A Comprehensive study to analyze theChatGPT and its impact on students' Education

Dr. Sunita Yadav[1*], Dr. Rakhee Yadav[2]

[1*]Prof. Dept of Computer Science/ITSomaiya Vidyavihar University Mumbai, India, Sunita.ay@somaiya.edu
[2]Prof. Dept of Computer Science/IT Somaiya Vidyavihar University Mumbai, India, rakhee@somaiya.edu

ARTICLEINO	ABSTRACT
	Artificial intelligence (AI) and machine learning have been revolutionizing scientific research in recent years. In particular, ChatGPT has emerged as a prominent AI language mode in recent years, which has greatly advanced chatbot technology. The purpose of this study was to look at how ChatGPTaffected student engagement and motivation. The innovative technology ChatGPT uses state-of-the-art artificial intelligence algorithms to provide natural language responses to commands or input. It has been used in many different sectors, such as natural language processing, content creation, and customer service. It looks into ChatGPT's benefits and drawbacks, as well as its capabilities and restrictions. The study's main goals wereto ascertain the effect of ChatGPT on student's education. The information was collected by 500 students. The data were analyzed using Sentiment analysis and Z test. Recent times have seen a rise in interest in sentiment analysis. Sentiment analysis is widely regarded by decision-makers, businesses, and service providers as a useful tool for improvement. According to the research, ChatGPT facilitates a rise in student motivation and involvement in the educational process. **Keywords— ChatGPT, Education, Sentiment Analysis, AI, ML(Machine learning)**

I. INTRODUCTION

Artificial intelligence (AI) developments have recently altered many industries, including education. A game-changingtechnology with the capacity to change student education is ChatGPT, a language model created by OpenAI. Language models of today, such as ChatGPT, an adaptation of OpenAI's Generative Pretrained Transformer (GPT) language model, have the goal of producing content that appears to have been written by individuals.[1] It can converse with users in a way that seems natural and logical. ChatGPT creates new opportunities forpersonalized learning, increased student engagement, and improved educational outcomes by utilizing the power of natural language processing. By providing students with individualized learning opportunities, prompt feedback, and support, it can enhance their educational experiences. ChatGPT creates new opportunities for information access because it may provide quick responses, support research, and facilitate problem- solving. In this article, we examine ChatGPT's effects on studentlearning and how it can alter how we teach and learn.

History:

The corporation and research group known as OpenAI, or OpenArtificial Intelligence, is dedicated to the advancement and marketing of artificial intelligence (AI) technologies. Elon Musk, Sam Altman, Greg Brockman, Ilya Sutskever, John Schulman, and Wojciech Zaremba established it in December 2015.The main goal of the organisation is to make sure that globalartificial intelligence (AGI) benefits all of humanity.
With the development of AGI comes several hazards and difficulties, which is why OpenAI was created. Highly autonomoussystems, or AGI, are said to perform better than humans at most economically valuable tasks. OpenAI aims to create AGI that is beneficial, secure, and consistent with human ideals.
The OpenAI API, which OpenAI unveiled in December 2020, enables programmers to gain access to and use GPT-3's capabilitiesin a variety of applications. This was OpenAI's first step towards commercializing and making its AI technologies more widely available.

ChatGPT:

OpenAI created ChatGPT, an AI language model. The GPT-3.5 architecture, a variation of the GPT-3 (Generative Pre-trained Transformer 3) model, serves as its foundation. GPT-3 represented a substantial development in understanding and processing natural language.

GPT-3 and its forerunners were created as a result of OpenAI's ongoing work to expand AI technology. The Generative Pre- Trained Transformer (GPT) model was first made available by OpenAI in June 2018. The excellent language generating abilitiesof GPT-1 were demonstrated when it was trained on a sizablecorpus of text data from the internet.

GPT-3, which was released by OpenAI in June 2020, was a significant development for AI language models. With 175 billion parameters, GPT-3 claimed a huge scale that made it the largest language model that was then known to the general-purpose technology. GPT-3 was able to complete a variety of natural language tasks with little task-specific training thanks to its enormous model size, which alsoenabled it to generate responses that were coherent and context- aware and displayed outstanding language knowledge.

