



# A Study On Ai In Education: Unveiling Student Insights Through Data Analytics

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**Abstract-** The rapid integration of Artificial Intelligence (AI) tools into academic environments has transformed how students learn and engage with knowledge. This study investigates student perceptions, usage patterns, and concerns regarding AI in education, focusing on the South Zone of Coimbatore District, Tamil Nadu, India. Primary data were collected from 120 students across school, undergraduate, postgraduate, and research scholar levels through a structured self-administered questionnaire and analysed using Percentage Analysis, Weighted Average Mean (WAM), Chi-Square Test, Pearson Correlation, and Simple Ranking Method. Findings reveal that 73.3% of students regularly use AI tools, primarily for assignment preparation (43.3%), with ChatGPT, Grammarly, and YouTube as dominant platforms. WAM analysis confirms positive student attitudes across all attitudinal dimensions, with AI's time-saving ability scoring highest (WM = 4.10). Chi-Square tests confirm significant differences in AI usage across academic levels ( $\chi^2 = 18.47$ ,  $p = 0.030$ ) and disciplines ( $\chi^2 = 21.34$ ,  $p = 0.006$ ), while a strong positive correlation ( $r = 0.712$ ) between AI usage and academic performance underscores the value of purposeful AI engagement. Critically, 56.7% of students have never received institutional guidance on AI use, highlighting an urgent policy gap. The study offers evidence-based insights for educators and policymakers to develop balanced, equitable AI integration frameworks for the Indian educational context.

**Keywords:** Artificial Intelligence in Education; Student Perceptions; Data Analytics; AI Tool Usage; Digital Learning; Critical Thinking Dependency.

## I. Introduction

The twenty-first century has witnessed an unprecedented convergence of technology and pedagogy, and nowhere is this more consequential than in education. Artificial Intelligence (AI), once confined to research laboratories, has today become embedded in the daily academic lives of millions of students worldwide, transforming learning through AI-powered tutoring systems, adaptive platforms, and conversational agents.

In the Indian context, this shift carries particular significance. Serving over 250 million school students and 40 million higher education learners, India's educational ecosystem is experiencing rapid digital disruption driven by tools such as ChatGPT, Grammarly, Microsoft Copilot, and institutional Learning Management Systems. Policy initiatives including NEP 2020, SWAYAM, DIKSHA, and PM eVIDYA have further accelerated this transformation.

Despite AI's growing ubiquity in academic settings, how Indian students engage with, perceive, and experience these technologies remains poorly documented. Most existing research originates from Western contexts where digital infrastructure and institutional support differ substantially from Indian realities, leaving a significant empirical gap. This study addresses that gap by gathering data from 120 students across multiple academic levels and disciplines in the South Zone of Coimbatore District, providing context-relevant, evidence-based insights into student AI engagement, perceived benefits and risks, and the institutional responses needed to guide responsible AI integration.

## II. Statement Of The Problem

Despite the rapid and widespread adoption of AI tools in Indian academic environments, there exists a significant gap in empirical evidence regarding how students actually experience these technologies. AI platforms such as ChatGPT, Grammarly, and Copilot have transitioned from novelty to necessity in a remarkably short period; yet their effects on learning outcomes, critical thinking development, and student well-being remain inadequately studied, particularly within the Indian higher education context.

Three interrelated problems motivate this research: first, a paucity of evidence-based data to inform institutional decision-making on AI integration; second, poorly documented demographic variations in AI engagement across age groups, academic levels, and disciplinary backgrounds; and third, growing concerns about over-dependence

on AI tools and the consequent erosion of students' independent intellectual capacities. These challenges are compounded by the near-total absence of formal, consistent institutional policies governing AI use, leaving students to navigate a complex and ethically ambiguous digital landscape without structured guidance.

### III. Objectives Of The Study

- 1.To determine the awareness and usage patterns of AI tools among students of various academic levels and disciplines.
- 2.To assess student perceptions regarding the academic influence and efficacy of AI tools in educational institutions.
- 3.To examine concerns and challenges associated with AI dependency, particularly with respect to critical thinking development.
- 4.To provide data-driven insights and actionable recommendations for AI integration in educational institutions.

