

Original Article

Comparative Analysis of AI-Based Learning and Traditional Teaching Methods

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Abstract

Traditional teaching methods and AI-based learning are compared in this paper. The study's foundation is secondary data gathered from books, scholarly journals, and academic research papers among other sources. According to the analysis, learners' needs are met by AI-based learning, which also offers prompt, trustworthy feedback. It gives them the chance to freely explore the areas that pique their interest. Traditional teaching techniques, on the other hand, are essential for creating moral and ethical values as well as emotional bonds. Teachers, in contrast to technology, offer students invaluable support through inspiration and mentoring, all of which foster a supportive environment where students can flourish. According to the research, while AI-based learning improves accessibility and efficiency, it is unable to provide the human element required for development in its entirety. A blended learning model that combines AI tools with conventional teaching methods is the most effective approach, according to the paper's conclusion. It promotes social, emotional, and cognitive development that is balanced. This method more effectively equips students to handle academic and professional obstacles in the real world.

Keywords: AI-based learning, traditional teaching methods, personalization, human elements

Introduction

Artificial Intelligence is leaving a long-lasting impression in various sectors. In the field of education, technology has always been used to enhance and improve the teaching and learning process, and Artificial Intelligence is the latest and most impactful development in this ever-evolving process. AI-based tools and platforms are increasingly being used in the education sector, providing new avenues for accessing information, presenting content, and assisting learners through adaptive and technology-based approaches.

At the same time, though, the traditional teacher-based learning approach remains central to the entire learning process, particularly when it comes to fostering ethical values, compassion, and value-based learning. Because AI-based learning solutions and traditional classroom instruction coexist, there is a lot of interest in the roles and effectiveness of these approaches in the education sector among academics. In this regard, the current research paper analyzes AI-based learning solutions and the traditional teaching process exclusively using secondary sources.

Research Objectives

The objectives of this study are as follows;

To understand the importance of traditional teaching methods in the overall development of students

To compare AI-based learning and traditional teaching methods.

To analyze the appropriateness of both models in regards to modern education systems.

Methodology

A qualitative secondary research design was used for this paper. The information was acquired from books on digital learning, peer-reviewed publications, online journals, and papers given at scholarly conferences on new educational technologies. Thematic analysis was used to examine the information.



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Review of Literature

Numerous studies have looked into the growing application of AI in the field of education and how it affects the processes of teaching and learning. According to Holmes Bialik and Fadel AI-powered learning systems allow for personalized learning by tailoring course materials to each students needs (Bialik Fadel and Luckin 23). Luckin & Associates. Additionally describe how AI tools can facilitate self-paced learning continuous feedback and learner progress tracking all of which can increase accessibility and efficiency in the classroom (Luckin et al. 58).

Although these studies emphasize the benefits of AI-based learning, other researchers have a more critical view of the issue. According to Selwyn, although the efficiency and scalability of AI in the educational sector are undeniable, overdependence on technology could lead to a decrease in human interaction and create ethical issues regarding data privacy and equity. This view recommends that it is necessary to analyze the balance between technological development and human engagement in the learning process.(Selwyn 102).

In contrast to technology-centered approaches, classical educational theorists have emphasized the significance of human interaction in learning. Dewey advocates experiential and learner-centered education, where teachers play a crucial role in connecting classroom learning with real-life experiences and encouraging reflective thinking (Dewey 45).

Further supporting the importance of teachers, Hattie, in his meta-analysis on visible learning, identifies teachers as one of the most influential factors affecting student achievement. The study emphasizes the impact of effective feedback, classroom management, and strong teacher–student relationships on learning outcomes. These findings reinforce the view that traditional teaching contributes significantly to students’ academic, emotional, and social development (Hattie 112)..

This literature provides a foundation for the analysis of the roles, benefits, and limitations of both AI-based learning and traditional teaching methods, which will be explored in this study.

1.Traditional Teaching:

Traditional teaching is a traditional educational method that is mainly based on interaction between teachers and students. This approach basically consists of instruction, discussions, group activities, and curriculum planning. Under this approach, the teacher has a prominent place in structuring knowledge, presenting ideas, supervising classroom activities, and monitoring students’ progress. The availability of a teacher enables the teacher to remove misconceptions immediately, provide individualized instruction, and monitor students’ progress constantly.

Research shows that the traditional method of teaching plays a major role in the development of communication skills, discipline, teamwork, and understanding of emotions among students. In the traditional classroom setting, students learn to articulate their thoughts effectively, listen to others, and engage in productive conversations. Group work and collaborative projects also enhance teamwork, leadership skills, and a sense of responsibility. Moreover, the organized environment of the traditional classroom setting instills discipline, time management, and adherence to rules and authority.

The traditional classroom setting also offers a very rich social environment that is conducive to holistic development. Students interact with one another in a way that promotes socialization, and they develop social skills, empathy, and mutual respect. Teachers, as mentors and role models, provide moral guidance and value-based education, and they help students develop awareness and understanding of values and culture. The human element of learning is very important in the development of emotional intelligence and character, and traditional teaching is a critical part of the learning process.

