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Perception of Teachers Towards the Use of Generative Artificial Intelligence in Higher Education

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ABSTRACT

Artificial intelligence has become the recent favourite of all people these days. Among the growing trends of AI comes the climax part, which is generative AI. We may consider ChatGPT to be everyone's most useful tool. The education sector has always been the most influential section of society in dwelling on new features introduced in them. The higher education students are becoming dependent on such generative tools for all their self-paced learning that their understanding and thinking should be completed. The technologies developed are meant to make work easier but eventually, it has made its users dependent on it. The increasing use of such AI tools can also be utilized for some good aspects such as using these platforms to address the emerging need of a sustainable environment. The launch of ChatGPT in November 2022 marked a significant milestone, as this tool became the most rapid grown app in history, highlighting a remarkable capability of generative AI to generate diverse outputs, from text to images, videos, and even software code. The study highlights the need for a thoughtful approach to navigating the benefits and risks of generative AI in education. It advocates for global and local discussions to prioritize a balanced perspective that recognizes the advantages of AI-powered tools while addressing growing ethical and privacy concerns. Such an approach is essential for leveraging AI's potential, protecting student interests, and equipping them for a promising future.

The study also discussed the need to promote the navigated use of GenAI and ChatGPT, which is a complement and not a replacement for teachers. The findings gained insights into the usage of GenAI, the ethical concerns at the institutional level, and possible solutions to maximize the benefits and not compromise the originality of the work.

Keywords: Generative Artificial intelligence, ChatGPT, critical thinking.

Introduction

Launched in November 2022, OpenAI's ChatGPT is a conversational AI chatbot after updated GPT-3 (Generative Pre-trained Transformer) model. This deep learning model, with 175 billion parameters and 600 GB of data sourced from books, articles, and online content, selectively focuses on various aspects of input data. ChatGPT acts as a user-friendly interface for GPT-3, enabling it to generate new text or essays in response to user prompts. Its applications range from writing and customer coding service. Microsoft has integrated ChatGPT with its search engine, Office suite, and Teams, and offers a paid version, ChatGPT Plus, for faster response times. Since its release, ChatGPT has become the most rapid growing app in history, having 100 million active users within two months and averaging 13 million unique daily users in January. However, despite its success, ChatGPT has notable limitations, such as generating factual errors, fabricating information, and providing invalid responses, raising concerns among users. ChatGPT based on OpenAI's generative pre-trained (GPT) language models and has been hailed as an innovative game-changer in education since its emergence. Discourse on its effect on education and learning has mirrored popular arguments about education and learning rumbling around nearly two millennia ago by ancient Greek philosophers like Socrates, Plato, and Aristotle. The ancient philosophers were thinkers engaged in examining theories about knowledge acquisition and dissemination, and from their ideas, we gain an important perspective on the conversation about artificial intelligence in the context of education. Should we, maybe, ask whether or not the dialectical expression in Socrates-finding truth in dialogue with a peer is still in place? Is that peer a chatbot, too? Generative AI has disrupted traditional learning models and brought with it all theories that underpin the movement of education and learning in modern times, including situated cognition, behaviourism, constructivism, and cognitive load theory. (UC Berkeley, 2023). These educational theories have shaped our understanding of the learning process and directed various instructional strategies. However, the resurgence and adoption of generative AI, particularly ChatGPT, are rapidly changing that scenario. Generative AI quietly but dramatically influences the way education is offered, filled with opportunities, and challenges as teaching and learning are shaped. Across the Asia-Pacific, the emergence of GenAI in education is together spurring a great disruption in opportunities and challenges for education systems. But the rise of this technology also carries a great burden in terms of a tangle of possibilities and challenges surrounding its discussion about applications and ethical issues related to its use, not to forget variations in the preparedness of countries to integrate with generative AI. Indeed, various perspectives are available concerning the ways generative AI is particularly misused in

education. While one side thinks of the technology as helpful for individual student learning with better outcomes, others are worried about the potential misuse of it in cheating in examinations or writing assignments.

Literature review

Kimberly Grotewold et al. (2023**)** administered a study on "GenAI and Teachers' Perspectives on Its Implementation in Education". The survey, which polled 147 teachers, discovered that most had a positive opinion of generative artificial intelligence, with frequent users expressing progressively more positive opinions. Teachers think generative artificial intelligence, can help pupils and improve their professional development. The study emphasizes that although there is hope in having good attitudes regarding generative artificial intelligence, putting these beliefs into reality is necessary for successful technology integration. The results imply that for generative artificial intelligence; to be implemented in educational settings successfully, it is essential to comprehend and take into account the perspectives of the teachers.

