

Teachers' and Students' Perceptions of Artificial Intelligence (AI) Technology in Learning Activities

Siti Sintiawati Sholikhah, Nagata Zamzami, Sulistyaningsih
UNIPDA Sidoarjo

ABSTRACT

This study aims to explore the perceptions of teachers and students regarding the use of Artificial Intelligence (AI) technology in classroom learning activities. Specifically, it investigates how AI is perceived in terms of its effectiveness and potential integration into the educational environment. Employing a descriptive qualitative approach with a case study design, the research was conducted at SMK Bhakti Norma Husada, Nganjuk, East Java, during May to June 2025. Data were collected through Likert-scale questionnaires and semi-structured interviews, involving purposively selected teachers and randomly selected Grade X–XI students. The findings indicate that most teachers hold a positive perception toward the use of AI in education, recognizing its potential to enhance personalized learning, improve evaluation processes, and support interactive teaching methods. However, a few expressed concerns related to limited training and the possible reduction of the teacher's role. In contrast, students' responses were predominantly neutral, suggesting a lack of direct experience and limited understanding of AI technology. Nevertheless, a notable portion showed openness and a willingness to explore its use in learning. In conclusion, while teachers exhibit readiness to embrace AI in their instructional practices, students remain cautiously receptive. To support effective AI integration, it is essential to provide targeted training, improve digital literacy, and create opportunities for both teachers and students to engage with AI in meaningful ways. The study highlights the importance of institutional support and strategic planning in harnessing AI as a valuable educational tool.

Keywords: *Artificial Intelligence, Teacher Perceptions, Student Perceptions, Educational Technology, Digital Literacy, Qualitative Research*

Corresponding author

Name: Siti Sintiawati Sholikhah

Email: sintiwung26@gmail.com

INTRODUCTION

The rapid advancement of Artificial Intelligence (AI) has significantly influenced various domains, including education. In classrooms, AI-based tools such as chatbots, automated assessment systems, intelligent tutoring systems (ITS), and personalized learning platforms are being integrated to assist and transform teaching and learning processes (Holmes et al., 2019; Spector, 2020). These technologies promise enhanced instructional efficiency, increased student engagement through adaptive content, and

broader accessibility to educational opportunities, regardless of time and place (Luckin et al., 2016; Roll & Wylie, 2016).

AI in education also supports data-driven insights, enabling educators to monitor students' progress and personalize instruction to meet individual needs (Chen et al., 2020). However, despite these benefits, the successful adoption of AI in educational settings relies not only on technological capability but also on user perception. The attitudes and readiness of teachers and students play a pivotal role in determining how effectively AI tools are integrated into classrooms (Zawacki-Richter et al., 2019; Huang et al., 2022).

Understanding these perceptions is critical because skepticism, lack of digital literacy, fear of replacement, or concerns about ethical implications can hinder the full realization of AI's potential (Tuomi, 2018; Williamson & Eynon, 2020). Thus, exploring teachers' and students' perspectives will contribute to more informed decisions about implementing AI in learning environments.

Although AI is increasingly used in education, there remains a gap in understanding how educators and learners perceive its influence. Issues such as ease of use, the need for professional training, data privacy, and the potential loss of human interaction may affect the level of acceptance and actual use of AI in schools (Aoun, 2017; Lee et al., 2021). If these concerns are not addressed, AI implementation may fail to deliver meaningful outcomes. Therefore, this study seeks to examine the perceptions of both teachers and students, identifying their perceived advantages and challenges in using AI during learning activities.

To answer this problem, the writers ask the following questions; What are teachers' perceptions of the use of Artificial Intelligence (AI) technology in classroom learning activities? What are students' perceptions of the effectiveness AI technology into their learning experiences? And This study aims to explore the perceptions of teachers and students toward the use of AI in educational contexts. To explore teachers' perceptions of the use of Artificial Intelligence (AI) technology in classroom learning activities. To investigate students' perceptions of the effectiveness AI technology into their classroom learning experiences.

This research offers valuable insights for educators, institutions, and policymakers. For educators, it helps in designing strategies for effective AI integration in pedagogy. Institutions can develop training modules and infrastructure aligned with users' needs, while policymakers may use the findings to formulate supportive AI education policies (Luckin et al., 2016; UNESCO, 2021). Additionally, researchers can expand on this study to further explore the human-AI interaction in educational contexts.

