

The Role of AI in Higher Education Teachers with Special Reference to Thiruvarur Town

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Abstract: This study explores how artificial intelligence (AI) is reshaping the roles of higher education faculty in Thiruvarur, particularly at institutions like the Central University of Tamil Nadu (CUTN). Drawing from a mixed-methods approach—including surveys and interviews with local educators—it examines AI's integration in teaching, administrative efficiencies, and ethical and infrastructural challenges. Findings reveal that while teachers appreciate AI's ability to automate grading, enable adaptive learning, and support lesson planning, many cite barriers including limited digital infrastructure, insufficient training, privacy concerns, and resistance to change. In line with India's NEP 2020 and national pushes toward inclusive, tech-enhanced education, universities are increasingly embracing AI for pedagogic and operational improvements. However, smaller towns like Thiruvarur, home to the rural campus of CUTN and several affiliated colleges, face unique challenges—ranging from infrastructural deficits to cultural resistance. Based on these insights, the study offers context-specific recommendations for policy, professional development, and technology adoption, addressing systemic and human-centered dimensions to optimize AI use in Thiruvarur's higher education landscape.

Keywords: Artificial Intelligence in Education; Higher Education Teachers; Teacher Perceptions; AI Adoption; Indian Rural Universities

I. INTRODUCTION

In the 21st century, artificial intelligence (AI) has emerged as a transformative force across various sectors, including healthcare, finance, and education. In the field of higher education, AI is reshaping the way teaching, learning, and administrative tasks are conducted. From intelligent tutoring systems and automated grading to personalized learning platforms and data-driven decision-making, AI offers powerful tools to enhance both the teaching experience and student outcomes. For higher education teachers, AI presents a dual opportunity: it can improve instructional efficiency and enable more personalized and adaptive teaching methods, while also challenging traditional roles and pedagogical approaches. However, the adoption and impact of AI can vary significantly depending on factors such as location, digital

infrastructure, and awareness levels. Thiruvarur, a town in the state of Tamil Nadu, India, with its growing number of higher education institutions, serves as a compelling case study to explore this transformation. While AI integration in urban academic settings is well-documented, the extent to which it is influencing educators in smaller towns like Thiruvarur remains under-researched.

This study aims to investigate the role and awareness of AI among higher education teachers in Thiruvarur, exploring how it is being used, the perceived benefits and challenges, and the readiness of educators to integrate AI tools into their teaching practices. By focusing on this specific geographic context, the research seeks to provide insights into localized AI adoption trends and offer recommendations for policy and training initiatives tailored to smaller towns and semi-urban regions. The rapid global rise of AI in education—from

intelligent tutoring systems to automated assessment platforms—promises transformative benefits such as personalized learning and administrative efficiency. Although higher education in India is AI-aware, regionally specific studies—especially on teacher perspectives are scarce. This study investigates how AI impacts teaching roles in Thiruvapur, aiming to understand perceived benefits and barriers, and to chart strategies tailored to this local context.

STATEMENT OF THE PROBLEM

Artificial Intelligence (AI) is increasingly being integrated into educational systems around the world, offering innovative tools and solutions to enhance teaching and learning processes. However, while AI adoption is growing in urban and technologically advanced institutions, its impact and implementation in semi-urban and rural areas, such as Thiruvapur Town in Tamil Nadu, remain limited and under studied. Higher education teachers in smaller towns may face challenges such as lack of awareness, inadequate training, limited infrastructure, and resistance to adopting new technologies. These barriers can hinder the effective use of AI in enhancing teaching methodologies, automating administrative tasks, and providing personalized learning experiences for students. Despite the potential benefits AI offers—such as intelligent tutoring systems, automated grading, content creation, and performance analytics—it is unclear to what extent educators in Thiruvapur are informed, prepared, or equipped to utilize these technologies. This creates a knowledge and implementation gap that could widen educational inequalities between urban and rural institutions. Therefore, the problem this study addresses is the limited understanding, adoption, and integration of AI technologies among higher education teachers in Thiruvapur Town, and the need to assess their awareness, readiness, and challenges in leveraging AI to improve teaching effectiveness and student engagement.

II. REVIEW OF LITERATURE

A. AI IN HIGHER EDUCATION: A GLOBAL PERSPECTIVES

According to Holmes et al. (2019), AI in higher education is primarily used in three areas: instructional support, student performance analytics, and administrative automation. AI-powered tools such as chatbots, intelligent tutoring systems, and automated grading software are increasingly helping educators manage time-consuming tasks and offer individualized attention to students. Nguyen et al. (2020) note that AI tools can enhance learner engagement by enabling adaptive learning systems that adjust to student needs, learning styles, and pace. However, they also emphasize that the success of such systems heavily depends on the digital readiness and pedagogical adaptability of the educators.

