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Literature Review on Pros and Cons of ChatGPT Implications in Education

Prof. Dr. C. Karthikeyan

Principal TIMS & Director IQAC, TJC,
Affiliated to Bangalore University, Bangalore, Karnataka, India

Abstract: *ChatGPT's presence has added an edge to the academic community to increase their alacrity levels as well as benchmark their academic outcome. The ChatGPT can aid better to the learning community too if used protectively. Still, the victimisation of ChatGPT can be done by the superior intelligent brain of humans, who gave birth to this ChatGPT with another version that makes the life of the learning community better to outwit or outclass ChatGPT, hence till then the era of ChatGPT for good, better or best supportive sixth sense of human brain rather than a competitor to the professional identity that humans have, come what may human brains have the capacity to bloom out for the better and evolve as invincible in the times to come.*

Keywords: ChatGPT, Learning, Education, Version, Professional Identity, Humans

1. Introduction

ChatGPT (Chat Generative Pre-trained Transformer) is now a threat buzzword for many technical creators as well as the white collar working class, that include teachers, as well as any professional whose job needs content creation for its ease of work without any need for verification (Roose, Kevin 2022). The dreaded and feared Chatbot that is developed by OpenAI launched as ChatGPT (Chat Generative Pre-trained Transformer) is now built with vigour and dynamic functional aspects that can surpass many search engines even (Quinn, Joanne 2020). The entire ChatGPT is now made on GPT-3 family using large language models fine-tuned for transfer learning that can use both the supervised as well as reinforced learning techniques. A release that cost US \$29 billion by Open AI, the founding company that is now threatening many of the search engines that possess very uneven accuracy factually too. The perception of ChatGPT use in academics is not encouraging. (Vincent, James, 2022). The academic bodies, a community of teachers and other related white-collar professions such as lawyers, accountants, journalists, writers, and poets are also against the introduction of ChatGPT since it can create havoc for the original contributors (Varanasi, Lakshmi 2023), as well as, nullify creativity in the minds of students. The fears about this new chatbot avatar are raising fears among certain professional establishments as well as people involved in it, the first being the educational sector (Greengard, Samuel 2022).

Objectives:

- To conceptualise what is ChatGPT and how it impacts our learning culture.
- To review from various literature the pros and cons of using ChatGPT.
- To analyse the facts from various kinds of literature presented in authentic sites to arrive at the advantages and disadvantages of using ChatGPT
- To learn from the available users' experience shared through a literature review as to what are the benefits of ChatGPT in the education industry across India and the world in general.

- To arrive at the accepted areas to utilise ChatGPT for the betterment of the education industry in India and abroad.

Method:

- Literature review with conceptual clarity on the technical notations of ChatGPT.
- Collating User experiences and reviews to conceptualise the Pros and Cons of using ChatGPT.
- Using Content Analysis and Conceptual Analysis from the literature review to conceptualise the Pros and Cons including implications of ChatGPT in the education industry.

Scope of the study:

- To add literature to the existing review of literature which is already limited to throw clarity to the general understanding of the utility of ChatGPT, particularly in the education industry.
- To conceptualise the actual utility of ChatGPT and understand from the negative views why the fear of ChatGPT existence is prevalent in the education industry.
- To verify the facts from the shared experiences, whether ChatGPT will be a threat to learning culture in the educational sector.

Problem Statements Identified from Existing Literature:

- The fear of being extinct: The teaching community fears whether there will be no use of intellect or working hard towards upgrading the skill by the teachers and the students, thereby posing a threat to the transparent and improvised learning experience.
- Will the Cognitive areas get weaker in the time to come since no activity to the brain will degrade the speed and accuracy of growing brains in children?
- Won't there be any genuine academic outcome that can be expected at any level?

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- (d) Will there be falsified and plagiarised home assignments that will be the norm over the original creative work?

Limitations of the Study:

This study does have its own existing and predictive limitations since the entire concept of ChatGPT is very limited. The resources to refer to and consolidate are very minimum even in the user experience reviews since many are on the trial and error mode.

- (a) Very few research outcome availability across the world.
- (b) The user experience sharing is too much general.
- (c) The experiences shared are based on perceptions.
- (d) A greater number of people have not experienced this so far.
- (e) The Version of ChatGPT is in the primary or Nascent Stage, and still, the real potent of ChatGPT is not known.

2. Review of Related Literature

Stephen Marche, (Atlantic Magazine 2023), found that there is no clear understanding yet of the application essays that ChatGPT essays.

