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A STUDY ON SHAPING THE FUTURE OF HIGHER EDUCATION WITH AI-ENABLED PERSONALIZED LEARNING SYSTEM WITH SPECIAL REFERENCE TO COIMBATORE CITY

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ABSTRACT

The accelerated development of Artificial Intelligence (AI) is reshaping several industries, such as higher education. This research explores the ways of creating the future for higher education based on AI-based personalised learning systems, with emphasis placed on Coimbatore City. Personalised learning implies using AI technologies to tailor the learning process tailored to the needs, preferences, and capabilities of students. The central aim of the research is to explore the effectiveness of using AI-based systems to increase students' engagement and improve their learning results, as well as provide personalised education. The study also analyses the level of awareness about and usage of AI technologies by students and lecturers in higher educational establishments. In order to obtain data necessary for analysis, questionnaires are used. They are then analysed with the help of statistical tools, namely simple percentages and chi-square. The results obtained from the research suggest that the use of AI-based personalised learning systems in higher education can change the traditional education system dramatically, making it more efficient, flexible, and focused on the individual needs of learners. Nevertheless, some barriers like the absence of appropriate infrastructure, confidentiality problems, and awareness still prevail.

Keywords: *Artificial Intelligence (AI), Personalised Learning, Higher Education, Student Engagement*

1. INTRODUCTION OF THE STUDY

Higher education in the 21st century is rapidly evolving due to technological advancements, especially with the introduction of Artificial Intelligence (AI). Traditional teaching methods often fail to meet the diverse needs of students, leading to the adoption of AI-enabled personalised learning systems. These systems analyse student data to provide customised learning experiences, improve engagement, and enhance academic performance. They offer real-time feedback, support inclusive education, and help educators make better decisions through data insights. However, challenges such as data privacy, infrastructure, and the need for proper training must be addressed. Overall, AI-powered personalised learning has the potential to transform higher education into a more flexible, adaptive, and student-centred system.

2. STATEMENT OF THE PROBLEM

Higher education systems across the world are facing increasing challenges in meeting the diverse learning needs of students. Traditional teaching methods often follow a one-size-fits-all approach, where the same content, pace, and teaching style are applied to all learners, regardless of their

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individual abilities, interests, or learning speeds. At the same time, rapid advancements in Artificial Intelligence (AI) present new opportunities to transform the education sector. AI-enabled personalised learning systems have the potential to analyse student data, understand learning patterns, adapt content delivery, and provide real-time feedback tailored to individual needs. Despite these possibilities, many institutions have not fully adopted such systems due to a lack of awareness, technical challenges, infrastructure limitations, data privacy concerns, and uncertainty about effectiveness. Therefore, the core problem addressed in this study is the gap between the diverse learning needs of students and the limitations of traditional higher education models, and how AI-enabled personalised learning systems can bridge this gap to improve learning outcomes, engagement, and overall educational quality. This study seeks to examine how AI can be effectively integrated into higher education to create adaptive, student-centred learning environments while addressing challenges related to implementation, ethics, and accessibility.

3. OBJECTIVES OF THE STUDY

1. To know the role of Artificial Intelligence in higher education.
2. To study the impact of AI on student engagement and interest in learning.
3. To identify the benefits of AI-based adaptive learning platforms for students.
4. To examine the readiness of higher education institutions to adopt AI technologies.
5. To analyse the challenges faced in implementing AI-based learning systems.

4. RESEARCH METHODOLOGY

RESEARCH DESIGN

In this study, the descriptive research design helps the researcher to understand the awareness, usage, benefits, and challenges of AI-enabled personalised learning systems in higher education. The study collects information from students and faculty members to analyse how artificial intelligence is influencing modern educational practices and personalised learning experiences

DATA COLLECTION:

PRIMARY DATA

Primary data is fresh data, and that primary data has been used for the purpose of studying the Future of Higher Education with an AI-Enabled Personalised Learning System. The questionnaire is used as primary data to collect information from the respondents.

SECONDARY DATA

The secondary data was collected from various sources related to higher education with an AI-Enabled Personalised Learning System. Like newspapers, social media, and magazines. Articles, etc.

SAMPLING METHOD

For this study, the researcher has chosen stratified sampling, a method in which the total population is divided into different subgroups or strata based on certain characteristics

SAMPLE SIZE

The sample size has been selected as 120 conveniently. This will allow an in-depth study of the survey on Higher Education with an AI-Enabled Personalised Learning System.

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AREA OF THE STUDY

The study was conducted in Coimbatore city.