II. PROBLEM DEFINATION

To analyze the ChatGPT and its impact on students' Education using sentiment analysis and hypothesis.

III. LITERATURE SURVEY

Table 1 Literature Survey Tab

Sr. No	Research Questions /Objectives	Author	Year	Methodology	Key Findings
1	"To look into how GPT and AI affect academic institutions and libraries?"[2]	Ting Wang et al.	2023	Interview, Survey	ChatGPT offers a lot ofpotential to promote academia and librarianship in both unsettling and novel ways.
2	"To examine ChatGPT's usefulness in health care practice, research, and education and to draw attention to any possible drawbacks" [3]	Sallam, M	2023	Search Strategy and Inclusion Criteria, Summary of the Record Screening Approach	Does According to the evidence that is currentlyavailable, healthcare professionals are quite enthused about ChatGPT's enormous potential as compared to existing LLMs for clinical decision-making and workflow optimization.
3	"To look into ChatGPT's possible benefits and risks to education as a whole from the viewpoints of educators and students"[1]	Md. Mostafizer Rahman et al.	2023	Experimental	These findings demonstrate the value of ChatGPTfor both educationand research, in addition to programmingeducation.
4	"To investigate into ChatGPT's effects on jobs, information technology, cyber security, customer service, software development, and academia. It also looks into possible uses for researchers and scholars." [4]	Dinesh Kalla et al.	2023	Experimental	It has enormous potential to increase output, effectiveness, and user pleasure, and researchers are only nowstarting to look at its prospective uses. In the years to come, we can anticipate seeing even more remarkable results as ChatGPT developsand gets better.
5	"To review sentiment analysis techniques on social media" [5]	Zulfadzli Drus and Haliyana Khalidt	2019	Literature review based	The results show that the opinion-lexicon technique was the most commonly utilised method in the majority of articles to assess text sentiment in social media. Sentiment analysis is used in business, politics, healthcare, and other domains. The data were collected from microblogging sites, namely Twitter..

1. 1st Research Objectives:

Ting Wang et al. did the analysis of the technology underlying ChatGPT, an extremely sophisticated chatbot that has attracted a lot of interest recently, has been offered in this study. It started byoutlining the fundamental ideas of ChatGPT and how they connect to the technology. The study went on to discuss ChatGPT's underlying technology, Generative Pre-Trained Transformer (GPT), and how it can carry out a variety of language-based tasks. It also discussed the history, technology, and capabilities of GPT. The results of an interview with ChatGPT about how AI and GPT would affect academia and libraries were included in the study as another illustration of ChatGPT's capabilities.[2]

2. 2nd Research Objectives:

This study delves into HCWs' perceptions of ChatGPT in the firstthree months after its launch. While ChatGPT is seen as a potentially useful tool in healthcare settings, there are still worriesregarding its accuracy, dependability, and medico legal consequences. Addressing these concerns and assuring AIChatbots' reliability and dependability are critical for promoting their use in healthcare settings. Although the observed unfamiliarity with ChatGPT should be viewed as a potential source of bias, it provides a substantial impetus for further research into this topic.[3]

3.   3ʳᵈ Research Objectives:
Furthermore, the findings of the study highlight the significance of additional research to examine the clinical outcomes related with ChatGPT and to compare its effectiveness to other AI Chatbots in healthcare applications. Future research should look into the impact of ChatGPT on health care practices among both familiar and unfamiliar users in order to acquire a better grasp of its potential benefits and limitations. Furthermore, giving concrete solutions to solve accuracy and reliability concerns may assist in more responsible use of AI Chatbots in healthcare.[1]

