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Saudi EFL Students and ChatGPT: An Exploration of Ethical Awareness in AI Use

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Abstract

The landscape of Artificial Intelligence (AI) is a rapidly evolving one with new inventions making ever deeper inroads into realms that were exclusively human domains so far. However, this close proximity of technology and learners has given rise to concerns about its ethical and judicial use and guaranteeing that such use is not detrimental to learning objectives. This study, accordingly, delves into the ethical awareness of Saudi English as a Foreign Language (EFL) students towards using ChatGPT. Data was collected from a sample of 100 EFL male and female students at Majmaah University Saudi Arabia based on a questionnaire with six themes: intellectual property, cultural sensitivity, ethical misgivings, developer responsibility, learning enhancement, and data privacy. Results showed that the participating students had a high level of ethical awareness for using ChatGPT. Further, interestingly, female students demonstrated a statistically higher ethical awareness compared to their male counterparts. This gender difference may reflect variations in ethical sensitivities or educational experiences and warrants further investigation. This research offers valuable insights into the current state of ethical awareness among a specific group of users and sets the stage for further studies on the broader implications of AI in education.

Keywords: *Artificial intelligence, ChatGPT, ethical awareness, gender differences, Saudi EFL students.*

Introduction

The incorporation of artificial intelligence (AI) technologies, such as ChatGPT, into the educational realm has precipitated a revolutionary shift in how students interact with and acquire new knowledge (Bin-Hady et al., 2023). These technological advancements, though potent in their capabilities to bridge linguistic and informational gaps, bring to the fore a plethora of ethical considerations that must be navigated with astuteness and foresight (Vaccino-Salvadore, 2023). Particularly, in the realm of English as a Foreign Language (EFL) learning, the discourse extends beyond the mere efficacy of such tools to larger concerns regarding data privacy, algorithmic biases, and the ethical use of technology in educational settings (Rad et al, 2022). The fulcrum of these concerns is in ensuring that educational technology does not become detrimental to learning objectives. This study, centering on Saudi EFL students, explores these very dimensions of ethical awareness regarding the utilization of ChatGPT, bringing to limelight how technological advancements are perceived and interacted with, from an ethical lens, by learners in a specific cultural and demographic context. Engaging with ChatGPT, for instance, learners may unconsciously contribute to the data that further trains and refines these models,

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sparking considerations about informed consent, data privacy, and the overall ethicality of machine learning models powered by user interactions (Ray, 2023). Further, given the ability of ChatGPT to generate human-like (the key qualifier is ‘like’ here) text, there exists the potential for misuse in creating misleading or false information, a domain where ethical discernment becomes paramount (Dwivedi et al., 2023).

Ethical awareness in technology use is a multifaceted concept that encompasses various domains, including data privacy, AI ethics, cybersecurity, and digital citizenship (Saura et al., 2022). Available literature not only highlights these ethical concerns, but also, challenges in preventing their occurrence (Dwivedi et al., 2023; Sohail et al., 2023). Ethical considerations in technology use should be placed on a priority to ensure responsible and socially beneficial outcomes. This includes understanding the implications of data privacy, recognizing the ethical dilemmas posed by AI, taking cybersecurity precautions, and practicing digital citizenship (Kilhoffer et al., 2023). With an increasing dependence on technology in contemporary society, the role of ethical awareness becomes all the more significant (Gray & Boling, 2016). Some review studies have focused on key ethical themes such as data privacy, artificial intelligence (AI) ethics, cybersecurity, and digital citizenship (Bietti, 2020; Dwivedi et al., 2023; Kilhoffer et al., 2023; Sohail et al., 2023). Moreover, some other studies have explored individuals' awareness of data privacy issues. One Pew Research Center (Rainie et al., 2016) study found that 91% of Americans believe they have lost control over how their personal information is collected and used by companies. This suggests a widespread awareness of data privacy concerns. Additionally, Turow et al. (2015) highlighted the concept of the "privacy paradox," where individuals express concerns about data privacy but often willingly share personal information online. This paradox underscores the complexity of ethical awareness in the digital age, where individuals may have an abstract understanding of privacy concerns but struggle to translate that awareness into concrete actions.

