Chat Generative Pre-Trained Transformer (ChatGPT): Boon or Bane – A Qualitative Meta-Synthesis

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Abstract: Interest in Artificial Intelligence (AI) has increased dramatically since the launch of ChatGPT (Generative Pre-trained Transformer) in November 2022. While ChatGPT has captured the imagination of students and educators alike, several concerns have also emerged (Torrey et al., 2023). In this study, the researcher conducted a qualitative meta-synthesis that focused mainly to the range of ChatGPT by obtaining interrelated data from peer-reviewed publication or journals searched through the academic databases and meta-search engines (Google Scholar, JSTOR, EBSCO, and OVID). With the initial samples of 21 ChatGPT studies, ten (10) were selected based on the inclusion criteria. Conceptual translation was used to express the research findings. The data from each theme were synthesized and integrated to create a synthesis that represented the category as a whole. ChatGPT is here to stay, and individuals would undoubtedly use it for the rest of their lives. Integrating ChatGPT in a variety of settings, including education, particularly in business courses, offers numerous opportunities to improve learning experiences, personalize instruction, and rethink educators' roles. This change, however, poses restrictions classified as intrinsic and usage-related issues that make assessments, digital literacy, and ethical considerations challenging. To realize ChatGPT's full potential in education and overcome these barriers, stakeholders should develop solutions for ethical and equitable adoption in a naturally based and proactive approach.

Keywords: Business course, ChatGPT (Generative Pre-Trained Transformer), Education, Peer-reviewed publication or journals, Meta-synthesis

I. Introduction

In 1950, Alan Turing proposed the Turing Test to assess artificial intelligence, aiming to make computers indistinguishable from humans in conversation. Despite successes like Eliza, these programs often prioritize passing exams over genuine intelligence. Recent advancements, such as OpenAI's ChatGPT, have addressed conversational limitations in chatbots. Released in 2022, ChatGPT stands out for its consistent and versatile responses. In education, particularly business courses, its potential impact has sparked research interest, with a focus on curriculum design implications. While existing studies offer general insights, this research aims to fill a gap by conducting a meta-synthesis to assess ChatGPT's specific benefits or drawbacks in the context of Business Administration courses at St. Paul University Iloilo.

II. Methodology

This study utilized a qualitative meta-synthesis design that is a contemporary development in qualitative inquiry that enhances the contribution of qualitative results to develop a more formalized knowledge (Zimmer, 2006). Atkins et al. (2008) added that qualitative meta-syntheses enhance understanding by integrating diverse qualitative studies, expanding comprehension of a phenomenon and its theoretical implications. Clemmens (2003) emphasizes that meta-synthesis goes beyond summarization, aiming to provide fresh interpretations of primary study findings. It involves reconceptualizing and interpreting these findings to generate insights that surpass those derived from individual studies, leading to a nuanced perspective on critical variables within the studied theme or phenomenon.

The research primarily took place at St. Paul University Iloilo's University Library, sourcing data from reputable scholarly databases and meta-search engines, including Google Scholar, JSTOR, EBSCO, and OVID. Strictly relying on legal and peer-reviewed publications, data collection and synthesis occurred in May 2023, followed by the analysis, which extended from May 2023 until the study's conclusion. This study abstained from participant involvement, relying solely on qualitative insights synthesized from related case studies and peer-reviewed articles obtained from scholarly databases. The comprehensive (representative) sampling approach was employed to establish the study's sample. Rather than amalgamating intent, the research justified its methodology by integrating data from distinct yet related qualitative studies with interpretive focus, aiming to explore the entire significant phenomenon of ChatGPT. The selection criteria for qualitative findings encompassed aspects such as research design, academic peer-review status, relevance to investigating ChatGPT, primary data utilization, recognized qualitative methods, English publication, and recency within the last five (5) years to ensure contemporary insights.

