International Journal of Integrative Research (IJIR)
Vol.1, No.9, 2023: 557-570

Artificial Intelligence (AI) on Learning Process

Shaun Kim Sopera[1], John Stephen Alaban[2], Zaira Briones[3],
Nicko A. Magnaye[4*]
Mindoro State University
Corresponding Author: Nicko A. Magnaye nickomaganye17@gmail.com

A R T I C L E I N F O

Keywords: Artificial Intelligence, Learning Process, Machine Learning, Revolutionize

Received : 4 August
Revised : 17 August
Accepted : 21 September

A B S T R A C T

Artificial intelligence (AI) is a helpful technology. By providing college students with more individualized and productive learning environments, they support education. This research examines how artificial intelligence (AI) works in education and enhances teaching and learning results for Mindoro State University students and teachers. The study will survey students and instructors to gauge their perspectives on AI, assess its benefits and obstacles in education, and propose strategies for successfully implementing AI into teaching and learning techniques. The poll will ask students about their understanding of AI and their experiences using AI-powered learning tools. According to the results of this study, students and teachers at the University have a strong belief and a positive outlook on the potential of AI to significantly improve the learning journey and outcomes for both students and instructors, as evidenced by the weighted mean rating of 4.37 for all categories combined. Overall, respondents strongly agree that artificial intelligence has the potential to considerably improve student and instructor learning and teaching outcomes at the University, as indicated by the average mean score of 4.23, which is characterized as "strongly agree." The study's findings will provide educators and policymakers with critical insights into the proper and successful use of artificial intelligence (AI) to improve student learning outcomes.

DOI: https://doi.org/10.59890/ijir.v1i9.244
ISSN-E: 2988-2184
https://journal.multitechpublisher.com/index.php/ijir

INTRODUCTION

AI is transforming several industries, including education, by allowing robots to do jobs that previously required human intelligence. There has been a surge in the desire to use artificial intelligence to transform the teaching and learning process, resulting in tailored learning experiences, increased teaching efficacy, and improved student outcomes (Wang & Sun, 2020). Although artificial intelligence in educational environments could be beneficial, more research is needed, especially in the Philippines.

The capacity to create tailored learning experiences is among the key benefits of integrating artificial intelligence into education. Artificial intelligence systems can assess student performance data and personalize educational materials to individual needs and learning styles. This tailored strategy increases student participation, motivation, and academic success (Baker, Inventado, & Labrum, 2020). AI-powered adaptive learning systems may provide students with personalized feedback and coaching, helping them to overcome learning problems and achieve academic objectives.

Another benefit of incorporating artificial intelligence into education is the potential for greater instructional efficacy. AI-powered systems assist teachers in monitoring student performance, providing feedback, and creating individualized learning plans. It can save instructors time and effort by allowing them to concentrate on areas that need particular attention. For example, AI-powered evaluation systems can give students fast feedback, allowing teachers to provide more targeted and tailored feedback (Khribi, Jemni, & Nassaoui, 2019).

However, using AI in education requires significant effort. Because AI algorithms can provide biased or discriminating results, employing AI in decision-making raises ethical concerns. Furthermore, confident students and educators may require additional assistance to rely on AI for learning and instruction. It reduces the negative repercussions for students and teachers; it is vital to guarantee that artificial intelligence is used ethically and responsibly in education (Lynch, Ashley, and Kargozari, 2021).

Despite rising interest in artificial intelligence in education, research regarding its usefulness, particularly in the Philippines, has to be enhanced. This study will investigate the usage of artificial intelligence in education and the effects on the learning outcomes of Mindoro State University students. The research will assess students' perceptions of artificial intelligence, highlight the benefits and obstacles of implementing AI in education, and recommend effectively incorporating AI into teaching and learning processes.

