



# INTERNATIONAL RESEARCH JOURNAL OF HUMANITIES AND INTERDISCIPLINARY STUDIES

( Peer-reviewed, Refereed, Indexed & Open Access Journal )

DOI : 03.2021-11278686

ISSN : 2582-8568

IMPACT FACTOR : 8.031 (SJIF 2025)

## The Role of Artificial Intelligence in Transforming Teaching-Learning and Administration

**Dr. Sachin Kumar Verma**

Assistant Professor,  
Dharma Samaj College,  
Aligarh (Uttar Pradesh, India)

DOI No. **03.2021-11278686** DOI Link :: <https://doi-ds.org/doi/10.2582-8568/06.2025-72718179/IRJHIS2502015>

### **Abstract:**

*This research article explores the transformative role of Artificial Intelligence (AI) in education system. Here, the researcher has studied how AI technologies and its tools are being applied into educational systems to enhance learning efficiency, personalized education and improve administrative proceedings. The study also puts lights on the substantial challenges and ethical considerations associated with AI. For the study, researcher went through the various research papers and articles concerned to the integration of AI in education to develop an insight. Through a comprehensive study of the related literature, this paper makes an attempt to highlight the potentials and limitations of AI in shaping the prospect of education in an effective and meaningful way.*

**Keywords:** Personalized learning, AI- driven learning, AI-driven administrative tools, Future trends in AI Education

### **Introduction:**

Artificial Intelligence is well known for its powerful tools in various fields. It is also taking place significantly in education. The incorporation of AI in education sector is enriching traditional teaching-learning methods, personalized learning experiences, and streamlining administrative processes and so on. Nowadays, personalized learning is one of the well-known features of AI tool to support effective learning. AI system is so much competent that can analyses the strengths and weakness of a student and it can present the study material according to the need of the learner. It works on the personal inputs of the students. Thus, this system is capable of ensuring the learning pace of the students to help students to learn at their own pace and receive the support if it is required. Additionally, grading, scheduling and management of records can be done through AI in automated way. It saves the time of teacher that can be spent on teaching related tasks. Although, researcher finds many benefits of the use of AI in educational sector, but there are some challenges and issues that emerges due to its integration in educational scenario. Threat to data privacy, lack of

human interaction and unethical practices can be noticed prominently due to the use of AI in education. It also helps in monitoring the modification of behaviour in students due to learning. There are also many administrative tasks in educational institutions that can be accomplished with the help of AI for example grading, scheduling and record management etc.

The focus of the present study is to examine the functions of artificial intelligence in education, as well as its advantages, difficulties, and potential applications. This study will provide us a better understanding of how artificial intelligence is influencing education in the future and how to use it effectively by examining current trends and real-world examples.

### **Objectives of the Study:**

- 1) To analyse the effect of AI on personalised learning and student engagement.
- 2) To evaluate the effectiveness of AI-driven administrative tools in educational institutions.
- 3) To identify the challenges and ethical considerations of implementing AI in education.
- 4) To study future trends and potential developments in AI technologies for education.
- 5) To discuss the role of AI in improving teaching methodologies and curriculum design
- 6) To investigate the role of AI in increasing the accessibility and inclusivity in education.

The outlook of the teaching-learning is being changed through the integration of AI into education to promote individualized learning. It is also enhancing the engagement of the students. In individualized learning, lessons and activities that are customized according to the need of the each students. It also takes care of the learning pace, style and weakness of the students. Its feedback is more effective that makes personalized learning a meaningful and purposeful concept. AI monitors performance of the students and modifies the lessons according to the requirement of the students. Appropriate assistance is provided to each student at the right time to make the teaching-learning a successful task. This method is quite flexible that offers students to learn at their own natural speed improving their conceptual understanding. AI-powered technologies, including virtual tutors and adaptive learning platforms work effectively. These tools can identify areas where students need help and also offer customized exercises to improve their understanding and knowledge to overcome the issues. By using effective videos, e-content, quizzes, and interactive subject matter, AI makes the learning process more interesting and easier to follow. Thus, substantial technical support can be provided with this AI tool in education for personalized learning. (Chang & Li, 2019). Students can learn at their own pace if AI is incorporated in education efficiently. (Roll and Wylie, 2016)

Student engagement plays a significant role to get better result in learning process. Student engagement shows the participation of the students in learning that is it means how focused, curious, and involved a student is during the learning process. AI enhances the engagement of the students by making lessons interactive and interesting through games, simulations, and personalized challenges. These tech based features motivate the students to participate actively, making learning more

enjoyable, effective and fruitful. This approach also makes the students techno-friendly. Through the use of AI in education, schools, colleges and universities can create better learning experiences that can keep the students motivated and help them in achieving better academic results. AI is making education more flexible, student-friendly, fruitful and efficient. It has been noticed that the use of AI education can also reduce the student absenteeism rate. (Karsenti, 2019)

In modern era, it is quite difficult to manage educational data to perform administrative tasks due to information explosion. Administrative body feels much difficulty in taking instant decision on the bases of large information. But, here artificial intelligence is an important tool in accomplishing administrative tasks in educational institutions. AI-driven tools help the schools and colleges in managing various tasks efficiently that is reducing the workload of teachers and administrators. These tools can help in automated repetitive tasks such as attendance tracking, timetable scheduling, and student performance analysis, consequently it will allow educators to focus more on teaching, student and school development programs.

