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EDUCATION IN THE ERA OF ARTIFICIAL INTELLIGENCE: BENEFITS, CHALLENGES, AND PERSPECTIVES

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Abstract: *Artificial Intelligence (AI) has begun to reshape the educational landscape, promising to bring profound changes to how teaching and learning are conducted in schools. The integration of AI into the educational system is expected to influence various aspects of schooling. The current research investigates the perceptions of educators and students regarding the integration of AI in education, focusing on five key dimensions: personalized learning, assessment and feedback, administrative efficiency, ethical considerations, and specific challenges related to AI implementation. Data were collected through anonymous responses to 5-point Likert scale survey questions to ensure candid insights for research purposes.*

Key words: *artificial intelligence, personalized learning, AI-based assessment, administrative efficiency, ethical concerns.*

1. Introduction

Since its conceptual beginnings, AI has evolved in multiple directions, being extensively applied in education to support teaching processes and optimize the management of educational resources (Bozkurt et al., 2021). One promising aspect of AI in education lies in its ability to support personalized learning by providing each student with an experience tailored to their individual needs. Through the use of intelligent systems such as virtual tutors and adaptive platforms, AI can analyze students' learning preferences and behavior, generating personalized educational pathways that enhance academic performance and engagement (Hinojo-Lucena et al., 2019).

AI also brings significant contributions to the automation of assessment processes and the provision of rapid and detailed feedback. Machine learning algorithms can analyze students' work, including open-ended responses and essays, with high accuracy, significantly reducing evaluation time (Hinojo-Lucena et al., 2019). Natural language processing technologies enable the assessment of complex aspects such as argumentative coherence or the logical structure of a text, broadening the applicability of AI to various forms of assessment, including formative and summative evaluations

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(Yang & Zhang, 2019). The feedback generated through these systems helps improve academic performance by quickly identifying gaps and offering targeted solutions (Zawacki-Richter et al., 2019).

Moreover, AI can contribute to the efficiency of administrative processes, reducing the workload of educators. AI algorithms can be used to automate repetitive tasks such as admissions processes, scheduling, attendance monitoring, and generating reports on student performance. AI-based platforms support decision-making by identifying students at risk, utilizing machine learning methods to evaluate the likelihood of dropout or other challenges in educational progress (Hinojo-Lucena et al., 2019). By integrating machine learning and deep learning algorithms that allow for the collection and analysis of educational data, AI results can aid in making informed decisions (Bozkurt et al., 2021).

On the other hand, the use of AI involves numerous challenges. Ethics and data privacy are heavily debated topics, as algorithms can amplify existing biases in datasets, raising questions about the fairness of decision-making processes (Zawacki-Richter et al., 2019). Furthermore, unequal access to advanced technologies may exacerbate socio-economic disparities, limiting the benefits of AI for students from disadvantaged backgrounds (Yang & Zhang, 2019). These issues underline the need for ethical codes and clear standards for AI usage to promote equity and trust in these technologies (European Commission, 2019).

2. Insights from AI Research in Education

This section explores the key contributions of recent research, providing a theoretical framework for understanding the promises and challenges of using AI in education.

2.1. Personalized Learning through Artificial Intelligence

Personalized learning represents a central dimension of education transformation enabled by AI, allowing educational processes to be tailored to the individual needs of students while enhancing learning experiences through advanced technologies. This approach leverages machine learning algorithms, interactive platforms, and flexible curricula to support the adaptive and accessible development of skills and knowledge.

A major contribution of AI in education lies in the use of adaptive systems that analyze student data to adjust content and teaching methods in real time. These systems identify individual learning styles, preferences, and pacing, offering personalized pathways to achieve educational objectives (Essa et al., 2023). Moreover, AI-powered personalization includes e-learning platforms that deliver constantly adjusted educational materials based on individual performance and interests. This process enhances student engagement and motivation by providing relevant and appealing content (Ng et al., 2023).

