RAJALAKSHMI ENGINEERING COLLEGE

Department of Artificial Intelligence and Data Science

AGENTIC AI-POWERED ASSITIVE LEARNING PLATFORM FOR DYSLEXIA STUDENTS

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Problem Statement and Motivation

Problem Statement:

Dyslexia makes it hard for young children to learn basic reading skills, such as recognizing sounds in words, reading new words, and understanding what they read. Most learning platforms today are not designed for dyslexic students—they do not adjust content based on reading level, provide enough readability support, or offer personalized help. Teachers also face challenges preparing simplified materials, tracking progress, and creating content at different difficulty levels.

Motivation:

There is a need for an AI-powered system that can automatically personalize learning material and make reading easier for dyslexic students. Such a system can simplify content, provide instant help, and reduce teachers' workload, helping children learn confidently and independently.

Existing System

Standard Learning Platforms

Most current learning platforms are designed for regular students and do not consider the special needs of children with dyslexia. They show content in standard fonts, small text sizes, and complex sentences, which are hard for dyslexic students to read and understand.

Limited Personalization

Existing systems rarely adjust the difficulty level or style of content based on the child's reading ability. Every student gets the same materials, regardless of whether they need simpler explanations or more visual support.

Minimal Real-Time Support

Students do not receive instant help when they struggle with reading, writing, or pronunciation. Teachers are often the only source of guidance, and they cannot assist every student at the same time.

High Teacher Workload

Teachers must manually create dyslexia-friendly versions of study materials, track progress for each student, and provide personalized guidance, which is time-consuming and stressful.

Lack of Interactive Tools

Most existing platforms do not provide features like read-aloud text, interactive quizzes, or AI chat support to make learning easier and engaging for dyslexic children.

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Objectives

To create an AI-powered learning system that helps children aged 6–9 with mild and moderate dyslexia read and understand study materials more easily.

To give students multiple ways to learn—through text, audio, visuals, videos, quizzes, and a friendly chatbot—so they can choose the method that is most comfortable for them.

To provide real-time support for reading, writing, and speaking using AI so students get immediate help when they are stuck.

To reduce the workload of teachers by giving them dashboards and automated tools that track student progress, show learning patterns, and help them manage classes more easily.

To use Agentic AI to create personalized learning paths for every child so the platform automatically adjusts the difficulty level and teaching style based on how the student is performing.

Abstract

Dyslexia in the 6–9 age group disrupts foundational literacy—phonemic awareness, decoding, and comprehension—while existing platforms remain fragmented with weak accessibility, generic read-aloud, and no adaptive personalization. The challenge is to design a scalable system that automatically adapts to learner needs while reducing teacher workload. This solution is an AI powered multi-modal assistive learning platform focused on moderate dyslexia, while also supporting mild cases. The platform converts PDFs, DOCX, PPTX, and videos into dyslexia-friendly formats with simplified text, accessible fonts, and high-contrast themes. It delivers lessons through text, synchronized audio, and visuals, generates adaptive quizzes, and provides real- time writing and speech feedback to strengthen literacy skills. Students are supported with a context-grounded AI Study Buddy, while teachers benefit from dashboards, progress reports, and actionable insights. By combining AI-driven adaptation with multimodal accessibility, the platform transforms learning into a more inclusive, personalized, and empowering experience for young dyslexic learners.

Architecture(framework)

