Exploring Ethical Concerns Among Students: The Impact of AI Usage in Education

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Abstract:

This study investigates the ethical concerns of students regarding the use of artificial intelligence (AI) in educational settings, focusing on three key factors: prior experience with AI tools, awareness of AI technology, and privacy concerns. As AI becomes increasingly integrated into academic environments through applications like online proctoring, AI tutoring, and automated grading, understanding students' perceptions of its ethical implications is essential. The research aims to measure the extent of students' concerns about AI's fairness, transparency, and data privacy practices. Using a survey-based approach, data were collected from a diverse sample of students to analyze how familiarity with AI, knowledge of its underlying technologies, and specific privacy-related worries influence their ethical perspectives on AI use in education. Results indicate that students' prior experience with AI tools tends to moderate their ethical concerns, with those having greater exposure expressing both higher awareness and more nuanced ethical considerations. Privacy concerns, in particular, emerged as a significant predictor of ethical apprehension, suggesting that data collection and sharing practices remain a prominent issue for students. This research highlights the need for developing clear ethical guidelines and privacy protections in the implementation of AI technologies in education to foster trust and promote responsible use. Future research could explore interventions to address ethical concerns and enhance AI literacy among students.

Keywords:

Artificial Intelligence, Ethical Concerns, Privacy, AI in Education, Student Perception, Awareness of AI, Experience with AI Tools

I.   Introduction

The advent of Artificial Intelligence (AI) in education has sparked significant transformations, presenting both opportunities and challenges for students, educators, and institutions. The integration of AI tools into academic environments is reshaping teaching methodologies, learning experiences, and administrative processes, underscoring the need for critical examination of its ethical implications (Aldrin, Sebastian, & Valerio, 2024). Despite its potential to enhance educational delivery, AI also raises concerns related to academic integrity, fairness, and equity, which demand the formulation of clear ethical guidelines (Anurag, Pahuja, Kaur, Budhraja, & Kathuria, 2024).

AI technologies such as adaptive learning platforms, automated grading systems, and generative AI tools like ChatGPT have revolutionized education by offering personalized and efficient solutions. However, these advancements have also brought ethical dilemmas, particularly concerning data privacy, algorithmic biases, and the balance between human and machine roles in education (Weber, 2020; Mohamed, Ghoneim, & Mahklouf, 2024). Students are increasingly apprehensive about how AI tools may disrupt their autonomy, influence learning outcomes, and challenge traditional norms of academic integrity (Zhou, Zhang, & Chan, 2024; Irfan, Aldulaylan, & Alqahtani, 2023).

Recent studies highlight the necessity of proactive strategies to address these ethical concerns. For instance, researchers emphasize the importance of raising awareness about AI's ethical challenges, developing comprehensive guidelines, and fostering responsible AI use among students and educators (Said & Salloum, 2024; Han, Nawaz, Buchanan, & McKay, 2023). Additionally, continuous professional development for educators is crucial to ensure the effective integration of AI tools while safeguarding educational values (Odeta, Gluoksynte, White, & Žitkus, 2024).

While many studies have explored the potential of AI in enhancing educational practices, gaps remain in understanding how ethical concerns influence students' perceptions and acceptance of AI technologies in education. This research aims to address this gap by examining the relationship between students' experiences with AI tools, their awareness of AI technology, privacy concerns, and their overall ethical concerns about AI use in education. By building on existing literature, this study seeks to contribute to a more nuanced understanding of the ethical dimensions of AI in education, ultimately supporting the development of policies and practices that promote responsible and equitable use of AI technologies.

The objectives of this study are:

- To examine the relationship between students' experience with AI tools and their level of ethical concern, focusing on how prior exposure influences ethical perspectives.
- To assess the impact of awareness of AI technology on students' ethical concerns by evaluating how knowledge and understanding affect their views.
- To evaluate the role of privacy concerns in shaping students' ethical considerations, including issues related to data collection and sharing practices.
- To analyze demographic differences in ethical concerns regarding AI in education, considering factors like education qualification, field of study, and gender.