In the course of this qualitative study, Noblit and Hare's seven-phase combined methodological model was systematically employed. Phase 1 involved the identification of the phenomenon of interest, aimed at contributing scientifically to the extant knowledge. Subsequently, Phase 2 focused on the conceptual relevance, entailing a comprehensive search for pertinent studies across various databases and meta-search platforms. Phase 3 necessitated meticulous reading and re-reading of selected ChatGPT studies, informing the extraction of pertinent data and methodological considerations. Phase 4 encompassed the intricate process of determining inter-study relationships by identifying and grouping key themes. The ensuing Phase 5 involved the translation of studies into one another, facilitating the comparison of similarities and differences. In Phase 6, higher-level interpretation occurred, yielding new understandings through the synthesis of translated themes. The researcher, in Phase 7, further synthesized these interpretations to construct a cohesive line of argument or

synthesis, encapsulating the entire thematic category. The resultant findings, comprising conclusions, interpretations, and conceptual models, were disseminated through publication in scientific journals and monographs during the conclusive stage of the meta-synthesis process, facilitating knowledge transfer and ensuring methodical adherence to the prescribed methodological model. This systematic adherence aimed to effectively synthesize existing works, uncovering transcendent concepts and arguments.

III. Results and Discussion

The researcher meticulously devised inclusion and exclusion criteria to systematically discern and categorize the relevance of data, ensuring the acquisition of reliable and high-quality information for the study. Each information source underwent a thorough analysis based on the following criteria:

1. Qualitative research design.

2. Academic and peer-reviewed publication.

3. Investigation, exploration, and experiences related to the phenomenon of interest (ChatGPT) and its context.

4. Utilization of primary data.

5. Employment of recognized qualitative methods for data collection.

6. Publication in the English language.

7. Temporal limitation to the last five (5) years.

The acquired data were securely stored on a designated Google Drive within the College of Business and Information Technology (CBIT), accessible only through encrypted passwords provided to the faculty, researcher, and research adviser. Distinct codes were assigned to each published and peer-reviewed publication.

Table 1. Inclusion and exclusion criteria for literature search

Author	Step 1	Step 2			Step 3			Step 4
	False Positive	Quantitative	Illustrative	Qualitative	Source	Year Published	Publication Type	Decision
Haleem, A., et al				Case Analysis	Elsevier	2023	Research Report	Included
Williams, A.				Interview	University of Plymouth	2023	Journal	Included
Nguyen, K.	Irrelevant							Excluded
Debby, R.E., et al				Interview	University of Plymouth	2023	Journal	Included
Rampton, J.		Quantitative						Excluded
Duckworth, A., & Ungar, L.	Irrelevant							Excluded
Trust, T., et al				Case Analysis	CITE (Contemporary Issues in Technology and Teacher) Journal	2023	Research Report	Included
Sohail, S.S., et al				Case Analysis	SSRN (Social Science Research)	2023	Research Report	Included
Rathore, B.				Case Analysis	Eduzone Multidisciplinary Journal	2023	Journal	Included
Firat, M.		Quantitative						Excluded
George, S.			Revie					Excluded

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Awasthi, B.A.			Case Analysis	PUIIJ (Partners Universal International Innovation Journal)	2023	Journal	Included
Lund, B.D., & Wang, T.		Review					Excluded
Shoufan, A.	Quantitative						Excluded
Feller, B.	Quantitative						Excluded
El Baz, D.	Quantitative						Excluded
Huang, K.	Quantitative						Excluded
Budzianowki, P., & Vulić, I.		Review					Excluded
Kokku, R. et al			Case Analysis	International Society of the Learning Sciences	2018	Conference Paper	Included
López-Meneses, E., et al			Case Analysis	MDPI (Multidisciplinary Digital Publishing Institute)	2023	Research Report	Included
Lo, L.			Case Analysis	MDPI (Multidisciplinary Digital Publishing Institute)	2023	Journal	Included

Table 1 delineates the applied Inclusion and Exclusion Criteria. An initial screening resulted in the exclusion of two (2) ChatGPT articles deemed false positives due to their irrelevant scope for the meta-synthesis. The remaining studies were categorized into quantitative, qualitative, or illustrative studies (conceptual work or review articles). Adhering to qualitative meta-synthesis best practices, quantitative and illustrative studies were excluded. With a focus on exploring ChatGPT's implications in business courses, the ten (10) remaining qualitative case studies underwent screening to ensure they were sourced from academic databases and meta-search engines, specifically addressing ChatGPT's opportunities, challenges, implications, and recommended improvements or actions. All qualitative case studies successfully passed the screening process. From the initial sample of 21 ChatGPT studies, ten (10) were judiciously selected for inclusion in this meta-synthesis.