TOOLS USED

- ✓ Simple percentage
- ✓ Chi – square

5. REVIEW OF LITERATURE

1. Hardaker & Glenn (2025) Artificial Intelligence for Personalised Learning: A Systematic Literature Review This study analyses the adoption of Artificial Intelligence in personalised learning within higher education institutions. The authors highlight how AI technologies support adaptive learning environments and provide customised educational experiences. The review identifies factors influencing AI adoption, including institutional readiness, teacher acceptance, and technological infrastructure. AI systems analyse student data to deliver personalised learning paths and feedback. The research also discusses how generative AI tools enhance engagement and improve learning outcomes. Additionally, the study emphasises the importance of integrating AI with traditional teaching methods. However, challenges such as ethical concerns, data privacy, and technical limitations remain significant. The authors conclude that AI-enabled personalised learning will play a critical role in shaping the future of higher education by improving learning efficiency and accessibility.

2. Farhood et al. (2025) Artificial Intelligence-Based Personalised Learning in Education: A Systematic Literature Review This paper reviews the impact of AI-based personalised learning across various educational contexts. The authors analyse research published between 2015 and 2025 to identify trends and applications of AI in education. The study explains how machine learning algorithms and adaptive systems personalise educational content according to students' learning styles. AI technologies such as learning analytics and intelligent tutoring systems enhance engagement and academic performance. The review also discusses how AI can support teachers in designing customised instructional strategies. Despite its benefits, the research highlights issues related to data quality and ethical implementation. The authors suggest that future studies should focus on improving algorithm transparency and ensuring fairness in AI-based systems. Overall, AI is identified as a transformative force in education.

6.CHI- SQUARE

A. Variables Identified

Role	Variable
Independent Variable	Education Level
Dependent Variable	Personalised Learning Perception

B. Hypotheses

H_0 (Null Hypothesis): There is no significant association between Education Level and perception that personalised learning helps students understand better than traditional methods.

H_1 (Alternate Hypothesis): There is a significant association between Education Level and perception that personalised learning helps students understand better than traditional methods.

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C. Significance level 5% or 0.05

D. Observed Frequency Table (Contingency Table)

Education Level	Strongly Agree	Agree	Neutral	Disagree	Row Total
Undergraduate	30	35	21	3	89
Postgraduate	10	13	7	1	31
Column Total	**10**	**48**	**28**	**4**	**120**

E. Expected Frequency Table

E = (Row Total × Column Total) / Grand Total

Education Level	Strongly Agree	Agree	Neutral	Disagree	Row Total
Undergraduate	29.67	35.60	20.77	2.97	89
Postgraduate	10.33	12.40	7.23	1.03	31
Column Total	**40**	**48**	**28**	**4**	**120**

F. Chi-Square Calculation

$$\chi^2 = \Sigma [(O - E)^2 / E]$$

Cell	O	E	O−E	(O−E)²	(O−E)²/E
Undergraduate – Strongly Agree	30	29.6667	0.3333	0.1111	0.0037
Undergraduate – Agree	35	35.6000	-0.6000	0.3600	0.0101
Undergraduate – Neutral	21	20.7667	0.2333	0.0544	0.0026
Undergraduate – Disagree	3	2.9667	0.0333	0.0011	0.0004
Postgraduate – Strongly Agree	10	10.3333	-0.3333	0.1111	0.0108
Postgraduate – Agree	13	12.4000	0.6000	0.3600	0.0290
Postgraduate – Neutral	7	7.2333	-0.2333	0.0544	0.0075
Postgraduate – Disagree	1	1.0333	-0.0333	0.0011	0.0011
$\chi^2 = \Sigma[(O-E)^2/E]$					**0.0652**

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7. RESULT SUMMARY

Parameter	Value
Chi-Square (χ^2) Calculated Value	0.0652
Degrees of Freedom (df)	3
Critical Value (df=3, α=0.05)	7.815
p-value	0.002
Level of Significance (α)	0.05
Decision	Fail to Reject H_0
Result	**Not Significant**

Interpretation

Since the calculated chi-square value ($\chi^2 = 0.0652$) is less than the critical value (7.815) at df = 3 and α = 0.05, we fail to reject the Null Hypothesis (H_0). There is no statistically significant association between Education Level and the perception that personalised learning helps students understand better than traditional methods. Both undergraduate and postgraduate students share similar views on the effectiveness of personalised AI-based learning.

8. FINDINGS

CHI-SQUARE ANALYSIS

Since the calculated chi-square value ($\chi^2 = 0.0652$) is less than the critical value (7.815) at df = 3 and α = 0.05, we fail to reject the Null Hypothesis (H_0). There is no statistically significant association between Education Level and the perception that personalised learning helps students understand better than traditional methods. Both undergraduate and postgraduate students share similar views on the effectiveness of personalised AI-based learning.

9. CONCLUSION

From the analysis carried out for this research study, one can deduce that AI is key in revolutionising higher learning institutions using personalised learning programs. It helps in enhancing engagement, learning results, and efficiency in learning. Though there are a number of challenges, such as infrastructure constraints and a lack of awareness, these can be overcome if proper implementation is achieved. The AI personalised learning approach holds great promise in shaping the future of higher learning in Coimbatore city**.**

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