Another significant aspect of personalization involves integrating AI into curriculum design. Recent studies propose curriculum models that address student diversity through flexibility and the integration of both local and global practices. These models

include dimensions such as content, processes, and praxis, adapting educational materials and activities to cultural contexts and available resources (Chiu, 2021). For example, the use of accessible terminology and visual representations facilitates the understanding of AI concepts, reducing conceptual barriers for students. Curricular flexibility allows educators to personalize teaching by selecting specific modules, adjusting difficulty levels, and choosing topics based on student interests (Alpay, 2013). As a result, the educational process becomes more inclusive, supporting students with diverse learning styles.

2.2. School performance assessment and feedback

AI offers new methods for assessing school performance and generating personalized feedback. Integrating AI technologies into the educational process facilitates a more dynamic, adaptive, and personalized approach to evaluation, supporting both student progress and teachers' decision-making processes.

AI-based systems use advanced machine learning algorithms to analyze student performance and provide real-time feedback. Predictive models, such as those based on neural networks and support vector machines, enable the early identification of at-risk students and the adjustment of educational strategies to meet their needs (Arashpour et al., 2022). For instance, algorithms can analyze variables such as student engagement, performance in intermediate assessments, or interactions with e-learning platforms to generate detailed reports on academic progress (Gligorea et al., 2023). The feedback generated by these systems is adaptive, providing students with clear information about their strengths and areas requiring improvement. In medical education, for example, AI is used to evaluate students' practical performance through virtual simulations, enabling the assessment of competencies in near-real conditions (Abdellatif et al., 2022). This approach promotes competency-based learning and fosters self-regulated learning.

Another innovative aspect of AI utilization is its ability to analyze students' emotions during the learning process. Emotion recognition technologies, such as facial expression analysis, eye movement tracking, and bio-physiological signal monitoring, allow real-time adjustment of educational content based on students' emotional states (Vistorte et al., 2024). Intelligent Tutoring Systems (ITS) integrate emotional assessment to guide students through the learning process, offering personalized support that combines cognitive and emotional dimensions. These tools contribute to creating a more empathetic and adaptable educational environment, supporting students' holistic development (Taub et al., 2021, cit in Vistorte et al., 2024).

2.3. AI and the optimization of administrative processes

AI has the potential to become an essential tool for optimizing administrative processes in educational institutions. Integrating AI into this domain not only streamlines operational workflows but also frees up human resources for higher-value activities, such as enhancing the educational experience.

AI is gradually becoming a practical solution for automating repetitive tasks, such as

managing admissions processes, course scheduling, and resource allocation. These applications significantly reduce the administrative workload and increase institutional efficiency. For example, AI algorithms are used to analyze historical data on enrollment and resource allocation to predict future demand, enabling data-driven decision-making (Salas-Pilco & Yang, 2022).

Advanced machine learning algorithms allow educational institutions to analyze large-scale data to identify patterns and trends. For instance, AI can estimate dropout rates, identify resource shortages, or suggest strategies for improving overall academic performance (Ahajjam et al., 2022). As a result, institutions can take preventive action, reducing financial losses and enhancing the educational experience.

AI-based predictive technologies are also utilized to optimize curricular planning and resource distribution. For example, predictive models can assess the need for textbooks based on historical data regarding student numbers and academic preferences (Nuong et al., 2024). This approach minimizes waste and ensures a more balanced allocation of resources.

By leveraging AI, educational administrators can make better-informed decisions. Analytical tools provide detailed insights into course demand, faculty efficiency, or budget allocation. Advanced data analysis enables the identification of weaknesses and the optimization of internal processes, thereby contributing to the overall efficiency of institutions (Munir et al., 2022).

2.4. Ethical concerns regarding Artificial Intelligence in Education

While AI offers valuable opportunities for personalized learning, administrative process optimization, and enhanced student performance, its integration raises fundamental questions about ethical, equitable, and responsible use in educational settings. The promise of AI to transform education through advanced algorithms and predictive analytics depends on how challenges related to data privacy, decision-making transparency, and algorithmic bias are addressed. The use of AI in education involves extensive collection of students' personal, behavioral, and performance data. Generative AI models often require vast datasets for effective training, which can lead to privacy breaches if the data are mismanaged or if their sources lack transparency (Ghassemi et al., 2021).