Daniel Herman (Nature Journal 2023) found that ChatGPT can usher the English language of high schools will come to end.

Chris Stokel-walker (2023) found that the education provider needs to update and enhance their critical thinking or reasoning.

Emma Bowman (NPR2023) found that the danger of student plagiarism will be on the high and forever and that the output may be nonsensical text or authoritative toned one.

Joanna Stern (The Wall Street Journal 2023) found that cheating in high schools in America in English using the tool to generate an essay is on.

Check Point (Research2023) found that ChatGPT was capable of writing phishing emails.

James Vincent (The Verge 2023) found the viral success of ChatGPT as the mainstream AI.

Economist Tyler Cowen found and expressed concerns about the effects of democracy that ChatGPT would bring in.

Samantha Lock (The Guardian 2023) found that ChatGPT produces impressively detailed human-like tests as an outcome.

Derek Thompson found that Chat GPT is "the generative AI eruption as it may change our mind with the way how we work.

Kelsey Piper (Vox2023) found Chat GPT as the general public's first hand-on "smart enough assistant despite the flaws it has".

Derek Thompson (The Atlantic Magazine 2023) found that the ChatGPT as the generative-AI eruption may change our minds, our work and the way we think about what creativity is.

The information website (The New York Times 2023), Microsoft Bing, plans of making optional ChatGPT functionality public as a search engine in the coming times.

Stuart Cobbe, (England and Wales) tested the ChatGPT by questions to found that the ChatGPT scored 42 per cent pass mark, though 55 was the pass percentage, fears the advanced version will be too good to score out the limitation in passing exams.

Steven Minz (Inside Higher Ed (2023)) found that ChatGPT is an ally as well as advantageous support rather than an adversary since the AI could assist educational goals like making reference lists, generating first drafts as well as solving equations. He found that the AI could even do the debugging to tutoring simultaneously assists to evaluate, the answers with specific answers to questions asked.

Sam Altman (The New York Times2023) found that AIs support for humankind could be so high that it is hard to believe the extent of intellectual support that AI could deliver, which we cannot fathom explain in clear terms.

Cai GoGwilt CTO of Ironclad found that ChatGPT could summarise the changes to legal documents. He found that ChatGPT betters in more creative responses compared to similar language AIs.

LexisNexis and Min Chen (Legal research and Data Company), found ChatGPT to be more useful for using Microsoft's Azure Cloud.

Abeba Birhane (Mozilla) found that ChatGPT produces song lyrics.

Krishna Gade CEO of Fiddler found that ChatGPT creates "disruptions in web search" that are long dominated by Google.

Objective (1) is to conceptualise what is ChatGPT and how it impacts our learning culture.

Uncertain future of ChatGPT in education

While inherently any answering machine in split seconds **OpenAI (November 30, 2022)**, stands as a huge blessing to both the teacher and the taught in the platform of the teaching-learning process (**Vincent, James 2022**). still, the bug stands in between, as to who will take charge of whom. The fear about everything available in a single click will not keep any surprise in the teacher's ability and efficiency in front of students for a classroom

demonstration, simultaneously, the fear that open AI Chat GPT (**van Heeswijk, Wouter 2022**), will completely wash out the creativity in the student (**Ortiz, Sabrina 2023**). Hence the anxiety-ridden educational stakeholders shall have the following wading inside their occupational area. Anxiety about AI wizards making research skills redundant: let alone taking a class that can be interesting for a teacher the incident of Chat GPT AI could clear MBA exam and operations research paper unto perfection recently in one of the universities, brings in a gloomy scenario to the tables of academicians and researchers. The research community too will not have anything new on the table, since the prognosis on the research items to be presented on any forum definitely will be linked to the resource Chat GPT, and as a whisker, the references in the research area were cited as AI Chat GPT, is no more a stunner. While the above is a predictive exercise to ponder on the anxieties at the same time there are academic scholars including the current author of this article supporting the use of Chat GPT (**Chawla, Raveen 2022**), creatively to make academics more interesting and creative to make the student's life meaningful. The only solution is to keep evolving into new roles from the traditional ones (**Tung, Liam 2023**). Similar to the earlier professionals getting into structural unemployment, the scenario for educationists is not too far. The present Gen Z and Gen Alpha are the so-called digital natives who are already familiar with and are at ease to handle digital adjustments or maladjustments are just their second nature, hence structural unemployment is not new.

