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Academic Evolution in the Age of ChatGPT: An In-depth Qualitative Exploration of its Influence on Research, Learning, and Ethics in Higher Education

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Abstract

This study delves into the potential advantages and challenges presented by the implementation of the ChatGPT within the realm of higher education. Specifically, it endeavours to shed light on the transformative effects of ChatGPT on the research and learning processes. Moreover, this study explores the intricate issues surrounding academic integrity, ethics, and regulatory concerns in this context. Adopting a qualitative research design, the study engaged in semi-structured interviews with 75 esteemed academicians hailing from higher education institutions in North Cyprus. The outcomes of this research endeavour reveal a spectrum of ways in which ChatGPT can augment educational productivity, learning experience, creativity, and idea generation. Nevertheless, it underscores the importance of meticulous consideration of ethical aspects pertaining to academic honesty and the potential over-reliance on ChatGPT. The findings not only offer insights into the opportunities and challenges linked with ChatGPT's integration into higher education, but also advocate for the responsible and ethical utilisation of AI technologies within academic settings. This study substantially contributes to the expanding body of research on the incorporation of artificial intelligence into education. It uniquely focuses on the ChatGPT, an innovative AI-based language model, within the context of higher education. The study's qualitative research methodology, characterised by its exploratory nature, provides a nuanced and comprehensive understanding of the impact of ChatGPT on learning and research writing and offers a wealth of valuable insights intended to assist educators, researchers, institutions and policymakers in their endeavours to seamlessly integrate AI technologies into their educational practices.

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Introduction

The rise of digital technologies and artificial intelligence (AI) has ushered in profound transformation across various industries, including marketing, healthcare, agriculture, and education. In the realm of higher education, the digital revolution has become an integral and enduring force. Notably, the COVID-19 pandemic has accelerated the adoption of digital tools such as mobile technologies and online meeting platforms, making them indispensable (Agbaglo & Bonsu, 2022).

Recently, a new AI tool has garnered significant attention for its application in both educational and non-educational contexts. OpenAI's Chat Generative Pre-trained Transformer (ChatGPT) is a formidable model with staggering 175 billion parameters. It is a cohort of natural language processing (NLP) models designed to facilitate human-computer interactions (Maicher et al., 2023). ChatGPT is capable of generating responses in a conversational style based on user input, showcasing its versatility across a wide array of topics and industries (Ray, 2023).

However, concerns have arisen regarding the credibility, acceptability, and relevance of ChatGPT in academic circles. These concerns center on their abilities, as highlighted by Oguz et al. (2023), to assist in the creation of academic papers (Dwivedi et al., 2023) and the composition of comprehensive discharge summaries (Patel & Lam, 2023). These apprehensions raise questions about the integrity of research conducted in the educational and other professional domains. Malik et al. (2023) pointed out its limitations, noting deficiencies in common sense reasoning tasks and raising concerns about its language coverage (Bang et al., 2023).

Previous research has indicated that AI-powered chatbots offer a wide array of advantages in the field of education (Kooli, 2023; Mohamed, 2023). These chatbots enable students to access information from diverse sources and at various times, provide personalised assistance by recalling past interactions, and offer prompt feedback that simulates human interaction (Chen et al., 2023; Ilieva et al., 2023). Furthermore, owing to their unique capabilities, chatbots empower students to manage their knowledge and effectively perform educational tasks (Al-Sharafi et al., 2022).

A growing body of research has examined the perception of university and on the use of ChatGPT in academia (Firat, 2023; Singh et al., 2023). Early studies suggested that ChatGPT can bring numerous benefits and concerns in the educational context. For instance, Sallam (2023) demonstrated that the ChatGPT can enhance scientific writing skills among healthcare students and provide personalised learning experiences. Conversely, Sallam (2023) also pointed out that the application of ChatGPT in healthcare education raises issues related to copyright, plagiarism, and ethics.

It has been observed that there exists a noticeable gap in the current literature that predominantly centers on the viewpoints of students' and academic educators regarding ChatGPT and its future implications. However, we acknowledge that students and researchers play pivotal roles as key stakeholders who aspire to integrate ChatGPT into their higher education and research experiences. Given the recent introduction of this AI tool, our understanding of the acceptance and utilization of this innovative technology by academic researchers remains limited.

Hence, the objective of this study was to gauge the perceptions of both students and researchers concerning the impact of ChatGPT on research and learning activities. Additionally, we aimed to identify potential solutions for the effective incorporation of the ChatGPT as an educational tool. Through this research endeavor, our aim was to bridge the existing gap in scholarly knowledge and contribute to a more comprehensive understanding of AI's role of AI in education.

Furthermore, obtaining insights into how students and academic researchers perceive ChatGPT is of utmost importance as it represents the primary users and beneficiaries of this technology. The knowledge acquired in this study offers valuable insights to educational practitioners, researchers, and policymakers. This will assist them in comprehending the ramifications of integrating ChatGPT into educational environments and in promoting responsible and efficient utilization of this transformative technology. Consequently, this study is designed to address the following research inquiries:

RQ1. How does the utilization of ChatGPT influence students' educational achievements?

RQ2. What are the consequences of incorporating ChatGPT into scholarly research practices?

RQ3. What ethical considerations arise in connection with the application of ChatGPT within academic contexts?

The remainder of this paper is structured as follows: Section 2 provides a comprehensive literature review. This is followed by section 3, which outlines the methodology employed in this study. Section 4 presents the results and findings of the study, and Section 5 provides a comprehensive discussion of the study's implications. The ensuing discussion encompasses the conclusions, Implications, limitations, and future research directions encapsulated in Section 6.

