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Voices of MA Plus Nurul Islam Sekarbela Students: Perception and Challenges of Artificial Intelligence (AI) in Physics Learning

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Abstract: This study aims to determine the extent of perceptions and challenges faced in the application of artificial intelligence (AI) in physics learning. This research activity was conducted at MA Plus Nurul Islam Sekarbela using a mixed method by integrating qualitative and quantitative data. This study sample used a saturated sampling technique with all science students in grades 10, 11, and 12 of MA Plus Nurul Islam Sekarbela. The research data was obtained through three stages: administering a questionnaire, in-depth interviews, and documentation studies. The data obtained were then analyzed descriptively. The results showed that the use of AI in physics learning has provided a positive response from students. This use has become one of the independent learning resources that students can use during class while still paying attention to the limitations set by the teacher. In addition, challenges were found in the implementation process, namely related to the purpose of using AI and the still limited ability of students to evaluate the results of answers or information obtained through AI.

Keywords: Artificial Intelligence (AI); Perception Student; Physics Learning

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Introduction

Artificial Intelligence, or AI, is a fascinating topic and continues to be the focus of research in almost every field of life. Technological advancements have simplified previously difficult and labor-intensive aspects (Nurhayati et al., 2020). Such technology allows processes that would have been lengthy to be completed effectively and efficiently. AI developments have also entered the world of education today, including in Indonesia. In the educational context, AI can function to provide rapid and automatic feedback, develop comprehensive materials, and develop intelligent self-tutoring systems (Gligorea et al., 2023). In general, technology and information have long been a mandatory subject in education, both at the elementary and secondary levels (Anggraeny et al., 2020; Rizaldi et al., 2021). This is evident in the various uses of internet-based media and tools to support the learning process.

In its implementation in madrasas, the use of technology has been increasingly integrated with various interactive learning models (Siskandar, 2020). However, currently, artificial intelligence has emerged as an open-source technology frequently utilized by both teachers and students to support classroom learning. The various advantages that make AI easily a focus for students today, due to its open access and ease of use, tend to make students more interested in utilizing this technology in the learning process (Kinshuk et al., 2016). However, as a fast and precise technology, AI can have negative impacts on the development of students' critical and creative thinking skills if not implemented appropriately and supervised wisely.

MA Plus Nurul Islam Sekarbela, a private madrasah in Mataram City, has begun incorporating artificial intelligence learning into its curriculum through coding and artificial intelligence subjects.

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Incorporating this topic into the formal learning process can certainly maximize the use and knowledge of AI. Having a dedicated course on AI certainly makes it easier for teachers of other subjects to implement it in their learning (Alamin, 2025). This approach is what researchers have implemented in physics teaching. Naturally, as a challenging subject for students, physics teachers must be able to provide students with a realistic picture of the subject through discussions and other learning activities. Physics instruction at MA Plus Nurul Islam Sekarbela has begun integrating cooperative learning models, supported by the use of gadgets as supporting learning media in the classroom. It is hoped that integrating these two elements will assist and provide a positive experience for students.

Based on these developments, researchers are interested in conducting a study to determine MA Plus Nurul Islam Sekarbela students' perceptions of the use of AI in physics learning. Furthermore, researchers are conducting a review based on the experiences of physics teachers to identify the various challenges and opportunities for using AI in the learning process, thus providing readers with a concrete picture of the integration of AI technology into learning at madrasahs.

Method

This study employed mixed methods, integrating qualitative and quantitative data. The research design was descriptive and explanatory, with the aim of providing a comprehensive overview or description of the use of artificial intelligence in physics learning and its impact on learning outcomes in Islamic schools. This research was conducted at MA Plus Nurul Islam Sekarbela, with all science students from grades 10 to 12 being the study population. The research sample consisted of the entire population, a total of 158 students, often referred to as a saturated sample. One reason for using this sampling technique was to increase the representativeness of the research results. This is because the larger the data collection, the more comprehensive the results.