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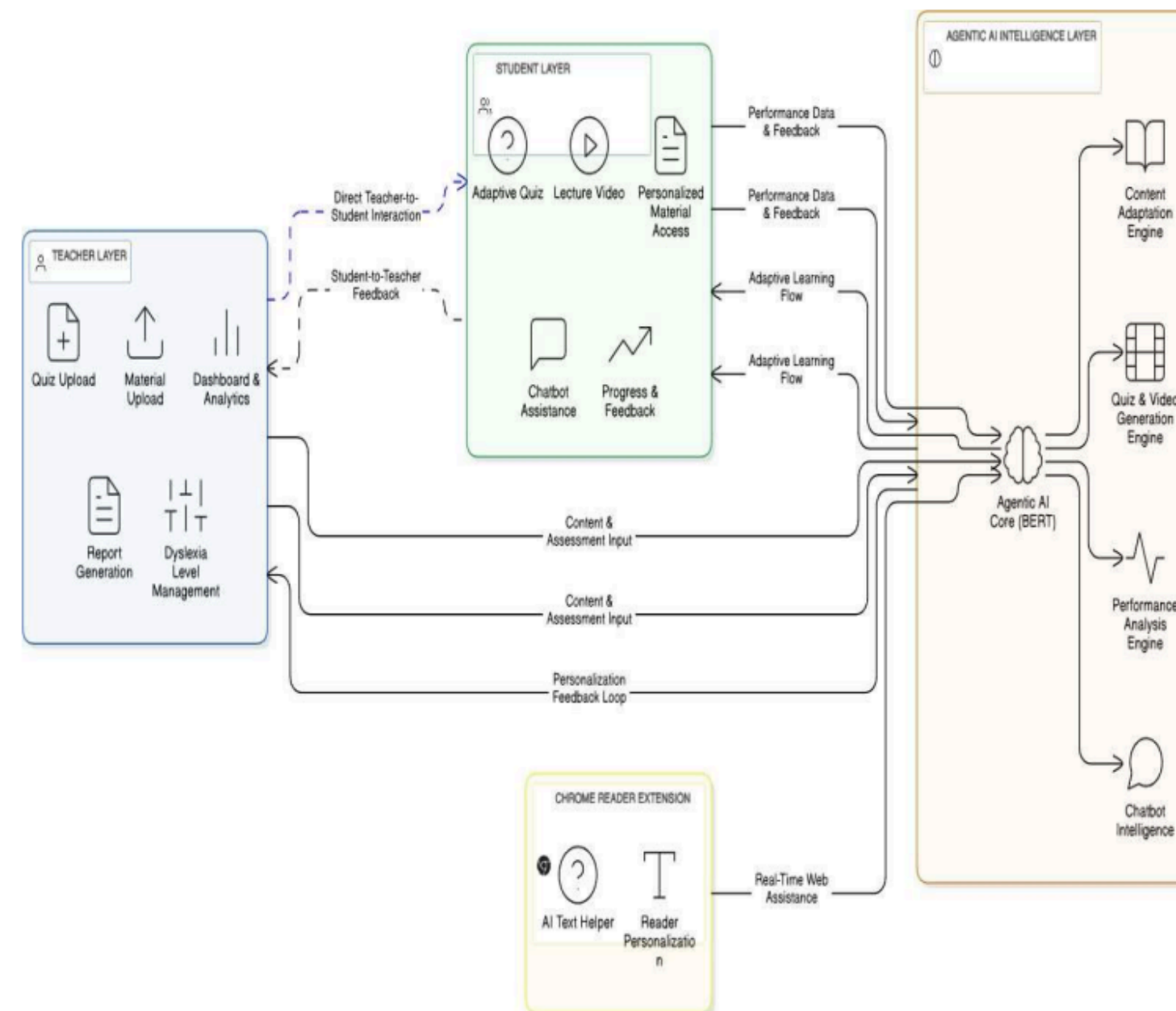
Module

MODULE 1 — Teacher Module

MODULE 2 — Student Learning Module

MODULE 3 — Script Analyzer Module

MODULE 4 — Chrome Extension Module

MODULE 5 — Agentic AI Module

MODULE 1 — Teacher Module

1. Teachers can upload all types of study materials
Teachers can upload PDFs, Word files, PPT slides, images, and videos. The system automatically prepares them in a format that is easy for dyslexic children to read and learn.

2. Teachers can see every student's progress clearly
The dashboard shows how each student is reading, how fast they understand things, and where they face difficulty. This helps teachers know which child needs extra help.

