STUDENT PERFORMANCE ANALYSIS DASHBOARD REPORT

1. Introduction:

The StudentPerformanceFactors.csv file contains data on various factors influencing students' academic performance, such as study hours, attendance, and parental involvement. The columns in dataset provide insights into student's study habits, socioeconomic background, and environmental influences, which can help identify patterns affecting exam outcomes. This data is useful for analysing how different factors contribute to academic success.

We used DAX functions in a Power BI dashboard to calculate and visualize insights, categorizing performance, calculating averages, and segmenting by demographics. This provides a clear view for educators to identify areas for improving student success.

2. Overview:

The "Student Performance Dashboard" provides insights into factors influencing student exam performance, allowing stakeholders (educators, administrators, and analysts) to explore how various elements like study hours, attendance, motivation level, and parental involvement impact scores. The dashboard is built using Power BI, incorporating key data transformations and DAX calculations to visualize and interpret student performance trends effectively.

3. Data Source

- File Name: StudentPerformanceFactors.csv

- Columns:

   - Numerical Columns: Hours_Studied, Attendance, Sleep_Hours, Previous_Scores, Tutoring_Sessions, Physical_Activity, Exam_Score

   - Categorical Columns : Parental_Involvement, Access_to_Resources, Extracurricular_Activities, Motivation_Level, Internet_Access, Family_Income, Teacher_Quality, School_Type, Peer_Influence, Learning_Disabilities, Parental_Education_Level, Distance_from_Home, Gender.

4. Dashboard Structure and Visuals

1] Exam Performance by Hours Studied

- Chart Type : Scatter Plot

- Description: Shows the correlation between Hours_Studied and Exam_Score, indicating if additional study hours correlate with higher scores.

- X-Axis: Hours_Studied

- Y-Axis: Exam_Score

DAX Calculation:

```
Exam_Avg = AVERAGE(StudentPerformanceFactors[Exam_Score])
```

2] Average Exam Score by Parental Involvement

- Chart Type: Column Chart

- Description: Displays the average Exam_Score across different levels of Parental_Involvement (Low, Medium, High).

- X-Axis: Parental_Involvement

- Y-Axis: Average of Exam_Score

DAX Calculation:

```
Avg_Exam_By_Parental =
CALCULATE(AVERAGE(StudentPerformanceFactors[Exam_Score]),
    StudentPerformanceFactors[Parental_Involvement] = "High")
```

3] Impact of Attendance on Exam Scores

- Chart Type: Line Chart

- Description: Tracks how variations in Attendance correlate with Exam_Score, highlighting trends across different attendance levels.

- X-Axis: Attendance

- Y-Axis: Exam_Score

DAX Calculation:

```
Attendance_Level = IF(StudentPerformanceFactors[Attendance] > 85,
  "High", IF(StudentPerformanceFactors[Attendance] > 70, "Medium",
                      "Low"))
```

4] Demographics and Exam Scores

   - Chart Type: Stacked Bar Chart

   - Description: Compares Exam_Score averages across different demographics, like Gender and Family_Income.

   - X-Axis: Gender or Family_Income

   - Y-Axis: Average of Exam_Score

 DAX Calculation:

```
Avg_Exam_Gender =
CALCULATE(AVERAGE(StudentPerformanceFactors[Exam_Score]),
StudentPerformanceFactors[Gender] = "Male")
```

5] Effect of Sleep Hours and Tutoring Sessions

   - Chart Type: Line and Clustered Column Chart

   - Description: Examines the relationship between Sleep_Hours, Tutoring_Sessions, and Exam_Score.

   - X-Axis: Sleep_Hours

   - Y-Axis: Average of Exam_Score and Tutoring_Sessions

DAX Calculation:

```
Avg_Exam_Sleep =
CALCULATE(AVERAGE(StudentPerformanceFactors[Exam_Score]),
          StudentPerformanceFactors[Sleep_Hours] >= 7)
```

STUDENT PERFORMANCE ANALYSIS DASHBOARD

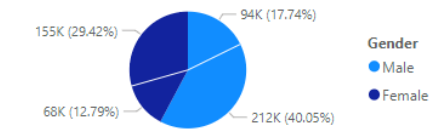| 67.24	528K	67.23	68.09
Exam_Avg	Total_Attandance	Avg_Exam_Gender	Avg_Exam_By_Parental

Sum of Attendance by Gender and School_Type

94K (17.74%)
155K (29.42%)
68K (12.79%)
212K (40.05%)

Gender
● Male
● Female

Sum of Exam_Score by Attendance

Sum of Exam_Score
10K
5K
60   80   100
Attendance
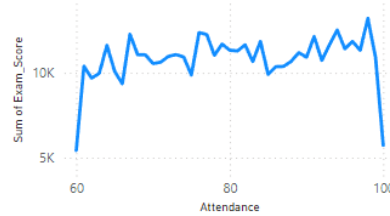
67.21
Avg Exam Sleep

Average of Exam_Score and Avg_Exam_By_Parental by Parental_Involvement

● Average of Exam_Score ● Avg_Exam_By_Parental

Average of Exam_Sco...
100
0
High   Medium   Low
Parental_Involvement
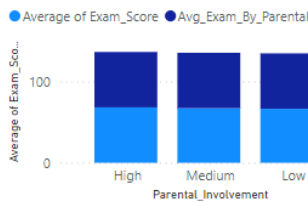
Average of Exam_Score and Avg_Exam_Gender by Gender

● Average of Exam_Score ● Avg_Exam_Gender

Gender
Female
Male
0   50   100
Average of Exam_Score and Avg_Exam_Gender
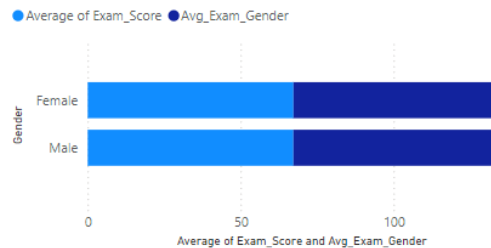
Average of Exam_Score, Avg_Exam_Sleep and Average of Tutoring_Sessions by Sleep_Hours

● Average of Exam_Score ● Avg_Exam_Sleep ● Average of Tutoring_Sessions

Average of Exam_Score and ...
100
0
4   6   8   10
Sleep_Hours

Average of Tutoring_Sessions
1.6
1.5
1.4
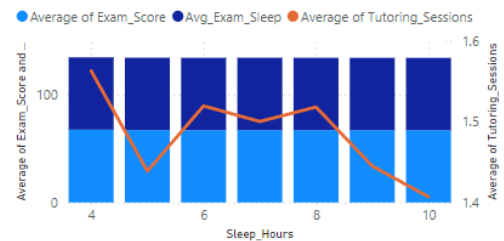
5.Conclusion:

The "Student Performance Dashboard" provides valuable insights into how various factors—like study habits, attendance, motivation, and parental involvement—impact student exam scores. By using DAX calculations, the dashboard effectively highlights patterns and relationships within the data, enabling educators and administrators to identify key areas for intervention. This tool serves as a powerful resource for understanding the dynamics behind academic success and supporting data-driven decisions to improve student outcomes