

Ethical and Practical Challenges in AI Integration for Education: Stakeholder Perspectives on Trust, Transparency, and Accountability

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Abstract

Artificial intelligence (AI) integration into education presents challenging ethical and practical issues as well as transforming possibilities for individualized learning, operational efficiency, and improved outcomes. This report investigates trust, transparency, algorithmic bias, and responsibility in AI-driven educational systems from the points of view of three hundred teachers, educators, and researchers around India. The results highlight a notable knowledge gap: Just 28.33% of respondents are highly familiar with artificial intelligence in education, while 32.67% are completely unfamiliar. Though 35% of respondents are unsure about data privacy policies, 41.67% of respondents believe AI can greatly improve educational outcomes, so they are cautiously optimistic. Only 27.67% of respondents said they were completely aware of how artificial intelligence systems use data. Thus, algorithmic bias became a major issue for 34% of respondents, along with general calls for transparency. The results highlight the need for human supervision since 35.67% of respondents support artificial intelligence use just under such circumstances. This paper comes to the conclusion that tackling these issues calls for strong ethical rules, professional growth to raise AI literacy, and inclusive models for transparency and responsibility. These steps are essential to guarantee fairness and confidence in AI integration, so opening the path for responsible application in learning environments.

Keywords: artificial intelligence in education, AI ethics and governance, trust and transparency in AI, algorithmic bias and fairness, human oversight in AI decisions

Introduction

Artificial intelligence (AI) inclusion into educational systems has excited and alarmed stakeholders depending on their perspectives. AI is positioned as a possibly revolutionary tool for administrative processes, teaching, and learning. A focal point of technological development in education is artificial intelligence's capacity to personalize learning paths, improve resource management, and raise educational outcomes (Holmes et al., 2019; Zawacki-Richter et al., 2019). Though its potential is great, the acceptance of artificial intelligence in education confronts major obstacles including problems of familiarity, trust, transparency, ethical governance, and responsibility. These elements affect the impressions of stakeholders and, hence, the success of artificial intelligence applications.

Recent research shows that the efficient use of AI tools in educational environments is hampered by educators' and administrators' lack of artificial intelligence literacy and technological familiarity. While teachers acknowledge that artificial intelligence could enhance learning results, Holmes et al. (2019) point out that many lack the knowledge and confidence to properly combine these technologies. Likewise, Luckin et al. (2016) stress the need for focused professional development initiatives to close this knowledge gap since inadequate knowledge usually results in opposition to technological innovation.

Acceptance of artificial intelligence still depends mostly on faith in its possibilities. Positive impressions of artificial

intelligence's ability to improve student engagement, learning efficacy, and educational accessibility were recorded by Zawacki-Richter et al. (2019). Still, mistrust of artificial intelligence replacing conventional teaching roles and its incapacity to handle difficult human interactions challenges confidence in its use (Chen et al., 2020). Establishing trust calls for evidence-based proof of the advantages of artificial intelligence, addressing teachers' and parents' doubts. Another important issue is transparency about artificial intelligence operations, especially with relation to data consumption and decision-making procedures. Many times, functioning as "black boxes" artificial intelligence systems allow the underlying algorithms and data consumption to remain hidden from users. Selwyn (2022) contends that this lack of transparency erodes trust and feeds questions about data privacy, algorithmic bias, and fairness. For example, Veale and Binns (2019) point out that faulty or biased data inputs in educational AI systems could support discrimination, so producing unfair results, transparency, and solidity. Thus, governance systems are indispensable in reducing these hazards and guaranteeing moral application. Beyond transparency, ethical questions about artificial intelligence use in education cover algorithmic bias, data privacy, responsibility, and human supervision. As Noble (2018) emphasizes, bias in artificial intelligence systems reflects and reinforces current prejudices in data, so aggravating societal inequalities. As stakeholders argue about whether developers, institutions, or legislators should bear responsibility for AI decisions, accountability for them remains a divisive topic.

