ORIGINAL RESEARCH PAPER

Education

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THE NEGATIVE EFFECTS OF ARTIFICIAL INTELLIGENCE: INDUCED ACADEMIC OVERRELIANCE

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ABSTRACT

The study explores the use of artificial intelligence (AI) among Sudanese EFL learners in completing various academic tasks and assignments. It investigates students' perceptions of the academic and cognitive impacts of excessive AI use in educational settings. A total of 32 Sudanese EFL students from Kassala University participated in the study. Data were collected using a questionnaire. The results reveal that participants widely agree that uncontrolled reliance on AI negatively affects critical thinking, problem-solving, research skills, memory retention, reasoning, creativity, writing proficiency, and comprehension of complex texts. Additionally, respondents noted that overuse of AI fosters passive learning, reduces engagement, undermines independent study and trial-and-error learning, and increases the risk of academic dishonesty. Despite acknowledging the educational benefits of AI, participants emphasized the need for guided and balanced integration to preserve essential cognitive and academic competencies. These findings underscore the role of teachers in guiding students to use AI effectively for academic tasks and assignments. Furthermore, the Ministry of Education should adopt clear policies and strategies to incorporate AI instruction into the learning syllabus.

INTRODUCTION

Artificial Intelligence (AI) is transforming educational practices worldwide, particularly in higher education and language learning centers. Educators are increasingly seeking ways to help learners succeed. AI is being heralded as a tool to support English language teaching and learning (ELT/L), offering new strategies to overcome challenges and enhance learning opportunities (Baranwal, 2022). For Sudanese university students, like other learners of English as a Foreign Language (EFL), AI provides instant access to information, language explanations, and tools that can improve writing, reading, and comprehension skills. Students can use AI to check grammar, translate texts, or generate model essays and responses. Such tools have the potential to accelerate learning and provide personalized support for learners who struggle with specific language skills. However, excessive reliance on AI can have negative consequences. Overdependence may weaken independent problem-solving, critical thinking, and analytical abilities. Research indicates that learners who do not practice thinking for themselves often struggle to generate original ideas or evaluate information effectively (Yulianti et al., 2024). For Sudanese EFL learners, this is particularly concerning, as mastering a language requires repeated practice, experimentation, and the ability to express ideas in one's own words. Overuse of AI can also reduce engagement with learning materials, impair cognitive development, and lower academic confidence, leaving students less prepared for advanced tasks or assessments. Therefore, while AI has great potential to support Sudanese EFL learners, it must be used thoughtfully. Understanding its effects on language learning and cognitive development is crucial to ensure that AI functions as a helpful tool rather than a substitute for thinking, creativity, and independent academic work. Educators and students must strike a balance that allows technology to enhance learning without undermining essential language and cognitive skills.

BACKGROUND

Artificial Intelligence (AI) has rapidly become a transformative force in education, reshaping how teaching and learning are approached across disciplines. In higher education, AI tools such as ChatGPT and adaptive learning platforms have been widely adopted to support both teaching and learning, offering opportunities for personalized instruction and enhanced student engagement (Bennett & Abusalem, 2024; Katsamakas et al., 2024). These technologies can generate high-quality text, images, and solutions within seconds, allowing learners to access immediate assistance and feedback. In English-language education specifically, AI integration promises improvements in language acquisition, comprehension, and fluency through tools that support natural language processing, automated feedback, and adaptive learning paths (Garagaparthi, 2024; Álvarez Martínez et al., 2024).

From a systemic perspective, AI adoption in higher education must be understood in terms of both its opportunities and challenges. AI can enhance learning outcomes, research productivity, and administrative efficiency, yet it also raises concerns about academic integrity, ethical use, and the need for AI literacy among students and faculty (Katsamakas et al., 2024; Bennett & Abusalem, 2024). Evidence from global studies suggests that without structured guidance, students may misuse AI tools, potentially compromising institutional credibility and limiting the development of critical cognitive abilities (Al Kaabi, 2025; Zhai et al., 2024).

