

Artificial Intelligence (AI) Towards Students' Academic Performance

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Abstract

The study examines the impact of artificial intelligence (AI) on students' academic performance, focusing on factors such as improved student performance, attitudes toward learning, motivation for study habits, and learning mechanisms. Further, it aims to evaluate and analyze how AI enhances student academic outcomes. A mixed-methods approach, incorporating focus group discussions (FGD), was used to gather quantitative and qualitative data. Random sampling was employed to select a sample size of 100 respondents based on predefined criteria. The results indicate that AI effectively targets the specific learning needs of students, facilitating comprehensive and improved learning experiences. It identifies struggling learners and provides necessary interventions and support to enhance their academic performance.

Additionally, AI accurately measures and enhances students' attitudes toward learning, offering deeper insights into the learning process. It also boosts students' motivation toward study habits and learning behavior. Furthermore, AI's adaptive learning mechanisms guide students' learning processes and provide valuable feedback.

Keywords: artificial intelligence, students' academic performance, motivation, learning mechanism, study habits

Introduction

Artificial intelligence (AI) towards students' academic performance impacts their studies because it provides the necessary information to comply with the requirements. It is the contribution of advanced technology. It is tailored with various information and advertisements based on the implementation and readiness process and transition to learning (Mallillin & Carag et al., 2020). Despite the adoption of AI in education, it remains nascent. It is a full-fledged form of AI in natural processing to enhance the engagement and performance of students. It helps students improve and be more effective in the personalized academic performance integration knowledge and needs for their enhancement and learning (Mallillin & Mendoza et al., 2020). It plays a crucial role in promoting advanced and effective learning. It provides benefits for the technology state of the art in learning acquisition knowledge and attention in teaching. It influences the capability of students to learn to the fullest (Altememy et al., 2023).

On the other hand, AI toward students' academic performance constitutes essentialities of standard education and development. It explores the learning domain embedded in advanced technology through myriad learning applications. It provides detailed efforts and an overview of the learning development of students' competency performance and skills in the educational setting (Mallillin & Mallillin, 2019). It highlights data-driven AI and the critical learning application to students' academic performance. It analyzes the tools of the AI process and role-driven limitations in the learning process. It reviews the application of various AI in education, such as classroom

monitoring, intelligent tutoring, sentiment analysis, student retention, and student assessment based on the structural domain of learning in students' academic performance (Mallillin et al., 2021). It highlights the AI trend in learning to provide a platform and development effort in students' learning process and academic performance. It explores and analyzes the learning domain and its contribution to the student's performance (Ahmad & Iqbal et al., 2023).

On the other hand, AI's effect on students' academic performance helps identify the tools and power of analysis among struggling learners. It provides and allows for improvement in students' intervention and academic performance (Mallillin, 2022). It automates the educational process, streamlines the educators, and saves time and routine administrative tasks. AI is necessary for learning and developing technology in the educational setting and society. It is crucial in the learning process because AI enhances the learning and creativity of students' performance. It improves academic performance and learning (Mallillin, 2020). It provides capability and resources for students' learning, such as reformation of knowledge, innovation, consciousness, collaboration competency, teaching application, and technical skills (Wang, Sun, & Chen, 2023). Hence, AI's effect on student performance provides systematic findings on the up-to-date learning principles and protocols process. It identifies the effect of AI in the process of learning. It highlights the emerging AI data of learning in students' academic performance, such as student learning management, intelligent tutoring, AI assistance, prediction, evaluation, and assessment. It highlights the systematic effect of learning concepts, theory, and framework in the educational system (Mallillin, 2023). The effect utilizes the

concomitant proliferation tools in AI for the learning process. It provides proper instructions for students and adapts various learning processes and needs in the various types of learning (Crompton & Burke, 2023).