This study focuses on teachers' and students' perceptions of AI technologies in learning environments. It includes commonly used AI tools in educational settings but excludes technical evaluations of the systems. The emphasis is placed on qualitative aspects such as user experiences, attitudes, and concerns rather than quantitative performance outcomes.

METHOD

This study employed a descriptive qualitative research design with a case study approach to explore the perceptions of both teachers and students regarding the use of Artificial Intelligence (AI) technology in classroom learning activities. The qualitative method was chosen to gain an in-depth understanding of experiences, attitudes, and interpretations of participants in a natural educational setting. The research was conducted at SMK Bhakti Norma Husada, Nganjuk, East Java. The data collection process was carried out during Mei to Juni 2025. The subjects of this study were, Teachers who have had experience using or being exposed to AI tools in teaching. Students of Grade X – XI who have interacted with AI-based learning technologies. The sampling techniques used were: Purposive sampling for selecting teachers, based on their relevance and experience with AI. Random sampling for students, to represent a variety of perceptions within the target class level.

Two types of instruments were used: Questionnaire with Likert Scale A Likert-scale questionnaire was developed to quantitatively explore general trends in teachers' and students' perceptions toward AI technology in education. The scale used ranges from: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree. To complement and deepen the questionnaire data, semi-structured interviews were conducted. The questions focused on participants' detailed experiences, challenges, and expectations related to AI use in learning.

The procedures data collection were as follows: Preparation, Questionnaire Distribution, Interview Sessions. And Data Analysis Technique, The collected data were analyzed using the interactive model by Miles and Huberman (1994), which involves three steps, Data Reduction: Selecting, focusing, and simplifying data based on the research questions, Data Display: Presenting the reduced data in the form of narrative descriptions and tables for easier interpretation, Conclusion Drawing and Verification: Interpreting the meaning of the data and verifying the findings by revisiting the data set for consistency and coherence, Data Trustworthiness.

To ensure the validity and reliability of the data, the researcher applied, Source triangulation: Comparing data obtained from students and teachers. Technique triangulation: Using both questionnaires and interviews to confirm consistency in findings.

FINDING AND DISCUSSION

RESEARCH RESULT

This study aims to explore the perceptions of *teachers and students* toward the use of AI in educational contexts. There are several interviews aimed at strengthening the answers to the questionnaire.

a. The teachers' perceptions of Artificial Intelligence in Learning Activities

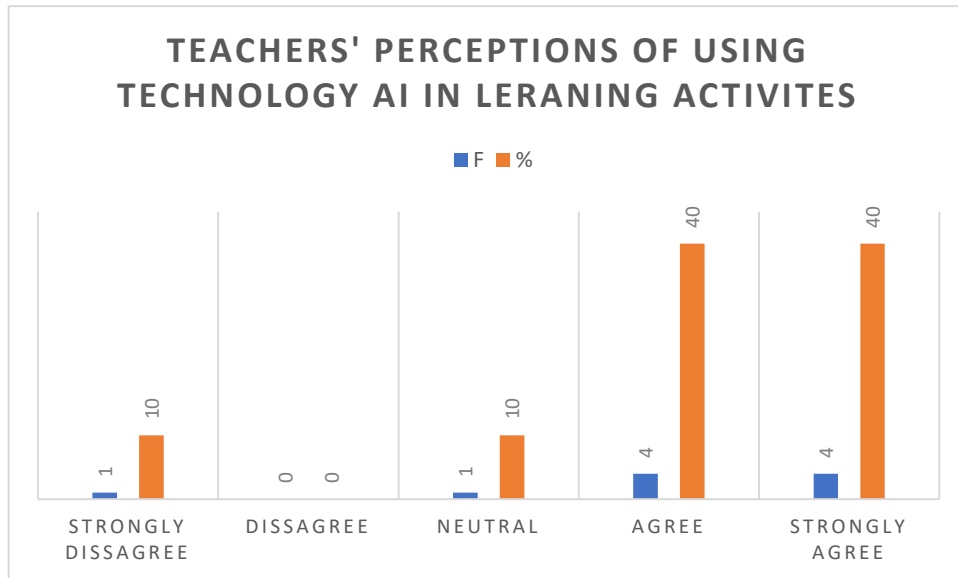


Figure 1 : Graph the result of the Teachers' Perception.

