Institutional Processes of Technology Integration in Teacher Education: An Analytical Framework for Active Learning, Digital Authorship, and AI Literacy

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Abstract

The integration of digital technologies and Artificial Intelligence in teacher education has become a central challenge in contemporary education systems. However, research shows that effective technology integration depends not only on access to digital tools, but on systemic alignment between curriculum design, pedagogical innovation, and institutional practices within teacher education programs. This study investigates institutional processes of technology integration in a Brazilian undergraduate Teacher Education program in Language and Codes. Using a qualitative document analysis of 20 institutional and pedagogical artifacts produced between 2025 and 2026, the study examines how curricular and research-based initiatives articulate within teacher education. The analysis identifies three interrelated dimensions: active learning, digital authorship, and AI literacy. These dimensions operate in a non-linear and interdependent manner, shaping different levels of institutional development and contributing to the construction of pedagogical practices across the program. Active learning is expressed through inquiry-based and project-oriented pedagogies; digital authorship emerges through multimodal knowledge production and dissemination; and AI literacy involves critical engagement with artificial intelligence in educational and research contexts. The study proposes an analytical framework for understanding technology integration in teacher education as an emergent institutional process shaped by the interaction of pedagogical practices, digital competence development, and inquiry-based learning. The findings suggest that technology integration should be understood as a socio-technical and institutional process rather than a technical implementation, emphasizing curriculum innovation and professional learning in teacher education.

Index Terms

Artificial Intelligence, Digital Competence, Teacher Education, Technology Integration

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