International Journal of Advanced Research in Commerce, Management &Social Science (IJARCMSS)
(An International Quarterly Multidisciplinary Double Blind Open Access Peer Reviewed Refereed Journal)
ISSN :2581-7930 (Online), Impact Factor (Cosmos): 7.270& PIF (I2OR): 5.010, Volume 09, No. 02(III), April-June, 2026, pp 161-167

A Study on the Usage of Artificial Intelligence in Education among College Students

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Citation: *Palliyalil, S., Alex, N. & Raj, V. (2026). A Study on the Usage of Artificial Intelligence in Education among College Students. International Journal of Advanced Research in Commerce, Management & Social Science, 09(02(III)), 161–167. 10.62823/IJARCMSS/9.2(III).8987*

ABSTRACT

Artificial Intelligence (AI) is one of the recent significant technological improvements that affect a range of industries, such as education. The paper analyzes how AI applications are used by higher education learners in Kochi City. The study aims at learning the role of AI tools in academic performance of students, their knowledge of the subject and how the ease of use of AI tools affects their use. The research is premised on the primary data where 120 college students took part in the research based on a structured questionnaire on the basis of convenience sampling. The data were analyzed using IBM SPSS with statistical tools like descriptive statistics, correlation and regression analysis. Cronbach's Alpha was used to assess the consistency of the questionnaire and showed internal consistency of the questionnaire. The results show that AI tools are popular among learners when it comes to academic tasks like information research, writing papers, brainstorming and editing. Another essential finding is that there is a strong positive correlation between the ease of use of AI tools and their use. Moreover, the application of AI has a positive effect on the knowledge of the subject and academic performance of the student group. The research arrives at the conclusion that academic achievements in higher learning can be improved through efficient adoption of AI devices and improved learning experiences.

Keywords: *Artificial Intelligence, Academic Achievement, Subject Understanding, User-Friendliness.*

Introduction

Education is a fundamental pillar in the advancement of human civilization, serving as one of the most crucial sectors in society. It is closely linked to all other industries and profoundly influences them. Throughout history, learning methods have continually evolved, driven by the emergence of new technologies. Traditionally, education was delivered within classroom walls to groups of students, but with the advent of the internet and digital technology, online platforms are gradually replacing physical classrooms. The modern education system has eliminated the spatial constraints of traditional classrooms, enabling students from all corners of the world to participate. By offering knowledge through online platforms and websites, it has successfully attracted a diverse range of students and teachers to engage in technology-based learning. Free from limitations of time, space, or student capacity, the popularity of online learning is steadily growing. In recent years, Artificial Intelligence (AI) has become more prominent in our daily lives, significantly influencing various sectors, including education. The field of education has experienced numerous changes due to AI, which offers the potential to transform and adapt the teaching and learning processes. AI enhances education by enabling personalized learning, offering immediate feedback, and increasing efficiency in assessments. The usage of AI tools in

education among college students is evident in their ability to seamlessly combine user-friendliness, student satisfaction, and improved academic comprehension. These tools streamline the learning process, making education more engaging and easier to access. By accommodating various learning styles and providing ongoing, personalized feedback, AI tools meet the diverse needs of students. Consequently, students experience greater satisfaction with their educational journey and achieve a deeper understanding of their subjects. This comprehensive impact highlights the significant value that AI adds to modern education, in an era of interactive and personalized learning experiences.

Statement of the Problem

The rapid advancement of AI tools in education offers new opportunities for enhancing learning experiences, yet their impact among college students remains unclear. Despite the potential of AI technologies to improve personalized learning, student engagement, and academic outcomes, there may be challenges in their integration due to factors such as limited awareness, resistance to new technologies, and concerns about data privacy and security. Furthermore, there is uncertainty about whether AI tools truly enhance collaborative learning and critical thinking skills. This study aims to explore the extent of AI adoption, the challenges faced by students, and the overall impact of these tools on their academic performance and learning engagement among college students in Kochi.

