



Artificial Intelligence and the New Responsibilities of Teachers: A Study of Secondary School Teachers in Kolkata

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Abstract: Artificial Intelligence (AI) rapidly transforming the educational landscape by introducing intelligent systems that support teaching, assessment, and learning management. The integration of AI technologies such as intelligent tutoring systems, automated grading tools, and adaptive learning platforms has significantly influenced the professional roles and responsibilities of teachers. The present study examines the emerging responsibilities of teachers in AI-integrated educational environments with special reference to secondary school teachers in Kolkata, West Bengal. A descriptive survey research design was adopted for the study. A sample of 120 teachers from government and private secondary schools in Kolkata was selected through a simple random sampling technique. Data were collected through a structured questionnaire designed to measure teachers' perceptions regarding AI usage and professional responsibilities. The collected data were analyzed using mean, standard deviation, and t-test. The findings revealed that Artificial Intelligence significantly influences instructional planning, student assessment practices, and classroom management strategies. The study concludes that while AI technologies enhance teaching efficiency, the human role of teachers remains essential in guiding students' intellectual, ethical, and emotional development. The findings have important implications for teacher education programs, educational policy makers, and curriculum planners.

Keywords: Artificial Intelligence in Education, Teacher Responsibilities, Educational Technology, Digital Pedagogy, AI Integration, Kolkata Schools.

1. Introduction: Technological advancements have significantly influenced the structure and functioning of modern educational systems. Among the emerging technologies, Artificial Intelligence has attracted considerable attention because of its ability to analyze large datasets, automate repetitive tasks, and provide personalized learning experiences. In recent years, AI technologies such as adaptive learning systems, intelligent tutoring systems, chatbots, and automated grading tools have been increasingly used in educational institutions.

Traditionally, teachers were responsible for delivering subject knowledge through lectures, evaluating students' performance, and managing classroom activities. However, the integration of Artificial Intelligence in education has transformed these traditional roles and created new professional expectations for teachers. In AI-supported learning environments, teachers are expected to act as facilitators, mentors, and technology integrators.

AI technologies can assist teachers by providing learning analytics, identifying students' learning difficulties, and offering personalized feedback. These capabilities enable teachers to focus more on guiding students' critical thinking, creativity, and problem-solving abilities. At the same time, teachers must ensure that AI technologies are used ethically and responsibly in educational settings.

In India, the adoption of digital technologies in education has increased significantly in recent years, particularly in metropolitan cities such as Kolkata. Schools are gradually adopting smart classrooms, online learning platforms, and AI-based educational tools. Therefore, it becomes important to understand how these technological developments influence the professional responsibilities of teachers.

The present study therefore investigates the role of Artificial Intelligence in shaping the new responsibilities of teachers in secondary schools in Kolkata.

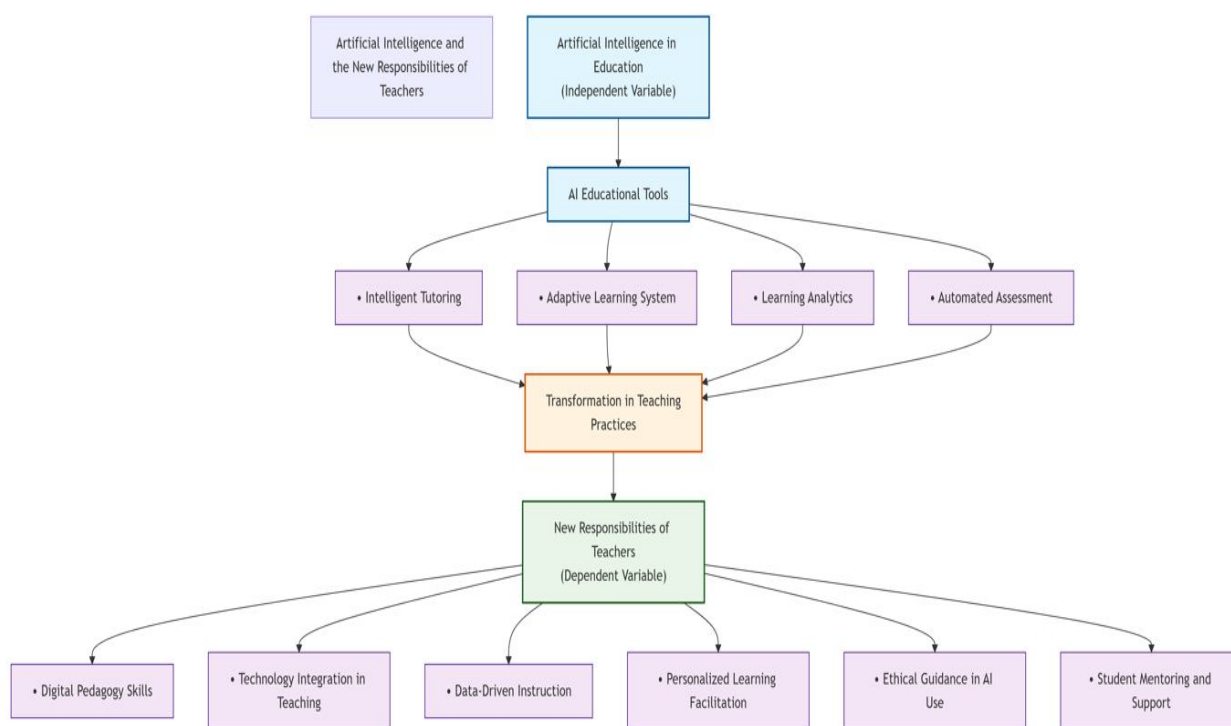


Figure 1. Conceptual framework showing the relationship between Artificial Intelligence in education and the new responsibilities of teachers.