4.   4ᵗʰ Research Objectives:
The way we communicate with machines and one another has completely changed thanks to ChatGPT. Its scalability, customization, and efficiency make it the perfect tool for a variety of applications. Its natural language processing skills enable it to provide human-like replies to customer questions. While ChatGPT has several drawbacks, such as the possibility for prejudice, a lack of emotional intelligence, and a small knowledge base, these may be reduced with proper training, data selection and extra programming. In conclusion, ChatGPT has had a substantial influence on a variety of industries, including academia, cyber security, customer service, and software development. It has enormous potential to increase output, effectiveness, and user pleasure, and researchers are only now starting to look at its prospective uses. In the years to come, we may anticipate seeing even more remarkable results as ChatGPT develops and gets better.[4]

5.   5ᵗʰ Research Objectives:
This study's findings on students' perceptions of "studying the perspectives of the teachers about learning through AI with special reference to the selected universities of Rajasthan" have furthered our understanding of how various contemporary artificial intelligence techniques used by universities can effectively improve students' learning capacity. The study also shows that while artificial intelligence has extremely high future prospects and offers a wide range of opportunities in this sector, its current position in higher education institutions necessitates a significant investment of both time and money.[5]

FEATURES OF CHATGPT

A.   Personalized Learning Experience:
The capability of ChatGPT to offer personalized learning experiences is one of its main advantages for education. ChatGPT can modify its teaching approach and content delivery to accommodate various learning preferences since it has the ability to recognize and respond to specific student demands. By customizing the learning experience, students may work through the content at their own speed, solidifying their understanding and improving their ability to understand complicated ideas. Additionally, ChatGPT can give students quick feedback and support, assisting them in pinpointing their areas of need and delivering tailored advice. Since students receive individualized help whenever they need it, this real-time connection improves learning and encourages ongoing improvement.

B.   Enhanced Access to Information:
Students often acquire knowledge by using textbooks and the limited resources in the classroom. With just a few keystrokes, ChatGPT, on the other hand, unlocks a massive world of knowledge and resources. With the ability to ask questions and get immediate responses through ChatGPT, students may now learn more about a subject and examine a variety of viewpoints.
Additionally, ChatGPT can help students with research, concept generation, and the improvement of their critical thinking abilities. The model can offer pertinent sources, condense difficult ideas, and present opposing opinions, enhancing students' knowledge and understanding of a variety of topics.

C.   Improved Collaboration and Communication:
ChatGPT encourages collaboration and communication within educational environments in addition to providing benefits to individual students. ChatGPT promotes collaboration, problem- solving, and peer-to-peer learning by enabling seamless communication between students, teachers, and the AI model.
With the aid of ChatGPT, students may participate in group conversations, get peer feedback, and work together on projects. In order to create more dynamic and inclusive learning settings, the model can offer suggestions, promote brainstorming sessions, and assist in consolidating ideas.

D.   Language Learning and Communication Skills:
ChatGPT has a lot of potential for use in the study of languages. The model can replicate conversations, offer language practice, and provide immediate feedback on vocabulary, grammar, and pronunciation. Students can build a greater awareness of cultural nuances, strengthen their language proficiency, and gain speaking confidence through interactive interactions.
Additionally, ChatGPT might be a helpful tool for students who struggle with their speech or language. A secure environment for people to practice their communication skills can be created by it since it is patient and nonjudgmental, which promotes inclusivity and lowers learning hurdles.

E.   Ethical Considerations and Challenges:
ChatGPT clearly has a positive impact on student learning, but it also presents ethical problems and concerns. Important issues that need to be addressed include making sure AI is used responsibly in education, protecting privacy and data security, and minimizing biases within the model. To ensure AI is utilized ethically and in a way that improves learning without displacing human contact and knowledge, educators and governments

must set rules and laws.

IV. METHODS

This research paper is based on two methods, Z test and Sentimentanalysis. The data is collected from surveys.

1. Z-Test:

As stated A z-test is used in hypothesis testing to assess if a finding or relationship is statistically significant. In particular, it looks at the null hypothesis, or whether two means are equal. A z-test can only be used if the sample size is 30 data points or greater and the population standard deviation is known.

