

COLLEGE STUDENTS' PERCEPTIONS ON ARTIFICIAL INTELLIGENCE (AI) IN MANGALURU EDUCATIONAL SETTINGS

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Abstract

This study delves into the attitudes of undergraduate students in Mangaluru City towards the integration of Artificial Intelligence (AI) in educational settings. The purpose of this research is to uncover potential disparities in student perspectives based on their field of study and academic year. Employing a structured Likert-scale questionnaire with 30 questions across three hypotheses, the research methodology involved collecting responses from 268 participants representing diverse academic disciplines. Statistical analyses, including Kruskal-Wallis tests and post hoc tests, were conducted to examine the significance of differences in attitudes. Findings reveal that academic discipline plays a role in shaping students' attitudes toward AI integration in education. The data also suggests that as students use AI-powered apps more frequently in their daily lives, they also tend to be more comfortable with AI-integrated educational tools. The study proved that there was no significant difference in the perceptions of students towards the impact of AI integration on the role of educators in the learning process based on their academic year. Limitations include the regional focus on Mangaluru City, which may impact generalizability. Educators can use the insights to tailor AI integration strategies based on disciplinary nuances, enhancing the learning experience. Socially, the study contributes to the discourse on AI in education, emphasizing the importance of considering diverse student perspectives. The originality of this work lies in its focus on a specific geographic region, shedding light on context-specific attitudes that can inform localized educational policies and practices.

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Introduction

The integration of artificial intelligence (AI) into education has ushered in transformative changes, promising a paradigm shift in teaching and learning. Its potential to personalize learning, deliver real-time feedback, and automate administrative tasks has positioned AI as a powerful tool for addressing longstanding challenges within the education sector. One of the most promising applications of AI in education is personalized learning. This aspect tailors educational content to each student's unique learning style and pace, thereby enhancing comprehension and retention. Intelligent tutoring systems, fuelled by AI, contribute to this personalization by providing instant feedback to students. These systems are adaptive, offering additional support in areas where students may be struggling, thus ensuring a more tailored and effective learning experience. Furthermore, AI plays a pivotal role in automating administrative tasks, alleviating the burden on educators. From grading assignments to tracking student progress, AI streamlines various administrative processes, allowing educators to dedicate more time to direct instruction and meaningful student interaction. Additionally, AI's predictive analytics capabilities can identify trends and patterns in student performance, enabling early intervention strategies for those at risk of falling behind and bolstering educational institutions' capacity to support every student's success.

Despite these advantages, the integration of AI into education comes with its own set of challenges. Chief among them is the concern over data privacy. AI systems often require access to extensive personal and academic data to function effectively, raising questions about the storage, use, and protection of this sensitive information. Another significant concern is the fear that AI might replace human teachers. While AI can complement educators' efforts, it cannot replicate the emotional connection and social interaction facilitated by human instructors. Striking the right balance between AI use and maintaining the irreplaceable human element in education is crucial.

The scope of this study is to investigate the attitudes of undergraduate students in Mangaluru City towards the integration of Artificial Intelligence (AI) in educational

settings. The research aims to identify potential disparities in student perspectives based on their academic discipline and academic year. Through a structured Likert-scale questionnaire with 30 questions, the study gathers responses from 268 participants representing diverse academic disciplines. Statistical analyses, including Kruskal-Wallis tests and post hoc tests, are employed to assess the significance of differences in attitudes. The findings of this study will contribute valuable insights to inform tailored AI integration strategies, impacting both academia and industry practices in the region.

The research, adopting a mixed-methods approach, seeks to address these issues by examining students' experiences with AI-powered educational tools, their perceived benefits and drawbacks, and the influence of their field of study on their attitudes towards AI. While AI has the potential to revolutionize education, it is essential to navigate the challenges effectively. The perceptions of students toward AI in education, encompassing a mix of optimism and apprehension, must be carefully considered. Striking a balance between human-led and AI-enhanced education, addressing data privacy concerns, and ensuring equitable access to technology is imperative for the successful integration of AI in education. The careful management of these aspects will enable the harnessing of AI's potential to enhance educational experiences while preserving ethical, fair, and acceptable integration.

Literature Review

The integration of Artificial Intelligence (AI) into the educational landscape is a prominent trend observed in recent years. As technology advances, the implementation and perception of AI tools in various educational settings have been an area of growing interest among scholars. This review delves into a series of studies from around the world, aiming to highlight the potential benefits, challenges, and prevailing perceptions surrounding AI in education.