Background and Literature Review

Artificial Intelligence and the Evolution of Chat Generative Pre-trained Transformer

Text prediction models, although lacking true artificial intelligence and wisdom, have been a part of our digital landscape for some time (Ray, 2023). A notable illustration of this is Gmail's intuitive feature that suggests the next word or phrase while composing the emails. In contrast, ChatGPT, developed by the renowned organization OpenAI, represents a significant leap in the field of natural language processing. It is an offspring of the GPT-3 Language Learning Model (LLM), which, in 2019, secured a momentous one billion USD investment from tech giant Microsoft to further enhance its generative capabilities.

Since its inception, ChatGPT has witnessed a meteoric rise in OpenAI's valuation, soaring to over 20 billion USD. The platform's astounding growth is exemplified by the fact that it amassed one million users within five days of its launch, and reached a staggering 100 million users in just three months. To provide context, this achievement outpaces the timelines of popular platforms such as TikTok (nine months), Instagram (30 months), and Spotify (55 months) to reach the same user milestone (Malik et al., 2023).

The GPT-3 model, the intellectual foundation of ChatGPT, has diligently combed the Web for over eight years, amassing a vast corpus of digital books, websites, scholarly papers, and news

articles. From this extensive dataset, ChatGPT derives its prowess, boasting approximately 5 billion tokens and colossal 175 billion parameters, which empowers the model to make contextually informed decisions (Ray, 2023).

Initially launched as a free web-based service, ChatGPT has recently transitioned to a freemium model, reflecting its growing significance and potential within the domains of artificial intelligence and natural language understanding. This transformation underscores the ever-evolving landscape of AI-driven technologies in academia and elsewhere.

ChatGPT in Education

In the realm of education, the progress of AI systems has resulted in a profound transformation in how students acquire knowledge and access information (Williamson & Eynon, 2020). ChatGPT has captured the attention of educators, with some viewing it as a potential catalyst for revolutionizing future learning and research, while others perceive it as a potential threat owing to its content generation capabilities, raising concerns about potential student misuse (Grassini, 2023; Sallam, 2023).

ChatGPT's exceptional conversational and language comprehension abilities empower it to generate content based on user input, offering a myriad of advantages for students. It facilitates seamless access to information and knowledge and enriches the learning experience while saving educators' valuable time by providing assignment feedback, homework assistance, and prompt answers to student inquiries. Its versatility extends to precise text translation across languages, thereby contributing to the enhancement of students' writing skills. With its conversational capabilities, ChatGPT has become a supportive learning companion, tailoring personalised experiences to individual students' abilities and performance levels. Additionally, it serves as an invaluable assessment tool, enabling students to monitor progress, seek solutions, and adjust their support levels based on their performance.

Another remarkable feature of ChatGPT is its ability to help researchers streamline various aspects of their work. ChatGPT can assist in literature review processes by summarizing and extracting key information from a vast body of academic literature, saving valuable time and enabling researchers to stay updated on relevant studies (Malik et al., 2023). It can also aid in generating initial drafts of research papers, proposals, and manuscripts, providing a foundational structure upon which researchers can refine and expand (Dwivedi et al., 2023). Furthermore, ChatGPT can facilitate data analysis by helping formulate research questions, generate code snippets for statistical analysis, and offer insights into data interpretation (Lingo, 2023). Additionally, researchers can leverage ChatGPT to engage in interdisciplinary discussions, brainstorm research ideas, and collaborate with peers in diverse fields. Overall, ChatGPT serves as a versatile tool for enhancing efficiency and productivity in academic research (Malik et al., 2023).

However, it is imperative to acknowledge the ethical concerns associated with the application of the ChatGPT in the educational context. Numerous ethical and academic integrity issues may emerge from their use (Cotton et al., 2023; Eke, 2023). One significant concern relates to potential

plagiarism, as ChatGPT might inadvertently generate content resembling existing material, potentially leading students to unknowingly violate academic integrity standards by failing to correctly attribute the generated content.

Moreover, the accuracy and reliability of the information provided by ChatGPT poses critical concerns. Although it can generate responses to a wide array of questions, there is a risk that the responses may be significantly inaccurate or biased, particularly when the underlying training data contain errors or biases. Such inaccuracies can have detrimental consequences for academic research and teaching, if incorrect or biased information is disseminated. Previous studies have highlighted instances where ChatGPT produces inaccuracies in output, such as references, citations, mathematical expressions, or scientific conclusions (Foroughi et al., 2023; Wardat et al., 2023).

Previous Studies on AI Technologies in Education

In the realm of educational technology, the application of artificial intelligence has received considerable attention, with the promise of substantial improvements in the learning experience. Several studies including those conducted by Fiialka et al. (2023), Nazari et al. (2021), and Ngo (2023) have lauded the integration of AI, emphasizing benefits such as increased motivation, engagement, and heightened interest in learning. Notably, these studies primarily focused on smart AI tools, such as Smart Sparrows, ALEKS, Knewton, Grammarly, InstaText, and Codecademy, highlighting their success in fostering personalised learning paths, providing instant feedback, and facilitating task customization (Adiguzel et al., 2023). While these advancements have demonstrated positive strides in learning outcomes and user engagement, a notable gap remains in comprehending the nuanced experiences of students when utilizing ChatGPT, specifically in educational settings.

Building upon the findings of previous studies, this research delves into three critical dimensions regarding ChatGPT's integration in education, aligning with the research questions addressed. First, our investigation aimed to discern how the adoption of ChatGPT influences students' educational achievements (RQ1). Second, we seek to comprehend the implications of integrating ChatGPT into scholarly research practices, thereby exploring its consequences for research endeavors (RQ2). Finally, our inquiry delves into ethical considerations stemming from the application of ChatGPT within academic contexts, shedding light on pertinent ethical concerns (RQ3). By critically examining the existing literature on AI in education and strategically aligning our research questions, this study aims to uncover nuanced insights into the impact of ChatGPT, providing a holistic perspective crucial for educators, researchers, and policymakers for its responsible integration into educational frameworks.