Research questions

The study aspires to not only shed light on the present state of ethical awareness among Saudi EFL students but also, to pave the path for future research, policy-making, and technological development that is cognizant of, and responsive to, the ethical considerations and implications of AI use in education. This multifold objective enables a multifaceted exploration that extends beyond mere awareness, delving into the implications, influences, and practical manifestations of ethical considerations in AI-assisted EFL learning among Saudi students.

1. What is the level of awareness and ethical considerations among Saudi EFL students on using ChatGPT?

2. What all themes related to ethical awareness and considerations on the use of ChatGPT emerged?

3. Is there any significant difference between the attitudes of male and female students’ attitudes regarding the level of ethical awareness in using ChatGPT?

Literature Review

Artificial intelligence

Artificial intelligence technologies, including machine learning and natural language processing, have raised profound ethical questions due to their vast applications and popularity amongst users. However, AI systems can perpetuate biases, invade privacy, and make autonomous decisions that impact individuals' lives (Kamila & Jasrotia, 2023).

Ethical awareness in this domain involves recognizing the potential ethical dilemmas posed by AI and understanding the responsibility of developers and users in mitigating these issues. Jobin et al. (2019) emphasized the importance of ethics in AI, highlighting that ethical AI should be transparent, accountable, and unbiased. This research underscores the need for individuals to be aware of these principles when interacting with AI systems and for developers to prioritize ethical considerations in AI design. Furthermore, Hofmann et al. (2020) explored public attitudes toward AI ethics, revealing that a majority of respondents supported guidelines for AI development and use. This suggests a growing awareness of the ethical dimensions of AI technology. Cybersecurity is another critical area where ethical awareness is paramount. As technology advances, so do the capabilities of cybercriminals seeking to exploit vulnerabilities. Ethical awareness in cybersecurity involves understanding the importance of secure practices and recognizing the potential harm that can result from cyberattacks. In this context, Albon (2016) found that while most Americans were aware of cybersecurity risks, they did not always take adequate precautions. This highlights the gap between awareness and action in the realm of cybersecurity ethics. Moreover, Saxena et al. (2020) emphasized the role of individual employees in maintaining cybersecurity within organizations. Ethical awareness among employees is crucial in preventing insider threats and ensuring responsible technology use in the workplace.

Digital citizenship

Ribble (2015) outlined nine elements of digital citizenship, prominently including digital etiquette, digital rights and responsibilities, and digital health and wellness. These elements emphasize the importance of ethical considerations in technology use. Furthermore, Livingstone et al. (2017) highlighted the role of parents and educators in fostering ethical awareness in young digital citizens and the need for educational efforts to instill values of empathy, respect, and responsibility in the digital realm.

Saudi Arabia, with its considerable investments in educational technology and a keen eye on transforming its educational landscape to be at the forefront of technological integration (Hamdan, 2014), provides a riveting context to explore the intersection of EFL learning, AI technology usage, and ethical awareness. Understanding how Saudi EFL students, in their language acquisition journey aided by technologies like ChatGPT, perceive and understand the ethical dimensions of these tools becomes a pertinent inquiry. Moreover, the gender disparities noted in the preliminary findings add another dimension to this exploration, prompting considerations regarding how gender-specific experiences or perspectives in the Saudi context influence ethical awareness. It is imperative to recognize that ethical awareness in utilizing AI technologies is not merely confined to understanding and avoiding potential misuses but extends to a comprehensive understanding of the underlying mechanisms, limitations, and broader societal implications of these technologies. Kallinikos (2013) propounded that ethical usage and understanding of technology is deeply entwined with a user's comprehension of the technology itself, positing that true ethical engagement requires an amalgamation of technical understanding and moral discernment.