Based on the survey results given to teachers regarding their perceptions of the use of artificial intelligence (AI) technology in learning activities, it can be concluded that the majority of teachers show a positive attitude towards the utilization of AI in the education sector. From the total respondents who filled out the questionnaire, 23.53% stated 'Strongly Agree', showing high enthusiasm and confidence in the role of AI in supporting learning activities. 23.53% stated 'Agree', indicating a good acceptance of AI technology, although there may still be room for further exploration. 5.88% of respondents were 'Neutral', indicating that a small number of teachers still do not have a definite stance, possibly due to limited information or experience in using AI. 5.88% stated 'Strongly Disagree', indicating concerns or rejection towards the use of AI, although the number is very small. Overall, more than 47% of teachers have a very positive perception, and if combined with the "Agree" category, about 70.6% of teachers tend to accept and support the use of AI in the learning process. This is a positive signal for the development of digitalization strategies in education based on smart technology.

This positive trend can be interpreted as teachers beginning to recognize the benefits of AI, such as ease of accessing materials, personalized learning for students, efficiency in evaluation, and support in developing more interactive and adaptive teaching methods. However, the presence of neutral or negative responses (each 5.88%) indicates that there are still some challenges that need to be addressed, such as: Lack of training or socialization regarding the practical use of AI in learning. Concerns about the possibility of teachers' roles diminishing if AI becomes too dominant. Uncertainty about the reliability or validity of the results provided by AI technology.

To ensure that the acceptance of AI among teachers increases and is optimally implemented, several strategic steps that can be taken include. Ongoing training and workshops Educational institutions need to conduct training that equips teachers with practical skills in using educational AI platforms and applications. Providing practical AI usage guides Guides, video tutorials, or digital modules can help teachers understand various scenarios of AI usage in real classroom contexts. Improving teachers' digital literacy Encouraging teachers to continuously update their technological knowledge so they can keep up with AI developments and apply them effectively. Facilitate discussion spaces among teachers Learning communities or teacher discussion forums will be very beneficial as a platform for sharing experiences and best practices in the use of AI in education. Collaboration with technology developers Involving teachers in the development or trial of AI-based learning technology so that the technology truly meets the needs in the field.

The conclusion of this result indicate that teachers generally have a positive perception of the use of AI technology in education. Although there is a small minority that remains skeptical or disagrees, the overall trend shows teachers' readiness and willingness to adapt to technological innovations. With the support of training, socialization, and appropriate policies, AI technology has great potential to become a strategic partner for teachers in creating a more effective, efficient, and enjoyable learning process.

b. The Students' Perceptions of Artificial Intelligence in Learning Activities.

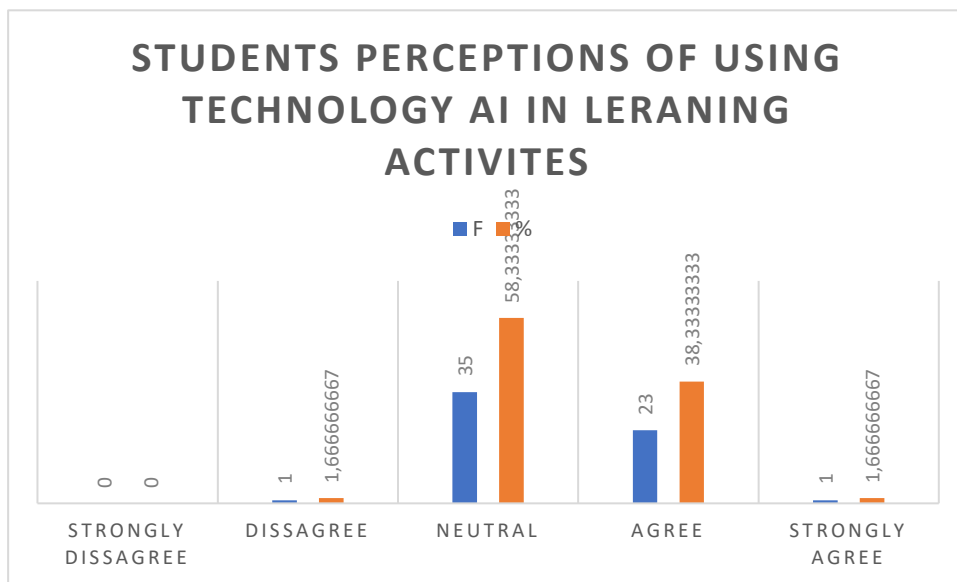


Figure 2 : Graphic the result of Students Pereception.

Based on the survey results, the majority of students have a neutral perception of the use of AI technology in learning activities, as indicated by the highest frequency and percentage in the "neutral" category. Most respondents also showed a positive tendency,

with a fairly high percentage in the "agree" category. On the contrary, only a few students expressed "disagree" or "strongly disagree," indicating that resistance to the use of AI in learning is relatively low. These findings indicate that although most students are not yet fully convinced, they are open to the potential integration of AI in the teaching and learning process.

