LEARNHUB – PROJECT REPORT

1. INTRODUCTION

1.1 Project Overview

The project titled "Learn Hub – Your Center for Skill Enhancement" aims to simplify online learning by providing an intuitive platform where students can browse, enroll in, and track courses, while teachers can upload and manage educational content. Learn Hub bridges the gap between learners and educators through centralized learning resources.

1.2 Purpose

The purpose of Learn Hub is to make learning accessible, organized, and flexible. It ensures:

- Easy access to online educational content
- Seamless course enrollment and progress tracking
- A dashboard experience for both students and instructors
- Scalability for diverse subjects and users

2. IDEATION PHASE

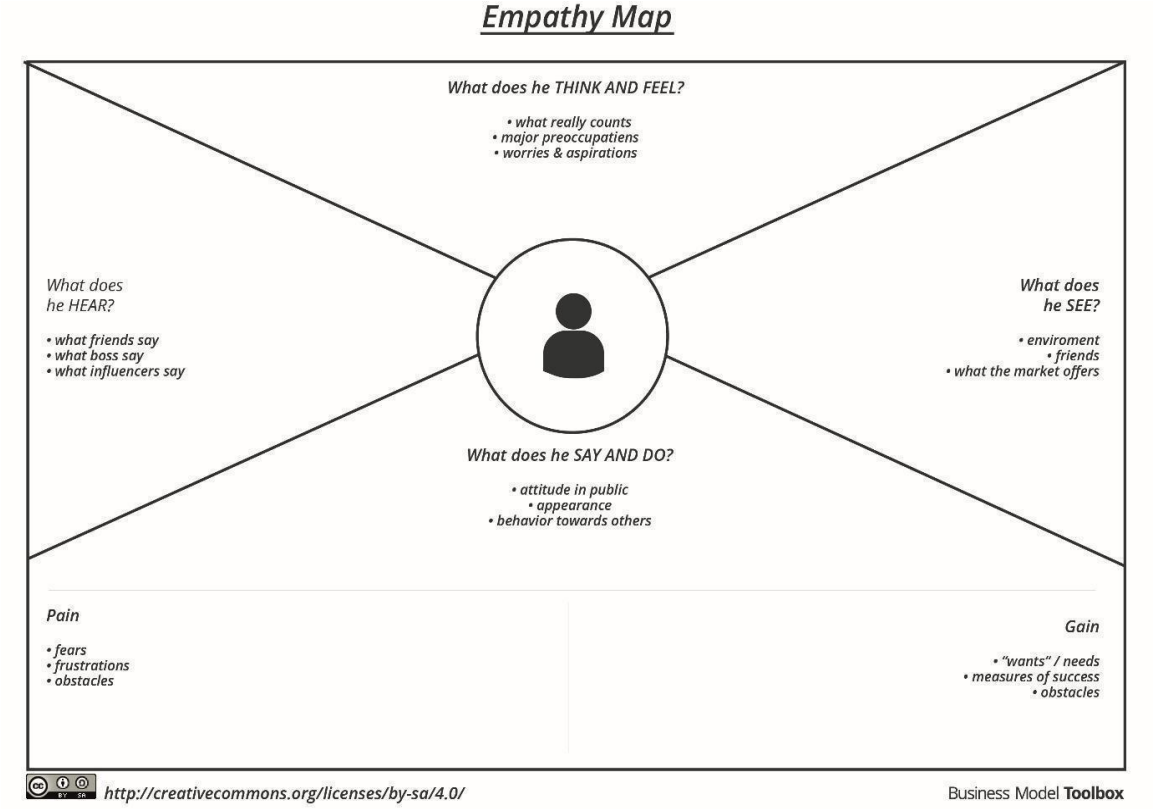
2.1 Problem Statement

Learners often struggle to find reliable and structured platforms for self-paced education with instructor guidance.

How Might We:

How might we help students learn and track skills online while allowing instructors to manage content effortlessly?

2.2 Empathy Map Canvas



Says:

“I wish there was one place for all my online courses.”

Thinks:

“Will I remember where I left off?”

Feels:

Overwhelmed, disorganized, curious

Does:

Switches between apps, uses notes to track progress manually

2.3 Brainstorming

During the brainstorming session, the team explored ideas such as:

- Student progress tracker
- Role-based dashboard (student/teacher)
- Embedded video lessons with quizzes
- Mobile-friendly UI for learning on the go

3. REQUIREMENT ANALYSIS

3.1 Customer Journey Map

The customer journey includes the following key stages:

- Awareness: User learns about the app.
- Registration/Login: New users sign up; existing users log in.
- Course Discovery: Search or filter courses by topic or instructor.
- Enrollment: Join a course and begin lessons.
- Tracking: View course content and progress dashboard.
- Completion: Access final resources or certification.