Method

The current study adopted a qualitative research design, employing semi-structured interviews as the primary data collection method (Kallio et al., 2016). Semi-structured interviews are particularly well suited for exploratory studies aimed at elucidating initial insights into phenomena (Galletta, 2013). They serve as valuable approaches for developing a theoretical foundation for

emerging topics (Barriball & While, 1994). In this study, interviews were conducted with 75 students and research assistants affiliated with the top three universities in Northern Cyprus namely Eastern Mediterranean University, Near East University and Cyprus International University. Participants were identified and recruited via email outreach. While there are no strict guidelines for determining the ideal number of participants for qualitative research, researchers commonly suggest that a participant range of 10–50 individuals is often considered adequate. This adequacy depends on the nature of the research and the specific inquiries pursued (Creswell & Creswell, 2018). The prospective participants received emails outlining the study's objectives, the confidential nature of their responses, the expected time commitment for the interview, and the voluntary nature of their involvement. Additionally, the participants were informed that the interviews would be recorded for transcription purposes. Prior to commencing each interview, a comprehensive introduction was provided to elucidate the purpose of the study and ensure the confidentiality of their responses. The participants were also given the opportunity to seek clarification or pose questions related to the study as suggested by (Gill et al., 2008). These interviews were conducted individually, either in person or through online meetings, in September 2023. All collected data were anonymised to safeguard participant privacy. Table 1 presents a snapshot of the respondents' demographic profiles, indicating a cohort of thirty-nine males and thirty-six female's participants, primarily aged > 25 years. The participants were mixed of undergraduate, Masters and PhD academicians with more than two years of academic and research experience.

Table 1.

Demographic profiles of the respondents `

Factor		Frequency	Percentage %
Gender	Male	39	52
	Female	36	48
Age in Years	25 – 35 Years	34	45.3
	36 – 45 Years	24	32
	Above 46 Years	17	22.7
Education	Undergraduate	17	22.7
	Masters	40	53.3
	PhD / Research Assistant	18	24
Academic and Research Experience	2 Years or less	16	21.3
	3 – 6 Years	19	25.3
	6 Years and above	40	53.4
Faculty	Engineering	19	25.3
	Medicine	13	17.3
	Applied Sciences	15	20
	Pharmacy	16	21.4
	Other	12	16
Region	Lefkosa	35	46.7
	Famagusta	22	29.3
	Kyrenia	18	24
		N = 75	100%

The demographic profiles of study participants in Table 1 above provided a comprehensive overview of the diverse groups involved in the research. The gender distribution showed a relatively balanced representation of male and female participants, ensuring a broad perspective. In terms of age, participants were distributed across various age groups, with a significant proportion falling within the 25-45 years range, indicating a mix of early-to mid-career professionals. The participants' educational backgrounds varied, with a substantial number holding master's degrees, which aligned with the academic context of the study. Additionally, the participants' academic and research experience spans a wide spectrum, with the majority having more than six years of experience, showcasing their expertise. Various faculties and university regions are well represented, underlining the study's inclusivity and the potential applicability of the findings across different academic domains and geographic regions. This diverse demographic composition ensures that the study's outcomes consider a range of perspectives and experiences, thus enhancing the richness and relevance of the research findings as noted by (Hennink et al., 2020).

Furthermore, the interview questions encompassed a combination of closed and open-ended questions. These questions were designed to delve into the participants' experiences with ChatGPT, probing for insights into any encountered challenges, strategies for integrating the model into their work, and recommendations for potential enhancements. Following the completion and recording of the interviews, transcription was carried out using two distinct tools, namely Otter4 and Temi5. To ensure the utmost accuracy of the transcribed data, a meticulous verification process was conducted by two independent researchers. This verification procedure entailed the rectification of errors and omissions introduced by transcription software as suggested by (Mergenthaler & Stinson, 1992). Subsequently, a comprehensive thematic analysis was employed to scrutinize the interview transcripts, aiming to unearth the prevalent patterns and themes within the data, as recommended by (Maguire & Delahunt, 2017).

Data Analysis

In this study, the authors utilised a qualitative approach, specifically implementing an inductive coding method to analyze the collected data. The choice of a qualitative approach is driven by its suitability for capturing the nuanced aspects of users' reactions and responses to emerging technologies, trends, and phenomena (Mogavi et al., 2024). The inductive method proved particularly fitting for our investigation because of the scarcity of prior empirical research on students’ perspectives on the application of ChatGPT for research and learning in higher education. Inductive coding enables researchers to extract themes from data without being swayed by pre-existing notions or presuppositions (Mogavi et al., 2024; Blandford et al., 2016).

We leveraged diverse digital tools to optimize the coding process. Microsoft Excel played a crucial role in efficiently organizing and managing the data. Additionally, we harnessed the capabilities of Atlas.ti, a qualitative data analysis software, to search for keywords, code data, and write reports. Furthermore, Jamboard, a virtual whiteboard, facilitated brainstorming sessions and visually represented the emerging themes. The seamless integration of these tools ensures a thorough and methodical examination of the dataset.

Analysis Pipeline. To identify prevailing themes within the dataset, we employed Braun and Clarke's (2006) six-phase framework. This systematic process involved familiarizing ourselves with the data, generating initial codes, conducting a thorough search for emerging themes, reviewing and refining themes, defining and naming themes, and finally, presenting a report of identified themes. To ensure a holistic understanding of people's opinions and minimize inadvertent biases, we concurrently analysed the data from all participants, an approach akin to the methodology advocated by Mogavi et al. (2024).