**3. The system creates helpful reports for teachers**
Teachers get ready-made reports that show improvement, weak points, and what the student should learn next. This reduces the teacher's work and saves time.

4. Teachers can manage classes and learning levels
Teachers can set the difficulty level for each child and update it anytime. They can also approve or edit the AI-generated content before giving it to students.

MODULE 1 — Teacher Module (Output)

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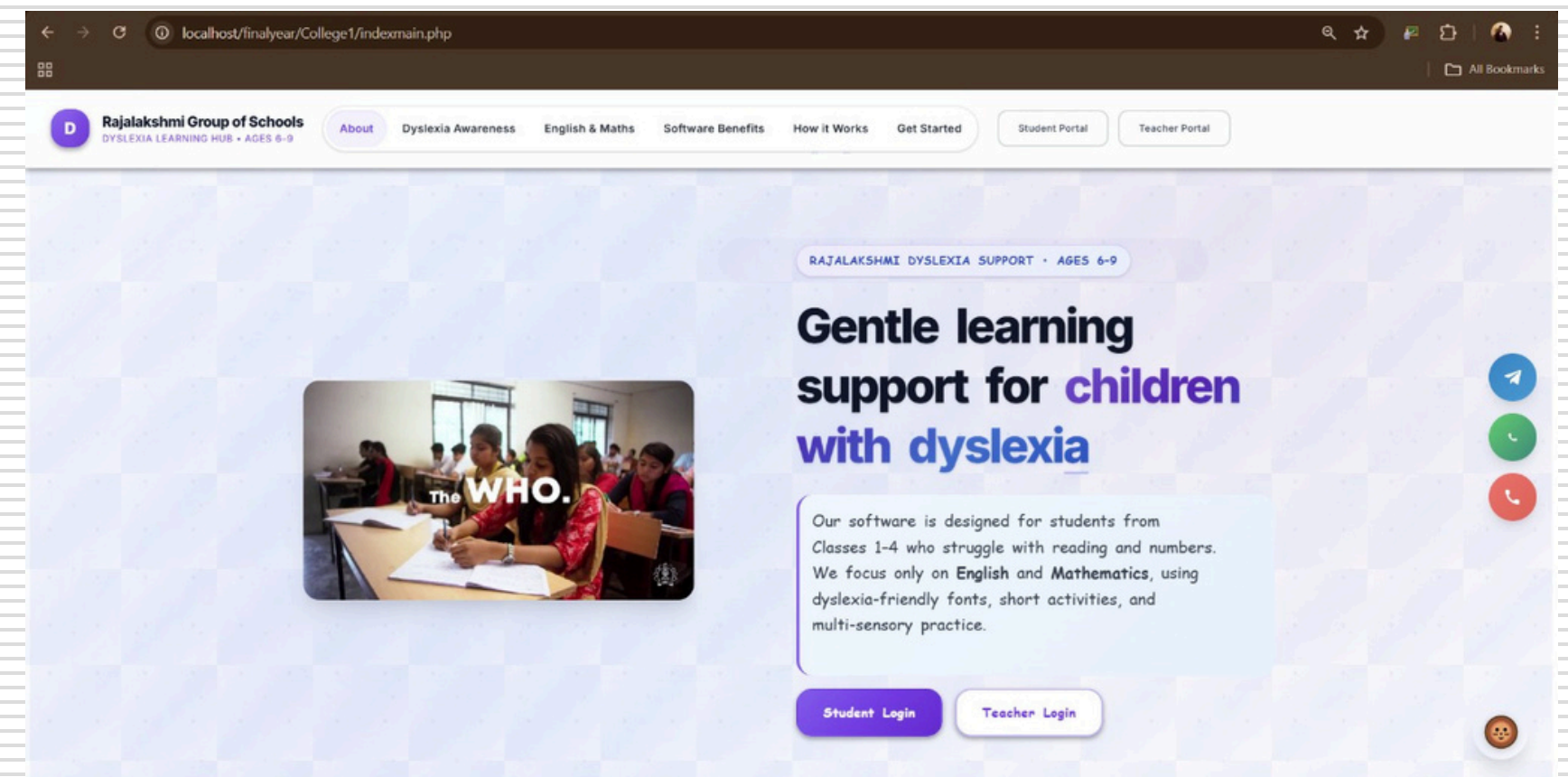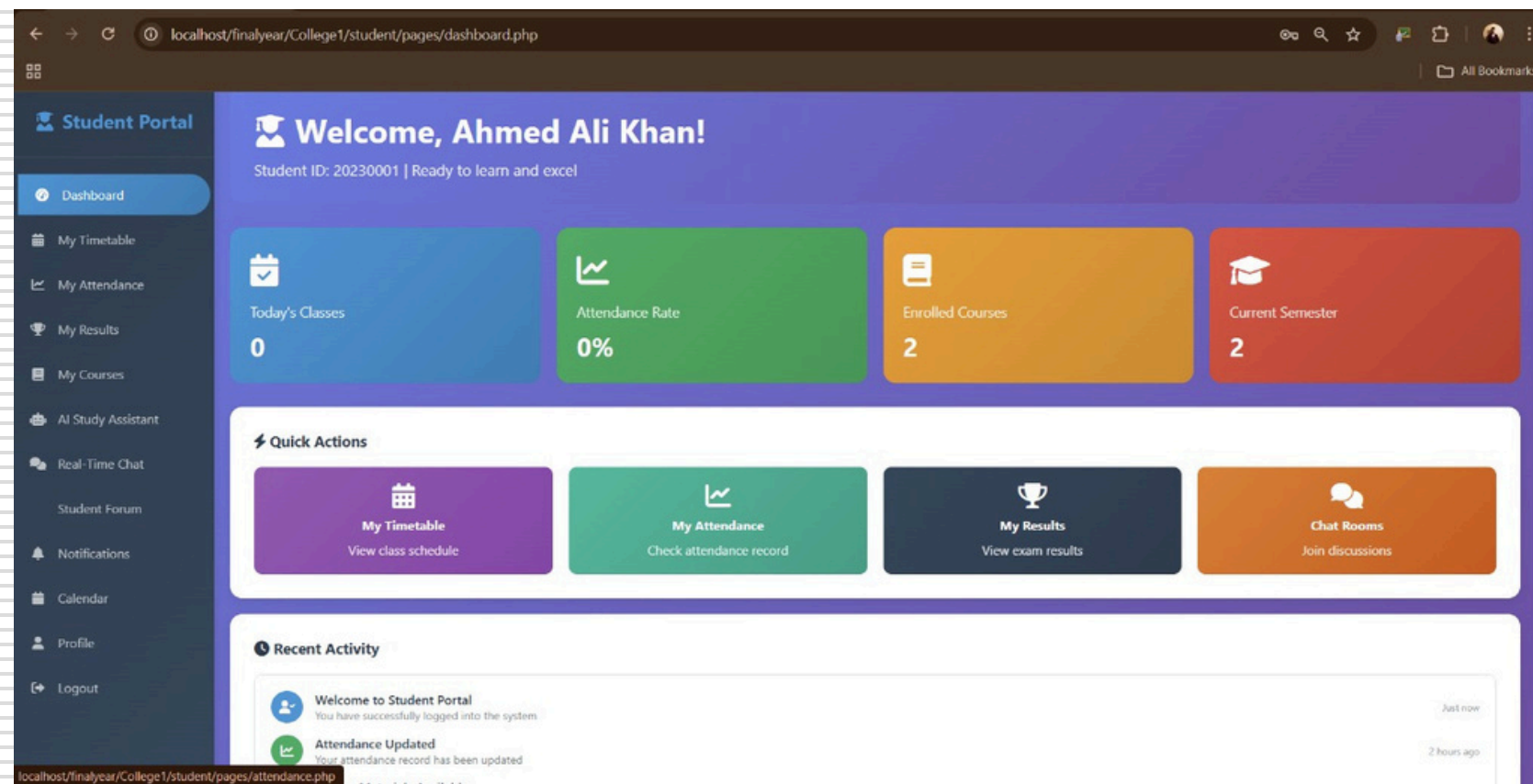
MODULE 2 – Student Learning Module

1. Students get study materials that are easy to read

The system shows lessons in big fonts, clear spacing, simple text, high-contrast colors, and read-aloud support. This makes learning comfortable for dyslexic children.

