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A Study on Digital Paradigm shift in Teachers Perception & Adoption of AI- based Teaching tools with reference to Colleges in Bangalore

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ABSTRACT

This Study examines the shift in teaching methods adopted by teachers, moving from Traditional to AI- based instructions. An area largely overlooked in existing literature, which predominantly examines teachers' adoption and institutional readiness. The research addresses a practical gap, where in AI integration in colleges moving forward without adequate assessment of its effect on students. Since existing framework fail to link teacher-driven pedagogical change to student outcomes within the Bangalore colleges.

The study follows a descriptive survey approach, gathering primary data through a structured questionnaires administered to teachers in Bangalore colleges, complemented by secondary data from reviewed literature.

Among the teachers surveyed, the performance was mixed between improvement and decline. Few teachers believed AI helped weaker students catch-up more than traditional methods. Overall, most teachers still favored traditional classrooms over AI assisted classrooms. The lack of decisive improvement may partly seem from financial barriers, as many teachers reported that cost had prevented them from adopting AI tools.

AI adoption alone has not produced a decisive improvement in student outcomes, largely due to financial and infrastructural barriers rather than the tool's ineffectiveness. Therefore, colleges should address funding constraints and treat AI as supplement. Further AI adoption in classrooms should be guided by outcome-based evaluation of actual performance, supported by adequate training and infrastructure investment.

Keywords: Paradigm shift, AI-Based Teaching Tools, Student Performance, Teacher's Perception, Financial Barriers.

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INTRODUCTION

In recent years, higher education has experienced a significant digital paradigm shift driven by the rapid evolution of artificial intelligent(AI). Educational institutions are increasingly moving away from traditional teacher-centric lecture-based instructions to incorporate technology-mediated AI-assisted classroom tools to automate and enhance instructions. Globally and across India, platforms such as Chat GPT, Google Classrooms, Learning management system(LMS), and AI plagiarism checkers have transitioned from experimental technologies into mainstream teaching tools. In a prominent educational Hub like Bangalore, college educators are at the forefront of the transition, experimenting with these digital aids to manage coursework, enhance presentation delivery, and track student interactions. Understanding how teachers perceive and adopt these tools is essential to evaluating how modern technology changes the daily classroom experience.

While higher education institutions across Bangalore are rapidly pushing forward with digital transformation, a critical gap exists because this implementation is moving ahead without a systematic, outcome-based assessment of its true effect on the student body. Existing academic frameworks and institutional readiness models focus heavily on top-down metrics-such as counting infrastructure availability or tracking whether teachers simply accept or reject a piece of software. Regrettably, these conventional evaluation models fail to establish a direct causal link between teacher-driven pedagogical adoption and actual student outcomes. This creates a prominent gap in the literature, where educational tools are frequently adopted under the broad assumption that they automatically improve student attention and marks, despite a distinct lack of empirical regional data to support such claims.

The research problem clearly positions the ground level data collected from college teachers across institutions in Bangalore. The teachers surveyed proves that hastening to implement advance tools has not created equal academic benefits. Specifically, when considering students test scores and assignments since introducing AI tools, a majority of educators reported no improvement or difference in outcome , while notable portion even saw a decline. Furthermore, despite the claim that digital tools help student engagement the real feedback differed from expectations, the students were struggling to keep up with short-term engagement compared to long-term traditional lectures. This contradiction between moder tech expectation and student performance proves that current push for digitalization is not a guaranteed success.

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This problem is worsened by the lack of financial funding and proper infrastructural resources that stop teachers to incorporate AI-tech effectively. A majority of the surveyed teachers reported that due to high cost of the software system have actively stopped them from purchasing the tools they wanted to use in the classrooms.

Consequently, teachers face a frustrating dilemma that they must adopt to fast forwarding shift to AI classes from Traditional methods, while facing expensive costs and deal with low students' performance and poor infrastructure campus. To bridge these gaps this study examines the digital paradigm shift in teachers' perception and their adoption intent of AI-based teaching tools among colleges in Bangalore. By analyzing the primary data surveyed through local teaches, this research moves to provide an empirical, outcome-based evaluation. This data is essential to prove to policymakers and college administrator that AI must be treated as a carefully funded classroom supplement rather than a complete replacement for traditional teaching methods.

