Week 3 Task: Dashboard Design Fundamentals

Internship: Virtual Power BI Data Insights Internship

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1. Objective

The aim of this task is to design a clear, interactive Power BI dashboard based on the data model created in Week 2, which focused on **student performance and attendance**. This dashboard will help school administrators and teachers track key academic and behavioral metrics, make informed decisions, and take necessary interventions.

2. Dashboard Design Strategy

Here's a step-by-step breakdown of how I approached this dashboard design:

Step	Description
Review Data Model	Used tables from Week 2: students, performance, attendance
Identify Business Needs	Tracked performance by subject, attendance issues, demographic insights
Plan Dashboard Layout	Top-down structure: KPIs → charts → details. Filters placed on left side
Choose Visuals	Picked visuals that highlight trends, comparison, and breakdowns
Add Interactivity	Slicers, drill-down, and tooltips to improve user experience
Follow Design Principles	Applied colors, alignment, font hierarchy for readability and flow

3.Selected Visual Elements & Their Purpose

- **KPI Cards** – Show core metrics like:
  - Average Score

    - Number of Students
    - Attendance %
    - % of Students with <75% Attendance
- **Bar Chart** – Subject-wise average scores to identify performance gaps
- **Line Chart** – Monthly attendance trends to spot consistency or drop-offs
- **Pie Chart** – Student distribution by gender or parental education
- **Matrix/Table** – Class-wise performance and attendance summary
- **Slicers** – Filters for Class, Gender, Subject, and Attendance Category

4.Dashboard Layout (Sketch/Mock-up)

This dashboard follows a clean top-down layout for clarity and practical use:

- **Top**:
  Contains 3–4 KPI Cards to show high-level academic stats
- **Left Panel**:
  Contains Slicers (filters) for Class, Gender, Subject, Attendance Category
- **Center Panel**:
    - Bar Chart (Subject-wise performance)
    - Line Chart (Attendance over time)
- **Bottom Section**:
    - Pie Chart (Demographic breakdown)
    - Matrix/Table (Class-wise performance and attendance)

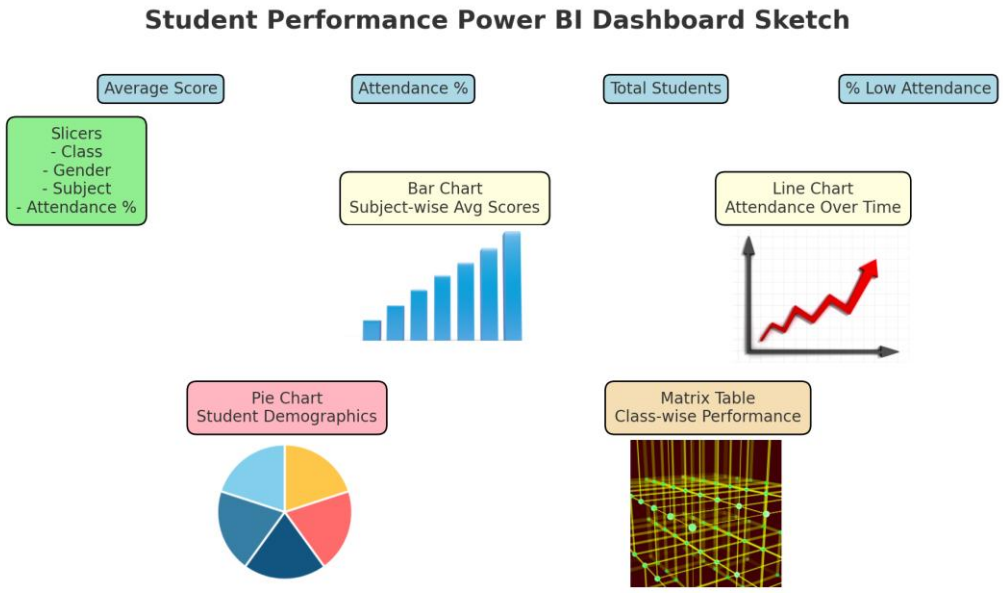

Figure: Planned dashboard layout for student performance & attendance tracking using Power BI.

5.Design Principles Followed

I followed key dashboard design principles to make the layout user-friendly and visually balanced:

- **Color Coding**: Positive indicators (e.g., good scores) are shown in green/blue tones. Red/orange is used to flag low attendance or poor performance, helping users spot concerns quickly.
- **Font Hierarchy**: Large, bold text is used for KPI cards; chart titles are medium-sized; data labels and filters use clean, readable fonts. This creates a natural reading flow.
- **Logical Grouping**: KPIs are placed at the top, followed by charts in the middle (bar/line), and deeper breakdowns (pie chart and matrix) at the bottom. This flow supports top-down analysis — from summary to detail.
- **Whitespace and Balance**: Elements are spaced out using a grid layout to prevent visual clutter and reduce user fatigue.
- **Consistent Theme**: All visuals follow the same color palette and font style for professional appearance and coherence.

6.Why Each Visualization Was Chosen

Each visual was selected based on its ability to directly answer academic questions and improve institutional decision-making:

- - KPI Cards allow school leaders to monitor critical academic health metrics like attendance %, average score, and low attendance risk at a glance — helping them respond without opening detailed views.
- - Bar Chart (Subject-wise Scores) enables direct comparison between subjects, helping identify weaker academic areas and allocate tutoring resources effectively.
- - Line Chart (Attendance Trend) shows how student attendance fluctuates over time. This allows tracking impact of seasonal events, holidays, or policy changes.
- - Pie Chart (Demographics) visualizes the distribution of students by gender or parental education. It supports inclusive education planning by showing if underrepresented groups may need focus.
- - Matrix Table (Class-wise Details) presents structured student-level data that educators can sort and filter. It's ideal for generating performance reports or triggering class-level interventions.

7. How Interactivity Enhances Decision-Making

The dashboard includes interactivity to allow flexible and relevant insights:

- - Slicers (for gender, class, subject, attendance %) allow targeted analysis. For example, a teacher can isolate low-performing female students in Class 9 and see their attendance history.
- - Drill-Down in bar charts helps go from subject → student level, helping identify which students pull down the average in a specific area.
- - Tooltips offer detail without cluttering the view. Hovering over a chart reveals exact values — useful during quick decision meetings.

8.Design Principles Applied to Solve UX Problems

- - Color Coding: Blue/green for positive indicators, red/orange for low attendance and alerts — this guides attention without needing extra labels.
- - Font Hierarchy: Large KPIs at top → medium chart headings → small labels. This reduces cognitive overload and creates a natural reading flow.
- - Layout Balance: Spaced visuals prevent clutter. Visuals are aligned so related data (e.g., scores + attendance) are near each other.
- - White Space & Grouping: Prevents visual fatigue, especially on dashboards reviewed frequently by educators. Filters on the left, summary on top, detail on bottom is a proven layout in BI design.

9.Conclusion

This dashboard is designed to be a simple yet powerful tool to help educators track and improve student performance. The use of interactive elements and a clean layout ensures that the data is not only accessible but also actionable. It provides a balanced view of academics and attendance to support effective decisions and planning.

The dashboard is built to support fast and informed decision-making in an academic setting. With key metrics visible upfront and the ability to drill down using slicers, school staff can:

- Quickly identify low-performing subjects or classes
- Track attendance trends that may indicate disengagement
- Filter data by class, gender, or subject to perform targeted analysis
- Use the matrix table to review detailed student insights for intervention

This structured, interactive approach ensures the dashboard is not only visually appealing but also functional and actionable.