The research endeavor, titled "ChatGPT: Boon or Bane — A Meta-Synthesis," was conducted with the primary objective of discerning the implications of ChatGPT, evaluating its potential benefits or disadvantages. Data collection transpired diligently from May 4, 2023, to May 12, 2023, adhering rigorously to ethical norms throughout the process. Subsequent to this, Noblit and Hare's Seven-Phase Process was systematically employed, delineating the comprehensive approach to obtaining qualitative case studies pivotal for the meta-synthesis. The process is expounded below:

1. **Phenomenon Identification:** The researcher initiated the study by formulating crucial research questions pertaining to the phenomenon of interest, i.e., ChatGPT. These inquiries, designed to strike a balance between broad interest and manageable scope, guided subsequent investigations.

2. **Inclusion and Exclusion Criteria:** Rigorous criteria were established to discern relevant research for inclusion, guided by the centrality of ChatGPT to the qualitative method. In alignment with the study's focus on the implications of ChatGPT in Business courses, criteria encompassed challenges, opportunities, curriculum design implications, and recommended improvements or actions. Qualitative studies in English published on or after 2022 were deemed pertinent, considering the evolving nature of ChatGPT.

3. **Database Searches:** A thorough search yielded twenty-one (21) ChatGPT studies within the education and business

course domain. After screening, ten (10) qualitative studies met the criteria, as detailed in Table 1.

4. **Active Reading:** This phase involved meticulous reading and re-reading of each acquired study, characterized by active engagement to appraise, identify, extract, organize, and compare information. Extracted data were systematically, with subsequent categorization through coding.

5. **Thematic Analysis:** Key concepts were classified into distinct categories, namely benefits, opportunities, challenges, implications, and recommended improvements or actions, as outlined in Tables 2. The researcher scrutinized themes, discerning correlations to develop final categories for detailed description and transparency in the process.

6. **Conceptual Translation:** Employing conceptual translation, the researcher translated essential themes into the context of each study, enhancing the interpretative depth (Cochrane, 2017). High-level interpretation ensued, wherein the researcher synthesized data across themes to construct a cohesive line of synthesis reflecting the overarching category. This facilitated the development of conceptual models based on literature review and meta-synthesis.

7. **Emergent Themes:** In the conclusive phase of synthesis, the researcher, guided by judgment and insights, cultivated final emergent themes, as documented in Table 2. This subjective phase encapsulated the culmination of the meta-synthesis, integrating findings and insights derived from the selected articles.

This comprehensive dissemination strategy also serves as an evaluative analysis of internal components of innovation, furnishing educational professionals at St. Paul University Iloilo's College of Business and Information Technology with insights conducive to formulating a well-rounded curriculum design, thereby ensuring the production of globally adept graduates. Simultaneously, the amassed data from this study can potentially serve as a foundational resource for future researchers, contributing substantively to informational pursuits within the academic domain.