Despite these advantages, over-reliance on AI has emerged as a significant concern. Studies show that students who depend excessively on AI for tasks often bypass critical thinking and independent problem-solving, leading to reduced cognitive engagement and surface-level learning (Zhai et al., 2024; Vieriu & Petrea, 2025). Such reliance can diminish the ability to analyze, synthesize, and evaluate information, weakening essential academic skills necessary for higher-order learning and graduate readiness (Al Kaabi, 2025; Zhai et al., 2024).

Excessive dependence on artificial intelligence systems can significantly undermine learners' capacity for reflective thinking, independent problem-solving, and sustained cognitive engagement, as the automation of intellectual tasks reduces opportunities for deep analytical processing and self-directed learning, thereby weakening the development of higher-order cognitive skills (Turkle.S 2011). Reliance on

AI encourages cognitive offloading, whereby learners increasingly delegate intellectual tasks to technological tools, consequently diminishing their capacity for sustained attention, deep reasoning, and critical engagement; as a result, Carr's work is frequently cited in scholarly discussions concerning technology-induced academic dependency and its implications for learning processes (Carr, N. (2010)).

The integration of AI in educational contexts often prioritizes efficiency and performance optimization over learners' intellectual development, thereby encouraging students to become passive consumers of algorithmically generated outputs rather than active constructors of knowledge; consequently, he advocates for pedagogical strategies that emphasize critical AI literacy to foster learners' analytical awareness, autonomy, and reflective engagement with intelligent systems (Selwyn, N. 2019). AI systems must be pedagogically aligned to effectively support learners' metacognitive awareness, self-regulated learning processes, and critical thinking abilities, as such alignment enables students to actively monitor, evaluate, and direct their own learning, thereby mitigating the risk of harmful academic dependence on AI (Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. 2016).

In language education, over-reliance is particularly problematic, as learners may neglect independent practice in applying grammar rules, paraphrasing, or producing original writing, which are crucial for developing linguistic competence (Crompton et al., 2023). The psychological impacts of AI in education are also evident. Integration of AI in English-language classrooms can increase anxiety and reduce motivation when learners encounter technological challenges, feel scrutinized by automated assessment systems, or experience reduced interpersonal interaction with peers and instructors (Álvarez Martínez et al., 2024). These factors can undermine student engagement, making it essential for educators to balance the benefits of AI with the promotion of active, self-directed learning. To maximize the benefits of AI while mitigating risks, educational institutions are encouraged to integrate AI thoughtfully. Strategies include promoting AI literacy, contextualized instruction, authentic assessments, and guidelines for ethical use, particularly in English-language classrooms where cognitive engagement and original production are central to learning (Garagaparthi, 2024; Crompton et al., 2023). By combining technological innovation with pedagogical oversight, AI can serve as a powerful tool to support language proficiency, foster engagement, and prepare learners for both academic and professional challenges.

Building on these concerns, this study explores specific strategies, including context-based instruction and authentic assessments, to protect the cognitive development and language skills of Sudanese EFL learners in an AI-driven learning environment.

MATERIALS AND METHODS

Participants

Thirty-two Sudanese EFL students majoring in English at Kassala University participated in this study. All participants were in their final year and had studied English for five years. During this period, they were exposed to substantial language input, which qualifies them as appropriate research participants and capable evaluators of learning practices. Therefore, the data elicited from their responses can be considered reliable for the purposes of this study.

Instruments

The tool employed to collect data for this research paper was a questionnaire. This method was chosen to obtain reliable information on students' attitudes toward over-reliance on artificial intelligence in performing intellectual academic activities.