ChatGPT in education

Saudi EFL students potentially represent both present and future users of AI tools, exploring their level of ethical awareness, their considerations, and apprehensions regarding AI technologies in education, and understanding the influences that shape these perspectives, becomes an endeavor of both contemporary relevance and future-oriented significance (Alzahrani, 2023). In contemporary times when technology and education are becoming increasingly enmeshed, ensuring that learners navigate through these digital landscapes without harming the ethical fabric. While AI technologies like ChatGPT are equipped with potent capabilities, understanding how their design and functionalities can be enhanced to not just facilitate, but actively promote ethical use and interaction is an

imperative yet uncharted domain. Moreover, the curricular and pedagogical implications of integrating AI technologies like ChatGPT, while fostering ethical awareness and interaction among EFL students, is also an area that deserves attention. While the importance of integrating ethical discussions into AI-related educational curricula is underscored, the "how" of this integration is left unexplored. Formulating curricula or pedagogical strategies that cohesively meld technological and ethical education, ensuring that they are not siloed entities but instead interwoven aspects of a holistic educational experience, constitutes a crucial forward stride. Lastly, while the study focuses on ethical awareness, it does not fully delve into how this awareness correlates or interacts with technological efficacy and learning outcomes among EFL students. In essence, while the research provides a foundational understanding of Saudi EFL students' ethical awareness regarding ChatGPT, it simultaneously reveals a multiplicity of practical gaps that warrant exploration to enhance our understanding of ethical AI usage in educational contexts, and pave the way for technological and pedagogical changes.

Methods

Research design

The present study employed a survey to explore and articulate the ethical awareness among Saudi EFL students using ChatGPT. Utilizing a questionnaire and FGD, it garnered empirical data that was statistically analyzed to provide a comprehensive overview of the participants' ethical apprehension and its variance based on gender. The study was conducted at Majmah University in the academic year 1445.

Participants

The participants of the study were 100 Saudi EFL students, enrolled in an intermediate English language course at a university in Saudi Arabia. The sample comprised a balanced gender mix to ensure comprehensive insights into ethical awareness across male and female students. The selection was made using the stratified random sampling technique to ensure that various strata (such as age, proficiency level, and academic background) were adequately represented. Ensuring the ethical integrity of the research was paramount. Participants were provided with a detailed information sheet elucidating the purpose, method, and implications of the study, ensuring they were well-informed prior to giving their consent. Anonymity and confidentiality were strictly upheld by eschewing the collection of any personally identifiable information and securely storing the data in an encrypted format. Furthermore, participants were assured of their right to withdraw from the study at any stage without incurring any penalties.

Instrumentation

The study used a structured questionnaire, designed meticulously to gauge the ethical awareness among Saudi EFL students concerning the usage of ChatGPT. The questionnaire was partitioned into sections dedicated to themes such as demographic information, and general awareness about ChatGPT, with responses based on a Likert scale aiming to assess their ethical considerations while interacting with ChatGPT. The survey items loaded onto various ethical dimensions such as privacy concerns, data security, and the moral and ethical use of AI technology in language learning. The questionnaires were distributed electronically due to the accessible and convenient nature of online data collection.

Data analysis

Data gathered from the questionnaires were analyzed using the SPSS (Version 26) to ensure a rigorous and precise statistical analysis. Descriptive statistics (mean and standard deviation) were computed to delineate the general trend in responses. Further, inferential statistics, including t-tests, were employed to unearth any significant disparities in ethical

awareness across genders. Thematic analysis was performed for processing the qualitative data.

Results

RQ1: What is the level of awareness and ethical considerations among Saudi EFL students on using ChatGPT?

The quantifiable metrics obtained from this study, as illustrated in Table 1, articulate a noticeable trend towards a high level of ethical awareness amongst the surveyed Saudi EFL students regarding the utilization of ChatGPT. The survey items that lead to this result were based on awareness of ChatGPT's language-learning mechanisms, recognition of potential ethical dilemmas, reverence for intellectual property, cognizance of possible culturally incongruous outputs, and understanding of developer non-intervention, they generated a collective mean range of 3.8 to 4.2. These metrics substantiate a generally high ethical awareness, though with variations in specific sub-domains as indicated by the standard deviations. The resultant high awareness across various facets of ChatGPT utilization could be perceived as an optimistic indicator of a generation of responsible future users.

