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Exploring the World of Artificial Intelligence: The Perception of the University Students about ChatGPT for Academic Purpose

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Abstract: *The study aims to explore the impact of ChatGPT on the writing skills of undergraduate students. This is a qualitative study in which 24 randomly selected students from two private sector universities in Karachi were interviewed and analyzed. The sample size was small but diversified, which was comprised of male and female BS (final year) students from humanities and sciences backgrounds. The data was classified into four categories to show different levels of responses from positive to negative. The result showed a mixed trend in which the majority of students were of the opinion that ChatGPT hinders creative writing, whereas the other group, was of the opinion that it is beneficial if used but under proper supervision / controlled conditions. The responses seem quite reasonable because ChatGPT is still in its infancy stage and may take some time to fully understand its technical aspects. However, more in-depth studies are required for its effective application in different academic areas.*

Key Words: Artificial Intelligence (AI), ChatGPT (Generative Pre-trained Transformer) Large Language Model (LLM), Rationalist Theory, Writing Skill

Introduction

The launching of the ChatGPT program by Open AI in 2022 immediately created two major groups in academia of the world. One of the groups comprising teachers, educators, writers and researchers believed that this was a great addition to the existing knowledge of the world covering almost all spheres of science, technology and social sciences. Its use as compared to other sources of knowledge was surpassed both in respect of 'time' and 'value'. Much more information was available in a much shorter time. Another important aspect is the transformation of knowledge in different forms and different contexts, like a great piece of written work prepared by a scholar. This group appreciated the program and showed a positive attitude towards it, and future use in academic studies. However, the other group of educators and researchers showed a different side of the picture, with the observation that, ChatGPT program despite its limited benefit could be extremely damaging to the "cognitive" abilities of the learners' community and the element of critical thinking in their writing would be completely missing by its users. Looking into the reflections of two distinct international communities, it seems quite 'timely' to discuss the issue among the academia of Pakistan and find out about the impact of ChatGPT on the English writing skills of undergraduate students at the university level.

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The present work is an attempt to find out more information, feedback and reaction of the education community of Pakistan towards the use of this magical technology with a special focus on English writing skills.

Scholars of science, arts and other faculty of knowledge agree that writing skill is the most effective communication tool to present their ideas and achievements for the overall benefit of world societies. ChatGPT has the convenient ability to write in different forms, styles, and contexts like an experienced scholar. By using the tool, ESL learners have excellent opportunities to improve their writing skills. However, Chomsky (2023) a world-renowned linguist labelled this advanced AI tool as "*essentially high-tech plagiarism*" that retards the learning abilities of students. *or* "*a technique of evading learning*". He claimed that the students were exploiting advanced technology out of instinct to avoid individual studies. This observation is also supported by James Stacey Taylor in his study.

The difference of opinion among the education community in the international scenario about the positive and negative impact of ChatGPT has also affected Pakistani academia and initiated serious debate and discussion, justifying possible benefits or hindrances due to its adaptation in the near future. To contribute to the research in the global context, the researcher developed the following questions to find out the perception of university undergraduate students.

- What will be the effects of Chat GPT in developing the writing skills of ESL students?
- How do ESL learners perceive ChatGPT as a tool to improve their writing skills?

The responses help in understanding the perception of ESL students on the use of ChatGPT in writing their assignments.

Review of Literature

Evaluating ChatGPT with Theoretical Framework

The real effect of ChatGPT on writing skills has not been fully understood and needing expert clarification, has much speculated both positive and negative effects on the writing skills of its users. This can be explained in the light of Chomsky's theory, as it has had a significant impact on the study of language, i.e., basic knowledge and creativity in language acquisition and cognitive development. Chomsky argues that language is not simply a learned behaviour but a unique cognitive ability acquired over time that reflects the creativity of the human mind (Anthony & Horstein, 2003, p. 6).

