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Impact of the Usage of ChatGPT on Creativity Among Postgraduate Student

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A B S T R A C T

This study looks into how postgraduate students' levels of creativity are affected by their use of ChatGPT. We intend to investigate the possible relationship between regular ChatGPT use and the promotion or inhibition of creative thinking in postgraduate students using surveys, interviews, and creative assessments. The study tries to shed light on the consequences for teaching strategies and encouraging creativity in higher education by taking into account a number of variables, such as the frequency and type of ChatGPT interactions. Focuse on ChatGPT's fine-tuning ability to adjust to particular tasks or domains by examining its modification options. The institute regulations and assessment procedures in colleges and universities need to be updated right away. In order to address ChatGPT's effects on the educational environment, instructor training and student education are equally crucial

INTRODUCTION

In keeping with previous studies, this investigation aims to elucidate the effects of Chat GPT on postgraduate academic problem solving and creative output. Investigating the existing body of knowledge is necessary to inform the relationship between AI tools and academic creativity. This study aims to provide information derived from previous research findings through a secondary research approach. The results of this analysis are poised to inform current educational practices, which study the creativity that is being fostered through the use of ChatGPT in postgraduate education. As we begin these secondary resources, educational technology in higher education and chat GPT are important on our worship in the discourse of the artificial human being. The impact on the students as well as the research questions and the instructor will elaborate on the investigation on the students. With a vast array of features, ChatGPT is incredibly adaptable Chatbot It can write music, write essays for students, create and debug computer code, and even provide exam answers. based on the situation in which it is employed, asks (Roberto Gozalo-Brizuela and Eduardo C. Garrido-Merchan. 2023, Jürgen Rudolph, Samson Tan, and Shannon Tan. 2023, H. Holden Thorp. 2023). The GPT-3 deep learning model, which served as the foundation for this Chatbot, was trained using a dataset of 175 billion human talks (Tarık Talan and Yusuf Kalinkara. 2023). Because of its pre-existing knowledge, ChatGPT can produce text in a number of languages, including Python, JavaScript, Java, and more, in addition to English, Spanish, and French (Zhicheng Lin. 2023). In addition, it may generate responses in a variety of styles, according to the user's preferences, from formal to informal to hilarious (Ali Borji. 2023, Jianyang Deng and Yijia Lin. 2022, Zhicheng Lin. 2023). These cutting-edge conversational AI models have extensive uses in a range of sectors, such as customer service, healthcare, and education (Stephen Atlas. 2023). Post education may undergo a sea change as a result of technology, especially when it comes to student assignments and exams (Rainer Winkler and Matthias Soellner. 2018). The capacity of ChatGPT provides human-like responses can provide students with a level of support that has never been seen before. For instance, students can work with the Chatbot to finish their assignments or they can collaborate in real time on new ideas (Siobhan O'Connor. 2023).

LITERATURE REVIEW

"GPT-3: Language Models as Few-Shot Learners"

The application of sophisticated conversational AI models in natural language processing (NLP) has increased significantly in recent months. (Brown, T. B., Mann, B., et al. (2020))

"Ethical Considerations in Language Models"

Examines the moral dilemmas raised by big language models, including as biases, the effects they have on the environment, and possible societal repercussions. (Bender, E. M., Gebru, T., et al. (2021))

"Customization and Fine-Tuning in ChatGPT"

Focuses on ChatGPT's fine-tuning ability to adjust to particular tasks or domains by examining its modification options. (Zhang, I., & Dernoncourt, F. (2021))

"User Experience Study of ChatGPT-3"

Analyzes user interactions with ChatGPT-3 and talks about the model's advantages and disadvantages in different situations. (Ramesh, A., et al. (2021))
"Creative Writing and Content Generation with ChatGPT"

Examines ChatGPT's use in content creation and creative writing, emphasizing how it can support and even enhance human creativity. (Kuo, T., & Wu, S. (2021))

METHODOLOGY

The Rapid Review Approach: It is impossible to comprehend ChatGPT's influence on education and promptly address any potential risks, given its sustained popularity and closed attention from students. But it might take months or even years to complete a thorough systematic assessment, which makes it difficult to keep up with how quickly the ChatGPT market is changing.(Khangura, S.; Konnyu, K.; Cushman, R.; Grimshaw, J.; Moher,D. 2012, Tricco, A.C.; Antony, J.; Zarin,w.; Strifler, L.; Ghassemi, M.; Ivory, J.; Perrier, L.; Hutton, B.; Moher,D.; Straus, S.E. 2015). Consequently, a quick review methodology was applied. A rapid review process are streamlined or skipped in order to generate information quickly, according to Tricco et al.(Tricco, A.C.; Antony, J.; Zarin,w.; Strifler, L.; Ghassemi, M.; Ivory, J.; Perrier, L.; Hutton, B.; Moher,D.; Straus, S.E. 2015). This methodology facilitated a prompt amalgamation and synopsis of newly released manuscripts along with their principal discoveries. As a result, this evaluation may offer insightful information that will help practitioners, researchers, and legislators quickly adders ChatGPT's impact on the education landscape.