Explanation of the Framework: The conceptual framework proposes that the integration of Artificial Intelligence in educational environments leads to the transformation of teachers' professional roles. AI technologies assist teachers in instructional planning, student assessment, and classroom management. At the same time, teachers must develop digital literacy and technological competencies to effectively utilize these tools.

Therefore, the framework highlights the complementary relationship between Artificial Intelligence and teachers, where AI acts as a technological support system while teachers remain central to the teaching-learning process.

2. Review of Literature

Holmes, Bialik, and Fadel (2019) examined the role of Artificial Intelligence in modern educational systems and highlighted its potential to support personalized learning. Their study emphasized that AI technologies such as intelligent tutoring systems and automated feedback mechanisms can help teachers analyze students'

learning patterns and provide individualized instruction. However, the authors also pointed out that teachers remain essential for guiding students' critical thinking and ethical use of technology.

Luckin, Holmes, Griffiths, and Forcier (2016) explored the impact of Artificial Intelligence on teaching and learning processes. The researchers suggested that AI can assist teachers in performing routine tasks such as grading assignments, tracking student progress, and managing administrative work. By reducing these workloads, teachers can dedicate more time to creative teaching practices and student mentoring.

Zawacki-Richter, Marín, Bond, and Gouverneur (2019) conducted a systematic review of Artificial Intelligence applications in higher education. Their study identified several AI applications such as adaptive learning systems, learning analytics, automated assessment, and academic prediction tools. The researchers concluded that teachers must develop technological competencies to effectively integrate AI into their teaching practices.

Chen, Chen, and Lin (2020) investigated teachers' perceptions regarding the adoption of Artificial Intelligence in education. Their study revealed that teachers who possess strong digital literacy skills are more confident in using AI technologies in classrooms. The authors recommended incorporating AI training in teacher education programs.

Holmes and Tuomi (2022) examined the future relationship between teachers and Artificial Intelligence in educational environments. They argued that the future of education lies in human-AI collaboration where teachers and AI systems work together to enhance learning outcomes. While AI technologies can assist in instructional processes, teachers remain responsible for providing emotional support, ethical guidance, and creative learning experiences.

Prilop, Weber, and Kleinknecht (2025) studied teachers' perceptions regarding generative Artificial Intelligence in education. Their findings indicated that teachers acknowledge the benefits of AI tools for lesson planning and instructional design but also express concerns regarding academic integrity and misuse of AI technologies. The study emphasized the need for proper training and guidelines for teachers.

Filo (2024) proposed an Artificial Intelligence competency framework for teachers. The study highlighted that teachers need competencies such as technological knowledge, data interpretation skills, and ethical awareness to effectively integrate AI tools into teaching practices.

Overall, the literature indicates that Artificial Intelligence has the potential to transform teaching practices, but teachers remain central to the educational process because of their ability to guide students intellectually, emotionally, and ethically.

3. Objective of the Study: Artificial Intelligence and the New Responsibilities of Teachers.

4. Hypothesis

H₀: Artificial Intelligence has no significant influence on the professional responsibilities of teachers.

H₁: Artificial Intelligence significantly influences the professional responsibilities of teachers.

5. Methodology

Research Design: The present study adopted a descriptive survey research design.

Area of the Study: The study was conducted in secondary schools located in Kolkata, West Bengal, India.

Population: The population consisted of secondary school teachers working in government and private schools in Kolkata.

Sample: A sample of 120 teachers was selected through a simple random sampling technique.

Tool for Data Collection: A self-constructed questionnaire consisting of 20 statements related to Artificial Intelligence usage and teacher responsibilities was used for collecting data.

Data Collection Procedure: The questionnaires were distributed to teachers both online and offline. Respondents were informed about the purpose of the study and their responses were kept confidential.

