EduTutor AI: Personalized Learning with Generative AI and LMS Integration

# Project Report

## 1. INTRODUCTION

### 1.1 Project Overview

EduTutor AI is a personalized education platform that leverages Generative AI and Learning Management System (LMS) integration to deliver adaptive learning experiences. It aims to bridge the learning gaps by tailoring educational content according to the learner’s pace, style, and performance.

### 1.2 Purpose

The purpose of EduTutor AI is to enhance student engagement and learning outcomes by offering AI-generated content, instant feedback, and smart tracking through LMS platforms.

## 2. IDEATION PHASE

### 2.1 Problem Statement

Students have diverse learning needs, but traditional educational systems often provide a one-size-fits-all solution.

### 2.2 Empathy Map Canvas

Includes user pain points such as lack of personalized feedback, delayed responses, and static curriculum.

### 2.3 Brainstorming

Discussions focused on using generative AI to adapt content delivery and integrating LMS for structured learning paths.

## 3. REQUIREMENT ANALYSIS

### 3.1 Customer Journey Map

From user onboarding, content consumption, to receiving personalized feedback.

### 3.2 Solution Requirement

AI model integration, LMS compatibility, performance tracking, user-friendly UI.

### 3.3 Data Flow Diagram

Data flows from student input to AI engine for processing and content adaptation, then back to LMS interface.

### 3.4 Technology Stack

Python, Hugging Face Transformers, Flask, React, Firebase, Moodle/Canvas LMS.

## 4. PROJECT DESIGN

### 4.1 Problem Solution Fit

Aligns student’s learning behavior with dynamically generated content.

### 4.2 Proposed Solution

A smart tutor system powered by generative AI and LMS integration to deliver personalized learning paths.

### 4.3 Solution Architecture

Includes AI backend (content generation), middleware (API services), and frontend (LMS interface).

## 5. PROJECT PLANNING & SCHEDULING

### 5.1 Project Planning

Agile methodology with sprints covering ideation, development, testing, and deployment phases.

## 6. FUNCTIONAL AND PERFORMANCE TESTING

### 6.1 Performance Testing

Load testing on LMS API, latency measurement on AI-generated content delivery.

## 7. RESULTS

### 7.1 Output Screenshots

Screenshots include AI content recommendations, progress dashboard, and feedback loop interface.

## 8. ADVANTAGES & DISADVANTAGES

Advantages: Personalized learning, real-time feedback, scalable platform.  
Disadvantages: Requires high computational resources, data privacy concerns.

## 9. CONCLUSION

EduTutor AI proves to be a transformative tool in personalized education, driving better outcomes through AI and LMS synergy.

## 10. FUTURE SCOPE

Integrating voice assistance, multilingual support, and predictive analytics to further personalize learning.

## 11. APPENDIX

Source Code (if any): [Insert GitHub link here]  
Dataset Link: [Insert dataset link here]  
GitHub & Project Demo Link: [Insert demo link here]