Table 1. Students' level of awareness and ethical considerations students on an AI-driven tool

Statements	Mean	Standard Deviation (SD)	Interpretation
I am aware that ChatGPT uses vast amounts of internet text for learning language patterns.	4.2	0.8	High Awareness
I understand the potential ethical issues related to using ChatGPT, such as biased responses.	4.0	0.9	High Awareness
I am mindful of respecting intellectual property while interacting with ChatGPT.	3.8	1.0	High Awareness
I recognize that ChatGPT may generate responses that could be culturally or contextually inappropriate.	4.1	0.7	High Awareness
I am aware that ChatGPT's responses are not monitored or endorsed by developers.	3.9	0.8	High Awareness

Future research might gravitate towards understanding the underlying factors that foster ethical awareness, exploring the nuances of its application in practical AI technology usage within educational contexts, and devising strategies to enhance and apply this awareness across diverse users. Analyzing the qualitative data in Table 2, several themes emerged that related to ethical awareness and considerations concerning the use of ChatGPT. The nuanced views of students reveal a complex web of perceptions and considerations when engaging with AI-driven tools. This qualitative data underlines the multifaceted nature of ethical considerations and concerns among Saudi EFL students in the context of ChatGPT and, by extension, AI-driven educational tools. Not only does it emphasize the necessity of ethically conscious AI tool utilization among users but it also nudges towards an intricate balance between user responsibility and developer accountability in orchestrating ethical AI interactions.

RQ2: What all themes related to ethical awareness and considerations on the use of ChatGPT emerged?

Table 2. Qualitative results on students' ethical awareness of ChatGPT

Themes	Initial responses	Frequency
Respect for IP	"I ensure to not misuse the information provided by ChatGPT to avoid IP issues."	15
Cultural sensitivity	"Sometimes the responses from ChatGPT don't align with our cultural values."	20
Ethical misgivings	"I am concerned about potential biases in ChatGPT's responses and its impact on learning."	18
Developer responsibility	"It's crucial for developers to take some responsibility for how ChatGPT is used and understood."	12
Learning enhancement	"ChatGPT is a helpful tool, but it's essential to use it ethically for learning purposes."	20
Data privacy	"I worry about how my data and interactions with ChatGPT are being used."	15

The exploration into the ethical awareness of Saudi EFL students using ChatGPT yielded multifaceted perspectives, intertwined with issues of intellectual property, cultural sensitivity, ethical misgivings, developer responsibility, learning enhancement, and data privacy. A distinct respect for intellectual property (IP) (evidenced in 15 responses) was perceptible among students, many of whom demonstrated a clear understanding and mindfulness toward adhering to IP norms, ensuring that they used information sourced from ChatGPT judiciously and within ethical boundaries. In parallel, there emerged tangible concerns pertaining to cultural sensitivity. While ChatGPT was acknowledged as a resourceful tool, participants' comments underscored a palpable deficit in its cultural contextualization for Saudi EFL learners, thereby highlighting the necessity for the evolution of AI technologies that are deeply attuned to a multitude of cultural norms and contexts (evidenced in 20 responses). Furthermore, ethical misgivings were apparent (evidenced in 18 responses) with concerns especially pertaining to the inherent biases perceivable in ChatGPT's responses, which further highlighted the complexities and ethical quandaries involved in incorporating AI into educational contexts. This brings forth an urgent call for developer responsibility, which is emergent in 13 responses to overtly and comprehensively address these issues. On a similar note, a subtle, yet discernible expectation for developer responsibility was expressed by some students who hinted at an aspiration for developers to embody some degree of responsibility in how ChatGPT is utilized, thereby spotlighting a need for clear guidelines and perhaps a measure of monitoring of AI tool outputs to ensure ethical use and information dissemination (evidenced in 29 responses). Additionally, students acknowledged the utility of ChatGPT as a viable complementary learning tool, yet this acknowledgment came hand in hand with an insistence on the paramount importance of ethical usage, thus exhibiting maturity and responsibility towards technology use. Lastly, emerging concerns related to data privacy (evidenced in 15 responses) encompassing the use of student interactions and data.

RQ3: Is there any significant difference between the attitudes of male and female students' attitudes regarding the level of ethical awareness in using ChatGPT?

The results of the t-test indicate a statistically significant difference in ethical awareness between male and female students regarding the use of ChatGPT. Female students ($M = 72.5$, $SD = 7.1$) demonstrated a significantly higher level of ethical awareness compared to their male counterparts ($M = 65.2$, $SD = 8.3$), with a t-value of -4.02, $df = 98$, and $p < 0.001$. The observed gender-based difference in ethical awareness is a noteworthy finding.

