenges. The capability of ChatGPT to produce coherent, human-like text complicates traditional paradigms of authorship, originality, and assessment. A significant concern is the escalation of plagiarism, data fabrication, and authorship misrepresentation, which existing plagiarism detection tools are often ill-equipped to identify (Barrett & Pack, 2023; Michel-Villarreal et al., 2023). This challenges the fairness and validity of assessments and undermines the foundational values of academic honesty (Duah & McGivern, 2024). Educators express apprehension about students developing an uncritical trust in AI outputs, which can distort their understanding of knowledge production and ethical scholarship (Kiryakova & Angelova, 2023). In response, scholars are calling for a fundamental rethinking of assessment strategies, shifting focus from product-oriented outputs to process-based evaluations that emphasize critical thinking, reflection, and AI literacy (Moorhouse et al., 2023; Kizilcec et al., 2024). Furthermore, the literature underscores a pressing need for robust institutional AI policy frameworks that provide clear guidelines on ethical use, address data privacy, and integrate digital ethics into the curriculum (Chan, 2023; Chiu, 2024).

Finally, the literature reveals several critical research gaps. First, there is a methodological bias toward cross-sectional and perception-based studies, with a scarcity of longitudinal research measuring the long-term impact of ChatGPT on skill retention and academic development (Polyportis, 2024; Chiu, 2024). Second, the geographical focus is uneven, with most evidence emanating from Asia, Europe, and North America, leaving a dearth of research from African, Middle Eastern, and other underrepresented regions (Habibi et al., 2023; Khlaif et al., 2024). Third, while writing and communication domains are well-studied, the application and implications of ChatGPT in STEM, medical, and applied science education require deeper exploration (Nikolic et al., 2024). Fourth, there is limited theoretical integration; few studies explicitly connect ChatGPT to established pedagogical theories like self-regulated learning or social constructivism to inform its design and implementation (Chang et al., 2023). These gaps collectively highlight the need for more rigorous, inclusive, and theoretically grounded research to guide the sustainable and equitable integration of generative AI in global higher education.

3. Methodology

This study adopted the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) framework to ensure a transparent, replicable, and rigorous process in identifying, screening, and synthesizing empirical evidence on the effect of ChatGPT on academic work among university students. The PRISMA protocol involves four critical phases

identification, screening, eligibility, and inclusion and exclusion criteria. Each designed to reduce bias and enhance the validity of systematic reviews.

3.1 Search Strategy

A comprehensive literature search was conducted using the Scopus database, owing to its wide coverage of peer-reviewed scientific publications. The search aimed to identify studies examining the impact of ChatGPT and other generative AI models on learning, assessment, and overall academic performance in higher education contexts. The Boolean search expression used was: ("ChatGPT" OR "Generative AI" OR "Artificial Intelligence chatbot") AND ("academic work" OR "learning" OR "education" OR "assessment") AND ("university students" OR "higher education" OR "college students").

The initial search yielded 2,825 documents. Several filters were sequentially applied to refine the results. When the publication year was restricted to 2020–2025, the records slightly reduced to 2,806. Limiting the subject area to Computer Science narrowed the records to 1,387, while restricting the document type to Articles reduced the total to 553. Further limitation to the final publication stage produced 496 records. To ensure

conceptual relevance, the search was refined using keywords including ChatGPT, Higher Education, Artificial Intelligence, Generative AI, University Students, Assessments, and Learning, reducing the results to 417. The source type was then restricted to Journal articles, leaving 416, and finally, limiting the language to English produced 405 records.

To ensure analytical depth, only highly cited articles were considered, and those with fewer than 30 citations were excluded. Consequently, a total of 80 articles were retained for detailed review and synthesis. This refinement process aligns with the PRISMA framework, ensuring that the review focuses on robust and credible academic evidence.

The distribution of retrieved articles by publication year is illustrated in figure 1, which depicts a steady increase in the number of research publications on ChatGPT from 2020 to 2025. The figure shows that only one article was published in 2020, reflecting the initial emergence of generative AI discussions in academia. The number of publications rose to 31 in 2023, corresponding with the global introduction of ChatGPT to the public, and surged dramatically to 167 in 2024 and 206 in 2025. This exponential growth shows the rapid expansion of scholarly interest in exploring the educational implications of ChatGPT within a short period.

