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Learn Path: Personalized Learning Path and Progress Tracking System

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ABSTRACT: LearnPath is a personalized learning platform that helps students organize their study materials into a clear and structured format. Nowadays, learners use different resources like YouTube videos, articles, and documents, but these are often scattered and difficult to manage. LearnPath solves this problem by converting all these resources into well-organized daily lessons.

The system creates a customized study plan that usually spans 10 to 30 days, depending on how much time a learner can dedicate each day. It also includes quizzes after every lesson to make sure the student has properly understood the topic before moving forward.

To maintain consistency, LearnPath uses features like progress tracking, streaks, and a locking mechanism that prevents users from skipping lessons without completing quizzes. If a learner misses a day, the system asks them to complete a revision quiz before continuing, which helps in better retention.

Additionally, the platform allows users to manage multiple study tracks at the same time, making it easier to handle different subjects. Overall, LearnPath provides a structured, interactive, and disciplined way of learning that improves focus, consistency, and understanding.

I. INTRODUCTION

LearnPath is a personalized learning platform that helps students organize their study materials into a clear and structured learning path. Today, learners use different resources such as YouTube videos, articles, and documents, but these are often scattered, making it difficult to manage and follow a proper routine.

To solve this, LearnPath converts these resources into well-organized daily lessons and creates a customized study plan based on the learner's available time. It also includes quizzes after each lesson to ensure that the learner understands the topic before moving forward.

The platform helps maintain consistency through features like progress tracking, streaks, and revision support. If a learner misses a session, the system encourages revision to strengthen understanding. It also allows users to manage multiple study tracks at the same time.

Overall, LearnPath provides a simple, structured, and interactive way of learning that improves consistency, understanding, and overall learning efficiency.

II. EXISTING SYSTEM

The current learning ecosystem mainly relies on platforms like YouTube, online course websites, and note-taking tools. Although these platforms provide a large amount of content, they do not offer a structured or personalized learning experience. As a result, learners often find it difficult to organize their study materials effectively.

Most existing systems focus on only one aspect of learning, such as video lectures or fixed courses. They do not allow

users to combine different resources like videos, articles, and documents into a single structured plan. This forces learners to switch between multiple platforms, making the process less efficient.

Another limitation is the lack of proper progress tracking and personalization. Learners must decide what to study next and track their progress manually. These platforms do not provide customized study plans based on individual learning time, making it difficult to maintain consistency.

Additionally, these systems support passive learning, where users can watch or read content without evaluation. There are no mandatory quizzes or discipline features like streak tracking, which often leads to low motivation and inconsistent learning.

III. PROPOSED SYSTEM

The proposed system, LearnPath, is a web-based platform designed to provide a structured and personalized approach to self-learning. It brings together features like study plan generation, daily lesson organization, quiz-based evaluation, progress tracking, and notes management into a single system.

The platform is divided into several modules, including the User Module, Study Plan Generation Module, Learning & Notes Module, Quiz & Evaluation Module, Progress Tracking Module, and Review Module.

The User Module allows users to register and access the system securely. The Study Plan Generation Module helps users create a customized 10–30 day study plan based on their available time and selected learning resources, ensuring a well-organized learning process.

The Learning & Notes Module enables users to go through daily lessons and create notes for better understanding, while the Quiz & Evaluation Module checks their knowledge through quizzes and allows progression only after successful completion. The Progress Tracking Module monitors performance, and the Review Module supports revision of completed content.

Overall, LearnPath combines planning, evaluation, and progress tracking to create a structured and interactive learning environment that improves consistency and learning efficiency.

