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Artificial Intelligence as a Tool in Increasing Academic Performance

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Abstract

This study examines the relationship between BPEd student academic performance and artificial intelligence involvement. The main objective is to comprehend how AI-driven educational techniques affect students' academic performance and learning processes in this physically demanding profession. The study uses a descriptive correlational quantitative research design to find out if there is a link between using AI and doing well in school among first- to fourth-year BPEd students at Cebu Normal University-Main Campus. The data is gathered using a standardized questionnaire that includes Likert-scale items and demographic data. The study reveals that the impact of AI on academic performance is generally perceived positively by students. The study discovered a strong and significant correlation between AI involvement and academic success. Students actively engaging with AI are likely to achieve higher academic performance. Educators and institutions should integrate AI technologies into teaching and learning to improve academic performance, promote student engagement, and ensure effective AI integration.

Keywords: Artificial Intelligence, Academic Performance, Impact of AI, AI Integration, Educational Technology

Introduction

The field of artificial intelligence has led to the emergence of human-like intelligence in computers, machines, and other artifacts. Artificial intelligence (AI) in education significantly influences how the curriculum is designed and how students are engaged (Motlagh *et al*., 2002). Timms (2016) [20], states that artificial intelligence is used in many educational institutions and the education sector. Artificial intelligence in education has significantly impacted innovative content, global learning, personalized or customized learning, and school management. The Bachelor of Physical Education degree encompasses a variety of disciplines, including coaching, sports science, and fitness management. Students who pursue this degree frequently need to possess a unique combination of theoretical knowledge and practical skills. The influence of artificial intelligence systems on the norms, expectations, and culture of interactions between students and teachers is yet unclear. It is critical to understand how students and teachers view the influence of artificial intelligence systems on their interactions to identify any gaps, difficulties, or impediments that may compromise the safety of these interactions and hinder artificial intelligence systems from realizing their full potential (Seo *et al*., 2021) [18].

Artificial intelligence (AI) integration in education has brought dramatic developments in the digital age, changing instructional strategies, curriculum design, and student involvement (Motlagh and others, 2002). Artificial intelligence (AI) is a technical development that has profoundly impacted this area. The quick advancement of AI-driven solutions creates several prospects for society and the educational field. Artificial intelligence can automate various time-consuming and repetitive jobs in the workplace, boosting efficiency and productivity. Individualized learning options in the classroom benefit students, and teachers can use cutting-edge teaching strategies.

Education has always been known for being flexible and receptive to new technological developments. Before the advent of computers and other associated technologies, instructors and pupils reportedly delivered lessons and learned through the mechanical application of natural human effort (Chen & Lin, 2020) [5]. AI has become a potent instrument in this digital age that promises to improve education in various ways. According to Seo *et al*. (2021) [18], artificial intelligence (AI) can revolutionize digital learning, enhance teaching techniques, and affect the direction of digital education.

Several departments in educational institutions or the education sector have incorporated artificial intelligence. Timms (2016) [20] stated that artificial intelligence has had a significant impact on the learning process in many ways, including increased

effectiveness and efficiency in school administration, global learning, individualized learning, innovative content, and motivational teaching. It is crucial to comprehend this relationship because it can help politicians and educational institutions realize the full potential of AI.

The Bachelor of Physical Education degree is a vibrant and physically demanding area of study that includes several topics, including sports science, coaching, and fitness management. Students pursuing this degree need to combine theoretical knowledge with practical skills. AI's engagement in this situation may enhance learning opportunities, enable data-driven training plans, and offer individualized feedback, which may boost academic achievement. These systems, which were created utilizing AI and techniques for natural language processing, provide valuable data about schooling. The capabilities of text-generating technologies are advancing due to the quick growth of AI (Lund, 2023) [10].

This study examines the relationship between BPEd students' AI participation and academic performance. We intend to learn more about the efficacy of AI-driven educational practices by researching how AI tools, such as virtual trainers or AI-assisted lesson planning, affect students' learning processes. To ensure a thorough grasp of the implications of AI adoption in this industry, we also aim to identify any potential difficulties or disadvantages.

Statement of the Problem

The purpose of this study was to examine the relationship between academic performance and AI participation among BPEd students. Specifically, these answered the following:

1. What is the demographic profile of the students?
1.1 Age
1.2 Sex
1.3 Year Level
2. What is the level of AI involvement of students?
3. What is the level of academic performance of students?
4. Is there a significant difference between AI involvement and academic performance?
5. What output can be proposed?

Materials and Methods

Design

The researcher utilized a research design known as Descriptive Correlational Quantitative. The research studies employed a descriptive correlational methodology to obtain static representations of circumstances and ascertain the associations between various variables (McBurney & White, 2009). This allowed us to draw externally valid generalizations regarding the outcomes of multiple events. The process involved more than the mere compilation and organization of factual information. It encompassed the essential components of rigorous analysis, interpretation, comparison, and the discernment of patterns and connections.

