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**DEVELOPING CRITICAL THINKING SKILLS THROUGH INTEGRATION OF
ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN READING AND WRITING AT FERGANA
STATE UNIVERSITY****FARG'ONA DAVLAT UNIVERSITETIDA O'QISH VA YOZISHDA SUN'YIY INTELEKT
TEKNOLOGIYALARINI INTEGRARIYA ORQALI TANQIDIY FIKRLASH KO'NIKMALARINI
RIVOJLANTIRISH****РАЗВИТИЕ НАВЫКОВ КРИТИЧЕСКОГО МЫШЛЕНИЯ ПУТЕМ ИНТЕГРАЦИИ
ТЕХНОЛОГИЙ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА В ОБУЧЕНИЕ ЧТЕНИЮ И ПИСЬМУ В
ФЕРГАНСКОМ ГОСУДАРСТВЕННОМ УНИВЕРСИТЕТЕ****Gafurova Nodira Ravshanovna** 

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Abstract

This article explores the role of artificial intelligence (AI) technologies in developing critical thinking skills through reading and writing at Fergana State University. Employing a mixed-methods approach, the research combines quantitative surveys and qualitative insights to examine the impact of AI tools, such as writing assistants, grammar checkers, and summarization tools, on students' cognitive processes.

Annotatsiya

Ushbu maqola Farg'ona davlat universitetida o'qish va yozish orqali tanqidiy fikrlash ko'nikmalarini rivojlantirishda sun'iy intellekt (AI) texnologiyalarining rolini o'rganadi. Aralash uslublar yondashuvidan foydalangan holda tadqiqot olib borish. AI vositalarining talabalarning kognitiv jarayonlariga ta'sirini o'rganish uchun miqdoriy so'rovlar va sifatli tushunchalarni birlashtiradi.

Аннотация

В этой статье рассматривается роль технологий искусственного интеллекта (ИИ) в развитии навыков критического мышления посредством чтения и письма в Ферганском государственном университете. Используя подход смешанных методов, исследование объединяет количественные опросы и качественные идеи для изучения влияния инструментов ИИ, таких как помощники по письму, средства проверки грамматики и инструменты реферирования, на когнитивные процессы студентов.

Key words: Artificial intelligence, critical thinking, reading and writing, AI tools, cognitive engagement, academic writing, Fergana State University, AI integration.

Kalit so'zlar: Sun'iy intellekt, tanqidiy fikrlash, o'qish va yozish, AI vositalari, kognitiv faollik, akademik yozish, Farg'ona davlat universiteti, AI integratsiyasi.

Ключевые слова: Искусственный интеллект, критическое мышление, чтение и письмо, инструменты ИИ, когнитивная вовлеченность, академическое письмо, Ферганский государственный университет, интеграция ИИ.

INTRODUCTION

In recent years, the integration of artificial intelligence (AI) technologies in education has garnered significant attention due to its potential to enhance various aspects of the learning process. At Fergana State University, the focus has been on exploring how AI can support the development of critical thinking skills, particularly in the domains of reading and writing. AI tools such as writing assistants (e.g., ChatGPT), grammar checkers (e.g., Grammarly), and summarization tools (e.g., QuillBot) are becoming increasingly popular among students for their ability to assist with language-related tasks. As critical thinking is a cornerstone of academic success, particularly in writing and analytical tasks, it is essential to examine how these AI technologies influence students' cognitive processes and writing abilities.

This study aims to investigate the impact of AI tools on the critical thinking skills of students at Fergana State University, focusing specifically on their use in reading and writing assignments.

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Using a mixed method approach, the study combines quantitative data on the frequency and effectiveness of using AI tools with qualitative data on students' experiences and challenges. Through this, the study seeks to determine whether AI tools improve critical thinking in writing and reading or whether they create barriers to cognitive engagement and independent thinking.

LITERATURE REVIEW

In Kasimjanova Shahlo Sodikjonovna's works involving 16 participants from Fergana State University, with a gender distribution of 62.5% female and 37.5% male students aged 20 to 23, provides valuable insights into the integration of AI technologies in academic writing [2,p.174]. The majority of students reported using AI tools, such as grammar checkers and writing assistants, regularly, and many felt that these technologies enhanced their critical thinking abilities and boosted their confidence. This suggests that AI is seen as a helpful resource for students in navigating the writing process. However, the study also highlighted significant challenges, including difficulties in identifying reliable AI tools, the risk of over-reliance on AI, and the need for better integration of AI into the students' writing workflow. These findings underscore the necessity for universities to provide clear guidance, resources, and strategies to help students use AI responsibly and effectively in their academic tasks. As AI continues to evolve in higher education, a balanced approach will be essential to ensure that students can leverage its benefits while maintaining the development of independent critical thinking and writing skills [2, p.178].