Data for this study were obtained through three instruments: a structured questionnaire, in-depth interviews, and a documentary study. Each instrument was used to obtain data regarding the use of AI in physics learning. Data related to the use of the AI platform and student perceptions were collected by administering questionnaires to students who had used AI during their physics lessons. To support the questionnaire data, in-depth interviews were conducted with several student representatives and physics teachers. Additionally, documentation study data was used, including student products produced during the learning process using AI with a contextual model. Qualitative and quantitative data obtained through the questionnaire, in-depth interviews, and document study were analyzed descriptively, creating a written report that represents the research findings.The interview procedures used in this study consistently utilize source triangulation techniques. Data obtained from students will be matched and clarified from the teachers' perspectives through in-depth interviews. The results of these interviews will validate various initial findings related to the questionnaire distribution to students. A brief summary of the research procedures can be seen in the following figure.

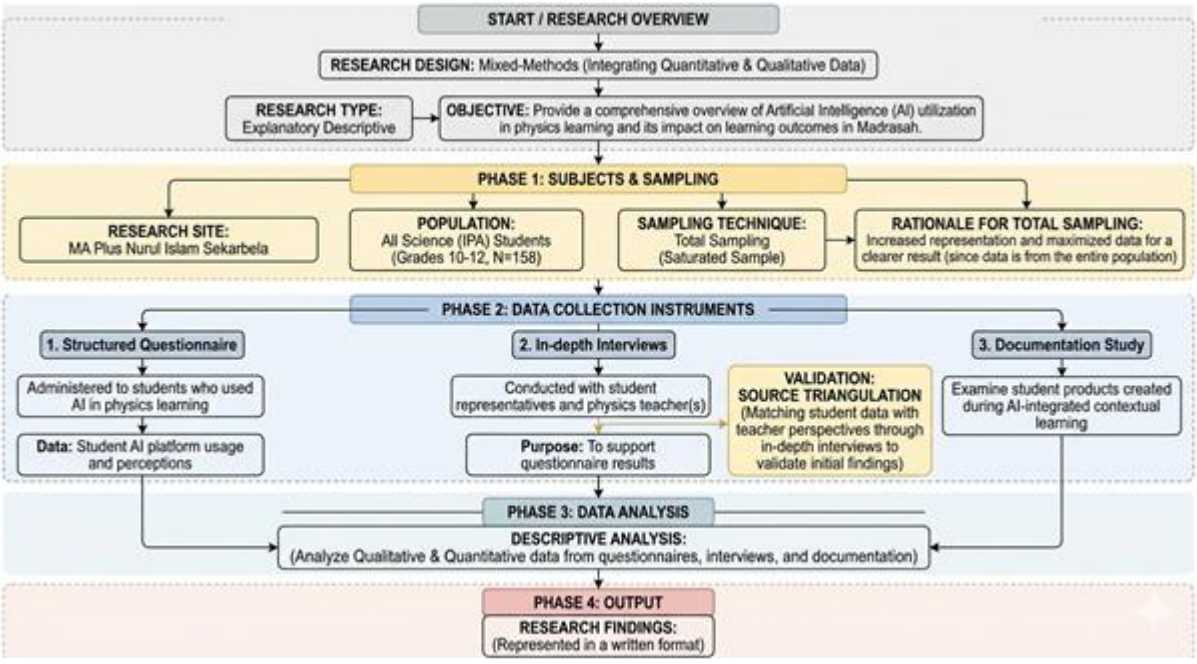

Figure 1. Research Stages

Result and Discussion

Distribution of Research Samples

Research related to the analysis of student and teacher perceptions regarding the use of AI in physics learning at MA Plus Nurul Islam Sekarbela has been completed. This research was conducted on all science students who had integrated AI to support each learning activity. Physics learning at MA Plus Nurul Islam Sekarbela during the study used a contextual-based learning model integrated with AI. However, students were not given the opportunity to use AI throughout the learning process.

This was done to minimize student dependence on fast-paced technology (Syafitri et al., 2024). The use of AI was focused on several stages, particularly when searching for literature or learning resources and developing reports or other outputs after discussions. Several types of outputs produced in physics learning by integrating a contextual approach and AI are shown below.

