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Artificial Intelligence Integration in Academic Writing: Insights from the University of Duhok

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***Abstract*—This study investigates the use of artificial intelligence (AI) technologies among academics at the University of Duhok (UoD), focusing on their perspectives, preferences, and intentions toward integrating AI within academic and research environments. A survey was conducted through Google Forms, targeting post-graduate students, recent alumni (since 2020), and faculty members of UoD in the Kurdistan region of Iraq. A total of 674 participants, aged 22–70 years, responded. The findings indicate that only 36.94% had employed AI technologies. Among AI users (n = 249), primary sources of information were friends or colleagues (46.59%) and social media (35.74%). Younger individuals and those holding master's degrees exhibited a stronger tendency toward AI usage ($p < 0.0001$), whereas gender and academic discipline had minimal influence. ChatGPT was the most widely used tool (70.68%), followed by Quill Bot (42.17%), Grammarly (34.94%), and Google Bard (29.32%). The main AI applications were text paraphrasing (33.73%) and information retrieval (15.26%). Notably, 47.58% of respondents recommended AI for various academic tasks, including scientific research and idea generation. In conclusion, the study shows that only one-third of UoD faculty members utilize AI, predominantly for text paraphrasing. Nearly half of the participants suggested the adoption of AI by post-graduate students and academic staff.**

***Index Terms*— Academic writing, Artificial intelligence, Technology adoption, University of Duhok.**

I. Introduction

Time is an invaluable resource, and advancements in artificial intelligence (AI) present new opportunities to optimize its use. Although AI language models have been in development for several years, their potential and widespread adoption became significantly more recognized following the launch of these technologies in November 2022 that enhance human-computer communication (Kacena, Plotkin and Fehrenbacher, 2024). AI technologies have significantly impacted industries such as healthcare, finance, and education by improving operational efficiency, enhancing decision-making, and providing innovative solutions (Coenen, et al., 2021; Nazari, Shabbir and Setiawan, 2021; Zhao, 2023). AI is transforming key sectors such as medicine (e.g., diagnostic algorithms) (Cestonaro, et al., 2023), education (e.g., personalized learning platforms) (Zohuri and Mossavar-Rahmani, 2024), business (e.g., automation of processes) (Aldoseri, Al-Khalifa and Hamouda, 2023), and scientific writing (e.g., automated text generation) (Kumar, Manikandan and Kishore, 2024); for instance, in medicine, AI enhances healthcare by assisting providers in making accurate diagnoses, identifying health risks, and developing personalized treatment plans. It also supports medical professionals in analyzing large datasets, uncovering patterns that may be overlooked by humans, thereby improving diagnostic accuracy and enabling more individualized therapeutic interventions. In addition, AI facilitates continuous patient health monitoring, aiding in the early detection of chronic diseases and predicting potential health risks (King, 2023).

Recently, AI-driven writing aids have garnered increasing interest within English as Foreign Language (EFL) communities. For writers learning EFL, the process of English writing presents significant challenges due to language barriers (Zhao, 2023). Some argue that the primary difficulty faced by EFL post-graduate students in academic writing is linguistic complexity. Studies have shown that digital writing tools can positively impact English writing proficiency (Nobles and Paganucci, 2015). Hence, it is proposed that AI-powered writing tools could serve as effective aids in fostering learning behaviors and promoting technology acceptance among non-native post-graduate students in the realm of English academic writing, primarily

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through formative feedback and assessment (Coenen, et al., 2021; Nazari, Shabbir and Setiawan, 2021; Barrot, 2022).

Conversely, the utilization of these tools raises numerous ethical concerns, including the potential for plagiarism and inaccuracies (Khalil and Er, 2023; Steponenaite and Barakat, 2023), as well as access inequality, where certain institutions may lack the resources to fully benefit from AI's advancements (Imran, 2023; Farahani and Ghasemi, 2024). Consequently, there is an imminent need for consensus on how to regulate these technologies in scientific writing (Salvagno, Taccone and Gerli, 2023). In addition, Zhao (2023) argued that relatively few technologies have been developed to support writers during the actual process of writing. Moreover, while many writing tools focus on the revision and editing stages, offering services such as grammar correction and similarity reports is essential (Winans, 2021). Although much research has been done on AI integration in academic settings, studies focusing on developing regions, such as the Kurdistan Region of Iraq, remain scarce. Therefore, this study aims to fill this gap by providing real-world data on AI adoption and its challenges in this context. As well, it aims to investigate the adoption of AI technologies among academicians at the University of Duhok (UoD) in the Kurdistan Region of Iraq, exploring their perspectives, preferences, and intentions regarding the utilization of AI technologies in academic and research settings.

