

## Artificial Intelligence in Teaching -Learning Process: A Study

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### ABSTRACT

Artificial intelligence has become a main source of discussion in the lives of human beings. It is entering in every sector of life including teaching and learning. It is employed for various purposes considering its nature of working and reliability. AI is giving more innovative and dynamic learning sources. Learners can understand the contents with the help of AI. Content creators can also create content by using AI-based various applications. AI enters education with its dynamic nature of communication, content delivery, and the effectiveness of its utility. Mostly it is used to ease and aid people in their various work. It becomes a part and parcel of the life of humans with its diverse functions. With the help of nanotechnology, AI is used at a micro level that operates and functionalises in any device which makes AI much better technology as compared to other technology. It changes the nature and dimension of education through its applications and persuasive power of learning. So the present research paper studies the emergence of AI in education.

**Keywords:** AI, Multifunction, Dynamic, Teaching-Learning, Creator

### 1. INTRODUCTION

Artificial Intelligence (AI) is swiftly transforming the education sector, reforming outmoded teaching and learning styles. AI-driven gears and technologies are being cohesive into classrooms, online learning platforms, and administrative systems to augment competence, personalize learning practices, and advance informative results. From intelligent teaching structures to mechanical scaling with adaptive learning platforms, AI is transforming how knowledge is carried, evaluated, and engaged. By examining AI-driven teaching and learning methodologies, this research provides insights into how AI can be effectively leveraged to enhance educational practices. It ensures accessibility and equity for all learners.

### 2. RESEARCH METHODOLOGY

#### Type of research

This study on *Artificial Intelligence in the Teaching-Learning Process* is a qualitative and descriptive research given an analytical approach. It aims to analyze the role of AI in education, assess its impact, and explore its benefits, challenges, and prospects.

#### Objectives

- To recognise AI incorporation in education.
- To assess the use of AI-powered tutoring systems.

#### Sources of Data Collection

The study primarily relies on secondary data sources due to the availability of research on AI in education.

#### Limitation

The study limited the use and effectiveness of AI in education especially in the teaching-learning process of the English language.

### 3. REVIEW OF LITERATURE

Ben Coppin's *Artificial Intelligence Illuminated* (2004) outlines artificial intelligence (AI) occupying theoretical foundations and real-world applications. The book is used in academic settings for its vivacious illuminations and designed method for AI ideas.

Stuart Russell and Peter Norvig's *Artificial Intelligence: A Modern Approach*, the book deliver a profound introduction to AI, layering introductory values, problem-solving, exploration algorithms, and information illustration.

The above literature studies the origin, history, and mechanism of AI and ML; however, this research paper studies the function of the AI teaching-learning process.

#### 4. DATA ANALYSIS AND INTERPRETATION

For the research paper, the textbooks have been taken for the analytical study of this book. It explains the use of AI in the teaching-learning process. This paper focuses on the use of AI and its function in teaching and learning.

AI is enormously used in every sector that changes the nature of working of people. Stuart Russell and Peter Norvig remark that "computer pioneer Alan Turing famously proved that if a computer can perform a certain bare minimum set of operations, then, given enough time and memory, it can be programmed to do anything that any other computer can do. Machines exceeding this critical threshold are called universal computers (aka Turing-universal computers); all of today's smartphones and laptops are universal in this sense". (p76)

It brings out many changes in the education field. The nature of offering education has become ICT-oriented. Many education institutes are using ICT in the teaching and learning process. ICT becomes a part of the administrative work of institutes, which helps institutes to ease their work. Various software has been used to make work smoother and faster. It increases the accuracy and working capacity of teachers. In the education sector, AI brought revolutionary changes, teacher can use these gears for their teaching and learning purposes. UGC and Universities are adopting and trying to include these gears in education. Many things cause the rise of AI and its application for various purposes. It has entered the hearts and minds of humans and comes into every house with its robust use and influence. Harry Henderson states that "Turing's most famous contribution to artificial intelligence was a "thought experiment." Working at the University of Manchester as director of programming for its computer project, Turing devised a concept that became known as the Turing test."(10)

AI brings more changes with its effective applications.

##### **Adapted Lessons:**

AI-powered platforms observe individual student data, as well as their language ability. It provides swift learning and contests to produce personalized learning strategies. AI proposes an abundance of resources that support students to create their notions and provide correct positive ideas with truthful bases. This ensures that students receive information that ties to their ability level and learning likings.