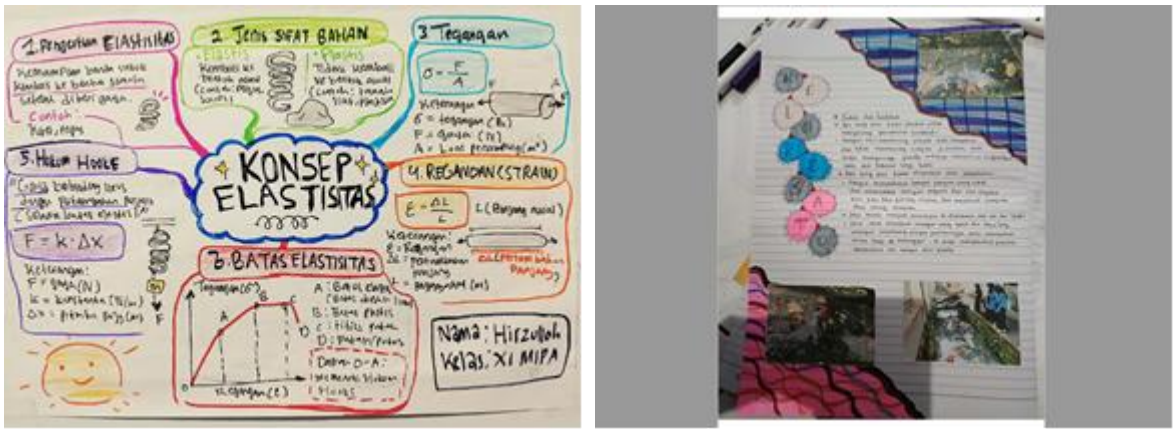

Figure 2. Physics Learning Outcomes with Contextual Approach and AI on the material a) Elasticity of Solids, and b) Environmental Pollution

During the discussion phase, students were still asked to solve the problems they faced in groups by practicing critical thinking skills. Combining contextual learning models with the use of AI provided students with greater opportunity to develop integrated skills while still addressing the predetermined learning objectives.

The total number of students focused on in this study was 158, with a breakdown of the number of students shown in the following figure.

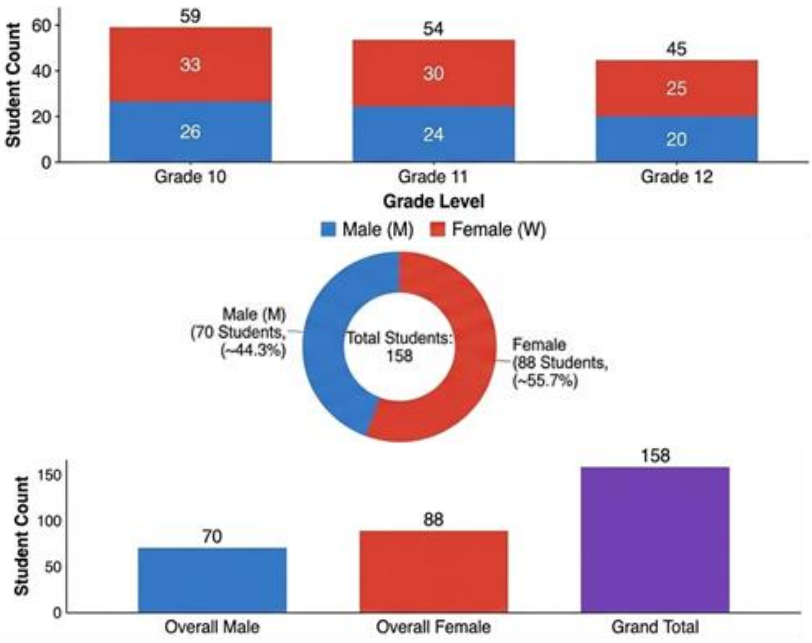

Figure 3. Research Sample Information including a) Gender Composition by Grade, b) Overall Gender Distribution, and c) Overall Student Counts

Based on the information in the figure above, it appears that this study examines two components: gender and distribution at each grade level. The data for both grade level and gender components do not significantly differ in the intensity of the numbers obtained. At all grade levels, female students outnumbered male students, resulting in a total of 88 female students, or approximately 55.7% of the sample. Furthermore, the total number of female students per grade level is higher in 10th grade. This indicates an increase in student interest in enrolling in science classes at MA Plus Nurul Islam Sekarbela each year. This interest is a key factor that can be used to create conditions or change student attitudes regarding physics learning.

Impact of AI Use in Learning

The increasing use of AI in various daily activities is one of several factors considered by physics teachers at MA Plus Nurul Islam Sekarbela. This situation is interesting to study because, in addition to facilitating information retrieval and representing results, AI is a solution teachers can use to support physics learning in madrasas. This was done in the physics learning process to measure the impact of a contextual learning model balanced with the use of gadgets to maximize AI's potential. The initial step taken by the researchers to determine the extent of understanding and use of AI in physics learning was to administer a questionnaire to physics students at MA Plus Nurul Islam Sekarbela. Based on this process, the following research data were obtained.