II. Methods

A. Study Design and Sampling

This survey-based study targeted post-graduate students, recent graduates (from 2020 onward), and academic staff at the UoD, a leading public university in the Kurdistan Region of Iraq. The purpose of the study was to assess the usage and application of AI technologies within academic settings. The survey was administered using Google Forms, ensuring wide accessibility to participants. The study link was disseminated through official university email channels coordinated by the Quality Assurance and Post-graduate Affairs departments, providing access to all academic staff. In addition, Post-graduate Affairs representatives distributed the survey link to post-graduate students and recent graduates through established social media groups. It is important to note that AI optimization processes were excluded from the scope of this study. A preliminary pilot test was conducted with a small subset of participants to validate the survey. The topics examined included types of AI usage, reasons for use, and recommendations for AI adoption, ensuring that potential over- or underestimation of results was carefully considered. Since the survey was anonymous, the risk of bias in the responses was minimized. The results of the pilot study confirmed the reliability of the survey, allowing us to proceed with the full study.

B. Setting

Since 1992, the UoD has been the largest public university in the Duhok Governorate and one of the most distinguished universities in the Kurdistan Region of Iraq. With an enrollment of nearly 22,000 undergraduate students, 1,272 post-graduate students, and a faculty of 2,000 academic staff across 20 colleges, the institution offers diverse academic programs in disciplines including medicine, humanities, science, engineering, and agriculture. The survey aimed to gather responses from as many participants as possible. To enhance participation, reminders were sent throughout the 20-day data collection period, which lasted from February 21, 2024, to March 12, 2024. A total of 674 participants completed the survey. Data curation and visualization were meticulously handled by the first author. It is worth mentioning that inclusion criteria were strictly enforced to ensure that only post-graduate students, recent graduates, and academic staff from the UoD participated.

C. Statistical Analyses

Participant characteristics were summarized using descriptive statistics, with age presented as mean and standard deviation, and categorical variables as frequencies and percentages. The prevalence of AI usage and the participants' perceptions were also reported as percentages. To examine the differences in AI usage across various participant characteristics, we employed the Pearson chi-squared test. The p-value was used to determine whether there is a statistically significant difference in the prevalence of AI use in participants with different characteristics. In addition, the motivations for and suggestions regarding AI use were analyzed using descriptive statistics (percentages). All statistical analyses were performed using JMP Pro version 17.3.0.

D. Ethical Views

Participation in this study was voluntary, and participants' confidentiality was strictly protected throughout the research process. Ethical approval was obtained from the Scientific Affairs Department at the UoD before the commencement of the study.

III. Results

The study included participants of various ages and educational backgrounds, encompassing both genders. The age range spanned from 22 to 70 years, with a mean age of 37.65 years. Participants consisted of post-graduate students, graduates, and academic staff, with 52.67% holding M.Sc. degrees and 47.33% holding Ph.D. degrees. They represented diverse fields of study, including humanities (44.81%), medical/veterinary (24.78%), and science, engineering, and agriculture (30.42%). Results indicated that younger individuals and those with M.Sc. degrees were more inclined to utilize AI tools ($p < 0.0001$). However, no significant differences were observed based on gender ($p = 0.6362$) or educational field ($p = 0.1569$) (Table I).