##### **Adaptive Learning Structures:**

AI mobilises its work based on a learner's development. It helps students to resolve their difficulties concerning the concept. For example, if a student is unable to understand complex grammar structures, the system will offer more exercise on that part. Platforms like Gemini and Babbel employ AI to compose lessons based on user requirements. It is well-prepared lesson plans that strengthen weak areas.

##### **Use in grammar Correction and offering advanced improvement:**

AI gears such as Grammarly and ProWritingAid are useful in the improvements in writing. It makes it easy for academicians to write correct material. These tools correct as well as give examples of correct sentences. It corrects the wrong spellings. It helps in grammar, punctuation, sentence structure, and even the tone of the passage. It gives coherence in the sentences and sense in the writing.

##### **Pronunciation and Speaking Reaction:**

AI brings out a revolution in the learning of language. It understands the tone and vibration in the speech. It accurately observes and evaluates the sense of pronunciation and speech modulation. These AIs correct the wrong pronunciation and provide accurate correction in the mistakes. By these, learners can use accurate pronunciation and increase their speaking ability. In these tools, learners can practice their pronunciation and get the correct estimation of their speech which helps them to use proper pronunciation and express themselves in the academic area. It compares the toning of native speech with academic speech and provides a valuable improvement in speaking skills. Various apps provide a learning platform where learners can practice with AI partners and communicate with them on any issues. During this communication, the AI partner corrects your pronunciation and speaking skills by suggesting proper pronunciation of the words and using of correct language. Stuart J. Russell and Peter Norvig marks that "AI systems have become so common in Web-based applications that the "-bot" suffix has entered everyday language. Moreover, AI technologies underlie many Internet tools, such as search engines, recommender systems, and Web site aggregators".(26-27)

##### **AI-assisted Exams:**

AI has brought innovation in automated assessment works. Numerous AI tools have been invented that evaluate the exams of the subject. These tools provide questions, observe the answers and offer correct answers. Any kind of exam-related duty

can be done through AI. It provides the grade based on his performance. It evaluated the listening, reading and writing skills of an examiner and assessed the examiner's performance.

#### **Prompt Feedback:**

Learners can understand the mistakes through the feedback provided by AI tools. It helps the learner to find mistakes in language and improve their language ability with the help of AI tools. It helps in tracking their improvement of language acquisition. Pearson's Versant English Test employs AI to evaluate language skills. It is comprised of speaking and writing and provides results instantly based on machine scoring.

#### **Conversational Practice:**

AI chatbots work to provide all kinds of facilities for the improvement of English language learning. AI chatbots involve learners in engaging themselves in real-life situations and do a practice of discussion. These help learners to understand communication skills and to face various kinds of situations.

#### **Accessibility:**

This tool is available for a learner, they can use it as per their needs and improve their understanding of the use of speech. Learners can practice it and acquire the experience of a real-time situation. It enables them to face any situation through interaction with a virtual partner. Replika and Andy English Bot are specimens of AI chatbots that aid beginners exercise conversational English through text-based or voice-based communications.

#### **AI-driven Translation Tools:**

These apps provide facilities of translation that translate the content into any language. Various apps make tasks easy for a learner to translate content in any language which helps the learner understand the subject which is available in different languages. Translation apps like Google Translator translate the content into any language as per the needs of the learner. In a few moments, the content can be translated into any language. Just by speaking any language on Google speaker mode, the language is inscribed on the desktop with accurate translation, which helps learners overcome the language barrier in understanding.

#### **Personalized Vocabulary Practice:**

AI helps learners to understand the meaning of words that can apply in any situation. These tools provide plenty of words to form meaningful sentences. With these, a learner can understand the passage and use these words in their writing. This makes vocabulary gaining more beleaguered and well-organized. Apps like Quizlet use AI processes to produce modified flashcards and quizzes that acclimate to a learner's growth.

#### **Virtual Reality (VR) and AI:**

AI-powered VR stages can create immersive situations where students can exercise English in real-world setups, such as shopping in a store, ordering at a restaurant, or having a discussion with a virtual native speaker. These immersive experiences help learners gain confidence and fluency in a natural setting. Mondly VR offers immersive language learning experiences where AI-driven avatars involve beginners in simulated real-life discussions.

#### **Pronunciation Exercise:**

AI-based speech acknowledgement gears assess learners' pronunciation by examining their speech designs and as long as corrective feedback. These tools help learners focus on challenging sounds, pitch, and stress designs that are critical for mastering spoken English.

#### **Speaking Eloquence:**

AI can dictate the mode of the native language. It has stored various kinds of expression in language that help learners to speak fluently. AI tools identify the learner's speech and tone of language and provide suggestions to improve fluency in language. AI listens to the learner's speech, compares it with native speakers, and identifies areas where fluency and pronunciation can be improved. Example: Google's speech recognition is cohesive into numerous language knowledge apps. It allows prompt examination of spoken English to help students precise their pronunciation.