Why do the majority of students have a neutral perception of the use of AI in learning? Because Lack of understanding or direct experience with AI Many students may not yet fully understand or have direct experience with how AI can be applied in the learning process. This makes them tend to choose the neutral option because they don't have enough information to assess. Concerns about the reliability and impact of AI Some students may have concerns regarding AI accuracy, data privacy, or the potential replacement of teachers. This can lead to a cautious attitude and ultimately result in a neutral perception. Lack of socialization and training Educational institutions may not have fully socialized the benefits and proper usage of AI. Without guidance or training, students will struggle to form a positive perception. The perception that AI is just an auxiliary tool, not a main component of learning Students might see AI as an additional feature, not a main component of their learning process, so they feel neutral towards its influence.

From the interviews with the teacher, the students should Improving digital and AI literacy. Students need to learn more about AI, for example, through training, reading reliable sources, or attending educational technology workshops. Using AI actively in learning activities. Respondents should start trying out various AI-based learning applications or platforms such as educational chatbots, AI essay writers, or learning material recommendation systems. Providing constructive feedback to teachers or schools if students feel that AI is helpful or rather confusing, they need to share their experiences so that the school can improve its approach to using the technology. Be open to technological innovations. Adopting an open and adaptive mindset is important in the digital era. Students should not only be passive users but also be able to critically and objectively assess the benefits of AI.

The conclusion of this part, Survey results show that the majority of students have a neutral perception of the use of AI technology in learning activities. This is likely due to a lack of understanding, direct experience, and socialization regarding the application of AI in the educational context. Nevertheless, there is a positive trend with a higher percentage of students agreeing compared to those disagreeing, indicating potential acceptance of this technology in the future. To effectively enhance the utilization of AI, students are advised to improve their digital literacy, actively experiment with AI technology in learning activities, and provide feedback to educators so that AI integration can proceed more optimally. An open and adaptive attitude towards innovation is also important so that students can maximize the benefits of technology in supporting the learning process.

DISCUSSION

The findings of this study reveal differing perceptions of Artificial Intelligence (AI) integration in educational contexts between teachers and students, highlighting both

enthusiasm and hesitation. The overall positive perception among teachers aligns with recent studies emphasizing the benefits of AI in facilitating personalized instruction, streamlining assessment, and enhancing student engagement (Zawacki-Richter et al., 2019; Huang et al., 2021). A significant portion of teachers in this study expressed agreement and strong agreement regarding AI's role in improving learning activities, suggesting a growing readiness to adopt technological innovations. This supports the idea that when educators recognize the pedagogical value of AI, they are more likely to integrate it into their teaching practices (Kong et al., 2020).

However, the presence of neutral and negative responses, though minimal, indicates ongoing concerns. These concerns often relate to the fear of technology replacing human interaction, lack of training, and uncertainties about AI's reliability—findings echoed in previous research (Luckin et al., 2016; Holmes et al., 2022). Such reservations point to the urgent need for continuous professional development and structured support systems to empower teachers in navigating AI-enhanced environments. Institutional support through training workshops, digital literacy programs, and collaboration with AI developers can mitigate resistance and promote informed usage.

In contrast, students' perceptions were predominantly neutral, with only a moderate number showing strong approval of AI technology in learning. This neutrality may stem from a lack of exposure to or understanding of AI applications, as also observed by Nouri et al. (2020), who noted that students often remain unsure of AI's role unless actively engaged with such tools. Students in this study may view AI as a supplementary rather than central component of learning, thus lacking the experience necessary to form strong opinions. Furthermore, concerns about privacy, data use, and AI's influence on the human aspects of learning may also contribute to their hesitation.

Despite this, the relatively low number of negative responses suggests a window of opportunity. With proper guidance, digital literacy enhancement, and exposure to AI-based learning platforms, students may develop more positive attitudes. Encouraging feedback mechanisms and involving students in the AI integration process can foster a sense of ownership and reduce resistance.

The contrast between teacher optimism and student neutrality reveals a potential gap in AI implementation. While teachers are prepared to integrate AI into pedagogy, students need more structured opportunities to engage with AI tools meaningfully. This reinforces the notion that successful AI integration requires not only technological readiness but also user acceptance and active participation from both educators and learners.

