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Let's Start!

Effect of Chat GPT on Students' Academic Performance at Undergraduate Level

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Abstract

The expansion in the field of Artificial intelligence led to many ground-breaking technologies. Chat GPT is technology of AI that was launched in November d2022 and produce swift responses to user inputs. This study aims to explore the effect of Chat GPT on students' academic performance at undergraduate level. The objectives of the study were to explore about Chat GPT, determine its effects, opportunities and challenges of Chat GPT. The nature of the study was descriptive. Data collected by using purposive sampling technique. Self-developed questionnaire based on five point Likert Scale consisted of 23 closed ended and 2 open ended questions were used for data collection. Researcher used SPSS for finding the reliability of tool. MS Excel and MS word documents were used for data processing. The findings of the study strongly advocated that Chat GPT facilitate more effective learning. It also demonstrated that students who interacted with Chat GPT significantly improved their learning experiences. It was also analyzed that Chat GPT leads to privacy risks, provide inaccurate information and limited corpus of data. It is highly recommended that Chat GPT may be integrated in the curriculum for betterment of teaching learning experiences.

Keywords: Chat GPT, AI, Academic Performance

INTRODUCTION

Allah Almighty has created uncountable creature in the universe but human being is superior from all those. One such reason for this superiority is his intelligence. Along with his God gifted intelligence human being also made rapid development in the field of artificial intelligence (AI). It is defined as the capability of a computerized system or other machine to do tasks requiring human intelligence and reasoning (Ma & Siau, 2018). AI field has led to the discovery of many innovative technologies and chat bots including Chat GPT. It become famous by grasping world wide attention. This tool was created by OpenAI based on the GPT large language model (Lund & Wang, 2023). OpenAI is a research laboratory that was discovered in 2015. Open AI launched text writing Chat GPT chat bot on November 2022 (Cherukuri & Murugesan, 2023). Due to its

effectiveness, it attracted one million active users within one week of its release. This tool was based on algorithmic technique that provide prompt response to users input. Chat GPT is a user interface for the LLM GPT-3, the third version of the GPT. It has a whopping 600 GB of data and 175 billion parameters that were collected in 2021 from books, journals, reports, research papers, and internet sources. This tool has opportunities as well as threats for users:

OPPORTUNITIES OF CHAT GPT

Chat GPT tool facilitates students by numerous ways. Learners can comprehend tough concepts, find solution of challenging problems. It is a best path for those students are interested in practical and experimental learning. Students can pose question and this chat bot provide them precise and more relevant answer to their question. It provides an opportunity to evaluate knowledge an understanding of subject material. Additionally, the Chat GPT model can generate explanations and detailed solutions for a given issue; it can aid in the development of analytical and creative thinking as well as problem solving abilities. The Chat GPT model can be a professional tutor for developing language skills, programming, report writing, project management, and technical (e.g., medical, legal, and IT) report writing. More fascinatingly, learners can argue with Chat GPT about the given descriptions, solutions,and other recommendations. Consequently, learners receive interactive help from Chat GPT anytime and anywhere (Rahman & Watanobe, 2023.)

Personalized learning is another major advantage of Chat GPT. Based on students' mental level and interests it provide response. Besides this, they can practice their linguistic skills by simulating real life conversation with chat GPT (Alves de Castro, 2023).

CHALLENGES OF CHAT GPT

PLAGIARISM

Student plagiarism represents a substantial issue in the field of education. Plagiarism detection tools such as Turnitin (Turnitin, 2023) and iThenticate (iThenticate, 2023) are frequently employed to spot instances of copied material in student submissions. Nevertheless, research has indicated that Chat GPT can circumvent these plagiarism detectors by creating content that appears to be genuinely

original (Lo, 2023).

PRIVACY

AI systems frequently entail the collection and processing of extensive student data, giving rise to concerns about both student confidentiality and the safety of this data.

LACK OF HUMAN INTERACTION

Lack of human engagement: Some students might not feel as driven or engaged while learning from an AI system; instead, they may like the personal interaction and support that a teacher provides.

RATIONALE OF THE STUDY

In the field of Artificial Intelligence (AI), a Large Language Model Chat GPT (Generative Pr-Trained Transformer) grasp worldwide attention of various fields including educational institutions and generally University of the Poonch Rawalakot Campus Haveli Kahuta. As Chat

GPT represents cutting edge technology in artificial intelligence field and no such study was conducted in this area. Therefore, researcher choose this topic. This research study aims to describe Chat GPT and explore the effects of Chat GPT on students' academic performance.

