

## CHATGPT IN THE CLASSROOM: AN EMPIRICAL ANALYSIS OF STUDENTS PERSPECTIVES ON AI-ASSISTED EDUCATION

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### Abstract

Artificial intelligence technologies, such as ChatGPT, that have transformative capabilities are valuable in diverse contexts due to their ability to generate intricate written content that is indistinguishable from content authored by humans. Technology can exert both advantageous and detrimental impacts on organizations, society, and individuals. This study seeks to explore the potential advantages and disadvantages of the Generative Pre-trained Transformer (GPT) AI, along with other forthcoming technologies, by employing a speculative approach. This essay examines the function, positioning, and repercussions of ChatGPT and generative artificial intelligence (AI) technologies in response to the shifting landscape of higher education and current society. In order to analyse emerging trends and discuss their implications for education in the twenty-first century, this study presents speculative narratives that focus specifically on educational settings. We view ChatGPT as an innovation generated by students, with significant potential to enhance students' educational experiences and resources by combining technological capabilities with educational requirements. Higher education institutions strive to strike a balance between the benefits and drawbacks of incorporating and expanding the use of this technology. In order to capitalize on this opportunity for innovative assessment practice, the researcher organized a survey to get insights from the students. The participants took an online survey that included a limited number of questions, which were both scaled and open-ended.

**Keywords:** ChatGPT, AI, Education, Technology, Students.

### Introduction

The application of artificial intelligence in academics is a highly intriguing topic within the field of education. ChatGPT is a modified version of GPT-3 (Generative Pre-trained Transformer 3) developed by Tom Brown in 2020. It was introduced in 2021 with the specific objective of generating written content that resembles human speech. The technology and media industries have devoted significant attention to it. GPT-3 is built around the Transformer framework, which was first presented in a research article authored by Ashish Vaswani in 2017.

Generative AI platforms like ChatGPT have the potential to efficiently and largely effectively help individuals facing programming difficulties in the contemporary era.

It can effectively offer them assistance and guidance. D. Baidoo-Anu, 2023. ChatGPT can be employed in the educational domain to create virtual tutors, address student queries, and provide personalized learning programs. Furthermore, it can be implemented in practical settings to assist educators and learners in enhancing their AI literacy—the ability to understand, utilize, and evaluate AI technologies and their impact on society. (Su, J. Y., & Z., 2022). OpenAI released the latest version of ChatGPT, called GPT-4, on 14 March 2023, making it easily available to users. ChatGPT has been applied in a diverse range of areas, including library services, healthcare, and education. ChatGPT, an intuitive AI tool, can be utilized by educators to assist students and instructors in acquiring the essential abilities to confidently navigate and engage with the rapidly advancing domain of artificial intelligence (AI). Jiahong Su, W. Y., 2023. The introduction of ChatGPT in educational settings has sparked discussions over its potential impact on education. The developers of ChatGPT praise its ability to enhance education through features such as personalized and flexible settings. The emergence of AI chatbots in the classroom, which promptly address students' inquiries and serve as readily accessible educational resources anytime and anywhere, exemplifies this impact. (Source: Fabio Clarizia, 2018). Furthermore, the advancement of AI-based learning systems has facilitated the implementation of adaptive learning. These systems provide personalized instructional content tailored to the individual learning style and pace of each learner. Personalization has demonstrated potential in enhancing student engagement and improving learning outcomes. (Liu, 2020).

### **Objective and Significance of The Study**

The objective of this study, from this perspective, is to examine the students' perceptions on the utilization of ChatGPT in AI-assisted educational courses. The findings of this work will greatly facilitate the development of ChatGPT and the integration of generative AI methods in educational environments. The aforementioned findings will improve understanding of the potential benefits and repercussions of utilizing these technologies in educational settings, offering guidance to educators and curriculum developers on effectively incorporating them into the instructional process.

## Research Questions

The study focused on addressing the research areas that aligned with its core objective.