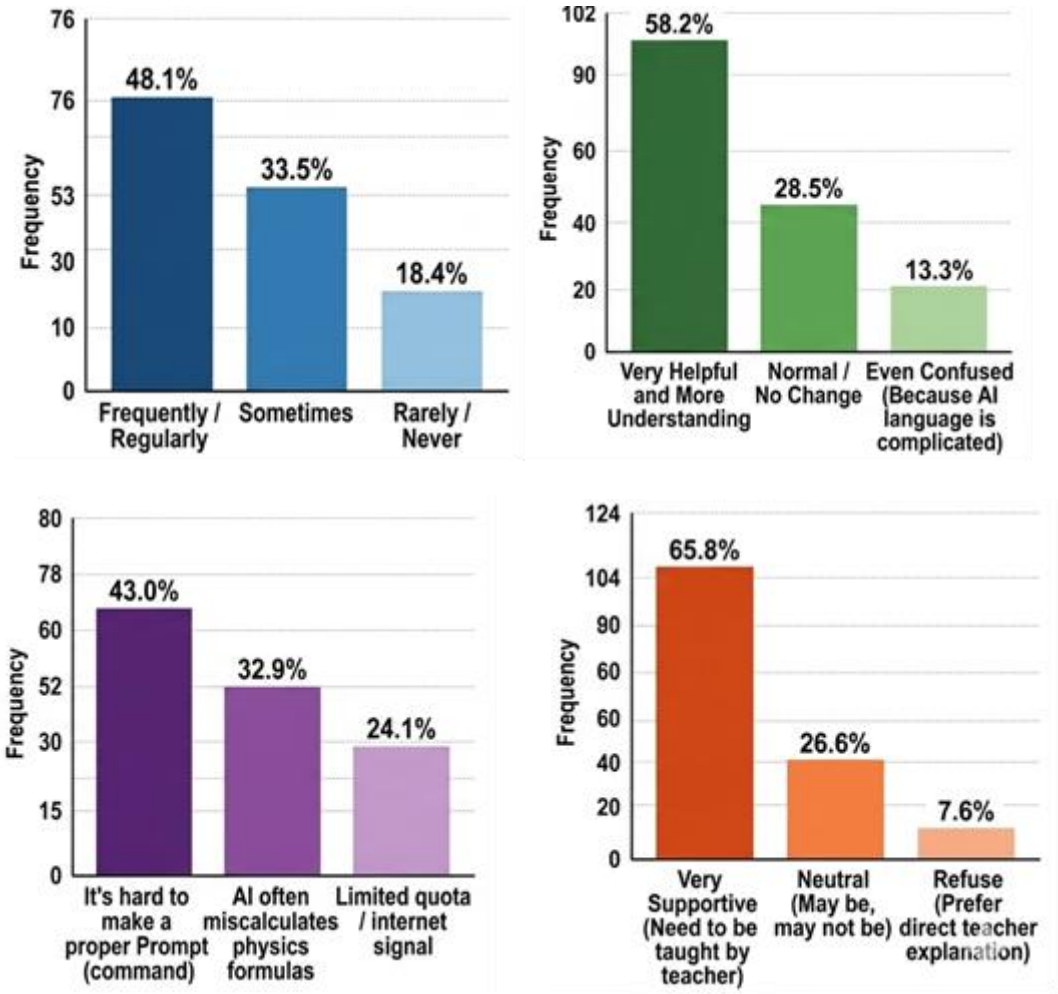

Figure 4. Students' perceptions of AI in terms of a) Frequency of AI Use for Physics Assignments, b) Contextual Understanding of Physics Thanks to AI, c) Main Obstacles to Using AI, and d) Attitudes towards AI Integration in Physics Classes

Based on the figure above, researchers focused on four main components related to students' perceptions of AI during physics learning: frequency of use, impact on conceptual understanding, perceived obstacles or

barriers, and attitudes toward AI integration in learning. Figure 4a shows that the level of AI use in student learning is already very high, as evidenced by 48.1% of respondents reporting frequent use of AI to complete assigned physics assignments. This indicates that AI has become an integral part of today's student self-directed learning ecosystem. This is supported by previous research, which suggests that one of the factors contributing to AI becoming a frequently used component for solving various problems is its ease of access and speed in searching for specific and easily understood information (Azizah & Putranta, 2025; Manuel et al., 2025).