Anant Krishna Parab (2020) reviewed Artificial Intelligence in Education: Teacher and Teacher Assistant Improve Learning Process. The researcher argues that human teachers are better than robots and they cannot replace human teachers instead mentioned that one could use voice assistants. The research was conducted by using two Google forms administered to 67 students from India and 48 teachers. Students from various educational levels (e.g., school, college) could be added to the research, since opinions may differ among these groups. Robotic teachers and voice assistants are not yet widely used in classrooms. Subsequent studies may draw comparisons between human and robot educators in several areas. Furthermore, there are drawbacks to voice assistants, such the fact that not all languages are supported, and security is an issue. To learn more about voice assistants and make sure teachers are properly trained in their use, more research is required.

Dr. Faiyaz Ahammad (2023) conducted research on "The Attitudes of Pupil Teachers Towards Artificial Intelligence" and found out that the attitudes of males and females towards artificial intelligence had a significant difference where the male had a possibly higher positive attitude towards artificial learning. The other parameters of comparison were rural-urban and arts-science. The conclusion showed more reliable results of artificial intelligence when it would have practical implications.

Rini Mandal and Jayanta Mete (2023) conducted a survey on perception of teachers and students towards the integration of AI in curriculum of the CBSE board of West Bengal through a questionnaire. The study concluded that use of AI in education could be a revolution to teaching methods and help teachers and students open up to a gateway of diverse knowledge. It suggests that schools using more od AI become more comprehensive and inclusive in their teaching process.

Rusma Kalra (2024) performed a study by exploring perception of teachers towards idea of integrating Artificial Intelligence in English curriculum at Thailand University adopting a structured survey questionnaire and also a semi-structured interview with 20 randomly selected instructors. The research revealed that instructors teaching English at an international university in Thailand widely used AI-powered tools, especially language learning applications. A significant concern among participants is that learners might become overly dependent on these AI tools. Overall, the study offers valuable insights into both the advantages and difficulties of integrating AI tools in English language teaching.

Melnyk and Pypenko (2024) presented a study on "Artificial Intelligence as a Factor Revolutionizing Higher Education" in Ukraine. The samples were widely from 57 countries with 788 respondents used by students and faculty. A model of stakeholder behaviour was developed, highlighting two problem-solving approaches: with and without AI. Key trends emerged: students were 26.9% more likely than faculty to use chatbots for class preparation or assignments. Of the students who used chatbots, 68.0% edited the results provided, and students were 30.1% more likely than faculty to make these edits.

Overview

The growing use of GenAI and ChatGPT has been a toss-up between its benefits and harm. The field of education is diverse and frequently requires answers to various problems, and GenAI has been proven beneficial for that.

The following research aims to find out the perceptions and fields of areas where educators use genAI and how they navigate a beneficial usage track for students. The results and conclusions of the research could be used to cure the effects of genAI, which might be a threat to the education field.

Research Question

- What do teachers perceive about using GenAI and ChatGPT in the teaching and learning process?

Objectives

- To study the perception of higher education teachers towards using GenAI with respect to gender.
- To study the perception of higher education teachers towards using GenAI with respect to their field of specialization.
- To study the perception of higher education teachers towards using GenAI with respect to years of experience.

Hypothesis

H_{01}: There is no significant difference in perception of teachers towards the use of GenAI in teaching and learning process with respect to gender.

H_{02}: There is no significant difference in perception of teachers towards the use of GenAI in teaching and learning process with respect to the field of specialization.

H_{03}: There is no significant difference in perception of teachers towards the use of GenAI in teaching and learning process with respect to experience.

Methodology

Method: This study used a normative survey method to collect data through Google Forms.

Population: The present study's population consists of teachers of higher education institutions in Gautam Budha Nagar, Uttar Pradesh.

Sample: For the present study, a sample of 102 teachers of Gautam Budha Nagar of Uttar Pradesh was selected by stratified sampling. The samples were divided into groups of years of experience, engineering and non-engineering, male and female.

Tool: To achieve the objective of this study the researcher used a self-developed tool to capture data on teachers' perspectives on using GenAI in higher education. A self-constructed questionnaire is used as a research tool for this study; named GenAI Usage Scale for Teachers. The questionnaire was checked and validated by experts before application. The survey questionnaire consisted of 30 items, which comprised of closed-ended questions with a 5-point Likert scale. The 5 points are strongly agree, agree, undecided, disagree and strongly disagree. There are 25 positive items and 5 negative items included. The tool scored in the range of 5-1 for positive questions and 1-5 for negative questions. The maximum score was 150 and the minimum was 30.

Procedure of data collection: The researcher created a Google form to collect data from teachers and circulated it with the help of email and WhatsApp assuring the subject for the data privacy.

