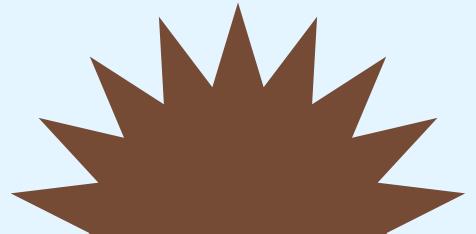




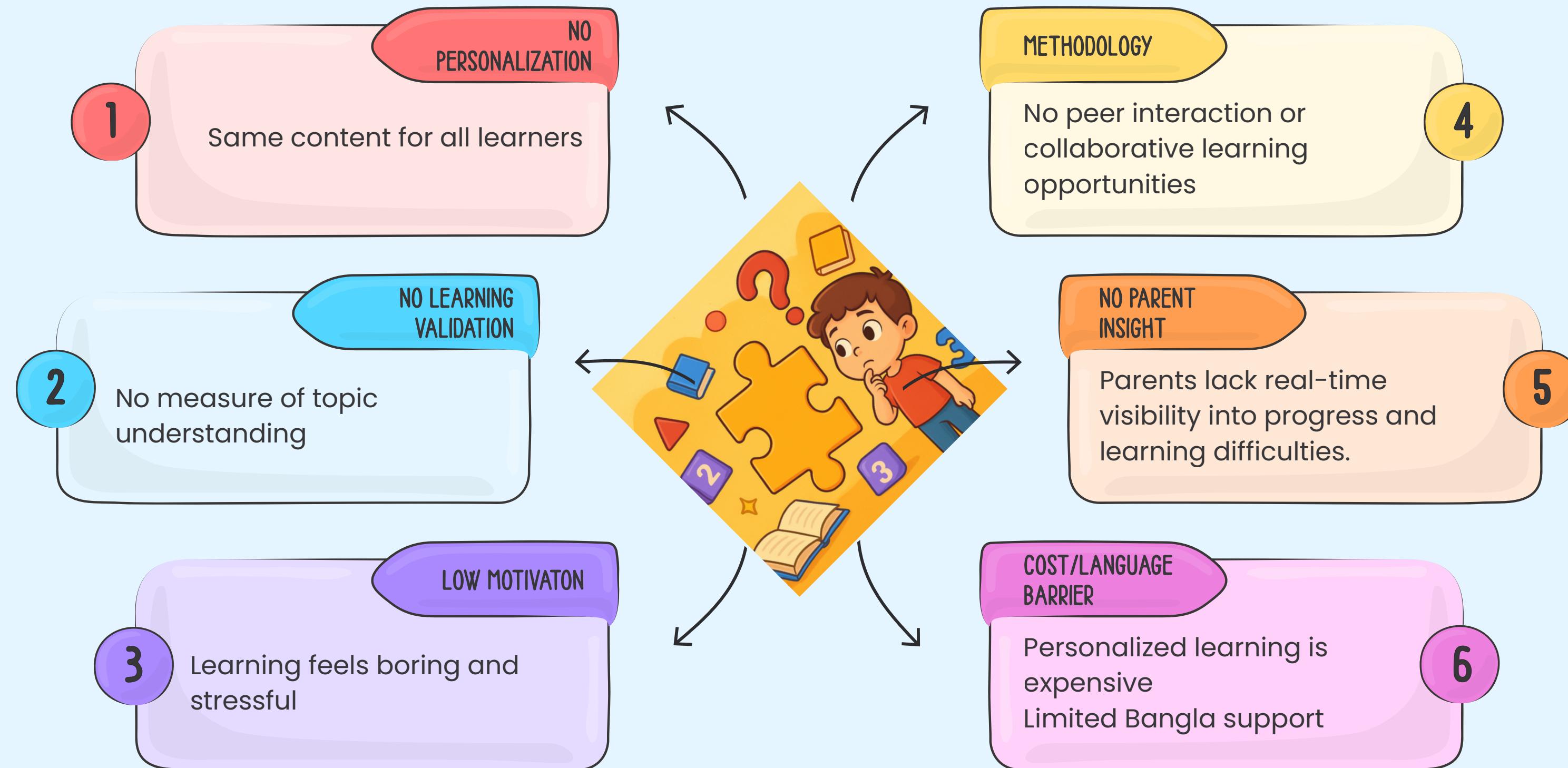
Children's learning Platform

a system that generates AI-based personalized learning contents for students

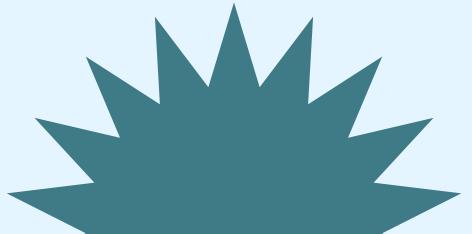
Problem Description

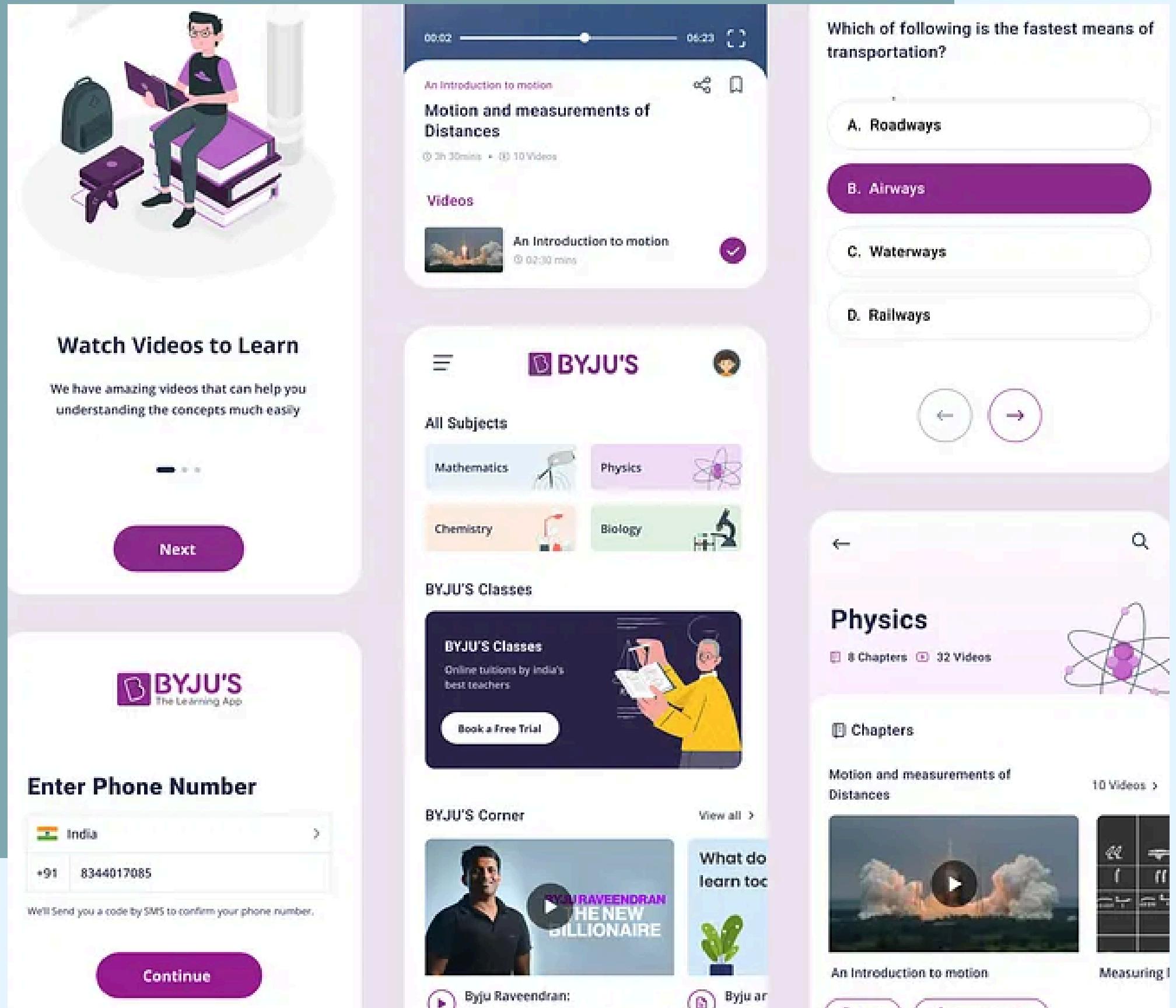


Problem Descriptions



Background Study and Motivation





BYJU'S