A survey was required to establish students' perceptions of AI and its influence on learning outcomes. The survey will gather data on students' understanding of AI, their perspectives on the advantages and difficulties of implementing AI in education, and their experiences with AI-powered learning tools. The results of this investigation will contribute to the existing data of research about the efficacy of AI in education, as well as give educators and policymakers valuable insights into implementing AI into teaching and learning processes. The findings impact educational institution choices in the Philippines

and worldwide, allowing AI to be used ethically and productively to improve student learning outcomes. The objective of this research is to identify whether artificial intelligence (AI) can improve learning outcomes for students at Mindoro State University.The following sub-problems must be addressed the demographic details. the advantages and disadvantages of adopting artificial intelligence in teaching and learning at Mindoro State University? perspectives of Mindoro State University students and professors on artificial intelligence in education? artificial intelligence affect student and instructor learning and teaching outcomes at Mindoro State University regarding academic achievement, critical thinking, problem-solving, and creativity?factors impact AI's success in boosting Mindoro State University students and faculty's learning and teaching outcomes? important are perception and effectiveness in AI learning and training for students and teachers?

LITERATURE REVIEW

This chapter will review recent research on how AI is being used in education. The focus of the study evaluation will be how AI affects student learning outcomes like academic performance, engagement, and motivation.

Related Literature

By effectively integrating AI technology into higher education, the most suitable learning technique matched to each student's talents, prerequisites, and job market expectations may be established (Dilmurod & Fazliddin, 2021). However, it is important to recognize the challenges that AI may present for education in terms of the appropriate use of artificial intelligence techniques, the alteration of instructors' and students' responsibilities, in addition to social and ethical issues (Zhai et al., 2021).

The complex issues of machine learning and AI, according to Scholkopf (2019), are organically linked to causality, which explains why the field is just now beginning to comprehend them. Much AI education research has developed dramatically, with a new emphasis on analyzing AI's efficacy and effects on educational practices (Osetskyi et al., 2020).

According to Luckin and Cukurova (2019), the learning sciences contribute significantly to the development of educational AI by providing ideas that can be improved and operationalized. One potential application of AI in education is to support human judgment rather than automate it.

Williams and his associates (2019). Early AI education can help youngsters grasp the increasingly common AI technology. A number of studies have shown that artificial intelligence (AI) and machine learning (ML) are essential tools for enhancing learning, especially through students' abilities, shared knowledge in higher education institutions (HEI), and an open research environment (Kuleto et al., 2021).

AI can potentially alter education, with students with special needs benefiting first (Reiss, 2021). In order to close the distance between online and face-to-face learning, AI can assist online educators (Lin et al., 2018).

AI integration in Philippine education has the potential to improve educational outcomes. It may enhance evaluation procedures, give immediate

feedback, and customize educational techniques. This research must adhere to ethical guidelines and address disparities in an equitable digital divide. The human element must remain central to teaching and learning, with technology as a supplement. AI can improve education, but careful planning is required for responsible and equitable deployment (Estrellado, 2023)

As demonstrated by applications such as Duolingo and Linguabot, AI in education delivers benefits like personalization, adaptability, efficiency, accessibility, and advanced analytics. It can analyze student data, create personalized learning plans, automate administrative activities, and improve teaching techniques. However, challenges include implementation costs, the value of personal connection, data bias, privacy concerns, and the threat of misinformation. Integration must prioritize student privacy and well-being while considering the pros and cons (2023, Tribdino)

By assisting educators in improving learning opportunities, training students for employment, and working with teachers and administrators, artificial intelligence in education has the potential to significantly benefit the Philippines. We can harness AI's potential and create a more positive future for education in the Philippines by using a human-centered approach in the classroom (Llego, n.d.).

AI possesses the ability to improve higher education teaching methodologies, adapt learning, and meet labor market demands. However, challenges like ethical problems and shifting obligations of teachers and students must be addressed. The key to successful integration is creating a balance of benefits and drawbacks of AI while focusing on student requirements and ethical AI deployment.