AI algorithms can inadvertently perpetuate or amplify biases present in the datasets used for training. This issue is particularly problematic in education, where biases can lead to inaccurate evaluations, discriminatory practices, or unequal access to opportunities (Golda et al., 2024). For example, biased datasets may disadvantage students from minority or underprivileged communities, reinforcing existing systemic inequities (Guleria et al., 2023).

AI systems often function as "black boxes," making it difficult for educators, students, and decision-makers to understand or challenge their decisions. The lack of transparency in decision-making processes raises accountability questions, especially when AI recommendations or actions significantly impact students' educational trajectories (Ghassemi et al., 2021).

The implementation of AI tools, such as chatbots and automated assessment systems, has raised concerns about the ethical boundaries of their use. Over-reliance on AI may undermine students' critical thinking development and diminish the pedagogical role of teachers. Furthermore, questions arise regarding intellectual property over AI-generated content, particularly in academic writing and research (Golda et al., 2024).

The rapid adoption of AI in education has outpaced the development of robust regulatory frameworks. Without clear guidelines, there is a risk of inconsistent implementation and insufficient oversight, which could exacerbate ethical challenges related to data usage, algorithm design, and AI accountability (Ghassemi et al., 2021).

AI has the potential to democratize education by providing personalized learning pathways for students with diverse needs. However, disparities in access to AI tools, driven by economic, technological, or infrastructural limitations, could widen the gap between privileged and underprivileged groups (Golda et al., 2024).

In a global educational context characterized by cultural, economic, and technological diversity, addressing the ethical dimensions of AI usage is vital to ensure equitable access and to prevent the amplification of existing inequities. Additionally, questions of accountability and the decision-making autonomy of educational actors become increasingly critical, especially with AI systems that can influence students' educational pathways or administrative decisions.

3. Research Design

This research adopts a quantitative descriptive design, aiming to collect and analyze data regarding participants' perceptions of AI usage in education.

3.1. Research objective

The primary objective of this study is to explore and analyze the perceptions of teachers and students regarding the use of AI in education, focusing on several specific dimensions. The study seeks to investigate how AI contributes to personalized learning, school performance assessment, and the optimization of administrative processes, while also identifying the ethical and special concerns associated with the implementation of these technologies. The research findings aim to provide a detailed perspective on the opportunities and challenges posed by the integration of AI in education.

3.2. Research questions

The research questions formulated for this study reflect five key dimensions of AI use, ranging from personalized learning and administrative task optimization to associated ethical add special concern.

*How do teachers and students perceive AI's contribution to the personalization of the learning process?

*What are the respondents' opinions on using AI for school performance assessment and automated feedback generation?

*How do teachers and students perceive the efficiency of AI in optimizing administrative processes in education?
*What ethical concerns are associated with the use of AI in education, according to participants' perceptions?
*To what extent are participants concerned about AI's impact on human interactions, critical thinking, and educational inequalities?

3.3. Description of the research instrument

The questionnaire items were formulated using a 5-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (5). The questionnaire consists of 25 items, divided into five subscales: personalized learning (items 1-5), school performance assessment and feedback (items 6-10), administrative process optimization (items 11-15), ethical concerns (items 16-20), and special concerns (items 21-25). The questionnaire was administered in November 2024 and completed by 165 respondents, comprising 121 students, 30 teachers from pre-university education, and 14 teachers from university education, providing a diverse perspective on perceptions of AI use in education.

The reliability analysis results, presented in Table 1, indicate varied Cronbach's Alpha coefficients for the five subscales of the questionnaire. The obtained values reflect good internal consistency for most subscales, except for "ethical concerns", which show low reliability. This reduced value may be attributed both to the heterogeneity of the items, which address diverse themes such as data privacy, algorithmic bias, and the reduction of teacher autonomy, and to the heterogeneity of the sample. Participants from different categories (e.g., students, pre-university teachers, and university teachers) may have differing perceptions of ethical issues, suggesting the need for further analysis of the structure and coherence of this dimension.