OBJECTIVES OF THE STUDY

1. **To Study the level of awareness of Digital & AI- Based teaching tools:**
   This involves evaluating the familiarity with specific platforms among teachers, ranging from coded/generative language models like AI- Plagiarism checker to LMS and Chatbots such as ChatGPT, Claude and much more. Across Different age groups and teaching experience levels.
2. **To Assess the Availability of Digital infrastructure across Institutions as an Adoption Barrier among College Teachers:**
   This Objective centers on evaluating the current state of physical Technological arrangement such as Smart Boards and digital Projectors across classrooms .Determining how deficit in this system restrict consistent classroom technology implementation.
3. **To Examine college Teacher's perception of data privacy when using AI tools with Institutional and Student data:**
   This Objective involves investigating Teachers Concern Regarding the institution, students' data and internal documents. While measuring their structural awareness of local data protection regulation like India's DPDP Act.

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4. **To Examine financial barriers in Adoption:**
   This Objective aims to quantify how personal software licensing cost and a lack of dedicated institutional budget lines prevent willing Teachers from purchasing and utilizing premium AI-Driven Teaching tools and applications.
5. **To Compare Students Performance and Engagement in AI-Assisted versus Traditional Classrooms:**
   The core comparative objective analyzes ground level teacher feedback to measure shifts in student test scores, assignment quality and general classrooms attentiveness when moving away from traditional, lecture-based methods.

LITERATURE REVIEW

Introducing AI into colleges has started debate about how teachers learn to use these tools. Research shows teachers do not undergo the identical approach about Technology. **YIM(2024)** researched how teachers see and adopt AI tools in Classrooms. Using Standard research models (TAM&TPACK), the study noticed that teachers value AI tools but still Favor blending them with productive, Traditional teaching methods rather than letting AI take over completely. However, Yim did not look at how lack of good school infrastructure might stop teachers from using these tools. A study in **Frontiers in Education (2025)** examined at how teachers are acquainted with AI and their Fear of Change affect their plan to use Technology, the verdict exposed that when teachers find AI useful and accessible to use , they tend to adopt it much faster. Yet Both YIM (2024) and The Frontiers study aimed on teacher's attitude. They missed the real-world problem like small school budgets and poor campus infrastructure, which is a major gap that needs more research.

Another Issues for teachers are data privacy. Because AI tools require large share of student information to work smoothly. **Prakash et all.(2026)** noticed this exact same problem in Indian classroom. Prakash concluded that AI could only help if it strictly protects children rights and follows clear rules. If teachers felt that an AI tool could put institutional data at risk , they would rather choose to avoid it. While past studies researched these ethical worries , we still lack if the colleges in Bangalore know about Indias active data laws, like the DPDP Act, and how these might change their daily teaching.

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Moving from Traditional classrooms to AI-Assisted classrooms requires to pool in money and good infrastructure to support the equipment's. **Elangovan, Yeon, Perumbilliy** and **Awungshi (2021),** studied the heavy challenges faced by teachers and students during pandemic in Indian higher education. They found major lack of basic resources needed to support online classes .However this study did not research on teachers' adoption and voluntarily purchase intent during normal condition. Past researchers also seem to ignore the high cost and direct financial barriers to adopt such premium tools. When colleges do not provide the teachers a budget for software licensing willing teachers are blocked from using the tools. This creates a gap for adoption intent for AI-Assisted classes.

The main dispute around if AI-Assisted classrooms are conventionally better than traditional classrooms or does AI-Assisted classrooms produce better student outcomes than the traditional classrooms. To test this **K et al. (2025)** presented a study at the IEE TALE conference. They used advanced computer models to analyze student grades and online participation to predict final performance and drop rate.