Scope of the Study

This study explores the influence and integration of AI tools in the educational sector, focusing on their adoption, usage patterns, and impact on learning outcomes. It examines how students and educators utilize AI for tasks such as information retrieval, assignment creation, problem-solving, editing, and generating visual content. The study also evaluates the effectiveness of AI tools in enhancing productivity, creativity, and academic performance, while identifying challenges such as dependency, and potential skill gaps. By analyzing user preferences and engagement with various AI tools, this research aims to provide valuable insights into the evolving role of artificial intelligence in modern education systems.

Objectives of the Study

- To study the influence of AI tools on student's academic achievement.
- To examine how AI tools, contribute to better subject understanding among students.
- To examine how the user-friendliness of AI tools lead to better usage.

Review OF Literature

Aldosari (2020), Several ways in which artificial intelligence is expected to impact higher education in the future include the potential for AI technologies to fully automate classification and grading systems in universities. This could allow students to receive significantly more support than they currently do.With various technological advancements applied to students' learning and teaching, artificial intelligence has been influencing higher education systems for the past few decades. However, at this time, universities are concentrating on developing the use of AI in teaching and learning in a sustainable manner to guarantee that it plays a significant role in both higher education institutions and society at large. **Channa et. al (2021)** This discussion explores the essential 21st-century skills and highlights some shortcomings in the current education system that hinder students' ability to develop advanced competencies. It aids in understanding how Artificial Intelligence in education can contribute to the development of these critical skills.

Xu Ouyang (2021), Artificial intelligence seeks to create machines that emulate human thought processes and mimic human behaviours, including learning, perceiving, predicting, planning, and reasoning.**Owoc, M. L., Sawicka, A., & Weichbroth, P**. **(2021),** Students benefit from artificial intelligence systems used for grading their exams and assignments, as these systems provide faster responses and quicker feedback on their results. Additionally, they offer personalized recommendations by analysing and processing students' answers. Moreover, certain AI applications can monitor students' learning progress and remind them of various tasks.**Dhawan (2021),** Integrating artificial intelligence technology in universities aids students not only in their learning but also in becoming familiar with these technologies and gaining knowledge that can be applied in their future workplaces.**Chen, X Zou, D, Xie, H. Cheng, G., & Liu, C**. **(2022)**, cite the ability of AI student assistants to support interactive learning activities that improve understanding of challenging materialwhich emphasize how crucial AI is for assisting with language learning and content learning.**Dwivedi (2023)**, AI or machine intelligence is an

area of computer science where machines are programmed with the ability to perform intelligent tasks that are usually undertaken by humans. **Adıgüzel (2023)** highlight that AI tools can significantly enhance the educational experience by simulating human interactions, thereby personalizing learning and making it more engaging.

Chan and Hu (2023) emphasize that AI chatbot, such as ChatGPT, can enhance learning experiences by providing personalized assistance and timely feedback. These functionalities can lead to improved academic outcomes, as students receive support tailored to their individual needs.

Artificial Intelligence (AI) is changing higher education by allowing machines to analyze data, learn and perform tasks that usually require human intelligence. AI tools, like intelligent tutoring systems and adaptive learning platforms, make learning more engaging and personalized, helping students improve their academic performance. It also supports flexible and interactive learning. AI also helps students in developing with important and technical knowledge that is needed for their future. However, AI should work alongside traditional teaching methods to fully prepare students for challenges ahead. By using AI in correct way universities can make learning more accessible, adaptable and personalized transforming students to gain knowledge.

Hypothesis

H1: There is a significant positive relationship between the user-friendliness of AI tools and their usage.

H2: The use of artificial intelligence tools is significantly and positively associated with improved subject understanding.

H3: The utilization of AI tools is significantly and positively linked to improved academic achievement.

H4: There is a significant positive relationship between subject understanding and academic achievement.