2. Students get personalized quizzes based on what they study

The system creates quizzes from their lessons. The questions become easy or hard depending on how the child is performing, helping them learn at the right speed.

3. Students can watch simple video lessons made automatically

The platform turns notes into short videos with slow narration and simple explanations. Children can watch and learn without feeling confused or stressed.

4. A friendly chatbot helps students understand difficult topics

The chatbot explains lessons in very simple words, gives examples, answers questions, and motivates children. It acts like a small study friend for the student.

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MODULE 2 – Student Learning Module (Output)
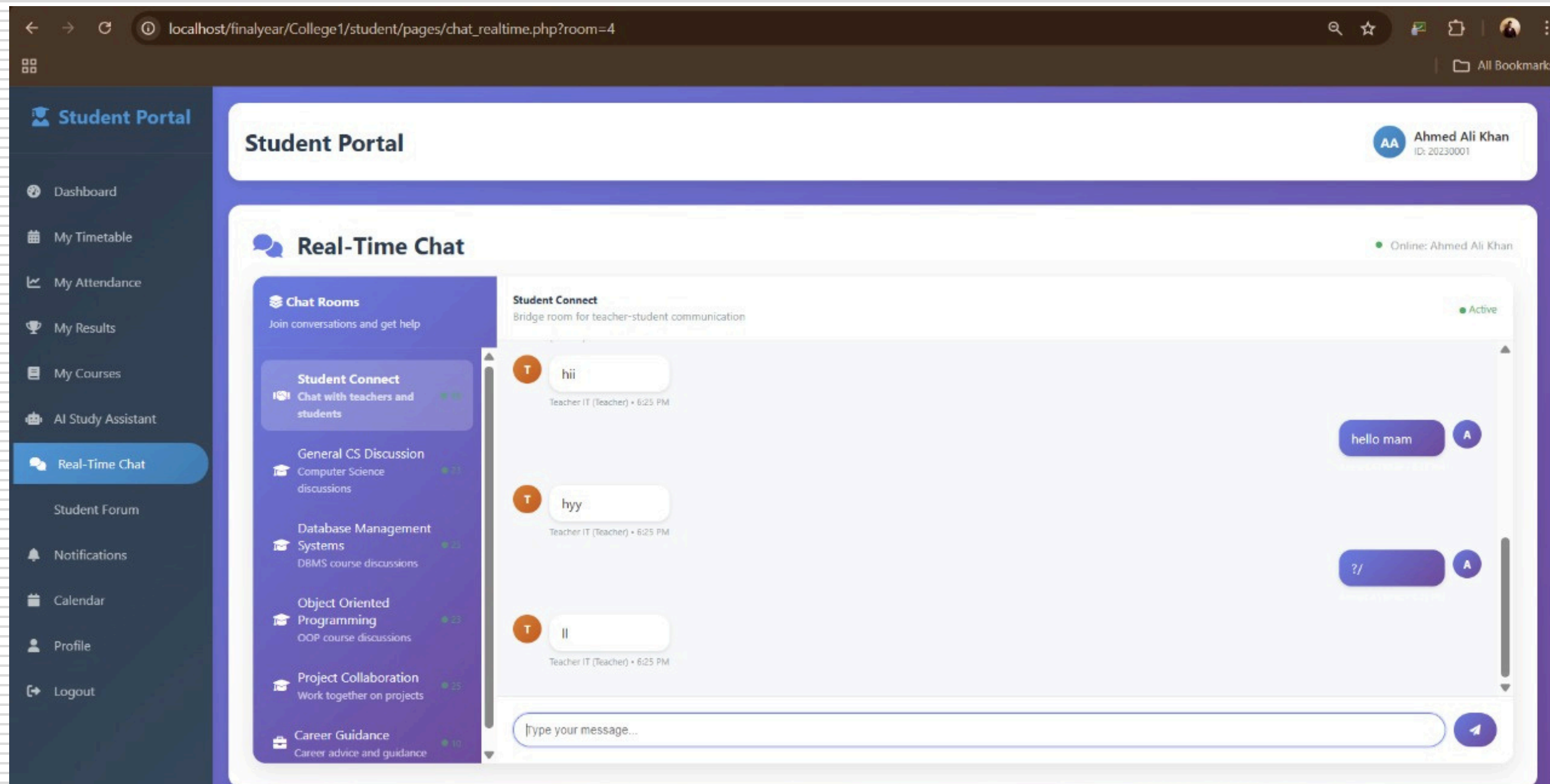
MODULE 3 – Script Analyzer Module