Moreover, the impact of AI on students' education and learning process provides experiences for personalized learning. AI assists automated learning in offering real-time feedback, enhancing teaching strategies, facilitating professional development, and promoting education inclusivity based on instructional teaching and learning (Mallillin, 2024). It is a landscape and transformation of education and learning. It offers solutions and enhances innovative learning experiences. It revolutionizes the comprehensive cover of AI by focusing on the impact of teaching methodologies and learning outcome design for effective learning (Mallillin et al., 2023). It adopts personalized learning experiences based on the needs of students in learning and teaching. It analyzes the adaptive learning power of AI systems to create a customized learning path and performance of students to ensure that students have the pace of understanding level and content. It streamlines and reshapes the personalized engagement of students' improvement and approach to their academic performance (Onesi-Ozigagun et al., 2024). Yet, the impact of AI on students' education and learning process creates interactive learning and provides proper real-time feedback among students. It develops and facilitates learning, especially critical thinking skills. It assesses the AI revolutionizing processes in moving insightful learning progress and student comprehension level. It integrates the extent of AI function in the academic performance of students. It optimizes the process and system to lead to an effective and efficient learning process for students as centers of learning. It aims to improve the approach to learning outcomes. It promotes engagement and motivation among students. It facilitates learning outcomes in the classroom setting (Huang et al., 2023).

Furthermore, AI assists students in their studies to the fullest. It offers personalized learning experiences among students. It helps to analyze the data for the student's weaknesses and strengths. It is created to customize the plan and learning needs of students. It provides support and guidance to achieve the full potential of learning. It can make a difference and receive interactive help in students' learning process and the global learning approach (Mallillin, n. d.). It assists in providing the needed learning in various scenarios for the project output of students. It helps in providing guidance and instructions to better meet the needs of students in the learning process. It provides potential challenges and drawbacks that address the gaps in AI in exploring the efficacy, challenges, opportunities, and ethical concerns in students' academic performance. It provides interactive response content and confidential learning experiences for the learners (Chen et al., 2023).

On the other hand, AI assists students completely and transforms the knowledge-learning process. It is a digital transformation for learning that provides details of answering students' questions, research, and learning as centers of learning. It provides a high level of knowledge in the academic overview of the learning education process. It contextualizes the focus of the learning process of students. It assesses the intelligence and development of tutoring systems and the potential impact of students on their academic performance. It changes the study habits of students because AI helps and guides students in the learning process. It defines AI's evolving capability and interdisciplinary nature to achieve a particular task and intelligent behavior (Chaudhry & Kazim, 2022).

Statement of the Problem

1. What are the factors associated with AI towards academic performance of students in the area of
 - 1.1 improve student performance,
 - 1.2 attitude towards learning,
 - 1.3 motivation toward study habits, and
 - 1.4 learning mechanisms?
2. What makes AI improve students' academic performance among the respondents?

Objectives

The following objectives are guiding the study:

1. Analyze the AI towards students' academic performance.
2. Explore the contributions and factors associated with AI toward students' academic improvement as centers of learning.

Methodology

Design

Mixed methods are employed through focus group discussion (FGD) to analyze AI toward students' academic performance. It resulted in both quantitative and qualitative research. Quantitative research is used to measure and quantify the factors associated with AI toward the academic performance of students in the area of improving student performance, attitude toward learning, motivation toward study habits, and learning mechanisms, while qualitative research is used to evaluate and analyze the AI improved the academic performance of students among the respondents. It is a dimension of the implementation of AI priority in the educational learning of students (Pischetola et al., 2024).

Sampling Techniques

A random sampling technique is utilized to select the population size of the study based on the predefined criteria. Respondents are randomly selected from the group of students exposed to AI systems. They are chosen to represent the entire study. It aims to improve the selection of the sample size accordingly. It suggests estimating the finite population of the respondents' function and distribution based on the variables of random sampling methods. It is expressed on the degree of approximation until the number of respondents is met. It obtains the set simulation measure and performance of the sample size through random sampling method counterparts in the study (Ahmad & Ullah et al., 2023).