Google classroom is one of the well-known AI tools that works as an LMS. It can help a teacher in managing many tasks of a class in an efficient way. It can help in managing assignments, grading, and communication between teachers and students. It also allows a teacher to use rubrics as a scoring guide. There is a well known tool Grammarly that is used for the assistance in checking grammar and plagiarism in academic writing. It provides comprehensive AI-powered features, therefore it is very much used by the teachers, researchers and educationists. Turnitin is also a powerful AI-tool. It is used in universities to detect plagiarism and helps in ensuring academic integrity. It checks the similarity of the contents to ensure the originality and give due credit to the real author.

Power School is popular AI-based software. It maintains the student's information system for all the administrative purposes, it can help in tracking the student attendance, grades, and overall performance throughout the session. It can also provide data-driven insights to take decision making steps for the administrative tasks of the organization. Chatbot is an AI powered virtual assistant for providing human like conversation with the students. It is used by universities or educational institutions for answering student queries that reduces response time and improves communication efficiency. AI-driven tools also assist in decision-making tasks by analyzing student data and help in predicting the future academic performance. This provides an insight to institutions to arrange necessary support to students who may need extra help. By using AI in administration, educational institutions can be on the right track effectively in achieving its goals reducing its errors.

The researcher has identified the various ethical considerations and challenges in implementing AI in education. The application of artificial intelligence offers many benefits to education, but it also comes with many ethical concerns and challenges. To transfer the role of a



teacher to a machine gives birth to many challenges. (Humble & Mozeliuss, 2019). Teachers and students are not well trained for AI tools. It is the first challenge to train all to avail its features properly. There are many who are familiar with AI but they are not comfortable in integrating it into education system properly. Teachers and students are not techno-friendly, therefore they are found reluctant towards the use of it. It is a challenge of educational institutions to provide enough training to the teachers so that they may use for the betterment of educational outcomes. Another issue is related to its high cost and maintenance. The AI tools are not so cheap to be adopted at a large scale. There are few free tools but they offer limited scope to work on it. India is a developing country, here educational institutions cannot pay high amount to take its benefits. They don't have so much fund to afford AI tools facilities and infrastructure cost. This may create a gap between these schools due to fund availability and resource management. It will create a sense of inequality in education system.

Popenici and Kerr (2017) showed the impact of AI on teaching-learning. Due to this, he pointed out conflicts between students and instructors as excessive control, privacy related concern and changes in power structures. The use of AI in education is also bringing out some issues of ethical concerns. There is a big threat to the data privacy and security. It will manage a huge data related to the students. If it is not protected and managed properly, then it can be misused. This is a big responsibility of the educational institutions to ensure the data privacy and security.

Except it, there is feeling of insecurity towards the use of AI that it may reduce the human interaction in teaching-learning process. People are thinking that AI equipped machine can replace a human being. So AI teaching machine can also replace a human teachers. There are many jobs that can be done by these machines more efficiently, so it is creating an uneasiness in the mind of the teachers. Thus, it has become necessary to resolve these issues before implementing the AI in education. Ethical and fair use of technology must be the prominent matter in its application in education scenario.

AI tools are rapidly taking its place. Its role is also expected to grow in the coming years. Its technological tools will make learning process more personalized, accessible, and efficient for the betterment of whole teaching-learning outcomes. There is another key trend named adaptive learning systems, where AI analyses the progress of the students and makes lessons to match their learning style and need. There are some examples of this platforms like Socratic by Google and Khan Academy's AI tutor, that already help students by providing step-by-step explanations based on their needs to improve learning experience of the learners.

Now there is an important development of tools in this field named AI-powered virtual tutors. In the future, these tutors will be more advanced and competent, providing real-time assistance similar to human teachers. They will be capable of answering complex questions, giving feedback,

and even recognizing a student's emotions to adjust teaching methods accordingly. Luckin (2017) showed that AI is quite effective for both the students and instructors as well through providing the appropriate feedback about the progress of the students. AI will also help in improving the automated grading and assessment system. Grade scope is an AI tool that assist teachers in evaluating assignments quickly. AI will be able to assess complex answers, essays, and even creative work more accurately in the coming time. Except it there are some AI-driven language translation tools that will make education more inclusive for non-native speakers. Apps like Google Translate are already helping students and teachers to understand lessons in different languages. The advanced AI will provide even more accurate real-time translations in an effective way. It is also making its place in the field of Career guidance; It can help students choose the right subjects and career paths based on their skills and interests. With the continuous advancements and research and development, AI in education will be able to provide a more interactive, student-centered, and accessible learning environment. Thus, it is making education more effective for everyone all the way.