The research revealed that 36.94% of the participants at UoD had utilized AI tools. However, a significant portion had not yet used AI (55.04%) or were unaware of what it entailed

TABLE 1
General Characteristics and AI use Among Post-graduate Students and Academic Staff of the University of Duhok

General characteristics	All participants no (%) (n=674)	Using AI (n=620) no (%)		
		Not AI users (371, 55.04%)	AI users (249, 36.94%)	p-value
Age (22–70 years.) mean (SD)	37.65 (7.57)	39.39 (7.68)	35.28 (7.17)	<0.0001
Std Err Mean: 0.30 year				
Age group				
22–29	82 (12.17)	22 (29.33)	53 (70.67)	<0.0001
30–39	318 (47.18)	173 (57.86)	126 (42.14)	
40–49	189 (28.04)	117 (68.02)	55 (31.98)	
50–59	58 (8.61)	41 (78.85)	11 (21.15)	
60–70	27 (4.01)	18 (81.82)	4 (18.18)	
Gender				
Female	331 (49.11)	183 (60.80)	118 (39.20)	0.6362
Male	343 (50.89)	188 (58.93)	131 (41.07)	
Education				
MSc student/graduate	355 (52.67)	176 (54.15)	149 (45.85)	0.0024
PhD student/graduate	319 (47.33)	195 (66.10)	100 (33.90)	
Education field				
Humanities	302 (44.81)	179 (63.70)	102 (36.30)	0.1569
Medical/veterinary	167 (24.78)	84 (54.55)	70 (45.45)	
Science, engineering, and agriculture	205 (30.42)	108 (58.38)	77 (41.62)	

(8.01%). Among those who had utilized AI (n = 249), the majority learned about it from friends/colleagues (46.59%), followed by social media (35.74%) and other sources (17.67%). The most popular AI tools included ChatGPT (70.68%), Quill Bot (42.17%), Grammarly (34.94%), and Google Bard (29.32%). Other AI tools were less frequently employed by the participants. AI usage served various purposes, such as paraphrasing text (33.73%), searching factual information and scientific data (15.26%), posing controversial questions (15.26%), generating research titles (13.65%), essay or review writing (12.85%), proofreading (12.85%), reference finding (12.05%), and proposal writing (6.43%) (Table II). ChatGPT, Quill Bot, Grammarly, and Google Bard were the most used AI tools among academic staff and post-graduate students. In addition, the most common purposes of using AI tools were paraphrasing text, searching factual information and scientific data, posing controversial questions, and generating research titles (Fig. 1).

The research revealed that nearly half of the participants (47.58%) recommended AI usage for post-graduate students and academic staff, while 28.87% indicated that they might make such a suggestion. However, the remaining 23.55% of the participants did not suggest AI tools for academic research and post-graduate purposes. Participants suggested AI applications in various areas, including searching factual information and scientific data (40.97%), paraphrasing (37.1%), generating research ideas (33.71%), resource findings (31.61%), posing controversial questions (30.32%), proofreading (29.52%), proposal writing (19.19%), and review composition (15.97%) (Table III).

TABLE II
Artificial Intelligence uses Among Post-graduate Students and Academic Staff of the University of Duhok in 2024

AI using features	All participants (n=674)	
	Number	Percentage
Using AI		
I do not know what is AI?	54	8.01
No	371	55.04
Yes	249	36.94
AI source, tools, and reasons	**AI users (n=249)**	
	Number	Percentage
Source of AI?		
Friends/colleagues	116	46.59
Others	44	17.67
Social Media	89	35.74
AI tools used		
ChatGPT	176	70.68
QuillBot	105	42.17
Grammarly	87	34.94
Google Bard	73	29.32
Wordtune	8	3.21
Bing	4	1.61
Asper	2	0.80
Google Gemini	2	0.80
Perplexity	2	0.80
DeepAI	1	0.40
Reasons for using AI		
Paraphrasing the text	84	33.73
Finding the fact information and science	38	15.26
Asking the controversial questions	38	15.26
Creating the ideas for the title of the research	34	13.65
Writing an essay or review	32	12.85
Proof-reading	32	12.85
Finding the references	30	12.05
Writing a proposal	16	6.43

AI: Artificial intelligence

IV. Discussion

The literature suggests that most university students and faculty possess basic digital skills. Moreover, it is recommended that higher education institutions focus on enhancing digital competencies among both students and faculty, develop effective learning strategies, and implement