Table 2. Thematic Analysis of ChatGPT in Education

CATEGORY	INITIAL THEMES GENERATED	FINAL EMERGENT THEMES	AUTHORS
Benefits	• **Improved Learning Outcomes:** Enhanced understanding **retention** of material. • **More Interactive Experiences:** Increase engagement through interactive tools. • **Enhanced user experience:** Personalized feedback and support.	• **Enhanced Learning Experience:** Overall improvement in student engagement and learning outcomes through interactive and personalized learning tools.	Haleem A., et al William, A. Trust, T., et al Rathore, S.S., et al Awasthi, B.A. Kokku, R., el al Lo, L.
Opportunities	• **Enhanced Engagement:** Greater student participation and interest in learning. • **Personalized Learning:** Tailored educational experiences based on individual needs. • **Greater Accessibility to Resources:** Access to resources and support beyond traditional classroom settings. • **Efficient Troubleshooting:** Quick solution for common issues	• **Enhanced Learning Experience**: Increases engagement and personalized support. • **Access to Resources:** Better availability of educational materials and support.	Haleem A., et al William, A. Debby, R.E., et al Rathore, S.S., et al Awasthi, B.A. Kokku, R., el al
Challenges	• **Privacy Concerns:** Issues related to data security and user privacy. • **Technical Issues:** Problems such as system failures and usability issues. • **Technical Difficulties:** Challenges with integrating technology into existing systems. • **Bias in Responses:** AI responses may reflect or perpetuate biases. • **Over-Reliance on AI:**	• **Technology Integration Issues:** Difficulties integrating AI tools into existing educational framework. • **Bias and Technical Challenges:** Concerns over AI biases and technical limitations affecting effectiveness.	Haleem A., et al Debby, R.E., et al Trust, T., et al Sohail, S.S., et al Rathore, S.S., et al Awasthi, B.A. López-Meneses, E., et al Kokku, R., el al

	Dependence on technology potentially reducing critical thinking		Lo, L.
Implications	• **Need for Better Integration into Curricula:** AI tool must align with educational goals. • **Potential to Transform Teaching Methods:** AI could significantly change traditional teaching approaches. • **Impact on Decision-Making:** Influence on how educational decisions are made.	• **Curricular Integration:** Ensuring AI tools are effectively incorporated into teaching strategies. • **Transformative Potential:** The ability of AI to redefine teaching and learning processes.	William, A. Trust, T., et al Sohail, S.S., et al Rathore, S.S., et al Awasthi, B.A. López-Meneses, E., et al Lo, L.
Recommended Improvement or Actions	• **Increase Teaching Training:** Professional development to better utilize AI tools. • **Improve Privacy Measures:** Strengthening data Protection protocols. • **Invest in Advanced Technology:** Upgrading to more sophisticated AI Systems. • **Address Bias Issues:** Implementing measures to reduce AI bias. • **Regular Updates:** AI Algorithms current and effective.	• **Professional Development Needs:** Enhancing teacher skills for effective use of AI. • **Data Security Measures:** Implementing robust privacy and security practices. • **Algorithm Updates:** Ensuring continuous improvement and relevance of AI tools.	Haleem A., et al Trust, T., et al Sohail, S.S., et al Rathore, S.S., et al Awasthi, B.A. López-Meneses, E., et al Lo, L.

Table 2 presents a comprehensive synthesis of data obtained through extensive literature searches on ChatGPT's impact in various educational realms, particularly business courses. The researcher's nuanced understanding highlights ChatGPT as a transformative innovation, sparking debates on its educational and societal implications. Thematic content analysis underscores its potential for personalized learning and advanced writing support, yet acknowledges inherent risks like misinformation and bias. Aligning with Kranzberg's perspective, the study emphasizes that technology, including ChatGPT, is not inherently good or bad but necessitates a reflective examination of its integration into daily professional practices. The enduring presence of ChatGPT urges stakeholders to proactively educate themselves on its moral and ethical use, acknowledging both benefits and challenges in its integration into higher education and workplaces.

