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Artificial intelligence: A game-changer in writing research papers in physical education and sports

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Abstract

Artificial intelligence stimulates human intellect that is used by machines, primarily computer systems. In recent years, artificial intelligence (AI) has advanced rapidly and developed into a powerful tool for many research fields. In the field of physical education, AI has the potential to completely change the way study papers are written. In this review paper, we explore how AI is changing the game in writing research papers in physical education. The current study discussed the various AI tools available to researchers, such as scispace, elicit, Chat GPT, quillbot, trinka, plag, scite, and how they can be used to improve research writing and outcomes. The conclusion of the study shows that AI has the potential to revolutionize the way research papers are written in physical education, but it is important to consider the limitations of AI and retain critical thinking and human input.

Keywords: Artificial intelligence, physical education, research, game

Introduction

Research paper is a type of academic or scientific writing that contains the procedure, in-depth analysis, interpretation of research on a particular topic (Shrestha *et al.*, 2021) ^[46] (Kumar, Dhull, *et al.*, 2023) ^[60]. Writing a research paper is a complicated and challenging process which is time-consuming, skill-intensive and requires a lot of effort (Derntl, 2014) ^[45]. It entails more than just summarizing prior research and providing fresh data; rather, it necessitates a thorough comprehension of the subject, rigorous analysis of data, and the capacity to concisely and clearly convey complicated ideas (Tully, 2014; Cooper, 2015) ^[44, 43] (NARA *et al.*, n.d.; Nara *et al.*, 2022; Sagre *et al.*, 2022) ^[64, 51]. To publish an article in a top journal it not only requires a high level of quality in the research, but also the writing of the article (Balch *et al.*, 2018) ^[42]. Some of the key requirements for writing an article are originality, in-depth methodology, formatting, citation, rigorous analysis etc. which is not an easy task for the researcher (Erdemir, 2014) ^[41] (Kumar & Dhull, 2023; NARA *et al.*, 2022) ^[60, 64].

The way a person executes a task is simulated by an artificial intelligence machine and mainly by computers. (Fitria, 2021a) [56] (Deepak *et al.*, 2022; Kumar, Nara, *et al.*, 2023) [51, 61]. AI is influencing each and every aspect of everyday life including education (Panigrahi, 2020) [39]. Education is contemporary shifted to AI and machine learning (Segura-Monroy *et al.*, 2022) [38]. Without any human intervention, AI enables a computer to think as human (Yang *et al.*, 2021) [37]. In order to sort and analyze massive amounts of text for academic research, tedious manual processes have traditionally been used (Dergaa *et al.*, 2023) [36] (Nara *et al.*, 2022; Parveen, 2018) [60, 67], but with the advent of AI, scientific writing has become simple (Abd-Elsalam & Abdel-Momen, 2023) [35]. The use of AI in academic writing has increasing rapidly with the emergence of automatic text generator features (Golan *et al.*, 2023) [34]. Writing is a difficult task, but AI made it easy by using language-based model i.e. (Kasnia & Dhull, 2022; Kumar & Dhull, 2023) [58, 60], it will respond to the text you input and then generate outputs based on the data it gathers (Chong, 2021) [33]. It enables the researcher to explore anything just by entering the keywords (Kokina & Davenport, 2017) [32] (Dhull, n.d., 2018; Kasnia & Dhull, 2022) [54, 58].

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AI Tools and Applications for Writing Research Papers

The technologies listed below, driven by AI, can assist researchers in enhancing the quality of their papers, navigating the wide array of publications, and making sense of their content.

Chat GPT

Generative Pre-trained Transformer, also known as Chat GPT, is an AI chatbot created by OpenAI and released in November 2022 (Baidoo-Anu & Owusu Ansah, 2023) [29]. It is built on large language model (LLMs) and has the ability to write a debug computer program, write fairy tales and essays, summarizing scientific article, and the creation of useful computer codes (Tung, 2023) [70]. It can also assist the researcher in the preparation and revision of a scientific manuscript (Vaishya *et al.*, 2023) [26].

Ouillbot

Quill Bot is an online application powered by AI to paraphrase writing avoid plagiarism (Dale, 2020; Fitria, 2021b) [24, 57]. QuillBot paraphrase the texts after we write or paste the data and then press the Paraphrase button (Kinga & Gupta, 2021) [23]. Apart from paraphrasing Quill Bot offer a large number of facilities such as summarizer, plagiarism checker, grammar checker, co-writer, translator, word counter, citation generator to be more accuracy (Fitria, 2022) [22]. In the field of physical education, or in any other field, QuillBot can be used as writing assistance to improve the quality research paper by grammar correction, summarizing long sentences, generating citations and by avoiding plagiarism (Syahnaz & Fithriani, 2023) [23].

Grammarly

Grammarly is an AI tool, that shows corrections and suggestions fast with accuracy (Fitria, 2021a) ^[56]. Grammarly is an American cloud-based typing assistant, work as online grammar checker that reviews in English material for faults in spelling, grammar, punctuation, clarity, and delivery (Azizah & Soraya, 2023) ^[20]. It also checks for plagiarism and offers substitutes for any errors that are found (Ghufron & Rosyida, 2018) ^[19]. It is available as windows software, browser's extension that offers writing suggestion in Microsoft word, Google Docs, and other site across the web (Barrot, 2020) ^[18]. It offers keyboard to write clearly, confidently, and mistakefree across all the apps on android. It is also available for iPhone and iPad (Dizon & Gayed, 2021) ^[17].