METHODOLOGY

Research Locale

Mindoro State University's Bongabong Campus in Labasan, Bongabong, Oriental Mindoro, did the study. Participants in the research will primarily be university students and lecturers.

Research Design

This study employs quantitative, non-experimental techniques in addition to correlational analysis. A quantitative research design is rigorous, objective, and methodical for acquiring variable knowledge using numerical data. It is used to describe and investigate the interrelationships between variables. Correlational research is a quantitative technique that uses two or more quantitative variables from the same population (McCombes, 2023). Since the main goal of the study is to determine how artificial intelligence affects students' and teachers' learning outcomes, this approach will be used.

Population Sampling and Respondents of the Study

The researchers randomly selected 100 students and faculty members from the Mindoro State University community. This sampling technique ensures that each student and teacher an equal chance is given to everyone in the sample to participate in the study.

Table 1. The Frequency Distribution of the Ages of Respondents.
n=100

AGE	FREQUENCY	PERCENTAGE	RANK
	(fr)	(%)	
18-24 years old	72	72%	1
25-34 years old	22	22%	2
35-44 years old	6	6%	3
45 years old and above	0	0%	4
	100	100%	

Table 2. The Frequency Distribution of the Gender of Respondents.
n=100

GENDER	FREQUENCY	PERCENTAGE	RANK
	(fr)	(%)	
Female	45	45%	2
Male	51	51%	1
Prefer not to say	4	4%	3
	100	100%	

Table 3. The Frequency Distribution of the Academic Status of Respondents.
n=100

ACADEMIC STATUS	FREQUENCY	PERCENTAGE	RANK
	(fr)	(%)	
Student	87	87%	1
Teacher	13	13%	2
	100	100%	

Research Instruments

In this investigation, the researchers will employ a questionnaire. The questionnaire comprises a series of well-structured, ordered questions that are supposed to be completed by a group of individuals. The questionnaire's first component collects demographic information from respondents. The researchers used the Likert Scale Method to assess respondents' agreement with the assertions in the second section of the questionnaire.

Statistical Treatment of Data

Descriptive Statistics were used to examine the given data. The information gathered from respondents in this survey will be statistically analyzed as follows:

1. Frequency and Percentage Distribution

A data visualization that illustrates the proportion of observations for each demographic point is the frequency and percentage distribution.

A frequency distribution is a data layout showing the frequency of different values. The algorithm will utilize the percentage to determine the proportion of each submitted data.

Formula:

$$\% = \frac{fr}{n} x100$$

For:
% = percentage
fr = frequency
n = total respondents

2. Weighted Mean

The value of respondents' questionnaire responses provided during the data-gathering process was determined using this statistical method.

Formula:

$$wm = \frac{\sum fw}{n}$$

For:
wm = weighted mean
∑ = summation
f = frequency
w = weight assigned
n = total respondents

Table 4. Likert Scale**.** The Likert Scale below provides guidance for analyzing the information gathered with the weighted mean.

Scale	Weighted Mean	Descriptive Rating
5	4.21 – 5.00	Strongly Agree
4	3.41 – 4.20	Agree
3	2.61 – 3.40	Neutral
2	1.81 – 2.60	Disagree
1	1.00 – 1.80	Strongly Disagree

Ranking. This was used to rank the respondents' perceptions in relation to its indicators.

RESULTS

The findings and analysis of the data are covered in this chapter. This chapter provides the interpretation, data analysis, justification, and supporting evidence.

1. What are the advantages and disadvantages of adopting artificial intelligence in teaching and learning at Mindoro State University?

Table 4 lists the average responses from Mindoro State University's respondents who were asked to evaluate the use of artificial intelligence in education has both benefits and drawbacks.

Item one obtained a weighted average score of 4.44, suggesting that AI encourages student involvement and participation. Strong agreement was shown by a weighted mean score of 4.33 for item 2, indicating that AI personalizes learning experiences, and a weighted mean score of 4.34 for item 3, indicating that AI improves delivery and accessibility.