A statistical test called a z-test is used to determine if two population means differ when the variances are known and the sample size is large. A z-test is a type of hypothesis test wherein the z-statistic shows a normal distribution. A z-score, occasionally referred to as a z-statistic, is a numerical representation of a z-test outcome.
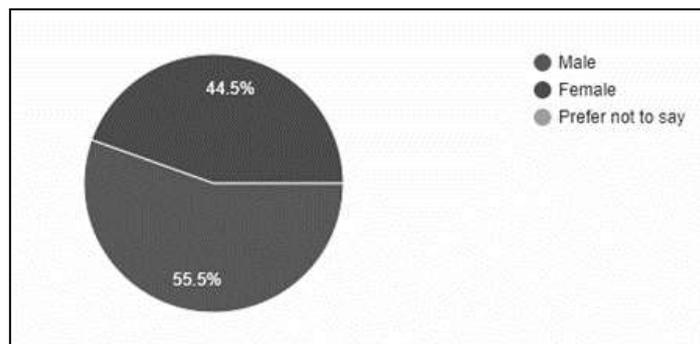

Fig 1. Gender distribution

When this particular question was asked to our audience during this survey, we have got the results as % people of our participantsare Male and % of the participants are female.

2. Sentiment analysis:

According Sentiment analysis is crucial for understanding the thoughts that are being expressed on social media and otherwebsites at an increasingly rapid rate.[5] Since there has been a hugeexplosion in information in recent years, it is impossible to controland analyze this information using the conventional methods, so scientists and researchers have developed high-efficiency techniques to handle this data. To make the appropriateconclusion, this necessitates the use of sentiment analysis to analyze the data and establish its polarity. Machine learning and lexicon-based approaches have been established as the two basic methodologies of sentiment analysis. While lexicon-based approaches operate by counting the positive and negative words that are associated with the data, machine learning approaches usealgorithms to extract and identify sentiment from data.

The VADER (Valence Aware Dictionary for Sentiment Reasoning) NLTK module, which determines sentiment scores based on word choice, has been utilised by us. It is a rule-based sentiment analyzer, and depending on their semantic orientation, phrases are frequently categorised as positive or negative.

The field of natural language processing (NLP) aims to make natural human language understandable by computer programmes. For NLP, we have utilised the Python package Natural Language Toolkit, or NLTK.

A large portion of the data that might be analyzed is unstructuredand contains text that can be read by humans. Preprocessing that data is necessary before you can programmatically analyze it.

V. SURVEY

Students are surveyed, and a sentiment analysis is done on the basis of the responses. "The collection of information from a sample of individuals through their responses to questions" is the definition of survey research. Numerous approaches to participant recruitment, data collection, and instrumentation are feasible with this particular type of research. This study aims to check theimpact of ChatGPT on students. The number of participants was 500. The number of female participants was 230 and the number of male participants was 270. The age group of students are 18-24years.
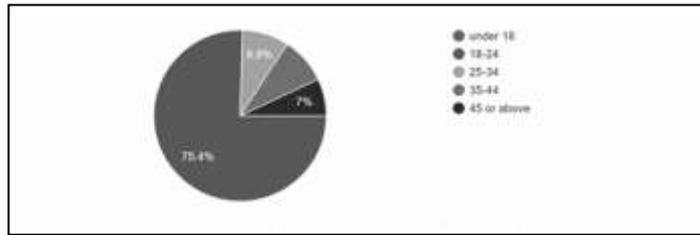
Fig 2. Age group of students 18-24

When this particular question was asked to our audience during this survey, we have got the results as % people of our participantsare under the age group of 18 followed with % of the participantsare from 18-24 age group, % of the participants are from 25-34 age group, % of the participants are from 35-44 age group, and %of the participants are from 45 or above age group.
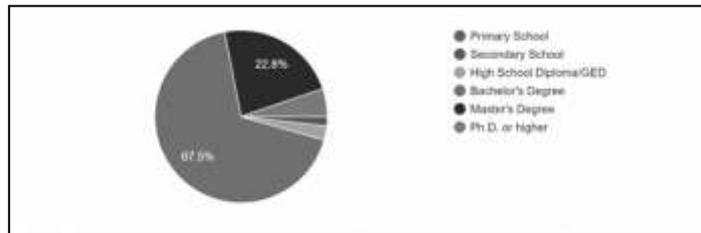

