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Adopting ChatGPT to Enhance Educational Experiences

Ibrahim A. Murad[1], Nigar M. Shafiq Surameery[2], Mohammed Y. Shakor[3*]

[1,3]Department of English, College of Education, University of Garmian, Kalar, Sulaimani, Kurdistan Region, Iraq*
[2]Information Technology Department, College of Computer and Information Technology, University of Garmian, Kalar, Sulaimani, Kurdistan Region, Iraq

Corresponding Email: [3]mohammed.yousif@garmian.edu.krd*

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Abstract*: *The integration of artificial intelligence into the realm of education has emerged as a consequence of using information and communication technologies as effective instruments to enhance the process of teaching and learning. In November 2022, an AI-driven chatbot known as ChatGPT was introduced. This chatbot possesses the capability to produce coherent and informative responses akin to those generated by humans in response to user inputs. ChatGPT demonstrates its adaptability as a potential facilitator of open education by providing assistance, guidance, and feedback to self-directed learners; thereby amplifying their motivation and involvement. The aim of this paper is to conduct a comprehensive analysis of the aforementioned aspects and delve into the prospective application of ChatGPT within educational frameworks. More precisely, its objectives encompass advocating integration of ChatGPT in educational contexts and furnishing educators with a repertoire of methodologies and approaches to guarantee the prudent and efficacious incorporation of ChatGPT in pedagogical or research endeavors. Through these efforts, the paper strives to foster a heightened and well-informed discourse about the utilization of ChatGPT within the scope of education. The paper outlines the essential strategies and methodologies that should be concurrently utilized when incorporating the services of ChatGPT in educational settings.

Keywords: AI, ChatGPT, Language Model, NLP, OpenAI.

1. INTRODUCTION

ChatGPT, a prominent artificial intelligence-based language model, has emerged as a pivotal innovation in Natural Language Processing (NLP). Developed by OpenAI, it has demonstrated remarkable capabilities in generating human-like text and engaging in coherent

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conversations. It provides personalized assistance and feedback; educators can enhance the learning experience of the students [1]. ChatGPT serves as a versatile educational technology with applications spanning from tutoring, language proficiency enhancement, and support roles in research and teaching. What sets ChatGPT apart from other Language Model (LM) systems are its unique attributes: accessibility, personalized interactions, conversational structure, and economic viability. Within the educational sphere, both students and educators can join ChatGPT for a multitude of scholarly and investigative intentions. Educators stand to benefit from ChatGPT's utility in crafting course frameworks, generating subject-specific materials for lectures, devising academic presentations, formulating queries, and constructing problem sets. Likewise, students can reward themselves through ChatGPT's aid in navigating intricate problems and queries, composing essays, and elucidating intricate subjects to accelerate their learning endeavors[2]. ChatGPT has been used in a number of application fields like essay generation, bot responses, answering questions, text-based language and language translation to mention just few of them. Within the scope of this research, we delve into the prospective applications of ChatGPT within the realm of education. Through an in-depth analysis, we examine the multifaceted opportunities that ChatGPT presents and subsequently we engage in a comprehensive discussion about the integration of these groundbreaking AI tools into forthcoming educational strategies and curricular frameworks[3]. The rest of the paper is organized as follows: Section 2 presents a literature review. Section 3 explores Leveraging AI and ChatGPT to Enhance Pedagogical and Learning Endeavors. Section 4 presents the SWOT analysis, and finally, Section 5 discusses and concludes the study.

Literature Review

Past studies have effectively demonstrated the successful application of AI for grading short-answer responses in online learning environments. The discourse within [4] brings to light the pivotal nature of education in an individual's life. Within this context, the integration of artificial intelligence emerges as a catalyst for enriching the pedagogical experience. Particularly, the employment of chatbots like OpenAI's ChatGPT model is significant, given its capability to provide instantaneous and targeted answers to user queries. But it should be acknowledged that alongside the merits offered by ChatGPT, its corresponding drawbacks necessitate careful contemplation and acknowledgement. [5] show that the advantages of ChatGPT extent academic writing by generating summaries, aiding writing, and supporting learning, yet it must be used alongside human intelligence. As a search engine, ChatGPT understands and responds to natural language queries, providing contextually relevant information, albeit with limitations in cost, accessibility, and accuracy. For coding, its understanding of natural language inputs aids developers in generating code and obtaining relevant information, despite constraints on access and precision. AI tools like ChatGPT can transform education by improving learning outcomes and motivation. Researches indicates that AI-based tutoring enhances student performance. ChatGPT's tailored and interactive assistance fosters engagement, supports self-directed learning, and personalizes recommendations for resources and activities, elevating the overall learning experience [6]. Finally, it is concluded that The ChatGPT model can help in solving technical and non-technical problems like (computer and engineering codes) and language and literature

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problems respectively. Moreover, ChatGPT has recently been applied to tasks in different domains such as software engineering, medical education, data augmentation, fifth industrial revolution, code gen- eration, intelligent vehicles, and solving AI tasks.

Leveraging Ai and Chatgpt to Enhance Pedagogical and Learning Endeavors

The existing body of scientific literature indicates that AI technology holds significant promise as a valuable asset within the realm of education, assuming diverse roles that augment both learning and pedagogical endeavors. Scholars have proposed that AI technology serves as a crucial tool for automated essay grading, although the efficacy and value of such AI-based grading tools remain largely uncertain within the current scholarly landscape.