Statistical Techniques Used: The collected data were analyzed using:

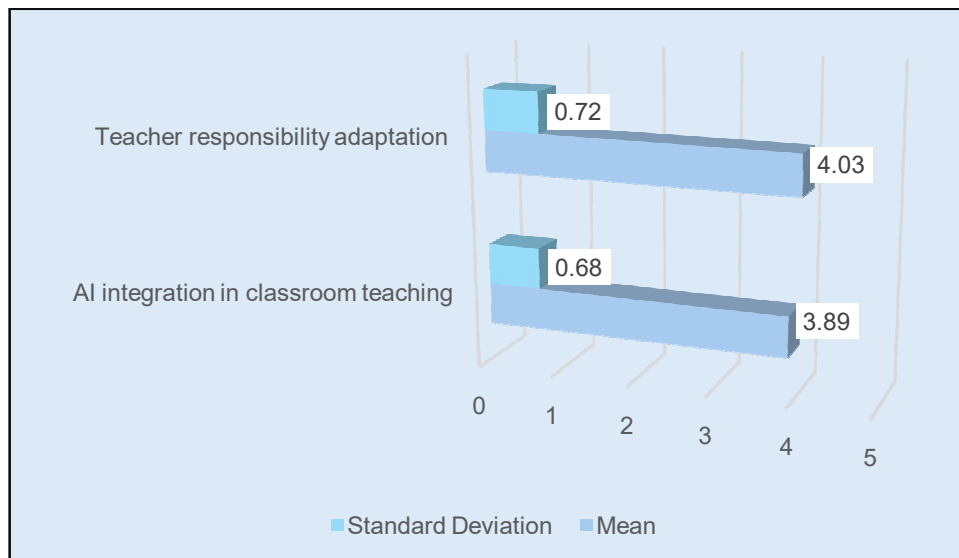
- Mean
- Standard Deviation
- t-test

6. Analysis and Interpretation

Table 1: Teachers’ Perception of AI Integration in Teaching

Variable	N	Mean	Standard Deviation
AI integration in classroom teaching	120	3.89	0.68
Teacher responsibility adaptation	120	4.03	0.72

Interpretation: The mean values indicate that teachers generally agree that Artificial Intelligence influences their teaching practices and professional responsibilities.

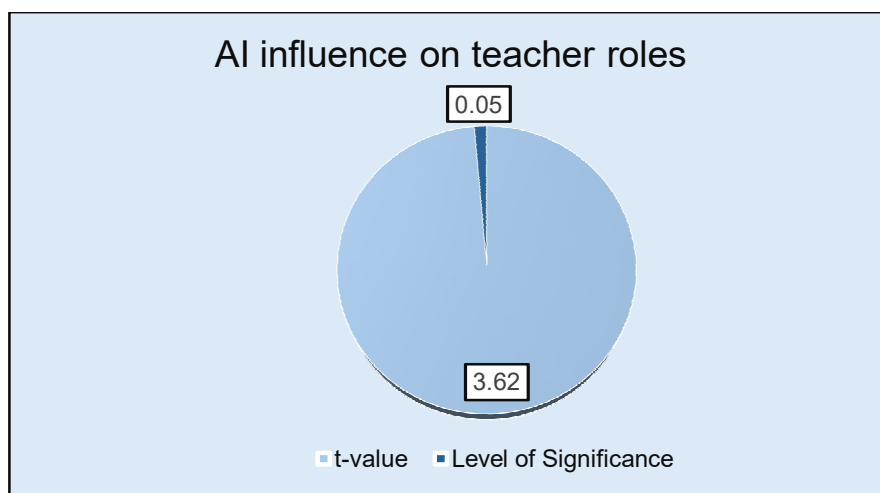


Graph 1: Teachers’ Perception of AI Integration in Teaching

Table 2: t-test Analysis of AI Influence on Teacher Responsibilities

Variable	t-value	Level of Significance
AI influence on teacher roles	3.62	0.05

Interpretation: The calculated t-value (3.62) is higher than the table value at the 0.05 level of significance. Therefore, the null hypothesis is rejected, indicating that Artificial Intelligence significantly influences teachers' professional responsibilities.



Graph 2: t-test Analysis of AI Influence on Teacher Responsibilities

7. Conceptual Framework

Independent Variable: Artificial Intelligence in Education

Dependent Variable: Teacher Responsibilities

Components: AI Technologies

- Intelligent tutoring systems
- Learning analytics
- Automated assessment

Teacher Responsibilities

- Digital pedagogy
- Technology integration
- Personalized learning facilitation
- Ethical supervision

8. Conclusion: The study reveals that Artificial Intelligence is gradually transforming the professional responsibilities of teachers. AI technologies assist teachers in instructional planning, assessment, and classroom management. However, teachers must develop digital competencies and technological knowledge to effectively utilize these tools.

Despite the technological advancements, teachers remain essential in guiding students' intellectual and emotional development. Artificial Intelligence should therefore be viewed as a supportive tool that enhances teaching efficiency rather than replacing teachers.

9. Educational Implications

1. Teacher education programs should include AI literacy training.

2. Schools should provide professional development programs for AI integration.
3. Educational institutions should develop ethical guidelines for AI usage in classrooms.
4. Curriculum developers should integrate AI-supported teaching tools into educational programs.

10. Suggestions for Future Research

1. Future studies may examine AI integration in higher education institutions.
2. Comparative studies may be conducted between urban and rural schools.
3. Research may explore students' perceptions regarding AI-supported learning.
4. Longitudinal studies may investigate long-term impacts of AI on teaching practices.

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