Another key finding from the student questionnaire was that 58.2% of students believed AI made a positive contribution to improving conceptual understanding in independent physics learning. In addition to involving peers as tutors in class, AI acts as a virtual tutor that students can access at any time and under any circumstances, eliminating limitations that hinder independent learning (Gromyko et al., 2017; Slamet, 2025). The most obvious advantage of AI compared to conventional learning without AI is when examining abstract physics concepts. This is certainly a key advantage for physics teachers, as utilizing AI during the learning process allows them to design various innovative and creative learning models or media, accompanied by illustrations that are easy for students to understand. Research conducted by Lestari et al. (2023) emphasized that the presence of AI provides new access for students to search for information, understand the material being studied, and increase the efficiency of independent learning.

While several positive points supporting the use of AI in physics learning were identified, students also encountered difficulties. There were at least two main difficulties encountered by students in using AI: difficulty in using prompts correctly and errors in solving mathematical physics problems. This is certainly a current shortcoming of some AI systems, as they are not yet fully capable of interpreting visual and logical situations in depth. This situation should also remind students that no matter how sophisticated the AI used, it still has gaps or shortcomings that must be addressed openly (Al-Zahrani, 2024). Therefore, in the learning process using AI, the results or information obtained should not be used immediately; instead, students must conduct critical analysis (Kasneci et al., 2023). This is a point that physics teachers consistently emphasize when students use AI to support classroom learning activities.

The final aspect related to the questionnaire administered, regarding students' attitudes toward the process of integrating AI into physics learning, provided positive support for its continued use and refinement, particularly in physics learning. As many as 65.8% of students were very happy if classroom learning wasn't solely based on their existing textbooks, as many students believed that not all material could be found in existing textbooks. In this context, AI provides a solution for students to access more material openly, at any time and in any situation. However, there is a note that when integrating AI into learning, teachers must continue to provide guidance, especially regarding the basic things that must be considered during the use of AI.

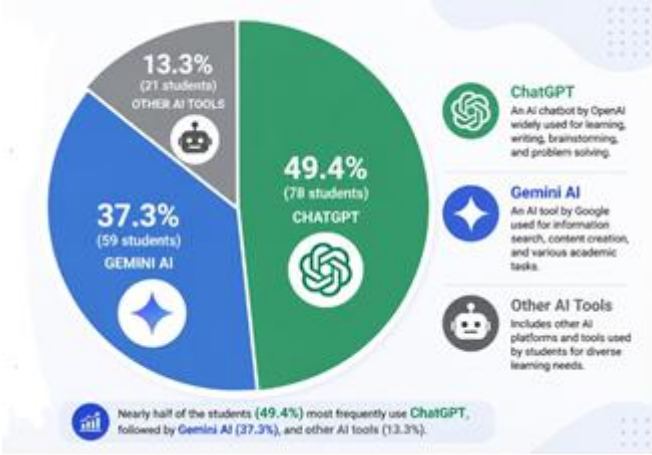

Figure 5. Distribution of AI Tools Most Frequently Used By Students

Referring to the image above, it is known that there are two types of AI most frequently used by students in the learning process: ChatGPT and Gemini AI. These two types are among the main choices used because of easy access and do not require difficult skills to use (Sobaih & Elnasr, 2025). The existence of open access is essentially a high selling price of a particular application, which is what the developers of ChatGPT and Gemini AI exploited to attract market interest, especially students in this study, so that they can be optimally utilized (Ardiansyah et al., 2024). These two types of AI have become an inseparable part of the needs of students in almost all samples in this study, although some students with better literacy skills have begun to combine and even integrate several types of AI in the process of working on each given physics assignment. Because access to use is still free, of course, other alternatives need to be developed by students to overcome any shortcomings found in ChatGPT and Gemini AI.

