

AI IN EDUCATION PRACTICES: CURRENT TRENDS AND FUTURE OPPORTUNITIES

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ABSTRACT

Nowadays, AI plays an important role in education system, it benefited students, teachers and lay man. By the help AI students can learn by its own, they can prepare their assignments, projects and study as well as. On another hand By the use of AI teachers can enhance their teaching skills and easily convey their ideas to each kind of student either he/she far apart from classroom or in classroom. AI in Education is not merely a technological advancement; rather, it represents a revolutionary approach to teaching and learning process, redefining the educational landscape. With the help of AI, educators can personalise learning experiences and all new future possibilities in Education.

1.INTRODUCTION

Artificial Intelligence, also known as AI, may be defined as ‘man-made thinking power’, in which, artificial means ‘man-made’ and intelligence means ‘thinking power’ (Choudhury, 2022).

It refers to the simulation of human intelligence in machines that are designed to think, learn, reason, and perform tasks typically requiring human cognition. These systems are programmed to process data, recognize patterns, and make decisions or predictions, often mimicking aspects of human thought and behavior. An area of computer science is known as artificial intelligence which allows us to build

intelligent computers with human-like behaviour, thought processes, and decision-making abilities (Pannu, 2015). This paper, "AI in Education Practices: Current Trends and Future Opportunities" explores how AI assists students, teachers, and professionals. It evaluates the use of AI in online education, open and distance education, and machine learning technologies, emphasizing AI's ability to deliver personalized, efficient, and widely accessible education. It enhances learning outcomes and revolutionizes the classroom, the integration of AI in education has transformed the learning landscape, offering personalized, efficient, and effective learning experiences. AI-powered systems can analyze vast amounts of data, identify knowledge gaps, and provide real-time feedback, enabling educators to tailor instruction to individual needs. This paper underscores prominent AI trends such as intelligent tutoring and systems, virtual classrooms, and adaptive learning platforms that enhance teaching and learning practices. The purpose of AI in education practices is to make education more efficient, accessible, and customized to individual needs. The following are the current trends by which AI enhance teaching learning process:

- **Personalized Learning:** We can use AI to track student progress and identify areas where they may need additional support. We can then create learning plans and assignments tailored to students' individual needs. Researchers and educators indistinguish have long been interested in incorporating AI into education. The promise of personalized learning through AI has kindled a flurry of research aiming to harness AI's perspective in tailoring education to the needs of the individual learner.

Education in school can be difficult but Personalized learning makes it more interesting. We can learn the way we like. And videos can help explain the content better, similar to pictures in a book. That's' why we remember 95% of a video's message compared to only 10% of text reading. And when we integrate custom learning with videos, the results are more than expected.

AI adaptive learning platforms like Smart Sparrow(SS) or Docebo are providing personalized educational learning. They analyze data and create unique learning plans for different user profiles. By making learning more adaptable and interactive, they make it stick.

- **Intelligent Tutoring Systems (ITS):** ITS also known as Intelligent systems which refer to educational software containing an AI component. The software tracks students' work, adjusting feedback and providing hints along the way. By collecting information on a particular student's performance as well as other cognitive and noncognitive variables, the software can make inferences about

strengths and weaknesses, and can suggest additional work. Intelligent tutoring refers to computer-based instructional systems that are founded on the assumption that learning based on individualized instruction by a competent tutor is far superior to classroom-style group instruction. Good human tutors are ‘intelligent tutors’ because they are able to continuously adapt the content and style of their instruction to best meet the needs of the learner.

- **Adaptive Learning Platforms:** Adaptive learning is a personalized strategy that’s especially valuable in environments with diverse learners, such as classrooms, online courses, or corporate training programs. Here, we can tailor our learner’s individual learning experience to their needs and progress, and make sure they can grasp the material thoroughly and effectively. This type of learning technology uses data and algorithms to analyze a learner’s performance, strengths, and areas that need improvement. The learning content and activities are adjusted in real-time to match the learner’s pace and level of understanding. That means it can generate more challenging content when they excel and offer additional support or review when they struggle. Summarize the characteristics of Adaptive learning:

Characterstics	Explanation
Data-Driven Personalization	Data and AI algorithms are use to analyze a learner's performance.
	Tracks progress, identifies strengths, and pinpoints areas of difficulty.
Dynamic Adjustment	Modifies learning content, difficulty, and activities based on the learner’s needs.
	Offers tailored support to struggling learners and advanced challenges to those excelling.
Real-Time Feedback	Provides immediate insights to learners and educators.
	Encourages reflection and improvement on specific areas.
Continuous Improvement	Adapts with each learner's evolving understanding and performance over time.