IV. METHODOLOGY

The methodology of the proposed system explains how different modules work together to provide a structured and effective learning platform. The system is divided into several modules, each responsible for specific functionalities that support and enhance the learning process.

i. Data Collection

This module is responsible for collecting learning resources such as YouTube videos, articles, and PDF documents provided by the user. It extracts key details like duration, content size, and type, which are used to organize the materials into a structured format. This ensures that the content is relevant and suitable for creating an effective study plan.

ii. Study Plan Generation

This module creates a personalized study plan based on the learner's available time and selected resources. It automatically divides the content into daily lessons, ensuring that each day's workload is balanced and easy to follow. This helps users stay consistent and maintain a proper learning schedule.

iii. Learning & Notes Module

This module manages the learning process by presenting daily lessons to the user. It also allows users to create, edit, and store notes for each lesson, which helps in better understanding and supports future revision.

iv. Quiz & Evaluation Module

This module generates quizzes based on the learning content to test the user’s understanding. It ensures that learners cannot move to the next lesson without successfully completing the quiz, encouraging active learning and improving knowledge retention.

v. Progress Tracking Module

This module keeps track of the user’s learning progress by monitoring completed lessons, current status, and performance. It updates the dashboard with progress details, helping users stay motivated and aware of their progress.

vi. Review Module

This module allows users to revisit completed lessons, quizzes, and notes. It supports revision and helps reinforce previously learned concepts, ensuring better understanding and retention.

V. SYSTEM ARCHITECTURE

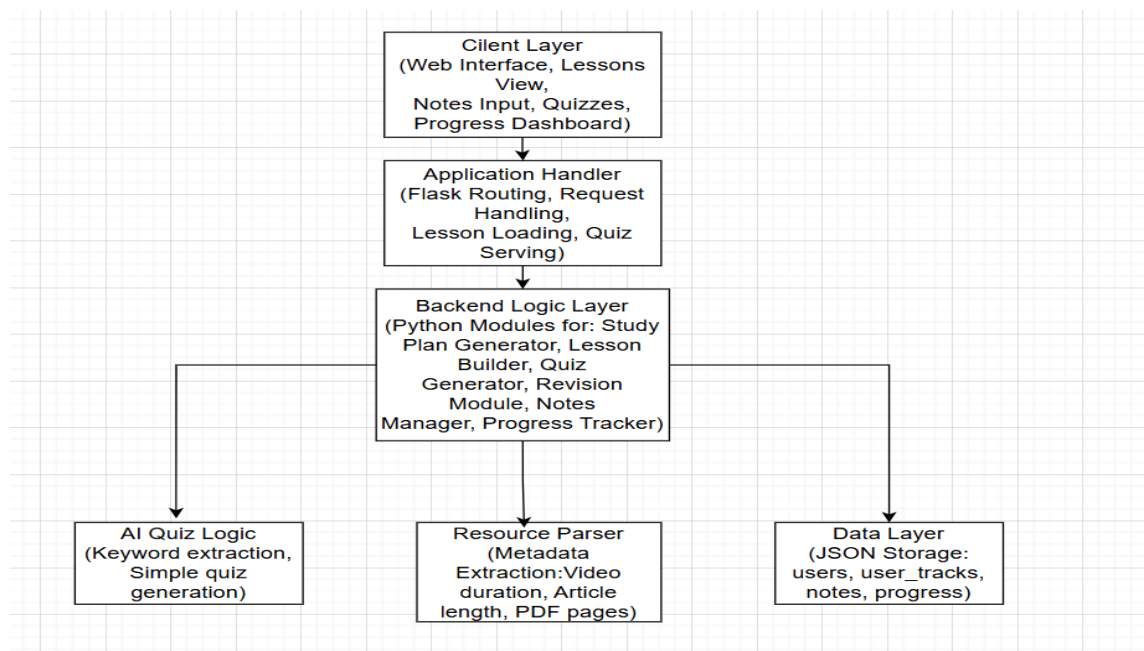
System architecture defines how the LearnPath system is structured and how different components work together. The system follows a multi-layered architecture to ensure smooth communication between the user, application logic, and data storage.

