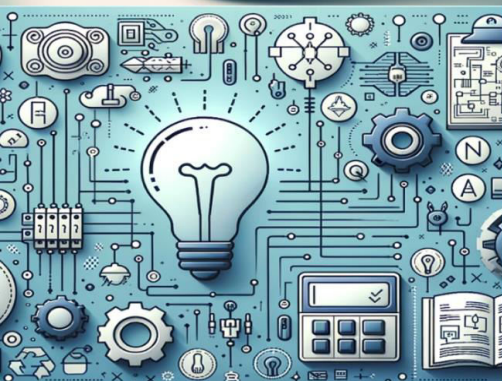# International Journal of Multidisciplinary
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A Study on Role of AI in Education Field in Coimbatore

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ABSTRACT: This study explores the evolving role of Artificial Intelligence (AI) in modern industries, focusing on its transformative impact across sectors such as healthcare, education, agriculture, and customer service. The research investigates how AI technologies like machine learning, natural language processing, and automation are being integrated into business processes to improve decision-making, productivity, and customer satisfaction. Using a structured questionnaire, data was collected from 120 respondents to assess awareness, acceptance, and the perceived benefits and challenges of AI adoption. Statistical tools were applied to analyze the data and derive meaningful insights Investigates AI's role in enhancing operational efficiency and competitiveness Examines the potential of AI to drive innovation and growth Assesses the impact of AI on workforce dynamics and job roles Identifies key challenges and opportunities for AI adoption Provides recommendations for industries to leverage AI effectively Identification of best practices for AI integration and implementation Recommendations for industries to harness AI's potential for growth and innovation.

I. INTRODUCTION

The role of AI in the education sector is ever-evolving. As science is advancing, AI technologies are becoming more sophisticated. Hence, all the stakeholders of the academic community should work in tandem towards a common goal of building an ecosystem with the right infusion of Artificial Intelligence and other technology-based education. This will enable learners to continue acquiring, perceiving, and connecting necessary skills with greater flexibility. Artificial intelligence (AI) has rapidly transformed from a futuristic concept to an integral part of our daily lives, and education is no exception. In 2024, AI technologies are revolutionizing the academic landscape, offering unprecedented opportunities for personalized learning, administrative efficiency and improved educational outcomes. From intelligent tutoring systems to AI-driven classroom management, the impact of AI is profound and far-reaching. Educators and administrators can now leverage AI to analyze vast amounts of data, providing insights that drive informed decisions and strategies. Additionally, AI is breaking down education barriers thanks to tools that support students with diverse needs and learning styles. As AI evolves, its potential to transform education grows, setting the stage for a future where learning is more personalized, inclusive and effective. Artificial intelligence is no longer just a promise for the future — it's actively enhancing education today.   By integrating AI into classrooms, educators can personalize learning experiences, streamline administrative tasks and provide more effective support to students. The advent of Artificial Intelligence (AI) has triggered a paradigm shift in numerous industries, with education being no exception. As an enabler of technological transformation, AI has become an integral part of modern teaching and learning processes. AI's role in education goes beyond traditional classroom settings, offering opportunities for personalized learning, automation of administrative tasks, and improved access to educational resources.

OBJECTIVES OF THE STUDY

- To explore the various applications of AI in education and their impact on teaching and learning processes.
- To examine the effectiveness of AI-powered tools in enhancing student engagement and performance.

II. RESEARCH METHODOLOGY

The research is adopted on convenient sampling. The area of the study is limited to Coimbatore. The sample size 120 respondents were from all age groups chosen randomly. To evaluate of the study, required data were collected from primary as well as secondary sources.

Sources of Data
The data collected for this study is   ☐ Primary data   ☐ Secondary data

Primary Data
Primary data is collected from the questions were designed in a systematic manner, covering adequate and relevant aspects of the study. Survey was done with the help of online questionnaire.

Secondary Data
Secondary data was collected from books, journals and websites.

Research tools
Tool that used for calculation: Statistical analysis

III. REVIEW OF LITERATURE

Luckin et al. (2022) emphasized the importance of AI in enabling personalized learning experiences. Their study discussed how AI-powered adaptive learning systems can analyze individual learner data to tailor educational content, pace, and feedback according to each student's needs. This personalization enhances student engagement and fosters better learning outcomes.

Chen et al. (2020) further elaborated on the role of AI-based recommendation systems in education. These systems leverage machine learning algorithms to suggest relevant learning materials and resources based on students' preferences, previous performance, and areas of difficulty.

VanLehn (2020) examined the effectiveness of Intelligent Tutoring Systems (ITS) that use AI to mimic human tutors. These systems provide individualized support, monitor student progress in real-time, and offer tailored interventions to address learning gaps. The study found that ITS significantly improves student performance, particularly in mathematics and science.