Chomsky's theory also emphasizes the role of rationalism in language acquisition. Rationalism is the idea that knowledge is innate, rather than being acquired solely through experience. Chomsky argues that humans are born with an innate capacity for language, which is reflected in the universal grammar that underlies all human languages. Chomsky's principal criticism of the Rationalists stress innate aspects of the mind in their accounts of behaviour and learning. (Markie, 2017). They believe that language is an expression of human creativity, that explanation is more important than description, and that the acquisition and use of language are based on innate capacities. By emphasizing the role of innate knowledge and creativity in language acquisition, Chomsky's theory has had a significant impact on the study of language and cognitive development. Chomsky's theory of rationalism and creativity, also known as 'generative grammar', is a linguistic theory which says that humans have an innate ability to generate an infinite number of sentences using a finite set of grammatical rules. Chomsky argues that this ability is evidence of a cognitive capacity for language that is unique to humans and reflects the innate structure of the human mind.

According to Chomsky (2012), humans are born with a universal grammar, a set of rules and principles that are common to all human languages. This universal grammar provides a framework for understanding and generating language, and it allows humans to create new sentences that they have never heard before. The creative aspect of language is what sets it apart from other cognitive processes, such as memory or perception. Chomsky argues that language is not simply a learned behaviour, but rather a unique cognitive ability that reflects the creativity of the human mind. (Chomsky, 1986)

Further, the features of chatbot named ChatGPT, Content writer, Alexander Christensen highlighted that it is built by Open AI's GPT-3 language model (AlAfnan, Dishari, Jovic, & Lomidze, 2023). A natural language processing (NLP) model called GPT-3 (Generative Pre-

trained Transformer 3) can produce text that resembles human speech in a variety of languages (Hariri, 2023). GPT-3 can produce text in a broad range of languages, including English, Spanish, French, Chinese, Russian, and many more(Sun et al., 2021). It was trained on a sizable dataset of text from the internet. It is important to remember that the performance of the model will differ based on the language and level of complexity of the text being created. Since ChatGPT is a sizable language model (Hariri, 2023) that was trained on a wide range of texts, it can comprehend and produce text in a number of different languages approximately 95 languages, It is primarily made to comprehend and produce content in English, nevertheless. (Christensen, 2023). To have a better concept of ChatGPT, it is necessary to have basic information about Large Language Model (LLM) (Li, 2022).

Large Language Models: (LLMs)

These are machine learning and neural network-based computer systems for natural language processing, like GPT-3, and others. LLMs may be used to create new material or edit already-existing text (Wang et al., 2023). Possible issues include biased produced material, non-verifiable information, original research, and copyright violations (Brants et al., 2007). As a result, 'LLMs should only be used for projects where the editor has extensive expertise', and their outputs must be carefully checked to ensure that they adhere to all applicable rules (Lyu, Xu, & Wang, 2023). Additionally, for articles and draughts, in-text credit is necessary, and LLM usage to produce or alter material must be disclosed in the edit summary(Lembersky, Ordan, & Wintner, 2012). For revisions made with LLM assistance, editors remain entirely responsible.

Scholars at the Texas University of Austin and MIT claim that to comprehend the power and limits of Language learning Models (LLMs), we must separate "formal" from "functional" linguistic competence. This distinction can help clarify the discourse and build models that understand and use language in human-like ways. On the discussion of LLMs limitations and misconceptions two prevalent ideas have been given by Mahowald et.al., (2023) a computational linguist at UT Austin and a co-author of the work, "like with everything, I think the way individuals understand LLMs is impacted by their own history, expertise, and experience" (p. 212) It is terrific that LLMs are generating attention from many academic fields, including linguistics, neurology, philosophy, anthropology, sociology, political science, and the NLP community. This inevitably results in a range of viewpoints on LLMs and their capabilities (Luong, Kayser, & Manning, 2015).

