Publisher
Singh Publication
www.singhpublication.com

E-ISSN:2583-0074

Social Science Journal for Advanced Research

2025 Volume 5 Number 5 September

Research Article

Artificial Intelligence

Artificial Intelligence and Evaluation in the Teaching-Learning Process: Emerging Paradigms and Directions

Kumar N[1*], Anukampa[2]

DOI:10.5281/zenodo.17284924

[1*] Neeraj Kumar, Assistant Professor, Department of B.Ed./M.Ed., M. J. P. Rohilkhand University Campus, Bareilly, Uttar Pradesh, India.

[2] Anukampa, Assistant Professor, Department of B.Ed., Vardhaman College, Bijnor, Uttar Pradesh, India.

In recent educational setup Artificial Intelligence is growing faster which is changing the whole perspective of the education sector. Now the teaching – learning process is equipped with new technological advancement. In this research paper researchers intended to mention all AI enhanced features which are affecting educational setup in various ways. In this critical evaluative research study researcher conducted this research study in a specific domain of evaluation and assessment process with teaching learning advancements. In this research study recent reviews, feedback analysis and interpreting techniques with AI applications being involved for better comprehensive research. Other various strategies such as adaptive learning, data analytics and automated based learning which are induced with AI applications are also those evaluation and assessment areas. A bonding between AI and human resources is a new thing for every field, same for education as well. At one end this union makes things exploring and advanced, but on the other hand it is also adversely affecting human natural intellect and originality. Professional growth with AI advancement is also a new thought-provoking aspect which is affecting the teaching-learning process in different ways. For better development and advancement of the education sector depends upon genuine utility of AI with creative transformation of human skills. This research study will emphasise on all possible aspects of AI based evaluation and assessment in the teaching- learning process.

Keywords: artificial intelligence, assessment and evaluation, grading system, data analytics, ai ethics, teaching methods, classroom learning, automated and adaptive assessment

Corresponding Author

Neeraj Kumar, Assistant Professor, Department of B.Ed./M.Ed., M. J. P. Rohilkhand University Campus, Bareilly, Uttar Pradesh, India.
Email: neeraj.rvni@gmail.com

How to Cite this Article

Kumar N, Anukampa, Artificial Intelligence and Evaluation in the Teaching-Learning Process: Emerging Paradigms and Directions. Soc Sci J Adv Res. 2025;5(5):45-50.
Available From
https://ssjar.singhpublication.com/index.php/ojs/article/view/297

To Browse

Manuscript Received	Review Round 1	Review Round 2	Review Round 3	Accepted
2025-08-10	2025-08-28			2025-09-15

Conflict of Interest	Funding	Ethical Approval	Plagiarism X-checker	Note
None	Nil	Yes	5.79	

1. Introduction

Education with emerging technologies and AI is developing a large scenario of teaching learning process. Integration of AI in evaluation and assessment also helps in divergent ways such as transparency, accuracy, large data handling, minimum time consumption, reliability etc. The concept of continuous and comprehensive learning is also helping learners for a better learning environment and teachers for advancement & transferring knowledge among students with concrete analysis. In previous days when the traditional classroom was the only option they were mostly depending on available resources of standardized tests, teacher-based assessment and feedback, chances of biased outcome. In the old days assessment and learning were based on established standardized tests and grading analytics. It is also having drawbacks such as not developed and updated tools according to need and situational demands. Also, dependency on teacher-based assessment may develop a tendency of biased results and outputs. By introducing AI there are many chances and opportunities for development of assessment tools, teaching techniques and unbiased results.

The main feature of AI is all about providing data with more accuracy, immediate results, verified inputs and feedback without time breaks. It is also helping in a personalized and adaptive way so that it does not show results universal for all. Introducing advanced coding and machine learning in AI with auto adaptive features and language learning tools makes it easier for providing results and evaluation assessments on the basis of learner's need and proficiently sorted for teachers and administrative authorities. A continuous real-time check for success and follow-up of students makes AI more promising (Holmes, Bialik, & Fadel, 2023; Wang, 2024).

It is also important to include the adverse affecting area of AI. AI is developing a gap between traditional creativity and modern technically advanced applications in terms of transparency, privacy, data encryption, technical advancement related challenges and data algorithms mechanism. Teachers also deal with issues with handling AI tools and techniques and incorporate them in routine teaching professions (UNESCO, 2024).