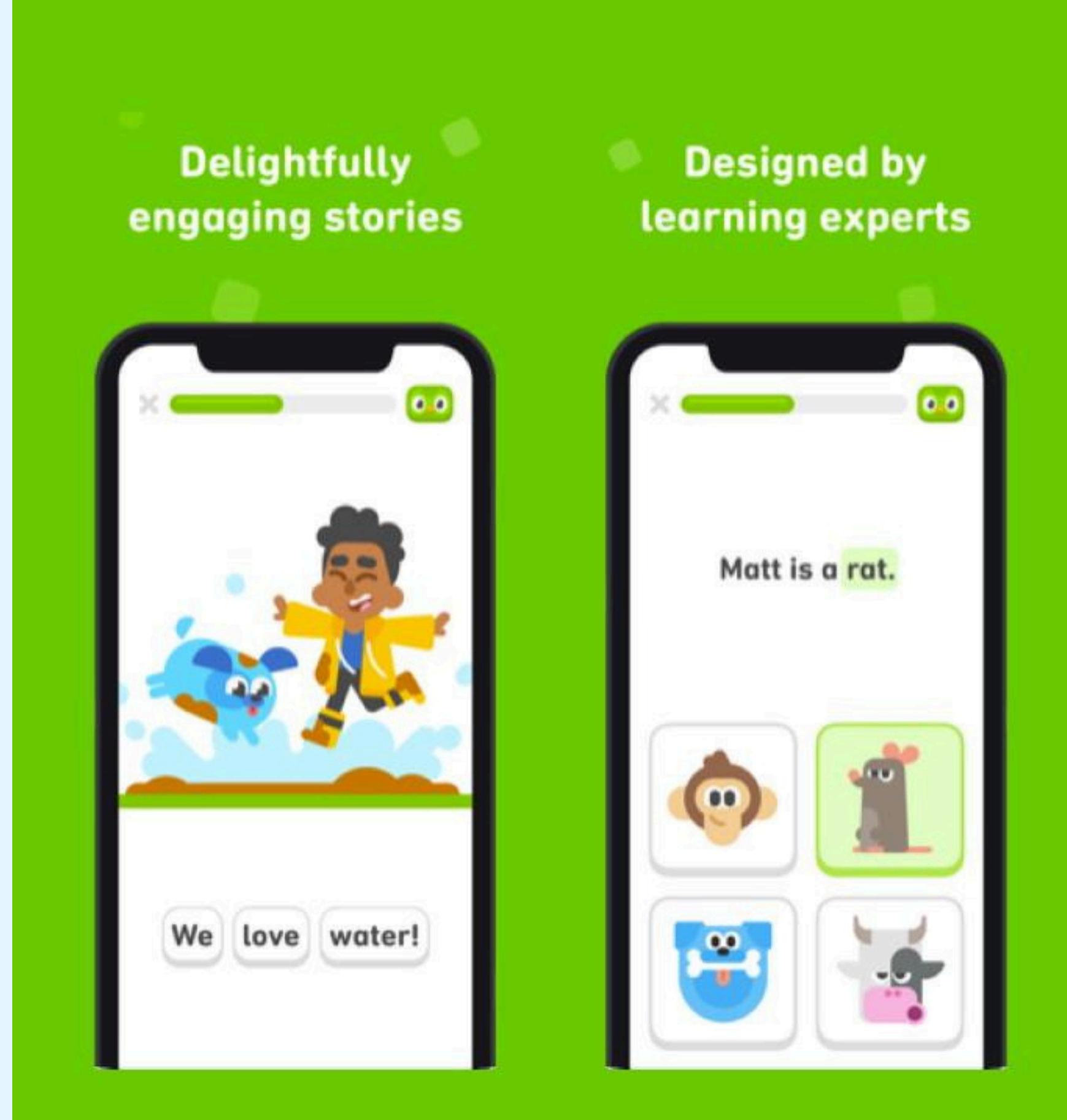
Key Features

- Video-Based Learning
- Adaptive Practice
- Parent Dashboard

Limitations

- No Emotion Awareness
- High Cost
- Passive Learning Risk

Watching ≠ understanding



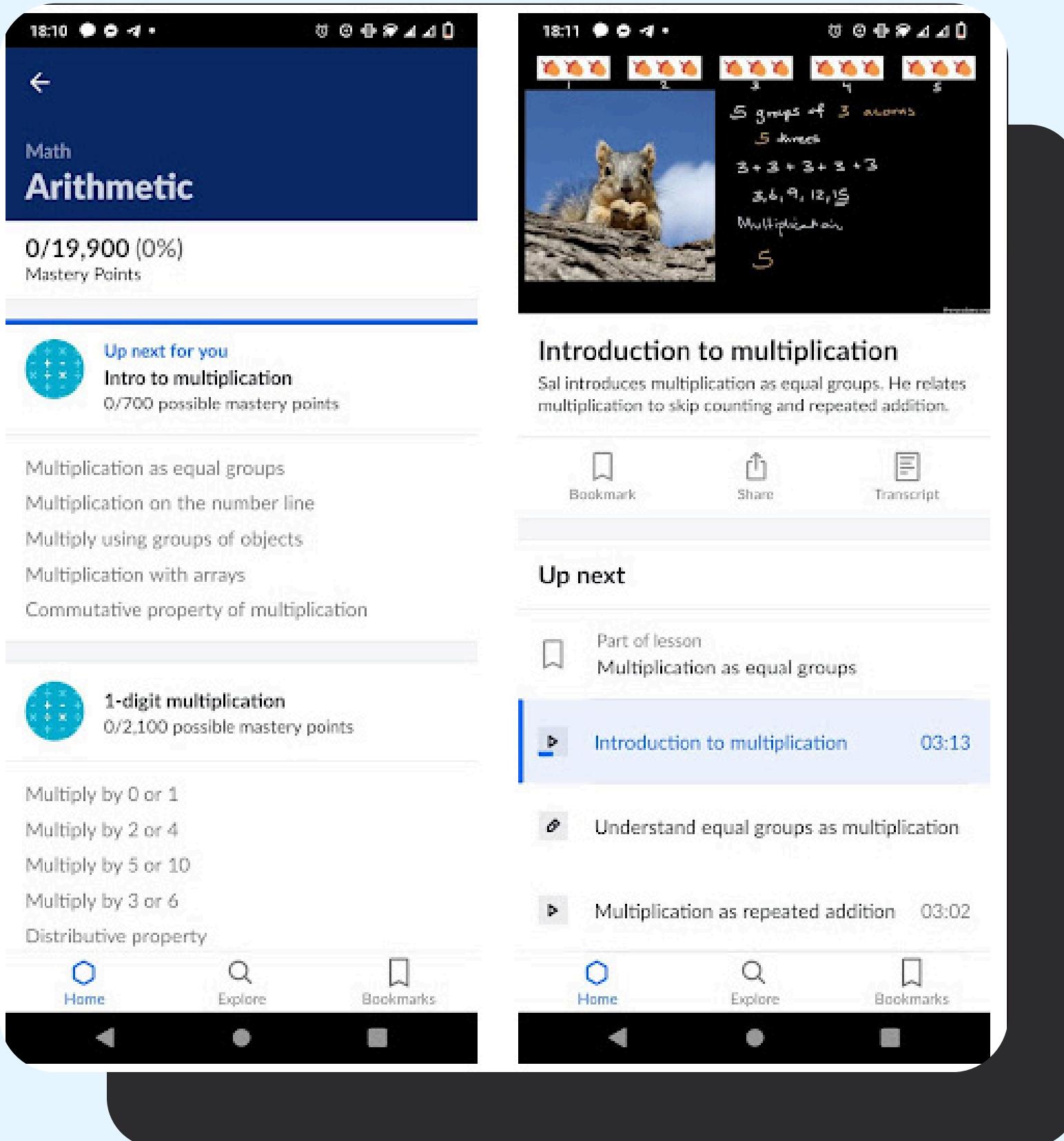
DUOLINGO

Key Features

- Micro-Lessons
- Spaced Repetition – Smart review for memory retention
- Streak-Based Motivation