II.   Review of Literature

Edwin, Okumu, Ogalo, and Fredrick, Mtenzi (2024) emphasize critical ethical concerns associated with AI tools in education, including risks of plagiarism, diminished critical thinking, and data privacy challenges. They advocate for a balanced approach with clear ethical frameworks to uphold academic integrity. Similarly, Jan,

Woerner, Turtova, and Lang (2024) highlight the importance of responsible AI use, focusing on privacy concerns, overdependence, and biases. They propose integrating AI with traditional teaching methods to enhance the academic experience while maintaining ethical standards.

Sang-Jun Kim (2024) identifies specific ethical issues linked to AI tools like ChatGPT, such as risks of unattributed content, plagiarism, and difficulties in detecting AI-generated content. The study underscores the necessity for researchers to ensure accuracy and research integrity. Hosseini, Resnik, and Holmes (2023) discuss ethical concerns in scholarly writing, including responsible authorship and proper acknowledgment of AI contributions. They argue against outright bans, favoring transparency and disclosure instead.

Gupta and Mishra (2022) analyze ethical challenges in AI applications, particularly in recruitment, pointing to data privacy concerns and the reinforcement of biases. Gomes Lima Junior, Lucena Karbage, and Nascimento (2023) stress the need for ethical guidelines in AI development for radiology, indicating a broader necessity for regulatory frameworks in diverse domains.

Weber (2020) and Prem (2023) both highlight significant ethical challenges tied to AI use in education, particularly privacy, fairness, and accountability. Prem (2023) focuses on converting ethical AI frameworks into practical tools to address these issues. Christian and Kitali (2024) add to this by emphasizing institutional regulations, critical thinking, and plagiarism detection as pivotal measures to address privacy issues and ensure responsible AI integration.

Octavio Irigoin Cabrera and colleagues (2024) highlight concerns over AI-driven discrimination, emphasizing the need for fair algorithms to prevent inequalities in educational access and outcomes. Kostas Karpouzis (2024) discusses similar challenges, including data privacy, algorithmic bias, and the evolving role of educators in the face of AI integration. Effective teacher training and ethical frameworks are proposed as solutions to these challenges (Khan et al., 2024).

Shukla (2024) and Tabbassum and Chintale (2024) discuss challenges like algorithmic bias and privacy, underscoring the need for transparency and accountability. Deepti Pandey and colleagues (2024) further explore these issues, calling for robust ethical frameworks to balance technological advancements with individual rights.

Chris Gilbert, Mercy Abiola, and Gilbert (2024) advocate for frameworks like GDPR and Privacy by Design to address ethical challenges like data breaches and surveillance in AI tools. Shahmar Mirishli (2024) and Ferretti et al. (2021) emphasize adaptive governance and international cooperation to balance innovation with societal values.

Pandey et al. (2024) and Borenstein and Howard (2020) stress the inclusion of AI ethics in education curricula to prepare future generations to address emerging ethical challenges effectively. Li (2024) identifies blind spots in AI ethics, such as algorithmic opacity and societal biases, proposing strategies to address them while ensuring fairness and accountability.

Mutuku (2024) outlines ethical concerns related to data privacy in education, advocating for informed consent, minimized data collection, and robust security measures to protect sensitive student information. Similarly, ethics studies like those by Ayub and Banday (2023) and Ray and Ray (2024) emphasize transparency and accountability in handling personal data in AI systems.

Research Gap

While previous studies have explored the general perceptions of AI in education, there is limited research investigating the interplay between students' experience with AI tools, their awareness of AI technology, and privacy concerns in shaping ethical considerations. Additionally, existing literature often overlooks the nuanced impact of these factors on ethical concerns specific to educational settings. This study addresses these gaps by providing empirical evidence on how these independent variables collectively influence students' ethical concerns about AI in education.