Proposed Research Framework

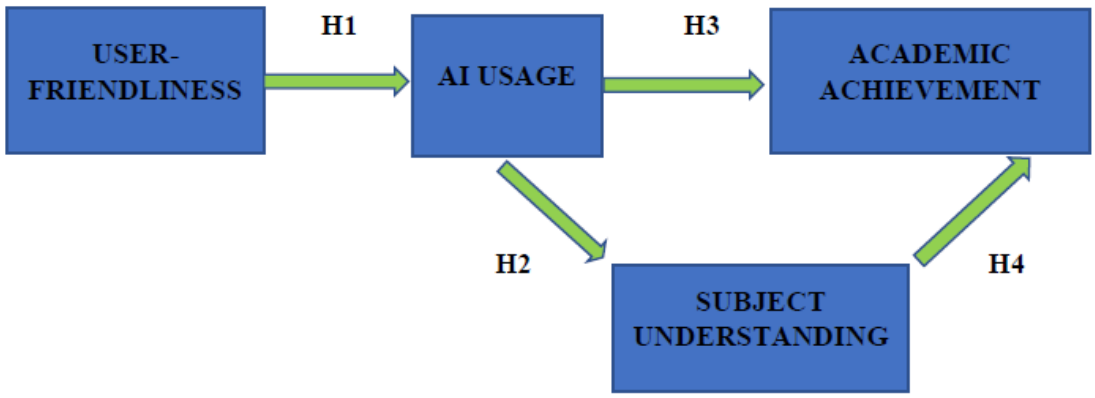

Figure 1: Showing the Proposed Research Model

Research Methods and Sample Collection

The study assesses the usage of Artificial intelligence tools in education among college students in kochi city. It aims to analyze the extent of usage, and benefits surrounding AI tools in academic contexts. A structured questionnaire was developed and the data was collected through online survey. To study the role of artificial intelligence tools in education, the present study uses AI usage and Subject understanding as the independent variables and Academic Achievement as dependent variable. The relationships between AI usage and User Friendliness and the effect of AI usage on subject understanding were also analyzed. The variables were measured using 4 or 5 statements describing each variable in 5 point Likert scale. The study includes 120 samples, through a convenient sampling.

Both data collecting and data analysis are components of research approach to be used for this study. Both primary and secondary data are used.A structured questionnaire need to be given to the respondents to gather the primary data for the study. These information is gathered by using google forms and offline with questionnaires from 120 respondents from cochin city. Secondary data taken from publications, journals and websites. The tools used in the study are Graph, chart and tables.

Data Analysis and Results

Data analysis is done with using the IBM SPSS to perform correlation and regression data analysis.

Table 1: Correlation Matrix

		User-friendliness	AI Usage	Subject Understanding	Academic Achievement
User-friendliness	Pearson's r	—	0.395**	—	—
	p-value	—	< .001	—	—
AI Usage	Pearson's r	0.395**	—	0.380**	0.212*
	p-value	< .001	—	< .001	0.020
Subject Understanding	Pearson's r	—	0.380**	—	0.741**
	p-value	—	< .001	—	< .001
Academic Achievement	Pearson's r	—	—	—	—
	p-value	—	—	—	—

Note. Compiled from primary data

From Table 1, correlation results show that there is a moderate positive relationship between user-friendliness and AI usage (r = 0.395). The correlation between AI usage and subject understanding is also moderate (r = 0.380). A weak but significant positive relationship is observed between AI usage and academic achievement (r = 0.212). Further, subject understanding and academic achievement exhibit a strong positive correlation (r = 0.741), indicating a high level of association between them.

Table 2: Regression Results: Dependent Variable- AI Usage; Independent Variables – User-friendliness

Predictor	Estimate	SE	t	p
Intercept	2.405	0.226	10.647	0.000
User-friendliness	0.263	0.056	4.665	0.000

Note. Compiled from primary data

Table 3: Regression Results: Dependent Variable -Subject Understanding. Independent Variable- AI Usage;

Predictor	Estimate	SE	t	p
Intercept	2.380	0.381	6.250	0.000
AI Usage	0.489	0.110	4.456	0.000

Note.Compiled from primary data

Table 4: Regression Results: Dependent Variable – Academic Achievement Independent Variable- AI Usage, Subject Understanding

Predictor	Estimate	SE	t	p
Intercept	0.758	0.280	2.709	0.008
AI Usage	0.299	0.127	2.359	0.020
Subject Understanding	0.804	0.068	11.795	0.000

Note.Compiled from primary data

H1: There is a significant positive relationship between the user-friendliness of AI tools and their usage.

From Table 2, regression results show that user-friendliness has a positive and statistically significant effect on AI usage ($\beta = 0.263$, $p < 0.001$). This indicates that higher levels of user-friendliness lead to increased adoption and usage of AI tools. Hence, H1 is accepted.