Challenges of Using AI in Learning

Through the learning process conducted at all grade levels of the physics department at MA Plus Nurul Islam Sekarbela, it was found that the main challenge faced by teachers in utilizing and integrating AI into physics lessons is generally the students' goals for its

use. This will have two distinct impacts depending on the students' responses and goals in using it. If students can use AI wisely, it can certainly be a valuable tool for independent physics learning (Gontina & Asyhar, 2023). However, if AI is used as a primary tool for finding instant answers, this will certainly diminish students' critical thinking skills in analyzing physical phenomena. The emergence of dependency is also a further problem for students (Abubakar et al., 2025). Therefore, one way physics teachers can address this issue is by designing contextual-based learning and setting specific limits for students in using AI, especially in the madrasah environment. Strict teacher supervision will be crucial and ensure the success of predetermined learning objectives.

Aside from usability, a problem encountered during this research process was the ability to evaluate the results obtained from the AI used. As a learning tool, it's certainly not beneficial if the results displayed by AI are used in their entirety without careful analysis and evaluation. Although AI is an intelligent technology, there are some situations where the answers it produces are inaccurate, leading to confusion (Rogers et al., 2020). This is supported by observations using a questionnaire that showed some students frequently found incorrect answers when dealing with mathematical problems.To identify the difficulties encountered by students during learning, the researchers conducted interviews with physics teachers at MA Plus Nurul Islam Sekarbela, and the following findings were obtained.

Table 1. Results of Interviews with Physics Teachers

Aspects	Teacher Response
Quality of Student Answers	Students' assignment answers become more analytical and neat, but sometimes students lose their manual calculation skills (mental calculations decrease).
Impact on Independence	It really helps students learn independently at home when teachers cannot provide direct guidance.
Major Concerns	Copy-paste without critical thinking process (Plagiarism) and students assume AI is always 100% correct even though AI sometimes hallucinates complex formulas.
Hope for the Future	There needs to be official guidance (SOP) from schools on how to use AI ethically in completing exact science assignments.

The interviews revealed several hopes for the future, expressed by physics teachers, including continuing to integrate technological developments into physics. This is because physics learning cannot be separated from technology, particularly AI. If teachers believe that AI only creates negative dependencies for students, this will not provide a solution but will hinder students' ability to survive in today's technology-driven society.

The use of AI in physics learning is a form of adaptation that madrasas, as formal institutions, can implement so that students can effectively utilize the various advances available today.

Conclusion

Physics learning using AI has received positive feedback from students. Students' need for more open and unlimited learning resources has made AI an alternative choice for many. While AI offers ease of access for students, certain limitations must be considered when used, particularly in physics learning in madrasas. Furthermore, several challenges were encountered during the AI implementation process, including the initial purpose of its use and the lack of evaluation of students' interpretations of AI answers.

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References

Abubakar, S., Jeilani, A., & Yusuf, M. (2025). The role of over-reliance on AI in the negative consequences of student learning: The moderating effects of ethical concerns and institutional policies. Cogent Education, 12(1), 2591503.https://doi.org/10.1080/2331186X.2025.2591503

Alamin, Z. (2025). Integrasi Teknologi Pembelajaran Berbasis AI untuk Meningkatkan Keterlibatan Belajar Siswa di Madrasah Aliyah. Jurnal Pengabdian Kepada Masyarakat (PEMAS), 2(2), 83-91.https://doi.org/10.63866/pemas.v2i2.87

Al-Zahrani, A. M. (2024). Unveiling the shadows: Beyond the hype of AI in education. Heliyon, 10(9). https://doi.org/10.1016/j.heliyon.2024.e30696

Anggraeny, D., Nurlaili, D. A., & Mufidah, R. A. (2020). Analisis teknologi pembelajaran dalam

pendidikan Sekolah Dasar. Fondatia, 4(1), 150-157.https://doi.org/10.36088/fondatia.v4i1.467

Ardiansyah, A. A. A., Abdin, M., & Salis, M. R. (2024). Analisis Komparatif Artificial Intelligence: ChatGPT, Gemini, dan Prefelixy sebagai Media Pembelajaran. Jurnal Teknodik, 95-112. https://doi.org/10.32550/teknodik.vi.1192

Azizah, H., & Putranta, H. (2025). The role of ChatGPT technology in students conceptual understanding of quantum physics learning. WaPFi (Wahana Pendidikan Fisika), 10(1), 69-86.https://doi.org/10.17509/wapfi.v10i1.78835