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Moreover, the dehumanizing of education, in which important decisions like admissions or grades depend just on artificial intelligence, raises issues regarding the function of human judgment and supervision (Borenstein & Howard, 2021). These moral conundrums highlight the need for clearly defined rules and responsibility systems to guarantee justice, responsibility, and transparency in AI-driven educational systems.

Examining stakeholders' familiarity with artificial intelligence, degrees of trust in its potential, and opinions of transparency, justice, and responsibility helps this paper to solve these important concerns. To find actions required for the responsible and fair application of artificial intelligence in education, it also investigates ethical issues including data protection, algorithmic bias, and human oversight. The study intends to add to the continuous conversation on ethical AI integration by offering a thorough examination of these aspects and supporting trust, transparency, and responsibility in educational AI systems.

Review of Literature

AI Integration in Education: Promise and Potential

The adoption of artificial intelligence in education has changed rapidly to provide tools for administrative efficiency, automated grading, intelligent tutoring systems, and customized learning. Early research such as Luckin et al. (2016), highlighted how artificial intelligence helps to customize learning opportunities to fit particular student requirements, increasing involvement and results. By means of data analytics, Holmes et al. (2019) observed that artificial intelligence could evaluate students' strengths and shortcomings, so enabling adaptive learning paths. In particular, in STEM disciplines, AI-driven technologies such as Intelligent Tutoring Systems (ITS) were found to offer targeted support to students (Chen et al., 2020). Still, the successful acceptance of artificial intelligence in the classroom depends on teachers' familiarity and preparedness. A systematic review by Zawacki-Richter et al. (2019) revealed that although the acceptance of artificial intelligence in higher education was rising, teachers sometimes lacked the required knowledge and abilities to make good use of AI tools. This "AI literacy gap" highlights the need of professional development activities and AI literacy programs to equip teachers and managers since it generates a barrier to implementation.

Trust and Perceptions Toward AI in Education

Among parents, teachers, and students, trust is still a major factor influencing artificial intelligence acceptance. Many teachers acknowledge AI's promise but are wary of its capacity to replace more conventional teaching approaches, according to Zawacki-Richter et al. (2019) and Chen et al. (2020). Many times, educators worry that artificial intelligence would devalue human interaction—a necessary component of holistic learning (Williamson & Eynon, 2020).

Trust in artificial intelligence systems calls for transparency and clear proof of their advantages. Trust cannot be attained, according to Borenstein and Howard (2021), unless artificial intelligence systems are built with justice and responsibility in mind. Showcases of artificial intelligence's effectiveness in improving learning results and tackling educational obstacles help to reduce doubt. In line with this, Selwyn (2022) advised early involvement of stakeholders in the AI adoption process to build trust and solve issues regarding the depersonalization of education.

Transparency and Ethical Concerns

The opaque character of many artificial intelligence systems makes transparency a major obstacle to integrating them. Many times, functioning as a "black box," artificial intelligence leaves stakeholders wondering about data use and decision-making processes. Selwyn (2022) underlined that teachers' and parents' mistrust and resistance resulting from this opacity could cause Veale and Binns (2019) to underline similarly the need for more transparency to guarantee the ethical application of artificial intelligence.

In artificial intelligence systems, bias raises still another urgent ethical issue. Noble (2018) showed how faulty or biased data inputs could reinforce social inequalities, thus producing unfair results, particularly for underprivileged groups. AI systems used for admissions or grading, for example, might inadvertently support prejudices in past data. To guarantee artificial intelligence systems maintain values of equality and fairness, Williamson and Eynon (2020) urged for regular audits and algorithmic fairness policies.

Data privacy and protection add still more complexity to ethical AI applications. Renz et al. (2020) find that parents and teachers frequently voice worries about student data security. Though similar rules and the General Data Protection Regulation (GDPR) have given structures for protecting data, consistent application remains difficult. To inspire more trust in artificial intelligence systems, Borenstein and Howard (2021) advised creating explicit rules for data usage, storage, and security.