1. What is the perception of students about the efficacy, precision, and reliability of ChatGPT in an educational setting?
2. Desired enhancements for ChatGPT tailored for classroom use, encompassing features and functionalities.

## The Idee Framework for Using ChatGPT in Education

**1. Determine the Intended Results:** The goal is to offer early children educators specific and timely feedback on their teaching methods in order to enhance the standard of early childhood education.

**2. Ascertain the Suitable Degree of Automation:** Based on the coach's observations during classroom monitoring, ChatGPT can be employed to generate feedback automatically. This feedback can effectively and personally address the specific requirements and concerns of each teacher, resulting in a highly tailored teaching experience.

**3. Guarantee Ethical Considerations:** It is of utmost importance to ensure that the output generated by ChatGPT remains unbiased and based on real observations. Moreover, ChatGPT should not supplant human coaches, who fulfill a vital function in providing guidance and support to early childhood educators.

**4. Assess the Efficacy:** The impact of feedback on the techniques and outcomes of instruction by early childhood educators can be utilized to evaluate the effectiveness of ChatGPT in supporting coaching. Utilizing assessment instruments such as feedback surveys and instructor evaluations might aid in accomplishing this goal. (Jiahong Su, W. Y., 2023).

## Theoretical Foundation

It is essential to involve teachers and students in projects to change assessment in order to give priority to the learning process rather than just the final results, encourage higher-order thinking, and promote the application of knowledge in real-world situations (Adele Smolansky, 2023).

The study conducted by Yilmaz (2023) found that students who received assistance via ChatGPT during the programming learning process exhibited higher levels of computational thinking, programming self-efficacy, and motivation compared to students who did not receive this support.

The research evaluation states that complicated and unstructured problems are beneficial for enhancing students' computational thinking skills. (Author: Hongquan Bai, Year: 2021) The

study's results indicate that students' creativity, algorithmic thinking, cooperativity, critical thinking, and problem-solving scores saw a considerable boost with the use of ChatGPT (Ramazan Yılmaz, 2023).

Using ChatGPT in programming enhances students' motivation, self-confidence, and coding skills. The research findings demonstrate that employing ChatGPT in education, or more broadly, educative AI, offers advantages such as a personalized and efficient learning experience for students, along with convenient and prompt feedback for teachers. However, it is crucial to consider the disadvantages associated with the technology, such as its ambiguous application, limitations on data quality, and concerns over safety and ethics (Jiahong Su W. Y., 2023).

In order to enhance students' readiness in dealing with these difficulties, it is advisable to incorporate mandatory courses or modules that specifically address the ethical aspects of artificial intelligence (AI) and the appropriate utilization of AI. These courses should include an introduction to relevant literature on the subject. This will ensure that students understand the ethical consequences of generative AI, such as ChatGPT, in professional and academic settings (Samuel Ariyo Okaiyeto, 2023).

### **Opportunities of AI for Higher Education**

One major advantage of artificial intelligence language models is their capacity to enable asynchronous communication. This feature has been demonstrated to enhance student engagement and collaboration by allowing students to post questions and engage in conversations remotely, without the need for physical presence. (Xing, 2021).

### **Opportunities**

The incorporation of ChatGPT into higher education has a range of prospective advantages or prospects for significant stakeholders, such as instructors, researchers, and students. Five of the seven options listed by ChatGPT are heavily focused on students, while the other two are more focused on researchers and teaching personnel, respectively. First off, ChatGPT positions itself as a tool that supports self-directed learning by offering "individualized feedback, explanations, and recommendations based on individual student queries." This is supported by research, which indicates that ChatGPT may serve as a tutoring tool by encouraging students' critical thinking and discussions while also offering tailored essay criticism. (Farrokhnia, 2023). The current discussion about possible uses is largely theoretical because there isn't yet a legal structure to support the usage of ChatGPT in research projects. (Rosario Michel- Villarreal, 2023)