Although the computer model used by K et al successfully predicted the performance but they were entirely relied on automated numbers. It did not look at student or teachers' perception at all and overlooks real-world resource constraints in underfunded colleges. This study addressed the gap by investigating whether teachers observed tangible difference in students' performance outcome and engagements compared to traditional and AI-Assisted classroom.

RESEARCH METHODOLOGY

This study uses a descriptive survey research design to understand how college teachers in Bangalore view and adopt AI tools. The descriptive approach helps record and illustrate practical situations as they are, without changing anything in the classroom. Through utilizing primary data from the survey and secondary data from the previous literature. This draw up allows the researchers to turn teachers view and intention into clear numbers. This helps recognize wide spread patterns considering technological use of AI in classrooms.

The focus for this study consists of higher education college teachers working in Bangalore. This study includes teachers from 3 different type of institution such as : Private, Government and semi-aided colleges. This samples ranges from different age bracket, gender and range of professional experience.

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The primary data was collected through using a structured questionaries which was digitally shared across teachers among various institution. The questionnaire used close-ended questions and was divided into simple section for easier understanding. Sections such as Demographics- age, gender, experience and institution type. Awareness based- familiarity of tools and their usage. Perceptions- assessing student performance, data privacy, risks and financial barriers.

Once the data was collected, the raw data was cleaned and compiled, the study used descriptive statistic, focusing on frequency distribution and percentage breakdowns to analyze patterns. To make it easier to read the data was displayed using percentage-based graphs, pie chart , stacked bar diagram and histograms. These visual charts helped in better comparison of data highlighting the major gap and problems faced by the teachers.

DATA ANALYSIS, RESULTS & DISCUSSION

To understand the digital paradigm shift among teachers, it is essential to consider basic background of the teachers who participated on the survey. This section breakdowns basic demographics collected by the survey.

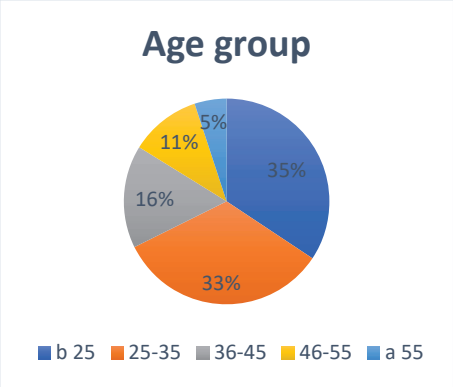


Fig. 01 Age distribution

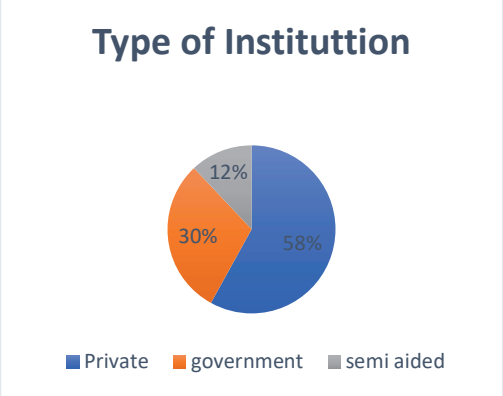


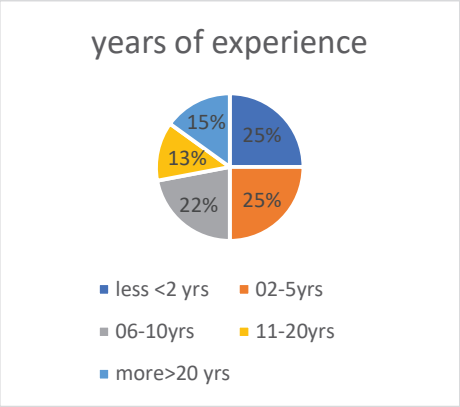
Fig. 02 Type of institution.

The fig.01 shows that around 68%(35+33) of the surveyed teachers are under the age of 35. This indicates a young workforce of digital natives who are generally open to experimenting with technology in their classrooms.