### IV. Research Methodology

This study adopts a descriptive and analytical research design using a mixed-methods approach, predominantly quantitative in nature. Primary data were collected through a structured self-administered questionnaire of 25 items across five sections demographic profile, digital learning habits, AI tool usage, student attitudes (Likert-scale), and open-ended suggestions — distributed digitally to students in the South Zone of Coimbatore District, covering the taluks of Pollachi, Valparai, and Kinathukadavu. Stratified random sampling ensured proportional representation across academic levels and disciplinary streams Arts and Humanities, Commerce and Management, Science, and Engineering and Technology yielding a final sample of 120 respondents. Secondary data were drawn from peer-reviewed journals and international reports by UNESCO and the OECD. Statistical tools employed include Percentage Analysis, Weighted Average Mean (WAM) on a five-point Likert scale (Strongly Agree = 5 to Strongly Disagree = 1), Chi-Square Test ( $\alpha = 0.05$ ), Pearson Correlation Analysis, and the Simple Ranking Method.

### V. Scope Of The Study

The study is geographically confined to educational institutions in the South Zone of Coimbatore District, Tamil Nadu. It encompasses students at school, undergraduate, postgraduate, and research scholar levels across multiple disciplines. The scope is limited to student perspectives; faculty views, institutional policy documents, and technical evaluations of AI platforms are outside its purview. The findings are intended to serve as an empirical foundation for further large-scale research and to offer practical guidance to educators, administrators, and policymakers on responsible AI integration.

### VI. Review Of Literature

The academic discourse on AI in education has expanded rapidly over the past decade. Popenici and Kerr (2017) were among the first to systematically examine AI's transformative impact on higher education, cautioning that over-reliance on AI-driven systems risks diminishing the depth of human interaction in learning. Zawacki-Richter et al. (2019), in a systematic review of 146 publications, identified profiling and prediction, adaptive systems, intelligent tutoring, and assessment as four dominant AI application themes, while calling for greater attention to ethical standards and data privacy.

Holmes, Bialik, and Fadel (2019) provided a comprehensive analysis of AI applications across K–12 and higher education, concluding that realising AI's educational potential requires substantial investment in teacher development and evidence-based governance frameworks. Selwyn (2019) offered a critical counterpoint, arguing that while AI can handle certain instructional tasks efficiently, the relational and moral dimensions of teaching remain irreducibly human, cautioning against uncritical techno-solutionism in education.

Vincent-Lancrin and Van der Vlies (2020), in an OECD publication, warned that commercially driven AI tools may prioritise user engagement over genuine educational value, advocating for transparent, accountable, and learner-centred AI deployment. The COVID-19 pandemic further catalysed AI adoption globally; Williamson, Eynon, and Potter (2020) documented how the emergency shift to online learning simultaneously revealed AI's transformative potential and its capacity to deepen existing educational inequalities.

Within the Indian context, Kumar and Balasubramanian (2020) applied the Technology Acceptance Model to find that perceived usefulness and ease of use are the strongest predictors of AI tool adoption among engineering students in South India. Sharma and Mishra (2021) identified a significant positive relationship between AI tool usage and academic outcomes among Indian higher education students, while highlighting the persistent digital divide. Arora and Sharma (2022) documented positive student attitudes toward AI as a learning aid, alongside significant concerns about academic integrity and intellectual dependency.

More recently, Cotton, Cotton, and Shipway (2023) argued that the rise of ChatGPT demands a fundamental rethinking of assessment design, urging educators to develop evaluations centred on higher-order cognitive skills. Kasneci et al. (2023) explored the promise and risk of large language models in education, concluding that their integration must be accompanied by robust ethical frameworks and bias mitigation strategies. Wu, Dang, and Li (2025), in a systematic review synthesising 99 studies, found that students and educators exhibit mixed attitudes toward generative AI shaped by disciplinary context and perceived ethical risk, reinforcing the need for institutional frameworks that balance innovation with academic integrity.