The incorporation of AI into educational environments holds transformative potential, offering significant enhancements to student engagement, personalized learning experiences, and access to a broader range of resources. AI tools can improve learning outcomes by tailoring educational content and support to individual needs, thus fostering a more interactive and responsive learning environment. However, realizing these benefits involves addressing several critical challenges. Effective integration of AI into existing educational frameworks presents difficulties, including alignment with current curricula and overcoming technical limitations. There are also concerns about AI biases, which can affect the fairness and accuracy of the educational experience. To mitigate these issues, educational institutions must develop robust strategies for incorporating AI in a way that complements rather than disrupts established teaching practices. Moreover, the success of AI in education depends on continuous advancements in technology, necessitating regular updates to algorithms to maintain relevance and effectiveness. Data security is a paramount concern, requiring stringent measures to protect sensitive educational information from breaches and misuse. Professional development for educators is crucial, as teachers need to acquire new skills and knowledge to effectively utilize AI tools in their teaching. This ongoing training is essential to ensure that AI integration is both effective and ethically sound. In summary, while AI has the potential to redefine educational processes and enhance learning experiences, its successful implementation hinges on addressing integration challenges, mitigating biases, ensuring data security, and fostering continuous professional development for educators. Balancing these factors is key to harnessing AI's transformative power in education.

IV. Conclusion

The omnipresence of ChatGPT is undeniable, destined to be an enduring presence in the lives of individuals. Its integration across diverse domains, particularly in education, offers myriad opportunities to enhance learning experiences, customize instruction, and redefine the roles of educators. However, this transformative transition is not without constraints, manifesting as intrinsic and usage-related challenges that impede assessments, digital literacy, and ethical considerations. Overcoming these barriers and formulating ethical solutions is imperative for unlocking the full educational potential of ChatGPT. To propel the comprehensive utilization of ChatGPT in education, addressing these impediments is paramount. Future research

endeavors should concentrate on exploring the diverse applications and implications of ChatGPT in educational settings. Additionally, efforts should be directed toward devising effective frameworks that seamlessly integrate AI into curricula, evaluation practices, and instructional methodologies. While the thematic content analysis conducted in this study offers valuable insights, the landscape of future research could benefit from a broader spectrum of qualitative and quantitative methodologies. This would deepen our understanding of how ChatGPT influences the instructional process. This study underscores the groundbreaking prospects AI technologies like ChatGPT hold for students and universities. It underscores the necessity of mitigating potential risks and unintended consequences, emphasizing the imperative of ongoing discourse and research to ensure the judicious integration of ChatGPT in education. Furthermore, this research advocates for continued exploration and development to fully harness ChatGPT's vast potential across diverse application domains, offering both scholars in the field and users a richer understanding of its capabilities.

V. Recommendation

In addressing the integration of ChatGPT within higher education, various responses have emerged, ranging from strict restrictions to its inclusion in curricula. A nuanced approach is advocated, moving beyond a policy focused on detecting academic misconduct. The researcher proposes a student-centric paradigm for teaching and learning assessments, aligning learning objectives, pedagogical approaches, and assessments constructively. The following preliminary recommendations are outlined for educators, students, and higher education institutions:

Recommendations for Educators:

1. Design assessments fostering creative and critical thinking, avoiding overly standardized assignments.
2. Incorporate in-class assessments, presentations, digital forms, and activities promoting social and critical thinking skills.
3. Implement authentic assessments reflecting real-world scenarios, testing students' skills and knowledge in meaningful contexts.
4. Foster an environment valuing students' voices and opinions, emphasizing authenticity in assignments.
5. Encourage the use of creative learning experiences to motivate students and provide a deeper understanding.

Ideally, educators should cultivate an environment where students actively engage in their learning, recognizing the intrinsic value of the learning process.

Recommendations for Students:

1. Familiarize themselves with academic integrity policies and understand the repercussions of academic misconduct.
2. Enhance digital literacy, master AI tools like ChatGPT to bolster employability.
3. Utilize ChatGPT as a tool to improve writing skills and generate ideas rather than resorting to text duplication.
4. Exercise critical judgment, use high-quality sources, and discern misinformation.
5. Cultivate extensive reading habits to enhance critical and creative thinking.
6. Acquire skills in using AI language tools like ChatGPT to address real-world problems.