## **Possibilities**

Integrating ChatGPT into higher education offers several potential benefits for key stakeholders, including teachers, researchers, and students. Out of the seven alternatives provided by ChatGPT, five have a strong emphasis on students, while the remaining two are mostly targeted towards researchers and teaching staff, respectively. ChatGPT presents itself as a tool that facilitates self-directed learning by providing personalized feedback, explanations, and recommendations in response to specific student inquiries. Research supports the idea that ChatGPT can be used as a tutoring tool to stimulate students' critical thinking and promote debates, while simultaneously providing personalized essay feedback. (Farrokhnia, 2023). The ongoing discourse regarding potential applications of ChatGPT is primarily theoretical due to the absence of a legal framework that can facilitate its utilization in research endeavors. Rosario Michel-Villarreal, 2023.

## **Challenges**

ChatGPT's perspective on the challenges it poses for higher education is around the limitations of various GenAI systems, namely the lack of reliability and accuracy in the generated data. Nevertheless, several issues are directly linked to the actual mistreatment perpetrated by students. ChatGPT's limitations can be categorized into four main areas: Communication and Collaboration, Expertise and Authority, Personalised Learning, and Quality Control. ChatGPT acknowledges that while it aims to offer precise and useful information, there is still a chance of creating inaccurate or misleading responses on quality control. There are widespread concerns in research about how the inherent biases of ChatGPT and other GenAI systems can have a negative impact on the quality and reliability of the data they provide. What impact does ChatGPT have on learning? An abridged examination of the literary works (2023). According to ChatGPT, it does not have the precise knowledge and competence that specialist teachers and professors possess, which affects its authority and competency in some domains. Hence, relying just on ChatGPT for higher education may not adequately fulfill students' needs for comprehensive understanding, rigorous evaluation, and guidance in specific fields of study. ChatGPT suggests that institutions should prioritize the involvement of instructors and teaching personnel in mentoring students, verifying the accuracy of AI-generated data, and providing additional context when necessary. This difficulty is directly connected to the previous one, which is Quality Control. Rosario Michel-Villarreal, 2023. The absence of readily available AI plagiarism checkers capable of detecting material generated via ChatGPT may pose a greater threat to academic honesty. Consequently, higher education institutions (HEIs) face challenges

in promoting a culture that considers academic dishonesty facilitated by GenAI as socially unacceptable. Ensuring students comprehend and are conscious of institutional rules, as well as the high probability of being caught for plagiarism, is necessary. Rosario Michel-Villarreal, 2023.

### **Barriers**

An evident hindrance is a deficiency in information and understanding. ChatGPT suggests that individuals in this particular situation, such as instructors, administrators, and students, might hesitate to investigate the possibilities of the technology if they lack knowledge about it and its advantages. The lack of clearly defined academic policies currently worsens this situation to a greater extent. For instance, this could hinder the progress of ChatGPT's adoption for educational purposes. Academic personnel seeking to utilize ChatGPT for innovative problem-solving currently face a deficiency in a regulatory framework that can provide guidance. The empirical testing of the potential benefits discussed in this study may be compromised due to this issue. Recent research on students' adoption and usage of ChatGPT indicates that students find it easy to utilize GenAI technology and that regular use fosters the development of habitual behavior. (Strzelecki, 2023). Sharing empirical studies on the use of ChatGPT is essential to enable the broader academic community to make well-informed judgments regarding the integration of this tool into teaching and learning practices. Rosario Michel-Villarreal, 2023

