**📘 Student Habits and Academic Performance – Summary Report**

### **📁 Dataset Overview**

* **Total Records:** 1000 students
* **Attributes Analyzed:** 16 features including demographic, behavioral, and academic variables
* **Missing Values:** 91 in *Parental\_Education\_Level* → filled with **"Unknown"**

### **🔍 Key Features Examined**

* **Demographics:** Age, Gender
* **Behavioral:** Study Hours, Social Media & Netflix Usage, Sleep, Diet, Exercise, Part-Time Job, Extracurricular Activities
* **Environment:** Internet Quality, Parental Education
* **Outcomes:** Mental Health Rating, Exam Score

### **📈 Statistical Insights**

#### **🧠 Academic & Lifestyle Stats:**

| **Metric** | **Mean** | **Std Dev** |
| --- | --- | --- |
| Study Hours/Day | 3.55 | ±1.47 |
| Exam Score | 69.6 | ±16.9 |
| Mental Health Rating | 5.43 | ±2.85 |
| Sleep Hours | 6.47 | ±1.23 |
| Attendance Percentage | 84.1% | ±9.4 |

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#### **🧑‍💻 Screen Time:**

* **Social Media Usage:** Avg **2.5 hrs/day**
* **Netflix Usage:** Avg **1.8 hrs/day**
* **Total Screen Time:** **>4 hrs/day** is common

### **📊 Visual Trends & Patterns**

* 📈 **Study Hours** ↗ **Exam Score**: Clear positive relationship
* 📉 **Social Media Use** ↘ **Exam Score**: High screen time hurts performance
* 😴 **Sleep Hours** ↗ **Mental Health**: More sleep supports better well-being
* 👷 **Part-Time Job**: Students tend to study less
* 🏅 **Extracurricular Participation**: Slight increase in attendance; mixed impact on scores

### **🔗 Correlation Matrix Highlights**

| **Feature Pair** | **Correlation** |
| --- | --- |
| Study Hours ↔ Exam Score | +0.62 |
| Sleep Hours ↔ Mental Health | +0.52 |
| Social Media ↔ Exam Score | -0.41 |
| Attendance ↔ Exam Score | +0.35 |

### **🧮 Engineered Insights**

* **Total Screen Time** = Social Media + Netflix
* **Study Efficiency** = Exam Score / Study Hours (if > 0)  
   📌 *High efficiency ≠ high total study — it depends on balance & habits.*

### **✅ Final Conclusions & Recommendations**

1. **Regular study habits** are key for better academic results
2. **Adequate sleep** boosts both mental health and performance
3. **High screen time** (esp. social media) is linked to poor scores
4. Promote **balanced student life** (exercise, extracurriculars)
5. Offer **mentoring** for students with low study hours or high screen time