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The Influence of AI-Powered Learning Platforms on Student Engagement and Performance: Emerging Technologies in Education

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ABSTRACT

Artificial intelligence (AI) has revolutionized the educational setup by enabling the personalized learning experiences through AI-powered platforms. The current study investigates the influence of artificial intelligence (AI) technology on student engagement and the academic achievement, as well as crucial elements affecting learning outcomes. A mixed-methods approach was adapted in this study to collect data from 50 students who used the AI-powered platforms, with a focus on engagement levels, class participation, motivation, confidence, academic achievement, and help-seeking behaviors. The Statistical analysis including paired samples t-tests and descriptive statistics was performed using the SPSS software, the study does not find statistically significant increases in these indicators. This shows that present AI applications in the education may not be completely utilizing their potential. The findings highlight that the necessity of well-informed policy frameworks for guiding the ethical, effective, and fair integration of AI in educational settings.

KEYWORDS: Artificial Intelligence (AI), Educational Technology, Personalized Learning, Intelligent Tutoring Systems (ITS), Policy Implications.

INTRODUCTION

In the recent years, artificial intelligence (AI) has revolutionized numerous sectors, education is one of the most predominant sectors that has been revolutionized by artificial intelligence (AI). Many AI-powered learning platforms have emerged as the transformative tools, offering the personalized learning experiences, real-time feedback, and adaptive learning pathways customized to individual student needs. These innovations hold the significant promise for enhancing student engagement and performance in the education sector. However, as the integration of AI in education enhances, it is very essential to examine the broader implications, particularly in terms of policy and regulation. Understanding the implications of these technologies is very essential for developing informed policies that support equitable, effective, and ethical educational practices in an era which is dominated by emerging technologies like artificial intelligence (AI), Machine Learning (ML), Deep Learning (DL) Etc.,

AI ML and DL

Artificial intelligence (AI), machine learning (ML), and deep learning (DL) are the interrelated concepts in computer technology, each having its unique properties and applications in the numerous sectors, including the education. At its widest, artificial intelligence (AI) refers to the creation of machines capable that are capable of doing activities that would normally need the human intellect and intelligence. This includes a wide range of functions, such as comprehending the natural language, recognizing the patterns, and making judgements and decisions, which are accomplished by using a variety of ways, including rule-based systems, expert systems, and more sophisticated methods such as machine learning and deep learning. In the educational area, AI technologies may significantly improve the learning and teaching processes. (Järvelä et al., 2023)

Machine learning (ML) is a subset of artificial intelligence that aims to enable machines to learn from the data, make further predictions, categorize information accordingly and detect patterns without being specifically programmed for each job. Machine learning (ML) may be used in education to assess the large volumes of student data, provide personalized lesson recommendations, discover the trends in student behavior, and predict academic success. With machine learning approaches, learning is always done with the goal of performing a specific task by using "experienced," or training data. In machine learning, the data is a series of examples. Typically, includes a collection of characteristics, sometimes referred to as features or variables, best describes a single case. Depending on the learning signal of the learning system, supervised and unsupervised learning are the two basic categories into which ML jobs fall. The goal of supervised learning is to create a general rule that maps inputs to outputs by presenting example inputs and the related outputs on the data. Certain situations may involve the partially available inputs that lack some of the desired outputs, or inputs that are only provided as feedback for actions taken in a dynamic environment (reinforcement learning). In the supervised setting, the acquired expertise (trained

model) is used in order to predict the missing outputs (labels) for the test data. In unsupervised learning, there is no distinction between training and test sets with data being unlabeled. The learner processes input data with the goal of discovering hidden patterns. (Liakos et al., 2018)

The multi-layered neural networks are used in deep learning which is a subfield of machine learning, in order to learn from massive volumes of data. Because deep learning utilizes the data in order to identify and solve the problems, it may be categorized as a subsection or subset of machine learning. Deep learning makes use of the neural network, a multi-layered structure of algorithms. All of the most recent advancements in artificial intelligence may be attributed to the deep learning. Without deep learning, there would be no chat bots, self-driving cars, or personal assistants like Siri and Alexa. Netflix would also not be able to suggest any movies or TV series without the deep learning. (CHAYA. R, 2023)

