

# Equity, Cost, and Pedagogical Effectiveness in Online and Distance Education: A Scoping Review of Post-Pandemic Evidence

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## Abstract:

The rapid expansion of online and distance education following the COVID-19 pandemic has fundamentally reshaped educational systems worldwide. While digital learning modalities have enabled continuity and scalability, they have also exposed persistent challenges related to equity, cost, and pedagogical effectiveness. This systematic literature review aims to critically synthesize post-pandemic empirical evidence examining how these three dimensions interact to influence the sustainability and quality of online and distance education. Following PRISMA guidelines, a comprehensive search was conducted primarily using the Scopus database, supplemented by other scholarly sources. Peer-reviewed empirical studies published in the post-pandemic period were systematically screened, assessed for quality, and thematically analyzed. The review synthesizes findings from diverse global contexts, encompassing higher education, teacher professional development, and marginalized learner populations. The results are organized around four interrelated themes: (1) equity and access, (2) cost and affordability, (3) pedagogical effectiveness and learning outcomes, and (4) integrative models linking equity, cost, and pedagogy. The findings reveal that while online education can enhance access and reduce certain costs, these benefits are unevenly distributed and highly contingent on infrastructure, institutional capacity, and instructional design. Low-cost solutions such as OER and mobile-based learning improve access, yet pedagogical quality often depends on structured platforms, instructor readiness, and learner support. Importantly, integrative studies demonstrate that isolating cost-efficiency from equity and pedagogy risks producing scalable but inequitable and pedagogically weak systems. This review contributes to scholarship by reframing online education as a socio-technical and economic ecosystem. It offers evidence-based insights for policymakers, institutions, and researchers seeking to design inclusive, affordable, and pedagogically robust digital education models in the post-pandemic era.

## Keywords:

Online education, Distance learning, Equity in education, Cost and affordability, Pedagogical effectiveness.