In summary, the study underscores the importance of balanced AI integration—one that combines the enthusiasm of teachers with the preparedness of students. Institutions must ensure that both groups receive adequate support, training, and engagement opportunities. Only then can AI be effectively leveraged as a transformative tool for modern education.

CONCLUSION

This study examined teachers' and students' perceptions of AI in education. Teachers showed generally positive attitudes, with many expressing readiness to adopt AI for its potential to personalize learning, ease evaluation, and support interactive teaching. However, some concerns remain regarding training, job security, and AI reliability, indicating the need for ongoing professional support and collaboration with tech developers.

Students, on the other hand, were mostly neutral, suggesting limited exposure to AI tools. While some showed openness, greater efforts are needed in digital literacy training and hands-on experiences to boost their confidence and engagement.

In conclusion, teachers are more prepared and optimistic, while students remain cautiously receptive. Effective AI integration requires investment in awareness, digital skills, and infrastructure to support both educators and learners.

REFERENCES

- Aoun, J. E. (2017). *Robot-Proof: Higher Education in the Age of Artificial Intelligence*. MIT Press.
- Chen, L., Chen, P., & Lin, Z. (2020). Artificial Intelligence in Education: A Review. *IEEE Access*, 8, 75264–75278. <https://doi.org/10.1109/ACCESS.2020.2988510>
- Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial Intelligence in Education: Promises and Implications for Teaching and Learning*. Center for Curriculum Redesign.
- Holmes, W., Bialik, M., & Fadel, C. (2022). *Artificial intelligence in education: Promises and implications for teaching and learning*. Center for Curriculum Redesign. <https://curriculumredesign.org>
- Huang, R. H., Liu, D. J., Tlili, A., Yang, J. F., & Wang, H. H. (2022). Handbook on Facilitating Flexible Learning During Educational Disruption. *UNESCO*
- Huang, R. H., Liu, D. J., Tlili, A., Yang, J. F., & Wang, H. H. (2021). *Handbook on facilitating flexible learning during educational disruption: The Chinese experience in maintaining undisturbed learning in COVID-19 outbreak*. UNESCO. <https://unesdoc.unesco.org>
- Kong, S. C., Lai, M., & Sun, D. (2020). Teacher development in AI education: The alignment of teacher knowledge, beliefs, and practices. *Journal of Educational Computing Research*, 58(6), 1071–1094. <https://doi.org/10.1177/0735633119865992>
- Lee, M., Yun, J., Pyun, J., & Park, S. (2021). Teachers' Perceptions of Artificial Intelligence in Education: A Comparative Study. *Education and Information Technologies*, 26(6), 6747–6765. <https://doi.org/10.1007/s10639-021-10560-5>
- Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). *Intelligence Unleashed: An Argument for AI in Education*. Pearson Education.
- Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). *Intelligence unleashed: An argument for AI in education*. Pearson Education. <https://www.pearson.com>

- Nouri, J., Zhang, L., Mannila, L., & Norén, E. (2020). Development of computational thinking, digital competence and 21st century skills when learning programming in K–9 education. *Education Inquiry*, 11(1), 1–17. <https://doi.org/10.1080/20004508.2019.1627844>
- Roll, I., & Wylie, R. (2016). Evolution and Revolution in Artificial Intelligence in Education. *International Journal of Artificial Intelligence in Education*, 26, 582–599. <https://doi.org/10.1007/s40593-016-0110-3>
- Spector, J. M. (2020). Thinking about the Future of Learning: Artificial Intelligence and Education. *Educational Technology Research and Development*, 68(1), 1–3.
- Tuomi, I. (2018). The Impact of Artificial Intelligence on Learning, Teaching, and Education: Policies for the Future. *JRC Science for Policy Report*.
- UNESCO. (2021). *AI and Education: Guidance for Policy-makers*. <https://unesdoc.unesco.org/ark:/48223/pf0000376709>
- Williamson, B., & Eynon, R. (2020). Historical Threads, Missing Links, and Future Directions in AI in Education. *Learning, Media and Technology*, 45(3), 223–235. <https://doi.org/10.1080/17439884.2020.1798995>
- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic Review of Research on Artificial Intelligence Applications in Higher Education. *International Journal of Educational Technology in Higher Education*, 16(1), 1–27. <https://doi.org/10.1186/s41239-019-0171-0>
- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education: Learning, assessment and administration. *International Journal of Educational Technology in Higher Education*, 16(1), 1–27. <https://doi.org/10.1186/s41239-019-0171-0>