Gligorea, I., Cioca, M., Oancea, R., Gorski, A. T., Gorski, H., & Tudorache, P. (2023). Adaptive learning using artificial intelligence in e-learning: A literature review. Education Sciences, 13(12), 1216.https://doi.org/10.3390/educsci13121216

Gontina, W., & Asyhar, R. (2023). Dampak artificial intelligence terhadap pembelajaran IPA/fisika di sekolah. Silampari Jurnal Pendidikan Ilmu Fisika, 5(2), 238-250.https://doi.org/10.31540/sjpif.v5i2.2609

Gromyko, V. I., Kazaryan, V. P., Vasilyev, N. S., Simakin, A. G., & Anosov, S. S. (2017, August). Artificial intelligence as tutoring partner for human intellect. In International Conference of Artificial Intelligence, Medical Engineering, Education (pp. 238-247). Cham: Springer International Publishing.https://doi.org/10.1007/978-3-319-67349-3_22

Kasneci, E., Seßler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., ... & Kasneci, G. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. Learning and individual differences, 103, 102274.https://doi.org/10.1016/j.lindif.2023.102274

Kinshuk, Chen, N. S., Cheng, I. L., & Chew, S. W. (2016). Evolution is not enough: Revolutionizing current learning environments to smart learning environments. International Journal of Artificial Intelligence in Education, 26(2), 561-581.https://doi.org/10.1007/s40593-016-0108-x

Lestari, K. M., Zakir, S., & Gusli, R. A. (2023). Penerapan AI dalam Pembelajaran untuk Meningkatkan Kualitas Pendidikan di SMAN 3 Bukitinggi. Jurnal Yudistira: Publikasi Riset Ilmu Pendidikan Dan Bahasa, 2(1), 277-289.https://doi.org/10.61132/yudistira.v2i1.434

Manuel, M. Y., Aini, M., & Agustina, T. P. (2025). Persepsi dan Sikap Siswa Terhadap Penggunaan Artificial Intelligence. Scholaria: Jurnal Pendidikan dan Kebudayaan, 15(1), 47-59. https://doi.org/10.24246/j.js.2025.v15.i1.p47-59

Nurhayati, E., Rizaldi, D. R., & Fatimah, Z. (2020). The Correlation of Digital Literation and STEM Integration to Improve Indonesian Students' Skills in 21st Century. Online Submission, 1(2), 73-80.

Rizaldi, D. R., Doyan, A., Fatimah, Z., Zaenudin, M., & Zaini, M. (2021). Strategies to improve teacher ability in using the madrasah e-learning application during the COVID-19 pandemic. International Journal of Engineering, Science and Information Technology, 1(2), 1-6. https://doi.org/10.52088/ijesty.v1i2.47

Rogers, A., Kovaleva, O., Downey, M., & Rumshisky, A. (2020, April). Getting closer to AI complete question answering: A set of prerequisite real tasks. In Proceedings of the AAAI conference on artificial intelligence (Vol. 34, No. 05, pp. 8722-8731).https://doi.org/10.1609/aaai.v34i05.6398

Siskandar, S. (2020). The role of religious education and utilization digital technology for improving the quality in sustainability madrasa. Jurnal Tarbiyah, 27(1).https://doi.org/10.30829/tar.v27i1.675

Slamet, S. (2025). Dinamika Interaksi Peserta Didik Dengan Asisten Virtual Berbasis Ai Dalam Proses Belajar. Jurnal Tarbiyatuna: Jurnal Kajian Pendidikan, Pemikiran dan Pengembangan Pendidikan Islam, 6(1), 90-100.https://doi.org/10.30739/tarbiyatuna.v6i1.4332

Sobaih, A. E. E., & Elnasr, A. E. A. (2025). Battle of AI chatbots: Graduate students' perceptions of ChatGPT versus Gemini for learning purposes in Egyptian higher education. Journal of Applied Learning & Teaching, 8(1), 128-142.https://doi.org/10.37074/jalt.2025.8.1.7

Syafitri, S., Sholeh, M., Fransiska, A., Tasya, A., Amanda, A. F., Lorenza, D. M., ... & Hoiriyah, V. N. (2024). Transformasi karakter peserta didik akibat penggunaan teknologi. NUSRA: Jurnal Penelitian dan Ilmu Pendidikan, 5(2), 499-508. https://doi.org/10.55681/nusra.v5i2.2496