Participants

The study participants are students from private and public higher education institutions (HEIs) along the national capital region (NCR) university belt. They are chosen randomly based on the predefined criteria. They are exposed to the contribution of the AI learning process. The study comprised only one hundred (100) respondents. The participants are chosen based on the predefined criteria of the study, which is that they are exposed to AI in all their assignment tasks and research in their subjects.

Results

The study's first objective was: On the factors associated with AI towards students' academic performance.

Table 1 presents the weighted mean and the corresponding interpretation of the factors associated with AI towards students' academic performance. It shows in the table that ranks one is shared by the two indicators, which are "It focuses on the needed learning task of students and demonstrates better learning to the fullest" and "It enhances and encourages students to express ideas and critical thinking in the learning process," with a weighted mean of 4.24 or *strongly agree* which means that AI towards the academic performance of students is highly effective. Rank two is shared by the two indicators, which are "It measures the learning process accurately in facilitating and providing deeper insights in the learning process among students" and "It provides learning mechanism and experiences to customize learning plans based on the needs of students," with a weighted mean of 4.20 or *strongly agree* which means that AI towards the academic performance of students is highly effective. The rank third is also shared by the two indicators, which are "It helps in leading and increasing the learning motivation of students toward learning behavior and study

habits," and "It immerses on the engagement of learning effort, enthusiasm, independence, active involvement, and collaboration," with a weighted mean of 4.11 or *agree* which means that AI towards the academic performance of students is effective. The lowest in rank is also shared by the two indicators, which are "It demonstrates consistent learning behavior and aspiration to achieve the academic performance of

students," and "It provides adaptive learning mechanism in guiding students' learning process and feedback," with a weighted mean of 3.37 or *moderately agree* which means that AI towards the academic performance of students is limited. The overall average weighted mean is 3.905 ($SD = .298$) or *agree*, which means that AI effectively determines the factors associated with AI's impact on students' academic performance.

Table 1

Factors Associated with AI Towards the Academic Performance of the Respondents

Indicators	WM	I	Rank
It helps lead and increase students' learning motivation toward learning behavior and study habits.	4.11	A	5.5
It assists in analyzing the response of students regarding assessment and tasks in the learning process.	3.85	A	10.5
It focuses on the needed learning task of students and demonstrates better learning to the fullest.	4.24	SA	1.5
It reinforces positive learning to boost students to improve and motivate performance in the classroom setting.	3.51	A	14
It enhances and encourages students to express ideas and critical thinking in the learning process.	4.24	SA	1.5
It demonstrates consistent learning behavior and aspiration to achieve students' academic performance.	3.37	MA	15.5
It offers a personalized learning mechanism for the automation of tasks in the learning process and the development of inclusive education.	3.93	A	9
It helps streamline the educational process, tasks, assignments, and other research projects for students as centers of learning.	3.79	A	12
It compels students to develop study habits through the help of AI in performing the learning task and efficiency.	3.64	A	13
It measures the learning process accurately in facilitating and providing deeper insights into the learning process among students.	4.20	SA	3.5
It adapts the realm of the improved performance of students' processing in the different forms of learning.	4.00	A	8
It provides adaptive learning mechanisms in guiding students' learning process and feedback.	3.37	MA	15.5
It immerses us in the engagement of learning effort, enthusiasm, independence, active involvement, and collaboration.	4.11	A	5.5
AI analytic tool power identifies struggling learners to provide intervention and support in academic performance improvement.	4.07	A	7
It motivates them to provide proper information and effort to manipulate the learning process to boost students' study habits.	3.85	A	10.5
It provides learning mechanisms and experiences to customize learning plans based on the needs of students.	4.20	SA	3.5
Average weighted mean	3.905		
SD	.298		

Note. WM = Weighted mean, I = Interpretation, SA = *strongly agree*, A = *agree*, MA = *moderately agree*.