Limitations

- Time-based rewards not skill-based
- Only for language learning



KHAN ACADEMY

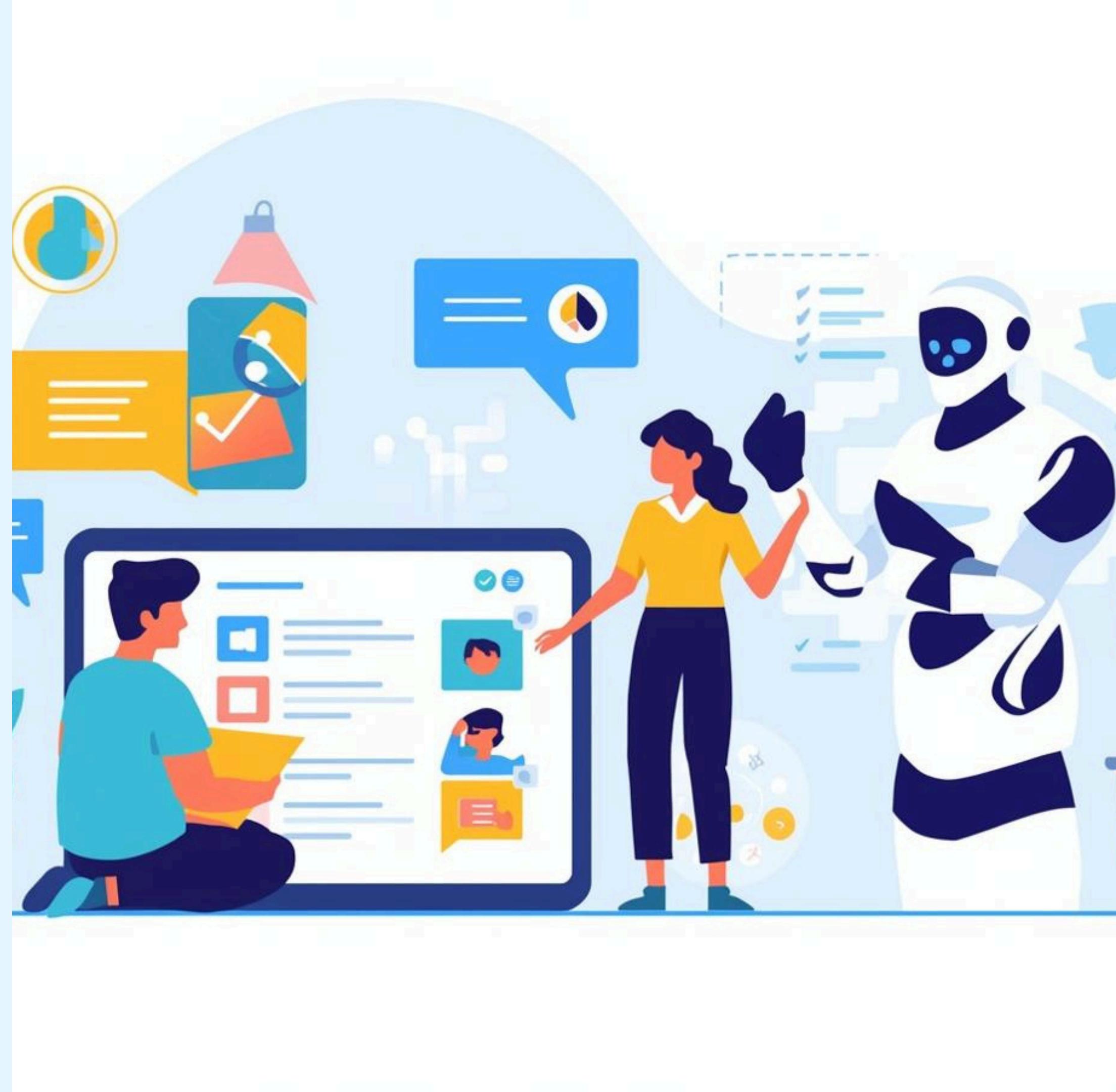
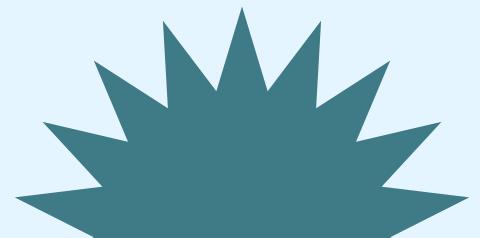
Key Features

- Socratic AI tutor – Doesn't give direct answers
- Creative interactions
- Teacher dashboard – Real-time insights on student struggles

Limitations

- Complex for very young kids

Proposed Solution Strategy



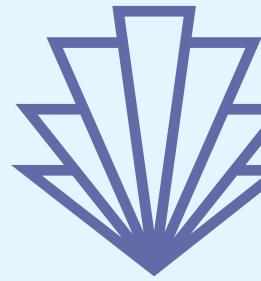
Our Solution-Overview



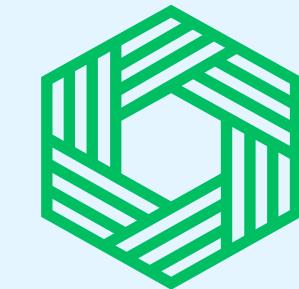
**1) AI-Powered
Personalization
Engine**



**2) Dynamic
Content
Generation**



**3) Comprehensive
Analytics**



**4) Engaging
Learning
Experience**

1) AI-Powered Personalization Engine

OUR SOLUTION-OVERVIEW



Adapts in
real-time

Studies learning
patterns for each
student



Performance
Prediction

Estimates success
probability of an
individual



Creates Daily
Goals

Analyzes capability,
creates goals
accordingly



2) Dynamic Content Generation

OUR SOLUTION-OVERVIEW

Auto quiz generation	Mistakes Related contents	Dynamic difficulty Wise Contents
Personalized Exercises	Spaced repetition	Multi-format content (Voice/ Text)

3) Comprehensive Insights

OUR SOLUTION-OVERVIEW

Student Insights :

Strength & weakness
overview

Showing daily goals

Parent View :

Visual progress
reports

Alerts for struggling
areas

Teacher Panel :

Class performance
summary

Students needing
extra help

4) Engaging Learning Experience

OUR SOLUTION-OVERVIEW

- **Gamified Learning:** Interactive Quests
- **Socratic Guidance:** Llama AI asks guiding questions rather than giving direct answers.
- **Peer Engagement:** Join study groups.
- **Contest:** Arranges Contests weekly/independently
- **Rating:** Averages Contest based Ranking and Course Based Rating



4) Engaging Learning Experience

OUR SOLUTION-OVERVIEW

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4) Engaging Learning Experience