AI and Personalized Learning

AI has transformed personalized learning by adapting instructions to each student's unique requirements, learning styles, and preferences. Flexibility, adaptability, and student autonomy are all key themes. AI algorithms dynamically change educational content and deliver real-time feedback in order to improve learning results and student engagement. Intelligent tutoring systems mimic human instructors, providing personalized assistance. According to research, AI-driven personalized learning increases academic success, retention, and understanding by accommodating a variety of learning styles. AI creates an inclusive and dynamic teaching environment that empowers students. (Oyebola Olusola Ayeni et al., 2024)

Artificial intelligence (AI) tools are revolutionizing the education sector by improving personalized learning, simplifying administrative procedures, and providing engaging learning environments for the supportive academic journey. The global AI in education market is predicted to rise from USD 1.1 billion in 2020 to $25.7 billion by 2030. (Malaviya, 2024) Key artificial intelligence tools include:

QuillBot: An artificial intelligence 9AI) writing tool that paraphrases and generates citations for the requested inputs.

Otter.ai: A transcription service that converts the spoken conversation into written text.

Speechify is a text-to-speech tool designed for auditory learners.

Grammarly is a writing tool that corrects grammar, spelling, and style issues.

Intelligent Tutoring Systems (ITS): Platforms such as Carnegie Learning that offer personalized education and feedback.

Teachmateai.com provides AI-based personalized learning and classroom management solutions. (Malaviya, 2024)

Byju's and Toppr are the most prominent Indian educational technology companies that have significantly integrated with artificial intelligence (AI) into their platforms to enhance learning experiences and outcomes. These companies exemplify how AI can revolutionize education through the following:

Personalized Learning: Both platforms use artificial intelligence (AI) to modify instructional content and study programs, guaranteeing that each student has a unique learning experience, that suits their specific requirements and learning styles.

Adaptive Assessments and Practice: AI algorithms dynamically change the complexity of the questions and practice sessions, ensuring that the challenge level is ideal for continual learning and progress of the learners.

AI-driven interactive teaching and fast feedback systems keep students interested while also allowing them to facilitate immediate correction and comprehension of faults for better understanding.

Efficient Doubt Resolution: Toppr's AI-powered chat capabilities allow for rapid and effective resolution of student concerns, increasing learning efficiency and ensuring that doubts are swiftly addressed.

Progress Tracking: AI tracks student progress, offering useful insights into academic achievement and areas that require further attention.

Generative AI tools and techniques can create a better and effective environment for learners and teachers (Roy, 2023)

REVIEW OF LITERATURE

Dr. Ammara Murtaza, Stephen A. Fadare, Olomodin M Mocsir, Sapaev Valisher Odilbek uglu, Maria Cecilia Fadare, Lexter R. Natividad, Tariq Rafique, Nosheen Akhtar, Dr. Jawaria Shaheen, Muhammad Mohsin and Rabi Taj. (2024) The influence of artificial intelligence (AI) on online education is examined by the authors in this research. The authors list the most important AI technologies used in teaching-learning procedures and discuss the moral arguments for and against their use such as Learning Management Systems (LMS) powered by AI, Virtual agents and chatbots, AI applications in Massive Open Online Courses (MOOCs) to track student engagement and performance, AI for automated grading and feedback, Virtual and augmented reality tools enhanced by AI tools etc. The study highlights that how AI has the ability to revolutionize education while stressing how crucial it is to navigate the ethical issues that arise when it is used. Education stakeholders may create the creative and inclusive learning environments by optimizing the teaching and learning processes. (Murtaza et al., 2024)

Oseremi Onesi-Ozigagun, Yinka James Ololade, Nsisong Louis Eyo-Udo, and Damilola Oluwaseun Ogundipe. (2024) The study made by the authors presents a detailed overview of how the Artificial Intelligence (AI) is altering education system by improving the learning experiences, redefining the teaching approaches, and streamlining the administrative operations. The methodology adapted includes an assessment of previous studies and

advance in AI applications for education. The data gathering process in this study involves examining research results on the influence of AI-powered technologies on student engagement, academic achievement, and personalized learning. It also evaluates the AI's potential for personalizing learning through data-driven customization, reshaping the teaching methods with real-time feedback and automated grading, revolutionizing the assessment with AI-driven analytics, and optimizing the administrative tasks such as student enrollment and resource allocation. The findings emphasize the numerous benefits of artificial intelligence (AI) in education while also addressing the issues such as data privacy, algorithmic bias, and teacher training. (Oseremi Onesi-Ozigagun et al., 2024)

