


Chapter 2


The Role of AI in Immersive Learning in Teacher Education: Simulated Environments, Tools, and Practices

R. Velmurugan

 <https://orcid.org/0000-0002-7925-9757>


Karpagam Academy of Higher Education, Coimbatore, India

R. Bhuvaneswari

 <https://orcid.org/0009-0003-9396-6129>

Dr. Mahalingam College of Engineering and Technology, Pollachi, India

M. Kalimuthu

 <https://orcid.org/0000-0003-2353-004X>

Dr. N.G.P. Arts and Science College, Coimbatore, India

Joji Abey

 <https://orcid.org/0000-0003-4176-3023>

Kingdom University, Bahrain

ABSTRACT

AI is revolutionizing teacher education by creating immersive learning experiences that simulate real classroom environments. Through AI-powered tools such as simulated teaching platforms, intelligent tutoring systems, and virtual teaching assistants, pre-service teachers can gain hands-on experience and develop crucial teaching skills. These technologies offer personalized learning experiences, allowing teachers to practice at their own pace, receive instant feedback, and engage in

DOI: 10.4018/979-8-3693-9861-6.ch002

reflective practices to refine their instructional techniques. AI's ability to provide tailored support for diverse learning styles further enhances teacher development. However, challenges related to the lack of human interaction, ethical concerns, and the potential for over-reliance on technology must be addressed to ensure responsible implementation. As AI continues to shape teacher education, it offers transformative potential in preparing educators for the dynamic and complex classroom of the future.

INTRODUCTION

Artificial Intelligence (AI) is rapidly transforming education, particularly in teacher preparation and professional development. AI-driven immersive learning environments, characterized by simulations, digital tools, and adaptive learning systems, are reshaping how educators acquire, practice, and refine their skills. These platforms offer dynamic, interactive, and flexible learning experiences that go beyond traditional methods, enhancing pedagogy and improving classroom readiness for future teachers (Graham & Perera, 2022). This chapter explores AI's impact on teacher education, supported by relevant research and examples.

At the core of AI's role in teacher education is its ability to create **simulated environments** that mirror real classroom dynamics. These simulations offer a safe, controlled space where teachers-in-training can practice skills like classroom management and student engagement without the fear of real-life consequences (Johnson et al., 2021). For example, AI-powered platforms like Mursion and TeachLivE provide virtual classrooms with AI-driven avatars that mimic students' behaviors and emotions (Dieker et al., 2014). These avatars challenge teachers to adjust their strategies and decision-making in real-time, providing valuable practice for managing diverse classroom scenarios. By engaging with these lifelike simulations, educators gain confidence and competency before entering actual classrooms.

AI simulations also offer **personalized learning experiences**, adapting to the individual needs of each teacher-in-training. Unlike traditional one-size-fits-all programs, AI tools can analyze data from users to identify strengths, weaknesses, and areas for improvement (Woolf, 2010). For instance, if a teacher struggles with managing classroom disruptions, the system can present additional scenarios focused on this challenge. This personalization accelerates skill development, ensuring teachers are better prepared to tackle the complexities of real classrooms (Luckin et al., 2018).

In addition to simulations, AI has introduced a range of **digital tools** to enhance teacher education. Platforms like Coursera, Edmodo, and Google Classroom incorporate AI to track progress, offer real-time feedback, and support adaptive learning (Popenici & Kerr, 2017). These tools allow educators to engage in self-paced learning, explore instructional strategies, and access resources tailored to their professional

26 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/the-role-of-ai-in-immersive-learning-in-teacher-education/383452

Related Content

Legal and Ethical Aspects of Teaching in Selected Social Virtual Worlds: A Review of the Literature

R. S. Talaband Hope R. Botterbusch (2011). *Virtual Immersive and 3D Learning Spaces: Emerging Technologies and Trends* (pp. 170-193).

www.irma-international.org/chapter/legal-ethical-aspects-teaching-selected/46777

Virtual Vignettes and Pedagogical Potentials: Insights into a Virtual Schooling Service

Donna Pendergastand Cushla Kapitzke (2004). *Development and Management of Virtual Schools: Issues and Trends* (pp. 192-215).

www.irma-international.org/chapter/virtual-vignettes-pedagogical-potentials/8310

A Private Cloud-Based Smart Learning Environment Using Moodle for Universities

T. S. Pradeep Kumar (2019). *Cases on Smart Learning Environments* (pp. 188-202).

www.irma-international.org/chapter/a-private-cloud-based-smart-learning-environment-using-moodle-for-universities/219026

Learning as Immersive Experience: Learning and Teaching Practices in Virtual Worlds

Sara de Freitas, Ian Dunwelland Genaro Rebolledo-Mendez (2011). *Teaching and Learning in 3D Immersive Worlds: Pedagogical Models and Constructivist Approaches* (pp. 15-30).

www.irma-international.org/chapter/learning-immersive-experience/52390

Effects of Virtual Manipulatives on Student Achievement and Mathematics Learning

Patricia S. Moyer-Packenhamand Arla Westenskow (2013). *International Journal of Virtual and Personal Learning Environments* (pp. 35-50).

www.irma-international.org/article/effects-of-virtual-manipulatives-on-student-achievement-and-mathematics-learning/95162