The architecture is divided into three main layers: User Interface Layer, Application Layer, and Database Layer. The User Interface Layer is responsible for interaction between the user and the system. It allows users to access features like study plan generation, daily lessons, notes, quizzes, and progress tracking through a simple and user-friendly interface. This layer is developed using HTML, CSS, and JavaScript.

The Application Layer handles the core processing of the system. It manages functionalities such as study plan generation, lesson management, quiz evaluation, notes handling, and progress tracking. This layer is implemented using Python and Flask to ensure smooth and efficient operation.

The Database Layer is responsible for storing and managing all system data, including user details, study tracks, notes, quizzes, and progress. It uses SQLite or JSON for storage, ensuring reliable and fast data access.

Overall, the architecture is designed to be simple, scalable, and easy to maintain. Each layer works independently while interacting with others, which improves system performance and flexibility.



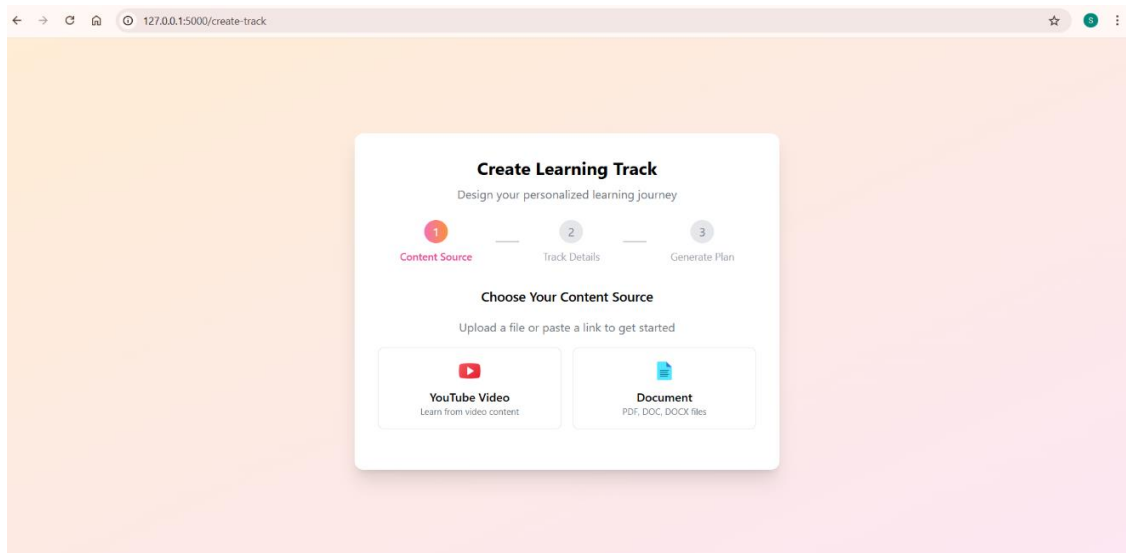
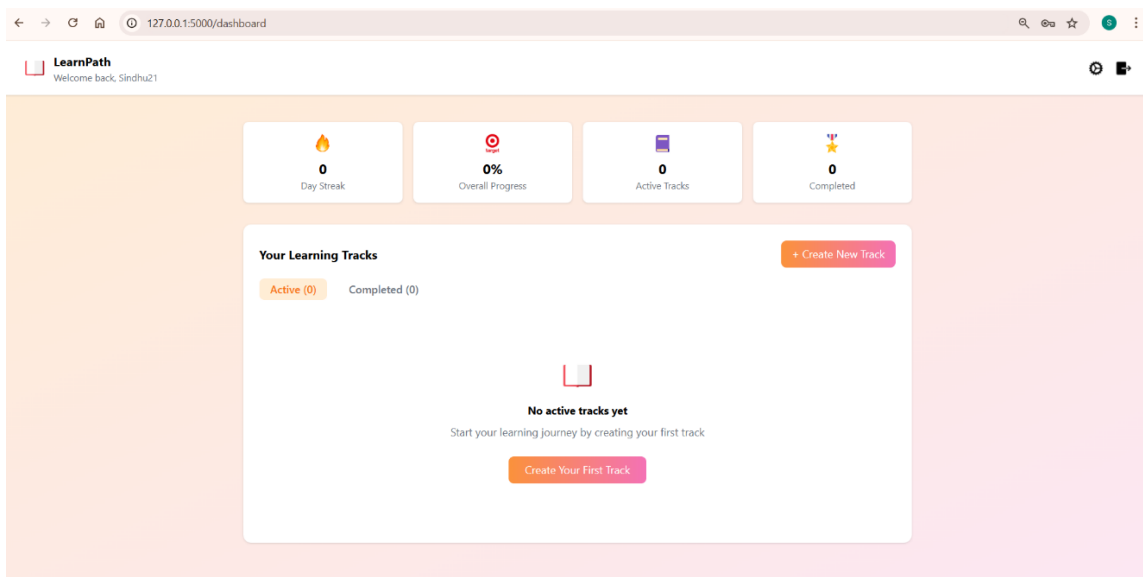
VI. RESULTS AND OUTPUT