AI is transforming education by improving the teaching methodologies and enhancing curriculum design. There are many tools available for teachers to make leaning more interactive, personalized, and efficient. There are significant AI tools for improving teaching methods using adaptive learning platforms. These platforms analyses students' progress and adjust lesson plans according to their need for the betterment of understanding of the student. It manages in such way in which each student will receive the appropriate level of instructions based on their strengths and weakness. The use of AI automated grading and assessment tools are reducing the time teachers spend on administrative tasks. It helps the teachers to focus more on constructive tasks. There are many tools that can help a teacher in quick and fair evaluation of the students. Grade scope and Turnitin also help the teachers in evaluating the assignments effectively within in a short while. This support allows a teacher to have spare time that can be utilized in other constructive work by the teachers for the betterment of the classroom management and teaching. Now students can be supported even out of the classroom through AI-powered virtual tutors providing instant explanations and additional learning material in real time frame.

Curriculum designing is one of the main tasks in educational field. This task can be completed effectively with the help of AI tools now. These tools are aptly competent that can help the teachers in developing the data-driven personalized learning materials. The learning style and performance of the students can be studied well by these tools that helps in designing the curriculum as per the requirement of the learner. There are few educational private coaching institutions that use AI- driven tools to provide customized content to each learner. Here, customized contents is provided to the learner to gain mastery over the content. This customized content is very helpful for the effective learning of the students. Curriculum forecasting, prediction of future educational trends

and skill development can be done with the help of AI. This helps in developing the required skills in students as per the need of the market. In this way, AI is continuously improving the teaching methodologies and curriculum development by making education more flexible, student-centered, data-driven and efficient. AI is grooming its features and competency gradually, its role will be more effective for both teachers and students.

NEP 2020 is focusing on inclusive education improving its accessibility to all students. The application of AI can make education more accessible and inclusive for all the students irrespective of their abilities and background. NEP 2020 is also paying attention on the equal opportunities of education and learning. AI is also helping the students in providing education breaking obstacles related to language differences, disabilities and demographic limitations ensuring equal opportunity to take part in teaching-learning. There are many assistive technology that have proved as big contributors of AI especially for the disabled students. Speech to text software help in writing the matter whatever students speak. Screen readers software can read the screen. Thus, hearing and visually challenged students can understand the contents and interact with the learning materials. These AI tool can also help a student that is suffering with dyslexia disease.

In present time, multilingual learning is promoted. AI tools also support multilingual learning to secure inclusive education. There are many AI language tools that can translate a language into any desired language within no time. This feature helps the non native speakers for the better understanding of the contents in their preferred language. Multicultural classrooms can be designed with the help of these tools. AI is also reducing the gap for the students who belong to remote areas. AI equipped platforms provide high quality contents to the students. Thus, education is becoming more inclusive and accessible for everyone through personalized learning and removing traditional learning barriers. As technology continues to advance in educational field, AI will further improve accessibility, making learning truly universal and equitable for all students. It is crystal clear that the role of teachers will not be same in future, therefore they should play the roles of mentors, teaching students lifelong skills, interaction, going out of the comfort zone and focusing on life problems. (Roll and Wyle, 2016).

Hence, several studies have also proved that artificial intelligence has the potential to transform the educational scenario in the coming time. (Bates et al., 2020)

## References:

- 1) Chang, J., & Lu, X. (2019, August). The study on students' participation in personalized learning under the background of artificial intelligence. In *10th International Conference on Information Technology in Medicine and Education (ITME)* (pp. 555-558). IEEE.
- 2) Karsenti, T. (2019). Artificial Intelligence in Education: The Urgent need to Prepare Teachers for Tomorrow's Schools. *-Formation et profession*, 27 (1), pp. 112-116.

DOI: 10.18162/fp.2019.a166.

- 3) Humnle, N., & Mozelius, P. (2019, October). Artificial Intelligence in Education- a Promise, a Threat or a Hype?. In *European Conference on the impact of Artificial Intelligence and Robotics 2019 (ECIAIR), Oxford, UK* (pp. 149-156). Academic Conference and Publishing International Limited.
- 4) Roll, I., & Wylie, R. (2016). Evolution and revolution in artificial intelligence in education. *International Journal of Artificial Intelligence*, 26(2), pp. 582-599
- 5) Luckin, R. (2017). Towards artificial intelligence-based assessment system. *Nature Human Behaviour*, 1(3), 1-3.
- 6) Propenici, S.A., & Kerr, S. (2017). Exploring the impact of artificial Intelligence on teaching and learning in higher education. *Research and Practice in Technology Enhanced Learning*, 12(1), 22.
- 7) Bates, T., Cobo, C., Marino O., & Wheeler, S. (2020). Can artificial intelligence transform higher education? *International Journal of Educational Technology in Higher Education*, 17, 1-12.
- 8) Roll, I., & Wylie, R. (2016). Evolution and revolution in artificial intelligence in education. *International journal of Artificial Intelligence in Education*, 26(2), pp`