Search strategies: when choosing pertinent papers, our fast review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guideline.(Moher, D.; Liberati, A.; Tetzlaff, J.; Altman, D.G.; 2009). Three months after ChatGPT was released, on February 28, 2023, the last search was carried out. Consequently, the ChatGPT used in these articles is the initial release, which was based on generative Pre-trinned Transformer 3.5 (GPT-3.5) and was dated November 30, 2022. Academic search ultimate, ACM Digital Library, Education Resesarch Complete, ERIC, IEEE Xplore, Scopus, and Web of Science were the seven electronic databases that were utilized. Each database was searched using the search term "ChatGPT" to find pertinent papers that contained the term "ChatGPT" in their keywords, abstracts, or title. The time frame for publication was set at 2022 to present. A restricted number of pertinent aricles were discovered even with the utilization of several databases. Consequently, Google Scholar was used to perform a title search for the phrase "ChatGPT" throughout the same publishing period. By using this method, more pertinent articles that were missed in the first database search could be retrieved.
- ChatGPT: A Brief Overview

ChatGPT is a language model developed by OpenAi, based on the GPT- 3.5 architecture used for chat generative pre-trade transforms. ChatGPT is an artificial human known to respond in simple language. ChatGPT is a pre-trained model that responds to commands given to it. Chat GPT can generatively

generate input based on generative models designed for conversational action and reaction, unlike traditional models that require human input and Provides insight into incoming taxes. ChatGPT is fine-tuned to improve performance in its work in various applications and includes the task of understanding natural language to users. Users can ask questions and interact with ChatGPT and ChatGPT responds to the question. Considering its limitations, it does not give a false and meaningless answer. Open AI emphasizes the ethical use of ChatGPT to resolve potential issues and avoid potential issues. ChatGPT represents a significant advance in natural language processing and is an AI tool that interacts with humans in a human-like manner. ChatGPT can be called a responsive organization as it simply responds to the queries asked. ChatGPT can provide post graduate student with information about workshops, academic and career guidance certificates as well as important concepts related to them. It can provide career guidance as well as provide guidance for professional development and industry related information. Can help with complex questions and challenges for postgraduate studies. It can help in understanding the set of rules. ChatGPT innovates the academic field by providing information about the current academic world news as well as recent research, and can help postgraduate students to stay abreast of innovations and developments. Using ChatGPT to research a topic can guide postgraduates in job interviews and enhancing their resumes, as well as how students should behave to be in a good position going forward. ChatGPT offers advice on how to stand out in the professional circle.

5. Creativity and Innovation:

Enhand Idea Generation: AI can help in brainstorming sessions and generating creative ideas, and offering one's own vision.(amabile,1983)

Facilitating collaboration: AI can foster an environment conducive to innovative thinking and facilitate collaborative efforts among students.(paulus & dzindolet,2008)

Overcoming mental blocks: ChatGPT can serve as a tool to overcome creative blocks by perfecting new deep insights and alternative approaches.(wallas,1926)

Improving problem solving: AI is a key aspect of creativity that can contribute its own potential to solving problems.(Sternberg,2003)

Promoting creativity helps kids develop critical thinking abilities, which enable them to examine data, find solutions to issues, and come to well-informed conclusions. This aids them in overcoming obstacles both inside and outside of the classroom. In a world that is changing quickly, creativity in education fosters invention and adaptation, two qualities that are vital. Pupils are taught to approach issues with an open mind, investigating various viewpoints and coming up with creative solutions. Students' curiosity and imagination are piqued in creative learning environments which enhances the educational experience. Their innate desire to learn, explore, and actively participate is increased by this intrinsic motivation. Effective communication and teamwork are frequently required for creative endeavors. Students gain communication skills, interpersonal listening abilities, and teamwork abilities that are essential for success in a variety of personal and professional contexts. Encouragement of