The researchers examine two prevalent misconceptions around language and mind in their work. The first is known as the "good at language -> excellent at mind" fallacy and asserts that an entity skilled at language is likewise good at the thought. Arguments that huge language models are a step towards "thinking machines" and artificial general intelligence are produced due to this misconception (AI) (Lin, 2023).

According to the second fallacy, "poor at thought -> terrible at language," a language model is not an adequate representation of human language if it cannot correctly capture the complexity and variety of the human mind. This school of thought is characterized by continual criticism of language models' faulty commonsense reasoning skills and paucity of reliable, generalizable knowledge about the world.

Conceptual Framework of Chat GTP

ChatGPT (Generative Pre-trained Transformer) is a large language model that uses deep learning techniques to generate natural language responses to user inputs. The conceptual framework of ChatGPT can be broken down into the following components:

Pre-training

ChatGPT is pre-trained on a large corpus of text data, such as books, articles, and web pages, using unsupervised learning techniques (Shur-Ofry, 2023). The pre-training process involves training a transformer-based neural network to envisage the appropriate expression in the text, based on the context of the preceding words.

Fine-tuning

After pre-training, the ChatGPT model is fine-tuned on a specific task, such as generating natural language responses to user inputs in a chatbot or virtual assistant application. Fine-tuning involves training the model on a smaller data set that is specific to the task at hand and

adjusting the model's parameters to optimize its performance.

Input processing

When a user enters a query or input, the ChatGPT model processes the input and uses its pre-trained knowledge of language to generate a response (Firat, 2023). The input is typically processed using natural language processing (NLP) techniques, such as tokenization and parsing, to break down the input into its component parts and extract meaning from it.

Response generation

The ChatGPT model generates a response to the user input using a probability distribution over the set of possible responses, based on the context of the input and the model's pre-trained knowledge of language. The response is typically generated using a decoding algorithm, such as beam search, which generates a sequence of words that maximizes the probability of the model generating a coherent and appropriate response.

Evaluation and feedback

The generated response is evaluated for coherence, relevance, and appropriateness, and feedback is provided to the model to improve its performance over time. The feedback can be in the form of explicit feedback from users, such as ratings or comments, or implicit feedback, such as user behaviour and engagement metrics.

Moreover, the conceptual framework of ChatGPT involves pre-training a neural network on a large corpus of text data, fine-tuning it for a specific task, processing user inputs using NLP techniques, generating responses using a probability distribution over possible responses and evaluating and improving the model's performance over time through feedback.

The debut of ChatGPT and its practice by students and researchers have also drawn the attention of academicians in Jammu & Kashmir, who are concerned that it will be challenging to identify any information or content gained via ChatGPT as having been copied. ChatGPT can quickly scroll over a large number of servers, and the mechanism it uses to generate the content ensures that the output is unique. The use of ChatGPT has come under investigation in academic circles, despite widespread reports that students in schools and universities are utilizing the new AI-based technology to write their assignments, essays, and academic papers. The ChatGPT is a significant advancement in the field of artificial intelligence, according to Prof. Dinesh, a former vice-chancellor of Delhi University and adjunct professor of mathematics at the University of Houston in the United States, who made this claim in a recent article. He also predicted that it will continue to improve over time. He has also stated that Indian politicians must understand how to take advantage of these developments and enter the AI race in order to ensure our own security and well-being.

Syed Rizwan Geelani in his article (Greater Kashmir, 2023) stated, Academics in the Valley are now aware of the ChatGPT's influence on the entire academic setup even if it is still in its early stages. Academicians say it will be difficult for the academic institutions in J&K to cope with ChatGPT and address its effects on research projects and general student conduct. Sidique,(2022) a famous academician and the former vice-chancellor of the Islamic University of Science and Technology (IUST), describes Chat GPT as a strong tool for having all of its fantastic AI features, but he is also concerned about it being abused in many ways (avid this reference)