PROBLEM STATEMENT

The main problem to be addressed in this study is to explore and assess the effects of Chat GPT on students' academic performance. Furthermore, the study aims to explore the potential challenges associated with the adoption of this technology in educational settings.

OBJECTIVES

• To explore about Chat GPT

• To determine the effects of Chat GPT on students' academic performance.

• To explain the opportunities and threats offered by Chat GPT to students.

HYPOTHESES

RESEARCH HYPOTHESIS

H1 There is effect of Chat GPT on students' academic performance at undergraduate level district Haveli Kahuta Campus.

NULL HYPOTHESIS

Ho There is no significant effect of Chat GPT on students' academic performance at undergraduate level district Haveli Kahuta Campus.

SIGNIFICANCE OF THE STUDY

The study "effects of Chat GPT on students' academic performance" is very significant for teachers and students. This study will aid students to understand the opportunities and threats offered by Chat GPT. It will help them to identify their learning gaps through feedback provided by Chat GPT. Besides this, this study is beneficial for teachers in improving their teaching methodologies. They can utilize Chat GPT in developing their lesson plans, generating contents in more effective way.

Furthermore, this study will provide valuable recommendation to policy makers about the integration of Chat GPT in teaching learning process.

LITERATURE REVIEW

Artificial intelligence (AI) and machine learning (ML) have grown more and more significant in a variety of disciplines in recent years, particularly during and following COVID-19 (Jowarder, 2023). Though its use in education is relatively new, artificial intelligence (AI) has been increasingly popular in recent years. In the 1960s, first of all Joseph Weizenbaum developed ELIZA, a program that could mimic a conversation with a human. Since then, conversational agents and AI tools for language processing have been used in education. Many developments in natural language processing and conversational AI have since taken place, leading to the creation of a wide range of AI tools and chat bots. These early efforts laid the foundation for the creation of more advanced AI-powered teaching platforms and tools, which are now widely used in classrooms throughout the world (Nurtayeva et al., n.d.). One AI powered tool is Chat GPT, a chat bot driven by artificial intelligence, was introduced by OpenAI, a U.S. firm, in

November 2022. This artificial intelligence (AI) program uses a sizable language database to produce replies from human-inputted text (Sullivan et al., 2023).

CHAT GPT AND STUDENTS' LINGUISTIC SKILLS

It has been demonstrated that Chat GPT considerably enhances students' language proficiency. It is designed to understand spoken language and react in a way that is acceptable and grammatically sound. Students can improve their language abilities by using Chat GPT, which presents them to superior language models. Students may ask questions, get prompt answers, and improve their vocabulary and grammar using Chat GPT. It's an entertaining and interactive learning tool (Muñoz, Gayoso, Huambo, Tapia, Incaluque, Aguila, Cajamarca, Acevedo, Rivera, and Arias-Gonzáles, 2023).

CHAT GPT AND STUDENTS' MOTIVATION

Yoon, Jarrett, and Van der Schaar (2019) found that in terms of learning outcomes, students who used Chat GPT in a virtual coaching system scored better than their peers who did not. Similarly, Takeda et al. (2018) found that that incorporating Chat GPT into a virtual classroom enhanced learning outcomes for students. Using NLP and ML algorithms, Chat GPT is an innovative chat bot that responds openly to user inquiries. Chat GPT was used by Liang et al. (2021) to provide immediate feedback to pupils enrolled in a programming course. According to the findings, Chat GPT significantly increased student motivation and engagement. Similarly, Chat GPT was used as a teaching assistant in a study (Deng & Yu, 2023) to provide individualized feedback and assistance to online students. In a similar vein, Chat GPT served as a teaching assistant in a study (Deng & Yu, 2023) to offer personalized feedback and support to remote learners. The motivation and engagement of students may be significantly increased by using chat bots, particularly Chat GPT. These chat bots, which offer quick, customized feedback, can improve students' motivation and focus (Kaid Mohammed Ali & Rashad Ali Bin-Hady, 2019). Using Chat GPT in the classroom substantially improves involvement and engagement from the students (Muñoz et al., 2023). According to Mhlanga (2023) and Qadir (2022), pupils who ask Chat GPT, which provides digital cognitive tutoring services, can get personalized responses and comments. It enable pupils to develop into independent and autonomous learners. In the same manner, Chat GPT may address a wide range of subjects in addition to answering questions from students (Baidoo-Anu & Ansah, 2023). But in order to fully utilize Chat GPT support, educational establishments must create clear policies and make them known to students so that they are aware of how to utilize it effectively and responsibly (Sok & Heng, 2023).

