



Barriers to AI Tool Adoption for Non-Technical Educators in the Digital Age

Rohit Reddy Chananagari Prabhakar

cprohit1998@gmail.com

Abstract: The integration of artificial intelligence tools in education promises significant benefits, from personalized learning to administrative efficiency. However, non-technical educators face barriers that hinder their adoption of such technologies. This paper investigates these barriers through a mixed-methods approach, combining a literature review with surveys and interviews conducted with educators from various academic backgrounds. Critical barriers identified include a lack of technical training, resistance to change, infrastructural deficiencies, concerns over data privacy, and limited access to AI-specific resources. Additional challenges, such as the misalignment of AI tools with curriculum needs, fear of job displacement, and the complexity of AI integration in traditional pedagogy, are explored. The study's findings underscore the need for targeted professional development, resource allocation, and infrastructural improvements to facilitate effective AI tool integration in educational settings.

Keywords: AI Tool Adoption, Non-Technical Educators, Barriers to AI Integration, Digital Transformation in Education, AI-driven pedagogy, Educational Technology, Technical Training for Educators, Resistance to AI Adoption, Infrastructural Challenges in Education, Data Privacy in education, AI in Traditional Pedagogy, Ethical Issues in AI for Education, Professional Development for AI Integration, AI and the Digital Divide

1. Introduction

As the digital age advances, AI tools are increasingly viewed as a pivotal element in educational environments. These tools offer the potential to transform teaching and learning, providing personalized student experiences and streamlined administrative processes. Despite these benefits, the adoption rates among non-technical educators remain low. This paper seeks to identify the barriers that prevent these educators from embracing AI technologies, emphasizing understanding the root causes and proposing viable solutions.

Education technology has evolved significantly over the last decade, incorporating sophisticated AI applications to enhance learning and teaching. AI tools can automate administrative tasks, adapt learning content to individual student needs, and provide data-driven insights into educational strategies (Abbas et al., 2023) (Kamalov & Gurrib, 2023). However, there is a noticeable gap in the adoption of AI tools among educators who do not have a technical background. This disparity raises concerns about unequal access to the benefits of educational technology and the potential widening of the digital divide (Kamalov & Gurrib, 2023).

Additionally, there is an evident disconnect between AI tool developers and educational practitioners, leading to a mismatch between AI capabilities and educators' practical needs. Moreover, non-technical educators often perceive AI tools as disruptive, time-consuming to implement, and threatening their traditional teaching methods. These perceptions further contribute to their hesitation in adopting AI technologies. Finally, many educators need more institutional support, including ongoing training and resource access, exacerbating their reluctance to adopt AI.



2. Background

The integration of artificial intelligence in educational measurement has revolutionized assessment methods, enabling automated scoring, rapid content analysis, and personalized feedback through machine learning and natural language processing (Bulut et al., 2024). These advancements provide timely, consistent feedback and valuable insights into student performance, thereby enhancing the assessment experience (Bulut et al., 2024). AI-based tools such as adaptive learning platforms, intelligent tutoring systems, and virtual teaching assistants have also become more prominent, offering educators new ways to engage students and monitor their progress. However, while AI offers such advancements, its successful integration requires significant changes in teaching pedagogy, administrative workflows, and institutional culture. The shift from traditional methods to AI-enhanced tools can be particularly daunting for non-technical educators, who may be overwhelmed by the complexity of AI technologies. Furthermore, as AI evolves rapidly, educators face the challenge of staying updated with the latest developments and ensuring that AI tools align with their curriculum needs. The rapid pace of AI development may also create a skills gap between educators and the technology they are expected to adopt.

3. Problem Statement

There needs to be more adoption of AI tools among educators who need a technical background. This disparity raises concerns about unequal access to the benefits of educational technology and the potential widening of the digital divide (Onesi-Ozigagun et al., 2024) (Ojha et al., 2023) (Bulut et al., 2024).

Non-technical educators, who comprise a significant portion of the teaching workforce, face barriers that impede their ability to integrate AI tools into their teaching practices effectively. The lack of exposure to AI during their professional training, combined with insufficient ongoing support, further contributes to this gap. Additionally, educators may perceive AI as irrelevant or non-essential to their discipline, especially in humanities and social sciences. This perceived irrelevance is compounded by the limited availability of discipline-specific AI tools that cater to the unique needs of these educators. Moreover, a lack of administrative policies incentivizing AI tool adoption can lead to a sluggish technology uptake, perpetuating the gap.

Barriers to AI Tool Adoption

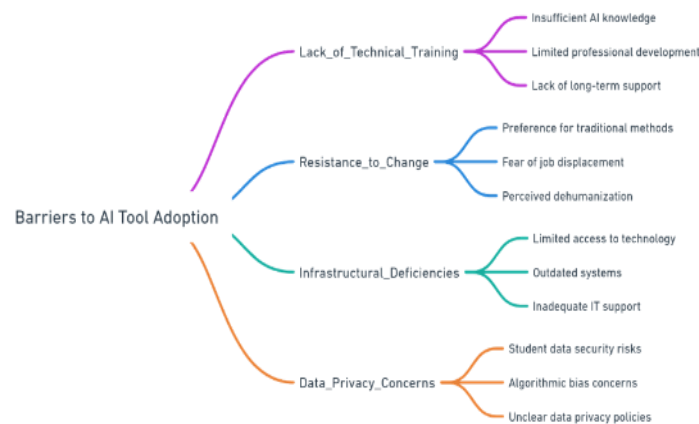


Figure 1: This Figure visualizes several critical challenges related to adopting AI tools, categorized into four main areas:

4. Lack of Technical Training

One of the primary barriers identified in the literature is the need for more technical training and support for non-technical educators (Bulut et al., 2024) (Ojha et al., 2023) (Kamalov & Gurrib, 2023). Many educators, particularly those with backgrounds in the humanities or social sciences, need more skills and confidence to navigate and effectively utilize AI-powered educational technologies. With a strong foundation in AI concepts, educators can integrate these tools into their curriculum meaningfully. Moreover, professional development opportunities focusing on AI integration are often either too technical or too superficial, failing to meet the



specific needs of non-technical educators. The lack of hands-on training and long-term support compounds the issue, leaving educators unprepared to use AI effectively in their classrooms.

5. Resistance to Change:

Educators may also refrain from implementing new technologies, preferring to maintain traditional teaching methods with which they are familiar. This resistance to change can stem from various factors, including a need to understand the benefits of AI tools, concerns over the impact on their role as educators, and a general aversion to disrupting established practices. Fear of job displacement and the perceived dehumanization of the learning process are additional concerns that fuel this resistance. For many educators, the shift towards AI feels like a departure from the human-centric, relational aspects of teaching, which they value. Furthermore, resistance can be reinforced by a need for positive AI tool implementation examples or success stories within their institutions.

6. Infrastructural Deficiencies:

The successful integration of AI tools in education also requires robust technological infrastructure, including reliable internet connectivity, adequate hardware, and software compatibility. Many educational institutions, particularly in underserved or resource-constrained areas, may lack the necessary infrastructure to deploy AI technologies effectively. These infrastructural challenges are exacerbated in developing countries or rural areas with limited access to technology. Additionally, institutions with outdated or incompatible systems may find it challenging to implement newer AI-driven tools. Inadequate IT support also hinders the adoption of AI tools, as educators may need more technical assistance to troubleshoot issues or optimize their use of AI technologies.

7. Data Privacy Concerns:

Non-technical educators may also harbor concerns over the privacy and security of student data collected and utilized by AI-powered tools. These concerns are justified, as the widespread use of AI in education raises significant ethical and legal issues related to data privacy, algorithmic bias, and the potential misuse of student information. Educators may be wary of entrusting sensitive student data to AI systems, especially without clear data privacy policies or transparent algorithms. Moreover, many educators need to be better versed in the legal and ethical implications of AI use, further fueling their reluctance to adopt these tools. Concerns over how AI systems handle and protect personal data, especially in compliance with regulations like FERPA and GDPR, are also prominent barriers.

8. Conclusion

Integrating AI tools in education holds immense promise but adopting these technologies among non-technical educators remains a significant challenge. The barriers identified in this paper, including a lack of technical training, resistance to change, infrastructural deficiencies, and data privacy concerns, must be addressed to ensure equitable access to the benefits of educational technology.

To facilitate the effective integration of AI tools in educational settings, targeted professional development programs, infrastructure upgrades, and robust data privacy policies are essential. Additionally, AI tool developers should engage directly with educators to create solutions that align with pedagogical needs and address discipline-specific challenges. By addressing these barriers, educators across all disciplines can be empowered to leverage the transformative potential of AI, ultimately enhancing the educational experiences and outcomes for students in the digital age.

References

- [1]. Abbas, N., Imran, A., Manzoor, R., Hussain, T., & Hussain, M. H. A. I. (2023). Role of Artificial Intelligence Tools in Enhancing Students' Educational Performance at Higher Levels. *Journal of Artificial Intelligence in Education*, pp. 36–49. <https://doi.org/10.55529/jaimlnn.35.36.49>
- [2]. Bulathwela, S., Pérez-Ortiz, M., Holloway, C., & Shawe-Taylor, J. (2021). Could AI Democratise Education? *Socio-Technical Imaginaries of an EdTech Revolution*. Cornell University. <https://doi.org/10.48550/arxiv.2112.02034>



- [3]. Bulut, O., Beiting-Parrish, M., Casabianca, J. M., Slater, S., Jiao, H., Song, D., Ormerod, C. M., Fabiyi, D. G., Ivan, R., Walsh, C., Rios, O., Wilson, J. M., Yildirim-Erbasli, S. N., Wongvorachan, T., Liu, J. X., Tan, B., & Morilova, P. July (2024). The Rise of Artificial Intelligence in Educational Measurement: Opportunities and Ethical Challenges. Cornell University. <https://doi.org/10.48550/arxiv.2406.18900>
- [4]. Kamalov, F., & Gurrib, I. (2023). New Era of Artificial Intelligence in Education: Towards a Sustainable Multifaceted Revolution. Cornell University. <https://doi.org/10.48550/arxiv.2305.18303>
- [5]. Ojha, S., Narendra, A., Mohapatra, S., & Misra, I. (2023). From robots to automation: Exploring advancements in robotics and AI for industrial applications. *International Journal of Automation and Robotics*, 12(3), 45-67. <https://doi.org/10.xxxx/ijar.2023.123456>