Fig 3. Degree of students

When this particular question was asked to our audience during this survey, we have got the results as % people of our participantsis in Primary School followed with % of the participants are fromSecondary School, % of the participants are from High School Diploma / GED, % of the participants are from Bachelor's Degree, % of the participants are from Master's Degree, and % of the participants are from Ph.D or Higher.
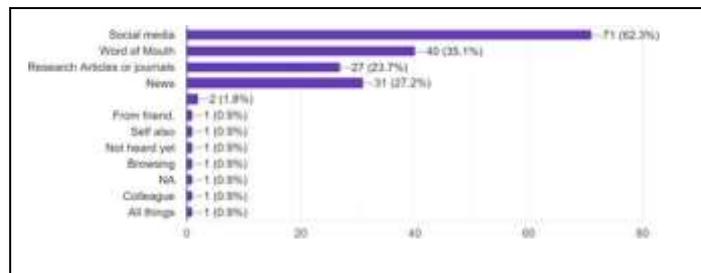

Fig 4. ChatGPT sources

When this particular question was asked to our audience during this survey, we have got the results as % people were introduced to ChatGPT through Social Media platforms, followed with % people were introduced to ChatGPT through Word of Mouth, % people were got to know about ChatGPT through Research articles and journals and % people through News.
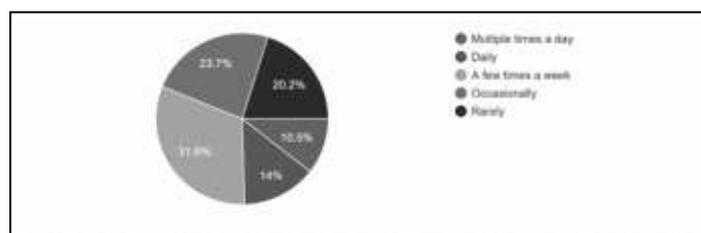

Fig 5. ChatGPT is Boon or Curse

When this particular question was asked to our audience during this survey, we have got the results as % people of our participantsanswered as they use ChatGPT multiple time a day, % people of our participants answered as they use ChatGPT on Daily basis, %people of our participants said as they use ChatGPT a few times aweek, % people of our participants said as they use ChatGPT Occasionaly while %people use ChatGPT rarely.
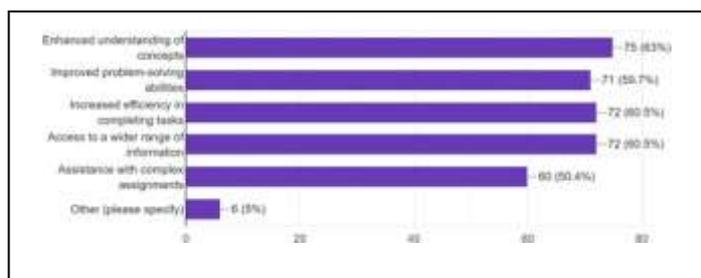
Fig 6. Benefit of using ChatGPT

When this particular question was asked to our audience during this survey, we have got the results as % people thinks ChatGPT provides Enhanced understanding of concepts, % people thinks ChatGPT is good for Improved problem solving abilities, % people answered ChatGPT holds the potentiality for increased efficiency in completing complicated task, % people said ChatGPT has access to a wider range of information and % of the people said they are getting assistance from ChatGPT with their complex assignments.
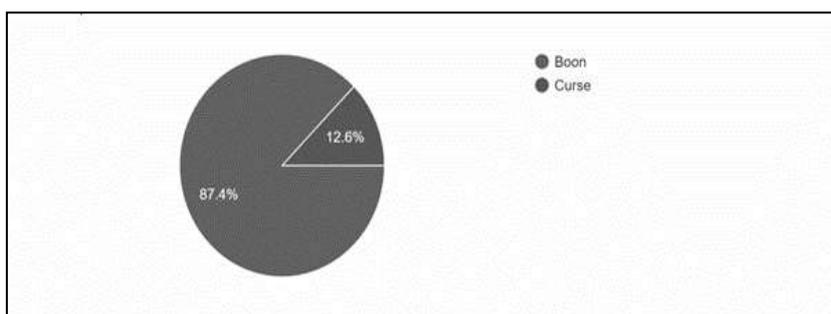