#### **Lesson Planning Assistance:**

AI gears support teachers in making tailored lesson plans, training, and quizzes based on the requirements and expertise levels of their students. AI provides simple highlighting content with a design that is needed for preparing lesson plans. It forms numerous tasks where teachers can focus on more collaborating and creative aspects of teaching.

#### **AI-generated Exercises:**

AI provides many sample quizzes on any topic. It forms question paper on any subject. Students can come to know what kinds of questions can be asked and they can prepare their answers. Teachers can prepare various types of questions as

multiple, descriptive and reading comprehension with the help of AI. Quizzes is an AI tool that supports teachers to make quizzes and questions from reading resources or study material in seconds.

#### **Learning Analytics:**

AI tools can play a major role in analysing students' performance or learning ability. Various AIs have been invented that offer an analytical report of students' progress on the base of students' responses. AI provides statistical analysis of students' knowledge by testing their aptitude towards a subject or content. It helps a teacher to track the understanding level of students. Teachers can pay attention towards students based on this analytical data. By recognizing drifts in performance, AI can propose intrusions for students who may be having difficulty understanding the concept and afford learning material and strategies to tackle it and help them increase confidence in learning. AI has technology that can read the brain of humans as Ben Coppin remarks, "by combining the processing power of individual neurons, we are able to produce artificial neural networks that are capable of solving extremely complex problems, such as recognizing faces. Proponents of strong AI might argue that such successes are steps along the way to producing an electronic human being, whereas objectors would point out that this is simply a way to solve one small set of problems—not only does it not solve the whole range of problems that humans are capable of, but it also does not in any way exhibit anything approaching consciousness"(P.21).

#### **Visualizing Achievement:**

AI systems can forecast students' upcoming performance based on their existing learning ability. It offers teachers visions of which students need extra care or which teaching approaches are most operative. Lingvist maps student performance and regulates lesson content and trouble, certifying that learners stay tested and inspired.

#### **Standardized Testing:**

AI is being amalgamated with all level English language proficiency tests such as the exam like TOEFL, and IELTS. Without any obstacle, AI assesses the information as well as intonation standards of the learners through its numerous apps. AI can be useful for test formation, content delivery, marking, evaluation and getting accurate results from the learner. It reduces human prejudice and gives a transparent evaluation of learning.

#### **Automatic Scoring:**

AI can exactly evaluate the performance of students based on language competency, application of words, comprehension of passage, and expression in various situations. On these, AI provides more objective and consistent scores. ETS's e-rater and Speech Rater are AI software used to evaluate written and oral responses in the exam. It certifies the evaluation and gives fair grading.

#### **Game-based Learning:**

AI has been built for various purposes, it is used for learning purposes, and it makes the learning experience more enjoyable which makes language acquisition more pleasurable by integrating game-like elements, such as rewards, marks, and contests. Gamification enhances involvement and motivation, predominantly for younger learners. Game-based learning is more interesting as it is used with diagrams, images and animation effects that attract the attention of learners and involve them in the learning process. In this learning game, a learner can enthusiastically learn the content of the syllabus and understand the difficult portion of the content. It increases the learning habits of learners with engagement and enthusiasm.

#### **Progressive Exertion:**

AI confirms that the contests offered in these games are accustomed to the learner's advancement. It provides a well-balanced blend of fun and learning. Lingokids and Memrise take part in gamification and AI, inspiring learners to exercise English while receiving rewards and developing through levels. Michael Negnevitsky states, "As humans, we all have the ability to learn and understand, to solve problems and to make decisions; however, our abilities are not equal and lie in different areas. Therefore, we should expect that if machines can think, some of them might be smarter than others in some ways"(p.02).

### **5. FINDINGS**

AI is revolutionizing the way content is imparted and learned by providing highly personalized, adaptive, and interactive learning experiences. It assists educators with administrative tasks and helps learners to improve their skills more efficiently. It opens up new ways to practice English in an engaging environment. AI is improving with its vitality and its application in the teaching-learning process. It will likely expand and enhance the accessibility and effectiveness of language education worldwide.

### **6. CONCLUSION**

AI is bringing innovative changes in the teaching-learning process. It is trying to integrate with the traditional teaching-learning process. With the concept of NEP-2020, innovative teaching pedagogies that become a pivotal part of the learning process. AI can make the learning process more flexible and interesting with its powered tutoring systems.

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