The Role of Human Oversight in AI Integration

Ethical questions about completely autonomous artificial intelligence systems have spurred calls for human supervision in important educational decisions. Particularly in fields that demand moral reasoning, empathy, and judgment, artificial intelligence should assist human teachers rather than replace them, claims Scholes et al. (2020). For example, human review should be used to guarantee fairness and context-based considerations in last decisions, even though artificial intelligence can help with grading processes.

Stakeholders' concerns about artificial intelligence's participation in decision-making procedures align with studies by Aoun (2017), who advocated robust ethical standards and human supervision systems. Human involvement is especially crucial in sensitive areas like admissions, where algorithmic bias could have major effects. Chen et al. (2020) contend that maintaining human control over AI decisions will help to allay worries about over-reliance on technology and dehumanization.

Ethical Governance and Accountability

Solving AI issues in education still depends mostly on ethical governance. Many times, accountability for AI decisions is scattered, which begs issues about responsibility when AI systems fail or generate biased outcomes. To guarantee fair and equitable use of AI, Borenstein and Howard (2021) contended that legislators, educational institutions, and AI creators should all share responsibility. Reducing these moral conundrums depends mostly on guidelines and policies. Emphasizing the need of well-defined ethical frameworks outlining transparency criteria, data privacy policies, and justice audits, Selwyn (2022) and Renz et al. (2020) Stakeholders should co-create these systems to represent the needs and values of teachers, students, and parents.

Measures to Support Ethical AI Implementation

The literature highlights several strategies for promoting ethical AI integration in education:

- Professional Development: Training programs to increase educators' AI literacy and technical skills (Luckin et al., 2016).
- Transparency Measures: Ensuring clarity about AI algorithms, decision-making processes, and data usage (Selwyn, 2022).
- Bias Audits: Regular monitoring and audits of AI systems to identify and address algorithmic bias (Noble, 2018; Williamson & Eynon, 2020).
- Data Privacy Protocols: Implementing robust policies for data protection and informed consent (Renz et al., 2020).
- Human Oversight: Maintaining human control over AI decisions to ensure fairness and ethical outcomes (Scholes et al., 2020).
- Accountability Frameworks: Clearly defining responsibilities for AI developers, institutions, and policymakers (Borenstein & Howard, 2021).

Objectives

1. To assess stakeholders' (teachers', educators', and research scholars') understanding of and trust in AI's role in education.
2. To explore issues such as algorithmic bias, data privacy, and fairness in AI-driven education.
3. To examine the importance of transparency and human oversight in AI implementation.
4. To find out guidelines and frameworks for responsible and equitable AI integration in education.

Methodology

Research Design

This study uses a descriptive research design to systematically examine teachers', educators', and research scholars' opinions of artificial intelligence integration in education. The approach integrates quantitative survey data analysis to grasp a complex knowledge of familiarity, trust, transparency, justice, and ethical issues on artificial intelligence. Primary data was gathered using a survey approach, guaranteeing strong and ordered insights into these opinions.

Participants

Ten thousand emails were gathered from different sources all around pan-India and used just for the intended use of the study. Teachers, researchers, and other educators were personally contacted straight through emails, and the questionnaire (Appendix 1) was sent as a Google Form for comments. Seven hundred thirty responses in all were obtained; the final sample of 300 respondents was chosen to guarantee variation in age, gender, and academic credentials.

Table 1
Participant Demographics

Variable	<i>n</i>	%
Gender		
Male	210	70.00
Female	90	30.00
Age		
26–35	70	20.33
36–45	105	35.00
46–55	112	37.33
>56	13	4.33
Education level		
Bachelor's degree	6	2.00
Master's degree	32	10.66
Research scholars	60	20.00
Doctoral degree	202	67.33

Note. *N* = 300.

