**Data Analysis on Kalboard 360’s Dataset**

**Introduction**

In the realm of educational technology, Kalboard 360, a multi-agent Learning Management System (LMS), is at the forefront of leveraging advanced technology to provide users with synchronous access to educational resources. The dataset analyzed in this report is derived from Kalboard 360, collected through the Experience API (xAPI), a crucial tool in monitoring learning progress and learner actions within the Training and Learning Architecture (TLA).

Comprising 480 student records and 16 features, the dataset is categorized into three domains: Demographics, Academic background, and Behavioral features. The diverse student cohort hails from various countries, reflecting a broad cultural spectrum.

The dataset spans two educational semesters, incorporating attendance data that classifies students based on absence days. A noteworthy addition is the Parent Participation category, featuring sub-features such as Parent Answering Survey and Parent School Satisfaction.

This report endeavors to utilize Python and Power BI for data analysis, KPI formulation, and dashboard creation. Through a deep dive into the dataset, our primary goal is to extract meaningful insights that can guide strategic decisions aimed at enhancing engagement on the Kalboard 360 platform.

**Key Insights**

Demographic Overview:

Nationalities and Places of Birth: Students hail from diverse nationalities and places of birth, reflecting a multicultural environment.

Academic Structure:

Stage and Grade Distribution: The educational stages include lower level, middle school, and high school, with corresponding grade levels (G-02 to G-12) indicating a range of academic progress.

Sectional Diversity: Students are classified into sections A, B, and C, contributing to a comprehensive view of the academic landscape.

Behavioral Patterns:

Topic Engagement: The dataset encompasses a variety of academic topics, such as IT, Math, Arabic, Science, and more, shedding light on the diverse academic interests of students.

Semester Analysis: Students' performance and engagement are tracked across two semesters (F and S), allowing for a temporal exploration of academic trends.

Parental Involvement:

Parental Responses: Parents actively participate in surveys, with a notable number answering affirmatively. This engagement provides insights into the level of parental involvement in the educational process.

Parental Satisfaction: A significant proportion of parents express satisfaction with the school, emphasizing positive sentiment within the community.

Numerical Features Overview:

Raised Hands: The average number of raised hands in class is approximately 46.78, with a diverse distribution reflected in the minimum and maximum values.

Visited Resources: On average, students access around 54.80 educational resources, indicating a substantial engagement with additional learning materials.

Announcements and Discussions: The average views for announcements and participation in discussions are around 37.92 and 43.28, respectively. These figures highlight interactive engagement within the platform.

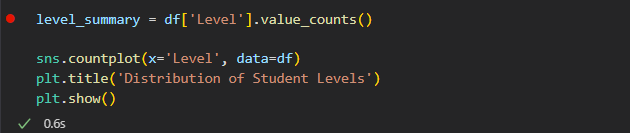
Categorical Features Summary:

Relation and Absence Days: Students primarily identify relations as either fathers or mothers, and their absence days are categorized as either under 7 or above 7, providing insights into familial and attendance dynamics.

A screen shot of a computer

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The bar chart depicting student distribution among different academic levels—High (H), Medium (M), and Low (L)—reveals compelling patterns. With over 125 students in the High level, 200 students in the Medium level, and an additional 125 students in the Low level, the chart underscores the platform's ability to cater to a diverse range of academic proficiencies.



A graph of a distribution of student levels

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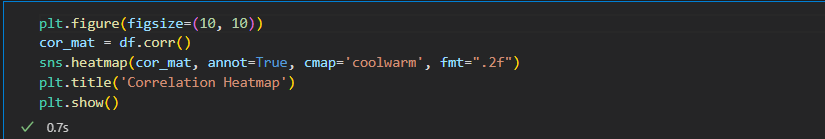
A computer screen with text

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Box plots depicting engagement metrics—hand raises, discussion participation, resource views, and announcement views—reveal a clear trend. High-level students consistently exhibit superior engagement, while medium-level students demonstrate moderate engagement, and low-level students show comparatively lower involvement. These findings underscore a positive correlation between academic level and platform engagement, suggesting opportunities for targeted interventions to enhance participation among medium and low-level students.