### **Order of importance**

ChatGPT proposes several key aims to solve the difficulties presented above, including policy reform, teaching and training, collaboration and interdisciplinary efforts, research and development, ethical review systems, and continual monitoring and evaluation. The need to create or revise academic policies to tackle the utilization of ChatGPT has been emphasized in this study and in previous scholarly works (Lo, what is the influence of ChatGPT on education? A rapid review of the literature, 2023). Engaging in financial investments Research and development is identified as another crucial mitigation method by ChatGPT. The research focuses on examining ethical frameworks for the utilization of AI in educational environments, examining methods to integrate AI models with human expertise, and analyzing the effects of AI models on student learning outcomes. These programs have the ability to provide empirically-supported viewpoints that will guide policy decisions and optimal approaches for incorporating GenAI into higher education. Another notable problem is the passive role that Higher Education Institutions (HEIs) currently have in GenAI research. Most cutting-edge GenAI solutions are exclusive products created by a limited number of prominent

tech businesses with the necessary resources to advance AI. These actions give rise to ethical concerns and contradict the trend towards transparency and open science (Eva A. M. van Dis, 2023).

Utilizing ChatGPT and AI to enhance teaching activities and facilitate learning progress. Scientific research consistently suggests that AI technology has the capacity to serve as a helpful tool in education, fulfilling many roles that improve the process of teaching and learning. Authors have suggested that AI technology may be extensively utilized for the purpose of grading essays. MM Babitha, 2022. ChatGPT has the potential to partially automate the grading process for students' work by detecting the strengths and shortcomings in many types of assignments, such as research articles, academic essays, and other written coursework. ChatGPT has demonstrated the capability to automate and enhance the grading system. Enkelejda Kasneci, in the year 2023.

### Objectives

- Measure the level of student engagement in AI-assisted educational settings using ChatGPT.
- Investigate student satisfaction with AI-assisted education and their overall experience using ChatGPT.
- Explore challenges or concerns that students may have regarding the use of AI in education.
- Investigate if students feel empowered to take control of their learning process with the aid of ChatGPT.
- Gather suggestions from students on how to improve the integration of ChatGPT into the classroom.

### Hypotheses

- There is no significant association between Educational Qualification and Overall satisfaction using ChatGPT in the classroom.
- There is no significant association between Age and the Effectiveness of ChatGPT for learning in the classroom.
- There is no significant association between the frequency of using AI for educational purposes and its impact on the comfortability and user-friendliness of AI.
- There is no significant association between the replacement of teachers in the classroom and the accuracy of AI, as well as its ability to provide enhanced understanding to the students.



## Research Methodology

**Nature of study** - Empirical research study.

**Data Collection** - Utilized both primary and secondary data sources. The primary data were obtained by administering a questionnaire utilizing a survey methodology, while the secondary data were gathered from sources such as scholarly publications, internet resources, books, and magazines.

**Sampling method** - The study utilized convenience sampling as the sample method.

**Sampling size** - The sample size consisted of 150 individuals who were students aged between 18 and 30.

**Questionnaire design** - Questionnaire design involves creating a structured questionnaire that utilizes Likert's scale. This scale consists of five points, ranging from 5 (completely agree) to 1 (not agree), and is used to gather information from the intended demographic.

**Data analysis** - Data analysis involved the application of statistical procedures such as percentage analysis, T-test, and ANOVA.

**Tools and Techniques** - The study utilizes the associative research design to establish the relationship between the variables. The method of sampling employed in this inquiry is purpose sampling. When the quantity of respondents is uncertain, a stochastic selection technique is employed to ascertain the quantity. Among the 150 randomly picked students, there was a diverse spectrum of courses and viewpoints. The results were derived through the utilization of t-test and ANOVA conducted on the data gathered using IBM SPSS software V.25.1.

### Reliability Test

The researcher applied the reliability test to find out whether all the variables are reliable and having internal consistency for the research study. The resulting output through SPSS showed 0.782 (Cronbach's Alpha) which means, that all the variables taken for the study have good internal consistency.

### Data Interpretation

From the above table, it is inferred that under the gender category, 47.3% of the respondents belong to Male and 52.7% of the respondents belong to Female. Under the age 93.3% of the respondents were between the age group of 18-23 and 6.7% of the respondents were between the age group of 26-30. Under the Educational Qualification 4.7% of the respondents are studying in school, 88.6% are doing UG and 6.7% of the respondents are doing their PG.