The fig.02 indicates that private institute makeup the majority of the sample. This breakdown is critical because private institution usually tend to have more flexible funding models than public government schools.

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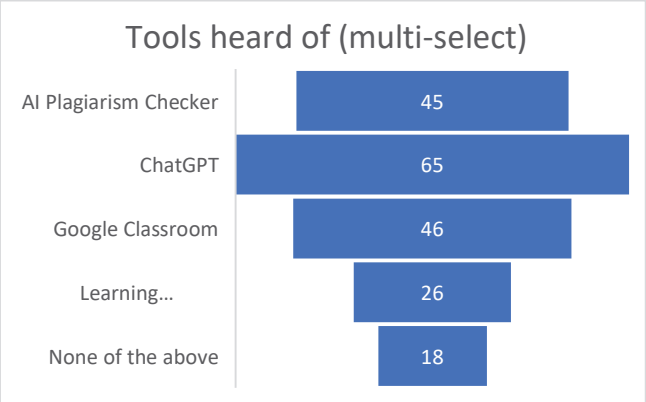
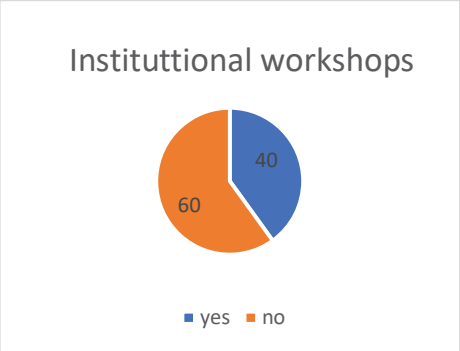


Fig.03 Years of teaching experience

Fig.04 AI tools teachers have heard of.

The sample on fig.03 is evenly split, with 50% (25+25) of teachers having under 5 years of experience and 37% of the teachers are having more than 11 years of teaching experience . This lets us study that if decades of traditional teaching habits make a teacher less likely to adopt AI tools,

The fig,04 chart shows much teachers are acquainted with AI tools available on the internet. Mainstream platforms such as ChatGPT and Google classrooms are highly recognizable among teachers compared to the rest of the tools. This proves that have mostly heard about basic tools rather than advanced and premium settings.



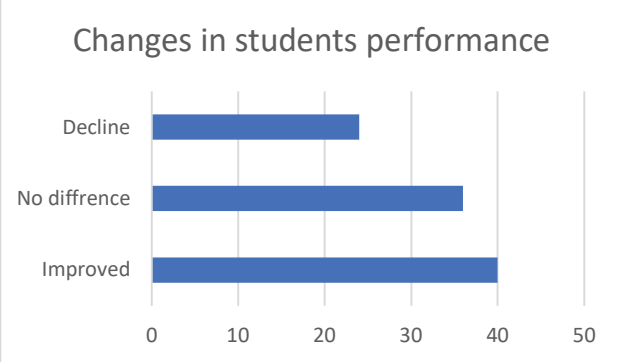


Fig.05 Institutional workshops and training availability

Fig.06 Students Performance outcome

Fig .05 highlights a major problem , more than half of the colleges in Bangalore have never held a workshop or training for teachers about AI tools and technologies. This creates a huge gap in understanding the tools and forces teachers to learn entirely on their own.

Fig. 06 It proves that just projecting AI in classrooms doesn't guarantee better results as more than half of the teachers have noticed very small amount of improvement. This might be caused due to not having enough information on AI tools and their instructions.

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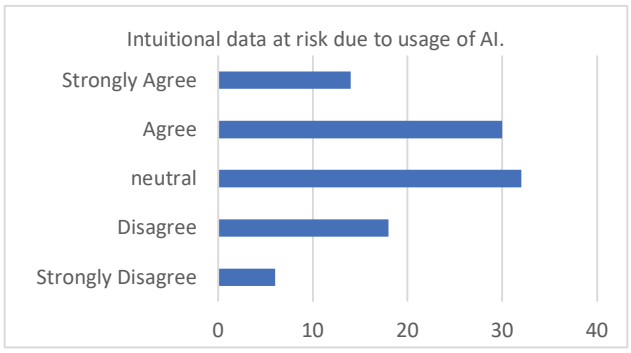


Fig.07 Intuitional data at risk due to usage of AI.