"In India, a Doctorate may be obtained through consulting because there are several stores in Delhi that can write your PhD thesis for you," They will provide you with a thesis in two weeks after receiving your subject. Thus, ChatGPT powered by AI may also be misused, "explained Siddique(2022) (Use proper reference) According to Prof. Siddique, the introduction of ChatGPT has raised the importance of the PhD guide. "CHATGPT may be utilized for a greater cause if the guide is honest and truthful," he stated. He claims that it is on to university administrations to address how AI will be used positively rather than negatively. He adds that it will be up to the University Vice Chancellors and Dean Research to figure out how to meet the challenge provided by the ChatGPT. "My perspective is that we should not lose the link between mentor and mentee because if this relationship disappears there will be implications," he says, "Since so many people utilize Chat Rooms for research, every university should set up a cell to keep an eye on its usage. It cannot be halted, but a system must be developed

to control it " The vice chancellor of the Central University of Kashmir (CUK), Prof. Farooq Ahmad Shah, acknowledged that the challenge posed by the AI-based ChatGPT was beyond the capacity of the higher education institutions.

"While ChatGPT is still in the developmental stage, issues about plagiarism detection will still exist. Everything is changing, but let's hope that higher education institutions will create ways to address the difficulties." Prof. Shah claimed that because the thesis was sent in as hard copies, it had been difficult to produce a polished version of the study. "Even after that, researchers continued to submit their work electronically, which presented further difficulties. Yet, the software is now readily accessible that can identify even a single instance of plagiarism throughout an entire study work. Furthermore, dealing with the difficulties brought on by the ChatGPT will also take time. Educational institutions should not accept it without thinking since it has significant repercussions". According to Prof. Umesh Rao, vice chancellor of Jammu University, ChatGPT has presented a number of difficulties for academic institutions. "The position of a teacher will be in peril if the Robots develop feelings. Because of this, I think a teacher's job nowadays is to pique students' interest in the subject matter rather than just provide a dry lecture. We risk losing our relevance if instructors don't do it." While discussing the development of ChatGPT, a renowned academician and Prof. Tariq Chalkoo, chairman of the Physics department at GDC Baramulla, stated it can scroll over so many servers in a very short period of time and produce the appropriate output in the form of a poem, essay, or anything else on any topic. In terms of human emotions, values, cultures, and logic of thought, he stated, "ChatGPT is pretty unique and distinct in that it produces its degree of authenticity in a way that has to be observed." (Geelani, 2023)

Prof. Chalkoo said ChatGPT is still in its infancy stage and needs regulations to protect the value system. Syed Muhammad Najiuallah, an engineering graduate from IUST Awantipora, said the Chatbot imitates human interaction of the highest intellect and can serve as a humongous tool for students in helping them with their studies. ChatGPT's most significant influence is the rise of other powerful AI tools in other domains, such as Video-based AI, creating presentations from scratch entirely by AI and so many more. However, it does have shortcomings such as having the know-how of all events and data up to 2021 only and stating ambiguous answers to queries many times. Najiuallah believes that AI locking horns with humans' thinking ability might turn out to be a battle created by humans against themselves. (Geelani, 2023)

Strengths of ChatGPT

ChatGPT (Generative Pre-trained Transformer) and chatbots are both AI systems designed to interact with users in natural language.

Training

ChatGPT is a large language model that has been pre-trained on vast amounts of text data.

Response generation: ChatGPT generates responses based on a statistical analysis of the text it has been trained on.

Flexibility

ChatGPT can generate responses to a wide range of queries.

Learning ability: ChatGPT can learn from new data and adapt to new situations.

Overall, while both ChatGPT and chatbots are designed to interact with users, ChatGPT has more flexibility and learning ability, while chatbots are typically designed for specific tasks and rely on a set of predefined rules. Some additional particulars about ChatGPT are:

Natural language understanding: ChatGPT has a more sophisticated natural language processing (NLP) capability, allowing it to understand the nuances of human language and generate responses that are more human-like.

