



AI-Enabled Learning Methodology – Adoption And Challenges Among College Students With Special Reference To Coimbatore City

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Abstract: AI-enabled learning methodology integrates artificial intelligence technologies into educational practices to enhance and personalize the learning experience. This study aims to analyze the level of adoption and the challenges faced by 150 college students in Coimbatore City while using AI application tools in their education. Data was collected through a convenient sampling technique and analyzed using statistical tools such as percentage analysis, rank analysis, and Likert scale analysis. The study suggests improving AI tools in education by creating technical awareness through training faculties and students, framing AI-related laws, and monitoring and controlling the AI's usage level in education with the help of technical experts.

Index Terms - AI, education, college students, adoption level, and challenges.

I. INTRODUCTION

In recent times, technology has played a significant role in various fields, including modern education. It provides tools for online learning, interactive classrooms, and educational resources. AI-enabled learning methodology refers to the integration of artificial intelligence technologies into educational practices to enhance and personalize the learning experience. By leveraging AI algorithms and tools, educators aim to adapt, analyze, and optimize various aspects of the teaching and learning process. AI-enabled learning aims to create a more adaptive, efficient, and personalized educational experience by addressing the diverse needs of learners through the intelligent use of technology. As this methodology evolves, it is likely to continue shaping the future of education by providing innovative and tailored learning experiences for students.

STATEMENT OF THE PROBLEM

This study examined college students' awareness of AI tools used in education. It seeks to figure out the factors impacting their adoption of AI tools in education. While the adoption of AI in education offers benefits, it also presents challenges, particularly for economically disadvantaged students. Issues related to limited access to technology, data privacy, security concerns, potential reductions in critical thinking skills, and concerns about job opportunities need to be addressed. The study aims at analyzing the adoption level and the challenges faced by college students when using AI application tools in their studies.

OBJECTIVES OF THE STUDY

1. **Assess student awareness:** Investigate students' awareness of AI-enabled learning methodologies.
2. **Evaluate adoption levels:** Determine the extent of AI tools adopted by college students.
3. **Analyze challenges:** Identify the challenges faced by students when utilizing AI application tools in education.
4. **Propose solutions:** Provide suggestions for enhancing an AI-enabled learning system.

SCOPE OF THE STUDY

The study aims to provide an overview of awareness levels, adoption levels, and challenges related to AI application tools among college students. By examining factors such as increasing productivity, improving content quality, reducing work burden, saving time, and cost-effectiveness, the study sheds light on the effectiveness of AI application tools in students' education. Additionally, the study investigates the drawbacks of AI that the students are concerned about and provides suggestions to enhance AI's role in the education system.

II. REVIEW OF LITERATURE

- ❖ **Suresh Kaswan (2022):** The study focuses on the impact of AI technology in education system. It suggests addressing AI's challenges in education. The author concludes that it is vital to focus on the new roles of professors in students' education, emphasizing elements like creativity, imagination, and capabilities that machines cannot replicate.
- ❖ **Linnet Christilda Gnana Lilly (2023):** The study examines the impact of AI tools on business students in their education system and addresses challenges in integration. It suggests that developers should make AI tools that are less prone to error, use powerful encryptions, and make AI tools accessible to diverse students for the effectiveness of learning. The author concludes that AI tools have impacted academics in both favorable and harmful ways.

III. RESEARCH METHODOLOGY

The research methodology involves planning, designing, and executing research to gather relevant data, analyze findings, and draw meaningful conclusions.

Data collection	Primary data through questionnaire. Secondary data from journals, magazines, etc.,
Sampling size	150 respondents.
Sampling technique	Convenient sampling technique.
Area of the study	Coimbatore city.

Table 1: Research methodology

STATISTICAL TOOLS USED FOR ANALYSIS

The statistical tools that are used to analyze the data are as follows:

- Percentage analysis (no. of respondents/total no. of respondents $\times$ 100)
- Rank analysis
- Likert scale analysis ($\sum(f(x))$ / total number of respondents).

LIMITATIONS OF THE STUDY

- Due to time constraints, the study is limited to Coimbatore city, and cannot extend to other areas.
- The study is based on the opinions of 150 college students, which may differ from person to person.

IV. DATA ANALYSIS AND INTERPRETATION

Percentage Analysis

Table 2: Students' adoption level of AI tools for educational purposes

S.NO.	Number of AI tools used	Number of respondents	Percentage (%)
1.	1 tool	42	28
2.	1–3 tools	72	48
3.	3–5 tools	26	17.3
4.	More than 5 tools	10	6.7
	Total	150	100

(Source: Primary data)

Interpretation: It shows that out of 150 respondents, 28% of the respondents used 1 AI tool, 48% of the respondents used 1–3 AI tools, 17.3% of the respondents used 3–5 AI tools, and 6.7% of the respondents used more than 5 AI tools in their studies.