They had a mean score of 4.37, indicating significant agreement. This illustrates that respondents are unwavering in their belief that incorporating AI into the learning and teaching process benefits students and instructtors.

Table 5. Benefits and Challenges of Using AI in the Teaching and Learning Process at Mindoro State University

ITEMS	WEIGHTED MEAN	RANK	DESCRIPTIVE RATING
1. AI enhances student engagement and participation.	4.44	1	Strongly Agree
2. AI personalizes the learning experience.	4.33	3	Strongly Agree
3. AI improves content delivery and accessibility.	4.34	2	Strongly Agree
OVERALL WEIGHTED MEAN RATING	4.37		Strongly Agree

2. **What do Mindoro State University students and instructors believe about artificial intelligence in education?**

Table 5 displays the respondents' understanding and perspectives on AI in education at Mindoro State University.

Item 3 had a weighted mean score of 4.25 and is rated top, while item 1 obtained a weighted mean score of 4.24 and is placed second.

Things with the descriptive rating "strongly agree" The second item scored third with a descriptive grade of concur and a weighted mean score of 4.20.

The mean score was 4.23, indicating excellent agreement. This shows that respondents see AI as a valuable tool for academic advancement, think it has the ability to improve teaching and learning, and are open to integrating it into educational activities.

Table 6. Level of Awareness and Perception of Students Toward AI in Education at Mindoro State University

ITEMS	WEIGHTED MEAN	RANK	DESCRIPTIVE RATING
1. I believe AI has the potential to enhance teaching and learning.	4.24	2	Strongly Agree
2. I feel comfortable incorporating AI into educational activities.	4.20	3	Agree
3. I perceive AI as a helpful tool for academic improvement.	4.25	1	Strongly Agree
OVERALL WEIGHTED MEAN RATING	4.23		Strongly Agree

3. How does artificial intelligence affect the learning and teaching outcomes of students and instructors at Mindoro State University regarding academic success, critical thinking, problem-solving, and creativity?

The average opinions of the respondents regarding how AI will affect the teaching and learning procedures at Mindanao State University are shown in Table 6. The fact that AI has a beneficial effect on academic performance is demonstrated by Item 1, which comes in second in Table 6 and has a weighted mean score of 4.39. Item 2, which received the highest weighted average score, means that AI encourages innovation in teaching and learning. With a 4.22 average score, item 3 illustrates that AI increases problem-solving skills. The statistics show a high degree of agreement among respondents across the board.

Overall, strongly concur is represented by a mean score of 4.34. This demonstrates that most respondents believe AI affects instruction and learning outcomes.

Table 7. Impact of AI on Students' and Teachers' Teaching and Learning Outcomes at Mindoro State University

ITEMS	WEIGHTED MEAN	RANK	DESCRIPTIVE RATING
1. AI has a positive impact on academic performance.	4.39	2	Strongly Agree
2. AI fosters creativity in teaching and learning.	4.40	1	Strongly Agree
3. AI improves problem-solving abilities.	4.22	3	Strongly Agree
OVERALL WEIGHTED MEAN RATING	4.34		Strongly Agree

4. What factors impact AI's success in boosting Mindoro State University students and faculty's learning and teaching outcomes?

Table 7 summarizes the findings, including each factor's ranking position and weighted average value and a descriptive assessment of the factors that affect AI's usefulness in enhancing learning and teaching outcomes for students and teachers.

With a weighted mean score of 4.44, Item 1 is ranked first and implies that students' preparation and adaptability influence the usefulness of artificial intelligence. Item 2 (with a weighted mean score of 4.38) demonstrates that effective AI integration necessitates teacher training and guidance. Item 3, ranked third, proposes that ethical considerations be considered when adopting AI, particularly in education, with an average score of 4.30. The statistics show a high degree of agreement among respondents across the board.

Respondents highly agreed that AI has the potential to significantly improve student and instructor learning and teaching outcomes at Mindoro State University, based on a weighted mean score of 4.37 across all domains. This rating's descriptive "Strongly Agree" score indicates that respondents agree that AI is successful when used with necessary considerations and guidance.