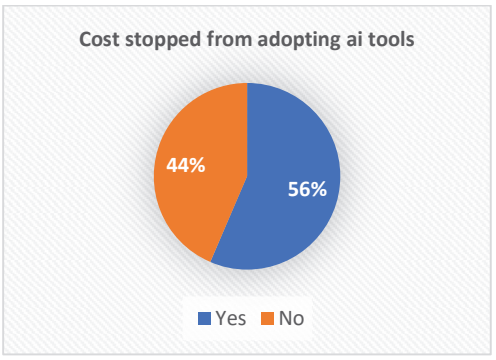
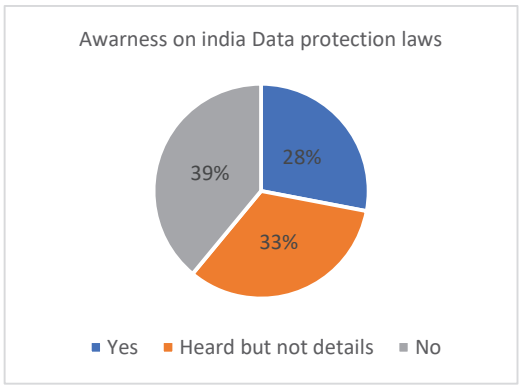


Fig. 08 Cost as an adoption barrier

The Fig. 07 tracks high anxiety among teachers. A combined majority Agreed or Strongly Agreed that inputting internal college documents and student data into Third-party AI system creates a serious security risk .

Fig.08 chart clearly reveals that individual software subscriptions are prices are too steep for teachers to pay out-of-pocket, acting as a major barrier in adoption of AI tools.



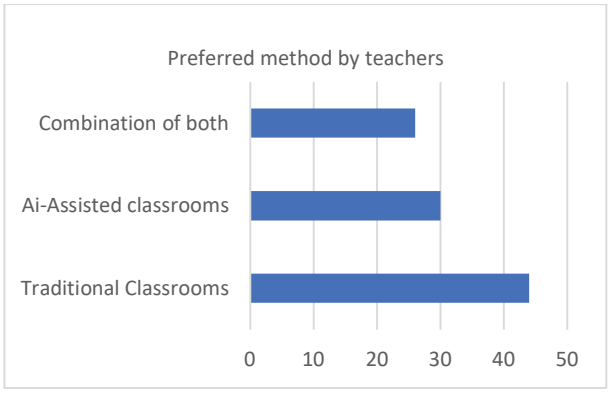


Fig. 09 Awareness of Data protection law among teachers

Fig. 10 Overall method preference

The Fig.09 measures the baseline familiarity among teachers regarding Indian data protection acts . this chart shows the legal gap where only scarce number of teachers are aware about the data protection act, while other percentage of the teachers worry deeply about data privacy and protection.

The Fig 10 directly compares two teaching formats such as traditional vs AI-Assisted on live classrooms. The data reveals that despite widespread of various AI tools teachers still prefer traditional classrooms over AI-Assisted environment, and only a small group of teachers believes that combination of both the classrooms works best to keep the student engaged and entertained.

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FINDINGS , RECOMMENDATIONS AND CONCLUSION

Evaluation of Research Findings

Based on the analysis of the survey data collected from teachers in colleges of Bangalore city. The major findings are;

- **High Tool Familiarity but low technical depth:**

The survey reveals that teachers of Bangalore are universally familiar with basic consumer grade tools which are easy to access and free for few tryouts such as ChatGPT, Google Classrooms and AI- Plagiarism checkers. However, the study highlights a critical lack of depth when it comes to specialized academic software such as Learning management system (LMS) And Specialized institutional tools. This proves that teachers are aware of the popular tools , but are inaccessible and lack technical mastery for the advanced technology system.

