


Chapter 7

Advancing Teacher Education Through Holographic Simulations: Tools and Practices for Immersive Learning

Andi Asrifan

 <https://orcid.org/0000-0002-9934-6129>

Universitas Negeri Makassar, Indonesia

ABSTRACT

Holographic simulations can improve teacher education by delivering immersive, 3D environments for classroom administration, course delivery, and student engagement. Compared to traditional approaches, holography offers a more realistic and interactive experience. Cost and infrastructure prevent widespread implementation of these innovations, limiting accessibility. Holographic simulations improve teacher readiness through real-time feedback, interactive learning, and reflective practice, as shown in this study. Results show enhanced teacher preparedness and skill development, with holographic simulations offering a controlled yet realistic environment for complex classroom dynamics. Holographic technology could also improve global education by addressing equity and diversity. As costs drop and access improves, holographic simulations could revolutionize teacher education and other educational processes.

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INTRODUCTION

1.1. Overview of Holographic Technology in Education

Holographic technology provides immersive, 3D simulations that can revolutionize learning (Walker, 2013; Moro et al., 2020). This technique projects realistic 3D holograms into physical locations using light. Users can interact with them in real-time. Holograms provide virtual objects with lifelike depth and presence, unlike 2D views or flat screens.

Holography extends involvement and interaction in education, particularly teacher training (Walker, 2013; Moro et al., 2020; Leopardi et al., 2021). Holographic simulations allow teachers to practice their methods in controlled, dynamic environments. Teachers-in-training can use virtual classrooms, manage simulated student conduct, and try course delivery strategies without role-playing or static classroom models. Immersive scenarios allow students to learn from mistakes, develop critical thinking, and solve real-world problems (Callaghan et al., 2009; Checa & Bustillo, 2019).

Holographic technology helps schools provide more effective and individualized instruction. Teachers can replicate difficult classroom scenarios, try new educational methods, and receive real-time feedback (Walker, 2013; Moro et al., 2020). Holography improves learning and teaching by giving teachers practical, hands-on skills needed in today's diverse classrooms. Overall, holographic technology improves teacher education. Its lifelike simulations increase engagement and give educators a unique, immersive platform to practice and improve.

1.2 The Role of Simulations in Teacher Training

Teacher training has historically included simulations to build practical skills in a controlled environment (Brown, 2014; Pottle, 2019; Dalinger et al., 2019). Role-playing has been a popular teacher education simulation. Apprentice teachers practice classroom management, lesson delivery, and student engagement by acting as teachers and peers or instructors as pupils. Traditional methods were effective but sometimes lacked realism and couldn't properly represent classroom complexity (Rivera & Simons, 2008).

Simulations in teacher training evolved with technology. VR added new dimensions to this practice. Users can engage with simulated students and classrooms in a completely realistic VR environment. This technology provided more realistic scenarios than role-playing, allowing aspiring instructors to address a variety of classroom difficulties. VR simulations assist instructors in learning problem-solving abilities by offering fast feedback and letting them practice until they perfect them (Stocker et al., 2011; Merchant et al., 2013; Herrington et al., 2007; Checa & Bustillo, 2019).

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