Scispace

Scispace AI is an AI tool that analyze large amounts of scientific literature and identify key concepts and trends (F. J. Pinzolits, 2023) [16]. It works by analyzing scientific texts and suggesting relevant phrases, keywords, and citations that can be included in the document being written (Giglio & Costa, 2023) [15]. It can help researchers to identify relevant sources and organize their ideas in writing academic papers, grant proposals, and other scientific documents by ensure that their writing is clear and concise (F. J. Pinzolits, 2023) [16]. (Chandha *et al.*, 2023) [14] founds that this AI tool provides descriptions for scientific texts, in addition to follow-up questions and answers in several languages, to help researchers to read and understand articles more effectively (Chandha *et al.*, 2023) [14].

Elicit

Elicit is a free AI online tool works as a research assistant that

"uses language models to automate part of researchers' workflows" (Kung, 2023) [13]. This AI tool can help the researchers to identify key concepts and trends in physical education, or in other field, to understand the strengths and weaknesses of previous research, and identify gaps in the literature that can be addressed in their research (Victor *et al.*, 2023) [12]. Elicit ensures comprehensive and up-to-date literature review, find relevant papers, highlight significant ideas from each paper that relate to your topic, and obtain important information from research the papers (Raftis, 2022) [11].

Trinka

Trinka is a web-based platform that uses AI to help research scholars to create academic papers and other types of scientific writing (Razack *et al.*, 2021) [10]. It functions by analyzing the document being written and making suggestions for changes to the text's structure, language, and layout. Trinka offers a variety of tools like Proofreading Tools, Grammar Checker, Essay and Thesis Checker, citation checker, plagiarism checker, and journal finder (Pongpuehee *et al.*, 2022) [9]. Trinka can help researchers to overcome writer's block, to save time, reduce the stress of writing by providing immediate feedback resulting in improving the efficiency of writing process.

Plag.AI

Plag.ai is a web-based platform that uses artificial intelligence to detect plagiarism. It scans the text of the document being checked and compares it to a massive database of prior publications that have been published and accessible on the internet. Plag.ai use machine learning techniques, to find similarities between the document being compared and other sources, such as books, papers from journals, and online information. This tool can help researchers to avoid unintentional plagiarism and improve the clarity and originality of their writing.

Scite

Scite is a platform that uses artificial intelligence to analyze research articles and provide contextualized citation reports (Lund & Shamsi, 2023) [8]. This tool can aid researchers in finding credible, pertinent material that is specifically customised to their interests (Brody, 2021) [7]. It can also help researchers understand how a particular piece fits into the larger framework of the academic literature. (Nicholson *et al.*, 2021) [6]. Researchers can use Scite to find evidence and review references; libraries can use it to improve the impact of research projects; editors and publishers can use it to review reference lists in submissions. (Beard & Aghassibakes, 2021) [5].

Advantages of Artificial Intelligence in Research Paper Writing

In research, organizing the data into a cohesive and persuasive argument involves careful thought and planning, as well as a clear understanding of the audience and their requirements (Rickinson, 2006) [31]. The argument also needs to be logical, supported by citations, and presented in a way that is understandable and accessible (Aksnes *et al.*, 2019) [30]. By the implication of AI tools in research paper writing, it reduces the workload of professors in supporting research writing (Chaudhry & Kazim, 2021) [4]. AI tools solve many mentoring and supervision problems, like overcoming the fear of writing, writer's block (unable to think of what to write or

how to proceed), making of outline or blueprint, developing an understanding of well-written scientific texts, and motivation/interest in research work (Hemachandran *et al.*, 2022) [3].

Limitations of AI in Writing Research Papers

AI tools become the helping hand of the researcher in scientific writing. Because of its automatic feature, it makes the humans less active. Some AI tools like Chat GPT, has many advantages in research writing but have limitations too, it was instructed on a small academic database that expires on September 2021, which may not catch the expansion of the physical education, or any other field, while the academic field is constantly changing, with novel studies emerging at an unparalleled rate. (Van Dis et al., 2023) [31]. Grammar correction tools sometimes suggest wrong correction. Grammar checkers occasionally advise the wrong correction. Tools for paraphrasing create outcomes that don't make sense, sounds odd, and might not completely convey the original text's intended meaning. These AI tools have limited functionality for non-English languages. Despite the fact that AI algorithms are made to replicate human behavior, they are still incapable of matching human creativity. Using AI tools in writing research paper can leads to decrease in critical thinking and creativity among researchers.

Discussion

Artificial intelligence tools have the ability to generate wellwritten literature, summarize the research paper, detect similarity, correct grammar, paraphrase the literature and many more. It helps the researcher to get new ideas, broader concept, get real-time updates. Writing a research paper requires a high level of writing skill, including the ability to write clearly, concisely, and persuasively. It also requires an attention to detail, as even small errors can undermine the credibility of the paper. It is clear that writing is difficult for many people. In a matter of seconds, Chat GPT and other AIpowered content creation tools may produce many draughts of text, which may help writers overcome writer's block. (Chen, 2023) [2]. The researcher can lose originality, inventiveness, and logical thought in scientific writing while using AI tools. The human becomes less active because of this autonomous feature. Auto-generated data that is processed quickly from a huge amount of data can sometimes be inadequate, leading the researcher to interpret the data incorrectly and generate incorrect inferences. And in research there are ethical concerns, who should be given credit for writing a research paper if AI systems are employed to do so? (Eppler et al., 2023) [1]. Based on understanding the benefits and limits of various artificial intelligence tools the conclusion of the study shows that, with the use of high-auto-generating text and paraphrasing tools, AI has the potential to revolutionize the way research papers are written in physical education, but it is important to consider the limitations of AI and retain critical thinking and human input to avoid relying on these tools.

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