The study's second objective was: What makes AI improve students' academic performance among the respondents? Table 2 presents the thematic analysis of what makes AI improve

students' academic performance. This is analyzed through focus group discussion. Text verbatim is included for the analysis of data as follows:

Table 2

Thematic Analysis and Core Ideas on the AI Improved Academic Performance of Students among the Respondents

Themes	Respondent's response	Core ideas
Improve student performance	Agree	Intervention and support. Streamlining the educational process. Reinforces positive learning.
Attitude towards learning	Agree	Process different forms of learning. Measures the learning process. Focuses on the needed learning task. Demonstrates consistent learning behavior.
Motivation toward study habits	Agree	Engagement of learning effort. Increases learning motivation. Manipulate the learning process. Express ideas and critical thinking.
Learning mechanisms	Agree	Performs the learning task efficiently. Provides adaptive learning mechanisms. Assesses tasks and learning process. Learning process and development. Customizes learning plans.

Improve Student Performance

AI towards students' academic performance in improved performance refers to the commonly associated performance tasks with intelligence being based on the help of AI in natural language processing and learning. It helps improve student

performance by transforming, communicating, and interacting in learning. It helps apply AI technology to automate assessment and enhance improved learning. It is an enormous, improved learning evolution process (Chiu & Xia et al., 2023). Participants P79 and P21 say, "AI analytic tool power identifies the struggling learners to provide intervention and support in the academic performance

improvement." Participants P67 and P21 say, "It helps in streamlining the educational process, tasks, assignments, and other research projects of students as centers of learning." Several more participants, like P59 and P34, say, "It reinforces positive learning to boost students to improve and motivate their performance in the classroom setting." Participants P52 and P27 say, "It adapts the realm of the improved performance of students processing in the different forms of learning."

Attitude Towards Learning

Attitude toward learning about AI advancement is actively striving to improve the related competency of students. It overhauls and develops step by step the skills of students to focus on the learning process attitude. Students continuously harbor in the AI favorable attitude and perception. It addresses the teaching method and issues toward the learning behavior of students. It identifies the need to cultivate a positive outlook and an effective method for AI attitude in the learning process. It is designed to assist students in their attitude toward learning. It evaluates the impact of the program on the attitude toward learning. It unveils the student perception and improvement contribution of AI to the attitude of the learning process (Kim, 2023). Participants P85 and P14 say, "AI measures the learning process accurately in facilitating and providing deeper insights into the learning process among students." Participants P80 and P18 say, "It focuses on the needed learning task of students and demonstrates better learning to the fullest." Several more participants, like P76 and P24, say, "It demonstrates consistent learning behavior and aspiration to achieve students' academic performance." Participants P68 and P28 say, "It immerses us in the engagement of learning effort, enthusiasm, independence, active involvement, and collaboration."

Motivation Toward Study Habits

AI contributes to the motivation toward students' study habits because it guides and helps to provide necessary information on the things needed in the learning process. Technology tutors students as learning centers to bring about various changes in classroom practices. It helps to connect the weak instructional approaches and perspectives to motivate students to learn fully. It benefits students and motivates them to support and mediate the role of AI as needed. It supports the needs and satisfaction motivation to learn with AI technologies. It helps in the motivation process for the study habits of students' application and practices (Chiu & Moorhouse et al., 2023). The participants P91 and P9 say, "It helps in leading and increasing the learning motivation of students toward learning behavior and study habits." Participants P85 and P14 say, "It motivates us to provide proper information and effort to manipulate the learning process to boost students' study habits." Participants P79 and P20 say, "It enhances and encourages students to express ideas and critical thinking in the learning process." Participants P75 and P22 say, "It compels students to develop study habits through the help of AI in performing the learning task and efficiency."