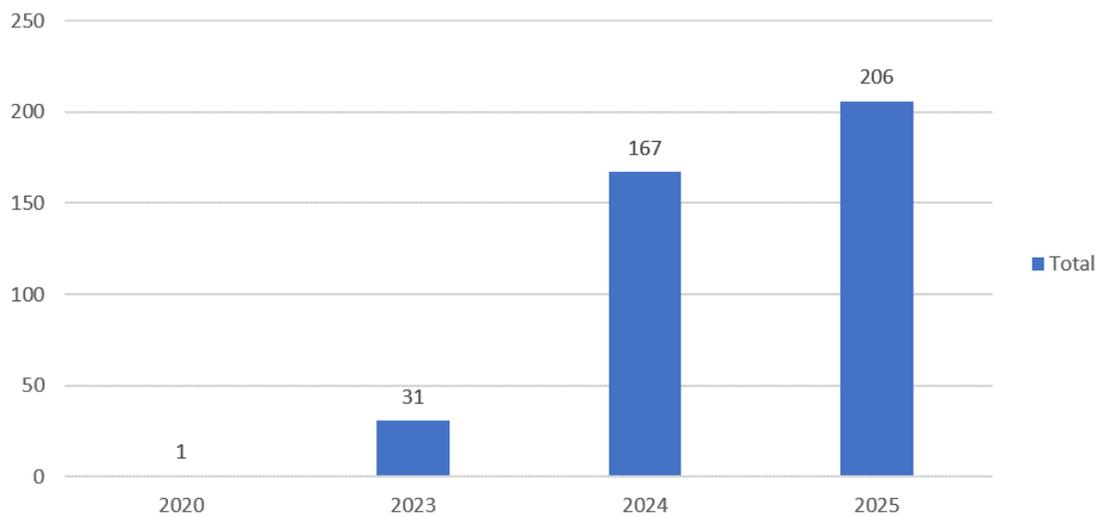


Figure1: Research Article Distribution

3.2 PRISMA Framework

The PRISMA framework presented in figure 2 was employed to organize the process of identifying and refining relevant literature systematically. During the identification phase, 2,825 records were retrieved through database searching. The screening phase involved applying filters for publication year, subject area, and document type, reducing the number to 553. In the eligibility stage, the studies were assessed for relevance based on titles, abstracts, and keywords,

leaving 417 records after refinement. The inclusion stage involved assessing the methodological quality, citation count, and relevance of each article, resulting in a final sample of 80 studies for synthesis.

The PRISMA flow diagram developed for this study illustrates these four stages, showing how the initial set of publications was narrowed through systematic filtering. This structured approach ensured that the review maintained methodological rigor and transparency in line with PRISMA 2020 recommendations.