Respondents and Sampling Design

Students from 1st to 4th year of Bachelor of Physical at Cebu Normal University-Main Campus participated in this study. The researchers took one hundred seventy-one (171) students as respondents. The highest frequency of students fell within the age of 21, with 26% of students, followed by 20 and 19 years old with 25% and 22% respectively. It concluded that most of the students fall within the age range of 19 to 21, indicating a concentration of students within this age group. Second-year students had the highest demographic profile, with 48 or 28%. While 4th year students had the lowest frequency, with 37 or 22%, indicating a smaller number of fourth-year students. It provided insights into how academic performance and artificial intelligence involvement might vary among different stages of the student's educational journey. Most were female representatives where 115 students (67% male), with 56 students (33%). It revealed a higher percentage of female students, possibly due to gender composition, enrollment patterns, or interest in artificial intelligence. It marked the need for gender-focused research and initiatives to promote equal opportunities and diversity.

These students were selected through random sampling. Stratified sampling is a probabilistic and random sampling technique that involves the division of the total population into distinct subgroups, referred to as strata, followed by collecting a random sample from each stratum. The attributes under consideration in this study may include sex, age, income, and degree of education, among others, in alignment with the study's aims and objectives (Dudovskiy, 2020). Stratified random sampling was one standard method researchers used because it enabled them to obtain a sample that accurately represented each subgroup of interest to obtain a representative sample population, ensuring each subset of interest was included in the study (Murphy, 2021) [12].

Locale

The study was conducted during the first semester of the 2023-2024 academic year at Cebu Normal University, focusing on undergraduate students pursuing a Bachelor degree in Physical Education, ranging from first-year to fourth-year. The main campus of Cebu Normal University was situated along Osmeña Boulevard in Barangay San Antonio, Cebu City. The selection of the implementation site was based on its ability to offer the requisite data regarding the correlation between the integration of artificial intelligence and the academic performance of undergraduate students pursuing a Bachelor of Physical Education degree.

Instrumentation

A structured questionnaire was used to analyze respondents' demographic data, including age, gender, and year of study

(Sections 1.1 to 1.3). The researchers constructed the questionnaire using insights from previous studies and is specifically designed to investigate the correlation between bachelor of physical education students' academic performance and their engagement with artificial intelligence. The measurement instrument comprised a scale of 20 items, employing a 5-point Likert scale. The available response options on this scale encompassed a variety of opinions, starting with "strongly disagree" (1) and extending to "agree" (5).

Data Gathering Procedure

Before the study, the researchers sought approval from the Dean of Student Affairs, addressed to Dr. Ma. Rosita A. Hernani, through a request letter with the research proponents' and research adviser's signature. Research advisor approval and instructions were obtained before conducting the study. The online questionnaire link was distributed, redirected to a Google form containing the consent form, demographic profile information, and the Likert scale questionnaire. The data was automatically retrieved and recorded after the respondents had submitted their Google forms. The analysis of the data then followed.

Data Analysis

The researchers used two different statistical tools. Descriptive statistical methods were employed to ascertain and summarize the demographic profile of the respondents, the extent of students' engagement with artificial intelligence, and the academic performance of students. These approaches encompass mean, standard deviation, frequency, and percentage measurements. The statistical metric used to assess the linear relationship between two variables evaluated on an interval or ratio scale is the Pearson correlation coefficient, denoted by the symbol r. It ranges from -1 to 1, indicating the strength and direction of the link. Furthermore, semipartial and partial correlation approaches were used in addition to Pearson's correlation coefficient to analyze the connection between a result and a predictor variable while accounting for the influence of other predictors in the equation.

Ethical Considerations

This study complied with applicable ethical standards and principles throughout the research procedure. Furthermore, Bryman and Bell (2007) emphasize the following aspects to consider while doing quantitative research that represented appropriate for this study, the following topics are relevant to ethical considerations:

The study cannot have a detrimental impact on the subjects. The participants' dignity must be preserved and emphasized by whatever means. The participants' full consent must be obtained before conducting the study. There must be assurances that the participants' privacy is protected. The confidentiality of the results must be protected. It is critical that people engaged in the study, such as the individual and the organization, stay anonymous. Any misrepresentation or misinterpretation of research interests and objectives is discouraged. It is critical that affiliations, funding sources, and any conflicts of interest be disclosed. In every correspondence relating to the research, fairness. Moreover, accountability must be achieved. Researchers must avoid erroneous data and distorted representations of the leading data results.