Table 8. Factors that Moderate the Effectiveness of AI in Improving Students' and Teachers' Teaching and Learning Outcomes at Mindoro State University

ITEMS	WEIGHTED MEAN	RANK	DESCRIPTIVE RATING
1. Students' readiness and adaptability influence the effectiveness of AI.	4.44	1	Strongly Agree
2. Teacher training and support are essential for effective AI integration.	4.38	2	Strongly Agree
3. Ethical considerations must be addressed when using AI in education.	4.30	3	Strongly Agree
OVERALL WEIGHTED MEAN RATING	4.37		Strongly Agree

5. How important are perception and effectiveness in AI learning and training for students and teachers?

Table 8 emphasizes the significance of perception and efficacy in AI learning and training for instructors and students. The table summarizes the findings, including each item's weighted mean, rank, and descriptive rating.

With a weighted mean score of 4.33, the top-ranked item 1 shows that utilizing artificial intelligence in education improves student learning outcomes. The second-ranked question, which asked participants to describe how their views on artificial intelligence (AI) affect the way they teach, received a weighted mean score of 4.27. And, with a mean score of 4.26, item 3, ranked third, suggests that successful AI integration improves overall education and learning quality. The statistics show a high degree of agreement among respondents across the board.

Participants overwhelmingly agreed that perception and effectiveness are critical characteristics in AI learning and training, as seen by the aggregate weighted mean score of 4.29 across all questions. This total score is a "Strongly Agree" descriptive rating, reiterating participants' belief that perception and efficacy for both students and teachers are crucial in implementing AI.

Table 9. Significance of Perception and Effectiveness to Students and Teachers in AI Teaching and Learning

ITEMS	WEIGHTED MEAN	RANK	DESCRIPTIVE RATING
1. The effectiveness of AI in teaching and learning impacts students' learning outcomes.	4.33	1	Strongly Agree
2. Teachers' perception of AI influences their instruction practices.	4.27	2	Strongly Agree
3. Effective AI integration contributes to overall teaching and learning quality.	4.26	3	Strongly Agree
OVERALL WEIGHTED MEAN RATING	4.29		Strongly Agree

DISCUSSION

The findings, judgments, and suggestions resulting from the data that was gathered, compiled, examined, and analyzed are summarized in this chapter.
The following findings were drawn based on the evidence gathered:

1. What are the advantages and disadvantages of adopting artificial intelligence in teaching and learning at Mindoro State University?

The mean perception scores for three critical areas relating to AI's impact on student engagement, customized learning experiences, and enhanced delivery and accessibility all received high-weighted mean values ranging from 4.33 to 4.44. According to these data, respondents feel AI positively influences learning. With an aggregate mean score of 4.37, equating to "strongly agree," respondents are convinced that incorporating AI into education benefits both students and teachers.

2. What do Mindoro State University students and instructors believe about artificial intelligence in education?

The weighted mean scores for three key questions concerning their awareness and viewpoint of artificial intelligence in education were more outstanding than 4.20, indicating significant agreement. The notion that AI can improve instruction via learning had the highest mean score of 4.25, followed by the conviction that AI is a valuable instrument for academic progress, which received a score of 4.24. With a mean score of 4.20, respondents reported considerable comfort with using AI in educational activities. With an overall average mean score of 4.23, classified as "strongly agree," respondents firmly believe in AI's capacity to improve teaching and learning, consider it a helpful tool for academic development, and feel comfortable incorporating it into their educational activities.

3. How does artificial intelligence affect the learning and teaching outcomes of students and instructors at Mindoro State University regarding academic success, critical thinking, problem-solving, and creativity?