III.   Research Methodology

This research study utilizes both descriptive and correlational research designs. The descriptive research design aims to analyze the attributes of students exhibiting varying degrees of ethical concern regarding artificial intelligence (AI) in educational contexts. Conversely, the correlational research design serves to identify the relationships between the dependent variable, which is the level of ethical concern, and the independent variables, which encompass experience with AI tools, awareness of AI technology, and concerns pertaining to privacy.

Population and Sample Size

The population for this investigation comprises students who have engaged with AI-based educational tools, such as online proctoring systems or AI tutoring platforms. An initial participant pool of 390 individuals was selected; however, following the screening for adequately completed responses, the final sample was reduced to 234, yielding a response rate of 60%.

Sampling Method

Non-probability sampling methods, specifically convenience and snowball sampling, were employed to select the participants. These techniques were considered suitable due to the exploratory nature of the study and the distinct characteristics of the target population.

Data Collection

Primary data were gathered through a self-administered survey questionnaire, which was disseminated both online via Google Forms and in physical form. The respondents included college students who were acquainted with AI-based educational tools. A pilot test of the questionnaire was conducted with experienced students to

enhance its structure and content. The reliability of the finalized questionnaire was affirmed with a Cronbach's alpha of 0.84.

Data Analysis

Descriptive statistics, such as means, standard deviations, and ranges, were utilized to categorize students according to their level of ethical concern. The subsequent statistical analyses included: a Multivariate Analysis of Variance (MANOVA) to investigate differences among demographic groups concerning the independent variables; Pearson's Correlation test to evaluate the strength and direction of associations among variables; and Regression Analysis to assess the model's fit and to test the specified hypotheses. The significance level was established at $p < 0.05$. The following hypotheses were tested:
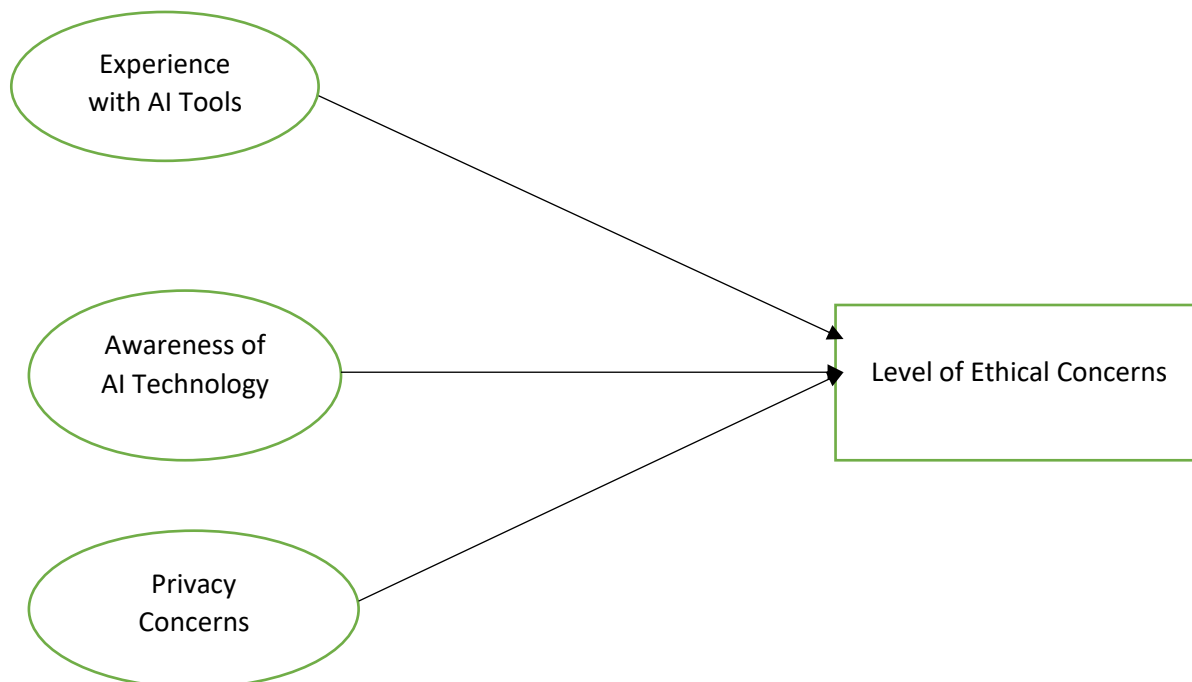
H1: A significant relationship exists between experience with AI tools and the level of ethical concern.