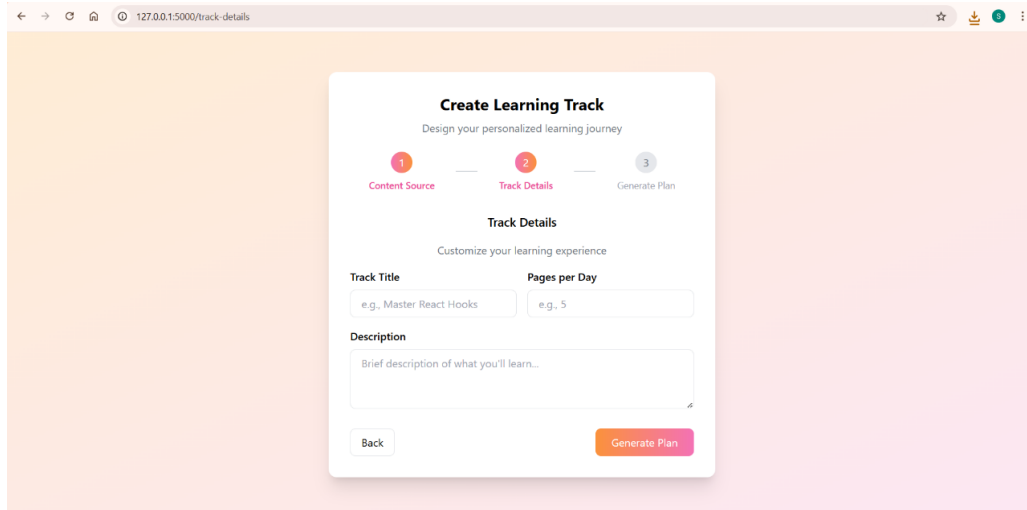
The developed LearnPath system provides a structured and personalized learning environment for users. It allows learners to convert their study resources into organized daily lessons and follow a clear and systematic study plan.

Users can access learning content, create notes, and take quizzes to check their understanding. The system ensures that each step is completed before moving forward, which helps improve knowledge retention and encourages active learning. The progress tracking feature also helps users monitor their performance and stay consistent.