Purpose

ChatGPT is primarily designed to generate natural language responses to user inputs. Deployment**:** ChatGPT is typically used in text-based chat interfaces, such as messaging apps.

Development**:** Developing a ChatGPT system requires a high level of technical expertise and access to large amounts of training data.

Cost**:** Developing and deploying a ChatGPT system can be more expensive than building a

chatbot, as it requires significant computing power and large amounts of training data. However, ChatGPT is more flexible and capable of generating more human-like responses but is more complex and expensive to develop and deploy.

The Concept of Writing

Writing is analogous to reading in that it is a solitary, individualized activity, according to Jo McDonough and Christopher Shaw (1993). Writing is a complicated system, and the writing process plays a key role in identifying expert writers from inexperienced authors (Weigle, 2005).

Writing is a helpful, effective, entertaining, and above all vital component of the modern world, according to Trisha Phelps-Gunn and Diana Phelps-Terasaki (1982). Writing, which is four times concerned with inner language and adds written expression to the preceding skills, is also regarded to be the most complicated language mode. According to Myklebust (1960), writing is made up of three different language modes that have successfully developed, with its primary concentration coming from auditory, oral, and visual receptive components. A similar concept had presented by researchers, (Bereiter & Scardamalia, 1987; Kellogg, 2008), that writing ability is cognitively developed in three stages: "knowledge telling" (making and producing what the writer wants to say), "knowledge transforming" (changing what the writer wants to say), and "knowledge constructing" (shaping what to say and how to express it) (pp. 6-7).

Grabe and Kaplan (1996) suggest that L2 writing ability includes elements of the language use context (such as participants, setting, task, topic, textual input, and output); the writer's internal goal-setting; verbal processing (which depends on both long-term and working memory and includes various elements of language competence as well as knowledge of the world); and a final component for internal processing output where the output can be compared to the original goal. This model, according to Grabe and Kaplan, "offers a way to integrate the three central concerns for a theory of writing: a writer's cognitive processing, the linguistic and textual resources that instantiate the writing task, and the contextual factors that strongly shape the nature of the writing" (p. 229). In Cumming et al., a very thorough rubric designed to define L2 writing skills is offered (2000). According to Cumming et al., the definition of L2 writing skill is "transmitting knowledge rather than generating it," which is "compatible with our core interest: individuals' writing and linguistic talents, rather than their academic knowledge or expressive creativity per se" (p. 5). In other words, L2 writing proficiency in an academic setting is more closely associated with knowledge reporting than with knowledge originating or changing, according to Cumming et al. According to the researchers, the capacity to write in a language other than one's own depends on the writer's "selection of relevant words and phrases; proficiency with the norms of syntax, punctuation, and spelling; and the competent application of spelling and grammatical rules, logic and rhetorical devices to sustain a reader's attention and direction" (p.14)

Findings and Discussion

ChatGPT as an advance advanced tool of artificial intelligence was launched in 2022 and despite its worldwide popularity not significant sufficient information is available for students in the Pakistani context random sample from two private university private sector universities word selected on the basis of prior knowledge of artificial intelligence and its advanced version ChatGPT. The respondents were asked to give their opinion on very specific questions regarding the impact of ChatGPT on creative writing skills at the tertiary level i.e. university level the responses were categorized into three headings those who think that the use of ChatGPT does not hinder creative thinking and writing, those who think its use does affect the creative writing skills and the respondents who are of the opinion that ChatGPT be used under proper supervision.

Content Analysis

The responses were interpreted, analyzed and categorized into three derived themes, presented in the following table.

1. ChatGPT Hinders Creative writing
2. ChatGPT be used in Controlled/Supervised
3. ChatGPT does not hinder creative writing.