Data Collection Tools

Data were gathered with a structured questionnaire. The survey comprised three main parts. The first was a demographic section gathering rudimentary data on the respondents. The second set of closed-ended questions is meant to gauge opinions on artificial intelligence transparency, fairness, and data privacy, as well as familiarity and confidence. At last, the survey comprised Likert scale items to evaluate participants' degrees of agreement on ethical issues, the need for human supervision, and the

application of ethical rules. Developed based on themes found in the literature review, the survey was pilot-tested with a small group of stakeholders to guarantee dependability and simplicity.

Data Collection Procedure

The process of gathering the data included email distribution of the online survey. Every participant gave informed permission, and a clear statement of the goals of the study, together with measures on data confidentiality, helped to guarantee transparency and belief.

Data Analysis

Descriptive statistics—including frequency counts, percentages, and graphic aids like tables and graphs—was used in quantitative data analysis. The survey was computed and examined using statistical programs similar to Excel to produce rather good results.

Ethical Considerations

The investigation followed ethical guidelines rigorously. Informed consent was obtained from participants, and anonymity and confidentiality of respondents' data were ensured. Furthermore, the study adhered to the data protection guidelines established by The Data Protection Board of India (DPBI), which is an important entity in the realm of data governance.

Limitations

The analysis recognizes possible constraints, chiefly the self-reported aspect of survey data, which could lead to bias.

Results

The study exposed clear differences in the level of artificial intelligence knowledge among educational stakeholders. While a bigger percentage, 39%, indicated they were somewhat familiar with artificial intelligence, only 28.33% of respondents said they were very familiar (Table 2, Figure 1).

Unbelievably, 32.67% of respondents said they knew absolutely nothing about artificial intelligence, so indicating a notable knowledge and understanding gap. These results highlight the urgent need for customized training campaigns and educational programs meant to raise awareness of artificial intelligence technologies among stakeholders. Regarding confidence, the outcomes displayed cautious hope. While another 33.33% of respondents were only moderately optimistic about its influence, a noteworthy 41.67% of respondents thought that artificial intelligence could greatly improve educational outcomes. Still, a sizable fraction of participants expressed doubt—14% of them questioned the value of artificial intelligence and 11% of them were unsure about its future. These revelations emphasize the need to give stakeholders evidence-based proof of the advantages of artificial intelligence to build more faith in its uses. One major obstacle in artificial intelligence operations, especially in relation to data consumption, was transparency in them. Just 27.67% of respondents said they are totally aware of how artificial intelligence systems gather, handle, and apply data. By contrast, 24% were totally uninformed and 48.33% were just moderately aware. This lack of transparency emphasizes the need for open communication and disclosure policies to develop confidence among stakeholders by means of trust-building (Table 2, Figure 1).

Table 2
Familiarity, Trust, and Transparency in AI Use in Education

Question	Response options	<i>f</i>	%
Familiarity with AI in Education	Very familiar	85	28.33
	Somewhat familiar	117	39.00
	Not familiar at all	98	32.67
Total		100	100

Question	Response options	<i>f</i>	%
Trust in AI's Potential	Yes, significantly	125	41.67
	Yes, to some extent	100	33.33
	No, not at all	42	14.00
	Unsure	33	11.00
Total		100	100
Transparency of AI Usage	Yes, completely aware	83	27.67
	Somewhat aware	145	48.33
	Not aware at all	72	24.00
Total		100	100