Positive Perceptions and Opportunities

As detailed by Kim et al. (2020), AI teaching assistants can significantly bolster the efficiency of educational delivery. The ability of these systems to handle vast amounts of data, offer timely responses to student inquiries and provide instantaneous feedback. Almaiah et al. (2022) emphasize that AI's ubiquity, innovativeness, and immersion

capabilities could shift the dynamics from conventional learning methods to more interactive and comprehensive educational paradigms. AI's prowess in language acquisition has been underscored by Aljohani (2021). The field-specific potential of AI is evident in studies like that of Yüzbaşıoğlu (2021). Here, the optimism of Turkish dental students shines a light on AI's expanding footprint in specialized sectors like healthcare, suggesting a future where practical and theoretical domains seamlessly converge. For instance, Romero-Rodríguez et al. (2023) explore the recognition of ChatGPT's potential by Spanish university students, indicating a larger trend of AI's global impact. This potential global reach can inherently facilitate collaboration and peer interaction across borders. As illustrated by Kim et al. (2020), AI teaching assistants, like ChatGPT, offer efficient and timely feedback, pointing to the significant role such technologies can play in enhancing the quality and responsiveness of educational platforms. As noted by Romero-Rodríguez et al. (2023), Spanish university students acknowledged ChatGPT's transformative capabilities in the learning process, aligning it with international strategies, such as those from UNESCO, to amplify AI's role in education. The applicability of ChatGPT isn't confined to higher education. Lozano and Blanco Fontao (2023) highlighted that even students in primary education perceived ChatGPT positively. An intriguing revelation from the work of Mensah Bonsu and Baffour-Koduah is the disconnection between perception and intention. While students acknowledged ChatGPT's potential for revolutionizing higher education in Ghana, there wasn't a significant correlation to using it.

Concerns and Challenges Navigating the Potential Pitfalls of AI in Education

The integration of artificial intelligence (AI) into the educational domain presents a plethora of opportunities and challenges. Analyzing the studies shared, we delve into these apprehensions and the potential pitfalls of AI's role in shaping future pedagogies. The use of AI in education, particularly through AI teaching assistants, as illustrated by Kim et al. (2020), can deprive students of the personal interaction intrinsic to human-taught classrooms. This sentiment expresses concerns about AI's inability to offer emotional support, something that human educators naturally provide. The study from Chan (2023) highlights apprehensions regarding the integration of text-generative AI technologies in Hong Kong universities. Overall, the integration is perceived positively, but there are legitimate worries about how it can affect academic honesty. There's fear

that AI technologies could enable or inadvertently encourage unethical behaviors, such as plagiarism or misuse in examinations. Students in the Hong Kong study, as reported by Ka, Chan, and Hu, express worries about the veracity of GenAI-generated content while simultaneously acknowledging the advantages of GenAI technologies. Moreover, privacy and security risks become evident pain points, given the amount of data AI systems require and process. The impact of AI on students' emotions and mental well-being is crucial. As observed by Almaiah et al. (2022), social and computer anxiety negatively influenced students' motivation and satisfaction with e-learning. This underscores the need to understand and mitigate potential anxieties related to AI's presence in learning environments.

Research Gap

The existing literature on AI in education emphasizes global opportunities and challenges but lacks a nuanced exploration of regional contexts like Mangaluru City. Current studies focus primarily on higher education, overlooking distinctions in perceptions and concerns across academic levels. Despite acknowledging concerns about emotional support, academic honesty, and technology adoption, there is a research gap in understanding these dynamics in the specific socio-cultural context of Mangaluru City. Additionally, the impact of AI on students' emotions and well-being is acknowledged, but there's a lack of strategies to address these concerns tailored to the cultural nuances of Mangaluru City. Closing these gaps would provide a more contextualized understanding of AI in education for this locale.

Hypotheses of the Study

(Ha₁): There is a significant difference in the attitudes of undergraduate students from Mangaluru City towards AI integration in educational settings based on their academic discipline.

(Ha₂): There is a significant relationship between the frequency of using AI-powered applications outside educational purposes and the level of comfort in using AI-integrated educational tools among undergraduate students in Mangaluru City.

(Ha₃): There is a significant difference in the perceptions of college students from

Mangaluru City towards the impact of AI integration on the role of educators in the learning process based on their academic year.

Research Methodology

The research methodology employed in this study aims to assess the attitudes and perceptions of students towards the use of artificial intelligence tools in education. To understand the perception, a structured questionnaire featuring Likert scale questions was administered to 268 respondents in Mangalore City.