Three individuals, who were identified as the authors of this study, engaged in a collaborative and iterative coding process to conduct a thorough thematic analysis. The inclusion of the third author served a specific role to meticulously address any potential inconsistencies that might have arisen between the initial analyses conducted by the first two authors.

During the initial coding phase, each of the three coders individually examined the data and created a preliminary set of codes. Subsequently, the coders convened remotely using the throughput Zoom meeting to review the individual codes, resolve any discrepancies in coding, and reach a consensus on the preliminary set of codes. Following this collaborative session, we compiled a codebook containing a concise summary of codes and illustrative data extracts (quotes) for each code. The purpose of the codebook is to provide a comprehensive overview of codes and ensure intercoder reliability.

We conducted five distinct coding sessions over a span of 42 days, followed by group discussions to reach a consensus. In each session, we refined and consolidated the codes, merging some while distinguishing others into cohesive concepts. Concurrently, we identified the emerging themes within these codes. After completing the fifth round of coding and discussion, we crafted a comprehensive codebook that encapsulated vital information from the data and addressed our research questions.

In the concluding phase of the thematic analysis, we employed Fleiss' Kappa to evaluate and report the level of consensus among all coders. The Kappa value was determined using the reliability analysis feature in the IBM SPSS Statistics10 application. The study yielded a Kappa score of $\kappa = 0.85$, indicating a substantial level of agreement among the team members regarding the final identified themes (Mogavi et al., 2024). Figure 1 delineate the phases of the thematic analysis, while a detailed account of actions taken is provided in Table 2.

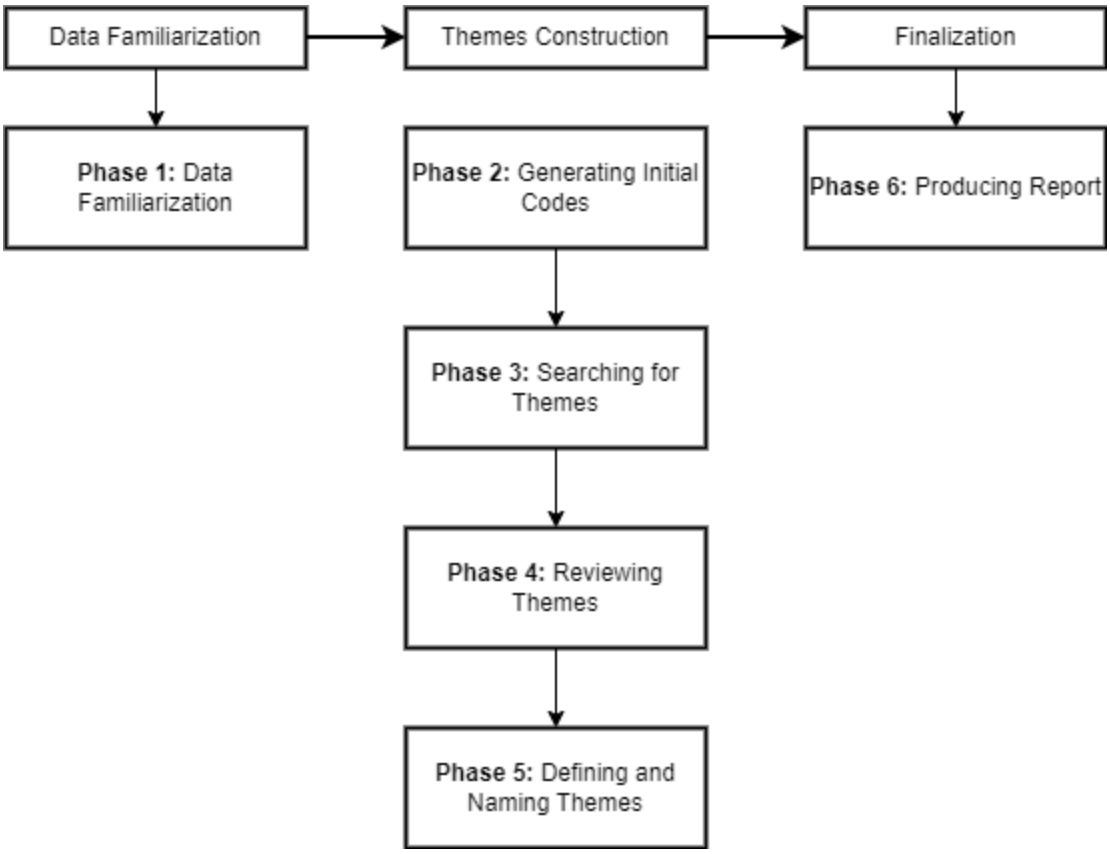

Figure 1: Thematic Analysis Framework

Table 2:

Elaboration on Actions Taken in Thematic Analysis

Phases of Thematic Analysis	Actions
Phase 1: Data Familiarization	- Transcribe the recorded responses obtained during interviews and data collection sessions. - Familiarize yourself with the accumulated information to obtain an understanding of the viewpoints expressed by the specialists.
Phase 2: Generating Initial Codes	- Open Coding: Determine and categorize the crucial thoughts or ideas pertaining to every theme. - Code Categorization: Categorize and classify codes with similarities.