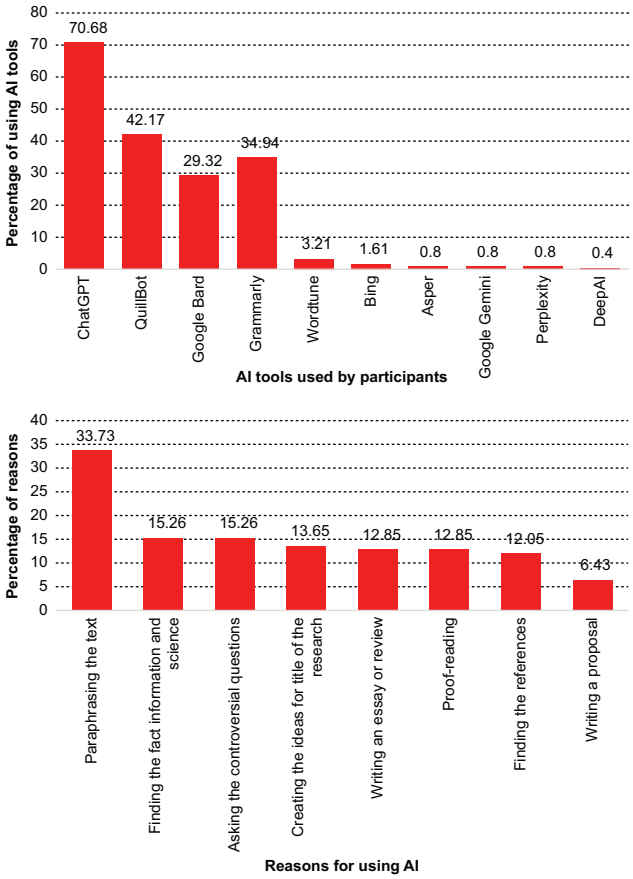


Fig. 1. AI tools used and their reasons for using the AI tools among academic staff and post-graduate students of the University of Duhok.

TABLE III
SUGGESTING THE AI BY THE POST-GRADUATE STUDENTS AND ACADEMIC STAFF OF THE UNIVERSITY OF DUHOK

Suggestions (n=620)	Frequency distribution	
	Number	Percentage
Suggest AI		
Maybe	179	28.87
No	146	23.55
Yes	295	47.58
Areas of use of AI as suggested		
Searching for science and facts	254	40.97
Paraphrasing	230	37.1
Creating ideas for research	209	33.71
Finding the resources	196	31.61
Asking the controversial questions	188	30.32
Proof-reading	183	29.52
Writing a proposal	119	19.19
Writing a review	99	15.97

AI: Artificial intelligence

appropriate tools to improve the quality of education (Zhao, et al., 2021). Therefore, the results of this study underscore the uptake and utilization of AI platforms among members of the UoD academic community, including faculty, post-graduate students, and graduates. Indeed, our findings have broader implications for policymakers and educators in regions with developing technological infrastructure. By understanding the unique challenges faced in the Kurdistan Region, educational strategies for AI integration can be more effectively tailored to similar contexts. Participants from diverse age groups and academic disciplines provided valuable insights into the current use of AI in academic and research settings. By examining the influences of age, gender, experience, and voluntarism on the predictive efficacy of the testing model (Venkatesh, et al., 2003), it was found that age attenuated all interactions between behavioral intentions and their determinants. Existing literature demonstrates a strong correlation between age and the use of AI tools (Roy, et al., 2022; Thai, et al., 2023), indicating that younger individuals with advanced academic qualifications are more likely to adopt innovative technologies. Similarly, the findings of this study revealed a significant correlation between age and AI adoption. Our analysis showed that younger academics, particularly those aged 22–49 with M.Sc. degrees, exhibited a higher propensity to use AI tools. This suggests potential differences in technology adoption across age groups and educational levels. While previous research has highlighted gender-based disparities in AI acceptance and use (Kucuk and Sisman, 2020; Alemi and Abdollahi, 2021; Roy, et al., 2022), our study found that both genders exhibited nearly identical rates of AI tool usage. However, a study by Gerlich (2023) also recognized the roles of income, educational attainment, and gender in AI adoption. It indicated that male participants with higher literacy, wealth, or technical expertise were more inclined to favor and promote AI usage.

Furthermore, our study found no significant variation in AI usage based on participants' academic disciplines. This indicates that the integration of AI transcends both demographic and disciplinary boundaries at UoD, highlighting its diverse application across a wide range of academic fields, from the humanities to medical sciences. These findings challenge previous assumptions (Chanthiran, et al., 2022; Hajkowicz, et al., 2023) that AI adoption might be more prevalent in technical fields such as engineering or computer science. The uniformity across disciplines highlights the widespread applicability of AI tools, even in fields like the humanities, where digital tools have traditionally been slower to integrate. It is noteworthy to highlight that Williams, Rana and Dwivedi (2015) discovered that perceptions regarding ease of use, usefulness, attitude, perceived risk, gender, income, and experience exert a substantial influence on behavioral intention, whereas perceptions concerning age, anxiety, and training demonstrate comparatively lesser impact.

