

CHAPTER-II

REVIEW OF RELATED LITERATURE

2.1 Introduction:

This chapter deals with the review of literature that is directly or indirectly related to the study proposed by the investigator. Resourceful information on the problem to be investigated is one of the most important steps in the planning of any research. Every piece of ongoing research needs to be connected with the work already done to attain overall relevance and purpose. The review of literature acts as a link between the studies already conducted in the field/area and the research proposed. There are mostly three stages in most of the reviews which are- finding relevant information, appraisal of relevant and contextual information and synthesizing and summarizing findings into a set of collective conclusions.

2.2 Review of Related Literature

According to **Chintalapati, S., & Pandey (2022)**, AI refers to the simulation of human intelligence in machines that are programmed to think and learn like humans. It encompasses various subfields, including machine learning, natural language processing, computer vision, and robotics. AI systems can perform tasks that typically require human intelligence, such as understanding natural language, recognizing patterns, and solving complex problems.

Singh, V., & Ram, S. (2024), pointed out that AI has made remarkable progress in recent years, with applications spanning various domains. In healthcare, AI aids in diagnosing diseases, analyzing medical images, and even drug discovery. In autonomous vehicles, it enables self-driving cars to navigate and make real-time decisions. Natural language processing powers virtual assistants like Siri and Alexa, making them capable of understanding and responding to spoken language. In finance, AI-driven algorithms analyze vast amounts of data for trading and risk assessment.

Aghaziarati et al., (2023) wrote a research article ‘Artificial Intelligence in Education: Investigating Teacher Attitudes’. It describes as educational institutions strive to adapt to the 21st century digital landscape, the integration of AI technologies into teaching and learning processes has emerged as a pivotal area of exploration.

Tapalova & Zhiyenbayeva (2022) delved deeper into the role of AI in facilitating personalized learning pathways. Their research underscores the adaptability of AI systems to cater to the diverse needs of individual learners, a testament to the technology's potential to democratize and customize education. By focusing on personalization, they highlight a core advantage of AI: its ability to mould educational content and delivery according to the unique preferences, strengths, and weaknesses of each student. This personalized approach not only fosters an inclusive learning environment but also ensures that education is more relevant, engaging, and effective.

Rios-Campos et al., (2023) specifically position ChatGPT within the broader context of AI in education. Their investigation into the applications of AI-powered tools like ChatGPT for students, teachers, and educational systems at large offers profound insights into the versatile utility of AI. From automating routine tasks to facilitating personalized learning and enhancing administrative efficiency, the study elucidates the myriad ways AI can serve as a catalyst for educational innovation and improvement.

Singh V. & Ram S. (2024) observed the transformative potential of AI in teacher education. The transformative potential of AI in teacher education is significant and has the capacity to reshape the way educators are prepared, supported, and continuously developed. AI has the transformative potential to enhance the quality and accessibility of teacher education, making it more responsive to the evolving needs of students and society. By providing personalized learning experiences, continuous support, and data-driven insights, AI empowers educators to excel in their roles and ultimately contributes to improved educational outcomes for students.

Ferikoğlu & Akgün (2022) contribute significantly to this aspect by developing a scale aimed at measuring teachers' awareness and perceptions of AI technologies. Their study opens avenues for understanding how educators, the primary facilitators

of learning, perceive, and interact with AI in their professional settings. By shedding light on teachers' awareness, the research underscores the importance of equipping educators with the necessary knowledge and skills to navigate the AI-enhanced educational landscape effectively.

The work of **Yu (2021)** enriches the discourse from an administrative perspective, examining the development and implementation of AI in university education management. Their qualitative analysis reveals the dual nature of AI in educational administration, pointing out the benefits such as efficiency and data-driven decision-making, alongside challenges including ethical considerations and the need for comprehensive training. This nuanced exploration emphasizes that the impact of AI extends beyond the classroom, affecting the broader operational frameworks of educational institutions.

Kim and Kim,(2022) noticed that overall, Teachers' perceptions of AI-based educational tools vary according to their pedagogical belief, teaching experience, prior exposure to educational technology, and the effectiveness and necessity of a particular technology, all of which can influence their readiness to embrace AI in education.

Ng et al. (2023) emphasize the need for more comprehensive studies on AI literacy in the context of teacher education. Teacher awareness of AI is critically important for ensuring the effective use of AI technologies in education. This highlights the importance of examining teachers' levels of awareness regarding AI technologies.

Shi (2024) aimed to investigate the AI literacy levels of teacher trainees and strategies to improve these levels. The research involved surveying and interviewing 430 teacher trainees. The results indicate that teacher trainees need more AI knowledge and capabilities but possess relatively high AI awareness. This recommends improving AI literacy at the school, teacher, and student levels.

Zhao et al. (2022) also investigated the AI literacy of primary and middle school teachers in China. The study found that teachers generally have a medium to high literacy level in using AI resources in the classroom. AI literacy and awareness of AI

may appear similar, yet they represent distinct concepts. AI literacy includes the ability to use AI technologies consciously and responsibly. While awareness suggests general knowledge and comprehension, it does not necessarily entail technical expertise or profound understanding.

Simhadri and Swamy (2023) collectively underline the need for more targeted research in this area and state that there is a notable gap in the existing literature on teachers' awareness of AI. By understanding where teachers stand regarding AI awareness, educational institutions can make more informed decisions about resource allocation, training needs, and curriculum adjustments to better prepare students for the future.

In conclusion, understanding teachers' perspectives on AI in teacher education is vital for shaping effective and meaningful integration of technology in classrooms. The existing research highlights both the opportunities and challenges teachers associate with AI, emphasizing the importance of targeted training, ethical awareness, and practical application. By prioritizing teacher voices in research and program development, educational institutions can bridge the gap between technological innovation and pedagogical practice. This approach not only enhances teachers' confidence and competence in using AI but also ensures that AI is implemented in ways that truly support teaching and learning.