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Teacher Competency, Professional Development, and Technology Integration in Curriculum Reform: A Systematic Review of Quantitative Evidence

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Keywords: technology integration in curriculum reform, teacher capacity for technology, key determinants of teacher readiness, teacher competency, pd influences teacher competency, teacher readiness, enhancing teacher capacity, competency development, teacher population, measurable levels of technology integration, technology readiness, demographic patterns in the teacher population, curriculum reform, professional development, tertiary teacher, technology integration, driven curriculum reform, technology integration within the context, competency, instructional practice, school leader, statistical associations among pd participation, final study inclusion

Abstract

This systematic review examines quantitative evidence on the relationships among teacher competency, professional development (PD), and technology integration within the context of curriculum reform. Using PICOS criteria, the review synthesizes studies that investigate how PD influences teacher competency and how these competencies contribute to measurable levels of technology integration in instructional practices. It further explores statistical associations among PD participation, competency development, and technology readiness. Secondary aims include identifying demographic patterns in the teacher populations studied, determining the contextual and institutional factors that influence outcomes, and mapping the theoretical frameworks and validated quantitative instruments commonly used in this research area.

A rigorous three-stage process—initial eligibility screening, methodological quality appraisal, and final study inclusion—ensures that only quantitatively robust studies are considered. Included research involves elementary, secondary, and tertiary teachers and employs designs such as correlational analyses, quasi-experiments, and survey-based approaches. The review is expected to generate evidence-based insights on effective PD modalities, key determinants of teacher readiness, and reliable measurement tools that can strengthen future empirical investigations. Ultimately, the findings aim to support policymakers, school leaders, and curriculum designers in enhancing teacher capacity for technology-driven curriculum reforms.

Keywords: teacher competency, professional development, technology integration, curriculum reform, quantitative evidence, TPACK, PD effectiveness.



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