Table 3. Test of difference between male and female on the level of ethical awareness on the use of ChatGPT

Group	Mean	Std. Dev	t-value	df	p-value
Male (n=50)	65.2	8.3			
Female (n=50)	72.5	7.1			
Difference	-7.3		-4.02	98	<0.001

Findings in this study reveal a higher level of ethical awareness among female students than their male counterparts. However, it is crucial to acknowledge that the existing literature on this topic is evolving, and further investigation is needed to fully understand the complex interplay between gender and ethical awareness in the context of AI tools.

Discussion

The results of this study reveal a significant trend among Saudi EFL students in their ethical awareness regarding the use of ChatGPT. The students displayed a high level of ethical awareness across various facets related to ChatGPT utilization, including an understanding of its language-learning mechanisms, recognition of potential ethical dilemmas, respect for intellectual property, acknowledgment of possible culturally incongruous outputs, and awareness of developer non-intervention in generated responses. These findings collectively suggest responsible and ethically conscious user behavior. This result is in line with Ajlouni et al.(2023) and Kasneci et al. (2023) which reported particular significance in the context of pervasive AI technology assimilation into educational paradigms, wherein ethical use and cognizance of potential pitfalls become paramount. Moreover, the importance of comprehending and navigating potential ethical minefields, such as biased responses or inadvertent propagation of culturally or socially insensitive content, cannot be overemphasized, especially in the diverse and culturally rich context of Saudi EFL learners (Al-Kahtani, 2015).

The intriguing dimensions of the gender disparity witnessed in the ethical awareness backdrop necessitate a nuanced exploration. Female participants revealed heightened ethical awareness compared to their male counterparts. This phenomenon invites explorations into the social, educational, and psychological variables that might be responsible for such disparities. Various studies have intermittently reinforced gendered variations in ethical discernment and moral reasoning across diverse disciplines and contexts (Wang & Calvano, 2015). Understanding whether these differentiations originate from inherent ethical sensitivities or are a manifestation of variances in educational experiences and exposures is crucial to tailor ethical education to the needs of the Saudi paradigm.

The findings in this study are based on six emergent themes on the ethical consideration for using ChatGPT by Saudi EFL students: respect for intellectual property, cultural sensitivity, ethical misgivings, developer responsibility, learning enhancement, and data privacy. Such findings raise questions about the underlying factors that shape these disparities, including societal, educational, and psychological variables. While this study does not delve deeply into the causative factors, it emphasizes the need for further exploration to better tailor ethical education in AI technologies. These findings have several implications for both theory and practice. As to theory implications, the observed high ethical awareness among Saudi EFL students supports and extends existing theories

of ethical behavior and technology adoption. It highlights the significance of considering the socio-cultural context and gender dynamics in shaping ethical perceptions and behaviors in technology usage.

Conclusion

This study delved into the ethical awareness of Saudi EFL students concerning the utilization of ChatGPT, an AI-driven tool with language-learning applications. The findings from both quantitative and qualitative data paint a comprehensive picture of the ethical landscape surrounding AI technology in education. Quantitatively, the data revealed a high level of ethical awareness among the surveyed students. Their responses to statements related to ChatGPT's language-learning mechanisms, potential ethical dilemmas, intellectual property respect, culturally incongruous outputs, and developer non-intervention collectively demonstrated a commendable mean awareness ranging from 3.8 to 4.2. These findings suggest that Saudi EFL students are cognizant of the ethical dimensions of AI technology, which is promising in light of the increasing integration of AI into educational settings. However, it is important to note that variations existed in specific sub-domains, as indicated by standard deviations, highlighting the need for targeted ethical education in certain areas. The study underscores the significance of navigating ethical minefields in the utilization of AI technology. As AI and machine learning algorithms continue to permeate educational technologies, understanding and addressing ethical considerations become paramount. This is particularly relevant in the culturally rich context of Saudi EFL learners, where AI has the potential to perpetuate stereotypes or generate culturally insensitive content inadvertently. One of the intriguing aspects of this study was the gender disparity observed in ethical awareness. Female participants exhibited a significantly higher level of ethical awareness compared to their male counterparts. This finding aligns with previous research showing gender-based variations in ethical discernment across diverse disciplines and contexts. The reasons behind these differences warrant further investigation. Tailoring ethical education in AI technologies to accommodate these disparities is crucial. The qualitative data provided additional depth to the study's findings, revealing multiple themes related to ethical awareness, such as, respect for intellectual property, cultural sensitivity, ethical misgivings, developer responsibility, learning enhancement, and data privacy. Students demonstrated a clear understanding of the importance of ethical use of AI tools while emphasizing the need for developer accountability and comprehensive ethical education programs. This study highlights the commendable ethical awareness among Saudi EFL students in the context of AI-driven educational tools like ChatGPT. It emphasizes the need for continued research into the factors shaping gender-based differences in ethical awareness. Additionally, it underscores the importance of inculcating a robust ethical framework into the pedagogical use of AI technologies to ensure responsible and effective utilization in diverse educational contexts. As AI becomes increasingly integrated into education, fostering an ethically conscious user base will be pivotal in harnessing the full potential of these technologies while mitigating potential ethical pitfalls.