The principal function of ChatGPT within the context of leveraging AI for advancing pedagogical and learning endeavors is to serve as a transformative tool that enhances educational practices. ChatGPT functions as an intelligent conversational agent capable of engaging in meaningful interactions with learners. Its role encompasses facilitating personalized learning experiences, providing real-time assistance, and offering valuable insights into a wide array of subjects. By simulating human-like conversations, ChatGPT fosters active learning, addresses queries, and offers explanations, thereby promoting a more interactive and engaging educational environment.[7] Through its adaptive and responsive nature, ChatGPT contributes to individualized instruction and aids in the comprehension of complex concepts. This integral role of ChatGPT aligns with the overarching goal of leveraging AI to elevate pedagogical methodologies and enhance the overall quality of learning experiences [8]. Furthermore, while AI systems draw from prior evaluation data for training, they may be particularly well-suited for standardized tests like nationwide professional education examinations, where ample historical data and standardized assessment methods are prevalent. However, these systems might be less adept at evaluating individual university exams, which often undergo yearly format changes and may lack extensive past evaluation data. Additionally, the assessment of intricate assignments by AI might necessitate calibration or the incorporation of various unique variables inherent to each task, such as a student's independent contributions, comprehension of existing literature, and scenarios with limited training data. An optimal evaluation approach is likely to involve a blend of transparent or explainable AI systems, along with human involvement, to achieve high-quality assessments and the acceptability of AI-based student evaluations [9]. Envisaging AI's future support, educators could potentially reduce their workloads, redirecting efforts toward innovative lesson planning, professional development, and personalized coaching, thereby enhancing students' preparedness for future challenges. Beyond grading and assessment, AI tools hold the potential for translating educational materials and cultivating interactive and adaptive learning environments.

SWOT Analysis

The SWOT analysis is a strategic planning framework that can be used to assess the strengths, weaknesses, opportunities, and threats of a new technology. In the context of education, a useful method for using new technology is to make benefit from opportunities it

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provides through promoting its strengths and addressing its threats or drawbacks, and this can be achieved by treating its weak points.The SWOT analysis can be used to identify the internal (i.e., strengths and weaknesses) and external (i.e., threats and opportunities) factors that can affect the integration of new technologies in education [10][11]. Strengths are resources or capacities that allow the new technology to achieve its defined goals. Opportunities are internal or external characteristics associated with the technology that increase demand for what the technology can provide for its users. Weaknesses are limitations or defects associated with the technology that impede progress toward defined goals. Threats are unfavourable characteristics of the technology that impede its strategy by presenting a barrier or constraint, thereby limiting the achievement of goals [12][13].
This section provides a comprehensive overview of ChatGPT's strengths, which can help identify its various educational opportunities. Moreover, it shows and displays the weaknesses of ChatGPT in order to mark any serious threat that could be faced in the future. And this step will help in developing a tailored strategy which is needed to achieve an effective management of the threats and consequently get rid of them.

Strength
ChatGPT is an advanced language model which is useful for generating more reasonable and more credible responses compared to other similar AI tools; especially that it has self-improvement and self-learning abilities which make it adjust and improve its responses according to any input from human evaluators. It can also come up with personalized responses according to the context of the given prompt in addition to the user's performances or needs. Last but not least, it has the ability to provide real-time responses which help in simplifying the process of obtaining information to a great extent.

Weakness
ChatGPT can enable students and teachers to access more information by providing them with a more efficient and a more comprehensive tool. It can make personalized learning easier through tailored Facebook support. It has the ability to speed up complex learning through the customized instruction and challenges that it can provide for the students. Finally, it can reduce teaching workloads by providing tools for class activities like feedback, test generation, and grading.

Opportunities
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Threats
Beside its many beneficial and facilitating aspects, ChatGPT can be a real threat for the learning and education process worldwide because it is an easy way for online cheating of the

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exams, hence, it poses a great threat for the academic knowledge and integrity. It can also be a discriminative method in education it trained on biased data. Another real threat could be the fact that it certainly encourages plagiarism in the academic researches and papers and this changes the balance between the knowledgeable and the non-knowledgeable people on behalf of the latter. It further leads to the deterioration of students' higher-order cognitive skills.

2. DISCUSSION AND CONCLUSION

ChatGPT and other AI language models (LMs) have the potential to be valuable tools in education and research. ChatGPT is an innovative language model that can replace a human being in a conversation and come up with a text closely similar if not identical to any human language. It can achieve different goals like: answering queries, writing essays, simplifying multipart concepts, providing practical tutoring, in addition to language practice. ChatGPT is also versatile enough to be used for both technical and non-technical problem-solving. However, ChatGPT does have some limitations. It can be deficient in common sense, susceptible to biases, and challenged by complex reasoning. It also cannot process visual data. Therefore, it is important to use ChatGPT judiciously and to be aware of its limitations. Many recommendations can be made for the responsible use of ChatGPT in education and research:

First, It is the duty of the educational institutions to become familiar with the value and worth of this electronic service and urge their students, educators, and researchers to use it in the best and truest way. However, it is significant to emphasize the importance of inclusive and ethical use. Second, While using ChatGPT to evaluate the works of the students, there should be a revision for the standards of assessment where the focus should go to aspects like critical thinking, problem-saving, and communication skills. Third, institutions should offer training to both teachers and students on how to effectively use ChatGPT while upholding academic integrity. Fourth, research should be conducted to explore the effectiveness of integrating AI tools like ChatGPT in education. Finally, researchers should experiment with ChatGPT for academic purposes with caution, using it for idea generation rather than producing entire research articles.

To conclude, ChatGPT and other AI-LMs have the potential to be valuable tools in education and research. However, it is important to balance their benefits with limitations and to foster responsible usage. The suggested strategies and recommendations can guide educators, institutions, and researchers in effectively leveraging ChatGPT while nurturing the uniquely human aspects of learning and innovation.

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