



Bridging the Connectivity Gap: The Role of Broadband Infrastructure in Enhancing Education Access and Engagement

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Abstract

Broadband infrastructure plays a critical role in the digital transformation of education institutions, particularly at Minority-Serving Institutions (MSIs) that have historically faced barriers to technology access. This paper examines how broadband expansion, enabled by the Connecting Minority Communities (CMC) initiative, can significantly enhance institutional capacity, academic engagement, and student access to education, both on-campus and remotely. Using the experience at a rural MSI that received federal investment through the CMC program, we analyze the impact of targeted infrastructure improvements on instructional delivery, digital resource utilization, and student support services. We explore how expanded infrastructure not only supports hybrid and online learning environments but also underpins broader digital initiatives, including simulations, virtual laboratories, tele-advising, and community outreach. In addition to highlighting measurable outcomes such as increased connectivity, expansion of online programs, and LMS usage, the paper also discusses implementation challenges and sustainability concerns. Findings underscore the critical need for continued broadband investment as a pillar of institutional resilience and student success in an increasingly digital academic landscape.

Keywords: broadband infrastructure; digital transformation; education access; rural institution; remote learning