Table 3: Challenges faced by students while using AI tools in education

S.NO.	Factors	Number of respondents	Percentage (%)
1.	Internet access	40	26.7
2.	Data privacy and security	52	34.6
3.	Limited access	45	30
4.	Lack of technical awareness	13	8.7
	Total	150	100

(Source: Primary data)

Interpretation: It shows that out of 150 respondents, 26.7% of the respondents faced internet access issues, 34.6% of the respondents faced data privacy and security concerns, 30% of the respondents faced limited access issues, and 8.7% of the respondents faced the problem of lack of technical awareness.

Rank analysis

Table 4: Factors that influence students to adopt AI tools

Particulars	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Total score	Final Rank
User-friendly	34(5) 170	26(4) 104	19(3) 57	19(2) 38	52(1) 52	421	V
Saving time and money	27(5) 135	29(4) 116	28(3) 84	41(2) 82	25(1) 25	442	II
Reducing work burden	25(5) 125	28(4) 112	40(3) 120	27(2) 54	30(1) 30	441	III
Improving content quality	21(5) 105	35(4) 140	31(3) 93	34(2) 68	29(1) 29	435	IV
Increasing productivity	35(5) 175	25(4) 100	33(3) 99	25(2) 50	32(1) 32	456	I

(Source: Primary data)

Interpretation: It shows that increasing productivity ranked first, saving time and money ranked second, reducing work burden ranked third, improving content quality ranked fourth, and user-friendly ranked fifth.

Likert Scale analysis

Table 5: Students' awareness level of AI tools in education

S.NO.	Factors	Number of respondents	Likert scale value	Total scale
1.	Highly aware	44	5	220
2.	Aware	73	4	292
3.	Neutral	31	3	93
4.	Unaware	1	2	2
5.	Highly unaware	1	1	1
	Total	150		608

(Source: Primary data)

Interpretation: It shows that the awareness level of students using AI tools in education shows a Likert scale value of 4.05, which is greater than the mid-value (3), so the respondents are aware of AI tools in education.

Table 6: Satisfaction level of using AI tools in education

S.NO.	Factors	Number of respondents	Likert scale value	Total scale
1.	Highly satisfied	32	5	160
2.	Satisfied	78	4	312
3.	Moderate	36	3	108
4.	Dissatisfied	3	2	6
5.	Highly dissatisfied	1	1	1
	Total	150		587

(Source: Primary data)

Interpretation: It shows that the satisfaction level of students using AI tools in education shows a Likert scale value of 3.91, which is greater than the mid-value (3), so the respondents are satisfied with the use of AI tools in their education.

V. FINDINGS

❖ PERCENTAGE ANALYSIS

- 46.7% of respondents know AI tools in education from social media platforms.
- 48% of respondents use 1-3 AI tools in their studies.
- 34% of respondents often using AI tools in their education.
- 27.6% of respondents are concerned about AI tools in education will reduce their abilities of critical thinking and creativity levels.
- 28% of respondents recommended raising technical awareness among faculty and students.

❖ RANK ANALYSIS

- The factor of increasing productivity is ranked first in influencing students to adopt AI tools in education.
- The issue of algorithmic bias is ranked first among the issues faced by students while using AI tools in their studies.

❖ LIKERT SCALE ANALYSIS

- A Likert scale value of 4.05 indicates that respondents are aware of the use of AI tools in education.
- A Likert scale value of 4.01 indicates that respondents agree with the effectiveness of using AI tools in education.
- A Likert scale value of 2.57 indicates that respondents are aware that AI tools will replacing humans with machines.

VI. SUGGESTIONS

The study suggests solutions for enhancing AI-enabled learning methodologies, as follows:

- **Framing AI laws:** Protect students from risks like privacy violations, bias, ethical concerns, security threats, and so on.
- **Creating technical awareness:** Using social media platforms like YouTube, X etc., and conducting seminars, workshops, and online courses to utilize the potential of AI tools in education.
- **Training faculty and student in AI:** Improving their skills and knowledge through training programs. For example, under the Pradhan Mantri Kaushal Vikas Yojana, students will be trained in AI foundational courses.

VII. CONCLUSION

This study concludes that the majority of college students in Coimbatore City are aware of the use of AI tools in education. It has been observed that factors such as increasing productivity, improving content quality, saving time and money, reducing work burden, and the user-friendly nature of AI technology influence the students to adopt AI tools in education. Most students utilize 1-3 AI tools in their education, agreed on the effectiveness of using AI tools in their studies, and also highlighted the drawbacks of AI tools, i.e., algorithmic bias, data privacy, and security concerns faced by the students. It suggests improving AI tools in education by creating technical awareness, training faculty and students, framing AI-related laws, and monitoring and controlling the usage level of AI tools in education with the help of technical experts, and ensuring the proper utilization of funds in AI missions.

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