E-Learning-Based Cloud Computing Environment: A Systematic Review, Challenges, and Opportunities

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Abstract: *New technologies drive educational shifts, transforming offline to online learning. This study investigates e-learning and cloud computing integration to understand synergies and their potential impact. The motivation behind this study is to investigate the intricate relationship between e-learning and cloud computing. By analyzing 154 scientific papers, the study delves into the specifics of this integration, highlighting trends and areas that have received more attention. The study examines e-learning in a cloud computing environment, focusing on architecture (27%), general topics (21%), software (19%), and performance (18%). Virtual environments have fewer security issues, while storage and network focus are more prevalent. Cloud computing services are mainly all services, with software as a service (18%), infrastructure as a service (17%), and platforms as a service (10%). Most studies are based on public clouds (74%), all other models (11%), and hybrid clouds (3%). The study examines e-learning integration in cloud computing, highlighting limitations in hybrid and private clouds, specialized infrastructure, and a gap in platforms and infrastructure offerings.*

Keywords: Cloud computing, e-learning, environment, educational, e learning based cloud computing, systematic.