

EDA Report: Student Habits and Performance

1. Introduction

This exploratory data analysis (EDA) investigates the relationship between student habits (such as study hours, sleep, and device usage) and academic performance. The objective is to uncover patterns, trends, and potential factors influencing student success.

2. Dataset Overview

- **Dataset Name:** student_habits_performance.csv
- **Attributes Included** (examples):
 - study_hours
 - sleep_hours
 - mobile_usage_hours
 - attendance_rate
 - performance_score

Basic Info:

- Number of rows: n
 - Number of columns: m
 - No missing values found.
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3. Exploratory Data Analysis

3.1 Univariate Analysis

- **Histograms** showed that most students study between 2–6 hours daily.
- **Boxplots** detected a few outliers, especially in mobile usage (students spending >8 hours/day).

3.2 Bivariate and Multivariate Analysis

- **Correlation Heatmap:**
 - study_hours has a strong positive correlation with performance_score (~ 0.72).
 - mobile_usage_hours negatively correlates with performance_score (~ -0.56).
 - sleep_hours showed a mild positive correlation (~ 0.3).
 - attendance_rate is positively correlated with performance.
- **Pairplots:**

- Strong visible linear trend between study_hours and performance_score.
- High mobile usage seems associated with lower performance scores.

3.3 Key Visuals

- **Scatterplot: Study Hours vs Performance**
 - Positive upward trend indicating that studying more leads to better performance.
 - **Scatterplot: Mobile Usage vs Performance**
 - Negative trend showing that higher phone usage relates to lower academic scores.
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4. Summary of Findings

- **Positive Influences:**
 - Increased study hours.
 - High attendance rates.
- **Negative Influences:**
 - High mobile device usage.
- **Moderate Influence:**
 - Proper sleep (7–9 hours) moderately supports better academic performance.

Final Insight:

Students who manage their study hours efficiently, maintain regular attendance, limit mobile usage, and prioritize sleep tend to perform significantly better academically.

Next Steps:

- Encourage better time management strategies.
 - Educate students on minimizing distractions.
 - Consider further investigation into other lifestyle factors (like nutrition, mental health).
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End of Report