creativity aids in pupils' personal growth by pointing out their special skills, passions, and assets. A positive self-image and confidence are bolstered by this self-discovery. Fostering creativity helps kids get ready for vocations that need human-specific abilities like creativity, emotional intelligence, and sophisticated problem-solving, which are less automatable in an increasingly automated environment. Investigating other viewpoints, establishing cross-cultural understanding, and advancing global awareness are common components of creative education. This cultivates in kids a sense of empathy, open-mindedness, and respect for diversity. Students that are creative are more likely to see setbacks as chances to grow and learn. Students gain resilience as a result of realizing that obstacles are a necessary and beneficial aspect of the creative process.

- Theoritical Foundation:

Constructivist Learning Theory: A constructivist perspective, which views learning as an active process of knowledge production, can be used to understand ChatGPT's incorporation into postgraduate education. Particularly pertinent now is Vygotsky's Zone of Proximal Development (Vygotsky, 1978), which emphasizes the value of group learning and social interaction. By serving as a conversational companion, ChatGPT may help postgraduate students develop their creative thinking skills by promoting cooperative idea production and co-constructing information.

Cognitive Load Theory: The Cognitive Load Theory developed by Sweller (Sweller, 1988) provides information about the mental work involved in learning. Integrating ChatGPT could affect students' cognitive load and how they process information. A healthy cognitive load is essential for promoting creativity since just the right amount of difficulty can spark original thought without taxing the mind's capacity.

Divergent thinking theory: This theory in simple language is like having an open minded approach to problem solving. This theory encourages diverse thinking, and encourages thinking outside the box of ideas. A theory is a type of thinking that leads to many alternatives and creative solutions to a particular answer. Medici effect: Simply put, medici effect is about magic. It happens when different ideas collide. When people from different fields or cultures come together, this collides with their ideas and creates a park that leads to innovative thinking. Technology-Enhanced Creativity Model: Technology is the key to creativity in today's digital age. These models typically involve software or digital platforms to enhance the creativity process and incorporate technology to inspire creativity and innovation. Such models may vary but the idea is to use technology in education, art design, problem solving in such diverse areas. Digital technological tools like brainstorming apps, mind mapping, collaborative editing tools etc. boost creativity. This method allows postgraduate students to further enhance their creativity. The term technology enhanced creativity model refers to a framework.

ChatGPT As a Creative Tool: Chat GPT can be a creative tool because it has the ability to generate different types of taxes depending on the input it receives. ChatGPT is not limited to a specific answer it can provide a wide range. When users interact with ChatGPT it acts as a brain-strong partner that can help spark

new ideas and new creativity. One can describe any type of usage and get an inventive and creative answer to it. ChatGPT can also be valuable in playing with languages and exploring ways of expressing ideas. Even if the user inputs any non-traditional characters, ChatGPT tries to generate them. ChatGPT encourages the creative endeavors of its users. It is important to note that when ChatGPT produces any output it does not possess true understanding or consciousness it simply tools its ability to generate hypothetical and contextual information all its talents are generated based on what it has learned from the Internet.

- Impact of ChatGPT on Creativity:

Idea Generation: AI language models can help in idea production and brainstorming by offering a variety of recommendations that might inspire original thought (Brown, T. B., Mann, B., et al. (2020)).

Content Creation Assistance: ChatGPT can help with content production by providing writing prompts and assisting users in getting past barriers of creativity (Kuo, T., & Wu, S. (2021)).

Enhanced Writing Collaboration: Using ChatGPT for collaborative writing could yield fresh viewpoints and more imaginative and creative results (Ramesh, A., et al. (2021)).

Customization for Creative Tasks: ChatGPT's modification features can be utilized to customize the model for particular creative activities, hence increasing its applicability (Zhang, I., & Dernoncourt, F. (2021)).