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The screenshot displays the 'EDUCATION QUIZ CHALLENGE' platform. At the top right, there is a 'LIVE NOW' button, the title 'EDUCATION QUIZ CHALLENGE', and the subtitle 'Academic Excellence Competition 2026'. Below the title is a timer showing '02 : 44 : 47' with 'TIME REMAINING' above it. The main interface is divided into several sections:

- Live Leaderboard:** Shows the top 5 participants with their names, subjects, and scores:
 - 1 Navnin Nawar (Mathematics) - 2,450 pts
 - 2 Nujhat Sadia (English Literature) - 2,280 pts
 - 3 Tasnim Tanmi (General Knowledge) - 2,150 pts
 - 4 Shatabdi Chowdhury (Science) - 1,980 pts
 - 5 Sadia Nasuhsin (History) - 1,850 pts
- Current Question:** Round 3, Mathematics Challenge. The question is: 'Solve the quadratic equation and find the roots: $x^2 + 5x + 6 = 0$. Apply the quadratic formula and show your work.' A completion rate bar shows 67% (42/63 solved).
- Achievement Progress:** Scholar's Journey. It lists three achievements with status indicators:
 - Math Master (Earned)
 - English Expert (In Progress)
 - General Knowledge (Locked)
- Summary Statistics:** At the bottom, there are four cards: 127 Participants, 24 Schools, 1,847 Questions Answered, and 5 Rounds Total.

4) Engaging Learning Experience



OUR SOLUTION-OVERVIEW

- **Gamified Learning:** Interactive Quests
- **Socratic Guidance:** Llama AI asks guiding questions rather than giving direct answers.
- **Contest :** Arranges Contests weekly/independently
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- **Rating:** Averages Contest based Ranking and Course Based Rating

BY Students

While
participating
in contest

4) Engaging Learning Experience

OUR SOLUTION-OVERVIEW

- **Gamified Learning:** Interactive Quests
- **Socratic Guidance:** Llama AI asks guiding questions rather than giving direct answers.
- **Peer Engagement:** Join study groups.
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- **Rating:** Averages Contest based Ranking and Course Based Rating

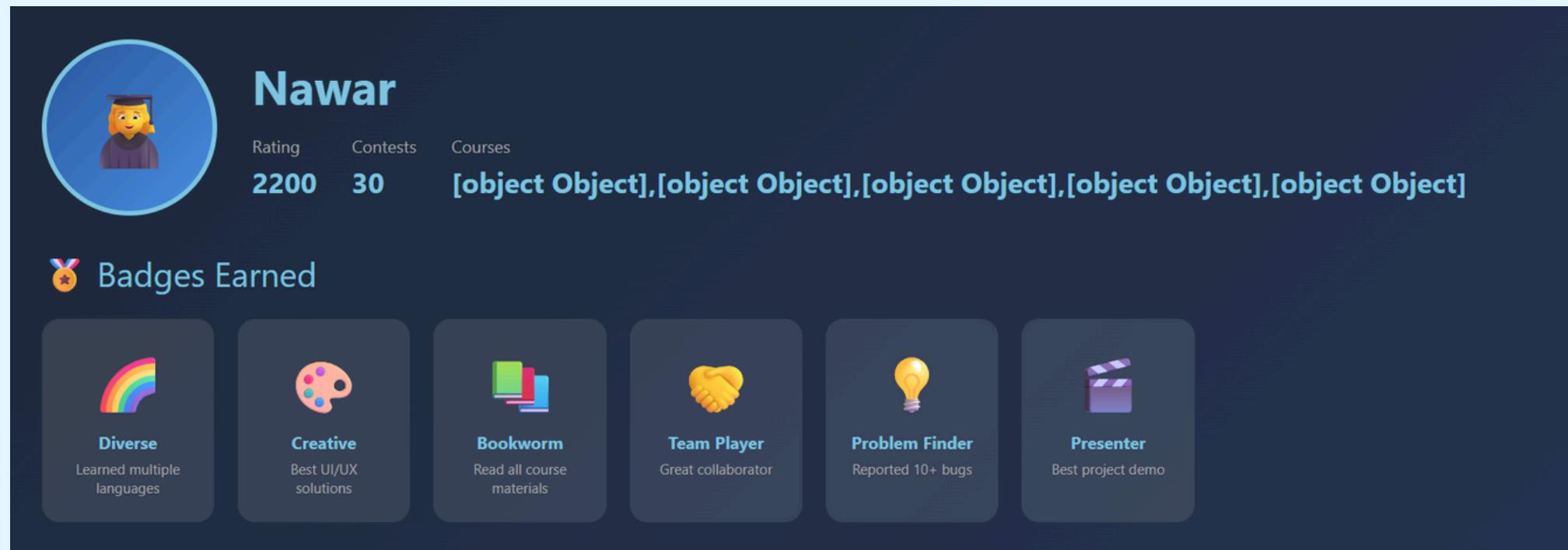


How to hold Students' Interest through healthy competition?



Holding Students' Interest Through Healthy Competition?

1) Showing **badges** on their profiles

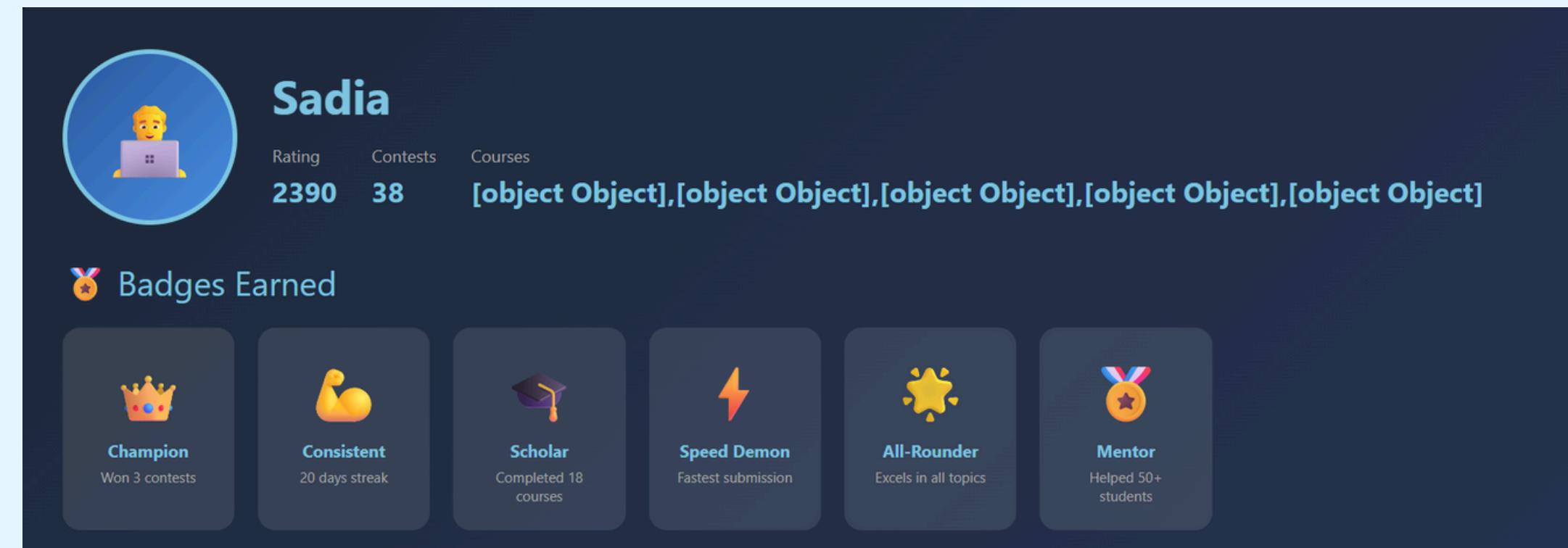


Nawar

Rating 2200 Contests 30 Courses [object Object], [object Object], [object Object], [object Object], [object Object]

Badges Earned

- Diverse: Learned multiple languages
- Creative: Best UI/UX solutions
- Bookworm: Read all course materials
- Team Player: Great collaborator
- Problem Finder: Reported 10+ bugs
- Presenter: Best project demo



Sadia

Rating 2390 Contests 38 Courses [object Object], [object Object], [object Object], [object Object], [object Object]

Badges Earned

- Champion: Won 3 contests
- Consistent: 20 days streak
- Scholar: Completed 18 courses
- Speed Demon: Fastest submission
- All-Rounder: Excels in all topics
- Mentor: Helped 50+ students

Holding Students' Interest Through Healthy Competition?