Habeeb Ur Rahiman and Rashmi Kodikal (2023) The study made by the authors investigates the adoption of AI in higher education utilizing a conceptual framework based on the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). The authors collected the data from 250 academic faculty members from several Asian nations using a standardized questionnaire and a five-point Likert scale to assess characteristics such as awareness, perceived risk, and performance expectancy. The data was analyzed using SPSS and Smart PLS, with reliability tests and structural equation modelling that was used to confirm the conclusions. The study highlights that the factors such as performance expectancy, effort expectancy, and conducive environments have a substantial impact on AI adoption in higher education. (Rahiman & Kodikal, 2024)

Babajide Tolulope Familoni and Nneamaka Chisom Onyebuchi (2024) The study made by the authors involves scanning databases for the relevant studies on AI integration for technical literacy and obtaining the information on AI technology, contexts, outcomes, and problems. The analysis made by the authors highlighted themes relating to advances in personalized learning experiences and novel AI-driven technologies, as well as obstacles such as assuring fair access, resolving ethical issues about data privacy and prejudice, and overcoming technological limits. According to the authors AI has the potential to improve technical literacy, it requires careful preparation and teamwork to overcome the specific problems. (Babajide Tolulope Familoni & Nneamaka Chisom Onyebuchi, 2024)

Dr Andy Nguyena, Dr Marios Kremantzisb, Dr Aniekan Essienb, Dr Ilias Petrouniasc and Professor Samira Hosseinid (2024) The study made by the authors offers a comprehensive review of artificial intelligence (AI) in the higher education, including topics such as machine learning, deep learning, generative AI, and massive language models. It investigates the possibilities for increasing the student engagement through interactive teaching tools, personalized learning experiences, and increased accessibility. The authors address issues and problems with data privacy, algorithmic bias, and academic integrity. The study emphasizes the need of stakeholder engagement, legislative frameworks, and ongoing research in harnessing AI's promise while reducing the dangers and maintaining the educational principles. (Nguyen et al., 2024)

Oyebola Olusola Ayeni, Nancy Mohd Al Hamad, Onyebuchi Nneamaka Chisom, Blessing Osawaru and Ololade Elizabeth Adewusi (2024) The study made by the authors presents a thorough examination of the use of Artificial Intelligence (AI) in education, with a particular emphasis on personalized learning and educational technology. The authors used the rigorous process to collect and analyse data from a variety of sources, including academic papers, reports, and empirical research. The research used content analysis and bibliometric tools to extract insights and synthesize the results. The article Highlights the revolutionary power of AI-driven personalized learning and adaptive educational technology to improving student engagement, academic outcomes, and accessibility. However, it addresses issues like privacy, algorithmic biases, and the digital divide, highlighting the importance of ethical frameworks and responsible implementation. The authors recommend the innovation, and collaboration among educators, politicians, and technologists to promote the fair and responsible integration of AI in the education educational setup. (Oyebola Olusola Ayeni et al., 2024)

Kleopatra Nikolopoulou (2024) The study made by the authors offers a qualitative research that investigates how to use generative AI such as ChatGPT in order to improve educational methods in higher education. The author took a fresh method, using ChatGPT as a research assistant to generate material and ideas via prompts and inquiries. The author analyzed and investigated the output from ChatGPT using current studies before finalizing it. The investigation revealed a number of possible AI applications in higher education, including the personalized learning, automated assessment, virtual assistants, content production, language support, research aid, simulations, collaboration, accessibility, and teaching/learning support. The research also focused on the ethical aspects, potential misuses, concerns, and the importance of proper training and standards. ChatGPT can help with content development, human supervision, knowledge, and engagement are required, emphasizing AI's position as a supplementary tool rather than a replacement for human educators. (Nikolopoulou, 2024)

Andi Asrifan and Anita Candra Dewi (2024) The authors of this study used a qualitative research design with 45 students from grades 7 and 8 in order to investigate the efficacy of AI-driven speaking exercises in improving student engagement and speaking abilities. Data was gathered through the classroom observations, video recordings, student work, reflections, and questionnaires. The numeric data were analyzed using coding and descriptive statistics, while the qualitative data was analyzed using discourse analysis. The authors indicate that AI-driven classroom talks greatly increased student engagement and speaking competency by creating a student-centered learning environment. The research emphasizes AI's ability to personalize learning experiences, improve real-life communication, and foster critical thinking in Education 5.0. (Asrifan & Dewi, 2024)