	- Generate Initial Codes: Identify patterns, connections, and relationships among various codes.
Phase 3: Searching for Themes	- Form Significant Groupings: Identify sub-themes within overall subjects. - Example: Theme of Learning: Categories like encouraging creativity, skill development, boosting productivity. - Reflexive and Iterative Process: Continuously evaluate and enhance the themes and categories based on the data.
Phase 4: Reviewing Themes	- Ensure Comprehensive Understanding: Gather the wide range of viewpoints held by experts in the field.
Phase 5: Defining and Naming Themes	- Interpret Findings: Draw insightful conclusions based on the identified themes. - Highlight Key Points and Quotes: Support analysis and provide an understanding of experts' views.
Phase 6: Producing Report	- Compose the analytical report.

Ethical Considerations

Qualitative research involves careful consideration of ethical principles (Webster et al., 2013). To ensure informed consent, participants were fully briefed on the study's nature, purpose, and potential risks, adhering to Regulation 2016/679. To maintain anonymity and confidentiality, interview details were protected through encryption and password security.

To address power imbalances in the researcher-participant relationship, a conducive environment for interviews was created (Ganga & Scott, 2006). The study prioritised the potential impact on participants, providing them with sufficient time to think through their responses and offering support as needed. Compliance with ethical guidelines, such as GDPR, was strictly adhered to. Intercoder reliability was given special attention to ensure the consistency and trustworthiness of qualitative data interpretation. The coding process was carried out independently, followed by a diligent comparison of findings. Any inconsistencies were resolved through extensive discussions until a consensus on the codes was reached.

The study prioritizes trustworthiness and quality by centering on four crucial categories: credibility, transferability, dependability, and confirmability. Credibility aimed to ensure accuracy and trust in the investigation, with the researchers faithfully representing the diverse perspectives provided

by the interviewees. This commitment to credibility was reinforced through crosschecking to validate the findings of the study.

Transferability addresses the applicability of the study's conclusions to diverse settings beyond higher education and the specific Chatbot under examination. This involved a focus on potential extrapolation, and required a comprehensive presentation of the research process and assumptions to facilitate broader relevance.

Dependability underscored transparency in the research process, striving to enhance reliability and providing a framework for the results to be replicated in similar studies. Confirmability, the final category, concentrates on the authors' objectivity and neutrality. This was achieved by openly acknowledging researchers' predispositions, assumptions, and beliefs. Additionally, providing raw data and unbiased information further contributed to the objectivity of the study.

Results of Findings

The thematic analysis of the interviews revealed the emergence of three overarching themes, namely learning, research, and ethics, as outlined in Table 2. The primary objective of conducting thematic analysis was to identify and highlight significant patterns within the data (Braun & Clarke 2006). This process goes beyond mere data summarisation; instead, it involves interpretation and comprehension of the data, ultimately leading to the extraction of meaningful insights. Thematic analysis serves as a means to address research questions or shed light on specific issues, offering a deeper and more profound understanding of the subject matter (Maguire and Delahunt, 2017). The participants in this study extensively discussed the transformative potential of artificial intelligence (AI) in the realm of education. AI was perceived as a catalyst for heightened productivity, accelerated skill acquisition, enhanced creativity, and the generation of novel ideas. However, this technological advancement also prompted profound ethical considerations, including concerns regarding the potential shallowness of comprehension, as well as implications for academic integrity. It is evident that while AI promises substantial educational enhancements, it simultaneously poses intricate challenges that warrant careful examination.

Table 3.

Major Themes, Definition and Sub-themes

Theme	Definition	Sub-themes
Learning	Obtaining knowledge or skills through study, experience, or instruction while incorporating ChatGPT in education.	1. Boosting Productivity and Saving Time/Effort (*Positive Impact*) 2. Encouraging Creativity (Mixed Impact) 3. Facilitating Skill Development (*Mixed Impact*) 4. Potential for Surface-Level Understanding (*Negative Impact*)

		5. Personalised Learning Experience 6. Enhanced Accessibility and Inclusivity (*Positive Impact*) 7. Supporting Continuous Learning and Retention (*Positive Impact*) 8. Encouraging Collaborative Learning Environments (*Positive Impact*)
Research	The development of fresh insights and innovative approaches by employing ChatGPT to either create or apply existing knowledge in novel ways, resulting in the generation of new concepts, methodologies, and perspectives.	1. Writing a. Enhancing Content Creation (*Positive Impact*) b. Potential Negative Impact on Writing Skills and Practice (*Negative Impact*) c. Risk of Text Dumping (*Negative Impact*) d. Expedited Writing Process (*Mixed Impact*) 2. Idea Generation a. Fostering Alternative Research Ideas (e.g., Seeding Ideas) (*Positive Impact*) b. Assisting in Formulating Research Questions and Abstracts (Positive Impact) c. Generating New Variables and Constructs (*Positive Impact*) d. Limited Scope of Ideation and Potential Impact on Critical Thinking 3. Analysis, Reflection & Creativity a. Potential Negative Impact on Critical Thinking b. Possible Lack of In-Depth Analysis

		c. Inhibiting Human Reflective Processes d. Ambiguous Impact on Creativity
Ethics	The field that deals with moral principles and the distinction between right and wrong while utilizing the capabilities of ChatGPT.	1. Copyright Concerns a. Issues Related to Intellectual Property Rights 2. Authenticity and Reliability Challenges a. Uncertainty About the Source of Information b. Absence of Proper Citations c. Recognition That Not All AI-Generated Content Is Accurate or Empirically Sound 3. Limitations in AI Information Retrieval and Algorithmic Bias a. AI Generates Content Based on Its Training Data and May Have Limited Data Sources b. Risk of Amplifying Inaccurate Information 4. Impact on Academic Integrity a. Potential Issues of Dishonesty b. Risk of Plagiarism 5. Information Reproduction and Ethical Considerations a. Positive Role in Facilitating Basic Information Collection and Accelerating Work b. Concerns About the Use of Ready-Made Boilerplate Solutions and Ethical Implications c. Recognition of Potential Bias, Such as the

The following section provides an in-depth examination of the identified themes and their associated subthemes. This comprehensive analysis was intended to facilitate a more profound comprehension of the intricate facets within each theme, thus contributing to an enhanced scholarly understanding of these pivotal subjects.