Conspicuously, AI technologies have significantly contributed to societal advancement, making their widespread adoption and acceptance inevitable (Zhao, 2023). However, factors such as cost, accessibility, and ethical concerns may influence the pace and extent of adoption (Cubric, 2020; Kabalisa and Altmann, 2021). Our study revealed that the vast majority of respondents from UoD had either not utilized AI services in their research or were unfamiliar with its capabilities. This lack of AI familiarity could be attributed to a combination of factors, including limited access to AI tools, inadequate training opportunities, or cultural hesitancy toward adopting new technologies in research contexts. These barriers may need to be addressed through

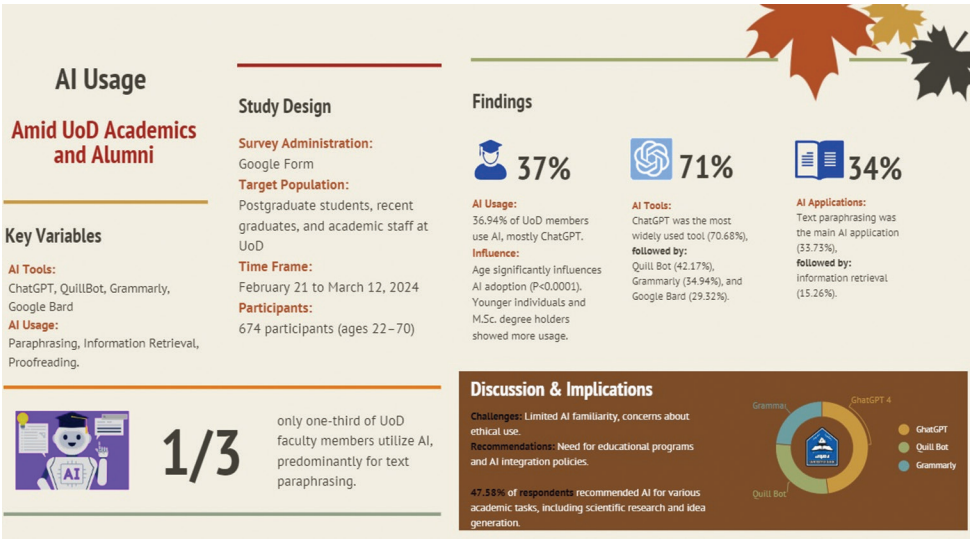
institutional strategies focused on enhancing AI literacy and access. This highlights the necessity for targeted educational programs and awareness campaigns to promote the benefits of AI in academic and research domains. In contemporary society, the importance of social media and digital platforms in disseminating information is undeniable (Hosen, et al., 2021; Yang, et al., 2023), making stakeholder engagement a central focus in this area. In our survey, individuals who utilized AI tools indicated that they primarily learned about these platforms from friends or colleagues and social media. This underscores the critical role of social media in providing information about AI tools and their academic advantages. This reliance on social media for information highlights a gap in formal institutional channels for AI training and knowledge dissemination. Given the increasing role that social media plays in shaping academic habits, institutions may need to adapt by integrating social media-based learning tools or campaigns to complement traditional AI training programs. Consequently, we strongly advise formalizing these internet-based platforms within universities and academic circles to enhance AI proficiency and encourage broader acceptance among scholars.