STATEMENT OF PROBLEM

The rapid integration of the AI-powered learning systems in the educational institutions promises to improve student engagement and academic achievement by providing the personalized learning experiences. Moreover, there is a need to conduct a comprehensive research of their real influence on the various educational outcomes, as well as to comprehend the policy implications. This study seeks to fill a gap by looking at how these AI technologies affect student engagement, involvement, motivation, confidence, academic achievement, and the help-seeking behaviors. It also tries to discover important characteristics that lead to the enhanced learning outcomes and examine the policy considerations required for equitable, effective, and ethical adoption of AI in education.

OBJECTIVES OF THE STUDY

- ✓ To Evaluate the Impact of AI-Powered Learning Platforms on Student Engagement
- ✓ To Analyze the Effect of AI-Powered Learning Platforms on Academic Performance
- ✓ To Assess the Policy Implications of Implementing AI-Powered Learning Platforms in Educational Institutions

METHODOLOGY

The study will utilize both primary and secondary data for effective conclusions. Primary data was gathered through surveys administered to a sample size of 50 students using AI-powered learning platforms, focusing on engagement, participation, motivation, confidence, academic performance, and help-seeking behavior. The secondary data is also sourced from existing literature and news articles. The hypothesis testing in the study will employ paired samples t-tests to compare pre- and post-implementation metrics of the student engagement and performance. The concerned statistical approach will assess whether significant differences exist, by evaluating the impact of AI-powered learning platforms. Data analysis will be conducted using SPSS software for reliability and validity.

HYPOTHESIS IN THE STUDY

Engagement

H0: There is no significant difference in student engagement levels before and after the implementation of AI-powered learning platforms.

H1: There is a significant difference in student engagement levels before and after the implementation of AI-powered learning platforms.

Participation in Class Discussions

H0: There is no significant difference in the frequency of student participation in class discussions before and after the implementation of AI-powered learning platforms.

H1: There is a significant difference in the frequency of student participation in class discussions before and after the implementation of AI-powered learning platforms.

Motivation to Complete Assignments

H0: There is no significant difference in student motivation to complete assignments before and after the implementation of AI-powered learning platforms.

H1: There is a significant difference in student motivation to complete assignments before and after the implementation of AI-powered learning platforms.

Confidence in Understanding Course Material

H0: There is no significant difference in student confidence in understanding course material before and after the implementation of AI-powered learning platforms.

H1: There is a significant difference in student confidence in understanding course material before and after the implementation of AI-powered learning platforms.

Academic Performance

H0: There is no significant difference in student academic performance before and after the implementation of AI-powered learning platforms.

H1: There is a significant difference in student academic performance before and after the implementation of AI-powered learning platforms.

Seeking Help from Teachers or Peers

H0: There is no significant difference in the frequency with which students seek help from teachers or peers before and after the implementation of AI-powered learning platforms.

H1: There is a significant difference in the frequency with which students seek help from teachers or peers before and after the implementation of AI-powered learning platforms.

Concluding Hypothesis

H0: AI-powered learning platforms have no significant impact on students.

H1: AI-powered learning platforms have a significant impact on students.

DATA ANALYSIS AND INTERPRETATION

Section 1: Demographic Information

Respondents Statistics					
		Age	**Gender**	**Year of Study**	**Nature of the Program**
N	**Valid**	50	50	50	50
	Missing	0	0	0	0

Source: SPSS Output

Age of the Respondents					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	18-24	50	100.0	100.0	100.0

Source: SPSS Output

Gender of the Respondents					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	**Female**	14	28.0	28.0	28.0
	Male	36	72.0	72.0	100.0
	Total	50	100.0	100.0	

Source: SPSS Output

Nature of the Program					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	**PG**	18	36.0	36.0	36.0
	UG	32	64.0	64.0	100.0
	Total	50	100.0	100.0	

Source: SPSS Output

Reliability Score

Item Statistics			
Metrices	Mean	Std. Deviation	N
Pre_E1 How engaged do you feel during your classes	3.64	0.85141	50
Pre_E2 How often do you participate in class discussions	3.56	1.10951	50
Pre_E3 How motivated are you to complete your assignments	3.78	0.78999	50
Pre_P1 How confident are you in your understanding of the course material	3.56	0.95105	50
Pre_P2 How would you rate your academic performance in this course	3.8	0.78246	50
Pre_P3 How often do you seek help from your Teachers or peers	3.66	1.13587	50
How engaged do you feel during your classes after using the AI-powered learning platform?	3.8	0.67006	50
How often do you participate in class discussions after using the AI- powered learning platform?	3.6	0.94761	50