Table 1

	ChatGPT Hinders in creative writing	ChatGPT be use in controlled/Supervised	ChatGPT does not hinder in creative writing	Responses not Clear
University A (AR)	08 (AR1 ,2 ,3 ,4 AR7 ,8 ,9 , 10)	02 (AR6, AR12)	01 (ARS)	01 (AR11)
University B (BR)	01 (BR1)	07 (BR3, 5, BR7, 8, 9, 10, BR12)	02 (BR4, BR6)	02 (BR1, BR11)
Total A & B Total Responses 24	09	09	03	03

The findings of this study revealed that the majority of the respondents (students) found ChatGPT as a useful AI tool for the specific purpose of English writing. Its use will be beneficial if used under the proper guidance of a teacher/supervisor, which will maintain a balance between learning 'new knowledge' and 'creativity'.

Evaluation of ChatGPT on Writing Skills

ChatGPT can have a positive and negative effects on writing skills, such as improving writing fluency, stimulating creativity, over-reliance on AI-generated content, and possible plagiarism. It can also enhance language proficiency by exposing users to a variety of linguistic idioms, structures, and expressions, allowing them to increase their vocabulary and gain a better understanding of linguistic nuances. Chat GPT can increase awareness of grammar and syntax, personalize writing style, reduce writing time, and reduce writing time by automating the procedure. It can also help users create content more quickly and effectively by offering immediate responses and suggestions. However, it can have potentially detrimental effects on cognitive function, such as reduced capacity for critical thought and lack of independent thought and poor decision-making. ChatGPT has trained on a dataset of texts and data gathered up until a particular point in time the dataset was probably created and pre-processed as recently as 2021, so there are restrictions on the information and knowledge that can be accessed.

Conclusion

AI tools can improve efficiency and reduce errors, but there are concerns about their impact on creativity and critical thinking skills. To balance the benefits of AI writing tools with the need to foster critical thinking, creativity, and originality, it is important to use AI tools in a controlled environment and under appropriate supervision.

In a recent research article by Professor Naomi S. Baron in this "The Conversation" on Jan 1, 2023, following comments from the AI (ChatGTP) users were received following; one participant said that at some point if you depend on a predictive text you are going to lose spelling abilities. Another participant said that with predictive texting "I don't feel I wrote it". A high school student from the UK responded "Grammarly can remove students art artistic voice style voice style by suggesting other changes to their work".

Some other prominent scholars are showed also showed their concern about the uses of AI in different forms; Evan Selinger an American philosopher of technology, at the Rochester Institute of Technology, observed that predictive texting reduces the power of mental activity and personal expressions. He says that 'automation can stop us thinking'.

Jennifer Lap, an American author opposes the use of 'Sudowrite' According to her after the use of technology, the resultant text does not seem to belong me"

Most important of all the comments and observations that I read the most intriguing what's the response of ChatGPT then ask to ChatGPT; Whether it posed a danger to people's desire to write. "There will always be a demand for innovative original writing that requires the special perspective and insight of human writers," was the remark. It simply means, there is no

alternative to human intellect and also that the machine except ‘its own limitation’

ChatGPT users have expressed concern about the use of AI in different forms, such as predictive texting and Grammarly. Evan Selinger, an American philosopher of technology, observed that predictive texting reduces the power of mental activity and personal expressions. Jennifer Lap, an American author, opposes the use of 'Sudowrite' as it does not belong to her. ChatGPT responded that there will always be a demand for creating original content that requires the unique perspective and insight of human writers.

Recommendations

It is recommended that the scope of the study be broadened by a significant number of participants selected from a diverse population. It could be much more beneficial if an experimental study is carried out to get quantitative data for practical use. To capture the global attraction, it is strongly recommended that, inter-faculty (IT, biological, physical, social and other areas of knowledge) be initiated at the university level. Moreover, ChatGPT be used with balance, with the need to develop cognitive abilities and promote ethical and authentic writing practices and think out of the box and integrate with other Language skills. Most significantly, policy should be devised for using ChatGPT at every level of academia.

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