2) showing progress on their profiles

The screenshot shows a student profile for "Nujhat". The profile includes a circular icon with a cartoon character, the name "Nujhat", a rating of 2310, 35 contests, and a list of courses. Below this, a "Course Progress" section displays five courses with their icons, names, progress percentages, and completion status.

Course	Progress	Status
English Verb Master	100%	Completed
Math Addition Pro	100%	Completed
Multiplication Pro	85%	In Progress
Grammar Champion	100%	Completed
Reading Master	90%	In Progress

Holding Students' Interest Through Healthy Competition?

3) showing contests result and performance overview

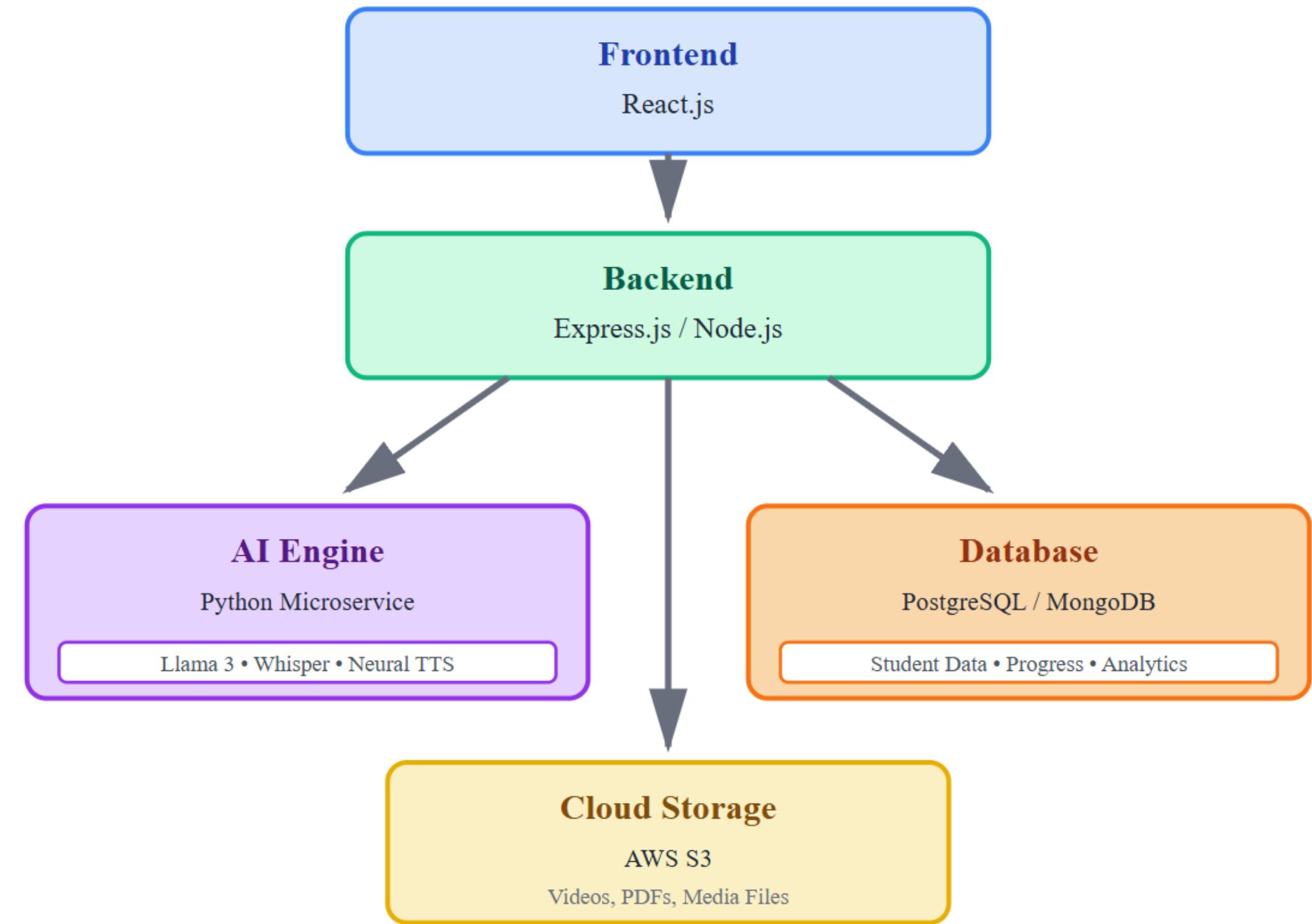


TECHNICAL METHODS



TECHNICAL METHODS OVERVIEW

Technology Stack Architecture



Technical Solution Strategy

Scalable, AI-Driven Architecture for Adaptive Learning



Core Stack (PERN):

Frontend: [React.js](#) for fast, responsive UI.

Backend: [Express.js](#) for high-concurrency APIs.

Database: [PostgreSQL/MongoDB](#) for structured data & AI embeddings.

Data & Media Strategy:

Hybrid Storage: [AWS S3](#) stores lesson videos & PDFs

Deployment: [AWS](#)

Technical Solution Strategy

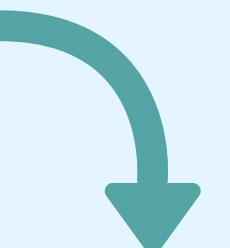
Student Input Collection

- Student asks a question (text / voice)
- System stores:
 - Current query
 - Past interaction history
 - Performance



Learning Pattern Analysis

- Identify:
 - Topic (e.g., fractions)
 - Difficulty level
 - Learning pace
- Determine what the child struggles with