Assumptions and presumptions versus the reality of ChatGPT fears are:

Some of the publications and abstract sections in the publication across many countries have already cited ChatGPT as a co-author of (ChatGPT Feedback Contest: Official Rules). The fears of academicians from India and abroad are:

- All writing works including homework/assignments may be outsourced by the students to ChatGPT (Reich, Aaron 2022).
- ChatGPT Can put an end to the learning curiosity in the students.
- The danger of extreme plagiarism at all levels. (Edwards, Benj, 2022).
- Taking wrong answers and learning the wrong way by the students.
- Output on any work can be biased since it provides a straight answer.
- Wrong answers may be justified to correct since the machine may provide wrong answers too.
- Generated answers for the essayers.
- A unique ChatGPT style of writing and answering will encompass students' memory thereby bringing down the creativity in students. (Pearl, Mike 2022).

Objective 2: To review from various literature the pros and cons of using ChatGPT.

Pros and Cons as per the literature available to the public in the use of AI-based ChatGPT.

The combined pros and cons of using ChatGPT inside the regular classrooms;

- Pros:
 - Faster access to information (Milmo, Dan 2023).
 - A wider range of topics at one go.
 - Supports personalised learning (Holmes, Aaron 2023).
 - Can act as a supplemental resource.
 - Can support a quick search (Pitt, Sofia 2022).
 - Can ask for immediate feedback.
 - Can get accessibility 24/7 and compete against the speed of teachers (Perrigo, Billy 2022).
- Cons:
 - Limited accuracy, since only one option of answers, is given.
 - Contexts will be a lacking factor.
 - Incorrect output if the data fed is wrong.
 - Critical thinking will be absent.
 - Stops lateral thinking (Biddle, Sam 2022).
 - Originality will be absent.
 - Bias in answers since it's one way.
 - Purely technology dependence, and in absence of technology, efficiency comes down (Walsh, Toby 2022).

The invasion of technology into education is not new to India or the world (Mintz, Steven 2023). The general perceptions, as well as fears of the academic bodies across the world and in India, are the following:

- (a) No use of intellect or working hard towards upgrading the skill by the teachers and the students, thereby posing a threat to the transparent and improvised learning experience.
- (b) Cognitive areas to get weaker in the time to come since no activity to the brain will degrade the speed and accuracy of growing brains in children.
- (c) No genuine academic outcome can be expected at any level.
- (d) Falsified and plagiarised home assignments will be the norm over the original creative work.
- (e) The future of schools/colleges is under threat (Lakshmanan, Lak 2022).

While the above perceptions are generalised ones, some of the specific areas of importance in the areas of teaching and learning are equally important and significantly advantageous are:

- Greater access to resources in a faster mode, and to the desired requirements.
- The language used by ChatGPT is almost mimicking human language naturally and freely (Whannel, Kate 2022).
- The answers are generated by the neural network data.
- The ChatGPT can have conversations and even can write essays if asked.
- It has the power to admit errors.
- It can affect as well as protect ethical issues related to going overboard for copying others' work.

Objective 3: To analyse the facts from various kinds of literature presented in authentic sites to arrive at the advantages and disadvantages of using ChatGPT.

Let us understand how ChatGPT and teacher interaction can happen, as an extra resource, ChatGPT shall do the following:

- Need not sift through answers like google; a straight one-word can get the answer faster.
- Straightforward answers that the students shall read through straight.
- They can supplement student-teacher discussions.

As an Assessments tool:

- Will help in creating assessments.
- Will help to take AI help to provide the context.
- Can provide any result for any input values given.
- Can create assessments from the scratch.

As supporting Grammar and Writing:

- Can provide instant feedback for students.
- Improves writing skills since everyone will start to learn (Vincent, James 2022).
- Can create lesson plans instantly.
- Can serve as a practice tool for teachers to use in the classroom.
- Can feed new ideas to students.

As a supporting tool for automation:

- Creating engaging lesson plans.
- Grading and providing feedback on assignments.
- More time for creating engaging lesson plans.
- Can use the time to focus on students' development.

ChatGPT assistance to students is varied and many, and students welcome this app.

Assisting in Home Assignments:

- Help in getting quick answers
- Saves time from sifting through the options.
- Can use correct usage of grammar and sentence formation.

Assisting in writing skills:

- Writing style and grammar shall become intact without effort.
- Will do corrections by myself.
- Can do sentences appropriate to the subject asked.
- Vocabulary support.
- The syntax of sentences is very intact. (Mannix, Liam 2022).

Supports in the feedback:

- Can do enormous data analysis to give the exact feedback report.
- Can provide feedback to students on all areas of his work.
- Can act as a scoring guide for all the work.
- Can track the sequences correctly.
- Can suggest improvements accurately.