Figure 1

Familiarity, Trust, and Transparency in AI Use in Education

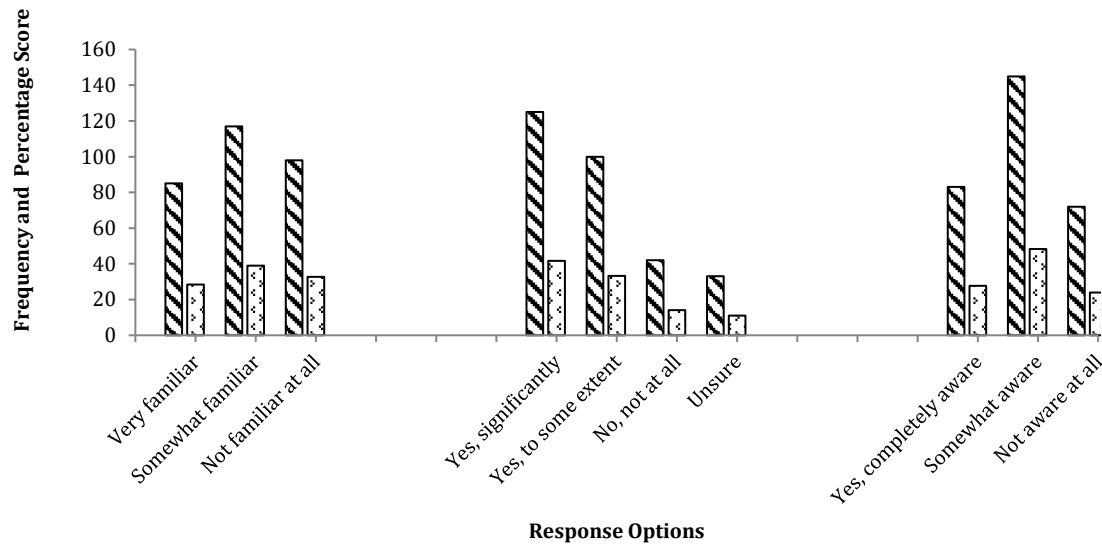


Table 3 investigates data privacy issues that are also a major obstacle to AI system trust. Although a nearly equal 32.33% of participants expressed concerns about data privacy, 32.67% of participants expressed confidence in the security of artificial intelligence systems. Furthermore, 35% of the respondents doubted whether the current policies are sufficient to safeguard private data. These findings underline the need for strong data protection rules, informed permission procedures, and open communication on how artificial intelligence systems manage and safeguard information. Among the stakeholders, the study found

algorithmic bias as a major issue. With 30.67% of respondents unsure about the fairness of AI systems, a noteworthy 34% of respondents considered biases in AI systems as a major concern. This uncertainty emphasizes the need of consistent algorithmic audits and monitoring to guarantee objective results. More general ethical questions draw attention to problems including data privacy and bias (27.33% and 21.67%, respectively), as well as other problems including poor transparency and the possibility of too strong technological reliance (Figure 2, Table 3).

Table 3

Ethical Concerns and Perceptions of AI in Education

Question	Response options	<i>f</i>	%
Data Privacy and Protection	Yes, I trust the system is secure	98	32.67
	No, I have concerns about data privacy	97	32.33
	Unsure	105	35.00
Total		100	100
Algorithmic Fairness	Yes, this is a significant concern	102	34.00
	Possibly, but it can be managed	46	15.33
	No, AI is inherently unbiased	60	20.00
	Unsure	92	30.67
Total		100	100
Ethical Concerns	Data privacy and security	82	27.33
	Bias and discrimination	65	21.67
	Lack of human oversight	48	16.00
	Over-reliance on technology	45	15.00
	Inadequate transparency	20	6.67
	Dehumanization of education	40	13.33
Total		100	100