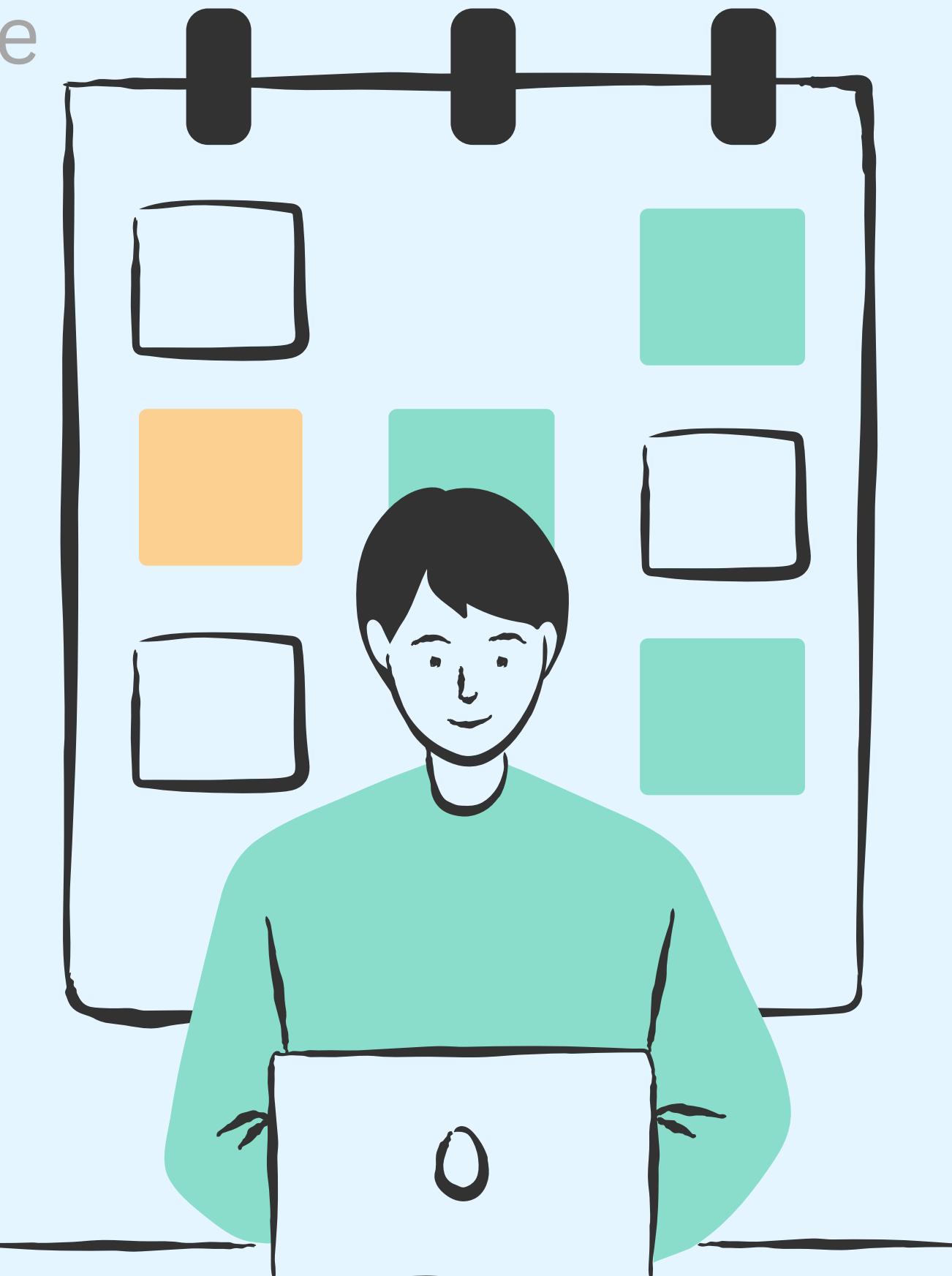


Feedback Loop

- Student response / quiz result logged
- Profile updated:
 - Difficulty modified accordingly
- Used for next interaction

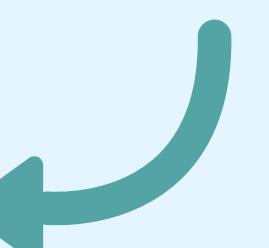


Personalize AI Engine



Personalized Output

- Output includes:
- Simple explanation
 - Example
 - Practice question / hint
- Language: Bangla / English (if needed)

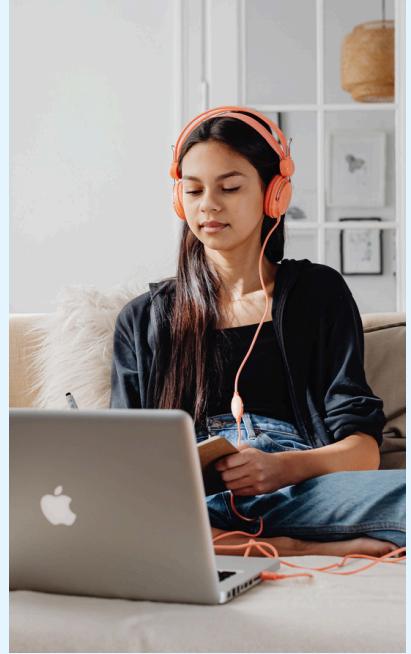


LLaMA Reasoning & Adaptation

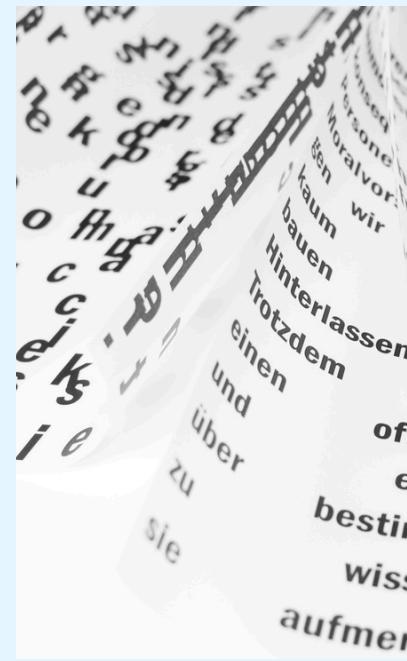
- LLaMA receives:
 - Student profile
 - Learning difficulty
 - Current question
- Generates:
 - Age-appropriate explanation
 - Personalized examples or exercises

Technical Solution Strategy

Bilingual Voice Interaction WITH AI TUTOR



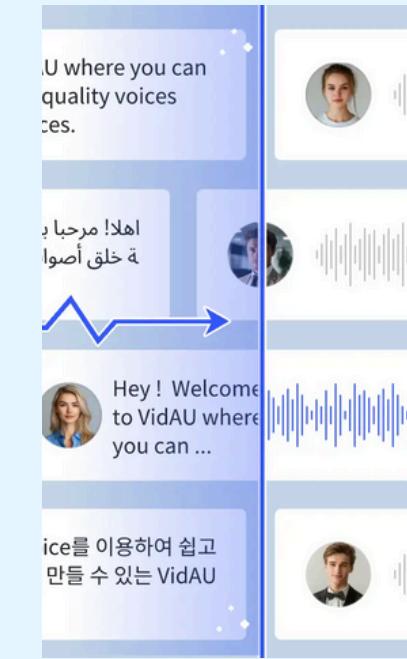
Student Voice
Input (Bangla or
English)



Speech To text
using Whisper



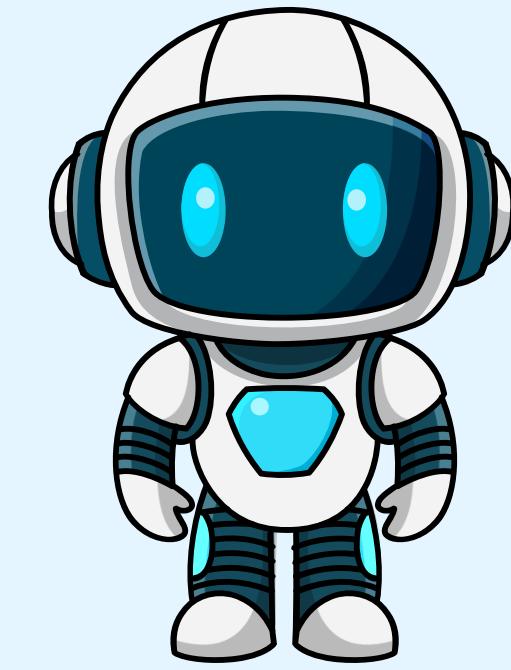
Build Prompt for
LLaMA (include
student profile &
language)