H2: The use of artificial intelligence tools is significantly and positively associated with improved subject understanding.

From Table 3, regression results show that AI usage has a positive and statistically significant effect on subject understanding ($\beta = 0.489$, $p < 0.001$). This indicates that increased use of AI tools enhances students' understanding of subjects. Therefore, the result supports **H2**.

H3: The utilization of AI tools is significantly and positively linked to improved academic achievement.

H4: There is a significant positive relationship between subject understanding and academic achievement.

From Table 4, regression results indicate that AI usage has a positive and statistically significant effect on academic achievement ($\beta = 0.299$, $p < 0.05$), thereby supporting **H3**. Subject understanding also shows a strong positive and highly significant influence on academic achievement ($\beta = 0.804$, $p < 0.001$), supporting **H4**. The findings further reveal that subject understanding has a stronger impact on academic achievement compared to AI usage.

Discussions

The findings of the study reveal that all proposed hypotheses are supported, indicating meaningful relationships among the variables in the model. User-friendliness was found to have a significant positive influence on AI usage, suggesting that students are more likely to adopt AI tools when they perceive them as easy to use and accessible. This highlights the importance of designing user-centric AI applications in educational settings. Further, AI usage significantly enhances subject understanding, emphasizing the role of AI as an effective learning aid that facilitates better comprehension of academic content. The positive relationship between AI usage and academic achievement, although comparatively weaker, indicates that AI contributes to improved performance, but may not be the sole determinant of academic success. The strongest relationship observed was between subject understanding and academic achievement, demonstrating that deeper comprehension of subjects plays a crucial role in improving students' academic outcomes. This also suggests a possible mediating role of subject understanding in the relationship between AI usage and academic achievement. Overall, the results validate the proposed model and underscore the importance of integrating user-friendly AI tools to enhance learning experiences and academic performance.

Table 5: Summary of Hypothesis Results

Hypothesis	Statement	Decision
H1	There is a significant positive relationship between the user-friendliness of AI tools and their usage.	Fail to reject
H2	The use of artificial intelligence tools is significantly and positively associated with improved subject understanding.	Fail to reject
H3	The utilization of AI tools is significantly and positively linked to improved academic achievement.	Fail to reject
H4	There is a significant positive relationship between subject understanding and academic achievement.	Fail to reject

Note. Created by Authors

Practical Implications

- Since user-friendliness significantly influences AI usage, designers and developers should focus on creating intuitive, easy-to-use interfaces to encourage wider adoption among students. Educational institutions should prioritize selecting AI tools that are accessible and require minimal technical expertise.
- The positive impact of AI usage on subject understanding suggests that educators can effectively integrate AI tools into teaching practices to enhance learning outcomes. Incorporating AI-powered platforms for personalized learning, instant feedback, and interactive content can improve students' comprehension levels.
- Although AI usage contributes to academic achievement, its relatively weaker effect indicates that it should be used as a **supportive tool rather than a replacement** for traditional teaching methods. Educators should combine AI tools with pedagogical strategies to maximize effectiveness.

- Given the strong relationship between subject understanding and academic achievement, academic programs should emphasize strategies that deepen conceptual clarity. AI tools can be strategically used to strengthen understanding, which in turn can significantly improve academic performance.

Conclusion

The research study "The usage of Artificial Intelligence tools in education among college students" reveals significant insights into how these tools are enhancing academic experiences. The results indicate that AI tools are widely used for variety of academic tasks, with students mostly utilising them for research, writing assignments and problem-solving. The study highlights the ease of use, effectiveness and technical support as key factors driving AI adoption among students. Furthermore, the positive correlations between user-friendliness, AI usage, subject understanding and academic achievement suggests that frequent use of AI tools can enhance student's grasp of subject matter and contribute to better academic performance. AI tools not only improve students understanding of course content but also play a role in enhancing academic outcomes. However, the study also acknowledges the importance of user-friendliness and the potential challenges related to the rapid technological evolution of AI tool. In conclusion, the integration of AI tools in education holds great promise for improving student learning experiences, but further research and attention to accessibility, training and ethical considerations are necessary for maximising their potential.

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