LACK OF CONTEXTUAL UNDERSTANDING

GPT models do not truly comprehend the background or meaning of the text; instead, they create text based on patterns and connections in the training data (Higher & Area, 2023).The inability of generative models to comprehend context and circumstance can result in inappropriate or irrelevant responses (Nurtayeva et al., n.d.). The risk of becoming overly dependent on technology, which could impede the development of critical thinking abilities, is another major obstacle that students may encounter when using NLP models in higher education. Critical thinking has been pointed out as an example skill, there are many other

higher-order thinking abilities that could be explored more thoroughly in the context of chat bots. An excessive dependence on platforms like Chat GPT and Google Bard may cause students to become inactive learners, accepting replies from the system without challenging or critically assessing the veracity or applicability of the material offered. This could result in the inability to acquire critical thinking abilities that are vital, such the capacity to assess the consistency and dependability of sources, create well-informed opinions, and come up with unique and inventive ideas. Furthermore, over-reliance may amplify preexisting prejudices and sustain educational disparities. For instance, if the system is trained on inadequate or biased data, it may provide solutions that reflect these biases. This might fail to confront and interrupt unfair practices in higher education, perpetuating existing inequities (Fuchs, 2023). GPT models produce text by using patterns and connections found in the training data, but they are not truly capable of comprehending the text's context or meaning (Higher & Area, 2023).

ISSUES IN REFERENCING

The absence of citations in the data presents a significant additional challenge to the GPT model. Students are thus unable to add the appropriate reference (Nurtayeva et al., n.d.)

BLIND RELIANCE ON GENERATIVE AI TOOLS

Over reliance on generative AI tools like Chat GPT can have adverse consequences on education and research. Recently, concerns have emerged regarding their impact on tasks such as essay writing and research article creation. OpenAI's CEO has cautioned against unquestioning dependence on Chat GPT, emphasizing that while it excels in some aspects, it is significantly constrained and should not be relied upon for critical tasks, serving as a preview of progress. The need for further work on enhancing its robustness and truthfulness is evident (Rahman & Watanobe, 2023).

METHODOLOGY

RESEARCH DESIGN

The study is descriptive in nature. The researcher mostly adopts this design to gain a better understanding of the problem and when not much is known yet about the topic or problem in a short duration of time.

POPULATION OF THE STUDY

The major and essential part of research study is the population. It can be defined as the group of people to which researcher intended to conduct study. Population of this study consisted of all the students studying at undergraduate level at university of the Poonch Rawalakot Haveli Kahuta Campus AJK. The total population consisted of 650 students.

SAMPLE OF THE STUDY

The technique used for sampling is purposive sampling technique. 100 students were selected from Education, Computer Science and English Department year 2023 to execute further study.

DEVELOPMENT OF RESEARCH TOOL

Research tool refers to the instrument used to collect data or information required to answer a research question. The tool of this research study was self developed questionnaire based on 5 points Likert scale having total 25 items. Out of them 23 items were close ended questions

while 2 items were open ended questions. The questionnaire was distributed among participants and asked them to express their point of views on the agreement level.

PILOT TESTING

It is defined as a collection of data to a small group of participants from the target population in order to evaluate the validity and reliability of each item of research tool. Besides this, it is designed to make the tool more effective. For this purpose, researcher collect the data from 20 students of Maths Department and it was excluded from original study.

VALIDITY OF TOOL

It is defined as the degree to which tool measure what it is intended to measure. The tool was validated by research experts.

RELIABILITY OF TOOL

Consistency of measurement is known as reliability.

The Cronbach's Alpha value 0.634 which falls in good category for conducting original study.

RESEARCH ETHICS

Research ethics are of paramount for any study as they guide commitment to conducting research with respect for participants and adherence to ethical principles.

For this study, strict measures were implemented to protect participants confidentiality, maintain anonymity and respecting their privacy. The participants fully authorized to share information willingly and have a right to refrain from providing information if they don't want to share.

DATA COLLECTION PROCEDURE

Data were collected by self-visited to departments. Questionnaire were distributed among students.

DATA ANALYSIS

Data were analyzed with the help of frequency distribution tables and graphs.