Muthmainnah & Oteir in their study employed mixed-methods study exploring the integration of artificial intelligence tools such as RALL-AI in the development of students' critical thinking (KM) skills, particularly in language learning and technology use [1,p.6]. The findings highlight the need for a holistic approach to the development of higher-order thinking skills, suggesting that KM includes cognitive, behavioural, affective and social aspects in a structured, inquiry-oriented way. The study emphasises that RALL-AI tools, especially when integrated into hybrid classes, contribute to improved CT through increased human-computer interaction. Having encouraged students to take responsibility for their own learning and encouraged self-inquiry, the study shows that AI-based tools can significantly enhance critical thinking, especially in the context of language learning. Furthermore, the study suggests that instructors and curriculum developers should implement instructional strategies that incorporate AI to enhance the effectiveness of CT, promoting a more student-centred approach. As a result, the study provides valuable information for teachers, professional development programmes and curriculum developers aimed at developing students' cognitive and metacognitive language abilities, especially in the context of language learning [1,pp.12-14].

METHODOLOGY

This study investigates the role of artificial intelligence (AI) technologies in developing critical thinking skills in reading and writing at Fergana State University. The research employs a mixed-methods approach, integrating both quantitative and qualitative data collection techniques to offer a comprehensive understanding of how AI tools influence students' critical thinking abilities. The sample group consists of 17 participants, predominantly students enrolled in English language courses, with a gender breakdown of 58.8% female and 41.2% male as shown on the Table 1. Participants are aged between 20 and 23 years, with the largest representation in the 20-year-old group (35.3%), followed by 21-year-olds (29.4%). Fewer participants fall within the 22-year-old (17.6%) and 23-year-old (11.8%) categories, providing insights into the age distribution of students at the university. The gender distribution shows a higher participation of females (58.8%) compared to males (41.2%), particularly among those aged 20-21.

Table 1: Participants' demographic

		How old are you?					Total
		20	21	22	23	Ok	
What is your gender?	female	5	4	1	0	0	10
	male	1	1	2	2	1	7

Table 1: Participants' demographic

	How old are you?					Total
	20	21	22	23	Ok	
Total	6	5	3	2	1	17

The data collection for this study involves surveys administered to the participants, focusing on their use of AI tools for reading and writing assignments, their perceptions of these tools' impact on their critical thinking abilities, and the challenges they face when integrating AI into their academic work. The quantitative data is analyzed using basic percentage calculations to assess the frequency of tool usage and the perceived effectiveness of AI in enhancing critical thinking. Additionally, qualitative data from open-ended questions provide deeper insights into students' experiences and challenges, particularly regarding the ease of integration, the reliability of AI tools, and the potential over-reliance on technology. This combination of data allows for a nuanced understanding of how AI tools contribute to the development of critical thinking skills, while also highlighting areas for improvement in AI integration within academic settings. However, the small sample size limits the generalizability of the findings and suggests the need for further studies with larger participant groups.

RESEARCH RESULTS

The data provides insights into the frequency and types of AI tools used by participants for reading and writing assignments. AI writing assistants, such as ChatGPT, are the most frequently utilized tool, with 7 participants using them "often," followed by grammar checkers like Grammarly, which are used by 9 participants in various frequencies. Summarization tools, like QuillBot, appear to be less popular, with only one participant using them as shown on the Table 2. This suggests that students predominantly rely on AI writing assistants and grammar checkers, which align with common academic practices aimed at improving writing clarity, structure, and correctness. The relatively low use of summarization tools indicates that students may not be as engaged with tools focused on content condensation.