Reliability Analysis of Questionnaire Subscales Table 1

Subscale	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Learning personalization	.827	.833	5
School performance assessment and feedback	.826	.826	5
Administrative process optimization	.860	.864	5
Ethical concerns	.496	.498	5
Special concerns	.794	.799	5

4. Research Results

This section summarizes respondents' perceptions of AI in education, highlighting positive views on personalization and administrative optimization, alongside concerns about ethics, human interactions, and equity, as shown in Table 2.

Descriptive Statistics and ANOVA comparison between groups Table 2

Learning Personalization Subscale						ANOVA	
Items / Groups	*personalized learning*	*engagement through personalized content*	*AI's ability to identify learning styles*	*reducing education inequities*	*increasing students' motivation for learning*	F	Sig.
university_t	3.93	4.21	3.50	3.43	4	.342	.711
pre-university_t	3.97	3.83	3.27	3.27	3.77		
students	3.33	4	4	3.33	3.66		
Evaluation & Feedback Subscale						ANOVA	
Items / Groups	*assessment objectivity*	*usefulness in generating detailed feedback*	*AI's fast assessment*	*development of self-regulated learning capacity*	*AI evaluations matching teacher accuracy*	F	Sig.
university_t	3.50	3.50	4	3.50	3.07	.781	.460
pre-university_t	3.30	3.53	3.70	3.20	2.53		
students	3.17	3.83	3.33	3	2.17		
Administrative Processes Subscale						ANOVA	
Items / Groups	*automating administrative tasks*	*reducing teachers' workload*	*useful reports for decision-making*	*identifying the risk of school dropout*	*managing educational resources*	F	Sig.
university_t	4.50	4.50	4.14	3.71	4.14	4.43	.01
pre-university_t	4.23	4.37	4.20	3.20	4.03		
students	2.83	3.17	2.67	2.83	3.33		
Ethical Concerns Subscale						ANOVA	
Items / Groups	*data privacy*	*algorithmic bias*	*AI decision-making transparency*	*reduced teacher autonomy*	*AI's negative effects on students*	F	Sig.
university_t	2.93	3.21	4.43	2.93	3.79	1.40	.25
pre-university_t	3.33	2.50	4.23	3.37	3.97		
students	3	3	3.33	2.67	2.67		
Special Concerns Subscale						ANOVA	
Items / Groups	*human interactions*	*technological dependency*	*lack of clear regulations*	*impact on critical thinking and creativity*	*school inequalities*	F	Sig.
university_t	3.29	3.79	4.14	3.86	4.21	.82	.44
pre-university_t	3.77	4.13	4.57	4.23	4.23		
students	3.17	3.50	2.83	2.17	3		

Regarding the "learning personalization" subscale, the results reflect varied perspectives across different categories of respondents. Specifically:

a*. University teachers* provided the highest scores for the impact of AI on student engagement through personalized content, with an average score of 4.21. Their evaluations were consistent and positive across all items in this dimension, with averages ranging from 3.43 to 4.21, suggesting a clear perception of AI's utility in adapting educational processes.

b*. Pre-university teachers* expressed similar perceptions, albeit with slightly lower averages, ranging from 3.27 to 3.97. In this group, the most appreciated contribution of AI was the creation of personalized learning pathways, with an average score of 3.97, highlighting a strong interest in the practical applicability of AI in the school environment.

c*. Students* provided more variable but positive scores, ranging between 3.33 and 4. They most appreciated AI's ability to identify learning styles and adjust teaching methods and enhance engagement through personalized content, with these aspects receiving average scores of 4. This perspective indicates their openness to integrating AI into the educational process, despite potentially limited direct experience with these technologies.