Those mentioned parameters are significantly important to include in the teaching- learning process before any AI based technology. It will be helpful for the education sector for better understanding of AI and involvement in daily teaching-learning practices.

In this research study, recent research, reviews, articles and survey data have considered AI for evaluation and implementation purposes with reference to teaching methods, data findings, educational barriers in real time situations and pedagogical analysis in teaching-learning procedure.

2. Problem Statement

In a traditional setup of classroom learning a lack of transparency, unbiased output, lack of adaptive experience, challenges related to personalized and self-paced learning is undeniable now. AI in educational setup, classroom is now equipped with new technological advancement associated features of AI like immediate feedback and motivation. With heterogeneous classes and expanding various new course content; it is very tough for educators to provide learning experience according to the needs of the learner. In this research paper the main highlights are about: how AI is enhancing the quality and transparency in the education sector in terms of evaluation and assessment with classroom learning utilities. However, in the current era how AI is affecting at global level it is non-negotiable.

3. Methodology

In this research study an analytical approach with literature review is being considered. Various research articles and studies included from the resources like Google Scholar, Web of Science, Research Gate, Vidwan, Scopus etc. Most research is from 2020 to 2025. The criteria for quoting and including research articles are:

1. Evaluation & assessment based on AI tools.
2. Learning module relativity and comprehensive analysis.
3. Ethical concerns and policies related to AI.
4. Various experiments and case studies related to research articles.

Also, researchers included all those research and articles before 2020 in which detailed description is mentioned about effects of AI and traditional systems in the education system.

Excluded were non-AI-related digital assessment papers, opinion pieces without empirical or theoretical grounding, and studies published before 2020 unless foundational to the field.

Qualitative data and textual based coding pattern used for scrutinizing the literature content in context to adaptive learning, personalized assessment, automated results, follow-up and feedback. A detailed summary is mentioned in table 1.

4. Review of Related Literature

Adaptive Assessment and Personalized Evaluation

Learners are getting a divergent benefit with AI equipped assessment tools such as personalized experiences, content clarity, distribution of questions according to individual capacity of learners and comprehensive engagement (Holmes et al., 2023; Wang, 2024). Some applications such as Knewton and Coursera making things easier with precise analytics and data modelling. These approaches providing more accuracy and strength to the education sector rather than using traditional systems (Ihichr et al., 2024).

Various language learning tools and LMS modules, which were very complicated and based on human programming intellect, now it is providing accuracy and ease of understanding in handling the complex data. Online question banks and quizzes are providing mastery in realistic situation from play group to school level and from university to corporate level (Johnson et al., 2023).

Automated Grading and Feedback

Natural language processing (NLP), application of AI for understanding human language and interpret in machine language to human language is making thing for assessment and feedback is more elaborated. It increases the accuracy, speed and unbiases in grading analytics and evaluation system which is quietly better than human efforts (Chiu, 2023; Hurix Digital, 2025). AI tools like E-rater (ETS) (for assessing essay skills and writing comprehension), Grammarly (for grammar check), and Turnitin (for plagiarism check) are helpful in assessing the content relatively accurate and faster than human efforts.

In some research report it is also concluded that handling large number of students and providing feedback is a tough task in older days but AI now helps this work completion in faster ways with more transparency. Teachers are getting benefitted and getting more time for providing content and improving teaching styles (Gligorea et al., 2023). Most of the research articles verified the utility of these apps in multidimensional approaches.

Learning Analytics and Predictive Modelling

Various educational work such as attendance management, scoring, student utility, identifying students in terms of their performance, counselling and discussion are becoming more effective with AI based tools (Wang, 2024; U.S. Department of Education, 2023). Some preventive measures related to students such as early alerts, tracing the dropouts and regular students, helping teachers and administrative authorities in terms of updating about progress of every student, providing help and follow-up timely to students as required (Papamitsiou & Economides, 2022).

Moreover, AI based approaches are helpful in pedagogical and content analysis. It becomes easier by filtering the content according to new trends, requirements of present scenarios and analysing the future perspective (Minn et al., 2022).