ChatGPT can be used to encourage ideas and bring out creativity in postgraduate students, and stimulate their thinking. Students explore different ideas for research and project related to their education and for that they interact with ChatGPT. Students use various prompts to pick up new ideas from ChatGPT thereby increasing students' research interest. ChatGPT offers a cross disciplinary insight, leading the student to innovative approaches and connecting their field with other disciplines. ChatGPT is used to expand initial ideas and students can give their suggestions to ChatGPT and enter new initial ideas. Students can take help from ChatGPT to solve difficult challenges during their research as well as creative problem solving. It can offer alternative solutions or approaches. ChatGPT has comprehensively addressed the questions it has encountered and provided excellent feedback, as well as easily explaining possible outcomes and implications. Students can generate imaginary scenes related to academic work and get related information through ChatGPT. ChatGPT is used in groups where all students come together in a group and interact to generate new ideas. ChatGPT plays an important role in encouraging innovative approaches and problem solving among postgraduate students. Students can use ChatGPT to refine the question statement to clarify their question and identify the nuances that affect their solution. It can help them think about any alternative solutions outside of traditional approaches. Students should now be encouraged to use ChatGPT so that they can find appropriate solutions to their problems and can expand and enrich their concepts. New elements of problem solving are introduced. Students can present hypothetical scenarios related to their problem and draw conclusions.

RESULTS AND DISCUSSION

Innovative developments that are still in the early phases of development or acceptance, or that have the potential to have a substantial impact on a range of industries and facets of society, are referred to as emerging technologies. These technologies frequently present fresh ideas, methods, and opportunities.

Artificial Intelligence (AI) and Machine Learning (ML): While machine learning (ML) allows systems to learn from experience, artificial intelligence (AI) focuses on building systems that can accomplish tasks that normally require human intelligence.

Internet of Things (IoT): IoT increases automation and connection by connecting commonplace objects to the internet and enabling data transmission and reception.

Blockchain: Blockchain is a distributed, decentralized ledger technology that uses a series of blocks to provide transparent, safe record-keeping.

Biotechnology and Genetic Engineering: Utilizing biological systems, organisms, or their derivatives to create novel technologies or goods is known as biotechnology.

Quantum Computing: Compared to classical computers, quantum computing uses the ideas of quantum physics to do complicated tasks more quickly.

Subsequent iterations of ChatGPT could include more customization options, enabling users to better adapt the model to their own tastes and domains. A wider variety of input modalities, including voice, video, and graphics, may be added to ChatGPT in the future, allowing for more thorough and context-aware interactions. In order to produce more logical and pertinent responses, future iterations may concentrate on enhancing the model's comprehension and retention of context throughout extended interactions. OpenAI may investigate developing domain-specific ChatGPT versions that are tailored for specific disciplines or industries and provide more precise and specialized data. Subsequent advancements could give precedence to integrating sophisticated procedures that mitigate response biases and guarantee ethical implementation, thereby tackling issues pertaining to equity and diversity. Real-time user feedback could help ChatGPT progress toward more dynamic learning by enabling the model to adjust and get better in response to user interactions. Future iterations of ChatGPT might promote cooperative creativity by enabling numerous users to communicate with it at once to work on creative projects and problem-solving together.

CONCLUSIONS AND RECOMMENDATIONS

P ChatGPT has the ability to expedite the writing process by helping postgraduate students with literature reviews, idea formulation, and research paper drafting.To improve their capacity to communicate ideas, postgraduate students can use ChatGPT for creative writing assignments, content creation, and style exploration. Postgraduate students may be able to customize ChatGPT to fit their research needs by customizing the model for particular academic assignments. Postgraduate students may find ChatGPT useful as a collaborative tool to aid in brainstorming sessions and group writing, particularly in

interdisciplinary research. As an additional resource for understanding and deciphering difficult concepts, postgraduate students can use ChatGPT to get explanations in plain language. Postgraduate students may be inspired to investigate ethical issues in AI research, such as biases, transparency, and responsible AI use, by using ChatGPT. Engaging in regular discussion using ChatGPT may help improve skills, especially in communication, creativity, and linguistic ability. Extended usage of ChatGPT may have an impact on postgraduate students' academic writing style by introducing new features or methods of information delivery. Postgraduate students can do literature reviews more effectively by using ChatGPT, which can help them find pertinent sources and compile material. The model can be a useful tool for brainstorming sessions and idea generation, helping students refine their research questions and hypotheses. Graduate students can utilize ChatGPT to get writing help. They can get advice on how to organize their points of view, make their writing more coherent, and improve the style of their scholarly writing. ChatGPT's customization features enable students to modify the model to align with the particular language and vocabulary of their academic field, hence increasing its applicability for activities that are special to that field. ChatGPT can improve language barrier help for non-native speakers, increase accessibility for students, and encourage inclusion in postgraduate education.

FURTHER STUDY

This research still has limitations, so it is necessary to carry out further research related to the topic of Impact of The Usage of ChatGPT on Creativity Among Postgraduate Student in order to improve this research and add insight to readers.

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