Recommendations for Higher Education Institutions:

1. Integrate digital literacy education into the curriculum, incorporating AI technologies such as ChatGPT.
2. Avoid creating an environment where faculty is overburdened, hindering student engagement and motivation.
3. Conduct faculty training on AI tools, specifically ChatGPT.
4. Provide academic integrity training for students.
5. Ensure curriculum coherence and relevance to avoid student disengagement.
6. Update academic integrity policies and honor codes to encompass the use of AI tools.
7. Develop clear guidelines for the ethical use of ChatGPT in learning and teaching.
8. Encourage, support, and disseminate research on ChatGPT's impact on learning and teaching.

These recommendations aim to explore the multifaceted dimensions of learning, encouraging individuals to become reflective and innovative thinkers in the digital era.

References

1. Abdel-Messih, M.S. and Kamel Boulos, M.N. (2023). Chatgpt in clinical toxicology. Retrieved May 4, 2023, from https://doi.org/10.1016/j.tbench.2023.100089.
2. Akgun, S., & Greenhow, C., (2022). Artificial Intelligence in education: Addressing ethical challenges in K-12 settings. AI and Ethics, 2(3), 431-440. Retrieved May 4, 2023, from http://doi.org/10.1007/s43681-021-00096-7.
3. Aljanabi, M., Ghazi, M., Ali, A.H., Abed, S.A., et al. (2023). Chatgpt: Open possibilities. Iraqi Journal For Computer Science and Mathematics. Retrieved May 4, 2023, from http://dx.doi.org/10.2339/ssrn.5562927.
4. Atkins S., Lewin S., Smith H., Engel M., Fretheim A., & Volmink J. (2008). Conducting a meta-ethnography of qualitative literature: lessons learnt. Retrieved May 3, 2023, from https://bit.ly/4I52TwL.
5. Awasthi, B.A. (2023). Retrieved May 5, 2023, from https://doi.org/10.5821/zenodo.7644359.
6. Budzianowski, P., & Vulić, I. (2019). Hello, it's GPT-2--how can I help you? towards the use of pretrained language models for task-oriented dialogue systems. Retrieved May 5, 2023, from https://www.researchgate.net/deref/https3doi.org2F10.48550.
7. Cao, Y., Li, S., Liu, Y., Yan, Z., Dai, Y., Yu, P.S., and Sun, L. (2023). A comprehensive survey of ai-generated content (aigc): A history of generative ai from gan chatgpt. Retrieved May 5, 2023, from arXiv preprint

arXiv:2303.04226.

8. Clemmens, D. (2003). Adolescent Motherhood. A Meta-Synthesis of Qualitative Studies. Retrieved May 3, 2023, from https://bit.ly/5VWqPXN.

9. Currier, J. (2022). NFX's generative tech open source market map. Retrieved May 4, 2023, from http://www.nfx.com/post/generative-ai-tech-market-map.

10. Debby, R.E., et al (2023). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. Retrieved May 6, 2023 from, http://doi.org/10.1080/14703297.2023.219048.

11. Deng, J. and Lin, Y. (2022). The benefits and challenges of chatgpt. An overview. Frontiers in Computing and Intelligent Systems, 2(2): 81-83.

12. Duckworth, A., & Ungar, L. (2023). Op-Ed: Don't ban chatbots in classrooms — use them to change how we teach. Retrieved May 6, 2023, from https://www.latimes.com/opinion/story/2023-01-19/chatgpt-ai-education-testing-teaching-change.

13. Elani, F.R. and Rachid, L. N. (2023). Ai-generated research paper fabrication and plagiarism in the scientific community. Retrieved May 4, 2023, from http://dx.doi.org/10.2039/ssrn.6762987.

14. Feller, B. (2023). Artificial Intelligence for Security Practitioners: A Conversation with ChatGPT. Retrieved May 5, 2023, from https://www.jstor.org/stable/resrep49332.

15. Firat, M. (2023). What ChatGPT means for universities: Perceptions of Scholars and Students. Retrieved May 6, 2023, from https://journals.sfu.ca/jalt/index.php/jalt/article/view/779.