To determine whether statistically significant differences exist between groups regarding perceptions of learning personalization through AI, a one-way ANOVA test was conducted. The p-value is greater than the conventional significance threshold (p>0.05), indicating that there are no statistically significant differences between the mean scores of the analyzed groups regarding perceptions of learning personalization through AI. Subtle differences emerge among respondent groups regarding perceptions of AI's role in "school performance assessment and feedback generation". Specifically:

a. University teachers gave the highest score to AI's ability to rapidly analyze student work, with an average of 4. This reflects a high level of confidence in the technology's efficiency for these activities. Additionally, they perceive AI-based assessments as being closer to those conducted by a teacher, with an average score of 3.07, a more favorable opinion compared to the other groups.

b. Pre-university teachers expressed similar opinions regarding the usefulness of AI in generating detailed feedback, assigning an average score of 3.53. However, they are more skeptical about the comparability of AI-based evaluations to those conducted by teachers, with this aspect receiving an average score of 2.53.

c. Students displayed greater optimism regarding AI's ability to generate detailed feedback, with an average score of 3.83. However, they were more reserved about the contribution of AI to the development of self-regulated learning capacity, assigning an average score of 3. Additionally, they consider it least likely that AI could evaluate performance with the same precision as a teacher, this aspect receiving the lowest average score of 2.17.

In this case as well, the p-value is greater than the conventional significance threshold (p>0.05), indicating that there are no statistically significant differences between the mean scores of the analyzed groups regarding perceptions of school performance assessment and feedback generation using AI.

Regarding perceptions of "AI efficiency in optimizing administrative processes", there are notable differences among respondent groups. Specifically:

a. University teachers expressed the greatest enthusiasm for AI's contribution to reducing teachers' workload and automating administrative tasks, with both aspects receiving an average score of 4.50. They were also relatively optimistic about using AI to identify students at risk of dropping out, with this aspect being evaluated at an average of 3.71.

b. Pre-university teachers shared similar views, assigning positive scores to AI usage in administrative processes. Workload reduction was rated with an average score of 4.37, while generating useful reports for decision-making received an average of 4.20. However, they showed slight reservations regarding the use of AI for identifying students at risk of dropping out, with this aspect scoring an average of 3.20.

c. Students, on the other hand, were more reserved in their perceptions of AI's efficiency in this context. They assigned the lowest average scores for generating useful reports (2.67) and automating administrative tasks (2.83). Nevertheless, they acknowledged that AI could contribute to some extent to reducing teachers' workload (3.17) and managing educational resources (3.33), although these evaluations were lower compared to those of the teaching staff.

In this case, the p-value (p=0.013) is smaller than the conventional significance threshold. This indicates that there are statistically significant differences between the three groups (students, pre-university teachers, and university teachers) regarding their perceptions of AI's ability to contribute to the optimization of administrative processes.

The findings of the post-hoc Tukey HSD analysis for the "administrative process optimization" dimension are presented in Table 3.

The post-hoc Tukey HSD analysis provides a detailed comparison of the groups' perceptions, highlighting the nature and extent of differences regarding AI's role in optimizing administrative processes.

Multiple Comparisons Across Educational Status Groups Table 3

Multiple Comparisons

Dependent Variable: Administrative Processes						
(I) Statut	(J) Statut	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
pre-university_t	university_t	-.19333	.29634	.791	-.8943	.5076
	students	.40667	.18673	.078	-.0350	.8484
university_t	pre-university_t	.19333	.29634	.791	-.5076	.8943
	students	.60000	.25846	.056	-.0114	1.2114
students	pre-university_t	-.40667	.18673	.078	-.8484	.0350
	university_t	-.60000	.25846	.056	-1.2114	.0114

a. University teachers vs. pre-university teachers:

Mean Difference = -0.19, p-value (Sig.): 0.79.

There are no statistically significant differences between pre-university and university teachers regarding their perceptions of AI's role in optimizing administrative processes.

b. Pre-university teachers vs. students:
Mean Difference = 0.40, p-value = 0.07.

There are no statistically significant differences between pre-university teachers and students. However, the p-value (p=0.07) is close to the significance threshold (p<0.05), suggesting a potential trend toward differences.

c. University teachers vs. students:
Mean Difference = 0.60, p-value = 0.05.