Students' Views on Incorporating ChatGPT in Learning.

The study delved into the influence of ChatGPT on the learning process, with participants offering a spectrum of perspectives encompassing both positive and negative aspects. In general, participants held a favorable view of the ChatGPT, considering it a valuable tool for enhancing their educational experience. For example, a participant highlighted its potential to spark learning by stating that:

> *"ChatGPT could be used as a thought starter or a springboard to begin their task, which would improve the overall learning experience."*

It was also seen as a means to boost productivity, with one participant noting:

> *"ChatGPT can be used for sentence construction far better than Grammarly."*

ChatGPT was perceived as beneficial for students because it can be utilizing for error detection, saving time on proofreading and editing, as expressed by a participant,

> *"using these AI tools will amplify the skills that we do have... it's like you're extending your abilities. So this will extend people's abilities."*

Another participant also highlighted that ChatGPT enhanced accessibility and inclusivity, were he mentioned that:

> "*AI tools such as ChatGPT play a vital role in demolishing educational barriers. They offer accessible resources and cater to different learning styles, fostering a more inclusive learning environment for students with diverse needs*."

Additionally, another participant emphasised that ChatGPT facilitates ongoing learning and retention.

> "*ChatGPT's assistance in reviewing materials, reinforcing concepts and, and offering quick access to information aids in long-term retention and promotes ongoing learning even beyond formal study sessions."*

Nonetheless, there were reservations among some participants regarding the role of AI in education. Concerns were voiced regarding the potential to encourage superficial thinking and students' preference for quick and easy solutions. Participants feared that excessive reliance on ChatGPT could erode critical thinking and analytical skills, both of which are essential for ongoing education. It has been acknowledged by Malik et al. (2023) that ChatGPT's impact on creative

thinking could vary depending on its usage and alignment with educational objectives. As one participant cautioned,

> *"if a student, for example, submits a written essay... students will struggle because arrmmm they'll only have that arrmm superficial surface learning."*

Furthermore, participants observed that ChatGPT might inadvertently lead to a surface-level understanding of the material, as it provides information without necessarily guiding students to critically evaluate what they read. The consensus among participants was that ChatGPT should be considered a supplementary tool to enhance the learning process rather than a complete replacement for traditional education. As a participant noted that:

> *"ChatGPT should be used as a tool for augmenting the learning process rather than replacing it entirely as a means of education."*

These findings emphasize the significance of deliberate planning and alignment with educational objectives when integrating the ChatGPT into educational settings. This is in line with research conducted by Qadir (2023), which explored both the positive and negative impacts of generative AI in education.

Students' Views on Incorporating ChatGPT in Research

Participants engaged in discussions encompassing a range of aspects related to the utilisation of ChatGPT in academic. Regarding its impact on writing, ChatGPT was recognised as a double-edged sword with both advantages and potential drawbacks. One noteworthy advantage identified by participants is the tool's capacity to expedite the academic writing process, affording valuable time savings for students and educators. As expressed by one participant,

> *"ChatGPT has the ability to increase efficiency in academic writing and save time for both students and researchers."*

Another participant also highlighted that:

> "*ChatGPT significantly enhances the efficiency of academic writing, benefiting students and researchers by conserving valuable time during the writing process."*

Additionally, other participants have observed that ChatGPT greatly contributes to boosting productivity in academic writing, offering substantial time-saving advantages for both students and researchers alike. For example, a participant highlighted its potential to spark academic writing skills by stating that:

> "*ChatGPT can significantly contribute to elevate productivity in academic writing, by offering substantial time-saving advantages for both students and researchers*."

Moreover, participants acknowledged ChatGPT's potential to enhance content creation through the provision of comments and suggestions, thereby contributing to improved content quality. Additionally, ChatGPT was seen as a catalyst for ideation, offering alternative research ideas, often referred to as "or seeding ideas," and aiding in the formulation of research questions and

abstracts. The tool's ability to generate additional variables and constructs was also recognised as being beneficial.

However, the participants voiced reservations regarding the tool's limitations, particularly concerning its impact on creativity. Concerns have been raised about ChatGPT's potential to restrict creative thinking because of its finite idea pool. A participant articulated the following concerns:

> *"ChatGPT might have a detrimental impact on writing abilities... potentially lowering the quality of writing and encouraging a practice of text dumping by research writers."*

Another participant also highlighted that:

> *“ChatGPT could potentially impede writing proficiency, leading to a decline in the standard of written content and fostering a habit among researchers of excessive information inclusion.”*

Participants also expressed concerns about ChatGPT's influence on analytical and critical thinking, fearing that it could hinder these essential cognitive processes and lead to a superficial understanding of research topics and methodologies. The lack of rigor in evaluating and verifying the information generated by ChatGPT further raised concerns about research quality and originality.

In light of these findings, the participants underscored the need for well-defined policies governing the use of ChatGPT and other AI tools in educational settings. This includes the recognition of ChatGPT's contribution to research outcomes and the transparent assignment of credit, thus promoting academic integrity within the academic community. This is in line with research conducted by Cotton et al. (2023), which explored the academic integrity of integrating ChatGPT in academia.