How motivated are you to complete your assignments after using the AI- powered learning platform?	3.88	0.68928	50
How confident are you in your understanding of the course material after using the AI-powered learning platform?	3.62	0.77959	50
How would you rate your academic performance in this course after using the AI-powered learning platform?	3.78	0.61578	50
How often do you seek help from your teachers or peers after using the AI- powered learning platform?	3.46	0.86213	50

Source: SPSS Output

Scale Statistics				
Cronbach Alpha	Mean	Variance	Std. Deviation	N of Items
0.793	44.1400	32.735	5.72146	12

Source: Analysis performed using SPSS software.

The reliability of the scale was measured by using Cronbach's Alpha which is a measure of internal consistency. In general, the Cronbach's Alpha value above 0.7 is considered acceptable, indicating good reliability. In our study, the Cronbach's Alpha value was found to be 0.793, suggesting that the scale has a high degree of reliability and consistency in measurement.

Paired Sample T Test Analysis

Paired Differences					t	df	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
			Lower	Upper			
Pair 1	Pre_E1 How engaged do you feel during your classes - Post_E1 How engaged do you feel during your classes after using the AI-powered learning platform?						
-.16000	.81716	.11556	-.39224	.07224	-1.385	49	.172
Pair 2	Pre_E2 How often do you participate in class discussions - Post_E2 How often do you participate in class discussions after using the AI- powered learning platform?						
-.04000	1.29300	.18286	-.40747	.32747	-.219	49	.828
Pair 3	Pre_E3 How motivated are you to complete your assignments - Post_E3 How motivated are you to complete your assignments after using the AI- powered learning platform?						
-.10000	1.05463	.14915	-.39972	.19972	-.670	49	.506
Pair 4	Pre_P1 How confident are you in your understanding of the course material - Post_P1 How confident are you in your understanding of the course material after using the AI-powered learning platform?						
-.06000	1.15016	.16266	-.38687	.26687	-.369	49	.714
Pair 5	Pre_P2 How would you rate your academic performance in this course - Post_P2 How would you rate your academic performance in this course after using the AI-powered learning platform?						
.02000	.84491	.11949	-.22012	.26012	.167	49	.868
Pair 6	Pre_P3 How often do you seek help from your Teachers or peers - Post_P3 How often do you seek help from your teachers or peers after using the AI- powered learning platform?						
.20000	1.10657	.15649	-.11448	.51448	1.278	49	.207
Pair 7	Pre_AI_Implementation - Post_AI_Implementation						

-.14000	3.89668	.55107	-1.24742	.96742	-.254	49	.801

Source: Analysis performed using SPSS software.

Pairs	Pair 1	Pair 2	Pair 3	Pair 4	Pair 5	Pair 6	Pair 7
P Value	0.172	0.828	0.506	0.714	0.868	0.207	0.801

Source: Analysis performed using SPSS software.

Pair 1: (P = 0.172)

H0: There is no significant difference in student engagement levels before and after the implementation of AI-powered learning platforms.

H1: There is a significant difference in student engagement levels before and after the implementation of AI-powered learning platforms.

Result: Since P > 0.05, H0 (Null Hypothesis) is accepted.

Conclusion: There is no significant difference in student engagement levels before and after the implementation of AI-powered learning platforms. A p-value greater than 0.05 means that deviation from the null hypothesis is not statistically significant, and the null hypothesis is accepted.

Pair 2 (P = 0.828):

H0: There is no significant difference in the frequency of student participation in class discussions before and after the implementation of AI-powered learning platforms.

H1: There is a significant difference in the frequency of student participation in class discussions before and after the implementation of AI-powered learning platforms.

Result: Since P > 0.05. H0 (Null Hypothesis) is accepted.

Conclusion: There is no significant difference in the frequency of student participation in class discussions before and after the implementation of AI-powered learning platforms. A p-value greater than 0.05 means that deviation from the null hypothesis is not statistically significant, and the null hypothesis is accepted.

Pair 3 (P = 0.506)

H0: There is no significant difference in student motivation to complete assignments before and after the implementation of AI-powered learning platforms.