Results and Discussion

Table 1: Level of AI Involvement of Students

	Weighted Mean	SD	Verbal Interpretation
AI technologies have been effectively integrated into the curriculum of my Bachelor of Physical Education program.	3.503	1.037	Agree
My program's professors employ AI-based technologies to improve the learning experience.	3.193	1.170	Neutral
I have access to AI tools and information that will help me with my research.	3.649	1.210	Agree
Artificial intelligence is frequently mentioned and stressed in program.	3.216	1.049	Neutral
I am encouraged to investigate artificial intelligence applications in my field of study.	3.263	1.044	Neutral
My engagement with AI has improved my academic achievement.	3.462	0.978	Agree
Because of AI-related resources, my knowledge of course content has been enhanced.	3.532	1.036	Agree
My participation in AI has made it simpler for me to keep focused on my schoolwork.	3.468	1.048	Agree
I feel AI has assisted me in improving my grades.	3.456	1.107	Agree
My engagement with AI has enhanced my ambition to achieve academic success.	3.240	1.077	Neutral
Overall	**3.398**	**1.075**	**Agree**

As shown in Table 1, students generally agree with the integration of artificial intelligence (mean=3.503) and knowledge enhancement (mean=3.649). Neutral opinions about professors' AI use (mean=3.193), AI emphasis (mean=3.216), AI investigation encouragement (mean=3.263). They agree that AI improves academic achievement (mean=3.462) and knowledge (mean=3.532), simplifies work (mean=3.468), and aids grades (mean=3.456). Neutral on AI's impact on ambition (mean=3.240). Students recognize AI's positive impact but need more professor engagement and program AI emphasis. Insights inform AI integration improvements in the program.

It shows that this generation uses AI to improve their academic performance. The flipped classroom approach enhances learning outcomes by facilitating learning, motivation, and engagement (Huang *et al*., 2023) [6]. It indicates a generally positive perception of AI engagement among the students, as they agree to varying degrees with statements related to the integration of AI technologies, access to AI tools and information, improvement in academic achievement, knowledge enhancement, and simplification of schoolwork through AI participation. Indicate a generally positive perception of AI involvement among the students, as they agree to varying degrees with statements related to the integration of AI technologies, access to AI tools and information, improvement in academic achievement, knowledge enhancement, and simplification of schoolwork through AI participation.

Table 2

	Weighted Mean	SD	Verbal Interpretation
I am well-versed in artificial intelligence and how it may be utilized in my area.	3.392	1.037	Neutral
I am confident in my abilities to employ artificial intelligence techniques and technology.	3.263	1.044	Neutral
I believe that artificial intelligence (AI) will play an important role in the future of Bachelor of Physical Education programs.	3.450	1.154	Agree
My interest in the issue has grown as a result of my participation with AI.	3.181	1.027	Neutral
AI classes and assignments take a substantial amount of time and effort.	3.281	1.025	Neutral
Incorporating AI into my coursework has been a difficult task.	2.871	1.003	Neutral
The advantages of involving AI exceed the additional time and effort required.	3.257	1.031	Neutral
I am prepared to put in extra effort to improve my AI skills.	3.380	1.107	Neutral
I feel that my work with AI will benefit my future employment chances in physical sciences.	3.421	1.051	Agree
AI knowledge and abilities are important advantages for my Bachelor of Physical Education job ambitions.	3.421	1.073	Agree
Overall	**3.292**	**1.055**	**Neutral**

Table 2 results indicate a generally neutral opinion among students regarding the level of their academic performance using AI. The students perceive themselves to have a neutral level of expertise (mean = 3.392) and confidence (mean =

3.263) in employing AI techniques. Overall, the findings suggest that students recognize AI's potential importance and benefits in their field of study and future careers.

The impact of technology is pervasive in all aspects of our daily lives, including communication, transportation, entertainment, and work. It can provide students with specialized support by forecasting academic sustainability or termination. Although AI research is still in its early stages, we must continuously watch its progress and determine how it may be fully utilized (Lee & Lee, 2021) [9]. According to the result, the students acknowledge challenges and neutral opinions regarding their current expertise, confidence, interest, and effort invested in AI-related coursework.

Table 3: Relationship between AI Involvement and Academic Performance

		AI Involvement	Academic Performance
AI Involvement	Pearson Correlation	1	.880**
	Sig. (2-tailed)		.000
	N	171	171
Academic Performance	Pearson Correlation	.880**	1
	Sig. (2-tailed)	.000	
	N	171	171

Table 3 shows the importance of AI involvement in improving academic performance and suggests that incorporating AI technologies into educational settings can positively impact students' learning outcomes. The findings indicate a significant correlation between involvement in AI and academic achievement. However, other factors may also have an effect.

The significant addition of technology, artificial intelligence (AI), to education has always been important (Neha & Kumar, 2023) [14]. This finding highlights the importance of AI involvement in improving academic performance and suggests that incorporating AI technologies into educational settings can positively impact on students' learning outcomes. Educators and institutions can focus on promoting and encouraging students' engagement with AI to enhance academic performance and increase the effectiveness of AI integration in education. It is vital to emphasize that there is a difference between correlation and causation, especially when it comes to education. Academic performance and AI involvement appear to have a strong relationship; however, other factors may also play a role. Further research and analysis would be needed to establish a causal relationship and understand the mechanisms through which AI involvement positively impacts academic performance.

Conclusion

With the result, it is concluded that involvement in artificial intelligence can help students' academic performance. The more they engage in AI, the greater the possibility they will excel in class.

Recommendation

The study found that AI is beneficial in students' academic endeavors. That is why it is recommended to utilize AI in the teaching-learning process, whether in instruction, activities, learning contracts, or other educational experiences. Moreover, investing more in artificial intelligence like plagiarism checkers, quillbot, and Grammarly is recommended.

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