Statements	SDA	D	U	A	SA
My learning experience improved after using Chat GPT.	6	20	10	49	15
I feel motivated in acquiring new knowledge through Chat GPT.	13	10	20	45	12
I prefer to work independently after using Chat GPT.	6	11	15	54	14
Chatting with GPT chat bot positively influence my communication skills.	4	22	14	47	13
I feel more confident in completing assignments by using Chat GPT.	9	10	10	47	24
Sometimes Chat GPT provide inappropriate information.	12	20	16	42	10
Over reliance on Chat GPT negatively affect my creativity.	13	34	18	23	12
Lack of citation in data is the major problem associated with Chat GPT.	4	34	29	20	13
Use of Chat GPT play a vital role in improving my grammatical errors.	9	12	7	60	12

Learned material is easily evaluated through quizzes offered by Chat GPT.	5	20	14	48	13
According to individual interest Chat GPT provides personalized experiences.	5	26	19	39	11
Chat GPT has positively influenced my reading comprehension.	5	15	15	47	18
There is lack of latest data on Chat GPT.	13	22	19	37	9
I assess my language proficiency through feedback provided by Chat GPT.	2	22	20	37	19
Sometime I waste my time by doing useless conversation with GPT.	13	2	8	57	20
Chat GPT explains tough concepts by making them easy.	5	19	10	51	15
My academic stress minimizes by the use of Chat GPT.	6	12	22	41	19
Chat GPT makes it easy for me to efficiently tackle complex problems.	4	13	15	49	19
Chat GPT can leads to privacy risk.	10	22	31	24	13
Chat GPT precisely respond to my queries.	8	17	10	49	16
I easily access Chat GPT at any time.	5	10	4	65	16
Chat GPT helps me to express my ideas effectively in writing.	6	17	8	51	18
Chat GPT enables me to complete task assign by teacher in no time.	7	17	11	47	18

ANALYSIS OF DATA

The result of the study showed that Chat GPT play a role in improving their learning experiences. 6 students strongly disagree, 20 disagree, 10 undecided, 49 agree while 15 strongly agree that Chat GPT enhance their learning experiences. Similarly, 13 strongly disagree, 10 disagree, 20 neutral, 45 agree and 12 strongly agree that Chat GPT like chat bots urge them to explore and acquire more and more knowledge. It is also analyzed that 6 strongly disagree, 11 disagree, 14 neutral, 54 agree, 15 strongly agree that they interdependent on Chat GPT in their academic work and reduce their academic anxiety. Students are able to polish their communication as well as writing skills by Chat GPT. However, result of study also expressed that first personal data is insecure on Chat GPT and it is unable to provide up to date information like weather forecast.

TABLE

Sr. No.	Items	Responses
1	Risk of Privacy	40
2	Risk of plagiarism	10
3	Lack of latest data	40
4	Wastage of time by useless conversation.	5
5	Lack of citation	5

Table demonstrated the challenges that mostly students faced while using Chat GPT.

FINDINGS

Analysis found that Chat GPT plays a pivotal role in improving the learning experiences of the students and develops motivation in acquiring knowledge. It is an effective for improving the language proficiency and communication skills. Similarly, it was also analyzed that prompts produced by Chat GPT are sophisticated and precise than generated by human teachers but it depends on quality of input data and algorithm design. Furthermore, Chat GPT become an efficient tool for students in completing their assigned task especially university students however, responses are not accurate always. Study revealed that Chat GPT contribute in simplifying complex concepts, clarify queries, reduce academic stress. Besides this, it also facilitates students in writing academic, article, thesis. In addition to its benefits, study figure out that there is risk of privacy while using Chat GPT. It is unable to provide latest information and sometimes information might be incorrect.

RECOMMENDATIONS

In the light of findings, it is recommended that policy makers and curriculum developers may integrate technologies including Chat GPT in curriculum for achieving SLOs, improving their critical and creative skills more efficiently and effectively.

Teachers try to use Chat GPT and encourage students to take its advantage but they must provide awareness to students about its drawbacks and provide alternate solution. As it is founded that, sometimes information might be incorrect. It is recommended that students must cross checked the information with the primary and valid source of information.

DISCUSSION

The aim of the research study was to explore the effect of integration of Chat GPT in education and on students learning. The findings of the study demonstrated that integration of Chat GPT enhance students learning experiences, motivation and skills. Similarly, Yoon et al. (2019) found that students who utilized Chat GPT in an online tutoring system outperformed their classmates who did not use Chat GPT in learning outcomes. Same like, Takeda et al. (2018) found that integrating Chat GPT into a digital classroom improved student performance. It was investigated that AI chat bots like Chat GPT play a crucial part in empowering students' writing, reading skills and providing valuable feedback. Previous studies also revealed that Chat GPT is a fun and engaging way for students to pose questions, immediate feedback, and increase their vocabulary and grammar skills (Muñoz et al., 2023). Earlier studies explained that sometimes Chat GPT could not understand the context and give inaccurate response. In a similar fashion, this study examined the same results. However, the findings of research study also deviated from existing literature. Previous studies presented that when using NLP models in higher education is the potential risk of over reliance on technology, which could undermine the development of important critical thinking skills (while critical thinking has been singled out as an exemplary skill, the list of skills is countless and multiple higher-order thinking skills could be further discussed in the context of chat bots).But, this research findings showed that AI Language model like Chat GPT did not be a hinder in the development of critical and creative thinking of students. Instead, it was analyzed that students use Chat GPT to enhance their