LLaMA generates
text response

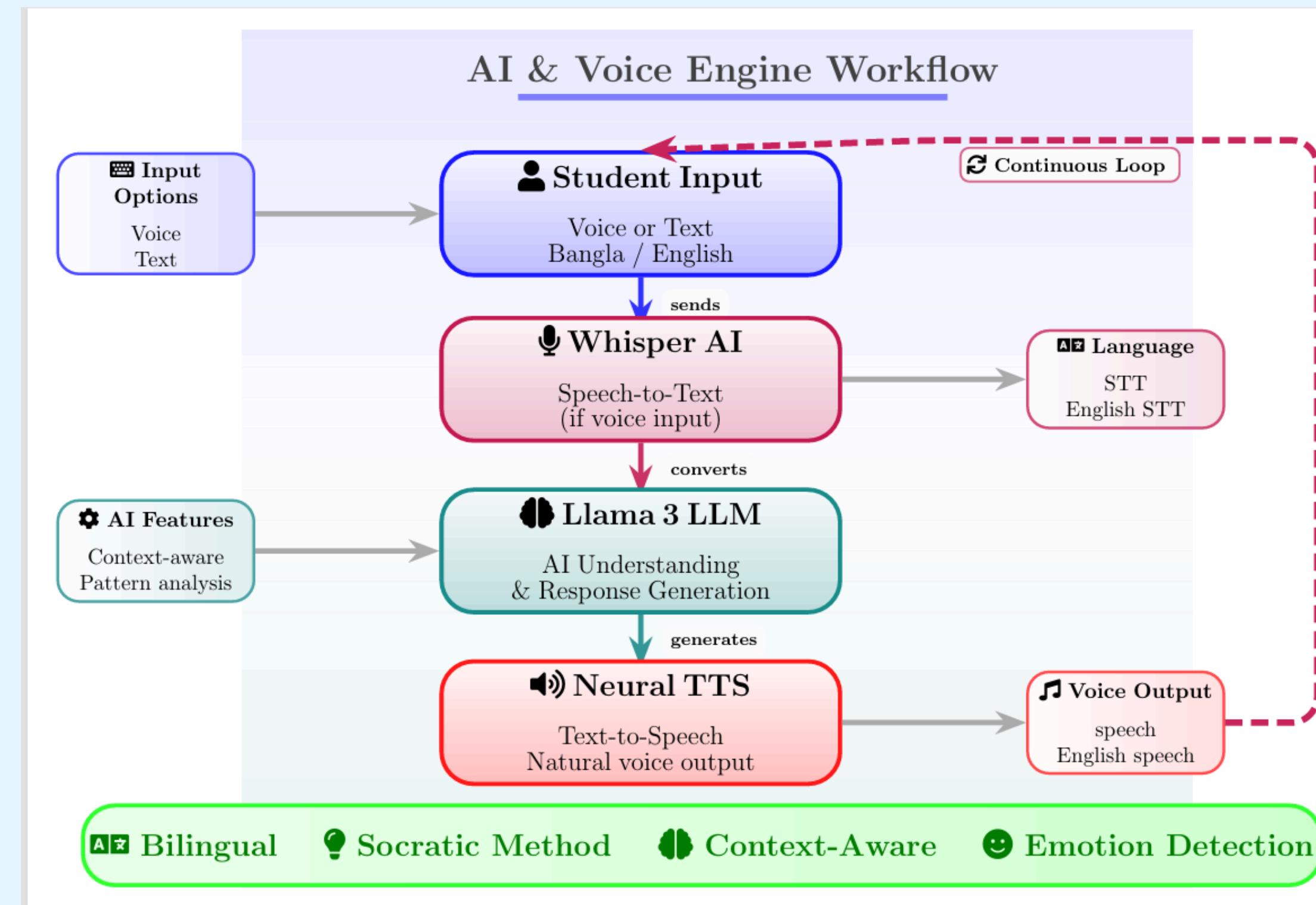


Text-to-Speech
(TTS) using same
language

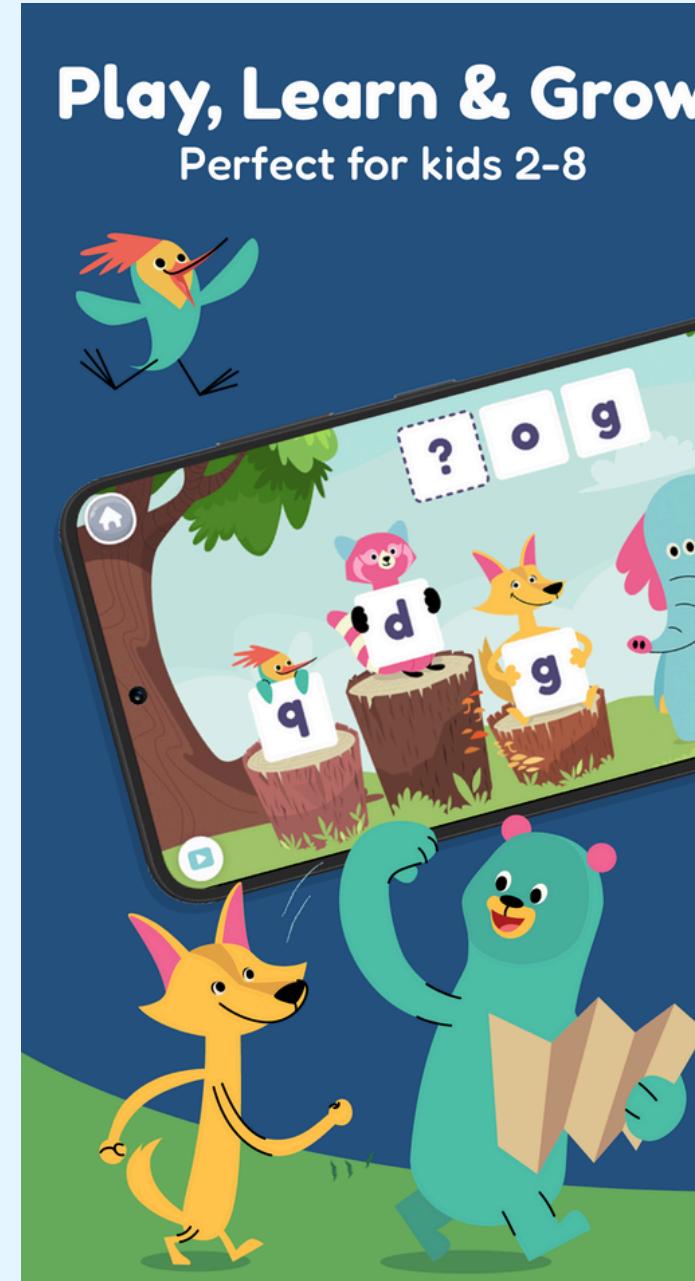


Ai tutor speaks
responses

AI & Voice Engine Workflow



Existing Vs Proposed Solution



Existing Solution

- One-size-fits-all learning paths
- No emotional or frustration awareness
- Limited engagement tracking
- Weak parent involvement
- Content-focused, not learner-focused

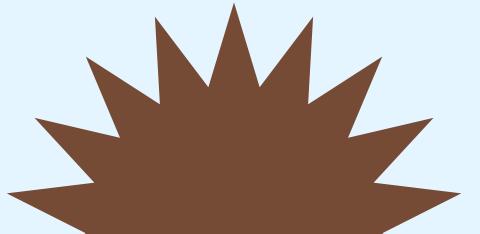
Existing Vs Proposed Solution

Proposed Solution

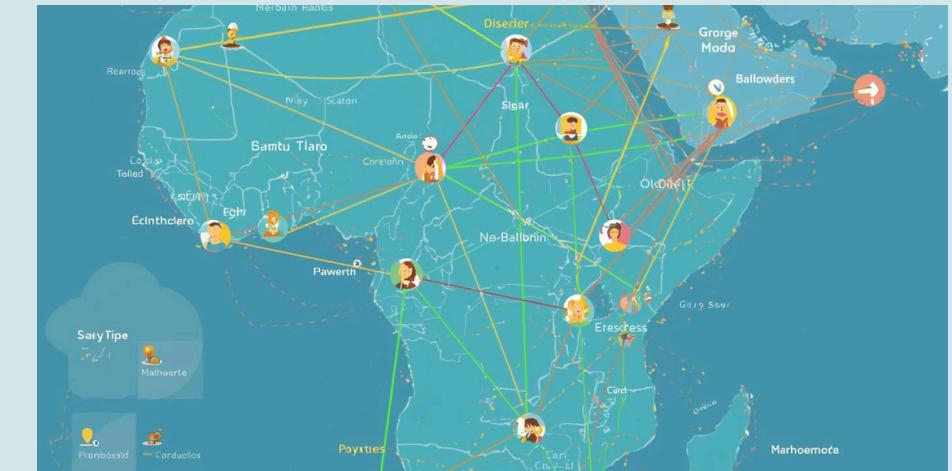
- AI-driven **personalized learning** paths
 - Real-time frustration & engagement detection
 - Adaptive quizzes **based on performance**
 - Parent dashboard with analytics
 - **Social & competitive AI** learning environment
-



Economic, environmental, social and ethical issues



Economic Impact



Affordable AI Tutor

Replaces **expensive** private tutors.

