

# Student Performance Analysis Report

## Academic Dashboard 2024-2025

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### Executive Summary

This Power BI report provides a comprehensive analysis of student academic performance across 100 students. The dashboard tracks performance across three core subjects— Mathematics, Reading, and Writing—while examining the impact of demographic factors (ethnicity, gender, parental education) and test preparation on student outcomes. The analysis reveals meaningful patterns in achievement across different student groups.

**Key Metrics:**

- **Total Students Monitored** 100
  - **Average Math Score** 62.51%
  - **Average Reading Score** 60.49%
  - **Average Writing Score** 60.53%
  - **Overall Average Score** 61.18%
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## 1. Report Overview

### Purpose

The report enables educators and administrators to identify performance trends, demographic disparities, and the effectiveness of test preparation programs to drive evidence-based interventions and support strategies for student success.

### Scope

- **Student Population:** 100 students
- **Subject Areas:** Mathematics, Reading, Writing **Demographic**
- **Dimensions:**
  - Ethnicity (Groups A, B, C, D, E)
  - Gender (Male, Female)
  - Parental Education Level (High School, Some High School, Associate, Some College, Bachelor's)
- **Intervention Tracking:** Test Preparation (Completed, None)

### Data Sources

Student assessment scores and demographic information collected from school administration systems and student records databases.

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## 2. Report Structure & Pages

The Power BI report contains multiple analytical dashboards:

### 2.1 Main Dashboard - Overview Page

**Visual Elements:**

- High-level KPI cards displaying average scores across all students and subjects
- Filter panels for Ethnicity, Gender, and Parental Education
- Test Preparation status filter for comparative analysis
- All-India view default setting for comprehensive overview

**Key Metrics Displayed:**

Metric	Value	Scale
Student Count	100	count
Avg Math Score	62.51	%
Avg Reading Score	60.49	%
Avg Writing Score	60.53	%
Overall Avg Score	61.18	%

**2.2 Performance by Ethnicity Analysis**

**Chart Type:** Column chart

**Focus:** Average score percentage across five ethnic groups **Key Findings:**

- **Group A:** 63% average (highest performing)
- **Group B:** 61% average
- **Group C:** 60% average
- **Group D:** 62% average
- **Group E:** 60% average

**Insight:** Group A demonstrates the highest performance with 3 percentage points above lowest performers, indicating possible achievement gaps across ethnic groups.

**2.3 Impact of Parental Education**

**Chart Type:** Column chart

**Dimensions:** Parental Education Level on X-axis, average score percentage on Y-axis **Educational Levels Tracked:**

- High School
- Some High School
- Associate Degree
- Some College
- Bachelor's Degree

**Performance Pattern:**

- **Bachelor's Degree Parents:** 63% average (highest)
- **Some College:** 63% average
- **Associate Degree:** 62% average
- **Some High School:** 61% average
- **High School:** 60% average

**Key Insight:** Strong correlation between parental education level and student achievement —students with bachelor's-educated parents score 3 percentage points higher on average.

2.4 Gender-based Performance Comparison

**Chart Type:** Comparison bar chart **Metrics:** Average score percentage by gender **Gender Breakdown:**

- **Female:** 61% average
- **Male:** 61% average

**Finding:** Minimal gender disparity in overall performance, suggesting equitable outcomes across genders in this student cohort.

2.5 Test Preparation Impact

**Chart Type:** Bar chart **Categories:** Test Preparation Status (Completed vs None) **Results:**

- **Test Preparation Completed:** 66.5% average score (significant improvement)
- **No Preparation:** Lower baseline performance

**Conclusion:** Test preparation program shows measurable positive impact of approximately 6.5 percentage points improvement in average scores.

2.6 Ethnicity × Parental Education Matrix

**Chart Type:** Clustered/stacked bar chart **Dimensions:** Ethnicity groups (X-axis) crossed with parental education levels **Purpose:** Reveals intersection of demographic factors affecting student outcomes **Pattern:** Students with both higher ethnicity group classification and bachelor's-educated parents demonstrate highest achievement levels.

2.7 Top 5 Students by Performance

**Chart Type:** Horizontal bar chart **Focus:** Five highest-performing individual students **Top Performers:**

Student ID	Math Score	Reading Score	Writing Score
S044	97.00	71.00	86.00
S098	88.00	69.00	76.00
S011	84.00	60.00	-
S070	76.00	58.00	-
S069	72.00	-	-

**Insight:** Top performers show particularly strong math scores, with S044 achieving nearperfect mathematics performance.

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## 3. Data Model & Methodology

### 3.1 Data Structure

The report aggregates student performance data across three hierarchical levels:

- **Overall Level:** Aggregate performance across all 100 students
- **Demographic Level:** Aggregations by ethnicity, gender, and parental education
- **Individual Level:** Student-specific performance metrics

### 3.2 Key Measures

All performance metrics are calculated as **percentage averages** across the three subject areas (Math, Reading, Writing), enabling comprehensive academic assessment while maintaining consistency across different student populations.

### 3.3 Subject Definitions

- **Mathematics:** Quantitative reasoning and problem-solving skills
- **Reading:** Comprehension, analysis, and textual interpretation abilities
- **Writing:** Composition, grammar, and written communication proficiency

### 3.4 Demographic Variables

- **Ethnicity:** Five classification groups (A through E)
  - **Gender:** Binary classification (Male, Female)
  - **Parental Education:** Five levels from high school through bachelor's degree
  - **Test Preparation:** Binary indicator (Completed or None)
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## 4. How to Use the Report

### 4.1 Navigation Steps

1. **Select Ethnicity:** Use ethnicity filter to focus on specific ethnic groups or view all
2. **Choose Gender:** Filter by male, female, or all genders for comparative analysis
3. **Filter by Parental Education:** Isolate students by parent education level to examine SES-related trends
4. **Apply Test Prep Filter:** Toggle between students who completed preparation versus those who did not

## 5. Key Insights & Findings

### 5.1 Demographic Achievement Gaps

- **Ethnicity Effect:** 3-point spread between highest (Group A at 63%) and lowest (Groups C, E at 60%) performing ethnic groups
- **Parental Education Strong Predictor:** Bachelor's degree parents' children average 3 points higher (63%) than high school parents' children (60%)
- **Gender Equity:** Virtually no gender gap (both at 61%), indicating successful gender-inclusive instruction

## 5.2 Test Preparation Effectiveness

- **Significant Impact:** 6.5 percentage point improvement for students completing test preparation (66.5% vs 60% baseline)
- **Recommendation:** Prioritize test preparation access for all students, particularly those from underrepresented groups

## 5.3 Individual Excellence

- **High Achievers Exist:** Top student (S044) scores 97% in math, 86% in writing— significantly above mean
- **Performance Range:** 25+ percentage point spread between top and typical students, indicating wide variance in achievement

## 5.4 Subject-Specific Patterns

- **Math Strongest Subject:** Average of 62.51% highest among the three subjects
  - **Reading Slightly Weaker:** 60.49% average, slightly below writing (60.53%)
  - **Consistent Gaps:** 2-point differential between math and reading suggests potential literacy intervention needs
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