2. AI-Based Learning

AI-based learning refers to the use of Artificial Intelligence technologies to support and enhance the teaching and learning process. It encompasses the use of digital platforms and tools such as intelligent tutoring systems, adaptive learning software, virtual assistants, and learning analytics that enable the personalization of learning content based on the needs of the learners. Unlike the traditional classroom setting, AI-based learning systems are capable of analyzing data on students to enable them to learn at their own pace. It entails the use of digital platforms and tools like intelligent tutoring systems, adaptive learning software, virtual assistants, and learning analytics that enable the personalization of learning content based on the needs of the learners. Unlike the traditional classroom setting, AI-based learning systems enable the analysis of student data, learning patterns, and levels of performance to tailor learning, thus allowing learners to learn at their own pace.

According to research, AI-powered learning has been shown to greatly enhance the personalization and flexibility of learning. These learning platforms are able to offer instant and reliable feedback to learners, which enables them to identify their strengths and weaknesses in a matter of minutes. AI-powered learning platforms also allow learners to access a variety of learning materials, such as videos, quizzes, simulations, and interactive content, at any time and from any location.

Moreover, AI-based learning enables efficiency in the assessment and tracking of progress. AI-based learning tools can evaluate the performance of students correctly and provide comprehensive reports to both learners and teachers. This enables interventions and decision-making based on the reports. However, AI-based learning is heavily

reliant on technology-mediated interaction. This can result in limitations in emotional and social interactions. Despite this limitation, the potential of AI-based learning to improve accessibility, adaptability, and engagement has made it a major part of modern learning practices.

3. Comparison between AI-based Learning and Traditional Teaching Methods

AI-based learning and traditional teaching approaches differ significantly in their methods, roles, and impact on the learning process. AI learning is mainly dependent on technology-based platforms that use data and algorithms to provide instruction based on the needs of the learners. It enables learners to learn at their own pace, receive instant feedback, and have access to learning materials at any time and from any location. Traditional learning is mainly dependent on face-to-face interaction, where the teacher provides instruction and facilitates discussions in a controlled environment.

AI-based learning is mainly dependent on technology-based platforms that use data and algorithms to provide learning according to the needs of the learners. This allows learners to learn at their own pace and provides instant feedback. On the other hand, traditional learning is mainly dependent on face-to-face interaction, where the teacher provides learning and guides the discussion in a classroom setting based on a structured curriculum and time schedule.

Regarding learner engagement, AI-based learning focuses on self-directed and independent learning, where students are encouraged to take more responsibility for their learning. Traditional learning, on the other hand, focuses on interactive learning, where students participate in classroom discussions, group work, and direct communication with the teacher. This enables the development of communication skills, teamwork, and understanding, which are not emphasized in an AI-based learning environment.

Assessment and feedback processes are also different in the two methods. In AI-based systems, fast and reliable feedback is provided through automated assessment. This helps in quickly identifying areas where learning is lacking. In traditional teaching, feedback is qualitative and provided through observation, conversation, and personal insight into the students. This helps in providing emotional support and context-specific advice.

Whereas AI learning improves efficiency, flexibility, and accessibility, traditional learning is vital in socialization, morality, and value education. These differences and contrasts underscore how each method tackles a different dimension of learning and how each contributes uniquely to the learning process.

3.1 Suitability of AI-Based Learning and Traditional Teaching for Contemporary Education

AI-Based Learning:

- Highly suitable for personalized and self-paced learning, allowing students to progress according to individual abilities and learning styles.
- Provides efficient access to diverse resources and instant feedback, supporting continuous improvement and data-driven decision-making.
- Facilitates remote and flexible learning, making it ideal for modern, technology-driven educational environments.
- Helps address challenges of large class sizes by offering scalable learning solutions without compromising individual attention.

Traditional Teaching:

- Essential for developing social, emotional, and ethical skills through direct interaction, mentorship, and classroom collaboration.
- Supports structured guidance and disciplined learning, which helps students develop responsibility and time-management skills.
- Promotes critical thinking, teamwork, and communication skills through discussions, debates, and group activities.
- Addresses challenges related to holistic development, moral education, and value-based learning that technology alone cannot provide.

Findings

- AI-based learning enhances personalization by allowing learners to progress at their own pace and access materials according to individual needs.
- Instant feedback and automated assessments in AI platforms help learners quickly identify strengths and areas for improvement.
- AI-based systems improve accessibility, enabling learning beyond traditional classroom time and location constraints.
- Traditional teaching supports the development of communication skills, teamwork, discipline, and emotional intelligence through face-to-face interaction.
- Teachers play a crucial role in mentoring, guiding, and providing moral and ethical education, which cannot be replaced by AI.
- Both approaches have limitations when used independently:
- AI-based learning may lack emotional engagement and social interaction.



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- Traditional teaching may face challenges in personalization and flexibility.
- Overall, both AI-based learning and traditional teaching contribute uniquely to learning outcomes and address different dimensions of education.

Suggestions

- Artificial Intelligence should be strategically used to provide personalized learning experiences, allowing students to progress at their own pace and receive tailored feedback based on their individual needs.
- Educators should be given proper training to effectively integrate AI tools into classroom instruction, ensuring that technology complements traditional teaching rather than replacing it.
- AI should enhance learning efficiency and accessibility, while teachers continue to focus on holistic development, including emotional, social, and ethical growth.
- Students should be guided to use AI platforms for independent learning, with teachers providing mentorship, support, and structured guidance where necessary.
- Monitor and refine practices: Regular evaluation of AI integration and teaching methods should be conducted to optimize learning outcomes and maintain educational quality.

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