H2: A significant relationship exists between awareness of AI technology and the level of ethical concern.

H3: A notable correlation exists between concerns regarding privacy and the degree of ethical concern.

Figure 1

Theoretical Framework

IV.   Analysis and Results

Table 1: Demographic Profile

Demographic Variables		No. of Respondents	Percentage
Gender	Male	152	65.2
	Female	81	34.8
Age	12-28	233	100
Education	High School/Plus Two	50	21.5
	Graduate	151	64.8
	Post Graduate	32	13.7
Field of Study	Science	30	12.9
	Technology	75	32.2
	Engineering	4	1.7
	Humanities	2	0.9
	Social Sciences	2	0.9
	Business	110	47.2
	Other	10	4.3
Experience with AI	Less than 6 Months	74	31.8
	6 Months to 1 Year	56	24.0
	1-2 Years	45	19.3
	More than 2 Years	58	24.9
	Total	234	100.0

The demographic profile of the respondents provides valuable insights into the composition of the study's sample. Among the 234 participants, 65.2% are male, and 34.8% are female, indicating a higher proportion of male respondents. The entire sample falls within the age range of 12 to 28 years, aligning with a youthful demographic. In terms of educational qualifications, 64.8% of respondents are graduates, followed by 21.5% with a high school/plus two level of education, and 13.7% being postgraduates. Regarding the field of study, the majority (47.2%) are from a business background, while 32.2% are from technology, 12.9% from science, and smaller percentages from engineering, humanities, and social sciences. Respondents also reported varying levels of experience with artificial intelligence (AI), with 31.8% having less than six months of experience, 24.9% with more than two years, and the remaining distributed across intermediate durations. These results highlight a diverse educational and experiential background among the respondents, which contributes to a holistic understanding of the perspectives analyzed in this study.

Table 2: MANOVA

Multivariate Tests (Main Effects)

Variable	Wilks' Lambda	F	Sig.	Partial Eta Squared
Education Qualification	0.854	2.913	0.002	0.076
Field of Study	0.779	1.841	0.008	0.049
Experience with AI	0.721	3.062	0	0.078

Multivariate Tests (Interaction Effects and Others)

Interaction	Wilks' Lambda	F	Sig.	Partial Eta Squared
Gender * Education Qualification	0.851	2.984	0.001	0.077
Gender * Field of Study	0.87	2.567	0.005	0.067
Gender * Experience with AI	0.831	1.702	0.029	0.045
Education Qualification * Field of Study	0.826	1.759	0.022	0.047
Education Qualification * Experience with AI	0.74	1.858	0.004	0.058
Field of Study * Experience with AI	0.515	3.196	0	0.124