The study encompasses multiple hypotheses, examining the impact of AI on academic performance, variations in attitudes based on academic discipline, the relationship between AI usage outside of education and comfort with AI in educational tools, and the potential impact of AI integration on the roles of educators. Hence, the questionnaire had three sections. The first section collected data regarding the perception and attitude of students based on their academic background. The second section had eight statements, and it collected data regarding the impact of the use of AI tools for non - educational purposes on educational purposes. The third section had fourteen statements, and it collected data regarding the role of educators in the learning process based on their academic year. The survey was conducted based on a stratified sampling method. The Mangalore region was chosen because of its convenience. All the respondents were students studying at various colleges in different disciplines.

A reliability test was performed for all the sections of the questionnaire using Cronbach's alpha. The Cronbach alpha for the first section is 0.859, the second section is 0.916, and the third section is 0.916. It reflects the good reliability of the scale.

Statistical techniques, including Kruskal-Wallis tests and Mann-Whitney U tests, were utilized for data analysis. These methodologies aim to provide a comprehensive understanding of how students perceive and interact with AI within the educational context in Mangaluru City.

Results and Discussions

Demographic Profile

The demographic profile of the 268 respondents in this study reveals a diverse sample. In terms of gender distribution, 57.8% were female, while 42.2% were male. Academic disciplines varied significantly, with the majority (39.5%) studying commerce, followed by business and management (17.5%), and engineering and technology (10.4%). Humanities, natural sciences, social sciences, and other streams were also represented in the sample. Regarding the academic year, undergraduate students comprised the largest group, with 74.3% distributed across the first, second, third, and fourth years, while postgraduates constituted 25.7%, spread across the three academic years. Undergraduate students were the predominant group, with 18.3% in their first year, 42.5% in their second year, 26.9% in their third year, and 4.5% in their fourth year. Postgraduate students constituted 4.5% in their first year, 1.9% in their second year, and 1.1% in their third year. This diverse demographic composition of respondents provides a multifaceted perspective on the integration of artificial intelligence in educational settings.

Hypotheses Testing

(H_a): There is a significant difference in the attitudes of undergraduate students from Mangaluru City towards AI integration in educational settings based on their academic discipline.

The Kruskal-Wallis test was conducted to assess whether there is a significant difference in the attitudes of undergraduate students from Mangaluru City towards AI integration in educational settings based on their academic discipline. The results indicate a statistically significant difference in attitudes among different academic disciplines ($\chi^2 = 8.002$, $p = 0.032$). This finding suggests that the attitudes of students from various academic disciplines towards AI integration in educational settings are not uniform. The significance level ($p = 0.032$) is less than the chosen significance level (α). This implies that there are variations in attitudes toward AI integration, and these differences are associated with the academic discipline of the students. The implications of this result for the alternative hypothesis (H₁) are that there is evidence to support the hypothesis. In other words, the data suggests that academic discipline plays a role in

shaping students' attitudes toward AI integration in education.

The significance levels (Sig) in the post hoc results indicate which pairs of academic disciplines exhibit significant differences in attitudes. Notably, several pairs, including Commerce-Business and Management, Commerce-Other, Commerce-Engineering and Technology, and Business and Management-Engineering and Technology, displayed p-values greater than the chosen significance level of 0.05. This suggests that there is no statistically significant difference in attitudes toward AI integration among these disciplines.

Conversely, certain pairs, such as Commerce-Social Sciences and Commerce-Humanities, displayed p-values less than 0.05, indicating significant differences in attitudes. This implies that students in the Commerce discipline have significantly different attitudes toward AI integration when compared to those in the Social Sciences, Commerce, and Humanities disciplines.

Interestingly, the business and management discipline showed significant differences in attitudes compared to several other disciplines, including the natural sciences, engineering and technology, social sciences, and humanities. This suggests that students studying business and management exhibit distinct attitudes toward AI integration, potentially influenced by the nature of their course work.

(H_a): There is a significant relationship between the frequency of using AI-powered applications outside of educational purposes and the level of comfort in using AI-integrated educational tools among undergraduate students in Mangaluru City.

The correlation coefficient between the "frequency of AI-powered app usage" and "comfort with AI-integrated educational tools" is approximately 0.765. This coefficient indicates a strong positive correlation between these two variables. The p-value associated with this correlation is very low, with a value of 0.000. The significance level (p-value) tells us whether the observed correlation is statistically significant. In this case, the low p-value ($p < 0.01$) suggests that the correlation is statistically significant at

the 0.01 level (2-tailed). This means that the strong positive correlation observed is not likely due to random chance.