**Research Gap:** While global literature on AI in education is expanding, most studies originate from Western academic contexts and focus predominantly on technological and institutional dimensions rather than student-centric perspectives. Within India, there is a notable absence of regionally contextualised, data-analytics-driven research examining AI usage, perceptions, and dependency across multiple academic levels and disciplines. This study addresses that gap.

## VII. Results

### 7.1 Demographic Profile and Digital Learning Habits

Of the 120 respondents, 53.3% were female, 43.3% male, and 3.3% identified as others. The majority (52.5%) were aged 18–22 years, corresponding to the undergraduate population, with 25.8% aged 23–26 years. Undergraduate students constituted the largest academic group (46.7%), followed by postgraduate students (31.7%), school-level students (15.0%), and research scholars (6.7%). Commerce and Management was the largest disciplinary group (28.3%), followed by Science (25.0%), Arts and Humanities (21.7%), and Engineering and Technology (20.0%). A significant 71.7% of students reported spending between one and four hours daily on digital learning tools, with 40.0% spending one to two hours. YouTube was the most widely used platform (35.0%), followed by Google Classroom (28.3%), while Online Courses and AI tools each accounted for 18.3% of platform usage.

### 7.2 AI Tool Usage Patterns

A substantial majority of 73.3% of students reported using AI tools regularly—38.3% "sometimes" and 35.0% "often" while only 8.3% had never used an AI tool. Assignment preparation was the dominant purpose (43.3%), followed by concept clarification (28.3%), exam preparation (18.3%), and note-making (10.0%). Critically, 56.7% of students reported that their teachers or institutions had never recommended any AI tools, confirming a significant policy gap. Seventy percent of respondents expressed comfort with AI tools, while 76.7% demonstrated awareness that AI is used in modern education systems.

### 7.3 Weighted Average Mean Analysis

All eleven attitudinal statements recorded WAM values above 3.50, placing them in the "Agree" interpretation range (3.41–4.20). "AI saves time in learning and academic preparation" recorded the highest mean (WM = 4.10), followed by "AI helps in personalised learning" (WM = 4.08). The statement "Overuse of AI may reduce students' critical thinking skills" recorded WM = 3.90, indicating students' self-awareness of cognitive risks. The lowest mean was recorded for "I trust AI-generated academic suggestions" (WM = 3.52), suggesting that while students use AI widely, they maintain a degree of critical evaluation regarding its reliability.

### 7.4 Chi-Square Test Results

Three Chi-Square analyses were conducted. First, the association between level of study and frequency of AI usage yielded  $\chi^2 = 18.47$  (df = 9,  $p = 0.030$ ), exceeding the critical value of 16.92, leading to rejection of the null hypothesis. Research scholars exhibited the highest "often" usage (50%), while school-level students showed the lowest engagement, confirming that AI reliance deepens with increasing academic complexity. Second, the association between field of study and positive perception of AI impact yielded  $\chi^2 = 21.34$  (df = 8,  $p = 0.006$ ), exceeding the critical value of 15.51. Engineering and Technology students exhibited the strongest positive perception (91.7%), while Arts and Humanities students recorded the highest relative disagreement (15.4%),

confirming significant inter-disciplinary variation. Third, the association between frequency of AI use and concern about critical thinking yielded  $\chi^2 = 16.82$  ( $df = 6$ ,  $p = 0.010$ ), indicating that students who use AI most frequently are also most likely to acknowledge its potential negative impact on intellectual independence.

### 7.5 Correlation Analysis

Pearson correlation analysis revealed a strong positive relationship between frequency of AI tool usage and self-reported academic performance improvement ( $r = 0.712$ ,  $p < 0.01$ ). A strong positive correlation was also identified between AI usage frequency and student satisfaction with AI learning tools ( $r = 0.683$ ,  $p < 0.01$ ), and a moderate-to-strong correlation between academic performance and satisfaction ( $r = 0.648$ ,  $p < 0.01$ ). All three correlations were statistically significant at the 1% level, collectively affirming the measurable educational value of purposeful AI tool engagement.

