Project Report

**1. INTRODUCTION**

**1.1 Project Overview**

An **LearnHub:Your Center for Skill Enhancement** is a digital environment offering educational resources, video lectures, assignments, and community interactions to help learners gain knowledge online. Built using the MERN stack (MongoDB, Express.js, React.js, Node.js), the project ensures accessibility, flexibility, and scalability for learners and educators.

**1.2 Purpose**

The purpose of this project is to provide a comprehensive, scalable, and user-friendly platform for learners to acquire new skills, track their progress, interact with instructors, and receive certifications. It also supports educators in course creation and administration.

**2. IDEATION PHASE**

**2.1 Problem Statement**

Traditional learning models are rigid and geographically limited. The need for accessible, flexible, and interactive learning solutions has led to the rise of online learning platforms.

**2.2 Empathy Map Canvas**

* User (Student): Curious, goal-oriented, self-paced learner
* Says: "I want to learn a skill in my free time."
* Thinks: "It should be easy to use and track progress."
* Feels: Motivated but overwhelmed by too many options
* Does: Searches courses, joins discussions, completes modules

**2.3 Brainstorming**

* Core features: Registration, course browsing, enrollment, progress tracking, certification
* Admin control panel
* Payment gateway for premium content
* **Responsive UI for all devices**

**3. REQUIREMENT ANALYSIS**

**3.1 Customer Journey Map**

1. Visit platform
2. Register/Login
3. Browse courses
4. Enroll in desired course
5. Access content
6. Complete tasks
7. Get certified

**3.2 Solution Requirement**

* User roles: Admin, Teacher, Student
* Functional: Course management, content delivery, communication tools
* Non-functional: Security, responsiveness, scalability

**3.3 Data Flow Diagram**

**(To be inserted as image)**

* **User ↔️ Frontend ↔️ Backend ↔️ MongoDB**

**3.4 Technology Stack**

* **Frontend: React.js, Vite, Bootstrap, Material UI**
* **Backend: Node.js, Express.js**
* **Database: MongoDB**
* **Other: Axios, Mongoose**

**4. PROJECT DESIGN**

**4.1 Problem Solution Fit**

This **LearnHub:Your Center for Skill Enhancement** addresses the demand for accessible, engaging, and structured e-learning by providing an intuitive interface, robust backend, and rich content delivery mechanisms.

**4.2 Proposed Solution**

Create a platform where students can learn at their own pace with instructor support, while admins manage content and users efficiently.

**4.3 Solution Architecture**

* React frontend communicates with Express backend via RESTful APIs
* Backend connects to MongoDB to store user and course data
* Axios handles API calls

**5. PROJECT PLANNING & SCHEDULING**

**5.1 Project Planning**

* Week 1: Requirements gathering, tool installation
* Week 2–3: Frontend & Backend setup
* Week 4–5: Core feature development (registration, course mgmt)
* Week 6: Integration and testing

**6. FUNCTIONAL AND PERFORMANCE TESTING**

**6.1 Performance Testing**

* Load testing using Postman/Apache JMeter
* Simulated multiple user logins, enrollments, and video loading
* Ensured optimal response time under high load

**7. RESULTS**

**7.1 Output Screenshots**

* + Landing Paga
  + Register Page
  + Login Page
  + Admin Dashboard
  + Teacher Dashboard

**8. ADVANTAGES & DISADVANTAGES**

**Advantages:**

* Flexible learning
* Real-time progress tracking
* Cross-platform access
* Scalable architecture

**Disadvantages:**

* Internet required
* Limited real-time instructor availability

**9. CONCLUSION**

The **LearnHub:Your Center for Skill Enhancement** project demonstrates the power and flexibility of the MERN stack in delivering modern educational platforms. It bridges the gap between learners and quality education regardless of location.

**10. FUTURE SCOPE**

* Integration of AI tutors
* Mobile application
* Gamification features
* Advanced analytics for teachers

**11. APPENDIX**

* **Source Code**: Included in Github Repository
* **Dataset Link: N/A (data entered via UI)**
* **GitHub link:** [**https://github.com/deepikamukku83/LearnHub-**](https://github.com/deepikamukku83/LearnHub-)