Data Analysis and Interpretation:

General Information about teachers is given in Table 1.

Table 1: General Information about teachers

Particulars	Options	No. of teachers	%
Gender	Male	56	54.90%
	Female	46	45.09%
Field of specialization	Engineering	36	35.29%
	Non-engineering	66	64.70%
Teaching Experience	5 years or less	32	31.37%
	More than 5 years	70	68.62%

- Around 54.90 percent of teacher respondents are male and 45.09 percent are female.
- Around 35.29 percent of teachers are from engineering backgrounds, and 64.70 percent are from non-engineering backgrounds (education, medical, business, etc.).
- 31.37 percent of teacher respondents have teaching experience of 5 years or less, and 68.62 percent have more than 5 years of experience.

Hypothesis

H_{01}: There is no significant difference in perception of teachers towards the use of GenAI in teaching and learning process with respect to gender.

To support this hypothesis, the collected data undergo statistical analysis to evaluate its significance. A T-test is performed using the data presented in Table 2.

Table 2: Perception of male and female teachers towards the use of GenAI

Category	N	Mean	Standard Deviation	df	't'value	Significance
Male	**56**	**104.29**	**13.67**	**100**	**1.64**	**Not significant**
Female	**46**	**100.11**	**11.60**			

H_{02}: There is no significant difference in perception of teachers towards the use of GenAI in teaching and learning process with respect to the field of specialization.

To support this hypothesis, the collected data undergo statistical analysis to evaluate its significance. A T-test is performed using the data presented in Table 3.

Table 3: Perception of teachers towards the use of GenAI with respect to field of specialization.

Category	N	Mean	Standard Deviation	df	't'value	Significance
Engineering	**36**	**104.96**	**13.47**	**100**	**-0.22**	**Not significant**
Non-engineering	**66**	**101.53**	**10.27**			

H_{03}: There is no significant difference in perception of teachers towards the use of GenAI in teaching and learning process with respect to experience.

To support this hypothesis, the collected data undergo statistical analysis to evaluate its significance. A T-test is performed using the data presented in Table 4.

Table 4: Perception of less experienced and more experienced teachers towards use of GenAI

Category	N	Mean	Standard Deviation	df	't'value	Significance
5 years or less	**32**	**101.93**	**10.64**	**100**	**0.11**	**Not significant**
More than 5 years	**70**	**102.61**	**13.63**			

Findings

Following is the finding of the present study.

a. Ther researcher found no significant difference between the perception of higher education teachers with respect to their gender.

b. There researcher found no significant difference between the perception of higher education teachers with respect to their field of specialization mainly engineering and non-engineering.

c. The researcher found no significant difference between the perception of higher education teachers with respect to their experience of teaching.

Discussion

The following study was administered in accordance with different variables which are the critical aspects of increasing the use of GenAI mainly ChatGPT. The study showed a complex finding that the use of ChatGPT is common among teachers and they find it a helpful tool in their teaching process and also accept the concerns of negative impacts it has on the education system and learning of students. The data from specific fields of specialization also show its usage and impact across all fields. Finally, the results of the hypothesis depicts no difference in the mean rating of respondents

concerning various demographic variables. The respondents believed that the use of such tools which produce instant responses and specific prompts might cause harm to actual learning. Also, most respondents agree the opposite and find it a helping tool to enhance the outcomes. Teachers are responsible for equipping the students with a holistic education which would not only focuses on subject knowledge but also nurtures students' overall development (Chan, Fong, Luk, & Ho, 2017). While researchers highlight the essential role of teachers, there is also a pressing need for educators and higher education institutes to reconsider the purpose of education. This includes evaluating subjects that are being taught, the methods used, and the reasoning behind choosing those specific approaches (Cecilia & Louisa,2023).

The argued response shows that the following research and topic require more qualitative research further. The study conducted in this study gathered data on teachers' perspectives, though it's important to note that perspectives don't always translate into corresponding actions. This study contributes to developing insights into teachers' knowledge, perceptions, and use of GenAI and ChatGPT in educational contexts. The educators are not in fear of losing their place but are in deep concern regarding the impacts of increasing the use of such tools.

Conclusion

The paper's findings gained a conclusion about the use of GenAI specifically by the educators of higher education. It has been controversial about being inclined towards a particular aspect of GenAI or ChatGPT. It shows GenAI as a helpful tool but only when being used as a supplement to teaching-learning process and not a replacement to the traditional methods.

Several studies administered in various countries and fields gave possibly similar results and opinions which are about its concerns and the need to address those immediately and make the best use of these tools without hindering the actual essence of tradition and critical thinking. There should be proper guidelines about using GenAI in education and educators and learners should be given proper training to use it to fullest without any harm to their actual learnings.

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