FINAL PROJECT REPORT

### Project Name

### Personalized Learning with Generative AI and LMS Integration

1. **INTRODUCTION**

1.1 Project Overview

This project integrates Generative AI with a Learning Management System (LMS) to deliver personalized learning experiences. The system dynamically generates content—quizzes, lessons, summaries—tailored to the learner’s behavior, knowledge level, and preferences. It promotes adaptive learning, increasing engagement and retention.

1.2 Purpose

The purpose is to automate personalized content creation using large language models (LLMs) and integrate it seamlessly into LMS platforms. This reduces manual content preparation for educators and ensures each learner receives material suited to their learning needs.

2. IDEATION PHASE

2.1 Problem Statement

Traditional e-learning platforms offer static content, which may not align with individual learning styles or paces. This leads to disengagement, learning gaps, and reduced educational outcomes.

2.2 Empathy Map Canvas

User Says Thinks Does Feels

Student “The material is too fast/slow for me.” “I wish the content adapted to me.” Tries to search for extra resources Frustrated, overwhelmed

Teacher “Creating personalized content for each student is impossible.” “AI might help me scale personalized teaching.” Prepares general lessons Overloaded

2.3 Brainstorming Ideas

Use Generative AI for custom quizzes, notes, and summaries

Integrate AI APIs into LMS for real-time content delivery

Track learner performance to adjust difficulty automatically

3. REQUIREMENT ANALYSIS

3.1 Customer Journey Map

1. Learner logs into LMS

2. System tracks learning progress

3. Generative AI creates personalized content

4. Learner interacts with generated material

5. System collects feedback → AI adapts next content

3.2 Solution Requirements

Module Description

AI Content Generator Uses LLMs to create personalized lessons, quizzes

LMS Integration Embeds AI output into LMS seamlessly

Learner Tracking Monitors interactions and adjusts content accordingly

Feedback Loop Updates learner profile for continuous personalization

3.3 Data Flow Diagram

Learner Input → LMS → AI Content Generation → Personalized Content Output → LMS Dashboard → Learner Feedback → AI Model Up3.4 Technology Stack

Component Technology

Generative AI OpenAI GPT / Custom LLM

Integration REST APIs

LMS Moodle,