Ethical Considerations of Incorporating ChatGPT in Educational Settings

The integration of ChatGPT into educational settings has far-reaching implications on the dissemination of knowledge and ethical conduct. On the one hand, ChatGPT streamlines the process of gathering essential information, expediting academic tasks. Conversely, the use of pre-made templates introduces ethical dilemmas such as academic dishonesty and plagiarism as noted by (Malik et al., 2023). The decision to implement the ChatGPT in educational contexts necessitates addressing crucial ethical inquiries. This integration also calls for a re-evaluation of assessment methods to align with the evolving educational landscape. Suggestions from participants encompass in-class assessments, oral evaluations, problem-based or case-study assessments, and context-based assessments, all aimed at promoting more authentic learning experiences and coherence across various learning approaches. For example, a master’s student from Cyprus International University stated that:

> “*Incorporating diverse evaluation methods such as in-class assessments, could significantly enhance the authenticity of learning experiences which could potentially prevent students from cheating on homework's and projects.”*

The ethical dimensions of ChatGPT use in education extend to concerns about academic integrity within institutions. The risk of students misusing ChatGPT and producing content that infringes on copyright and intellectual property rights is a central concern (Morocco-Clarke et al., 2023). Participants expressed apprehension regarding potential dishonesty and plagiarism associated with ChatGPT usage, raising issues related to the authenticity and ownership of submitted work with potential legal ramifications as stated from another PhD student from Near East University:

> "*To ensure ethical and lawful use, educational institutions must establish clear rules and procedures governing the application of ChatGPT within the academic environment*."

Participants also underscored the threat posed by students outsourcing their work to third parties online, undermining the credibility of their degrees and the educational system's effectiveness. Therefore, students must be educated about the ethical considerations surrounding ChatGPT and institutions must hold them accountable for the work generated using this technology.

In various educational contexts, questions arise regarding the credibility of the information generated by ChatGPT. The participants highlighted that,

> "*When using ChatGPT, the sources of information are not always transparent, and citations for produced work may be lacking*."

Consequently, not all AI-generated content is empirically sound or accurate, posing potential issues regarding the authenticity and reliability of the information provided (Dwivedi et al., 2023). To ensure the ethical and academically appropriate use of ChatGPT, educational institutions should establish comprehensive policies and procedures to guide its implementation. Additional challenges when employing ChatGPT include the potential for algorithmic bias and limitations in the scope of information retrieval. Errors and biases may emerge in the results because of AI's reliance on the trained algorithm and available data sources. Algorithmic bias can also result in biased content generation, such as in anti-Islamic or Islamophobic materials (Malik et al., 2023). Educational institutions must craft policies to promote diversity and inclusivity when utilizing artificial intelligence tools. A solid understanding of the functioning of AI tools is essential for policy development and transparency.

Discussion of Findings

In line with the evolving landscape of Artificial Intelligence in education (AIED), recent publications in the field have initiated critical discussions on the impact of AI technologies in educational settings (Crawford et al., 2023; Lodge et al., 2023; Kelly et al., 2023). Building on these conversations, our research seeks to extend and contextualize these discussions within the specific context of ChatGPT's role in reshaping academia, and how academics perceive its benefits and repercussions in learning and research.

Our study extensively explored the nuanced applications of ChatGPT in research and learning, highlighting its subjectivity and potential impact. While enhancing the efficiency of academic tasks, our findings caution against uncritical use, recognizing its potential to hinder users' capabilities (Megahed et al., 2023). Notably, the study identified ChatGPT as a valuable tool for idea generation, acting as a catalyst for brainstorming, and expediting diverse research processes

(Lodge et al. 2023). This dual functionality underscores the tool's significant potential to not only streamline academic tasks, but also substantively contribute to the creative and ideation aspects of scholarly endeavors.

Drawing on contemporary literature, the adaptability of the ChatGPT as a versatile and supportive tool for learning activities has been acknowledged (Rahman & Watanobe, 2023). It empowers students by facilitating access to information and fostering personalised interactions, feedback, and support tailored to their individual abilities (Rahman & Watanobe, 2023). This aligns with recent discussions on the potential of AI tools to enhance accessibility, personalisation, and overall learning experiences (Lodge et al., 2023). Additionally, ChatGPT aids language translation, writing improvement, interactive learning material creation, enhancing engagement, and enabling remote learning. This is also in line with previous studies on the ability of ChatGPT to improve supportive learning activities in higher education (Atlas, 2023; Javaid et al., 2023). The educational benefit of ChatGPT lies in its potential to enhance accessibility, personalisation, and overall learning experiences (Rahman & Watanobe, 2023).

Our study underscores the core purpose of education and research in developing future workforce skills and capabilities. Acknowledging the concerns raised by Paul et al. (2023), we recognize that while assistive AI tools, such as ChatGPT, facilitate tasks, their uncritical reliance may hinder skill acquisition and understanding of the underlying processes. This aligns with the ongoing debates in the literature regarding the potential drawbacks of AI tools on user skills and information reliability (Kelly et al., 2023).

Our study delves into the ethical and moral dimensions of ChatGPT's use in academic settings, specifically concerning content ownership and academic dishonesty. In alignment with Qadir's (2023) research, our findings underscore the unethical utilisation of assistive AI tools in both research and learning contexts. For example, the issue with students using ChatGPT for copyright and intellectual property infringement raises questions about the authenticity and ownership of the submitted work. Furthermore, outsourcing work to third parties online undermines the credibility of degrees and effectiveness of the educational system. To address these concerns, it is crucial for students to be educated about the ethical implications of using ChatGPT, and for educational institutions to hold them accountable for the content generated by this technology. In addition, institutions must develop policies that promote diversity and inclusivity when using AI tools.