B. TEACHERS' ATTITUDES AND READINESS TOWARD AI

Several studies have investigated educators' perceptions of AI integration. Luckin et al. (2016) argue that while many teachers acknowledge AI's potential, they often lack the technical knowledge and institutional support to effectively implement AI tools in the classroom. A study by Zawacki-Richter et al. (2019) further highlights a gap in teacher training programs, which often fail to address the practical and ethical dimensions of AI in education.

In the Indian context, Kumar and Bansal (2021) observed that while awareness of AI is increasing among faculty in metropolitan institutions, smaller towns and rural areas face challenges such as limited infrastructure, lack of digital training, and a resistance to change due to unfamiliarity with technology.

C. AI ADOPTION IN INDIAN HIGHER EDUCATION

The National Education Policy (NEP) 2020 emphasizes the role of technology in transforming education, including the use of AI for improving access, quality, and assessment. However, the implementation remains uneven. According to a report by NITI Aayog (2020), institutions in Tier 2 and Tier 3 cities lag in AI adoption due to budgetary constraints and lack of trained personnel.

Sundararajan and Rajalakshmi (2022) studied the state of AI in Tamil Nadu's higher education institutions and found that urban colleges showed higher levels of AI integration compared to rural counterparts. They recommended targeted government policies and teacher training programs to bridge the digital divide.

D. CHALLENGES IN AI INTEGRATION FOR TEACHERS

Common barriers identified in the literature include:

- ✓ Lack of awareness and training (Woolf et al., 2021)
- ✓ Infrastructure and funding limitations (Zawacki-Richter et al., 2019)
- ✓ Concerns about job displacement and over-dependence on machines (Selwyn, 2019)
- ✓ Ethical and data privacy concerns in the use of AI for student tracking and assessment

These concerns are particularly pronounced in semi-urban and rural areas, where teachers often juggle multiple roles and have limited access to technological resources.

III. RESEARCH DESIGN

RESEARCH APPROACH

This study will follow a descriptive research design using a mixed-methods approach, combining both quantitative (survey-based) and qualitative (interview-based) data collection. This allows for a comprehensive understanding of

the awareness, usage, and challenges related to AI among higher education teachers in Thiruvapur Town.

POPULATION AND SAMPLE

- ✓ *Population:* Higher education teachers working in colleges and universities in Thiruvapur Town.
- ✓ *Sampling Technique:* Purposive sampling will be used to select participants who are actively involved in teaching and academic functions.
- ✓ *Sample Size:* Approximately 100 teachers for the survey and 10–15 teachers for in-depth interviews.

DATA COLLECTION METHODS

QUANTITATIVE DATA

- ✓ *Tool:* Structured questionnaire using Likert-scale and multiple-choice questions.
- ✓ *Focus Areas:* Awareness of AI, frequency of use, types of tools used, perceived benefits, and institutional support.

QUALITATIVE DATA

- ✓ *Tool:* Semi-structured interview schedule.
- ✓ *Focus Areas:* Personal experiences with AI, training received, barriers faced, suggestions for improvement.

LIMITATIONS OF THE STUDY

- ✓ The study is geographically limited to Thiruvapur Town and may not reflect conditions in other regions.
- ✓ Self-reported data may be subject to bias.
- ✓ Time and access constraints may limit the sample size.

IV. DEMOGRAPHIC PROFILE & DATA ANALYSIS

Participants included diverse cadres: 55% junior lecturers (<10 years), 30% mid-career, and 15% senior faculty; disciplines ranged from arts, sciences to professional programs. 60% male, 40% female; average age ~38 years.

- ✓ *Usage Patterns:* 45% reported using AI tools (e.g., auto-grading, lesson planning); junior faculty and sciences reported higher rates.
- ✓ *Attitudes:* 60% agreed AI saves time; only 35% felt confident applying AI pedagogically.
- ✓ *Correlations:* AI training positively correlated with perceived usefulness ($r = .45, p < .01$).
- ✓ *Qualitative Themes:* Enthusiasm for AI efficiency; concerns around infrastructure, digital literacy, and ethics; cultural resistance to automated assessment.

V. FINDINGS

Based on the data collected through surveys and interviews with higher education teachers in Thiruvapur Town, the following key findings emerged regarding their awareness,

usage, and perceptions of artificial intelligence (AI) in education:

AWARENESS OF AI TOOLS AMONG TEACHERS

- ✓ 68% of respondents were aware of the term "Artificial Intelligence" and its potential role in education.
- ✓ However, only 35% could name or describe specific AI tools (e.g., ChatGPT, AI-based grading software, adaptive learning platforms).
- ✓ Awareness was generally higher among younger faculty and those with computer science or engineering backgrounds.

ACTUAL USE OF AI IN TEACHING

Only 28% of teachers reported actively using AI-based tools in their teaching practice.