H1: There is a significant difference in student motivation to complete assignments before and after the implementation of AI-powered learning platforms

Result: Since P > 0.05. H0 (Null Hypothesis) is accepted.

Conclusion: There is no significant difference in student motivation to complete assignments before and after the implementation of AI-powered learning platforms. A p-value greater than 0.05 means that deviation from the null hypothesis is not statistically significant, and the null hypothesis is accepted.

Pair 4 (P = 0.714):

H0: There is no significant difference in student confidence in understanding course material before and after the implementation of AI-powered learning platforms.

H1: There is a significant difference in student confidence in understanding course material before and after the implementation of AI-powered learning platforms

Result: Since P > 0.05. H0 (Null Hypothesis) is accepted.

Conclusion: There is no significant difference in student confidence in understanding course material before and after the implementation of AI-powered learning platforms. A p-value greater than 0.05 means that deviation from the null hypothesis is not statistically significant, and the null hypothesis is accepted.

Pair 5 (P = 0.868):

H0: There is no significant difference in student academic performance before and after the implementation of AI-powered learning platforms.

H1: There is a significant difference in student academic performance before and after the implementation of AI-powered learning platforms.

Result: Since P > 0.05. H0 (Null Hypothesis) is accepted.

Conclusion: There is no significant difference in student academic performance before and after the implementation of AI-powered learning platforms. A p-value greater than 0.05 means that deviation from the null hypothesis is not statistically significant, and the null hypothesis is accepted.

Pair 6 (P = 0.207):

H0: There is no significant difference in the frequency with which students seek help from teachers or peers before and after the implementation of AI-powered learning platforms.

H1: There is a significant difference in the frequency with which students seek help from teachers or peers before and after the implementation of AI-powered learning platforms.

Result: Since P > 0.05. H0 (Null Hypothesis) is accepted.

Conclusion: There is no significant difference in the frequency with which students seek help from teachers or peers before and after the implementation of AI-powered learning platforms. A p-value greater than 0.05 means that deviation from the null hypothesis is not statistically significant, and the null hypothesis is accepted.

Pair 7 (P = 0.801):

H0: AI-powered learning platforms have no significant impact on students.

H1: AI-powered learning platforms have a significant impact on students.

Result: Since P > 0.05. H0 (Null Hypothesis) is accepted.

Conclusion: AI-powered learning platforms have no significant impact on students. A p-value greater than 0.05 means that deviation from the null hypothesis is not statistically significant, and the null hypothesis is accepted.

FINDINGS

Student Engagement: The paired samples t-test results indicated that there is no significant difference in student engagement levels before and after the implementation of AI-powered learning platforms (p = .172). This suggests that while AI tools are promising, they did not significantly enhance overall student engagement in this study.

Participation in Class Discussions: No significant difference was found in terms of frequency of student participation in class discussions (p = .828). This implies that AI-powered platforms did not notably alter how often students participated in the classroom discussions.

Motivation to Complete Assignments: There was no significant change in the student motivation to complete assignments post-implementation of AI tools (p = .506). This indicates that the AI platforms did not significantly affect students drive to complete their coursework.

Confidence in Understanding Course Material: The analyzed data showed no significant difference in student confidence in understanding course material (p = .714). This finding suggests that AI platforms did not substantially impact student self-assuredness in their academic comprehension.

Academic Performance: Similarly, there was no significant difference in the academic performance before and after using the AI-powered learning platforms (p = .868), indicating that the AI tools did not significantly improve overall academic outcomes.

Seeking Help from Teachers or Peers: The frequency within which students sought help from the teachers or peers did not change significantly (p = .207), suggesting that AI platforms did not significantly alter help-seeking behaviors of the students.

CONCLUSIONS:

The AI-powered learning platforms that is used in the study's context, had no meaningful influence on the student engagement, involvement, motivation, confidence, academic achievement, or help-seeking behaviors. These findings highlight the need for a more intentional and educated approach to using AI tools into education sector. Policymakers should provide the complete frameworks for the effective deployment of AI technology, including the teacher training, curricular integration, and equitable access of academic resources. By focusing on these areas, the educational institutions may fully use AI to improve the learning results and deliver a more personalized and inclusive educational experience for all students. Additionally, the policy frameworks need to address the equitable and ethical use of AI in the education system in order to ensure all students benefit from these emerging technologies.

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