Building on these insights, further research is needed to explore the evolving dynamics of AIED, considering methodological advancements and practical applications in educational settings. Future investigations should address the limitations identified in this study and contribute to ongoing conversations regarding the responsible and effective use of AI tools in academia.

Practical Implications

Our findings have significant practical implications for educators, policymakers, and AI developers in the field of education. Educational institutions are encouraged to take proactive measures to establish clear and comprehensive ethical guidelines and policies governing the utilisation of AI tools, such as ChatGPT, within academic settings. These guidelines should encompass various critical aspects including academic integrity, content ownership, plagiarism prevention, and

copyright adherence. Additionally, institutions should prioritize the dissemination of knowledge and awareness among educators and students regarding the responsible and ethical utilisation of AI technologies. This educational initiative should encompass the potential drawbacks of excessive reliance on AI tools and the concurrent emphasis on nurturing critical thinking skills in tandem with technological integration. On the other hand, policymakers are presented with an opportunity to enact regulatory frameworks specifically tailored to the incorporation of AI tools in education. These frameworks should aim to ensure transparency, fairness, and ethical conduct in the use of AI and promote a balanced and responsible approach to technology-enhanced learning. Furthermore, AI developers, including those behind the ChatGPT, can gain valuable insights from this study. They can focus on refining their AI models to address certain limitations, particularly information credibility and algorithmic biases. This will enable them to create more dependable and ethically sound educational AI tools that are better suited to the unique demands of the academic contexts.

Limitations

Although this study sheds light on the impact of ChatGPT in academia, several limitations should be considered. First, the study sample focused on a specific developing small island, which may limit the generalizability of the findings to broader international contexts. Therefore, future studies should involve participants from developed countries to improve the generalizability of the results. Second, the temporal factor must be acknowledged, as this study was conducted in 2023, and AI technologies will continue to evolve rapidly. Finally, the study's qualitative approach captured subjective perceptions. Future research should incorporate quantitative measures for a more comprehensive understanding of the effects of ChatGPT.

Future Research Directions

Future research should explore various avenues to further enhance our understanding of the role of ChatGPT in academia. Longitudinal studies can track the long-term effects of ChatGPT integration by monitoring the changes in learning outcomes, research productivity, and ethical considerations over time. Comparative analyses should assess the effectiveness of ChatGPT relative to other AI tools and traditional educational methods. Cross-cultural studies can reveal how cultural factors influence ChatGPT adoption and their impact in diverse educational settings. Collaborative efforts among AI experts, educators, ethicists, and policymakers should lead to comprehensive frameworks for ethical AI integration in education. Finally, investigations into the impact of ChatGPT on specific skill development, such as critical thinking and problem solving, can help shape the future workforce's readiness. These research directions aim to build upon this study's insights and address the emerging challenges and opportunities in educational AI integration.

Conclusion

In summary, this study examined the potential advantages and obstacles associated with the incorporation of ChatGPT within the context of higher education. Through comprehensive semi-structured interviews, our study engaged with a cohort of 75 esteemed scholars affiliated with higher education establishments in North Cyprus. This approach allowed us to obtain a significant

and profound understanding of the diverse and intricate ramifications of the ChatGPT in the domains of research, education, and the preservation of academic honesty.

The results of our study demonstrate that ChatGPT exhibits considerable potential in improving educational efficiency, facilitating individualised learning encounters, promoting innovation, and assisting in the production of ideas. This application provides significant utility for both instructors and students as it offers support across all facets of the academic process, ranging from generating content to translating languages.

Nevertheless, ethical considerations pertaining to academic integrity have become prominent focal points. The concerns expressed by participants were about the possibility of academic dishonesty and excessive dependence on ChatGPT, both of which have the potential to impede the cultivation of critical thinking abilities and the development of essential skills. The aforementioned problems highlight the necessity of adopting a prudent and accountable strategy towards the incorporation of AI technologies such as ChatGPT within educational environments.

Furthermore, our study emphasizes the imperative need to establish explicit ethical protocols and regulatory frameworks to oversee the utilisation of ChatGPT. This is crucial for effectively exploiting its potential advantages while simultaneously minimizing any associated hazards. These findings highlight the significance of increasing awareness among students and educators concerning the responsible and ethical utilisation of artificial intelligence.

This work is a valuable contribution to the expanding field of research on the incorporation of artificial intelligence in educational settings based on the aforementioned findings. This study specifically provides insight into the application of ChatGPT, an innovative artificial intelligence language model, within the realm of higher education. The use of a qualitative research methodology in this study offers a nuanced and thorough comprehension of the effects of ChatGPT on the domains of learning and research writing.

As the examination of AI technologies in education persists among educators, researchers, and policymakers, this study's discoveries provide significant perspectives and suggestions to direct the conscientious and ethical utilisation of ChatGPT. These insights aim to ensure that the ChatGPT adheres to the fundamental principles of academic institutions and contributes to the overall enhancement of educational experience.

Conflict of Interest

The authors declare that they have no actual or perceived conflict of interest. Furthermore, they affirmed that no external funding was received for this manuscript, with the study being conducted solely through the allocation of academic time resources at their respective universities.

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AI Usage Statement

In our research, we combined the use of AI tools, such as Paperpal and Grammarly, to enhance the quality of the written content. Specifically, these tools were employed to improve the sentence structure, ensure grammatical accuracy, and enhance coherence throughout the text. Paperpal and Grammarly were instrumental in refining our writing by providing suggestions and corrections to optimise readability and linguistic fluency.

Furthermore, ChatGPT played a pivotal role in the revision process, where we used it to refine and enhance the writing that we had initially produced. ChatGPT serves as a valuable resource for providing additional insights, suggestions, and revisions to further polish our content.

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