3.2 Solution Requirement

Functional Requirements:

- User Registration and Login
- Add/view courses (teacher)
- Book/Cancel/Reschedule Appointments
- Enroll & access lessons (student)
- Upload materials and track engagement
- Secure authentication
- Generating course completion certificate

Non-Functional Requirements:

- Fast loading time (<2 seconds)
- Secure data handling
- Data privacy and token-based security
- Mobile-responsive design
- RESTful API integration

3.3 Data Flow Diagram

Level 0 DFD:

External Entities: Student, Teacher, Admin (optional)

Processes: Registration, Course Management, Enrollment

Data Stores: Users DB, Courses DB, Enrollments DB

3.4 Technology Stack

- Frontend: React.js + Vite, Context API
- Backend:. Node.js, Express.js
- Database: MongoDB with Mongoose
- Authentication: JWT
- Testing: Jest, Mocha/Chai, Cypress

4. PROJECT DESIGN

4.1 Problem-Solution Fit

Students and teachers need a centralized system that simplifies course sharing and tracking. Learn Hub meets that demand with intuitive dashboards and efficient course management..

4.2 Proposed Solution

A full-stack web application where:

- Students can explore and enroll in courses
- Teachers can upload videos and resources
- Roles are separated for focused UI and access

4.3 Solution Architecture

Architecture Type: Client-Server Model

Layers:

- Presentation Layer: React frontend using Vite
- Business Logic Layer: Express RESTful APIs
- Data Layer: MongoDB Atlas/local instance

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Agile Methodology was used with sprints of 6 days each:

Sprint-1: 16 June 2025 - 18 June 2025: Folder setup, routing

Sprint-2: 19 June 2025 – 20 June 2025: Login/Register for all roles

Sprint-3: 21 June 2025 - 23 June 2025: Course upload, enrollment

Sprint-4: 24 June 2025 - 26 June 2025: API testing, styling, role dashboard logic

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

Tools Used: JMeter, Postman, Chrome DevTools

Test Scenarios:

- 100 concurrent user load test
- API response benchmarks
- MongoDB query profiling

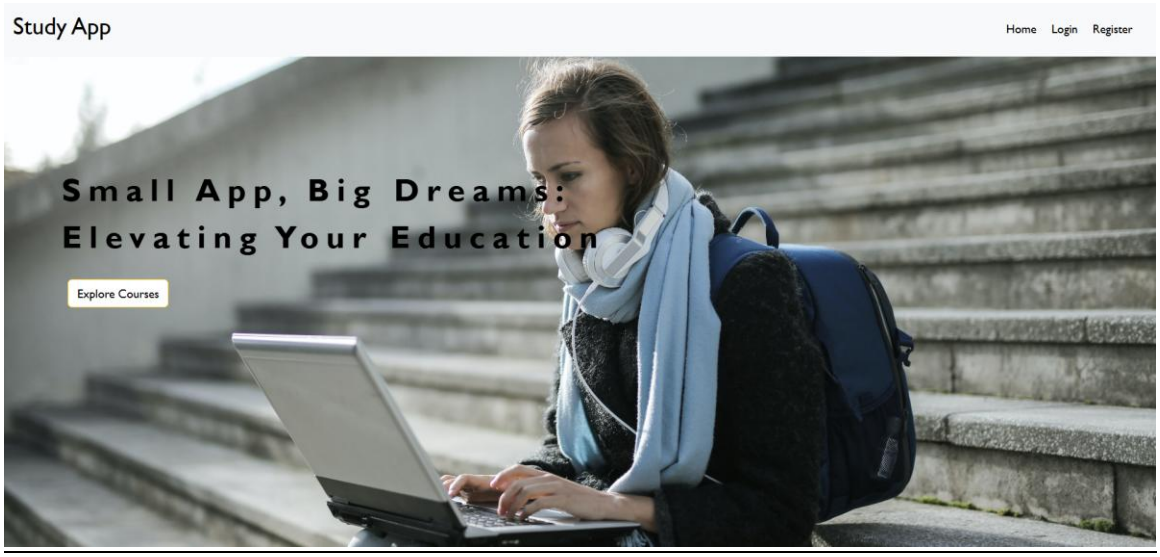
Results:

- Avg API latency: 1.2s
- No downtime during load simulation
- DB queries optimized with indexes