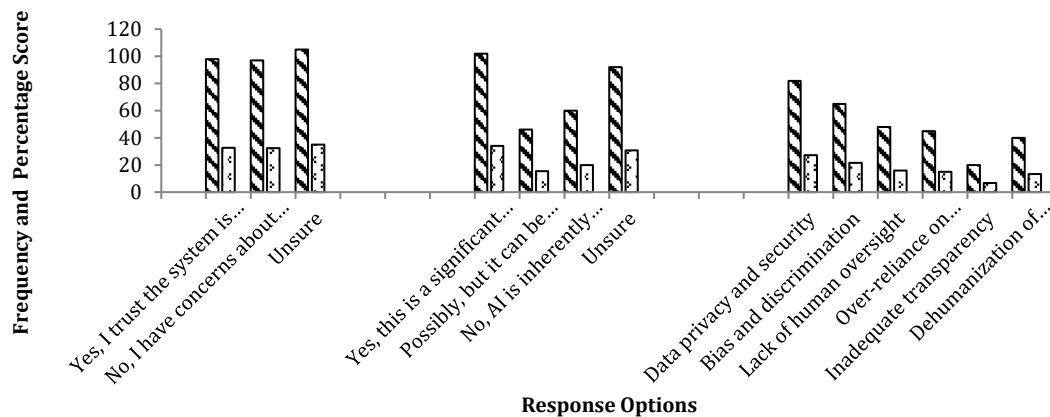
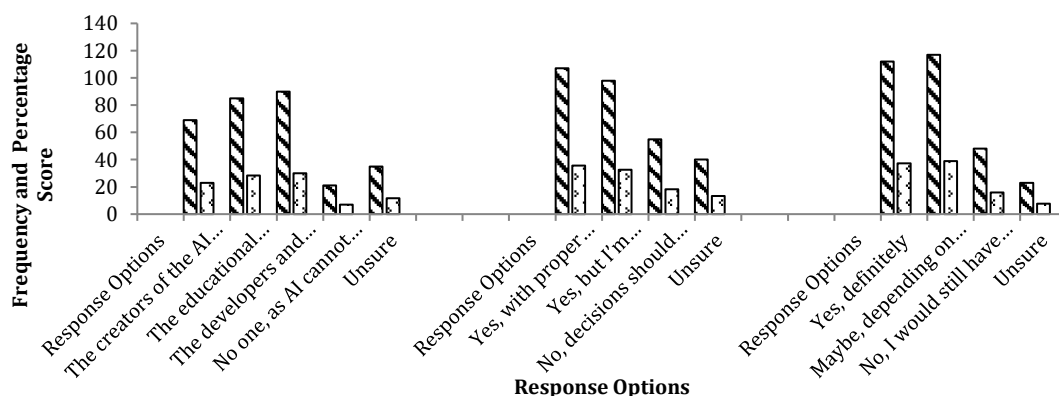
Figure 2*Ethical Concerns and Perceptions of AI in Education*

Table 4 emphasizes AI-driven education ethical standards, human supervision, and responsibility. According to the data, thirty percent of participants believe developers and institutions should share equal responsibility for AI decisions; otherwise, accountability for these decisions is seen as shared responsibility. Another major issue was human supervision; 35.67% of respondents supported artificial intelligence applications in education only in line with appropriate checks and control systems. Moreover, 18.33% of participants thought that important decisions like admissions and grades should be

made just by humans, reflecting general caution on totally autonomous artificial intelligence systems. These results show the need for a mixed strategy combining the ethical thinking and judgment of human control with the efficiency of artificial intelligence. The findings underlined rather the need of ethical principles and responsibility structures for the application of artificial intelligence. To guarantee transparency, justice, and responsibility, most respondents—76.33%—said they supported rigorous or conditional ethical standards (Table 4, Figure 3).

Table 4*Accountability, Oversight, and Ethical Guidelines*

Question	Response options	<i>f</i>	%
Accountability for AI Decisions	The creators of the AI system	69	23.00
	The educational institution	85	28.33
	The developers and institution equally	90	30.00
	No one, as AI cannot be held accountable	21	7.00
	Unsure	35	11.67
Total		100	100
Human Oversight in Critical Decisions	Yes, with proper oversight and checks	107	35.67
	Yes, but I'm concerned about fairness	98	32.67
	No, decisions should be made by humans only	55	18.33
	Unsure	40	13.33
Total		100	100
Importance of Ethical Guidelines	Yes, definitely	112	37.33
	Maybe, depending on the guidelines	117	39.00
	No, I would still have concerns	48	16.00
	Unsure	23	7.67
Total		100	100