1. The system finds difficult words in the notes

When a teacher uploads notes, the tool highlights words that might be hard for dyslexic children to read or understand.

2. It explains every difficult word in a simple way

The system gives meaning, pronunciation, easy examples, and simple synonyms so students can understand the word without trouble.

**3. It changes long and complicated sentences into easy ones**

Large paragraphs are broken into smaller sentences. The text becomes simple, clear, and comfortable for young children.

4. It helps teachers prepare easy-to-learn notes automatically

The tool gives teachers a simplified version of their notes so they don't have to rewrite everything. This saves a lot of time and effort.

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MODULE 3 – Script Analyzer Module(Output)
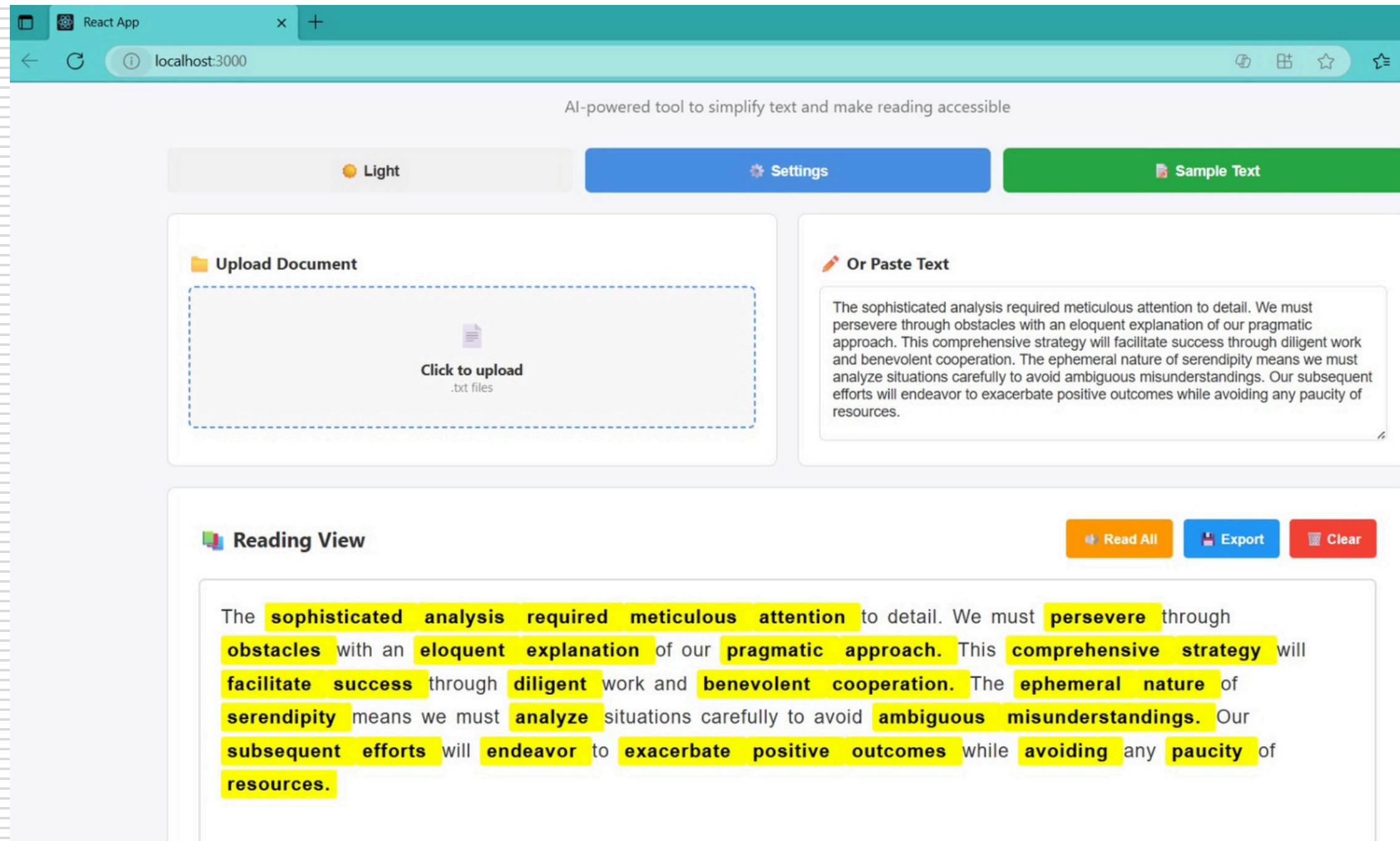
MODULE 4 – Chrome Extension Module