The results of the MANOVA analysis reveal significant effects of individual variables and interactions on the dependent variables. Education Qualification (Wilks' Lambda = 0.854, F = 2.913, p = 0.002, Partial Eta Squared = 0.076), Field of Study (Wilks' Lambda = 0.779, F = 1.841, p = 0.008, Partial Eta Squared = 0.049), and Experience with AI (Wilks' Lambda = 0.721, F = 3.062, p < 0.001, Partial Eta Squared = 0.078) independently influence the dependent variables, with Experience with AI showing the highest effect size. Interaction effects also indicate significant contributions. The interaction between Gender and Education Qualification (Wilks' Lambda = 0.851, F = 2.984, p = 0.001, Partial Eta Squared = 0.077) and Gender and Field of Study (Wilks' Lambda = 0.87, F = 2.567, p = 0.005, Partial Eta Squared = 0.067) highlight gender-specific nuances. Furthermore, the interaction of Field of Study and Experience with AI (Wilks' Lambda = 0.515, F = 3.196, p < 0.001, Partial Eta Squared = 0.124) demonstrates the strongest combined influence, suggesting a substantial impact of these two factors on outcomes. These findings emphasize the multifaceted nature of the relationships

and underline the importance of considering both individual and interaction effects in analyzing the variables' impact.

Table 3: Correlation Analysis

		Level of Ethical Concern	Experience with AI Tools	Awareness of AI Tools	Privacy Concerns
Level of Ethical Concern	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	233			
Experience with AI Tools	Pearson Correlation	.455**	1		
	Sig. (2-tailed)	.000			
	N	233	233		
Awareness of AI Tools	Pearson Correlation	.696**	.700**	1	
	Sig. (2-tailed)	.000	.000		
	N	233	233	233	
Privacy Concerns	Pearson Correlation	.646**	.397**	.621**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	233	233	233	233

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation analysis reveals significant relationships between the variables under study at the 0.01 level (2-tailed). The level of ethical concern shows a strong positive correlation with awareness of AI tools ($r = 0.696$) and privacy concerns ($r = 0.646$), indicating that individuals with higher ethical concerns are more likely to be aware of AI tools and exhibit heightened privacy concerns. Additionally, a moderate positive correlation is observed between the level of ethical concern and experience with AI tools ($r = 0.455$), suggesting that increased experience with AI may influence ethical considerations. Awareness of AI tools is strongly correlated with both experience with AI tools ($r = 0.700$) and privacy concerns ($r = 0.621$), highlighting that greater awareness is associated with higher privacy sensitivity and more extensive experience. Lastly, privacy concerns exhibit a moderate correlation with experience with AI tools ($r = 0.397$), implying that individuals with more experience may develop moderate privacy.

Table 4: Regression Anaysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.748a	.559	.554	3.087

a. Predictors: (Constant), Privacy Concerns, Experience with AI Tools, Awareness of AI Tools

ANOVAa

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2771.284	3	923.761	96.912	.000b
	Residual	2182.828	229	9.532		
	Total	4954.112	232			

a. Dependent Variable: Level of Ethical Concern

b. Predictors: (Constant), Privacy Concerns, Experience with AI Tools, Awareness of AI Tools

Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.404	.768		5.737	.000
	Experience with AI Tools	-.034	.056	-.038	-.616	.539
	Awareness of AI Tools	.491	.070	.507	7.035	.000
	Privacy Concerns	.278	.045	.346	6.180	.000

a.   Dependent Variable: Level of Ethical Concern

The regression analysis evaluates the impact of privacy concerns, experience with AI tools, and awareness of AI tools on the level of ethical concern. The model demonstrates a strong fit, with an R value of 0.748 and an R2 value of 0.559, indicating that 55.9% of the variance in the level of ethical concern is explained by the

predictors. The adjusted R2 value of 0.554 further confirms the model's robustness. The ANOVA results indicate the model's overall significance (F(3,229) =96.912, p<0.001, F(3,229) = 96.912, p < 0.001, F(3,229)=96.912, p<0.001).