RESULTS AND DISCUSSION

Table (1) General Impact of Artificial Intelligence on Learners' Academic Reliance

No	Statement	Agree	Disagree
١	Uncontrolled reliance on AI reduces students' ability to think critically and solve any intellectual problems.	27	5
		84.4%	15%.6
٢	Immoderate use of AI negatively affects students' ability to develop research skills.	29	3
		90.6%	9.4%
٣	Uncontrolled reliance on AI makes it difficult for students to depend on memory to retain and recall information	26	6
		81.3%	18.7%
٤	Unrestricted reliance on AI reduces students' ability to treat academic issues properly.	23	9
		71.9%	28.1%
٥	Excessive reliance on AI negatively affects the development of students' autonomous learning skills.	23	9
		71.9%	28.1%

Results in Table 1 indicate that the majority of respondents (84%) perceive that uncontrolled reliance on AI diminishes students' critical thinking and problem-solving abilities. Respondents also reported that excessive AI use negatively impacts the development of research skills. Similarly, 81% of participants believe that unchecked AI dependence undermines students' ability to retain and recall information. Unrestricted use of AI further appears to impair students' capacity to address academic challenges effectively and hinders the development of autonomous learning skills. Overall, disagreement across all items was minimal, suggesting broad consensus that excessive AI usage may compromise key academic competencies. While AI provides substantial educational benefits, these findings underscore the need for careful and balanced integration of AI tools to support critical thinking, research proficiency, memory retention, and learner autonomy.

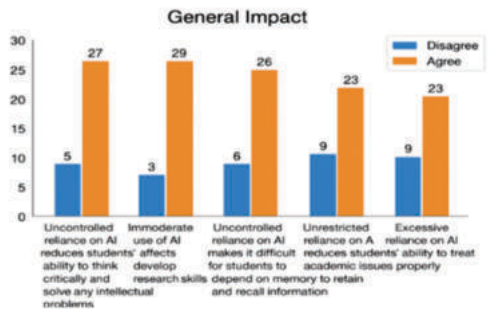

Figure 1 General Impact of Artificial Intelligence on Learners' Academic Reliance

Table (2) Study Habits and Learning Process

No	Statement	Agree	Disagree
6	Immoderate use of AI might reduce students' ability to engage with learning materials	24	8
		75.0%	25.0%
7	Uncontrolled reliance on AI leads students to develop passive learning attitudes.	25	7
		78.1%	21.9%
8	Unrestricted use of AI can reduce students' ability to summarize and analyze learning materials to the minimum.	27	5
		84.4%	15.6%
9	Immoderate reliance on AI could impede the development of students' long-term learning abilities.	26	6
		81.3%	18.7%
10	Overuse of AI in language learning can reduce students' ability to test linguistic hypotheses independently.	26	6
		81.3%	18.7%

Results in Table 2 indicate that most respondents believe that excessive use of AI may reduce students' engagement with learning materials. Similarly, the majority reported that uncontrolled reliance on AI fosters passive learning attitudes. Furthermore, unrestricted AI use appears to hinder students' ability to summarize and analyze information, which negatively affects the development of long-term learning skills and the capacity to test linguistic hypotheses independently. Consequently, students may struggle to participate in active learning, limiting their recall and application of cognitive strategies. In effect, excessive AI use can promote surface learning, where students become passive consumers of information rather than active participants in the learning process. Although AI remains a valuable educational tool, these findings underscore the need for regulated, pedagogically guided use to ensure that AI supports, rather than replaces, essential cognitive and learning competencies.

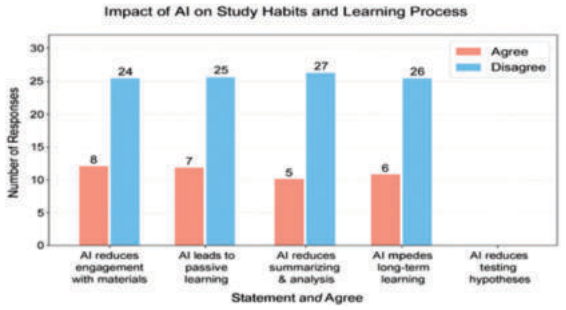

Figure 2 Study Habits and Learning Process

Table (3) Academic Integrity And Dependance

No	Statement	Agree	Disagree
11	Dependence on AI contribute heavily to academic dishonesty.	24	8
		75.0%	25.0%
12	Uncontrolled use of AI reduces students' willingness and motivation to engage in trial-and-error learning	27	5
		84.4%	15.6%
13	Excessive reliance on AI reduces students' ability to do their exercises independently.	28	4
		87.5%	12.5%
14	Excessive reliance on AI makes homework and any out-of-class-activities meaningless.	21	11
		65.6%	34.4%
15	Immoderate dependence on AI results in academic difficulties	25	7
		78.1%	21.9%