TABLE 1.1 CHARACTERSTICS OF ADAPATIVE LEARNING

Adaptive Learning Tools used in education practices:

- **DreamBox(DB):** This tool is used for 5th-grade class to analyze student responses to math problems and adjust the complexity. For a student struggling with fractions, it introduces simpler visual aids, while for an advanced student, it progresses to word problems involving fractions.
- **Smart Sparrow(SS):** This tool is used in higher education to enhance student engagement in large, lecture-based biology courses; it adjusts the difficulty of lab simulations based on student input. If a student struggles with cellular respiration, it provides detailed tutorials; if they excel, it offers advanced experiments to deepen their understanding.
- **Khanmigo:** It is developed by the Khan Academy and is a top-rated AI application software for education. This software saves time in preparation for exams, assists in solving homework, and gets personalized tutoring. It is a powerful teacher tool that streamlines our preparation, giving us more energy for teaching students. It adjusts problem sets and provides hints based on user performance.
- **ALEKS (Assessment and Learning in Knowledge Spaces):** It adapts coursework to build on what the student knows and identifies gaps. It is an online learning platform that helps teachers and parents understand each student's knowledge and learning progress in depth.
- **LinkedIn Learning:** This tool is used for workforce training, to upskill employees in technical or soft skills. An employee taking a course on project management encounters adaptive quizzes that adjust based on their responses. If they're proficient in risk management, the system focuses on scheduling and budgeting topics instead.
- **Automated Grading And Feedback:** This is an AI-powered tool that automates grading, freeing instructors to focus on teaching. It provides immediate, consistent feedback, helping students track progress.
- **Natural Language Processing (NLP) For Language Learning:** AI-powered NLP tools evaluate language skills, identifying areas for improvement. It leverages AI technology to facilitate, personalize, and enhance the process of acquiring new languages. NLP enables machines to understand, interpret, and generate human language, making it a powerful tool for developing language learning applications. Real-time language translation tools like "Google Translator" and "DeepL" use NLP to translate text and speech between languages instantly. These tools help learners understand unfamiliar words, phrases, or entire texts in their target language.

- **AI-Driven Assessment And Evaluation:** It refers to using AI technologies to design, conduct, and analyze student assessments. These systems enhance traditional evaluation methods by automating grading, personalizing feedback, and providing deeper insights into student performance. AI can evaluate multiple-choice, short-answer, and even essay responses. Tools like Gradescope and Turnitin streamline grading for teachers. Provides tailored suggestions for improvement based on individual performance. Grammarly evaluates writing style and grammar while offering real-time recommendations. AI systems like ETS SpeechRater assess spoken responses, pronunciation, and fluency in language exams. Virtual labs evaluate hands-on skills by monitoring user interactions. AI-powered tools like Turnitin and Copyleaks detect plagiarism in student submissions, ensuring academic integrity.

2.FUTURE OPPERTUNITIES OF AI IN EDUCATION PRACTICES

The future of AI in education holds transformative opportunities to enhance learning experiences, improve teaching methodologies, and streamline educational administration. Here are some key opportunities that AI offers for the future of education:

- AI can bridge educational gaps in underserved areas by providing cost-effective, high-quality learning resources. AI-powered apps translating lessons into multiple languages. Virtual classrooms powered by AI offering equitable access to top-tier education globally.
- AI can create highly customized learning paths for individual students by analyzing their abilities, preferences, and goals. AI tutors offering real-time, tailored explanations based on a student's questions. Learning apps dynamically adjusting content to match a student's interests.
- AI has the capability to enhance learning experiences by increasing their interactivity and engagement levels. Virtual and Augmented Reality (VR/AR) technologies, energized by AI, can provide students with immersive, visual experiences, aiding their understanding of intricate concepts. These technologies enable students to engage with content in ways that traditional methods cannot, fostering deeper understanding and retention. It provides a fully hypnotic environment where users interact with 3D simulations. It requires devices like VR headsets (Oculus Rift, HTC Vive).
- Future AI systems could design games tailored to individual learning needs, fostering engagement through fun and interactive challenges.

- GOOGLE CLASSROOM provides a platform where teacher share study material for the students, give assignments and student can access notes and submit assignment online.
- CHATBOTS and VIRTUAL ASSISTANTS can provide students with immediate support, addressing their queries and helping to complete assignments and coursework.
- AI could offer instant, unbiased assessments that evaluate more than just knowledge focusing on creativity, problem-solving, and collaboration. It assesses open-ended responses and group projects using advanced natural language processing (NLP) and behavioral analysis.

3. CONCLUSIONS

Hence we can say that AI provides Artificial Education and enhances classroom education by providing innovative tools to power the education system. AI in education is set to revolutionize traditional methods by opening new pathways for learning, teaching, and analysis. AI benefited both students/research scholars and teachers by uplifting their skills. AI is transforming classrooms into personalized and engaging learning environments, revolutionizing the way we teach and learn.

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