critical thinking and implement their creative ideas for innovation. Nurtayeva examined that data taken from Chat GPT leads to plagiarism risk in writing while this study found that it provides data with reference and citation. This deviation in study is due to development in AI chat bots day by day. Now, such chat bots are also launched that help any researcher to review articles, paraphrase thesis, write thesis and so many. Therefore, students did not face this challenge. Researcher would like to point out the limitation of the study including small sample size, level of students and specific geographical area. In future, it can be elaborate to elementary, secondary and primary level. Furthermore, this study is confined to students' performance and conduct study using different variables. In the light of these findings, it is suggested that students must go through it to gain better insight about AI chat bot like Chat GPT, teachers should provide awareness to students about its benefits and threats as well and curriculum wing must take into consideration this study while designing curriculum and integrate Chat GPT in curriculum especially at undergraduate level. This study is beneficial for improving their learning experiences by sharing immediate feedback, quizzes and individualized instructions based on their interests.

REFERENCES

Alves de Castro, C. (2023). A Discussion about the Impact of ChatGPT in Education: Benefits and Concerns. *Journal of Business Theory and Practice*, *11*(2), p28.

Baidoo-Anu, D., & Ansah, L. O. (2023). Education in the era of generative artificial

Chiu, T. K., Moorhouse, B. L., Chai, C. S., & Ismailov, M. (2023). Teacher support and student motivation to learn with Artificial Intelligence (AI) based chatbot. *Interactive Learning Environments*, 1-17.

Economies to Improve Education with ChatGPT. *Available at SSRN*

Fuchs, K. (2023). Exploring the opportunities and challenges of NLP models in higher education: is Chat GPT a blessing or a curse? *Frontiers in Education*, *8*.

Higher, E., & Area, E. (2023). Chat GPT and education. *Education*, *1*(4), 1–8

intelligence (AI): Understanding the potential benefits of ChatGPT in promoting teaching and learning. *Journal of AI, 7*(1), 52-62

Jowarder, M. I. (2023). *The Influence of ChatGPT on Social Science Students : Insights Drawn from Undergraduate Students in the United States*. 194–200.

Lo, C. K. (2023). What Is the Impact of ChatGPT on Education? A Rapid Review of the Literature. In *Education Sciences* (Vol. 13, Issue 4). MDPI.

Lund, B. D., & Wang, T. (2023). Chatting about ChatGPT: how may AI and GPT impact academia and libraries? In *Library Hi Tech News* (Vol. 40, Issue 3, pp. 26–29). Emerald Publishing.

Ma, Y., & Siau, K. L. (2018). Association for Information Systems AIS Electronic Library (AISeL) Artificial Intelligence Impacts on Higher Education Recommended Citation Artificial Intelligence Impacts on Higher Education. In *Artificial Intelligence Impacts on Higher Education*.

Mhlanga, D. (2023). ChatGPT in Education: Exploring Opportunities for Emerging

Muñoz, S. A. S., Gayoso, G. G., Huambo, A. C., Tapia, R. D. C., Incaluque, J. L., Aguila, O. E. P., Cajamarca, J. C. R., Acevedo, J. E. R., Rivera, H. V. H., & Arias-Gonzáles, J. L. (2023). Examining the Impacts of ChatGPT on Student Motivation and Engagement. *Przestrzen Spoleczna*, *23*(1), 1–27.

networks. *Advances in neural information processing systems, 32*.

Nurtayeva, T., Salim, M., Taha, T. B., & Khalilov, S. (n.d.). *The influence of ChatGPT and AI Tools on the Academic Performance*.

Rahman, M. M., & Watanobe, Y. (2023). ChatGPT for Education and Research: Opportunities, Threats, and Strategies. *Applied Sciences (Switzerland)*, *13*(9)

Sok, S., & Heng, K. (2023). ChatGPT for Education and Research: A Review of Benefits and Risks. *SSRN Electronic Journal*, *June*.

Sullivan, M., Kelly, A., & McLaughlan, P. (2023). ChatGPT in higher education: Considerations for academic integrity and student learning. *Journal of Applied Learning and Teaching*, *6*(1), 31–40.

Yoon, J., Jarrett, D., & Van der Schaar, M. (2019). Time-series generative adversarial