Significance of the study

Firstly, the practical application and understanding of the ethical norms in real-time interactions with AI tools like ChatGPT amongst Saudi EFL students has been a poorly explored area of research. This study provides invaluable insights into their awareness levels, the practicality of how this awareness can be translated into ethical use and interaction with AI technology within and beyond educational contexts. Understanding how ethical awareness influences actual user behavior, interaction patterns, and problem-solving or decision-making in ethically ambiguous situations involving AI technology

presented a crucial gap that warranted exploration. Furthermore, the study points out gender disparity in ethical awareness (Burr & Leslie, 2023), albeit without digging deeper into the underpinning causes or practical implications of such disparities. These nuances could be grounded in sociocultural factors, educational experiences, or disparate exposures to technology-use ethics, each factor being worthy of exploration. The result sof this study may find application in ethical awareness programs, curricular endeavors, and streamlining of course content to address the unique needs of Saudi learners.

Recommendations and Future Research Directions

Based on the gender-based differences in ethical awareness observed in this study, it is recommended that educational institutions and policymakers tailor ethical education programs to address these disparities. Educators and policymakers should leverage the findings of this study to enhance ethical use of educational technology. Additionally, considering the gender-based differences, educators should develop gender-sensitive strategies for ethics education. Moreover, developers of AI-driven tools like ChatGPT should take into account the ethical considerations highlighted by users such as, addressing cultural sensitivity issues, potential biases in responses, and data privacy concerns. Developer responsibility and accountability should be integrated into AI tool design and usage guidelines. Lastly, future research should delve into the underlying factors influencing gender-based differences in ethical awareness. This could involve examining the impact of educational experiences, cultural norms, and psychological variables. Moreover, research should explore strategies to enhance and apply ethical awareness in diverse user demographics and contexts. This study illuminates the ethical awareness landscape among Saudi EFL students using ChatGPT, emphasizing the importance of ethically conscious AI tool utilization. The gender-based differences in ethical awareness invite further exploration, and the implications extend to education, technology development, and future research in AI ethics. This could involve offering specific modules or resources aimed at enhancing ethical awareness among male students, thereby bridging the gap between the performance of the males and females. Such programs should not only focus on theoretical aspects but also practical applications of ethical considerations in AI technology use. Given the multicultural context of Saudi EFL learners, further research should investigate ways to enhance AI tools' cultural sensitivity and adaptability. This includes developing AI models that are attuned to a wide range of cultural norms and values, reducing the likelihood of generating culturally insensitive content. Future research can also delve into the development of robust data privacy policies and mechanisms that provide students with greater control over their data when using AI-driven educational tools. Additionally, exploring strategies to obtain informed consent from users regarding data usage can be a vital aspect of future research. While this study sheds light on the ethical awareness of Saudi EFL students regarding AI technology in education, there is a need for ongoing research and action to ensure responsible and ethical AI use. Tailored education, developer accountability, cultural sensitivity, and data privacy are key areas that warrant further investigation and attention to harness the full potential of AI in educational settings while mitigating ethical challenges.

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