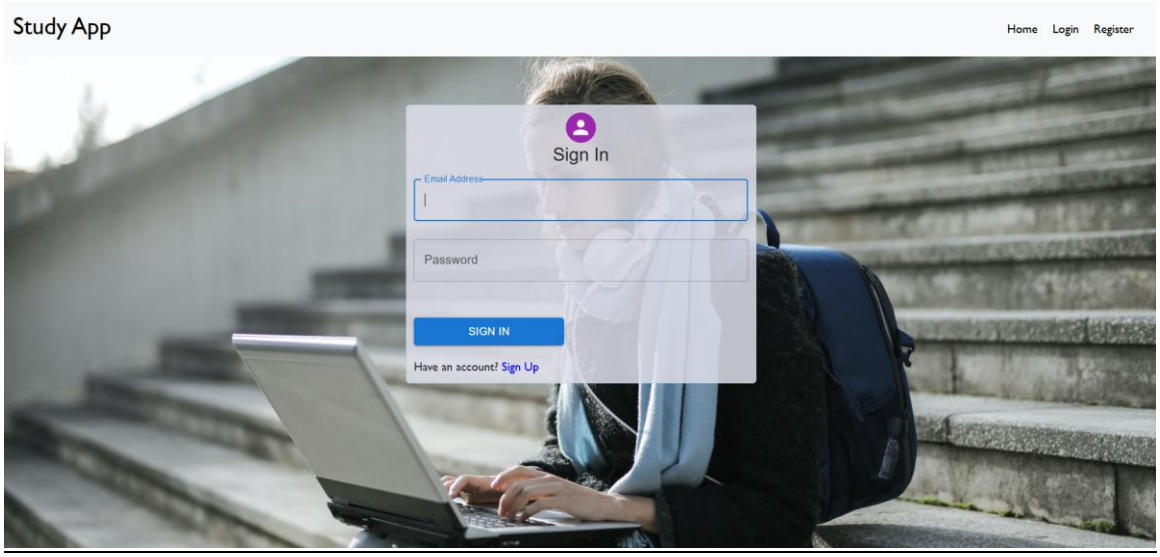
7. RESULTS

7.1 Output Screenshots:

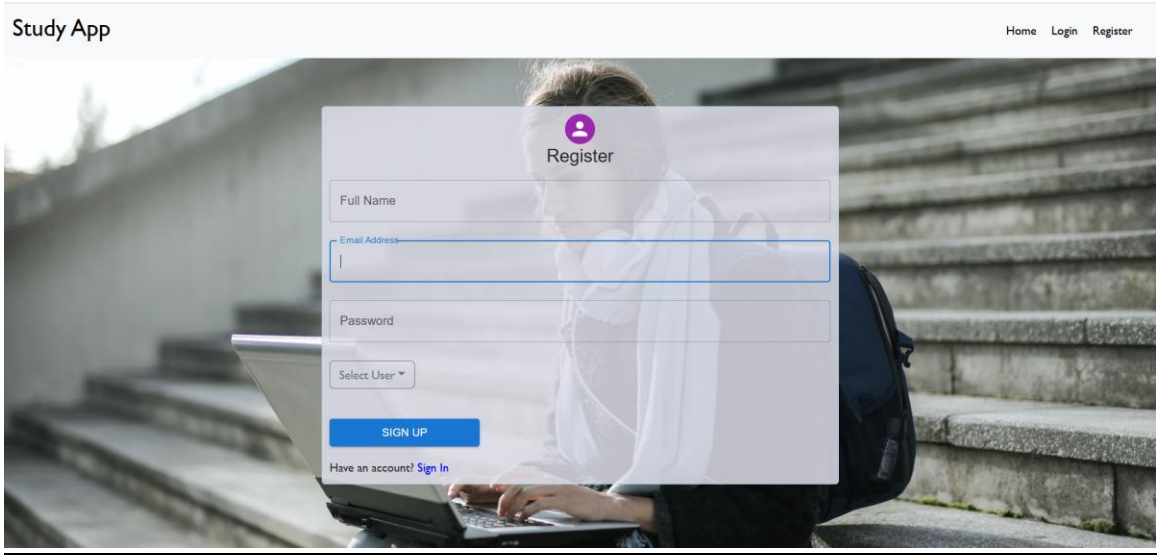
HOME PAGE :