Aleven et al. (2022) conducted a longitudinal study on AI-based tutoring systems and highlighted their ability to foster self-regulated learning. The research concluded that ITS not only improves academic performance but also enhances students' ability to set goals, monitor their progress, and adapt learning strategies.

IV. DATA INTERPRETATION AND ANALYSIS

Statistical Analysis:

Statistical analysis is the process of collecting, organizing, analyzing, interpreting, and presenting data. It helps us understand patterns, trends, and relationships within data sets. In basic statistics, key concepts include mean, median, mode, and frequency distribution.

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TABLE 1
BIGGEST ADVANTAGE OF AI IN EDUCATION

Response	Count	Percentage
Personalized learning experience	25	20.83
Improved efficiency in grading and administration	20	16.66
Increased accessibility for students with disabilities	35	29.16
24/7 availability for student queries	40	33.33
Total Respondents	120	100

Interpretation:
The most cited advantage of AI in education is its 24/7 availability for student queries, acknowledged by 33.33% of respondents. This is followed by increased accessibility for students with disabilities at 29.17%. Personalized learning experience was noted by 20.83%, while 16.67% valued improved efficiency in grading and administration. These findings reflect that round-the-clock support and inclusivity are viewed as the most impactful benefits of AI in the educational sector.

TABLE 2
LIKELIHOOD OF RECOMMENDING AI-BASED LEARNING PLATFORMS

Response	Count	Percentage
Very likely	40	33.33
Somewhat likely	25	20.83
Neutral	45	37.5
Not likely	10	8.33
Total Respondents	120	100

Interpretation:
Among 120 respondents, 33.33% are very likely to recommend AI-based learning platforms, while 20.83% are somewhat likely. The majority response is neutral at 37.5%, indicating hesitation or lack of conviction. Only 8.33% are not likely to recommend these platforms. This suggests moderate support for AI-based learning tools, but also highlights the need to build stronger trust and awareness among users.

TABLE 3
CONCERNS ABOUT AI IN EDUCATION

Response	Count	Percentage
Data privacy and security	20	16.66
Job displacement for teachers	15	12.5
High implementation cost	45	37.5
Lack of human touch in education	40	33.33
Total Respondents	120	100

Interpretation:
The highest concern among respondents is the high implementation cost of AI in education, noted by 37.5%. This is followed by the lack of human touch, with 33.33% expressing concern. Data privacy and security worry 16.67% of respondents, while 12.5% are concerned about potential job displacement for teachers. These findings reflect a mix of technical, financial, and emotional apprehensions that must be addressed for effective AI integration in education.

V. FINDINGS

Advantages of AI in Education
33.33% cited 24/7 availability to answer student queries as the primary advantage.
29.17% mentioned increased accessibility for students with disabilities. 20.83% acknowledged the benefit of a personalized learning experience. 16.67% emphasized improved efficiency in grading and administrative tasks.

Willingness to Recommend AI-Based Learning Platforms
33.33% are very likely to recommend AI-based learning platforms. 20.83% are somewhat likely to recommend them. 37.5% remained neutral in their opinion. 8.33% are not likely to recommend these platforms.

Concerns About AI in Education
37.5% identified the high implementation cost as the top concern. 33.33% expressed worries about the lack of human interaction in AI-driven learning. 16.67% were concerned about data privacy and security issues. 12.5% feared potential job displacement for teachers due to AI integration.

VI. RECOMMENDATION

Enhance Awareness and Training
Conduct awareness programs and training sessions to educate students and educators about the benefits and effective use of AI tools, which can help reduce hesitancy and build trust.

Address Implementation Costs
Governments and institutions should explore funding options, partnerships, or phased rollouts to reduce the financial burden associated with implementing AI in education.

Maintain Human Interaction
Blend AI tools with human support to preserve the personal touch in learning, ensuring emotional and motivational aspects are not overlooked.

Strengthen Data Privacy Measures

Implement strong data security protocols and transparent policies to address concerns related to privacy and build user confidence.

VII. CONCLUSION

The study highlights both the promising benefits and key concerns associated with the integration of AI in education. The most valued advantage is its 24/7 availability for student support, followed by improved accessibility for differently-abled learners. However, significant concerns such as high implementation costs and the absence of human interaction present barriers to widespread adoption. A considerable number of respondents also remain neutral about recommending AI platforms, indicating uncertainty or limited awareness. To fully harness the potential of AI, it is crucial to address these financial, technical, and emotional concerns. Enhancing user trust through better communication and support can improve acceptance. Overall, AI holds immense promise in transforming education if implemented thoughtfully and inclusively.

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