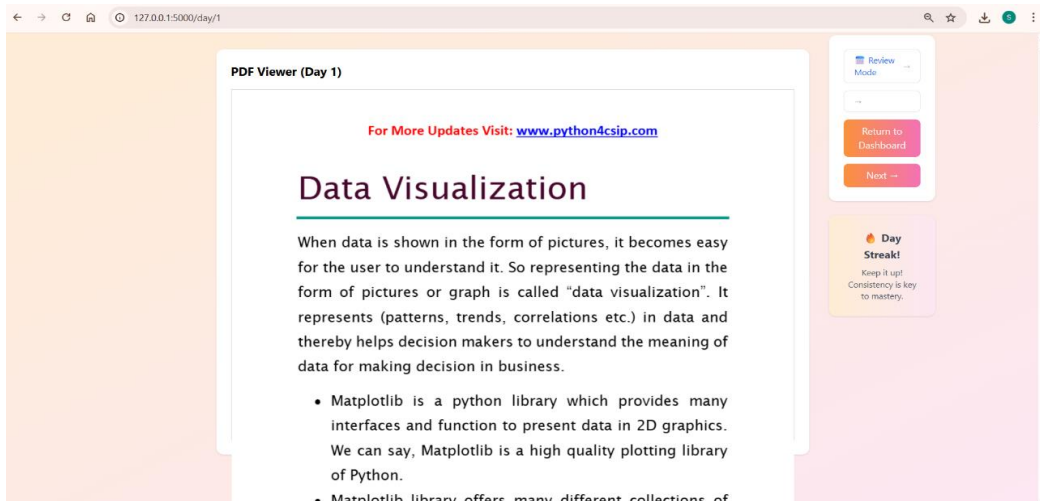
The system supports multiple study tracks, enabling users to manage different subjects or skills simultaneously. Additionally, the review module allows users to revisit completed lessons and notes, which helps in better revision and understanding.

Overall, LearnPath enhances learning efficiency, promotes discipline, and provides a simple, user-friendly, and interactive platform for self-learning.





The screenshot shows a web browser window with the URL `127.0.0.1:5000/track-details`. The page features a central white card titled "Create Learning Track" with the subtitle "Design your personalized learning journey". At the top of the card, there are three numbered steps: 1. Content Source, 2. Track Details (which is the active step), and 3. Generate Plan. Under the "Track Details" section, the user is prompted to "Customize your learning experience". There are two input fields: "Track Title" with the example text "e.g., Master React Hooks" and "Pages per Day" with the example text "e.g., 5". Below these is a "Description" text area with the placeholder text "Brief description of what you'll learn...". At the bottom of the card, there are two buttons: a "Back" button and a "Generate Plan" button.



The screenshot shows a web browser window with the URL `127.0.0.1:5000/day/1`. The main content area is titled "PDF Viewer (Day 1)" and contains the following text:

For More Updates Visit: www.python4csip.com

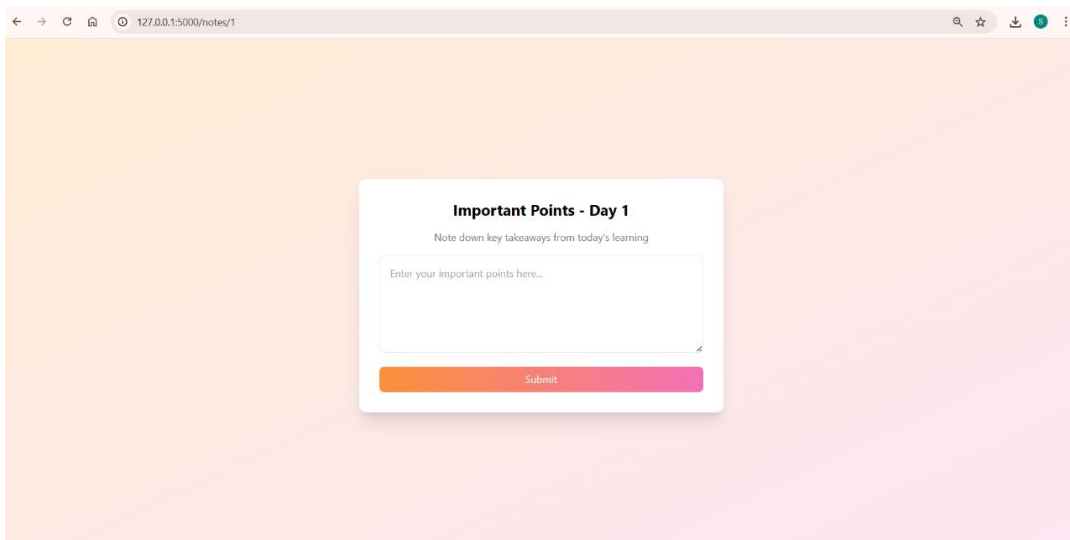
Data Visualization

When data is shown in the form of pictures, it becomes easy for the user to understand it. So representing the data in the form of pictures or graph is called "data visualization". It represents (patterns, trends, correlations etc.) in data and thereby helps decision makers to understand the meaning of data for making decision in business.

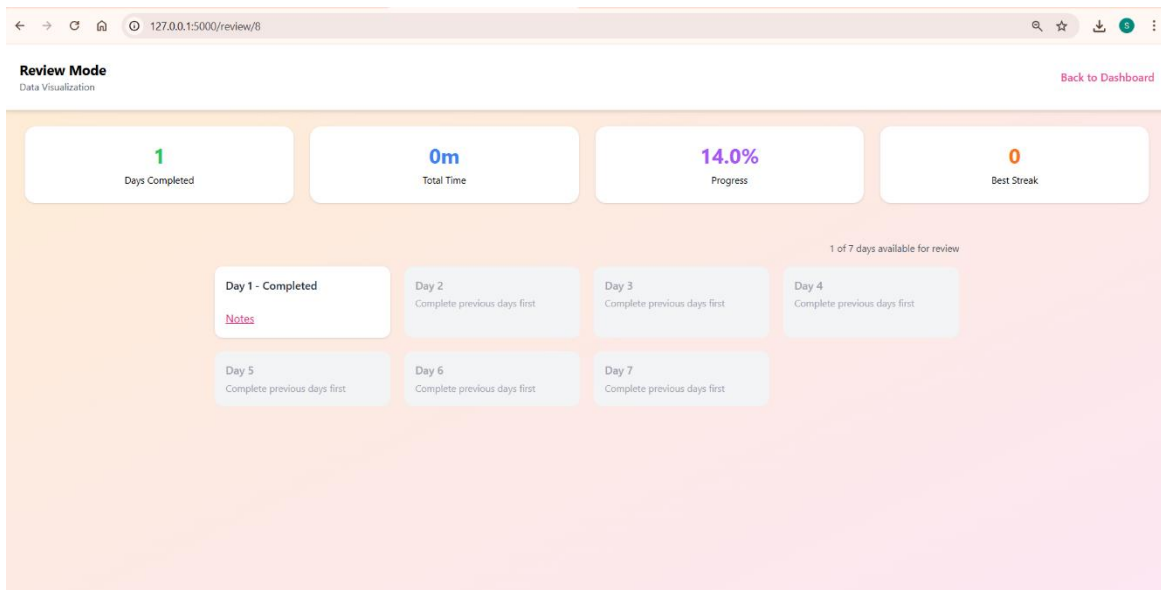
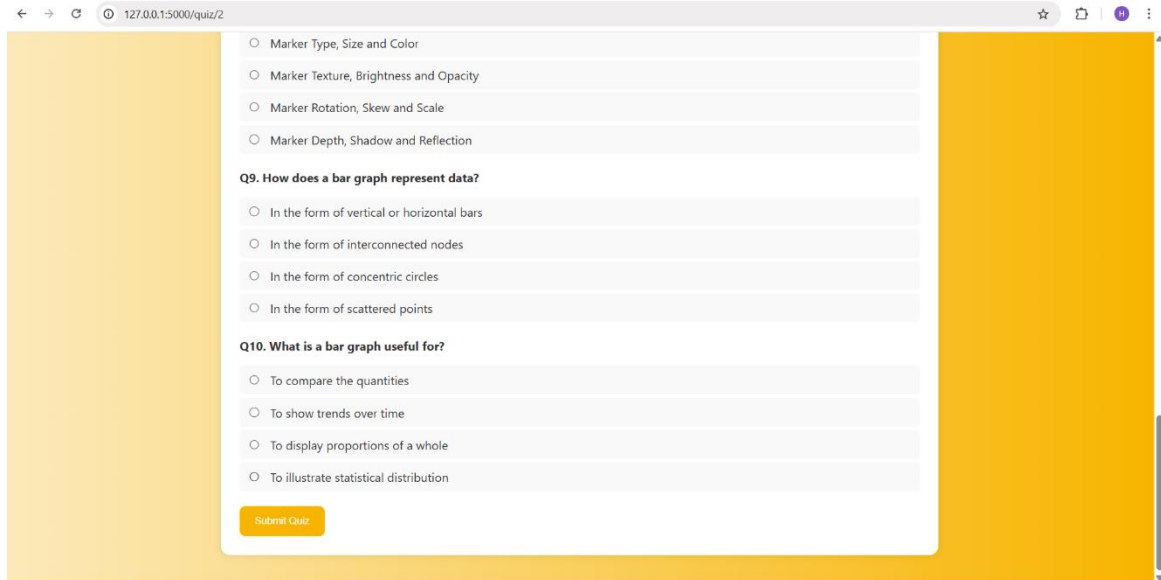
- Matplotlib is a python library which provides many interfaces and function to present data in 2D graphics. We can say, Matplotlib is a high quality plotting library of Python.
- Matplotlib library offers many different collections of