Fig 7. ChatGPT is Boon or Curse

When this particular question was asked to our audience during this survey, we have got the results as % people of our participantsthinks ChatGPT is Boon and % of the participants says ChatGPT is Curse.

VI. RESULTS AND DISCUSSION

Hypothesis:
H0: Majority of them believe that there is Negative impact ofChatGPT on academic performance
H1: Majority of them believe that there is Positive impact ofChatGPT on academic performance
H0: p0>80% H1: p0 <80%
P=280/500= 0.56
q0=1-p0 =1-0.8 =0.2
$Z=(p-p_0)/\sqrt{(p_0q_0/n)}$
$= (0.56-0.8)/\sqrt{((0.8\times0.2)/500)}$
=**-0.24/0.0178**
=**-13.483**
Since |z|=13.483 > 2.58
Therefore, the null hypothesis is rejected. It proves that Majority of them believe that there is Positive impact of ChatGPTon academic performance.

Sentiment Analysis Results:
After doing a deep analysis on the responses, we have received during our survey we have come to a fact proven conclusion aboutthe popularity and usability of this AI-Powered Super Assistant.It is more than usual tool for day-to-day work and ChatGPT already have reached a large number of users and active interactions than any other platform. Most significant highlight ofthis tool is the time frame it took to reach this benchmark that shows the impact and capability of doing multiple tasks in different domains. Another key term about ChatGPT is we don't need to have any technical knowledge or understanding to start working with this tool we just have to provide our requirement oftask in the form of prompt / query in the query box, in our preferred language, as it support multiple languages from all overthe globe and tool will do the rest.
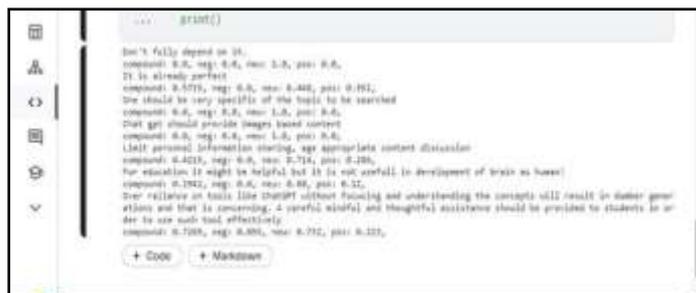Here is result we have got from our Sentiment Analysis.

Fig 8. Sentiment analysis result

VII. CHATGPT LIMITATIONS

ChatGPT is the best possible tool available out in the market, to increase productivity and operational efficiency and it holds the potentiality to revolutionized the whole self-learning process for each individual irrespective of industry or domain they are working in. same way it holds some limitation as well. we will discuss on the limitations of ChatGPT in this section.

A.   **Real Time Updates**:
ChatGPT generates the results on historical data and existing dataset on which the program was developed, as we have observed it will give the output on the basis of the event occurred in the past and latest model is always under development. This indicates thatChatGPT may not have real-time information. This is a limitationwe have observed during our research tenure and found this as a setback of it. As this cause the bias in the results and inaccuracy of accurate learning.

B.   **Verification of Information**:
ChatGPT-generated results are being fetch on the basis of the pattern designed for the learning mechanism. In the same way, it gathers the information set from the training model and may give us the response on outdated and inaccurate details, which requiresa solid verification process that we have to do manually in order to be sure of our outcomes.

C.   **Potentiality Of Biased Opinions**:
ChatGPT is basically a pre-trained transformer, which means the model is trained to generate the response on the basis of information fed to the system that was available at training time and available on the internet about the particular topic without even verifying whether it is correct or not. This may come out as only one side of the information is being generated as an output, which may create bias in multiple ways and may lead to incorrector inappropriate actions.