Results indicate that a substantial majority of respondents believe dependence on AI contributes significantly to academic dishonesty. This suggests a widespread concern that AI tools may be used unethically-for example, for plagiarism or completing tasks without genuine learning-thereby undermining academic integrity. Moreover, respondents agreed that uncontrolled use of AI diminishes students' willingness and motivation to engage in trial-and-error learning. As a result, AI may discourage active learning processes, which traditionally rely on experimentation, mistakes, and self-correction. Similarly, excessive reliance on AI was perceived to reduce students' ability to complete exercises independently. In effect, this threatens the development of critical thinking, problem-solving, and self-reliance skills. Additionally, respondents felt that overreliance on AI renders homework and out-of-class activities less meaningful. However, the presence of some disagreements suggests that AI can still support homework if guided or regulated appropriately. Finally, respondents agreed that immoderate AI dependence can lead to broader academic difficulties. Together, these findings reinforce the perception that excessive AI use negatively impacts academic performance and learning outcomes. Overall, while AI offers potential educational support, uncontrolled or excessive use is associated with dishonesty, reduced motivation, weakened independent learning skills, and academic challenges. These results highlight the need for institutional guidelines, ethical frameworks, and instructional strategies that promote responsible AI use while preserving academic integrity and cognitive development.

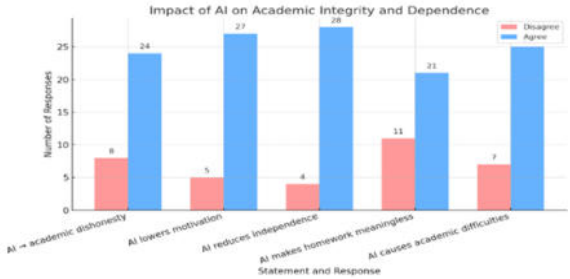

Figure 3 Academic Integrity and Dependance

Table (4) Cognitive And Skill Development

No	Statement	Agree	Disagree
16	Unrestricted reliance on AI may reduce students' ability to reason and make logical judgements.	21	11
		65.6%	34.4%
١٧	Unrestricted dependence on AI may reduce students' ability to debate and lead into fruitful academic discussion.	26	6
		81.3%	18.7%
١٨	Too much use of AI negatively affects students' effort to be creative.	22	10
		68.8%	31.2%
١٩	Immoderate use of AI can weaken students' ability to infer and analyse information from a text.	25	7
		78.1%	21.9%

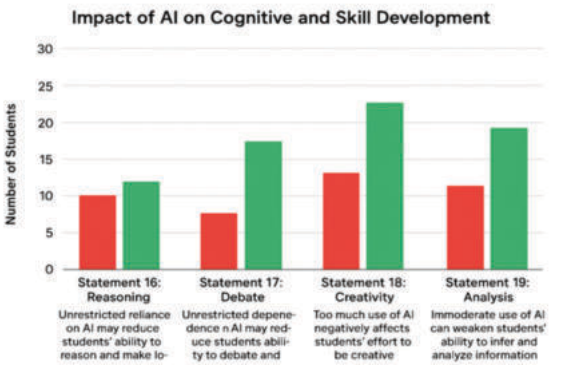

Figure 4 Impact of AI on Cognitive and Skill Development

Results in Table 4 indicate that respondents generally agree that unrestricted reliance on AI may diminish students' ability to reason and make logical judgements. Closely related to this, the findings also suggest that overdependence on AI can limit students' capacity to engage in debates and foster productive academic discussions. Taken together, these results demonstrate a strong consensus, with more than four-fifths of respondents expressing concern. This pattern highlights that students perceive excessive AI use as a factor that discourages active participation, argument construction, and critical dialogue-core components of meaningful academic engagement.