A diagram of different colored squares

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High Positive Correlations:

Raised Hands and Visited Resources: A strong positive correlation of approximately 0.69 indicates that students who frequently raise their hands also tend to visit resources actively.

Announcements View and Visited Resources: With a correlation of around 0.59, students who actively view announcements also tend to engage with educational resources.

Moderate Positive Correlations:

Announcements View and Discussion: A positive correlation of approximately 0.42 suggests a moderate association between students who view announcements and actively participate in discussions.

Raised Hands and Discussion: A moderate positive correlation of about 0.34 indicates that students who frequently raise their hands are also likely to participate in discussions.

Negative Correlations:

Gender and Various Metrics: The negative correlation values for 'gender\_M' with raised hands, visited resources, announcements view, and discussion imply some differences in engagement between male (M) and female (F) students, with males showing slightly lower engagement.

Categorical Features:

Parental Engagement: Positive correlations are observed between various engagement metrics and features such as 'ParentAnsweringSurvey\_Yes' and 'ParentschoolSatisfaction\_Good.'

Student Absence Days: The metric 'StudentAbsenceDays\_Under-7' positively correlates with various engagement metrics, suggesting that students with fewer absence days tend to be more engaged.

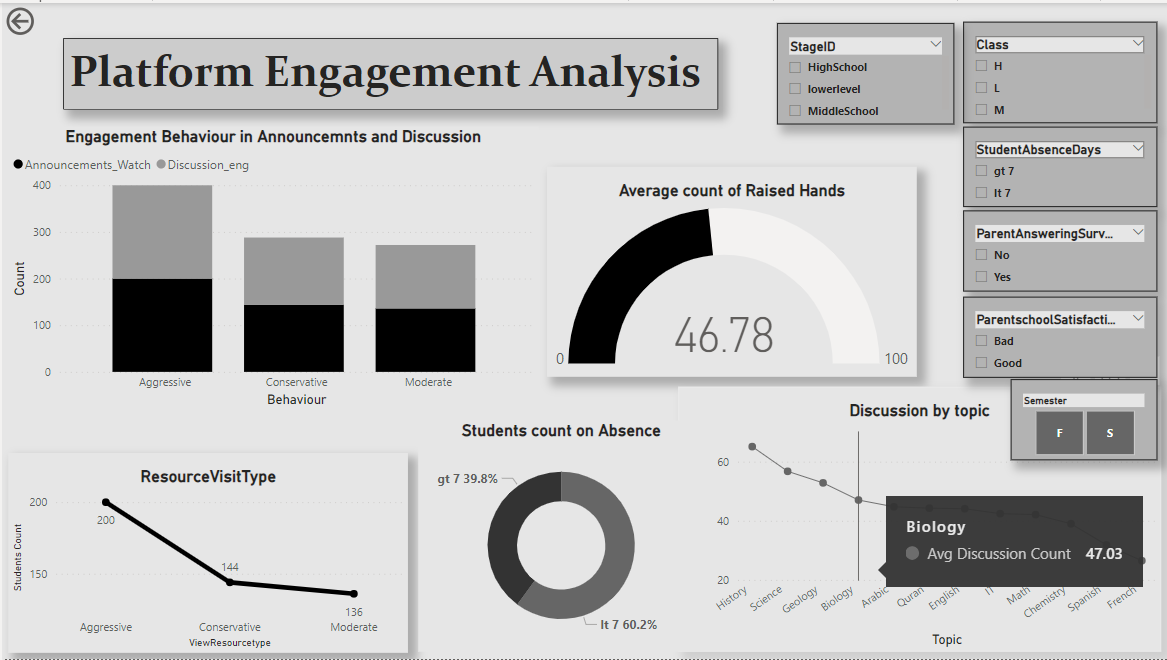
A screenshot of a graph

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**Key Performance Indicators**

1. Class
2. Raisedhands
3. VisITedResources
4. AnnouncementsView
5. Discussion
6. StageID
7. Semester
8. Topic
9. ParentAnsweringSurvey
10. StudentAbsenceDays
11. ParentschoolSatisfaction

**Dashboard**

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Link: https://github.com/Farzinaayub/edplatform-engagement-analysis-.git

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