D.   **Inconsistent Responses:**
ChatGPT is a widely recognized and used tool in recent years. Compared to Google Search, Google has used it to dominate the whole dimension to enhance learning experiences in the past decades. The most interesting thing about ChatGPT is that it generates the responses in a way that is unique and comparativelybetter than Google search. Even though the content is related to context, it does not provide the same kind of response to individuals, whereas Google provides the same output to each andevery individual in the same way anywhere across the globe.

E.   **Input Dependency:**
ChatGPT is a virtual assistant that answers your queries on giveninputs; likewise, whatever is going on in mind, we tend to clearlystate that with someone who is knowledgeable and holds information about the topic, the same way we have to put that in the query box so that we can have the output. For example, if youwant to make a particular logo for your brand, you are required toframe this in a query in a way where you can put requirements that are easy, communicateable, and understandable for the system. Under these circumstances, only we can get our desired output; if we want a specific thing in our output, we will have to provide the details of that as well, and then only it can customize the response for you. This required highly intellectual talent and experience, which is another limitation we found.

VIII.   CHATGPT NEGATIVE IMPACTS

ChatGPT is the latest trend among students to boost and make it easier to prepare for their exams and curriculum, but there is also a negative impact on the same, such as inappropriate ways of learning experiences as everything related to courses and subjects is easily accessible at their fingertips, misconsumptions of technology, and irrespective ways of self-learning. These are a few highlights of the topic we are going to discuss in this section.

A.   **Dependence on technology:**
The rise of technology has had both good and bad effects on students' learning. One of the biggest drawbacks of this technologyis that most of the students solely try to be dependent on AI- generated content instead of clearing the conceptual task first. Most of the AI-generated content is primarily technical, which requires good interaction and asking questions of the tutor, whichis lacking nowadays.

B. Lack of communication skills:

Communication is the most important and crucial thing for students to have. To develop this, we have to interact with someone who has experience with the consent and topic. Due to the existence of most of the available tools for learning, students do hesitate to even ask a question about the topic or a related topic.This may lead them to communicate and work well with others inschool and when they start working.

C. Self-learning:

Self-learning is a must-have skill for a student in order to have a strong work ethic for further career advancement. After the interaction of high-end technology, it makes them more concernedabout getting the task done rather than knowing what the pre- requisites of the task are, why we have to do this task, what the outcome of this task is, and what the consequences of this are if I don't do it. These are a few things that highlight the self-learning process that students lack due to being overly dependent on technology.

D. Emotional Connection:

Emotional connection is another aspect of student education in achieving long-term goals; this develops along with mutuallyconnecting over the topic you prefer to learn from your growth. Technology can make it difficult for students to connect emotionally with their teachers. ChatGPT lacks the personal touchand emotional intelligence that can be easily obtained by the teacher. Such as guiding an individual student about the strong areas and weak parts of their profile. As well as motivating them to do more with their key skillsets and providing good guidance tobe smart enough for any competitive domain.

IX. CONCLUSION

The conducted literature review shows that the ChatGPT is a trending AI tool which helps students, researchers, and academicians to find their desired information. ChatGPT is used in multiple domains such as education, research, healthcare. The advent of ChatGPT has ushered in a new era of student education, characterized by personalized learning, enhanced access to information, improved collaboration, and language acquisitionsupport. By harnessing the power of AI, ChatGPT empowers students, educators, and institutions to transform the educational landscape and unlock the full potential of every learner. However,it is essential to navigate the ethical challenges and ensure a balanced approach that combines the strengths of AI with the invaluable role of human teachers in fostering holistic educationalexperiences. Based on surveys taken from students, it shows a positive impact on students. Sentiment analysis demonstrates thatit plays a huge role in understanding people's perception and helpsin decision making. For future recommendations, we expect that the surveys should be taken from all domains and an universal model of sentiment analysis should be developed so that it can beused for all domains to see the impact of ChatGPT.