## Findings and Hypotheses Testing

*Comparison between Educational Qualification and Overall satisfaction using ANOVA.*

**Ho** - There is no significant association between Educational Qualification and Overall satisfaction using ChatGPT in the classroom.

### *Test Statistics*

	<b>Sum of squares</b>	<b>df</b>	<b>Mean square</b>	<b>F</b>	<b>Sig</b>
<b>Between groups</b>	.809	2	.404	.718	<b>.490</b>
<b>Within groups</b>	82.851	147	.564		
<b>Total</b>	83.660	149			

### **Interpretation:**

The p value of .490 is **greater than the critical value** of 0.05. Thus, the **null hypothesis is deemed valid.**

Therefore, it can be inferred that there is no substantial association between the level of education attained and the overall happiness experienced when utilizing ChatGPT in an educational setting.

### **Description:**

Independent Variable: Educational Qualification.

Dependent Variable: Overall Satisfaction.

This Association has been measured because it was expected that the satisfaction level of using ChatGPT might vary based on the educational qualification. And it was concluded that there was no significant association these two variables.

**Comparison between Age and the Effectiveness of ChatGPT for learning in classroom using T test.**

**H<sub>0</sub>** – There is no significant association between Age and the Effectiveness of ChatGPT for learning in classroom

*Test Statistics*

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		f	Sig	t	df	Sig.(2-tailed)	Mean Difference	Std. Error Difference
Effectiveness of ChatGPT for learning in classroom	Equal variances assumed	8.452	<b>.004</b>	.864	148	.389	.11909	.13777
	Equal variances not assumed			.875	145.550	<b>.383</b>	.11909	.13605

Particulars	Age	N	Mean score	F-Score	Sig	Null hypothesis
Effectiveness of ChatGPT for learning in classroom	18-23	140	2.4430	8.452	<b>.004</b>	Null hypothesis is rejected
	24-30	10	2.3239			

**Interpretation:** Based on the information provided in the table, it can be concluded that the **Significance value is 0.004**, which is lower than the threshold p-value of 0.05. The data in the table indicates that the average score is higher in the age group of 18-23 compared to the age group of 24-30.

*Thus, the null hypothesis is refuted.*

Therefore, it can be inferred that there is a notable association between age and the efficacy of ChatGPT for educational purposes in a classroom setting.

**Description:**

Independent Variable: Age

Dependent Variable: Effectiveness of ChatGPT for learning

Age was predicted to have a significant impact on ChatGPT's ability to support classroom learning, which is why this link has been studied. In addition, it was found that age and ChatGPT's effectiveness for in-class learning were significantly correlated.

**Comparison between the frequency of using AI for educational purposes might affect the comfortability and user-friendliness of AI using Multiple Linear Regression.**

**H0** – There is no significant association between the frequency of using AI for educational purpose might affect the comfortability and user friendliness of AI.

**ANOVA TABLE**

Source	DF	Sum of Square	Mean Square	F Statistic	P Value
<b>Regression</b>	1	839.41	839.41	21.32	<b>0.000084</b>
<b>Residual</b>	148	5827.42	36.37		
<b>Total</b>	149	6666.83	44.74		

**Interpretation:** The multiple linear regression analysis revealed a modest but statistically significant association among the variables X1, X2, and Y ( $F(1, 148) = 21.32, p < .001, R^2 = 0.13, R^2_{adj} = 0.12$ ).

*Thus, the null hypothesis is refuted.*

Therefore, we can infer that there is a notable association between the frequency of utilizing AI for educational purposes and the level of comfort and user-friendliness of AI.

**Description:**

Dependent Variable: Comfortability and user-friendliness of AI. Independent Variable: Frequency of using AI for educational purposes.