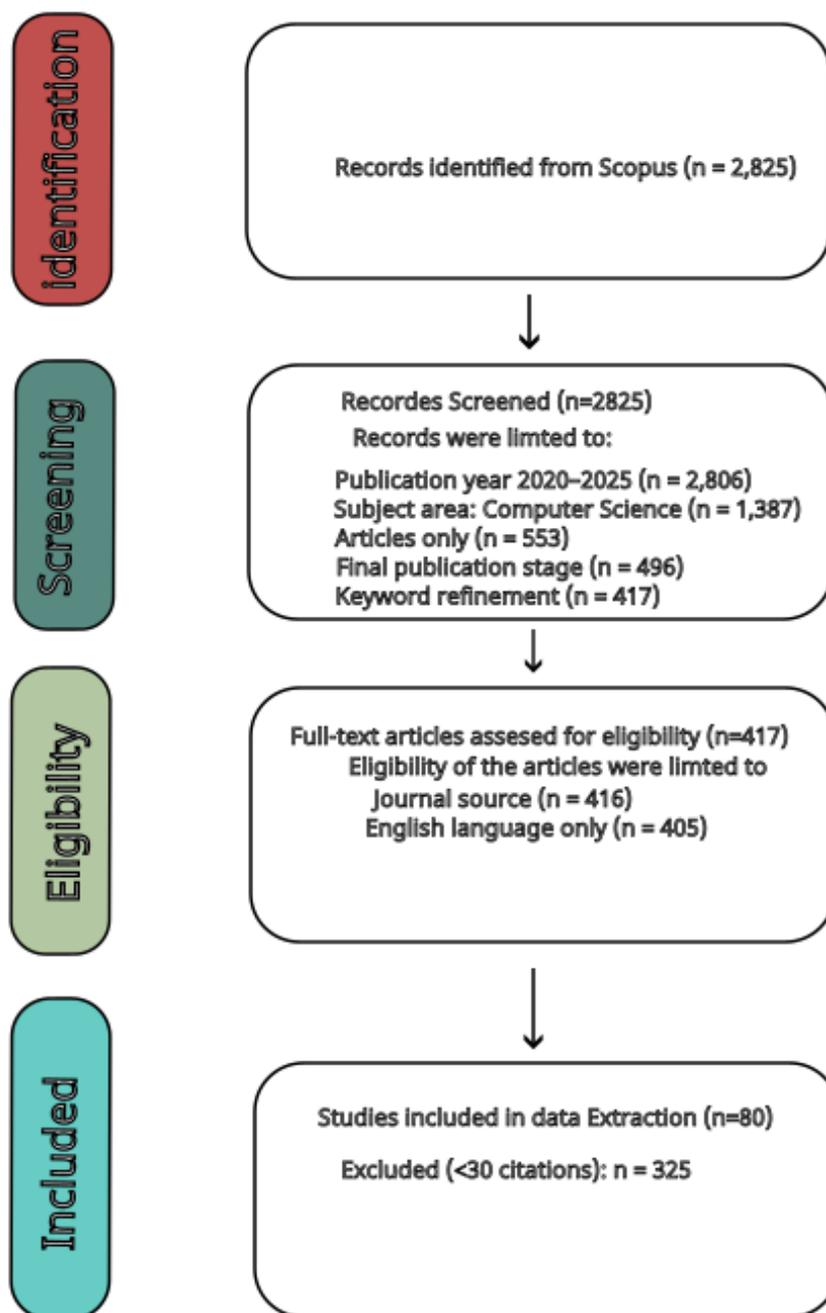


Figure 2: PRISMA 2020 Flow Diagram for Study Selection

3.2 Selection Criteria

The selection criteria were established to maintain uniformity and ensure that only relevant and high-quality studies were included. Articles were eligible if they focused on university or college students, examined ChatGPT or other generative AI tools as learning or assessment aids, and presented measurable academic or ethical outcomes. Studies focusing on non-AI tools, secondary education, or technical AI architecture were excluded. Only English-language, peer-reviewed journal

publications from 2020–2025 with at least 30 citations were included. This selective approach enhanced the validity and representativeness of the reviewed studies.

3.3 Quality Assessment

Each study followed a quality appraisal based on three dimensions: relevance, credibility, and methodological rigor. Relevance was determined by alignment with the research objective examining ChatGPT’s impact on academic activities. Credibility was confirmed through

the peer-review status and citation count of each article. Methodological rigor was assessed by reviewing study design, sample adequacy, and clarity of results. Studies that lacked methodological transparency, adequate data, or clear outcomes were excluded. This process ensured that the final pool of 80 articles reflected high academic integrity and reliability.

3.4 Data Extraction

Data extraction was conducted using a structured Microsoft Excel template designed to capture essential study details, including author(s), year, country, research design, academic context, AI application, and key findings. Each article was coded and categorized according to three main themes: positive academic impacts, negative academic impacts, and ethical or pedagogical considerations.

The positive impacts included improved learning efficiency, enhanced writing and research capabilities, and increased engagement. The negative impacts covered issues such as plagiarism, dependency, and reduced creativity. Ethical and pedagogical considerations encompassed policy gaps, academic integrity concerns, and the need for AI literacy among students and educators. These thematic categorizations formed the analytical basis for the subsequent results and discussion sections.

4. Results and Discussions

The results of this study are arranged according to the research questions. Each subsection presents findings that directly address the specific objectives of the study.