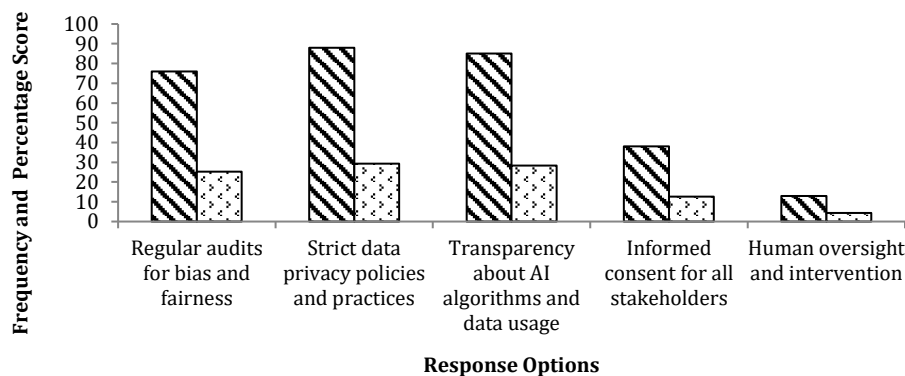
Figure 3*Accountability, Oversight, and Ethical Guidelines*

When asked about particular steps for ethical AI integration, 29.33% of respondents gave strict data privacy policies a top priority, while 28.33% stressed the need for transparency about AI algorithms and decision-making procedures (Table 5, Figure 4.). 25.33% of respondents also judged regular audits for bias and fairness to be absolutely essential. Though less often mentioned, informed permission and human supervision were also noted as crucial steps to handle ethical issues and build trust. These results highlight the need of thorough, stakeholder-inclusive models to direct the moral and responsible application of artificial intelligence in the sector (Table 5, Figure 4).

Table 5
Measures for Ethical Implementation of AI in Education

Measure	<i>f</i>	%
Regular audits for bias and fairness	76	25.33
Strict data privacy policies and practices	88	29.33
Transparency about AI algorithms and data usage	85	28.33
Informed consent from all stakeholders	38	12.67
Human oversight and intervention	13	4.33

Figure 4
Measures for Ethical Implementation of AI in Education



Discussion

The results about degrees of knowledge with artificial intelligence in education match earlier research that regularly show gaps in stakeholders' awareness and readiness for AI integration. For instance, Holmes et al. (2019) pointed out that although many teachers lack enough knowledge to properly apply artificial intelligence technologies, they usually recognize their potential. To close this knowledge disparity, Luckin et al. (2016) also underlined the need for professional development initiatives. The findings of this study, in which 32.67% of respondents claimed not knowing anything about artificial intelligence, point to a continuous demand for educational programs raising AI literacy among officials and teachers. The optimism shown in this study, where 41.67% of respondents said AI could greatly improve outcomes, reflects past results by Zawacki-Richter et al. (2019), who underlined good opinions of AI's ability to increase student engagement and learning efficiency. Still, mistrust persists, as Chen et al. (2020) found in studies showing that worries about artificial intelligence substituting for conventional teaching roles lead to trust deficits. These similarities highlight the need of evidence-based demonstrations to establish confidence in the educational advantages of artificial intelligence. With 48.33% of respondents somewhat aware of AI data usage, the lack of knowledge about it corresponds with issues expressed by writers like Selwyn (2022), who claimed that technical complexity sometimes eclipses transparency in AI systems. Furthermore, data privacy concerns raised in this study reflect the results of Veale and Binns (2019), who underlined privacy as a main ethical concern in systems of educational artificial intelligence. Similar findings show that strong data governance and transparency still present continuous worldwide difficulties.

With 34.00% of respondents identifying AI bias as a major, the worries about it fit studies like those by Noble (2018), which show that faulty data inputs cause AI systems to reinforce current society prejudices. Likewise, recent research by Williamson and Eynon (2020) maintained that in order to avoid discriminating results in education, algorithmic fairness is absolutely vital. The results of this study emphasize the necessity of consistent algorithmic audits to guarantee equity and transparency.