Since it was anticipated that the comfort and user-friendliness of AI would be impacted by its frequent usage in education, this association has been measured. It was determined that there was a noteworthy correlation between these two factors.

*There is no significant association between the replacement of teachers in the classroom and the AI's accuracy and its provision of enhanced understanding to the students.*

**H0** – Replacement of teachers in the classroom and the AI's accuracy and its provision of enhanced understanding to the students.

**ANOVA Table**

Source	DF	Sum of Square	Mean Square	F Statistic	P Value
<b>Regression</b>	1	43.97	43.97	4.99	<b>0.027</b>
<b>Residual</b>	148	1303.87	8.81		
<b>Total</b>	149	1347.84	9.05		

**Interpretation:** The multiple linear regression analysis showed a modest but statistically

significant association among the variables X1, X2, and Y ( $F(1, 148) = 4.99, p = .027, R^2 = 0.03, R^2_{adj} = 0.03$ ).

*Thus, the null hypothesis is refuted.*

Therefore, it may be inferred that artificial intelligence (AI) is incapable of substituting teachers in the classroom due to its precision and ability to provide pupils with improved comprehension.

### **Description**

Independent Variable: Replacement of teachers in the classroom

Dependent Variables: AI's accuracy and provision of enhanced understanding to students

This Association has been measured because it was expected that ChatGPT would replace teachers in the classroom and also provide more accuracy and its provision of enhanced understanding to the students. And it was concluded that there AI cannot replace teachers in the classroom with its accuracy and provision of enhanced understanding to the students.

### **Summary of Findings**

- 52.7% of the participants identified as female.
- 93.3% of the participants fell within the age range of 18-23.
- 88.6% of the participants were enrolled in undergraduate programs.
- Out of the total respondents, 26% were acquainted with ChatGPT.
- 36% of the participants utilize AI-assisted technologies weekly for educational purposes.
- 43% of the respondents believe that ChatGPT is useful for learning in the classroom.
- 60% of the respondents believe that ChatGPT occasionally gives false or misleading information.
- According to the survey, 44% of the participants believe that ChatGPT is beneficial and improves their comprehension.
- A total of 49% of the participants expressed satisfaction with the utilization of ChatGPT in the educational setting.
- According to the survey, 47% of the participants believe that artificial intelligence cannot be substituted for teachers in the classroom.
- 42% of the respondents feel ambivalent, neither comfortable nor uncomfortable, about the employment of AI in education.
- Approximately 47% of the participants perceive AI-assisted educational products to be moderately user-friendly.

### Limitations of the Study

Although Chat GPT is still in its initial stages, it appears that it could prove valuable in the future. In contrast to AI acquaintances like Siri and Alexa, Chat GPT doesn't look up solutions elsewhere. Rather, it constructs a phrase word by word, using the lessons it has learnt from previous encounters to determine which "token" is most likely to appear next.

### Conclusion

ChatGPT has garnered significant attention, elicited concerns, and even provoked alarm among instructors. ChatGPT is found to be beneficial for educational purposes in the classroom but may occasionally offer misleading or incorrect information. The study demonstrates that ChatGPT is a valuable tool for augmenting comprehension and enhancing knowledge. It has been noted that ChatGPT is unable to substitute teachers in a classroom setting. It is recommended that ChatGPT incorporate more up-to-date information beyond 2022, enhance the accuracy and reliability of its replies, and consider including visual aids such as images and diagrams to complement the offered information. Integrating ChatGPT into school can have a significant impact on students' future professional paths by enhancing their understanding of technology and fostering their creativity and communication skills. This paper examines several advantages, constraints, difficulties, future research avenues, and recommendations for employing ChatGPT in educational environments. In the future, this discipline will prioritize the development and evaluation of AI-driven educational materials, exploration of the benefits and challenges in different educational environments, examination of its impact on student learning results, resolution of ethical concerns, and experimentation of its efficacy in different situations.

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