A derivative of GPT-3, ChatGPT is an advanced language model introduced by OpenAI in November 2022. It has emerged as a significant and unique AI platform with practical applications, garnering attention as a transformative, albeit controversial, tool for enhancing teaching and learning experiences (Lo, Hew and Jong, 2024). Remarkably, the AI chatbot ChatGPT has experienced unprecedented growth, potentially making it the fastest-growing internet application in history. As of January 2023, it boasts nearly 100 million users and approximately 1.8 billion website visitors per month (Bin-Nashwan, Sadallah and Bouteraa, 2023). Unsurprisingly, ChatGPT emerged as the predominant AI tool utilized by respondents in this study, followed by Quill Bot, Grammarly, and Google Bard. The findings of this investigation align with existing scholarly literature (Dergaa, et al., 2023; Livberber and Ayvaz, 2023; Lund and Wang, 2023), indicating that AI tools, particularly ChatGPT, can serve as effective aids in scientific research and educational endeavors, potentially acting as catalysts for the exploration of novel topics or research domains. However, the study also reveals ethical concerns among academics regarding ChatGPT, including issues related to plagiarism and the dissemination of misinformation. These risks have profound implications for academic integrity, as reliance on AI tools without appropriate checks can lead to the production of unoriginal or inaccurate content, compromising the quality of academic outputs. As AI becomes more integrated into scholarly workflows, we recommended addressing these ethical issues through clear guidelines which will be crucial to maintaining research standards. Our participants utilized these tools in research contexts for a variety of tasks, including paraphrasing text, answering questions, proofreading, finding references, and drafting proposals. This reflects the diverse needs and preferences of individuals engaged in scholarly writing and research activities. Notably, some universities worldwide have restricted access to ChatGPT or similar AI tools (Tlili, et al., 2023), while others are hesitant to impose such bans (Huang, 2023), citing concerns about the submission of unoriginal or potentially plagiarized material. Conversely, technology experts advocate for universities to educate faculty, researchers, and students on the appropriate use of ChatGPT and AI platforms rather than implementing blanket prohibitions (Bin-Nashwan, Sadallah and Bouteraa, 2023). In this context, the UoD currently lacks definitive and uniform policies regarding the prohibition, use, or regulation of AI technologies. This could lead to inconsistent use of these technologies, raising concerns about the proper regulation of AI in academic work. Hence, establishing well-defined guidelines will be essential for ensuring that AI is used responsibly, particularly in safeguarding against academic dishonesty and maintaining the rigor of scholarly outputs.

Finally, while 52% of participants expressed reservations or ambivalence toward recommending AI usage, approximately 48% endorsed its use to their peers and colleagues. Empirically, individuals tend to place greater trust in human recommendations than in AI for practical or applied tasks (Jin and Zhang, 2023). Indeed, AI plays a growing role in modern scientific research, from automating data analysis to enhancing research reproducibility. As AI technologies evolve, their influence on knowledge production is likely to expand, though this will depend on continued advancements and regulatory frameworks (Harvey and Gowda, 2021; Adedokun, 2024). Consequently, participants in this study advocated for the adoption of AI platforms across various contexts, ranging from conducting scientific inquiries and generating empirical evidence to tasks such as paraphrasing text, proofreading, proposal writing, and content creation. This highlights the potential and significance of AI technologies in streamlining and enhancing academic processes, refining research workflows, and optimizing productivity. Following Cath et al. (2018), this survey effectively examines the diverse adoption and utilization of AI among academics at the UoD. Therefore, it is strongly recommended that universities, including our own, establish a comprehensive strategic vision and long-term plan to foster the development of a robust academic and higher education AI community. In addition, we suggest that universities create appropriate protocols for the use of AI among post-graduate students. While some prestigious journals have begun integrating AI tools, it is essential for other academic publications to allow researchers to leverage AI technologies to enhance both academic and linguistic aspects (Central Illustration).

A. Strength and Limitations

This study offers valuable insights into AI technology usage among academics at the UoD, highlighting trends across diverse age groups, disciplines, and education levels. Of importance, the large sample size enhances the reliability of the findings. However, limitations include potential biases from self-reported data, the cross-sectional nature of the survey, and the lack of qualitative insights. In addition, findings may not be generalizable to other institutions or



Central Illustration: AI Integration amid University of Duhok Academics and Alumni.

regions due to the study's focus on a specific academic environment in the Kurdistan region.

V. Conclusion

The findings of this study indicated that only one-third of faculty members at the UoD utilize AI, specifically ChatGPT, primarily for text paraphrasing. Approximately half of the study's participants recommended the implementation of AI for use by post-graduate students and academic staff. In addition, this study provides a foundation for future research on the role of AI in education, particularly in emerging academic environments. Further studies could explore the long-term impact of AI on academic outcomes and the role of policy in facilitating technology adoption.

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