Learning Mechanisms

AI provides a learning mechanism for students' academic performance because it guides them to provide necessary information and knowledge on the learning process. AI supports and automates the attention and techniques in the learning mechanism to obtain better academic performance of students. It impacts and supports the learning mechanism's sufficiency in students' skills. It integrates appropriate learning knowledge to promote learning mechanism strategies for students' academic performance. AI benefits the learning mechanism and reflective thinking support to widen learners' knowledge and approach for students. It helps in improving the quality of learning. It improves the learning mechanism of self-regulated self-efficacy perceptions (Liu et al., 2023). The participants P87 and P19 say, "It provides adaptive learning mechanisms in guiding students' learning process and feedback." Participants P83 and P17 say, "It assists in

analyzing the response of students regarding assessment and tasks in the learning process." Participants P77 and P21 say, "It offers a personalized learning mechanism, automation of tasks, learning process and development in inclusive education." Participants P66 and P24 say, "It provides learning mechanisms and experiences to customize learning plans based on the needs of students."

Discussion

The factors associated with AI toward students' academic performance focus on the needed learning task and demonstrate better learning. It enhances and encourages students to express ideas and critical thinking in the learning process. In addition, it measures the learning process accurately to facilitate and provide deeper insights and learning mechanisms and experiences to customize plans based on the needs of students. The design implements the anticipated academic performance of students through the use of AI. Academic performance predicts learners through AI. The effect of AI demonstrates support based on the needs of the learners. The rudiments and assistance enhance the AI information. It adopts the AI application and natural process engagement in the prevalent learning of students' innovation in students' academic performance (Pacheco-Mendoza et al., 2023). On the other hand, factors associated with AI toward students' academic performance help lead and increase students' motivation toward learning behavior and study habits. It immerses us in the engagement of learning effort, enthusiasm, independence, active involvement, and collaboration. The consistent learning behaviors demonstrate an aspiration to achieve students' academic performance and provide adaptive learning mechanisms to guide students' learning process and feedback. AI transforms and has the potential to impact the focus learning process in terms of academic achievement, student motivation, and learning experiences. Integrating AI is a comprehensive challenge in the educational setting (Pertwi et al., 2024).

The improved student performance through AI analytic tool power identifies the struggling learners to provide intervention and support in academic performance improvement. It also helps streamline the educational process, tasks, assignments, and other student research projects as centers of learning. It examines the conventional immense challenges in education in dealing with students' work through AI as the system provides necessary information for students' learning process. It speculates the AI tool in the learning process. It benefits the improved learning process and increases academic performance. It provides a better impact in the implication of AI's positive improved learning process. It encourages hurdles and greatness in reaching technological advancement in the educational system (Shrivastava, 2023). In addition, the improved student performance reinforces positive learning to boost students' performance and motivate them to improve in the classroom setting. It also adapts to improved performance in students' processing of different forms of learning. It influences the academic performance of students in various complex factors. It accommodates a diverse approach to traditional teaching process struggles based on students' optimal learning outcomes and needs. It provides better strategies and comprehensively understands students' learning in shaping improved academic performance. It integrates artificial tools in support and decision-making to improve the educational approach and learning process. It is based on empirical power and AI features to recognize students' academic performance and learning process (Bressane et al. 2024).

Indeed, attitude towards learning of AI measures accurately facilitating and providing deeper insights into the learning process. It focuses on the learning tasks students need and demonstrates better learning. It contributes to the implementation of AI. It explores the behavior and impact attitude of students toward AI, which assists the learning process in attaining better academic outcomes. It better impacts students' learning, especially when searching for facts, which provides a necessary learning process. AI facilitates conditions in the attitude and learning of students significantly through the use of

AI in education intention. It designs the cognitive task of AI associated with human thinking and the learning process. It is the most common application of AI towards students' learning (Alzahrani, 2023).

Consequently, an attitude towards learning demonstrates consistent learning behavior and aspiration to achieve academic performance. It immerses us in the engagement of learning effort, enthusiasm, independence, active involvement, and collaboration. It infiltrates the predicted AI in creating the attitude of students' learning process. It is a result of AI technology that surges the interest and attitude of students in guiding the learning process through AI tutoring. It helps students to learn independently through the use of technology and AI. It provides systematic tutoring learning through AI technology in understanding the limit to address the proper learning process. It defines the behaviors and attitudes of students in the learning process and their willingness to use AI to the fullest (Kelly et al., 2023).