Among the predictors, awareness of AI tools (β=0.507, p<0.001, beta = 0.507, p < 0.001, β=0.507, p<0.001) and privacy concerns (β=0.346, p<0.001, beta = 0.346, p < 0.001, β=0.346, p<0.001) significantly and positively influence the level of ethical concern. This suggests that individuals who are more aware of AI tools or have heightened privacy concerns are more likely to exhibit ethical considerations. However, experience with AI tools does not significantly predict the level of ethical concern (β=−0.038, p=0.539, beta = -0.038, p = 0.539, β=−0.038, p=0.539), implying that familiarity with AI tools alone does not impact ethical concern. These findings highlight the critical roles of awareness and privacy considerations in shaping ethical attitudes toward AI.

V.   Discussion

The results of this research underscore significant ethical issues pertaining to the incorporation of artificial intelligence (AI) tools within educational settings, with particular emphasis on aspects such as privacy, algorithmic bias, and the overarching effects on academic integrity and equitable access. This study stresses the vital importance of upholding academic integrity during the integration of AI tools in education.

Previous scholarly work, including that of Sang-Jun Kim (2024), has identified potential risks, such as plagiarism and difficulties in recognizing AI-generated content. The findings of the present research corroborate these concerns, revealing an increase in ethical apprehensions among students who are acquainted with AI tools, thereby indicating the necessity for robust frameworks to facilitate responsible usage. Ethical considerations, as articulated by Hosseini et al. (2023), are paramount and include the requirements for transparent disclosure and appropriate citation of AI contributions, which are crucial in fostering trust and accountability. Privacy emerged as a prominent concern among respondents, echoing the worries highlighted in the research by M.W. Mutuku (2024) and Prem (2023). These studies accentuate the imperative for informed consent, strong data protection measures, and clarity in data usage—a sentiment that is also reflected in this research. The adoption of Privacy by Design principles, as advocated by Chris Gilbert et al. (2024), is essential for the protection of student data while encouraging ethical AI integration. The challenge of algorithmic bias, as discussed by Kostas Karpouzis (2024) and Mohamed Ghoneim et al. (2024), is similarly echoed in the findings of this study, which reveal the varying impacts of AI tools across different demographic groups. Addressing the biases present within AI systems is vital for ensuring equitable educational results.

This sentiment corresponds with recommendations from researchers such as Ahmad et al. (2024), who stress the necessity for adaptive governance to curb discriminatory practices in AI-enabled decision-making processes. The simultaneous pursuit of innovation alongside the adherence to ethical principles is a recurring theme within the extant literature. For example, Shahmar Mirishli (2024) emphasizes the urgency for international

collaboration and adaptive governance to reconcile technological progress with societal values. This research aligns with these conclusions, advocating for a well-rounded approach that incorporates ethical AI frameworks into educational policies and practices.

The findings also bring to light the significance of implementing institutional regulations, as articulated by Christian Mubofu and Luzabeth Kitali (2024). Such regulations should include the promotion of critical thinking, provision of teacher training, and establishment of plagiarism detection systems to ensure the considerate application of AI. Moreover, ethical frameworks, such as those proposed by Weber (2020), play an instrumental role in addressing issues related to fairness, accountability, and transparency. This research contributes to the expanding discourse on the ethical adoption of AI by providing actionable recommendations for educators, policymakers, and technology developers. By aligning with the suggestions of Deepti Pandey et al. (2024) and other scholars, this study highlights the urgent need for comprehensive guidelines to resolve ethical dilemmas, encourage responsible innovation, and maintain academic integrity in AI-enhanced educational environments.

VI. Conclusion and Implications

In conclusion, this research emphasizes the imperative of addressing ethical concerns surrounding the integration of AI tools in education to safeguard privacy, reduce algorithmic biases, and uphold academic integrity. The findings advocate for the adoption of robust ethical frameworks, such as Privacy by Design, to ensure data protection and equitable outcomes. The study bears practical implications for educators and policymakers, calling attention to the necessity of institutional regulations, transparency, and teacher training to facilitate responsible use of AI. Furthermore, it urges collaboration among stakeholders to harmonize technological innovation with ethical considerations, ultimately cultivating a more inclusive and sustainable educational environment.

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