The sidebar on the right contains a "Review Mode" section with a dropdown menu and a "Return to Dashboard" button. Below that is a "Next" button. At the bottom of the sidebar is a "Day Streak!" widget with a flame icon and the text "Keep it up! Consistency is key to mastery."



The screenshot shows a web browser window with the URL `127.0.0.1:5000/notes/1`. The page features a central white card titled "Important Points - Day 1" with the subtitle "Note down key takeaways from today's learning". Below the subtitle is a text area with the placeholder text "Enter your important points here...". At the bottom of the card, there is a "Submit" button.



VII. CONCLUSION

The LearnPath system provides a structured and personalized approach to modern learning. It enables users to convert their own study resources, such as YouTube videos and documents, into organized daily learning plans. By combining features like study plan generation, notes management, quiz-based evaluation, and progress tracking, the system helps learners stay consistent and disciplined.

Unlike traditional learning platforms, LearnPath offers a more flexible and user-centered approach by allowing learners to use their own content while still following a structured path. The use of quizzes and progress tracking ensures that learners not only go through the content but also understand and retain it effectively.

The system is simple, user-friendly, and supports self-paced learning. It encourages regular study habits through proper planning and interactive features. Overall, LearnPath improves learning efficiency, increases user engagement, and provides an effective solution for managing the learning process in a more organized and meaningful way.

VIII. FUTURE SCOPE

The LearnPath system can be further improved by adding advanced features to enhance its functionality and overall user experience. These improvements can make the system more intelligent, adaptive, and efficient for learners.

One possible enhancement is the integration of advanced AI features. The system can generate summaries, key points, and simple explanations from the learning content. It can also suggest additional resources based on user performance, helping learners understand topics more effectively.

Another improvement is the addition of a personalized feedback system. By analyzing quiz results and user activity, the system can provide suggestions such as revising specific topics or adjusting the study plan. This will make the learning process more adaptive and user-centered.

The platform can also be extended into a mobile application, allowing users to learn anytime and anywhere. Features like notifications and reminders can be added to help users stay consistent.

Additionally, advanced dashboards and analytics can be introduced to help users track their progress, strengths, and areas for improvement. These enhancements will make LearnPath more effective, user-friendly, and suitable for real-world learning needs.

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