Table 2: Frequency and types of ai tools usage

What AI tools have you used the MOST for reading and writing assignments?					
		AI writing assistants (like ChatGPT)	Grammar checkers (Grammarly, etc.)	Summarization tools (like QuillBot)	Total
How often do you use AI tools to help with your writing assignments?	Often	4	2	1	7
	Sometimes	2	3	0	5
	Almost never	0	2	0	2
	Always	1	2	0	3
	Total	7	9	1	17

When examining the frequency of use, the majority of respondents (12 out of 17) use AI tools either "often" or "sometimes" to aid their writing assignments, indicating a strong reliance on these technologies. Interestingly, 3 participants report using AI tools "always," suggesting that

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these tools are integral to their writing process. However, 2 students indicated they "almost never" use these tools, signaling that some students may either prefer traditional methods or are less confident in integrating AI into their academic work. The findings reflect a growing trend toward incorporating AI tools in academic writing, with particular emphasis on writing assistants and grammar checkers, although there remains a subset of students who have yet to embrace these technologies fully.

The survey results indicate a generally positive perception of AI tools in terms of enhancing critical thinking, with the majority of respondents (9 out of 17) believing that AI tools help them think more critically when writing as on the Table 3. However, there is a considerable divide, as some participants are unsure or hesitant about the impact of AI on their critical thinking, as reflected in the 5 responses under "Maybe" and 2 responses under "I'm not sure." This suggests that while AI tools are seen as beneficial for fostering critical thinking by some students, others remain uncertain about their effectiveness or have reservations about their impact on independent cognitive engagement.

Table 3: Challenges and perceptions of AI tools

Do you think AI tools help you think more critically when writing?								
				Yes, definitely	No, not really	Maybe	I'm not sure	Total
What's the biggest CHALLENGE you face when using AI for writing?	It's difficult to tell if the AI is truly helping me think critically			2	1	1	0	4
	It's hard to find reliable AI tools			5	0	0	0	5
	It's hard to integrate AI with my regular writing process.			0	0	2	0	2
	It's easy to rely too much on AI and not do my own thinking			2	0	2	2	6
Total				9	1	5	2	17

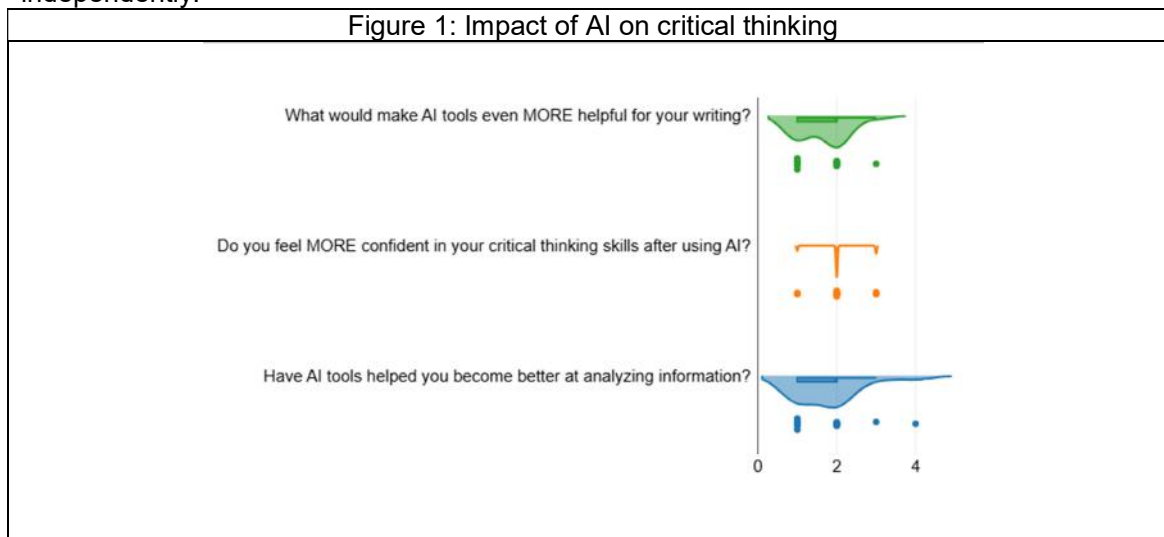
The challenges reported by students in using AI for writing reveal key obstacles to effective integration. The most significant challenge, noted by 5 participants, is the difficulty in finding reliable AI tools. This highlights a need for better guidance and resources to help students navigate the multitude of available AI options. Another notable concern is the tendency to over-rely on AI, with 6 respondents indicating that they find it easy to depend on AI tools instead of engaging in their own critical thinking. This reflects the potential risk of AI becoming a crutch for students, potentially diminishing their cognitive involvement in the writing process. These results underscore the importance of balancing AI use with developing students' independent thinking and writing skills.