Gamification, Multimodal, and Inclusive Assessment

Launching gamification in learning practices making learning more encouraging and interesting. Learners are getting more continuous and motivated for learning through gamified models. Recent AI based communication tools and chatbot applications provide live experience which is somehow not only developing intellectual aspects but also beneficial for social and emotional growth (Holmes et al., 2023; Frontiers in Artificial Intelligence, 2024). Inbuilt applications such as continuous feedback, badging stars, interactive chatbot application, generative applications etc. making things more accurate and live for a better learning environment.

AI is helping students in various ways such as multidisciplinary approach, inclusive education, remote area accessibility, availability of content especially for special needs children (Georgieva & Stuart, 2025).

Ethical Inclusions: Bias, Transparency, and Data Privacy

Applications of AI are useful in various data applications. But still, it is a matter of concerns on the basis of biased results, variation in results in terms of socio-economic differences, cultural variety and linguistic issues (Georgieva & Stuart, 2025; Perrotta & Selwyn, 2020). Also, the concept of vulnerability of "black box" is still not trustworthy and transparent for trusting AI generated data.

UNESCO and the U.S. Department of Education also mentioned a guideline about managing transparency of AI in terms of data transparency and generating outcomes (UNESCO, 2024; U.S. Department of Education, 2023). After that some institutions improved their AI applications and organised a review board for continuous update.

Teacher Professional Development and Human-AI Partnership

Integrating AI in educational setup is not only about technical advancement for teachers but also helpful in professional development in terms of content delivery, pedagogical analysis and data driven techniques (Papamitsiou & Economides, 2022).

Use of AI for human perspective is also helpful for managing AI applications. Human needs and future requirements can only be fulfilled when AI is being applied in various ways and highlighting the key elements for correction, changing and developing for relatively useful content (US Department of Education, 2023).

5. Challenges and Future Directions

Advancement in technology and integration of AI is a challenge in terms of digital literacy among teachers. There are still many teachers and content developers who are not aware and comfortable with technology (Gligorea et al., 2023; Papamitsiou & Economides, 2022). Some cases like (UNESCO, 2024).

Many research outputs and practices are required for better AI utility to make it more reliable and valid for data progression in terms of automated experiences (Minn et al., 2022; Frontiers in Artificial Intelligence, 2024).

Table 1: Sample of Recently Influential Works

Author(s)	Key Contribution
Holmes et al. (2023)	Adaptive, formative assessment design
Wang (2024)	Predictive analytics and at-risk identification
Chiu (2023)	Automated grading, feedback, teacher workload reduction
UNESCO (2024)	Guidelines for ethical, inclusive use of AI
Georgieva & Stuart (2025)	Institutional governance for responsible AI
US Department of Education (2023)	National policy for transparency and fairness
Gligorea et al. (2023)	Comparative case studies of adaptive assessment
Hurix Digital (2025)	Trends in AI-enabled assessment tools
Frontiers in AI (2024)	Thematic issue on multimodal evaluation
Perrotta & Selwyn (2020)	Systematic review of AI in educational innovation
Minn et al. (2022)	AI in adaptive knowledge assessment

6. Discussion

Evaluation in Technical Adaptability

AI has developed a transformation in terms of making technology more friendly and utilized. Features like auto generation and adaptive transmission make AI more interesting and divergent. Also, it is a better version in terms of self-paced and personalized learning (Holmes et al., 2023; Wang, 2024).

Equity, Bias, and Explainability

AI is undoubtedly useful in various ways and making applications more useful. But AI is questionable in handling data privacy and unbiased results. Thus, it is still challenging for managing data encryption and privacy concerns for AI uses (Georgieva & Stuart, 2025). After objecting to the concept of "black box" a movement was initiated named "explainable AI" – making its data and algorithms more understanding and accessible (UNESCO, 2024; US Department of Education, 2023).

Teacher's Accountability

AI will be more helpful if it is more techno accessible and teachers can handle it with ease of technical awareness. Many functions such as data utility, preparing reports, making progress data with techno support will be more meaningful if teachers are comfortable with technology uses (Papamitsiou & Economides, 2022).

Responsible Adoption

Administrative authorities and educators should be taken as supported form in terms of using AI in comprehensive ways for dealing tasks in precise, accurate and applied ways. It should be also incorporated with faculty development and advancement skills, directions and policies related to educational development, personalized and professional development of faculties.