Supports in the Research:

- Highly intelligent with its vast resources (Cowen, Tyler 2022).
- The database is equipped with internet sources.
- Can be used as a Wikipedia-type source.
- Can serve as a pedestal.

Objective 4: To learn from the available users' experience shared through the literature review as to what are the benefits of ChatGPT in the education industry across India and the world in general.

ChatGPT threat to entertaining means, modes and correlations to human creativity: Putting a question of writing a poem about electrical engineering in the style of Wilfred Owen was well executed as per Omar Al-badly, in the Al Arabia News article recently published. Maybe the PhD holders of any area including the natural or social sciences could be in trouble since any intelligence report that requires utmost accuracy, may be gotten in split seconds, and there is no necessity for the faculty of PhD to reason, treason or think, and all that they need is to type the question (Kovanovic, Vitomir 2022). Where will then be the novelty left in the research area, which had so much hyped-up validity for people with PhD or any person involved in research and development including the physical sciences (Wiggers, Kyle 2022)? Human skill sets are often nuanced, fluid and ephemeral according to changing times: as the saying goes, kill time till time kills you, the adage now fits firmly to the economists, too who are usually groping into uncertain misfitting stats to evolve a theory, in the area of labour markets, in the area of employment scenarios, seasonal unemployment including the structural unemployment, where they had been predicting the hit and run movements of computers displacing human non-technical and technical or manufacturing jobs from humans, as well as their dispassionate analysis of the redundancy theory that would fit in the administrative staffs, factory workers or staff, manual workers, construction workers, designers including the soldiers who stand up front against the enemy even in the borders were all predictions, whenever the invasion of technology was precariously high. We need to wait and watch in this too.

Changing scenario where in we need to change the tyres on the move:

The upgradation in skill sets for the profession that is run as knowledge economies are in threat as per the recent predictions, and how far the impact is yet to be known

(Cave, Nick 2023). Yet even proficient literature reviews that stand amidst the value-added transformations executed in just a keystroke need attention. It is another cog in the repetitive AI machines at this juncture, since breathing space for all of us due to the following:

- Since **ChatGPT 3 is based on the "pre-trained"**, proficient analysis of the existing knowledge that requires synthesis of previous work, the machine also needs human support of feeding all the material for creating knowledge, which fortunately only humans can do.
- Even a single **blind spot, in the formulation of the research plan**, policies or including the methodical significance, can derail the results it gives as a spot-on answer (Herman, Daniel 2022).
- **Research plan or any question based** on plan and perspectives are to be fed appropriately including the work of gathering data are still with the human skills that are never to be made easy by the answering AI machine (Tran, Tony Ho 2023).
- Ask Chat **GPT about the mega plans**, perspectives, city development plans, human interactions, and other spot-on thinking questions, the answers that it renders will be pre-trained, which is not even optimal, and can nowhere come near what a human being thinks.
- Chat GPT **cannot travel as fast as** what and how or where the changes in the world happen, and why it happens, but still, humans can near accurately predict so (Stokel-Walker, Chris 2022).
- Chat GPT **cannot give you the differences** between the past and present on the experiences of many manifestations of humankind nor can it give a narrative of how it had happened unless those analogies are fed inside on the pre-trained radar it has.
- Even on the **data game changers**, that threaten all of us, gathering and analysing the data needs human interventions in feeding what it wants to calculate or assimilate, break numbers or proliferate answers, which human minds are capable of.
- Chat GPT can **suggest but cannot make it as powerful as a human substitution** since the interview techniques for qualitative data that the human researcher can do cannot be done by the machine.
- Chat GPT **can never give time probably to the levels of human interactions** in the areas of laughing, reassuring, sympathising, and spontaneously appreciating the fellow responses, like the human touch, that humans can give or yield to.
- Measuring **tasks like that of gathering data** with drones for security, humidity for better atmosphere check, land area specifications, traffic patterns and predictions, and other important supportive elements where human interactions are high is not possible as of now for the Chat GPT (Ropek, Lucas 2023).
- **Qualitative research can never be overtaken by ChatGPT Vincent, James (December 1, 2022).** . Imagine to what extent any ChatGPT will be able to do a proper research output virtually even in the area of literature reviews, retrospective syntheses of qualitative factors that requires collating including

gather of unique data that can be done only by face to face.