The data suggests a mixed response from participants regarding the impact of AI tools on their critical thinking and information analysis abilities. When asked if AI tools helped them become better at analyzing information, a majority of respondents (7 out of 17) indicated a moderate improvement, with only 8 participants feeling that AI tools significantly aided their analysis as on the Figure 1. This implies that while AI tools may offer some support, many

students may not fully recognize or appreciate the depth of their effect on analytical thinking. Interestingly, when it comes to critical thinking, most respondents (12 out of 17) reported no significant improvement in their confidence after using AI tools, suggesting that while AI may assist in certain aspects of writing, it doesn't always translate into enhanced critical thinking.

In terms of improving AI tools for writing, most participants emphasized the need for more advanced tools that provide specific feedback (7 out of 17) and more resources to help them learn how to use AI effectively (9 out of 17). This indicates that students feel AI tools could be more helpful if they were tailored to provide clearer, more actionable insights, and if additional support were available to guide their use of AI in the writing process. The suggestion for more collaboration between teachers and students regarding AI usage in class (3 out of 17) further highlights the importance of integrating AI into the learning process in a way that enhances understanding and application, rather than leaving students to navigate these tools independently.

Figure 1: Impact of AI on critical thinking



DISCUSSION

The integration of artificial intelligence (AI) technologies in developing critical thinking skills through reading and writing at Fergana State University reveals both potential benefits and challenges. The findings from the study highlight a predominant use of AI writing assistants like ChatGPT and grammar checkers such as Grammarly. These tools, which focus on enhancing writing clarity and correctness, are seen as valuable resources for students, with a majority of participants (12 out of 17) relying on them regularly for their writing assignments. This suggests that AI technologies can facilitate the writing process, allowing students to refine their language skills and improve the overall quality of their work. However, despite these advancements, the perception of AI's role in fostering critical thinking remains divided. While some students reported a positive influence of AI tools on their ability to think critically, others were uncertain about the extent to which these technologies contribute to their cognitive development.

A significant challenge identified in the study is the potential for students to over-rely on AI tools, which could undermine their independent cognitive engagement. Six participants acknowledged the ease of becoming dependent on AI for generating ideas or improving writing, which may inhibit their development of critical thinking skills. This issue highlights a broader concern regarding the balance between utilizing AI as a supportive tool and preserving the cognitive processes necessary for deep learning. Students also expressed difficulty in identifying reliable AI tools, a concern raised by five participants. The variability in the effectiveness and reliability of AI technologies indicates the need for clearer guidance and training to help students select and use these tools strategically. Without adequate support and understanding, students may fail to fully benefit from AI in ways that enhance their analytical and critical thinking abilities.

In light of these findings, it is clear that while AI tools hold promise for improving certain aspects of writing, their role in developing critical thinking skills is not yet fully realized. The study underscores the need for a more structured approach to AI integration in academic environments. Future efforts should focus on providing students with more comprehensive resources and training to ensure that AI tools complement rather than replace critical thinking. Additionally, fostering collaboration between teachers and students regarding AI usage can ensure that these tools are used in ways that promote independent thought and deeper cognitive engagement. Upon addressing these challenges, teachers will be able to better support the development of critical thinking skills by responsibly integrating AI technologies into reading and writing assignments.

CONCLUSION

The findings of this study provide valuable insights into the role of artificial intelligence in the development of critical thinking skills among students at Fergana State University. While the majority of participants reported a positive impact of AI tools on their writing, the effectiveness of these technologies in fostering deeper critical thinking remains complex. AI writing assistants and grammar checkers are widely used, indicating their usefulness in improving writing quality and clarity. However, concerns about over-reliance on AI and difficulties in identifying reliable tools highlight the need for a balanced approach to AI integration. Students must be encouraged to use AI as a supplement to their cognitive efforts, rather than a replacement for independent thought.

In conclusion, this study emphasizes the importance of providing students with more guidance and training on effectively integrating AI tools into their academic work. While AI technologies hold the potential to enhance writing skills and facilitate critical thinking, they must be used in conjunction with active cognitive engagement. Future research should explore ways to better integrate AI into the learning process, with a particular focus on ensuring that students continue to develop their independent critical thinking abilities.

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