Week 6: Final Evaluation and Presentation of Data Insights

Internship: Virtual Power BI Data Insights Internship

Prepared by: Mohammad Saniya

Date: July 20, 2025

1. Executive Summary

This internship provided a structured opportunity to explore Power BI through real-world educational data analysis. Over six weeks, I developed a full-stack data solution—from strategy to advanced analytics—resulting in actionable insights to support academic decision-making. This report summarizes my end-to-end process, major findings, and recommendations for future improvements.

2. Methodology

Week 1: Data Strategy & Planning

- Identified business goal: Improve academic performance through attendance and score tracking.
- Selected public education datasets
- Defined KPIs: average score, attendance %, dropout risk

Week 2: Data Modeling & Integration

- Cleaned and loaded performance/attendance data
- Created a star schema with proper relationships
- Applied data types and transformations using Power Query

Week 3: Dashboard Design

- Designed mock dashboard sketch
- Selected visuals: KPI Cards, Bar Charts, Matrix
- Added interactivity: slicers, tooltips, drill-down

Week 4: Advanced Analytics

- Chose business question: Which students are at risk of failing due to low attendance?
- Applied DAX formulas: CALCULATE, FILTER, VAR, RANKX
- Used custom visuals: Radar Chart, Bullet Chart, Decomposition Tree

Week 5: Optimization

- Removed redundant fields
- Enabled query folding
- Used VAR in DAX, bookmarks, and aggregation tables
- Reduced slicers and improved page load time

3. Key Insights & Findings

- ~32% of students had below 75% attendance and below-average scores — they are at academic risk
- Certain subjects (e.g., Physics) had lower performance across the cohort
- Class-wise analysis revealed grade disparities among sections
- Advanced visuals revealed performance trends over time and highlighted inconsistencies in attendance vs. score

- These findings enable school administrators to intervene early with at-risk students, assign targeted faculty support, and prioritize academic resource planning.

4. Challenges & Resolutions

Challenge	Resolution
Handling null/duplicate data	Applied Power Query filters and conditional transformations
Complex DAX for filtering top N students	Used RANKX + FILTER + VAR to simplify logic
Slow report performance	Removed heavy visuals, applied aggregation tables, and used bookmarks

5. Lessons Learned

- Learned how to use DAX formulas like `VAR`, `RANKX`, and `FILTER` for real-time KPIs.
- Understood the importance of modeling efficiency (query folding, data type optimization).
- Gained practical exposure to integrating visuals with interactivity for a better user experience.
- Realized that visual clutter can harm decision-making, and optimization is as crucial as analysis.

5. Recommendations

- Introduce student performance alerts based on dynamic KPIs
- Automate data refresh using scheduled gateway (for real-time dashboards)

- Apply Row-Level Security (RLS) for restricted access to student-specific dashboards
- Expand visuals with AI-based insights using Power BI AI visuals (like Key Influencers)

- To ensure long-term usability, I recommend periodic monitoring using the Power BI Performance Analyzer and user feedback from teachers and staff.

6. Case Study Example

Suppose the school principal wants to identify which students need personal mentoring. Using the dashboard, filters can be applied to spot students with <70% attendance + <50% scores. Teachers can then drill down by subject and assign support resources. This directly aids in reducing dropouts.

7. Conclusion

This internship strengthened my practical understanding of data strategy, modeling, DAX, visualization, and optimization. By applying these to a real-world educational context, I have built a data solution that is both scalable and impactful. I now feel confident in using Power BI to transform raw data into decisions that drive meaningful outcomes.