The positive side of ChatGPT for researchers:

- ChatGPT Can make researchers overcome writer's block
- It can turbocharge the writing process (Woods, Allan 2022).
- Shall formulate the emails and replies.
- It can write stellar research titles or topics (K, Siddharth 2022).
- Can simplify methods of research.
- Brainstorm ideas asked.
- Can suggest more analogies for research.
- Help in interpretation and translation.
- Can advise and correct the work done (Scharth, Marcel 2022).
- Can boost the speed of the work (Toh, Michelle 2023).

ChatGPT's presence has added an edge to the academic community to increase their alacrity levels as well as a benchmark for their academic outcome (Hern, Alex 2022). The ChatGPT can aid better the learning community too if used protectively. Still, the victimisation of ChatGPT can be done by the superior intelligent brain of humans, who gave birth to this ChatGPT with another version that makes the life of the learning community better to outwit or outclass ChatGPT, hence till then the era of ChatGPT for good, better or best supportive sixth sense of human brain rather than a competitor to the professional identity that humans have, come what may human brains have the capacity to bloom out for the better and evolve as invincible in the times to come, (Piper, Kelsey 2022). At the same time, the realisation does exist that, AI-powered ChatGPT (Kantrowitz, Alex 2022), will impact the education system, but still can remain valuable for the teachers and students for supporting their time scale for other activities. The danger of loss of creativity in both the students and teachers stands as the biggest of the fears, which requires time to reveal the real results. The hope as an academician is that it is used for good than for inappropriate ones.

Objective 5: To arrive at the accepted areas to utilise ChatGPT for the betterment of the education industry in India and abroad.

The problem statement: perceived, synthesised and exaggerated

- (a) On how it works: illustrations like it is an AI-based tool enhancing how we conduct business, and also a natural language processing bot that is evolving very quickly Kay, Grace (December 11, 2022).
- (b) A very powerful GPT (Generative Pre-training Transformer) that could generate texts like human speech in a conversational situation.
- (c) It produces natural language responses to user input.
- (d) It could improve processes and provide better customer experiences in light of new technology.

The confusion on what it does from the perceived problems:

- a. ChatGPT shall be summed up as a language machine, that can index words, and phrases, format sentences, utilise statistics, reinforce learning and supervise all related learning as a learning assistant (Grant, Nico; Metz, Cade 2022).
- b. Lacking genuine "intelligence" is a fact since it does not know what the word "means" but does magnify its uses.
- c. Excels at responding to questions, and summarises facts for producing articles.
- d. It can produce new articles with related trained engines.
- e. If trained further it may code 80% of the data.
- f. It can become a virtual teaching assistant.

The perceived versus actual functions of ChatGPT:

- ChatGPT has 175 billion parameters (Bhuiyan, Johana 2023).
- It has strong knowledge of both spoken and written.
- Will be able to produce video, sound and graphics as asked.
- Provides a broad range of skills from the creation of poems to cliché rom-com.
- Can produce lengthy research papers and articles.
- Can write stand-up comedy, and speed process complex data to a simplified form.
- Can create quantum physics articles in minutes.
- Can create cohesive human-like text results on anything from poetry to SQL data.
- Can summarise a text with fluent humanlike writing.
- Long voluminous data can be condensed.
- Can throw insight into data collection and analysis.
- Can respond to queries and can offer an exact solution for the queries.
- Can automate translation.
- Can recognise any language and as well flag particular harmful communication.
- Can be used to create a further chatbot.
- Can be used for conversation, and will be useful for machine-learning virtual assistants.
- Can be used for App Development with AI support and can develop and design advanced apps with layout tools.

Some of the problems that ChatGPT can create:

- Cannot be always correct.
- Can struggle with basic algebra even and may not present facts as a whole and may give incorrect answers.
- Can give inaccurate and nonsensical answers.
- Can be biased in design.
- Might be harmful in medical advice.
- Can generate fake social media accounts.
- Can create online scams.
- Can be a threat to real intellectual development.
- Can threaten human existence in clerical work.

- Can give racist and unparliamentary views even.

3. Conclusion

ChatGPT no doubt is creating a scare in the public eye, nevertheless it also will highlight the individuals with real talent and shall help in voicing out who as an individual is at his or her best since many of the answers assisted by ChatGPT is going to be identical than the person, who utilises his or her content, then the real part of the content the key for education will bring out the realities in education. The AI writing tools might be too homogenous, and can also become evident whether the article content is original or stolen from the ChatGPT, or through any other technology or by a human. ChatGPT also will bring informational content that could help the writers with as many assignments where authors will be released from the confinements of SEOs and would make the content getting to uniqueness as well as insightful so that newer floodgates could open. It will also clarify what humans need or what the needs of humans are, where content will become more human for not only reading but for producing.

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