The weighted mean evaluations for three crucial components related to AI's impact on academic attainment, encouraging creativity, and enhancing problem-solving abilities varied from 4.22 to 4.40. The article on AI's positive impact on educational attainment received the highest mean score 4.40, followed by the post on AI's support for creativity in teaching and learning 4.39. The average score for problem-solving abilities increased by AI was 4.22. With an aggregate mean of 4.34, which describe "strongly agree," respondents strongly believe that AI enhances teaching and learning outcomes. They believe artificial intelligence promotes classroom creativity, academic success, and problem-solving ability.

4. What factors impact AI's success in boosting Mindoro State University students and faculty's learning and teaching outcomes?

The influence of student preparedness and flexibility on the efficacy of AI received the highest mean score 4.38, followed by the value of teacher training and help. The average score for ethical difficulties in AI implementation was 4.30. According to the average mean score of 4.37, most respondents thought AI could significantly improve learning and teaching outcomes for university students and instructors. This suggests that humans see AI's positive effects when implemented with the necessary considerations and help.

5. How important are perception and effectiveness in AI learning and training for students and teachers?

The item had the highest weighted mean score of 4.33 and placed first, indicating the influence of AI efficacy on student learning outcomes. The second-ranked article, which investigated the impact of instructors' views of AI on their teaching practices, had a weighted average score of 4.27. The average score for the third-ranked question, which focused on how well AI integration contributes to overall instructional and learning quality, was 4.26. According to the data, the majority of respondents agreed. Respondents appeared to be largely in agreement with the value of perception and efficacy in AI learning and training, as evidenced by the average weighted mean rating of 4.29. This "Strongly Agree" rating validates the participants' beliefs about the importance of perception and effectiveness for students and teachers in the educational context of AI integration.

CONCLUSIONS AND RECOMMENDATIONS

Based on the study findings, the following conclusions have been drawn:Incorporating AI into education benefits both students and teachers. AI's capacity to improve teaching and learning, consider it a helpful tool for academic development, and feel comfortable incorporating it into their educational activities.Artificial intelligence promotes classroom creativity, academic success, and problem-solving ability.AI could significantly improve learning and teaching outcomes for university students and instructors. This suggests that humans see AI's positive effects when implemented with the necessary considerations and help.Respondents appeared to be largely in agreement with the value of perception and efficacy in AI learning and training. This validates the participants' beliefs

about the importance of perception and effectiveness for students and teachers in the educational context of AI integration.

FURTHER STUDY

Based on the gathered information and conclusions, the following suggestions are taken into consideration. Embrace AI Integration: Use AI in teaching and learning processes to boost academic success and student engagement through personalized learning experiences. Provide Training and Support: Provide comprehensive training and support to instructors to boost their confidence and experience in adopting AI into their teaching techniques.Foster Student Readiness: Prepare students for AI-based learning environments by introducing them to AI tools and technology via orientation programs, resources, and help.Address Ethical Considerations: Create specific rules and processes for the ethical use of artificial intelligence, such as data protection, algorithm transparency, and bias reduction.Encourage Collaboration and Research: Foster collaboration with industry leaders and researchers to share best practices, insights, and advances in artificial intelligence in education.

ACKNOWLEDGMENT

The researchers would like to convey their gratitude to everyone who contributed to the success of the research study. This research would not be possible withoutthem. The researchers would like to thank the Almighty God, for His everlasting goodness and for guiding the researcher all throughout the process of completingthe research. **Marianne M. Lope,** our research statistician, for her commendable efforts in sharing her relevant research techniques. **Blessilda M. Loberiano,** our research grammarian, for providing us with motivational support in making our research successful. Also by giving her effortsto share knowledge about the research and easily acquire techniques in doing ourresearch.

REFERENCES

Baker, R. S., Inventado, P. S., & Labrum, M. (2020). Educational data mining and learning analytics. In J. Michael Spector (Ed.), The SAGE Handbook of Learning Sciences (2nd ed., pp. 236-253). Sage Publications.