Although the difference is not statistically significant (p=0.056), it is very close to the conventional threshold (p<0.05), indicating that university teachers might perceive AI-optimized administrative processes more positively than students.

Regarding "ethical concerns" related to the use of AI in education, the perceptions of different respondent categories highlight varying priorities and levels of concern. Specifically:

a. University teachers emphasize the necessity of transparency in AI-based decision-making, assigning this aspect the highest score (4.43). They also express moderate concern about the risk of data privacy breaches (2.93) and the potential reduction of teachers' decision-making autonomy (2.93). Additionally, they show a high level of concern about AI's impact on students from disadvantaged backgrounds, with this risk being evaluated at an average of 3.79.

b. Pre-university teachers share similar perceptions but express clearer concerns regarding data privacy (3.33) and the reduction of teacher autonomy (3.37). They are more concerned about the risk of AI contributing unequally to supporting students from disadvantaged backgrounds, evaluating this aspect with an average of 3.97.

c. Students display a lower level of concern regarding the ethical aspects of AI use. However, they acknowledge the importance of AI transparency, assigning this aspect an average score of 3.33. They also have moderate perceptions regarding algorithmic bias (average: 3) and data privacy (average: 3). In terms of AI's impact on students from disadvantaged backgrounds, their perception is more reserved, with an average score of 2.67.

The p-value (p = 0.25) is greater than the conventional significance threshold. This indicates that there are no statistically significant differences among the three groups regarding ethical concerns related to the use of AI in education.

The respondents offer distinct perspectives on "special concerns" regarding the use of AI in education, highlighting various key risks. Specifically:

a. *University teachers* express moderate concern regarding the impact of AI on human interactions, with this issue being rated with an average score of 3.29. They are also relatively worried about the risk of technology creating excessive dependency in education, rated at 3.79, as well as the potential impact on students' critical thinking and creativity, with an average score of 3.86. Furthermore, university teachers emphasize the importance of clear regulations for AI usage, with the lack of such regulations being perceived as a significant problem (4.14). Another major concern identified is the risk that AI might exacerbate inequalities between schools with different technological resources, an issue scored at 4.21.

b. *Pre-university teachers* highlight a stronger concern regarding the introduction of educational inequalities through AI usage, with the risk evaluated at an average of 4.23. Additionally, the lack of clear regulations is perceived as the most significant issue, having the highest score within this segment (4.57). Pre-university teachers are also more worried than their university counterparts about the effects of AI on critical thinking and creativity (4.23) and on excessive technological dependency (4.13).

c. *Students* on the other hand, appear less concerned overall about the effects of artificial intelligence. They consider that AI might have a limited impact on critical thinking and creativity (2.17) or on human interactions (3.17). Regarding technological dependency, students adopt a moderate stance, with an average score of 3.50. However, their concern is minimal about the lack of clear regulations (2.83) and educational inequalities (average: 3). These perceptions suggest a lower sensitivity to the potential risks associated with AI implementation in education.

In this case as well, the p-value (p=0.442) is greater than the conventional significance threshold. This indicates that there are no statistically significant differences among the three groups (students, pre-university teachers, and university teachers) regarding their perceptions of special concerns related to the use of AI.

5. Discussion and Conclusions

The results of this study highlight the varied perceptions of teachers and students regarding the use of AI in education.

Participants expressed generally positive perceptions of AI's potential for personalizing the educational process. While university teachers provided the highest scores for AI's impact on student engagement through personalized content, pre-university teachers emphasized AI's utility in creating personalized learning pathways. Students most appreciated AI's ability to identify learning styles. However, the ANOVA test indicated no statistically significant differences between groups regarding perceptions of learning personalization, suggesting that all participant categories in this study generally recognize AI's potential in this area.