In addition, a substantial majority of respondents believe that heavy AI usage can suppress creativity. This raises the concern that AI-generated content might replace original thought, prompting students to rely on pre-constructed ideas rather than developing their own creative expressions. Moreover, the data reveal that immoderate AI use may undermine students' ability to infer and analyze information

effectively. Such perceptions underscore the belief that overreliance on AI could weaken both textual analysis and inferential reading skills. As a result, students appear aware that dependence on AI-generated summaries or interpretations can reduce engagement with texts, limiting opportunities for deep comprehension.

Overall, the findings portray a predominantly critical view of unrestricted AI use in educational contexts. Although opinions remain somewhat divided regarding reasoning and logical judgement, there is broad agreement that excessive AI dependence adversely affects debate skills, creativity, and analytical reading abilities. Collectively, these insights suggest that students recognize the need for balanced and guided AI integration rather than unrestricted reliance, in order to preserve essential academic and cognitive skills.

Table (5) Impact On Reading And Writing

No	Statement	Agree	Disagree
20	Overuse of AI may diminish Students' ability to write effectively.	27	5
		84.4%	15.6%
21	Overreliance on AI may weaken students' ability to comprehend complex texts.	25	7
		78.1%	21.9%
22	Too much dependence on AI may reduce students' ability to write fluently.	27	5
		84.4%	15.6%
23	Uncontrolled dependence on AI may reduce students' ability to summarize and paraphrase ideas in their own words.	27	5
		84.4%	15.6%

Results in Table 5 reflect that a large majority of respondents agreed that overuse of AI may diminish students' ability to write effectively. This finding indicates a strong concern among students about the impact of AI on writing proficiency. In a similar vein, results show that respondents agreed that overreliance on AI may weaken students' ability to comprehend complex texts. Moreover, the results report that respondents agreed that excessive dependence on AI may reduce students' ability to write fluently. Additionally, results show that respondents agreed that uncontrolled dependence on AI could have further negative effects. Taken together, the analysis shows consistently high levels of agreement across all four statements, suggesting widespread concern about the negative academic consequences of excessive AI use.

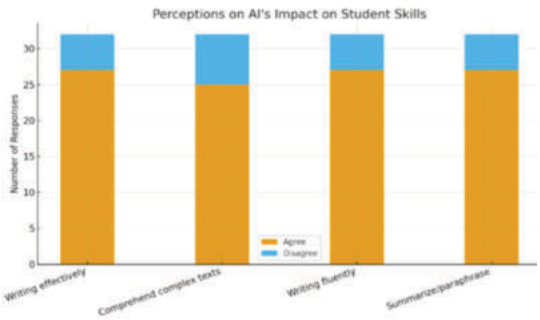

Figure 5 Impact on Reading and Writing

CONCLUSION:

The findings consistently indicate that excessive or uncontrolled reliance on AI in educational contexts is perceived to have massive negative effects on students' academic and cognitive development. Respondents widely agreed that overuse of AI can diminish critical thinking, problem-solving, research skills, memory retention, reasoning, creativity, and writing proficiency. It also appears to encourage passive learning, reduce engagement with learning materials, and undermine independent study, trial-and-error learning, and academic integrity. While AI is recognized as a valuable educational tool, these results underscore the necessity of balanced, guided, and pedagogically informed use to support learning without replacing essential cognitive and academic competencies. These findings underscore the role of teachers in guiding students to use AI effectively for academic tasks and assignments. In this respect, the Ministry of Education also has a vital role to play by adopting clear policies and strategies for incorporating AI instruction into the curriculum, given that AI has become an inevitable educational tool worldwide. Such measures would provide a practical framework to help students make informed, balanced, and responsible use of AI to enhance their learning processes.

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