### 7.6 Simple Ranking Analysis

The Simple Ranking Method confirmed YouTube as the most preferred digital learning platform (Rank I, 35.0%), followed by Google Classroom (Rank II, 28.3%), and Online Courses and AI tools jointly at Rank III (18.3% each). Assignment preparation ranked first among purposes of AI tool usage (Rank I, 43.3%), followed by concept clarification (Rank II, 28.3%), exam preparation (Rank III, 18.3%), and note-making (Rank IV, 10.0%). A clear majority of 61.7% of students affirmed that AI improves the quality of education, while 26.7% remained undecided.

## VIII. Discussion

The high prevalence of regular AI use (73.3%) confirms mainstream adoption among students in the Coimbatore region, corroborating Sharma and Mishra (2021) and Arora and Sharma (2022). However, the dominance of assignment preparation as the primary use case (43.3%) raises concern, aligning with Cotton et al. (2023) that students use AI predominantly as a task-completion shortcut rather than a genuine intellectual partner.

The WAM findings reveal a notable paradox: students simultaneously affirm AI's benefits for personalised learning and time-saving ( $WM = 4.08$  and  $4.10$ ) while acknowledging its potential to undermine critical thinking ( $WM = 3.90$ ). This self-awareness, corroborated by the Chi-Square result ( $p = 0.010$ ), suggests students are capable of reflective evaluation — a disposition that structured AI literacy programmes can further cultivate. The strong correlation between AI usage and academic performance ( $r = 0.712$ ) is consistent with Karumbaiah et al. (2021) and Ramesh and Sankar (2020), who affirm that intentionality of engagement matters more than frequency alone. Discipline-based variation in AI perception Engineering and Technology students most positive, Arts and Humanities most sceptical reflects Nair and Pillai's (2022) findings on subject-specific AI relevance. Most critically, 56.7% of students have never received institutional guidance on AI use. This institutional vacuum, flagged by Zawacki-Richter et al. (2019) and Holmes et al. (2019), represents the most urgent policy gap in this research, leaving vulnerable learners to navigate AI's complex academic and ethical dimensions without structured support.

## IX. Implications To Society

The societal implications of this study extend beyond the classroom. At the institutional level, findings call for formal AI Acceptable Use Policies across all educational institutions, defining permissible applications, disclosure requirements for AI-assisted work, and mechanisms for periodic policy review. UGC and AICTE should mandate AI Literacy and Digital Ethics as a compulsory cross-disciplinary module in all undergraduate and postgraduate programmes.

At the national level, the Ministry of Education should develop a National AI in Education Framework as an extension of NEP 2020, providing guidelines on AI integration across educational levels, minimum digital infrastructure standards, and a national AI literacy certification system. India's Digital Personal Data Protection Act (2023) must be supplemented with education-specific regulations governing student data consent, prohibiting commercial use of learning data, and mandating algorithmic transparency by EdTech companies.

More broadly, AI adoption has the potential to either democratise educational access or entrench existing inequalities. The 30.0% of students uncomfortable with AI tools signals already-uneven adoption; equity-focused interventions subsidised device access, rural infrastructure investment, and multilingual AI development are



essential to ensure benefits are universally shared. The dominance of task-driven AI use further invites educators to redesign assessment through oral defences, contextualised problem-solving, and competency-based evaluation.

## X. Conclusion

This study confirms mainstream AI adoption among students in the South Zone of Coimbatore District, with 73.3% using tools regularly and all eleven WAM scores in the "Agree" range. Strong correlations between AI usage, academic performance ( $r = 0.712$ ), and student satisfaction ( $r = 0.683$ ) affirm the educational value of purposeful AI engagement. However, the finding that 56.7% of students have never received institutional guidance alongside Chi-Square-confirmed variations across academic levels and disciplines underscores the urgent need for evidence-based frameworks. Educators, administrators, and policymakers must collectively ensure that AI serves as a tool for genuine intellectual empowerment rather than a shortcut that diminishes the irreplaceable human processes of critical thinking and transformative learning.

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