

Application to Enhance Educational Infrastructure and Connectivity in Rural Areas

A PROJECT REPORT

Submitted by,

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Under the guidance of,

**Mr. Md Ziaur Rahman
Assistant Professor**

in partial fulfillment for the award of the degree of

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND ENGINEERING

At



PRESIDENCY UNIVERSITY

BENGALURU

MAY 2025

PRESIDENCY UNIVERSITY
PRESIDENCY SCHOOL OF COMPUTER SCIENCE
ENGINEERING

CERTIFICATE

This is to certify that the Project report “**Application to Enhance Educational Infrastructure and Connectivity in Rural Areas**” being submitted by “**Ankitha Hudegal, Arpitha G**” bearing roll numbers “20211CSE0680, 20211CSE0682” in partial fulfillment of the requirement for the award of the degree of Bachelor of Technology in Computer Science and Engineering is a bonafide work carried out under my supervision.

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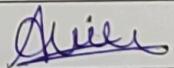
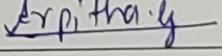
PRESIDENCY UNIVERSITY

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DECLARATION

We hereby declare that the work, which is being presented in the project report **“Application to Enhance Educational Infrastructure and Connectivity in Rural Areas”** entitled in partial fulfillment for the award of Degree of **Bachelor of Technology in Computer Science and Engineering**, is a record of our own investigations carried under the guidance of **Mr. Md Ziaur Rahman, Assistant Professor, School of Computer Science Engineering, Presidency University, Bengaluru.**

We have not submitted the matter presented in this report anywhere for the award of any other Degree.

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ABSTRACT

India's rural education sector continues to grapple with deep-rooted systemic challenges, including inadequate infrastructure, sporadic internet connectivity, and a lack of access to quality learning resources. These limitations severely restrict the academic growth of students in remote areas and contribute significantly to the widening educational divide between urban and rural communities.

Edubridge, an inclusive and adaptive educational learning platform, is envisioned as a transformative solution designed to bridge this divide by leveraging modern digital technologies. The platform presents a unified, cloud-powered ecosystem that offers live and recorded virtual classrooms, intelligent educational resource management, and AI-driven learning support. By enabling seamless access to curriculum-aligned digital content, Edubridge empowers teachers to deliver engaging and personalized learning experiences, even in resource-constrained environments.

To address connectivity barriers, the platform integrates bandwidth-efficient streaming, offline access through mobile applications, and content caching techniques to ensure uninterrupted learning. Additionally, educators benefit from an intuitive dashboard equipped with advanced learning analytics to monitor student engagement and performance in real time, facilitating timely intervention and personalized guidance.

For students, Edubridge provides a holistic and interactive learning environment featuring AI tutors, study goal tracking, peer collaboration, and access to both free and premium educational materials. The platform also fosters a vibrant academic community by enabling students and teachers to connect, share resources, and collaborate on projects, regardless of geographic location.

At an institutional level, the platform supports administrators and policymakers through infrastructure planning tools and actionable data insights, enabling informed decision-making and optimized resource allocation.

By addressing both technological and pedagogical gaps, Edubridge aims to democratize access to quality education, enhance learning outcomes, and promote digital inclusion in line with the national vision of "Education for All" and the Digital India initiative. The project stands as a robust step toward achieving educational equity, driving rural empowerment, and shaping a more inclusive, knowledge-driven future for the nation.