Subsequently, motivation towards students' study habits through AI helps lead and increase their behavior to the fullest. It motivates them to provide proper information and manipulate the learning process to boost students' study habits. It utilizes AI to guide the learning process and helps students learn independently through the creativity of study habits. This is useful in the learning outcome. It motivates students to explore critical thinking on the knowledge provided by the AI to develop study habits. It provides the learners with necessary information on the topic and areas of knowledge needed. AI is a guide on what to do, but it needs to analyze the process for proper learning that leads to motivation toward study habits and better academic performance. AI provides thinking skills and knowledge to promote self-efficacy. It helps motivate students to learn (Yilmaz & Karaoglan Yilmaz, 2023). In addition, motivation towards study habits of students through AI enhances and encourages students to express ideas and critical thinking in the learning process. It compels students to develop study habits through the help of AI to perform the learning task efficiently. It provides a digital transformation and a huge impact on the learning process because AI plays a significant role in the motivation of students to learn. AI can help expand understanding of the framework and acceptance of digital learning skills. It influences the motivation of students to use AI devices in the learning process. It motivates the learning service delivery of AI in the learning process (Vitezić & Perić, 2024).

Lastly, learning mechanisms through AI provide adaptive guidance for students' learning processes and feedback. It also assists in analyzing the response of students regarding their assessment and tasks in the learning process. It unifies the learning theories and the role of AI model and promotion. It develops instructional design in the learning mechanism of students' complexity. It helps explain the work access and learning occurrence in the various learning domains. It provides information and explains the learning dissipated and aggregated learning levels. It proposes an AI alignment model and features in the learning mechanism of students' knowledge and activities. It provides proper learning mechanisms and limits. It evaluates the learning mechanism practice in the focus of AI developers, leverages, and learning designs. It improves building knowledge and individual learning (Gibson et al., 2023). Finally, learning mechanisms through AI offer personalized automation of tasks in the learning process and the development of inclusive education. It provides learning mechanisms and experiences to customize learning plans based on the needs of students. It profoundly presents AI in the field of education. It emerges from integrating technology to provide improved intelligent teaching that enriches learning experiences and effectiveness. The AI helps students to participate in the learning interaction involvement and mechanism. It designs the learning mechanism that supports, rewards, and interactive learning mediation of AI in the effect of positive learning. AI moderates AI in terms of the learning mechanism's interaction and intention process. It optimizes the learning strategy and improves learning participation and experiences of teaching and learning to equip quality education (Wang, Wang et al., 2023).

Conclusion

It shows that factors associated with AI towards the academic performance of students focus on the needed learning task and demonstrate better learning to the fullest where it enhances and encourages students to express ideas and critical thinking learning process since it measures the learning process accurately in facilitating and providing more profound insights learning process and provides learning mechanism and experiences to customize learning plans based on the needs of students.

It shows that improved student performance identifies the struggling learners to provide intervention and support in the academic performance improvement where it helps in streamlining the educational process, tasks, assignment, and other project of research of students as centers of learning since it reinforces positive learning to boost students to improve and motivate performance in the classroom setting, shows that attitude toward learning in AI measures the learning process accurately in facilitating and providing deeper insights among students where it focuses on the needed learning task and demonstrates better learning to the fullest since it performs consistent learning behavior and aspiration to achieve academic performance of students, shows that motivation towards study habits helps in leading and increasing the learning motivation of students toward learning behavior and study habits since it provides proper information and effort to manipulate learning process to boost students study habits because it enhances and encourages students to express ideas and critical thinking in the learning process, and shows that learning mechanisms provide adaptive learning mechanism in guiding students' learning process and feedback since it assists in analyzing the response of students regarding assessment and tasks learning process and offers a personalized learning mechanism in the automation learning process and development in the inclusive education.

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Received: 09 May 2024

Revised: 01 June 2024

Accepted: 13 June 2024