7. Implications

For Educators

- It will be helpful for educators using AI for continuous feedback, on time support and suggestive measures for progress.
- It will be helpful for getting techno awareness and using data with online tools.
- AI should be handled as a supporting tool, not purposely for replacing human utility.

For Institutions

- It will be useful developing AI tools for better administrative and data handling use at institution level.
- AI based applications and content should be useful in terms of equal division and without creating barriers for learners.
- While using AI, some measures should be used for managing transparency, encryption, privacy and unbiased features.

For Policymakers

- AI should be used in practical ways for managing data and handling transparency issues.
- A genuine concern of fund availability, infrastructure and utility should be kept in mind.
- A continuous and comprehensive development and updates should always be a part of any AI equipped institutions.

8. Conclusion

Artificial intelligence is better for every sector. Education also cannot be unnoticed. It will make the education sector more useful, efficient and enriched with new advancements. However, AI can be a challenge in those scenarios where people are not friendly with technology. But it can be sorted by providing learning opportunities for technical awareness. AI can create a bridge between human and technology. Generative AI makes the educational field more encouraging and interesting in terms of administration, classroom learning, assessment and evaluation. In the future traditional methods cannot be useful due to various limitations such as time taken, human error, creativity etc. Thus, it is better that accepting AI as a supporting tool for humans not as replacement alert.

References

1. Chiu, T. K. F. (2023). Challenges and opportunities of AI in schools: A meta-review on artificial intelligence in education. *Computers & Education, 199*, 104860. https://doi.org/10.1016/j.compedu.2023.104860

2. Frontiers in Artificial Intelligence. (2024). Educational evaluation in the age of artificial intelligence: Challenges and innovations. *Frontiers in AI, 7*. https://www.frontiersin.org/research-topics/60399

3. Georgieva, M., & Stuart, J. (2025). Ethics is the edge: The future of AI in higher education. *EDUCAUSE Review*. https://er.educause.edu/articles/2025/6/ethics-is-the-edge-the-future-of-ai-in-higher-education

4. Gligorea, I., Smeureanu, G., Marinica, C., & Smeureanu, M. (2023). Adaptive learning using artificial intelligence in e-learning. *Education Sciences, 13*(12), 1216. https://doi.org/10.3390/educsci13121216

5. Holmes, W., Bialik, M., & Fadel, C. (2023). Artificial intelligence in education: Promises and implications for teaching and learning. *Center for Curriculum Redesign*.

6. Hurix Digital. (2025). *AI in education: Revolutionizing assessment now!*. Retrieved from: https://www.hurix.com/ai-in-education-revolutionizing-assessment-now/

7. Ihichr, A., El Azhari, J., El Barhoumi, A., & Benhaddou, D. (2024). A systematic review on assessment in adaptive learning. *International Journal of Advanced Computer Science and Applications, 15*(7), 855–870. https://thesai.org/Publications/ViewPaper?Volume=15&Issue=7&Code=IJACSA&SerialNo=103

8. Johnson, C. G., Green, J. A., & Boyer, K. E. (2023). Adaptive assessment systems in K–12 education: A review of recent advances and trends. *Journal of Computer Assisted Learning, 39*(1), 1–20. https://doi.org/10.1111/jcal.12685

9. Minn, S., Cho, S., Park, H., & Lee, H. (2022). AI-assisted knowledge assessment techniques for adaptive learning. *Intelligent Education Systems, 4*(2), 55–68. https://doi.org/10.1016/j.ies.2022.02.005

10. Papamitsiou, Z., & Economides, A. A. (2022). Learning analytics and data-driven decision making in education: A systematic literature review. *Educational Technology & Society, 25*(2), 20–39.

11. Perrotta, C., & Selwyn, N. (2020). Artificial intelligence in education: A systematic literature review. *Expert Systems with Applications, 159*, 113676. https://doi.org/10.1016/j.eswa.2020.113676

12. UNESCO. (2024). Guidelines for the ethical use of artificial intelligence in education. *United Nations Educational, Scientific and Cultural Organization*. https://unesdoc.unesco.org/ark:/48223/pf0000380455

13. U.S. Department of Education, Office of Educational Technology. (2023). *Artificial intelligence and the future of teaching and learning*. https://tech.ed.gov/artificial-intelligence

14. Wang, S. (2024). Artificial intelligence in education: A systematic review. *Journal of Educational Technology & Society, 27*(1), 45–60.