AI Internship IBM SkillsBuild

Presented By: **The Matrix**

Group Members:

1. Akshay Sharma
2. Arijit Dey
3. Sanjana Verma
4. Nisha Shaw
5. Ritwika Banik
6. Moumita Bapari
7. Ashis Paul

College: Dr. Sudhir Chandra Sur Institute of Technology & Sports Complex

Concept Note: To develop an AI-powered educational agent capable of analyzing learner performance data and generating personalized learning paths.

Introduction:

The Indian education system, while extensive, often follows a standardized approach that overlooks the diverse learning needs of individual students. This generalization leads to unequal learning outcomes, particularly affecting students from marginalized and under-resourced communities. To address these challenges, this project introduces an AI-powered mobile application designed to improve the quality of education by offering personalized, adaptive learning experiences.

The app utilizes artificial intelligence to analyze each student's performance, identify learning gaps, and recommend tailored learning paths and resources. It also assists educators by providing actionable insights to enhance curriculum delivery and teaching strategies. Through real-time progress tracking, early detection of difficulties, and curated educational content, the app empowers both students and teachers.

By making education more inclusive, data-driven, and student-centric, this solution aims to strengthen the Indian education system and contribute to Sustainable Development Goal 4: Quality Education for all.

Problem Statement:

The primary challenge addressed by this project is the lack of personalized and inclusive learning within the Indian education system. Traditional teaching methods are largely uniform and do not adapt to the diverse learning styles, paces, and needs of individual students. This often results in learning gaps, low engagement, and poor academic outcomes—particularly among underprivileged and rural populations.

Despite efforts to expand access to education, the quality and effectiveness of instruction remain inconsistent across different regions and socioeconomic groups. There is a critical need for a scalable, intelligent solution that supports educators, identifies learning difficulties early, and provides customized learning experiences.

This project leverages Artificial Intelligence to bridge these gaps by creating a personalized learning platform that enhances educational outcomes, improves teaching strategies, and ensures equitable access to quality education for all learners.

Objective:

The main objective of this project is to enhance students' motivation to learn by providing a personalized and engaging study experience. By leveraging artificial intelligence, the website adapts to individual learning styles, tracks progress, and delivers customized educational content. This approach supports the goals of SDG 4: Quality Education by promoting inclusive, equitable, and student-centered learning, especially for underprivileged and diverse learners.

Why this problem:

The current education system, particularly in many developing regions, is often generalized and outdated and fails to effectively meet the diverse learning needs of individual students. As a result, many students fall behind because teaching methods are not tailored to their unique learning styles. Additionally, underprivileged communities frequently lack access to quality learning materials and support systems.
We are addressing this problem because:

- Students are unable to learn at their own pace or in a way that suits their style.
- Many teachers lack the tools necessary to identify learning gaps early on.
- The digital divide restricts educational opportunities for rural and marginalized communities.

Overview:

The solution involves a Subject-Wide Learning App built to simplify foundational learning across Math, Science, Computer, and English.
Each subject includes Resources, Videos, and an Interactive Quiz system.

The app prioritizes modularity, ease of use, and backend integration with Relay AI for smart analysis.

Core Features:

1. Multi-Subject Support-

Subjects: English, Math, Science, Computer

- Each subject follows the same standardized format for ease of use and development.

2. Level-Based Learning-

- Divided into three difficulty levels: Basic, Intermediate, Advanced
- Ensures progressive mastery of content.

3. Content Modules-

3.a. Resources Tab

- Static or downloadable reference material (PDFs, guides, notes)
- Organized by subject and topic.

3.b. Videos Tab

- Embedded or linked educational videos
- Optional: Playlist-style content delivery

3.c. Quiz Tab

- Dynamic quiz engine with:
  - **i.** Topic-based questions
  - **ii.** Multiple choice format
  - **iii.** Instant feedback

Questions stored in structured JSON files, categorized by subject, level, and topic

4. AI Integration with Relay.app-

4.a. Smart Submission

- Sends quiz results to Relay after user completion

4.b. Weak Topic Detection

- Analyses answers to flag weak areas
- Uses tags (topic in JSON) for accurate feedback

4.c. Automated Feedback (PDF)

- Relay generates a PDF report of weak areas
- Sent to the student or saved for teacher/admin use

4.d. AI-Generated Questions

- Relay will eventually be used to generate new questions based on user performance.

5. Technical Design Features-

5.a. Modular JSON Structure

- Easy to update or add new questions per subject/level
- Keeps frontend fast and backend light

5.b. Scalable Architecture

- Can plug in more subjects or quizzes without altering core structure

5.c. Responsive UI

- Works on desktop and mobile

Clean, modern design using basic HTML/CSS

Tech Implementation:

1.Frontend Design and Structure

Design a responsive and modular user interface using HTML, CSS, and JavaScript. Implement a tab-based layout to separate each subject into sections with Resources, Videos, and Quiz components, ensuring smooth user navigation across devices.

2. Data Storage and Integration

Organize quiz data in structured JSON files categorized by subject and level. Each question entry includes the prompt, options, correct answer, and associated topic. Load these dynamically into the quiz interface to enable scalable and flexible content delivery.

3.User Interaction and Answer Processing

Capture user-selected answers during quiz attempts and compare them against correct responses in real time. Log incorrect answers by topic to generate a list of weak areas, preparing data for backend automation and feedback generation.

4.Backend Automation with Relay AI

Integrate Relay.app as the backend automation tool. Upon quiz completion, send a webhook containing subject, level, and missed topics. Relay processes this data to trigger workflows such as generating feedback PDFs or tracking performance.

5.Future Integration and AI Feedback Loop

Designed a feedback loop where Relay not only processes results but also interacts with AI systems to generate new practice questions based on user weaknesses, thereby enabling adaptive and personalized learning experiences.

Why Relay:

No-code automation platform that integrates easily with webhooks

Allows quiz data to be processed instantly without a backend server Enables creation of custom flows:

- Extract weak topics
- Generate PDF feedback Email or store reports
- Supports scalability and modularity with minimal technical overhead

Future-ready: can connect with AI tools for question generation and progress tracking.

Conclusion:

This project aims to bridge learning gaps and enhance educational outcomes through an AI-powered, subject-wide learning application. By integrating foundational subjects with interactive resources and intelligent analysis via Relay AI, the platform supports a more personalized and effective learning journey for students.

Continuous updates, data-driven validation, and adaptive features will ensure the system remains relevant, scalable, and aligned with the goals of Quality Education (SDG 4). This initiative demonstrates the potential of AI in transforming education, making it more inclusive, efficient, and impactful.