Common uses included:

- ✓ Plagiarism detection software (e.g., Turnitin)
- ✓ Automated quiz/test generation
- ✓ AI-powered language translation tools

The majority (72%) had not integrated AI tools into their curriculum due to lack of training or institutional support.

INSTITUTIONAL SUPPORT AND TRAINING

77% of respondents stated that their institution had not provided any formal training or workshops on AI in education.

Teachers expressed a strong interest in learning about AI, with 85% indicating they would attend training sessions if offered.

A significant gap was observed between institutional infrastructure and the growing demand for AI knowledge among faculty.

PERCEIVED BENEFITS OF AI

- ✓ Teachers who used AI tools identified the following key benefits:
 - Time-saving in grading and material preparation
 - Improved student engagement through personalized learning experiences
 - Access to multilingual and assistive technologies
- ✓ However, they also emphasized that AI should support—not replace—human interaction in education.

CHALLENGES IN AI ADOPTION

- ✓ Major challenges reported include:
 - Lack of training (72%)
 - Poor internet infrastructure in some institutions (49%)
 - Fear of job displacement and resistance to change (34%)

- Limited budget for digital tools (46%)
- ✓ Teachers from government institutions reported more constraints compared to those in private colleges.

ATTITUDE TOWARD AI INTEGRATION

- ✓ Overall, 65% of teachers had a positive attitude toward AI and were open to adopting it if proper support was provided.
- ✓ Teachers preferred a blended approach, where AI complements traditional teaching methods rather than fully automating them.

DEMAND FOR AI POLICY AND CURRICULUM SUPPORT

- ✓ Several teachers recommended that universities and colleges should:
 - Include AI literacy modules in faculty development programs.
 - Provide access to tools and licenses for AI platforms.
 - Establish clear guidelines on the ethical use of AI in assessment and content creation.

The study reveals that while awareness of AI is growing among higher education teachers in Thiruvapur, actual usage remains limited due to infrastructural, financial, and knowledge-related barriers. Teachers are generally open to using AI but require institutional support, training, and clear ethical guidelines to integrate it meaningfully into their teaching practices.

VI. SUGGESTIONS

Based on the research findings, the following suggestions are made to improve the integration and effectiveness of Artificial Intelligence (AI) in higher education in Thiruvapur Town:

✓ CONDUCT REGULAR AI AWARENESS AND TRAINING PROGRAMS

Institutions should organize workshops and seminars to educate teachers about AI tools, their applications in education, and best practices for integration into teaching methods.

✓ INCORPORATE AI LITERACY IN FACULTY DEVELOPMENT PROGRAMS

AI-related modules should be included in faculty induction and professional development training to build digital competencies among educators.

✓ IMPROVE DIGITAL INFRASTRUCTURE:

Colleges and universities should invest in high-speed internet, smart classrooms, and digital devices to support the use of AI-powered tools.

✓ PROMOTE BLENDED LEARNING MODELS:

Encourage the adoption of hybrid teaching approaches where AI complements traditional classroom methods, enhancing efficiency while maintaining human interaction.

✓ ESTABLISH INSTITUTIONAL AI POLICIES AND ETHICAL GUIDELINES:

Institutions should create clear frameworks for the ethical use of AI in areas like student evaluation, content generation, and data handling to avoid misuse and build trust.

✓ PROVIDE ACCESS TO AI TOOLS AND RESOURCES:

Ensure teachers have access to licensed AI platforms, open-source tools, and technical support to facilitate experimentation and integration into academic activities.

✓ ENCOURAGE RESEARCH AND INNOVATION IN EDTECH:

Encourage teachers to engage in research on AI applications in education and support pilot projects or innovations that enhance teaching and learning outcomes.

VII. CONCLUSION

The study concludes that AI has significant potential to transform higher education by enhancing teaching efficiency, personalizing learning experiences, and simplifying administrative tasks. In Thiruvapur Town, while awareness of AI among higher education teachers is moderate, actual implementation is still at a nascent stage due to infrastructural limitations, lack of training, and limited institutional support. However, teachers have shown a positive attitude toward adopting AI when provided with the right resources and support. This indicates a strong foundation for future growth if proper interventions are made. The way forward lies in developing a supportive ecosystem that includes continuous training, digital infrastructure, ethical governance, and strong institutional commitment. By bridging the knowledge and resource gap, Thiruvapur's educational institutions can empower their educators to effectively use AI, thereby improving the quality of education and aligning with national goals of digital transformation in higher education. AI holds real promise to assist teachers at Thiruvapur but challenges persist: human dimensions, costs, ethics. Success depends on proper training, infrastructure, and a policy framework tailored to local context. Conclude that technology should augment—

not replace—human teaching, ensuring empathy and critical pedagogy remain core.

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