Athena Internal Learning Dashboard

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1 Project Summary

This project presents a Retool-based internal dashboard developed for the Athena Learning Platform to streamline the collection, review, and analysis of student-submitted learning materials. The system consists of three integrated modules: a **student submission panel**, an **admin review dashboard**, and an **analytical dashboard**.

Students can submit explanations on specific topics using a structured form that captures textual and optional audio input. To maintain data integrity, the system automatically flags duplicate submissions based on the student name and topic.

The admin dashboard enables reviewers to filter submissions by name, topic, and review status. Admins can apply the review, assign clarity ratings, and update the review status automatically when submitting a review. Review interactions are explicitly saved to avoid unintended data changes.

The analytics module visualizes key engagement metrics, such as the topics submitted the most frequently, the top student contributors, and the number of pending reviews. All functionalities are powered by the Retool database and seamlessly integrated with the Retool user interface and query logic.

This dashboard makes it easy to manage academic tasks without writing any code, while providing real-time data.

2 Features

2.1 Student Submission Panel

This is the student-facing module where users can submit explanations on specific topics. The submission form includes the following fields:

- **Name**: to identify the student
- **Email**: to uniquely associate the submission with the student
- **Topic**: the subject or concept being explained
- **Explanation**: a text area where students write their explanation
- **Voice URL (optional)**: allows students to attach an audio explanation if available

To ensure data integrity and avoid redundancy, the system automatically checks for duplicate topic submissions by the same student during the submission of the form. If a duplicate is detected (the same student name and topic), a **duplicate_flag** field is set to **true** in the database.

All submitted data is stored in the Retool Database, using form submission actions.

2.2 Admin Review Dashboard

This section is designed for internal staff or reviewers. It displays all student submissions in a filterable, tabular view. Key features include:

- Filtering by **name**, **topic**, and **review status** using dropdowns and text inputs
- Ability to assign review submissions

- Option to rate submissions using a star-based clarity rating (1–5 scale)
- A **Save Changes** button triggers an update to the backend, which:
  - Stores the review and rating
  - Marks the `review_status` field as `true`
- Duplicate submissions are visually flagged within the table

This ensures that all review actions are deliberate and not triggered automatically upon row selection.

2.3 Analytics Dashboard

The dashboard includes visual summaries to help admins understand platform-wide usage and engagement. The following metrics are included:

- Most Frequently Submitted Topics (bar chart)
- Top Contributors by Submission Count (bar chart)
- Submissions Pending Review (pie chart)

Data is visualized using Retool's native chart components and dynamically updated using SQL queries that aggregate values based on topic, student name, and review status.

Overall, this dashboard ensures a full pipeline — from submission to review to analysis — all within one internal tool, with minimal technical overhead, while maintaining clear logic and structured data management.

3 Database Schema

The following table describes the schema of the `student_info` table used in the Retool Database:

Column	Type	Description
`id`	Integer	Primary key (auto-incremented)
`student_name`	Text	Name of the student
`email`	Text	Email address of the student
`topic`	Text	Topic of the explanation
`explanation`	Text	Main content of the submission
`voice_url`	Text	Optional voice note URL
`duplicate_flag`	Boolean	Set to `true` if the topic is a duplicate submission by the same student
`admin_review`	Text	Review assigned by the admin
`review_rating`	Integer	Clarity score on a 1–5 scale
`review_status`	Boolean	`true` if the submission has been reviewed

Table 1: Schema of the `student_info` table

4 Technology Stack

The dashboard was built using the following technology stack:

Layer	Tool/Technology
Frontend	Retool (UI builder)
Backend	SQL (via Retool DB)
Storage	Retool DB, File URLs

Table 2: Technology stack used in the Athena dashboard project

5 Challenges Faced

Several challenges were encountered during the implementation of the dashboard:

- **Dropdown filter error with boolean casting:** Filtering based on review status initially caused SQL errors when attempting to cast the value "all" as a boolean. This was resolved using dynamic SQL injection with a `WHERE TRUE` fallback condition.
- **Unintentional auto-update when selecting rows:** Selecting a table row was triggering updates automatically. This was resolved by disabling auto triggers and ensuring updates occur only on explicit button clicks.
- **Limited layout control in Retool:** Retool's UI has constraints when building visually complex layouts, requiring careful use of containers and components to maintain alignment and spacing.

6 GitHub Repository

The source code and configuration files for this project are hosted in a public GitHub repository:

- **Repository Link:** https://github.com/MusfiqurRahmanShahed/Athena-Internal-Learning-Dashboard

  The repository includes:

- Retool exported JSON configurations
- `project_report.md`