- **Severe Deficit in Institutional Support and Trainning**

This research unveils the lack of institutional support and workshops to provide training to teacher's faculty. An alarming 60% of the surveyed teachers mention that institutions have never conducted a workshop or orientation regarding AI- based teaching tools. This structural gap leaves teachers unprepared and on their own which leads to heavily uneven technology execution across classrooms.

- **Stagnant Academic Outcomes and flat Student Performance**

The ground level data shows that AI integration has failed to produce a clear improvement in student's grade. A considerable 52% of teachers surveyed observed no difference in students test or assignment since introducing AI tools into teaching methods. This indicates that just simply introducing software tools does not guarantee better grades and performance, raising question on total digitalization of the classes.

- **Financial Barriers and Funding Deficits**

The study clearly demonstrates that individual and institutional finance constraints act as barrier to technology adoption. A clear majority of 62% of teachers reported that high subscription costs and personal licensing fees have actively stopped them from using the Advanced AI tools they wanted to use for their classes. This barrier is worsened by the lack of institutional support and funding lines. A major portion reported that their colleges do not provide budget or funds for purchasing educational software licensing. Consequently, blocking educators from exploring modern technology.

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- **Legal literacy gap and data security risks**

This survey tracks a contradiction among teachers about their worries over data security and legal awareness. A majority agreed that inputting students or institutional data into Third-party AI-Models creates severe data security risks for the institution. However, despite these privacy concerns there is a severe lack of legal literacy regarding active data regulations. Only tiny 28% of respondents stated that understand India's Digital Personal Data Protection (DPDP) Act and how it works and applies to educational policies.

- **Strong Faculty Preference for Traditional Classrooms**

Despite modern technology applications like ChatGPT, the majority of educators in Bangalore still strongly prefer Traditional, Face-to-Face Classrooms Over AI-assisted classrooms. While only a small percent of teachers believes that a balanced combination of traditional and AI-assisted classes are better. The teachers report that interactive digital tools provide quick splash of shorter attention but fail to maintain long-term attention.

Recommendations

To certify that integration of digital tools like AI deliver tangible value to the higher education, the following suggestion to be implemented

- **Establishment of Institutional software Budgets**

The downgrade result of AI- assisted classroom is due to financial barrier . the study identified 62% financial barrier exclusive of infrastructure barrier. Academic boards must set up annual funds to buy official software licenses so teachers do not have to pay off their wallet. The colleges must ensure that willing educators must have enough resources and secure subscription without facing economical strain.

- **Mandatory workshops and technological trainings**

To resolve the critical training deficit where 60% of educators receive no institutional support, universities must mandate technical onboarding. Teachers should be trained on

How to use AI as an administrative supplement ensuring they retain total control over the instructional delivery.

- **Implementation of Data Privacy Workshops and DPDP Compliance**

The study revealed that only 28% of the teachers have heard and understood about national data privacy regulations, this creates gaps and vulnerabilities to trust AI for security reasons. Colleges must introduce legal literacy workshops focused on Indias Digital Personal Data Protection (DPDP) Act. Faculty teachers must be trained on what type of data to be processed through third-party models.

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- **Adoption of Outcome-Based Evaluation Frameworks**

Since 52% of teachers reported absolutely no change in student test scores, colleges must stop using stop measuring success solely based on number of smart boards and apps downloaded rather the institutions should mandate controlled trails to check if new AI tools actively improve students' grade and Performance.

CONCLUSION

This study concludes that the digital paradigm shift among college teachers is still partial and traditional face to face learning remains vital. While teachers are voluntarily sampling tools like ChatGPT, the rapid push for digitalization has ignored resource limitation and funds constraints. The fact that 52% of teachers noticed zero change in student's performances proves that technology alone cannot fix these challenges. To assess this colleges must fix the 60% training deficit and 62% cost hurdles found in the data.

In the end , AI must not be used to replace traditional face to face lectures rather it should be used as a secure, well-funded and regulated classroom supplement.

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