RQ1: What is the effect of ChatGPT on academic work among university students?

Evidence from multiple quantitative and qualitative studies (Banihashem et al., 2024; Bernabei et al., 2023; Boubker, 2024; Chen et al., 2023; Sun et al., 2024) consistently demonstrates that ChatGPT significantly enhances students' academic productivity, learning efficiency, and comprehension. In programming and engineering education, ChatGPT-facilitated learning improves debugging, code interpretation, and conceptual understanding (Silva et al., 2024; Sun et al., 2024). In writing-based disciplines, it provides structured feedback, helping students refine arguments and grammar (Banihashem et al., 2024).

In broader higher education contexts, students report higher performance expectancy and satisfaction when ChatGPT supplements academic tasks (Boubker, 2024; Grassini et al., 2024). Moreover, studies using the UTAUT and TAM frameworks (Habibi et al., 2023; Strzelecki, 2024) found that habit, performance

expectancy, and perceived usefulness are the strongest predictors of behavioral intention and usage behavior.

However, the findings also caution against overreliance on ChatGPT, as highlighted by (Valova et al., 2024) and (Kizilcec et al., 2024), who observed that students may rely excessively on AI-generated outputs, which risks reducing critical analysis and originality. Despite this limitation, the general conclusion is that ChatGPT acts as a cognitive amplifier, improving accessibility to knowledge, academic writing, and problem-solving across various disciplines.

RQ2: How does ChatGPT influence learning patterns, motivation, and creativity among university students?

A wide range of studies, such as (Hmoud et al., 2024; Lai et al., 2023; Liu et al., 2024; Pesovski et al., 2024), confirm that ChatGPT fosters intrinsic motivation, engagement, and self-directed learning. The conversational and interactive design of ChatGPT encourages students to actively query and test ideas, aligning with constructivist principles of exploratory learning.

Motivational models (Jo, 2024; Lai et al., 2023) show that intrinsic motivation and perceived usefulness are primary determinants of ChatGPT use. (Hmoud et al., 2024) found that generative AI interactions promote task enjoyment, relevance, and effort, while reducing learning anxiety. In language learning contexts, ChatGPT supports creativity and communication fluency by providing real-time semantic suggestions (Cai et al., 2024; Kohnke et al., 2023).

Nevertheless, studies such as (Polyportis, 2024) and (Valova et al., 2024) note that continuous reliance on AI reduces critical thinking and originality, particularly when students copy outputs without reflection. In contrast, (Pesovski et al., 2024) observed increased study time and sustained engagement when ChatGPT was integrated into personalized learning materials. The overall evidence suggests that ChatGPT positively influences motivation and creativity when used interactively, but limits creativity when used passively as a content generator.

RQ3: What are the ethical and academic integrity challenges associated with ChatGPT in higher education?

Ethical and integrity related issues form a dominant theme across literature. Studies by (Barrett & Pack, 2023; Jarrah et al., 2023; Michel-Villarreal et al., 2023; Zeb et al., 2024) consistently warn that ChatGPT's indistinguishable outputs from human writing complicate plagiarism detection and challenge assessment fairness. Educators express concerns about AI-generated academic dishonesty, data privacy, and authorship misrepresentation.

Several empirical and policy-oriented studies (Kizilcec et al., 2024; Kurtz et al., 2024; Moorhouse et al., 2023), recommend reframing assessments to focus on AI literacy and process-based evaluation rather than mere output. Similarly, (Kiryakova & Angelova, 2023) found that 73% of educators fear students' uncritical trust in AI, which can distort academic honesty.

From a governance perspective, (Chan, 2023) and (Chiu, 2024) proposed AI Education Policy Frameworks that integrate ethical governance, accountability, and infrastructure readiness into curriculum design. Additionally, (Fuchs & Aguilos, 2023) and (Bouteraa et al., 2024) highlight trust and integrity as mediating variables affecting adoption, emphasizing that while students appreciate ChatGPT's efficiency, they are aware of the moral and academic risks.

Overall, these studies agree that ethical literacy, transparency, and policy frameworks are central to mitigating risks and ensuring responsible AI use in higher education.