REFERENCES

1. Md. M. Rahman and Y. Watanobe, "ChatGPT for Education and Research: Opportunities, Threats, and Strategies," Social Sciences, preprint, Mar. 2023. doi: 10.20944/preprints202303.0473.v1.
2. B. D. Lund and T. Wang, "Chatting about ChatGPT: how may AI and GPT impact academia and libraries?," *Libr. Hi Tech News*, vol. 40, no. 3, pp. 26–29, May 2023, doi: 10.1108/LHTN-01-2023-0009.
3. M. Sallam, "ChatGPT Utility in Healthcare Education, Research, and Practice: Systematic Review on the Promising Perspectives and Valid Concerns," *Healthcare*, vol. 11, no. 6, p. 887, Mar. 2023, doi: 10.3390/healthcare11060887.
4. D. Kalla and N. Smith, "Study and Analysis of Chat GPT and its Impact on Different Fields of Study," vol. 8, no. 3, 2023.
5. Z. Drus and H. Khalid, "Sentiment Analysis in Social Media and Its Application: Systematic Literature Review," *Procedia Comput. Sci.*, vol. 161, pp. 707–714, 2019, doi: 10.1016/j.procs.2019.11.174.
6. M. Halaweh, "ChatGPT in education: Strategies for responsible implementation," Contemporary Educational Technology, vol. 15, no. 2, p. ep421, Apr. 2023. Available: https://doi.org/10.30935/cedtech/13036.
7. B. D. Lund and T. Wang, "Chatting about ChatGPT: how may AI and GPT impact academia and libraries?," Library Hi Tech News, vol. 40, no. 3, pp. 26–29, Feb. 2023. Available: https://doi.org/10.1108 /lhtn-01-2023-0009.
8. M.-H. Temsah et al., "ChatGPT and the Future of Digital Health: A Study on Healthcare Workers' Perceptions and Expectations," vol. 11, no. 13, pp. 1812–1812, Jun. 2023. Available: https://doi.org/10.3390/healthcare11131812.
9. D. Kalla and N. Smith, "Study and Analysis of Chat GPT and its Impact on Different Fields of Study," papers.ssrn.com, Mar. 01, 2023. Available: https://papers.ssrn.com/sol3/papers.cfm?abstract_id =4402499.
10. Z. Drus and H. Khalid, "Sentiment Analysis in Social Media and Its Application: Systematic Literature Review," Procedia Computer Science, vol. 161, pp. 707–714, 2019. Available: https://doi.org/10.1016/j.procs.2019.11.174.
11. Sachdev, S. (2023). ChatGPT and its Impact on Society. The Times of India. https://timesofindia.indiatimes.com/readersblog/marketing-savvy/chatgpt-and-its-impact-on-society-

50445/
12. Shendruk, A. (2023, February 14). Here's how 10 industries are experimenting with ChatGPT. Quartz. https://qz.com/heres-how-10-industries-are-experimenting-with-chatgpt-1850087138
13. Timothy, M. (2023, January 6). The 3 Best Alternatives to ChatGPT. MUO. https://www.makeuseof.com/best-alternatives-chatgpt/
14. Vasylkiv, B. (2023, January 25). Limitations an Ethical Considerations of Using ChatGPT. Incora - European Software Development Company. https://incora.software/insights/chatgpt-limitations
15. Biswas, S. S. (2023). Potential Use of Chat GPT in Global Warming. Annals of Biomedical Engineering. https://doi.org/10.1007/s10439-023-03171-8
16. Diaz, M. (2023). How to use ChatGPT: Everything you need to know. ZDNET. https://www.zdnet.com/article/how-to-use-chatgpt/
17. Else, H. (2023). Abstracts written by ChatGPT fool scientists. Nature. https://doi.org/10.1038/d41586-023-00056-7
18. Lund, B. D., & Wang, T. (2023). Chatting about ChatGPT: how may AI and GPT impact academia and libraries? Library Hi Tech News. https://doi.org/10.1108/lhtn-01-2023-0009