


Chapter 6

Investigation of the Opinions of Classroom Teachers Working in Science and Art Centers on the Pitfalls of Artificial Intelligence in Education

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ABSTRACT

This chapter examines the perspectives of classroom teachers at Science and Art Centers regarding artificial intelligence (AI). Employing a case chapter design and qualitative methodology, the research collects insights from 18 teachers during the 2023-2024 academic year through semi-structured interviews, followed by content analysis. Findings indicate that AI enhances classroom processes, reduces teacher workloads, and boosts student engagement. However, challenges such as inadequate technological infrastructure, insufficient resources, and internet connectivity issues hinder effective AI integration. Teachers also express concerns about potential ethical dilemmas associated with AI applications. The chapter underscores the necessity for comprehensive in-service training, practical guidance, and high-quality technological resources to optimize AI utilization. Furthermore, it emphasizes the importance of establishing ethical guidelines and usage protocols to address these concerns and foster a responsible approach to AI in educational settings.

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INTRODUCTION

The integration of AI in educational settings has garnered significant attention in recent years, particularly concerning the perceptions and attitudes of teachers. As AI technologies become increasingly prevalent in classrooms, understanding how teachers view these innovations is crucial for effective implementation. Research indicates that teachers' awareness and understanding of AI directly influence their ability to integrate these technologies into their teaching practices. For instance, Ferikoğlu and Akgün (2022) found that higher levels of education correlate with increased awareness of AI among teachers, suggesting a need for ongoing professional development to enhance AI literacy. This aligns with findings from Zhang et al. (2024), who emphasized the importance of validated curricula in AI education, highlighting that teachers require evidence of student learning outcomes to adopt new educational frameworks effectively.

Moreover, the perceptions of teachers regarding AI education are shaped by their training and professional development experiences (Acut et al., 2025; Arif et al., 2025). Studies have shown that targeted professional development programs can significantly enhance teachers' self-efficacy in teaching AI concepts. For example, Kim and Kwon (2023) noted that in-service teachers who participated in AI training reported increased confidence in their pedagogical content knowledge related to AI. This is further supported by Zhang et al. (2024), who demonstrated that teacher-led AI literacy curricula could effectively engage students and improve learning outcomes, thereby reinforcing the necessity for teachers to be well-equipped with AI knowledge. To further contextualize teacher competencies in AI, incorporating internationally recognized frameworks such as the ISTE Standards for Educators (International Society for Technology in Education) and DigCompEdu (Digital Competence Framework for Educators) can provide a structured foundation (Srinivasan et al., 2025). These frameworks outline specific competencies teachers need to effectively integrate AI in classrooms, emphasizing areas like digital pedagogy, learner engagement, and the ethical use of technology. For instance, the DigCompEdu framework identifies proficiency levels that can guide professional development efforts tailored to SACs.

The role of teachers as primary stakeholders in the educational process cannot be overstated. Zulkarnain and Yunus (2023) highlighted that teachers' attitudes and beliefs significantly impact the integration of AI technologies in classrooms, underscoring the need to consider their perspectives when implementing AI in education. Additionally, the ethical implications of AI in education have emerged as a critical area of concern. Adams et al. (2022) discussed the new ethical obligations teachers face as AI technologies become integrated into educational practices, emphasizing the need for teachers to navigate these challenges thoughtfully.

In the Turkish education system, science and centers (SACs) serve as specialized educational institutions designed for gifted students across primary, secondary, and high school levels, allowing them to pursue their formal education concurrently. These centers are instrumental in nurturing and enhancing the talents of students recognized for their exceptional abilities in general intelligence, visual arts, and music (Özer, 2021). By offering tailored programs, SACs play a significant role in fostering the social and academic growth of gifted students, with a focus on promoting their holistic development across cognitive, affective, and social dimensions (Goksu & Yalcin, 2023).

To ensure that SACs deliver effective and efficient educational experiences, it is essential to integrate key elements such as teacher competencies (Kilic & Ozkan, 2022; Ozer & Demirbatir, 2023), educational materials (Bolat, 2020), technology integration (Kiroglu & Trust, 2024), student support services (Nacaroglu & Mutlu, 2020), and continuous professional development (Altun & Vural, 2012). Among

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