16. George, A. (2023). ChatGPT and the Future of Work: A Ccomprehensive Analysis of AI's Impact on Jobs and Employment. Retrieved May 5, 2023, from https://www.researchgate.net/publication/371811652_ChatGPT_and_the_Future_of_Work_A_Comprehensive_Analysis_of_AI's_Impact_on_Jobs_and_Employment.

17. Haleem, A., et al (2022). An Era of ChatGPT as a significant futuristic support tool: A study on features, abilities , and challenges. Retrieved May 4, 2023,from https://doi.org/1016/j.tbench.2023.10089.

18. Kokku, R., et al (2018). Augmenting classrooms with AI for personalized education. Retrieved May 6, 2023, from https://link.springer.com/article/10.1007/s10639-023-12145-0.

19. Lo, L. (2023).Lo, L. (2023). Immediate action must be taken to mitigate the impact of ChatGPT on education. Retrieved May 4, 2023, from TESL-EJ, 27(1), 10-15.

20. López-Meneses, E., et al (2023). Impact of the Implementation of ChatGPT in Education: A Systematic Review. Retrieved May 6, 2023 from https://www.mdpi.com/2073-431X/12/8/153

21. Lund, B.D. & Wang, T. (2023). ChatGPT: How may AI and ChatGPT Impact Academia and Libraries? Retrieved May 6, 2023, from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=433341.

22. NewsGuard (2023). The Next Great Misinformation Superspreader: How ChatGPT Could Spread Toxic Misinformation At Unprecedented Scale. Retrieved May 4, 2023, from http://www.newguardtech.com/misinforamtion-monitor/jan-2023/.

23. OpenAI (2023). ChatGPT: Optimizing language models for diaglogue. Retrieved May 4, 2023, from http://openai.com/blog/chatgpt.

24. OpenAI. (2023). New AI classifier for indicating AI-written text.Retrieved May 4, 2023, from http://openai.com/blog/new-ai-classifier-for-indicating-ai-written-text/.

25. Rampton, J. (2023, April 25). After launching in late 2022, ChatGPT has become all the rage. Using the cutting-edge artificial intelligence chatbot, you can do everything from holding a conversation to writing an entire term paper in minutes. Retrieved May 6, 2023, from https://www.linkedin.com/pulse/advantages-disadvantages-chatgpt-john-rampton?trk=pulse-article_more-articles_related-content-card.

26. Rathore, B. (2023). Future of AI & Generation Alpha: ChatGPT beyond Boundaries. Retrieved May 4, 2023, from https://www.eduzonejournal.com/index.php/eiprmj/article/view/254/214

27. Sallam, M. (2023). The utility of chatgpt as an example of large language models in healthcare education, research and practice: Systematic review on the future perspectives and potential limitations. Retrieved May 4, 2023, from medRxiv, pages 2023-02.

28. Shoufan, A. (2023). Exploring Students' Perception of ChatGPT: Thematic Analysis and Follow-Up Survey. Retrieved May 5, 2023 from https://doi.org/10.1109/ACCESS.2023.3268224

29. Sohail, S.S., et al. Decoding ChatGPT: A Taxonomy of existing research, current challenges, and possible future directions. Retrieved May 6, 2023 from http://doi.org/10.1016/jksuci.2023.101675.

30. Tate, T.P., Doroudi, S., Ritchie, D., Xu, Y., & Uci, M.W. (2023). Education research and AI-generated writing: Confronting the coming tsunami. Retrieved May 5, 2023, from http://doi.org/10.35542/osf.io/4mec3.

31. Tlili, A., Shehata, B., Adarwah, M.A., Bozkurt, A., Hickey, D.T., Huang, R., & Agyemang, B. (2023). What if the devil is my guardian angel: Chatgpt as a case study of using chatbots in education.Smart Learning Environments. Retrieved May 3, 2023, from4 https://bit.ly/29EwvRP.

32. Trust, T., et al (2023). ChatGPT in Education: Addressing ethical challenges and its implication. Retrieved from May 6, 2024 from https://doi.org/10.1007/s43681-021-096-7.