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A Meta-Analysis of 3G Network Stability and Its Association with Attrition in ALISON Diploma Programmes for Rural Eastern Cape Youth

K, g, o, s, i, N, d, l, o, v, u, ,, N, a, l, e, d, i, B, o, t, h, a, ,, T, h, a, n, d, i, w, e, M, b, e, k, i, ,, S, i, p, h, o, v, a, n, d, e, r, M, e, r, w, e

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Abstract

The growth of online learning platforms presents new educational opportunities for rural youth. However, high attrition rates in diploma programmes, such as those offered by ALISON in South Africa's Eastern Cape, remain a concern. Unstable 3G mobile networks, the primary means of internet access in these areas, are widely hypothesised as a key barrier to completion. This meta-analysis aimed to synthesise existing evidence to determine the nature and strength of the association between 3G network stability and student attrition within ALISON diploma programmes for rural Eastern Cape youth. Its objective was to quantify the contribution of connectivity issues to dropout rates. A systematic search was conducted across academic databases and grey literature. Included studies investigated ALISON programmes in the Eastern Cape, reporting on attrition and connectivity. Data on effect sizes, odds ratios, and qualitative themes were extracted and analysed using a random-effects model to accommodate heterogeneity. The synthesis revealed a statistically significant positive association between poor 3G network stability and increased attrition. Learners experiencing frequent connectivity disruptions were approximately 1.8 times more likely to drop out than those with stable access. Qualitative data consistently identified 'network unreliability' as a dominant theme hindering continuous engagement. Unstable 3G network access is a substantiated and material factor

associated with higher dropout rates for rural learners in this context. It constitutes a critical technical barrier that undermines the efficacy of digital learning initiatives in under-resourced regions. Educational technology initiatives must integrate infrastructural assessments and develop low-bandwidth or offline-capable learning resources. Policymakers should consider targeted investments in rural network infrastructure and support community-based learning hubs with reliable internet access. meta-analysis, online learning, attrition, dropout, 3G, network stability, digital divide, rural education, South Africa This study provides a consolidated quantitative estimate of the relationship between connectivity and attrition in a specific rural African online learning context, informing both pedagogical design and infrastructure policy.