1. It helps students read any website easily

The extension reads the selected text aloud and highlights each word, helping dyslexic children follow the sentence smoothly.

2. It simplifies hard sentences and long paragraphs

If the text on a website is too difficult, the extension rewrites it in simple words so children can understand it better.

3. Students can change font size, colors, and spacing

They can adjust the text to be bigger, clearer, and easier to read. Color themes like yellow or blue make reading comfortable.

4. It shows the meaning of tough words instantly

When students hover over a word, the tool gives the meaning, pronunciation, and an example in simple language.

MODULE 4 – Chrome Extension Module(Output)

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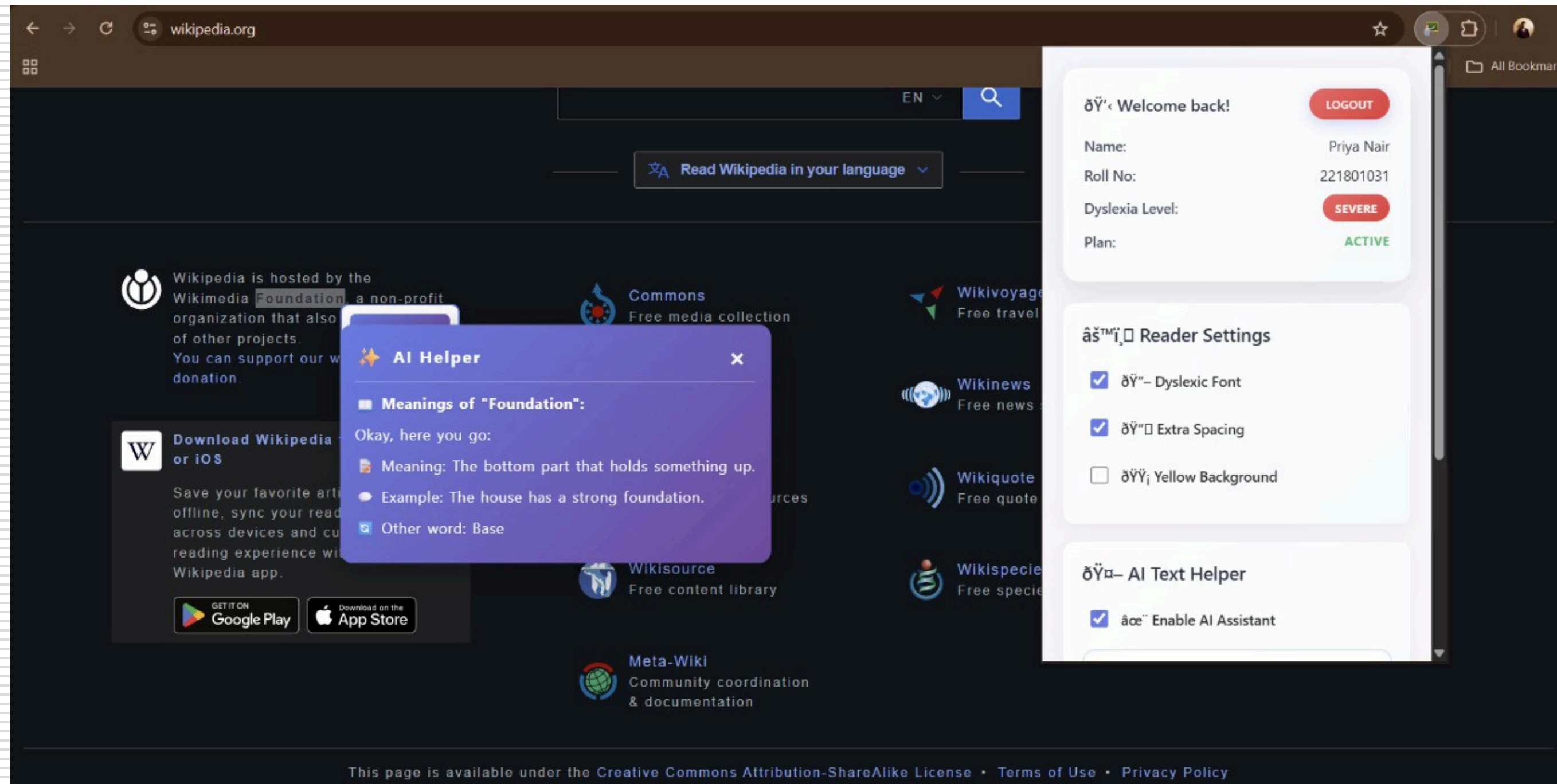
MODULE 5 – Agentic AI Module

1. The AI understands each child's learning pattern

It observes how the child reads, how fast they learn, and what topics they struggle with. Then it changes the content based on the child's needs.

2. The AI helps prepare personalized learning materials

It automatically creates easy text, quizzes, videos, and suggestions so every child learns in their own way.

3. The AI gives smart recommendations to teachers and students

It suggests which topic to study next, which part needs revision, and what type of activity will help the child improve faster.

4. The AI works like a background brain for the whole system

It connects all modules, makes decisions, fixes difficulties, and ensures the learning experience stays smooth and comfortable.

Conclusion

In this project, we developed a complete learning system with five main modules: the Teacher Module, Student Learning Module, Script Analyzer, Chrome Extension, and Agentic AI Module. In the Teacher Module, we successfully completed the student data section, dashboard, and mock progress analytics, which help teachers easily see how each child is learning. In the Student Module, we finished important features like showing material in dyslexia-friendly formats, creating personalized quizzes, generating lecture videos, and building a simple chatbot to guide students. We also completed the Chrome Extension, which helps children read any website more easily, and the Script Analyzer, which identifies difficult words and makes the text simpler to understand. These modules work together to support young dyslexic learners through easy text, audio, videos, and instant help. In the next phase, we will complete and improve the Agentic AI module so it can make smarter decisions, give better recommendations, and personalize learning even more. We also plan to add more emotional support features, voice-based learning, and handwriting help to make the platform more supportive, more interactive, and even more useful for children with dyslexia.

Thank You