The strong and statistically significant positive correlation between the frequency of using AI-powered applications outside of educational purposes and the level of comfort with AI-integrated educational tools supports our alternative hypothesis. This suggests that as students use AI-powered apps more frequently in their daily lives, they also tend to be more comfortable with AI-integrated educational tools. In other words, there is a clear relationship between real-world AI usage and their readiness to embrace AI in educational settings, affirming the hypothesis.

(H_{a3}): There is a significant difference in the perceptions of college students from Mangaluru City towards the impact of AI integration on the role of educators in the learning process based on their academic year.

As the data was not normally distributed, a non-parametric test was applied to the hypothesis. The Kruskal-Wallis test was conducted to assess a significant difference in the attitudes of undergraduate students from Mangaluru City towards AI integration in educational settings based on their academic years. A Kruskal-Wallis H test showed that there was no significant difference in the perceptions of college students from Mangaluru City towards the impact of AI integration on the role of educators in the learning process based on their academic year, $\chi^2 = 0.373, p = 0.830$, with a mean score of 119.59 for the first year, 115.28 for the second year, and 121.22 for the third year. Therefore there is no strong evidence to suggest that there is a significant difference in how college students from different academic years perceive the impact of AI integration on the role of educators in the learning process.

Suggestions

This study makes several important recommendations for the incorporation of AI in Mangaluru City's educational settings. First and foremost, it is crucial to adapt AI strategies to various academic levels, taking into account that perceptions and concerns may differ across various educational contexts. Understanding and addressing socio-

cultural factors that affect how AI technologies are adopted should be given top priority. Additionally, strategies for emotional support and academic integrity need to be culturally sensitive, acknowledging the unique dynamics of the Mangaluru City educational environment. Given the recognized privacy and security risks, there is a need for transparent policies and ethical guidelines specific to this locale. Furthermore, initiatives should be undertaken to mitigate anxieties related to AI adoption, considering the socio-cultural nuances of the region. Finally, fostering collaboration between educators, policymakers, and technologists can contribute to the successful and culturally responsive implementation of AI in education in Mangaluru City.

Conclusion

In this comprehensive study, we delved into the perceptions and attitudes of undergraduate students in Mangaluru City towards the integration of artificial intelligence (AI) in educational settings, addressing several key hypotheses. Firstly, our analysis focused on whether there is a significant difference in attitudes towards AI integration based on academic discipline. The Kruskal-Wallis test yielded intriguing results, indicating a statistically significant variation in attitudes among students from diverse academic backgrounds ($\chi^2 = 8.002$, $p = 0.032$). This finding signifies that the attitudes of students vary depending on their academic discipline, thus affirming the alternative hypothesis (H1). In essence, academic discipline plays a discernible role in shaping students' perspectives on AI integration in education. Secondly, we explored the relationship between the frequency of using AI-powered applications outside educational contexts and the level of comfort with AI-integrated educational tools. A robust correlation coefficient of approximately 0.765 revealed a substantial positive correlation between these variables. The low p-value ($p < 0.01$) further confirmed that this correlation is statistically significant, supporting our alternative hypothesis (H1). This underscores the notion that as students engage more frequently with AI-powered applications in their daily lives, their comfort with AI-integrated educational tools also increases significantly. Lastly, we investigated whether the academic year of students influences their perceptions regarding the impact of AI integration on the role of educators in the learning process. Utilizing the Kruskal-Wallis H test, the results indicated no significant difference in perceptions across academic years ($\chi^2 = 0.109$, $p =$

0.947). This suggests that students' views on the role of educators in the context of AI integration remain consistent throughout their academic journey.

In conclusion, this research provides valuable insights into the complex landscape of AI integration in educational settings, highlighting the pivotal role of academic discipline in shaping attitudes. Moreover, it underscores the importance of real-world AI usage in fostering comfort with AI-integrated educational tools. The findings contribute significantly to our understanding of how students perceive and interact with AI within the educational domain, offering pertinent insights for educational institutions and policymakers navigating this evolving terrain. Additionally, investigating the evolving role of educators in AI-enhanced learning environments and its impact on pedagogy remains an intriguing area for further inquiry, offering opportunities to shape the future of education in the era of artificial intelligence.

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