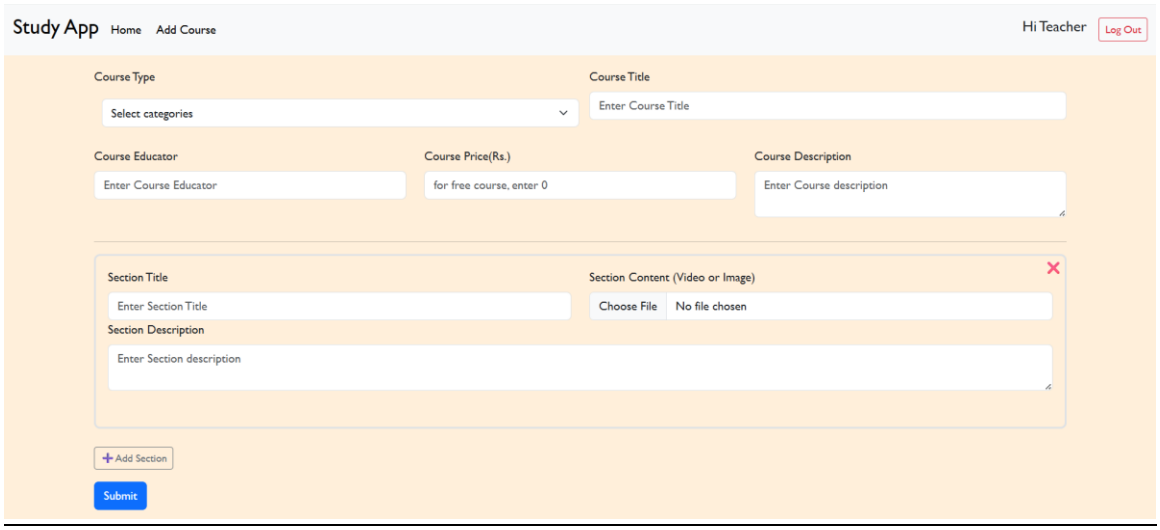
LOGIN PAGE:



REGISTER PAGE :

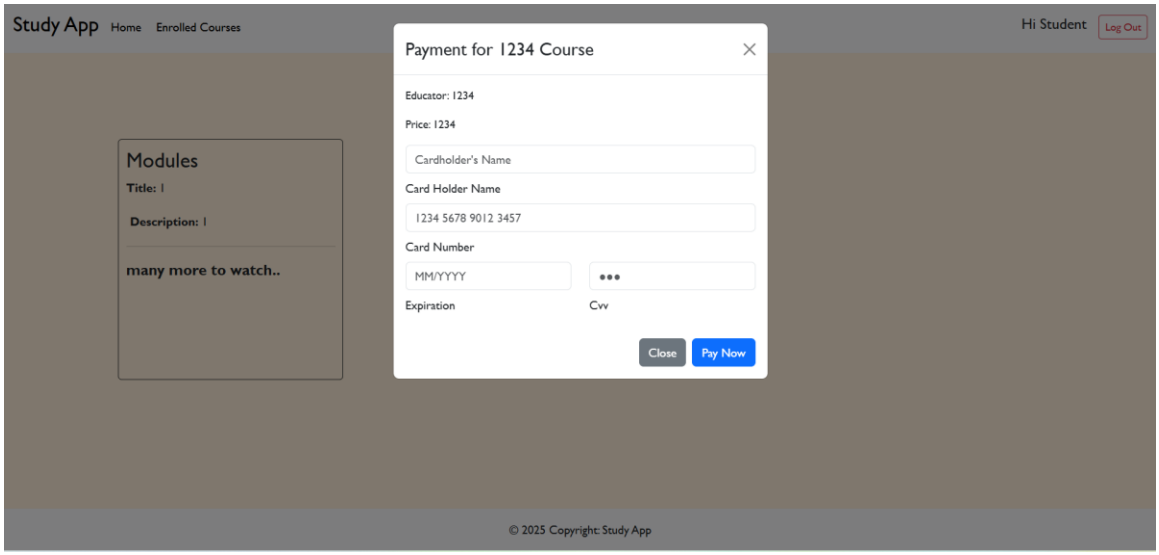


TEACHER DASHBOARD:



STUDENT DASHBOARD:

PAYEMENT PAGE:



8. ADVANTAGES & DISADVANTAGES

Advantages:

- Clean and responsive UI
- Supports multi-role functionality
- Scalable for more features and users
- Easy to use

Disadvantages:

- Requires stable internet
- Limited file formats for upload
- Can be enhanced

9. CONCLUSION

Learn Hub successfully delivers a user-friendly platform for self-paced learning and digital teaching. Its flexible architecture allows future growth into mobile learning, smart recommendations, and analytics.

10. FUTURE SCOPE

- Video conferencing integration (Zoom/Meet)
- AI-based course recommendation
- Teacher-student chat system
- Badge system
- Calendar and event sync

11. APPENDIX

Source Code :

https://github.com/Purnesh4215/LEARNING_HUB