The results also revealed subtle differences among group perceptions. University and pre-university teachers valued AI's ability to rapidly analyze assignments and generate detailed feedback, though they were more skeptical about the objectivity of AI assessments compared to human evaluations. Students demonstrated greater optimism toward AI-generated feedback but were more reserved regarding its comparability to teacher assessments. Nevertheless, the ANOVA test did not show statistically significant differences between groups, indicating that the perceived differences are marginal.

Regarding administrative process optimization, teachers expressed the greatest enthusiasm for AI's contribution to reducing workload and automating administrative tasks. University teachers recorded higher scores compared to pre-university teachers, while students were more reserved. Unlike the other dimensions, the ANOVA test revealed statistically significant differences between groups. The post-hoc Tukey analysis indicated a trend of differences between teachers and students, with no significant differences between university and pre-university teachers.

Ethical concerns varied among groups. University teachers emphasized the importance of transparency in AI decision-making, while pre-university teachers gave greater importance to the risk of educational inequality. Students showed lower levels of concern but recognized the importance of AI transparency. The ANOVA test did not indicate statistically significant differences between groups, reflecting a relative convergence of opinions on ethical issues.

Regarding the impact of AI on human interactions, critical thinking, and educational inequalities, all groups expressed concerns, although no significant differences were found between them. The analysis reveals distinct perspectives on AI's impact across respondent groups. Pre-university teachers demonstrate heightened concern about ethical and equity issues, particularly the potential for AI to exacerbate inequalities and the need for clear regulations. University teachers share similar concerns but place additional emphasis on the effects of AI on creativity and critical thinking. In contrast, students exhibit lower levels of concern overall, suggesting limited awareness or experience with AI-related challenges. These findings underscore the importance of addressing educators' priorities and ensuring the ethical and equitable integration of AI in education.

The research results reveal a general consensus among participants regarding the potential of AI to transform the educational process, particularly through personalized learning and adherence to ethical principles. All respondent categories acknowledged AI's value in tailoring the educational process to individual needs, but differences in priorities and trust levels among groups indicate distinct perspectives.

Teachers, both at university and pre-university levels, demonstrated greater enthusiasm for using AI to optimize administrative tasks and reduce workloads, compared to students, who were more reserved in their evaluations. This suggests that differences in experience and roles within the educational process influence perceptions of AI applicability. At the same time, all groups expressed concerns about the ethics of AI usage, emphasizing the need for transparency in decision-making, data protection, and the reduction of educational inequalities. These concerns reflect an awareness of the potential risks associated with implementing AI technologies in education.

In summary, AI integration in education is perceived as having significant potential, but its success depends on equitable implementation, clear regulations, and awareness of ethical concerns by all stakeholders.

6. Research Limitations and Future Research Directions

This study, while providing valuable insights into perceptions of AI usage in education, has several important limitations to consider.

First, the relatively small sample size and participant distribution may influence the generalizability of the findings. The study included pre-university and university teachers as well as students, but their demographic and professional diversity was limited. Factors such as age, technological experience, or access to digital resources were not analyzed in detail, which could affect the understanding of group differences.

Additionally, the exclusively quantitative nature of the analysis represents another limitation. Using a questionnaire allowed for a broad assessment of perceptions but did not provide an opportunity to explore participants' opinions, motivations, or

experiences in depth.

A primary future direction would be to expand the sample size and participant diversity. Including a larger number of teachers, students, and pupils from different regions and with varied technological experiences would yield more generalizable results.

Another important direction is combining quantitative and qualitative methods. Future research could incorporate individual interviews, focus groups, or direct observations to complement quantitative data and capture the nuances of participants' opinions, concerns, and experiences.

The impact of AI in diverse cultural and educational contexts also merits exploration. Comparative research across different regions could highlight how cultural factors and infrastructure influence perceptions and AI implementation.

Additionally, it would be useful to evaluate AI's practical effects on the educational process. Future studies could analyze how AI directly influences learning outcomes, student engagement, administrative efficiency, or the reduction of educational inequalities using experimental or observational methods.

These future research directions could contribute to a more comprehensive and balanced understanding of how AI can be efficiently and responsibly integrated into education, maximizing benefits while minimizing associated risks.

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