Transformative Pedagogy of Digital Inclusion: Integrating Universal Design for Learning, Assistive Technology and Artificial Intelligence in Primary Education

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Abstract

Modern approaches to inclusive education transcend traditional didactics and call for a transformative pedagogy grounded in digital inclusion. This paper extends earlier research on teachers' perceptions of Universal Design for Learning (UDL) and Assistive Technology (AT) by introducing a theoretical framework that brings together constructivism, digital humanism, and the ethics of technology. The aim was to explore how teachers perceive the integration of UDL, AT, and artificial intelligence (AI) in shaping personalized, equitable, and accessible education. The study was conducted in two primary schools in Istria (N = 50 teachers) using semi-structured interviews and reflexive thematic analysis. Findings indicate that teachers view technology as a facilitator of flexibility and differentiation, while emphasizing ethical challenges (privacy, algorithmic bias) and the need for institutional support. The results also reveal that teachers value the pedagogical potential of AI but remain cautious about its human implications and the necessity of sustained professional development. This study contributes to current debates on digital equity and responsible AI in education by proposing an integrated pedagogical-ethical model of digital inclusion. It highlights the importance of empowering teachers as co-designers of inclusive, human-centered digital learning environments and suggests directions for future research combining qualitative and quantitative approaches. Overall, the findings emphasize that digital transformation in education should not only enhance accessibility, but also cultivate empathy, critical thinking, and ethical awareness as essential dimensions of 21st-century inclusive pedagogy.

Keywords

Artificial intelligence, assistive technology, digital inclusion, transformative pedagogy, universal design for learning.