Scalable Education System

LLAMA-based AI allows nationwide deployment without hiring large numbers of teachers.

Reduced Learning Inequality

Children in rural areas get the same quality of guidance as any student with only a basic device and internet.

Environmental Impact

Paper Reduction

Digital resources decrease paper consumption significantly.

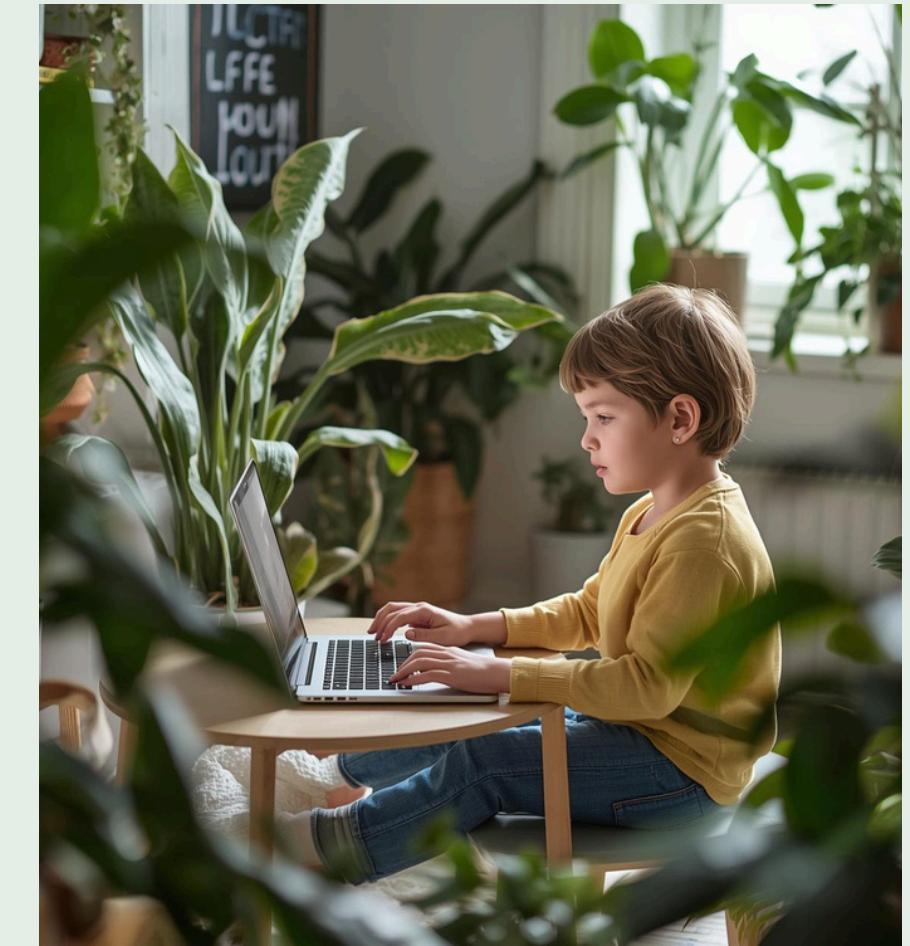


Digital Materials

E-learning replaces **physical textbooks** and **worksheets**.

Reduced Travel

Online tutoring minimizes the need for **commuting**.



Social Impact of the Learning Platform

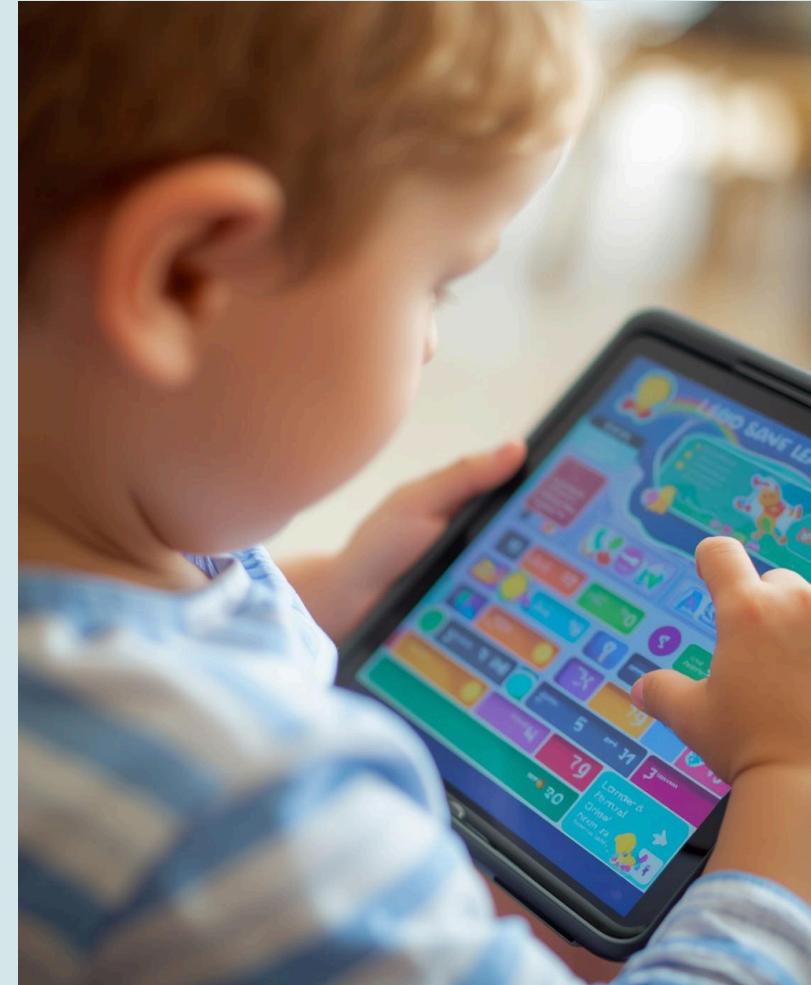
Inclusive Learning

Supports students of all backgrounds and abilities



Personalized Pace

Tailored lessons that match individual learning speeds



Parental Involvement

Encourages active participation in children's learning



Language Accessibility

Bangla language support for inclusive education



Ethical Considerations in AI



Data Privacy

Ensuring children's data is secure

Transparency

Clear communication with parents is essential



AI Behavior

Preventing harmful outcomes through oversight



Fairness

Ensuring unbiased content for all users

Future Development Opportunities



Multilingual Support

More languages can be added:
Hindi, Arabic, Hispanic, indigenous
languages

Adaptive Curriculum Engine

The AI can generate a custom
learning path for each child based
on school curriculum

Subject Expansion

Incorporating additional
subjects to broaden learning

MADE BY

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Thank You!

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Dr. Anindya Iqbal

INDUSTRY

Optimizely

INDUSTRY SUPERVISOR

Engr. Tanvir Islam