Cukurova, M., Kent, C., & Luckin, R. (2019). Artificial intelligence and multimodal data in the service of human decision-making: A case study in debate tutoring. Br. J. Educ. Technol., 50(6), 3032–3046. https://doi.org/10.1111/BJET.12829

Dilmurod, R., & Fazliddin, A. (2021). Prospects for the introduction of artificial intelligence technologies in higher education. ACADEMICIA: AN INTERNATIONAL MULTIDISCIPLINARY RESEARCH JOURNAL, 11(2), 929–934. https://doi.org/10.5958/2249-7137.2021.00468.7

Estrellado, C. J. (2023). Artificial Intelligence in the Philippine Educational Context: Circumspection and Future Inquiries. 4. 16. 10.29322/IJSRP.13.04.2023.p13704.

Khribi, M. K., Jemni, M., & Nasraoui, O. (2019). Artificial intelligence in education: A review of the state-of-the-art and perspectives. International Journal of Smart Technology and Learning, 1(2), 70-99.

Kuleto, V., Ilić, M., Dumangiu, M., Ranković, M., Martins, O. M. D., Păun, D., & Mihoreanu, L. (2021). Exploring Opportunities and Challenges of Artificial Intelligence and Machine Learning in Higher Education Institutions. Sustainability, 13(18). https://doi.org/10.3390/SU131810424

Llego, M. A. (n.d.).How to Survive the AI Revolution: A Human-Centered Approach to AI in Philippine Education - TeacherPH. https://www.teacherph.com/surviving-ai-revolution- philippines-education/

Lin, P. H., Wooders, A., Wang, J. T. Y., & Yuan, W. M. (2018). Artificial Intelligence, the Missing Piece of Online Education? IEEE Engineering Management Review, 46(3), 25– 28. https://doi.org/10.1109/EMR.2018.2868068

Luckin, R., & Cukurova, M. (2019). Designing educational technologies in the age of AI: A learning sciences-driven approach. Br. J. Educ. Technol., 50(6), 2824–2838. https://doi.org/10.1111/BJET.12861

Lynch, R., Ashley, K., & Kargozari, H. (2021). Intelligent tutoring systems: A comprehensive review. Computers & Education, 166, 104177.

McCombes, S. (2023). What Is a Research Design | Types, Guide & Examples. Scribbr. https://www.scribbr.com/methodology/research-design/

Osetskyi, V., Vitrenko, A., Tatomyr, I., Bilan, S., & Hirnyk, Ye. V. (2020). ARTIFICIAL INTELLIGENCE APPLICATION IN EDUCATION: FINANCIAL IMPLICATIONS AND PROSPECTS. Financial and Credit Activity Problems of Theory and Practice, 2(33), 574– 584. https://doi.org/10.18371/FCAPTP.V2I33.207246

Reiss, M. J. (2021). The use of AI in education: Practicalities and ethical considerations. London Review of Education, 19(1). https://doi.org/10.14324/LRE.19.1.05

Schölkopf, B. (2019). Causality for Machine Learning. Probabilistic and Causal Inference, 765–804. https://doi.org/10.1145/3501714.3501755

Tribdino, R. G. B. (2023). Will AI be beneficial to education?. https://malaya.com.ph/news_special_feature/will-ai-be-beneficial-to-education/

Wang, M., & Sun, J. (2020). Artificial Intelligence in Education: A Review. IEEE/CAA Journal of Automatica Sinica, 7(1), 3-17.

Williams, R., Park, H. W., & Breazeal, C. (2019). A is for Artificial Intelligence: The Impact of Artificial Intelligence Activities on Young Children's Perceptions of Robots. Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems, 4, 11. https://doi.org/10.1145/3290605.3300677

Zhai, X., Chu, X., Chai, C. S., Jong, M. S. Y., Istenic, A., Spector, M., Liu, J. B., Yuan, J., & Li, Y. (2021). A Review of Artificial Intelligence (AI) in Education from 2010 to 2020. Complexity, 2021. https://doi.org/10.1155/2021/8812542