Data privacy, bias, and over-reliance on technology are among the ethical issues raised in this paper that speak to results from

Borenstein and Howard (2021), who underlined that responsible AI implementation depends critically on ethical standards and human oversight. The results of this study, which show 35.67% of respondents in favor of AI use under supervision, reflect advice by Scholes et al. (2020) to keep human control in AI-driven educational decisions.

The findings of this study, in which respondents preferred ethical rules and responsibility frameworks, line up with studies by Aoun (2017) and Renz et al. (2020), who maintained that well-defined policies are indispensable to solving moral conundrums and building stakeholder confidence. Moreover, the focus on shared responsibility fits more general debates on fair responsibility among institutions and developers.

Conclusion

The results of the research expose a mix of deep-seated concerns about the application of artificial intelligence in education and cautious optimism. Although many respondents see artificial intelligence's ability to improve results, important questions including transparency, data privacy, justice, and responsibility still remain top priority. The study also draws attention to important ethical issues including prejudice, too strong reliance on technology, and dehumanizing of education. Fostering trust and optimizing the advantages of artificial intelligence in educational environments depends on addressing these issues through ethical rules, human supervision, and strong data security policies going ahead.

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Annexure 1

Questionnaire**Person Details**

Gender:	M	F		
Age group:	26–35	36–45	46–55	>56
Education level:	Bachelor's degree	Master's degree	Research Scholars	Doctoral Degree

Ethical Use of AI in Education

Tick (√) Here	Questions and Options
	1. Familiarity with AI in Education
	a. How familiar are you with the use of AI in educational settings?
	Very familiar
	Somewhat familiar
	Not familiar at all
	2. Trust in AI's Potential
	b. Do you believe AI has the potential to enhance educational outcomes?
	Yes, significantly
	Yes, to some extent
	No, not at all
	Unsure
	3. Data Privacy and Protection
	c. Do you feel that students' data collected by AI systems is adequately protected from misuse or breaches?
	Yes, I trust the system is secure
	No, I have concerns about data privacy
	Unsure
	4. Transparency of AI Usage
	d. Are you aware of how your (or your child's) data is being used by AI systems in your educational institution?
	Yes, completely aware
	Somewhat aware
	Not aware at all
	5. Algorithmic Fairness
	e. Do you believe AI systems in education could unintentionally perpetuate biases
	Yes, this is a significant concern
	Possibly, but it can be managed
	No, AI is inherently unbiased
	Unsure
	6. Accountability for AI Decisions
	f. Who should be held accountable if an AI system makes an incorrect or biased decision in education?
	The creators of the AI system
	The educational institution using the system
	The developers and the institution equally
	No one, as AI systems cannot be held accountable
	Unsure
	7. Human Oversight in Critical Decisions
	g. Should AI be allowed to make significant decisions (e.g., grades, admissions, learning pathways) in education without

	human oversight?
	Yes, with proper oversight and checks
	Yes, but I'm concerned about fairness
	No, decisions should be made by humans only
	Unsure
	8. Ethical Concerns
	h. What concerns do you have about the use of AI in education?
	Data privacy and security
	Bias and discrimination
	Lack of human oversight
	Over-reliance on technology
	Inadequate transparency
	Dehumanization of education
	9. Importance of Ethical Guidelines
	i. Would you feel more comfortable with the use of AI in education if there were strict ethical guidelines and oversight in place?
	Yes, definitely
	Maybe, depending on the guidelines
	No, I would still have concerns
	Unsure
	10. Measures for Ethical Implementation
	j. What measures should be taken to ensure AI in education is implemented ethically?
	Regular audits for bias and fairness
	Strict data privacy policies and practices
	Transparency about AI algorithms and data usage
	Informed consent for all stakeholders (students, parents, educators)
	Human oversight and intervention in critical decisions