RQ4: What research gaps and future directions emerge from the reviewed studies?

The reviewed literature identifies several gaps. First, the majority of studies employ cross-sectional or perception-based designs, limiting understanding of long-term learning outcomes (Chiu, 2024; Polyportis, 2024). Future research should focus on longitudinal and experimental designs to measure sustained performance and skill retention.

Second, there is geographical bias toward Asia, Europe, and North America, with limited evidence from Africa and the Middle East. Scholars such as (Habibi et al., 2023) and (Khlaif et al., 2024) call for cross-cultural studies to evaluate how institutional policies and digital readiness influence ChatGPT adoption.

Third, most studies emphasize writing and communication domains, while underexploring STEM, medical, and applied sciences contexts where ChatGPT's reasoning ability could be transformative (Nikolic et al., 2024; Padovano & Cardamone, 2024).

Fourth, there is a lack of research connecting ChatGPT use with pedagogical theories like self-regulated learning (Chang et al., 2023) or constructivist models. Future work should integrate these theoretical perspectives to design pedagogically sound AI interventions.

Finally, institutional policy development remains fragmented. Studies such as (Chan & Hu, 2023) and (Chan, 2023) emphasize the need for AI ecological education policies that address governance, pedagogy, and operational infrastructure. Collectively, these gaps highlight the need for multi-institutional,

interdisciplinary research on sustainable AI integration in higher education.

5. Conclusion and Recommendations

This systematic review examined the effect of ChatGPT on academic work among university students using synthesized evidence from eighty peer-reviewed studies published between 2020 and 2025. Guided by the PRISMA framework, the study evaluated four dimensions: the effect of ChatGPT on academic work, its influence on students' learning motivation and creativity, the ethical and integrity challenges it presents, and the gaps and future directions in current research.

The collective findings reveal that ChatGPT has emerged as a transformative academic technology, offering students enhanced access to knowledge, personalized learning support, and improved academic writing and problem-solving capabilities. Across disciplines, its integration into higher education has led to measurable gains in learning efficiency, engagement, and self-directed study. The tool functions as a cognitive amplifier helping students clarify difficult concepts, generate ideas, and receive formative feedback. When used critically and responsibly, ChatGPT strengthens academic productivity and supports inclusivity by accommodating diverse learning needs, including language barriers and cognitive differences.

However, the review also identifies significant challenges that threaten academic integrity and the quality of higher education. Overreliance on ChatGPT can undermine critical thinking, creativity, and originality skills central to intellectual development. Several studies documented instances of plagiarism, data fabrication, and ethical ambiguity in students' use of AI-generated outputs. The inability of existing plagiarism detection systems to identify AI-authored text compounds this issue, calling for urgent institutional intervention. Furthermore, the lack of standardized AI-use policies and ethical guidelines across universities has created inconsistencies in how students and educators interpret responsible use.

From a motivational and behavioral standpoint, ChatGPT reshapes students' learning patterns by promoting autonomy and curiosity when used interactively yet fosters dependency when used passively. Its educational value therefore depends not on its computational power but on how it is embedded pedagogically. Institutions that integrate AI literacy, reflective learning, and process-based assessment tend to realize greater educational benefits while minimizing misuse.

Despite the rapidly growing body of research, substantial gaps remain. Most studies are cross-sectional, perception-based, and limited to Western and Asian contexts, leaving underrepresented regions particularly Africa largely unexplored. Moreover, few studies have empirically linked ChatGPT use to long-term academic outcomes or aligned it with learning theories such as constructivism and self-regulated learning. Future research should therefore adopt longitudinal and experimental designs to evaluate the sustained cognitive and ethical impact of ChatGPT in diverse higher education contexts.

ChatGPT represents both an opportunity and a challenge for academia. It offers new pathways for personalized, efficient, and engaging learning, but simultaneously calls for rethinking assessment, pedagogy, and academic ethics. To maximize its educational value, universities must invest in AI governance frameworks, faculty capacity-building, and curriculum redesign that emphasize digital responsibility and critical inquiry. If strategically integrated, ChatGPT has the potential to complement, rather than compete with human intellect transforming higher education into a more adaptive, creative, and ethically grounded ecosystem.

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