August 14, 2025

**Educational Improvement Report Outcomes**

**Power BI Report**

# Executive Summary

This document provides a sheetwise and visualwise analysis of the Power BI report exported as 'Educational Improvement Report.pdf'. It summarizes the key patterns and metrics and gives brief steps to interpret each visual for decision-making.

* Overall Average Student Score: ~67.79
* Overall Average Attendance: ~50.01%
* Totals (across all states): ~600.9K classrooms, ~1.22M computers, ~39.95K internet-accessed schools, ~35.09K library-accessed schools, ~27.5K fully digital schools
* Callouts in the report: Digitally Best Schools – Karnataka; Most Skilled Teachers – Sikkim

## How to Read This Document

1. Each section corresponds to a Power BI report page (sheet).
2. Within each sheet, visuals are listed with a short description and insights.
3. Where relevant, recommended filters/slicers and interactions are described.
4. Use the final section for end-to-end reproduction steps in Power BI.

# Sheet 1: Overview – Average Attendance & Score by State

Purpose: Compare state-level average student score and average attendance, and surface digital-readiness highlights.

## Visuals & Insights

* Line/Combo – Average Attendance by State: States range tightly around ~49.6%–50.4%. Uttarakhand is near the top (~50.38%).
* Line/Combo – Average Student Score by State: Scores cluster around ~67.7–68.0. Himachal Pradesh appears among the top performers (~68.01).
* KPI/Callout – Digitally Best Schools: Karnataka is highlighted.
* KPI/Callout – Most Skilled Teachers: Sikkim is highlighted.

### How to Interpret

* Minimal dispersion suggests systemic uniformity—look for states deviating from the narrow bands to prioritize interventions.
* Use this page to drill into states for deeper root-cause analysis on later sheets (Teacher, Infrastructure, Attendance, Socio-Economic).

# Sheet 2: Teacher’s Impact Analysis

Purpose: Examine how teacher qualifications, experience, and training relate to student outcomes.

## Visuals & Insights

* Clustered Bars – Teachers Qualification by State (B.Ed, M.Ed, PhD): Compares qualification mix per state. Use it to identify states with higher advanced qualifications.
* Bar/Matrix – Skilled Teacher by State: Highlights relative skill levels; the report calls out Sikkim as ‘Most Skilled’.
* Bars – Teachers Experience Level by State: Breaks out Newly Joined, Junior, Mid-Senior, and Senior counts by state.
* Donut/Bar – Total Teachers by Experience Level: ~52K Senior (~51%), ~27K Mid-Senior (~27%), ~17K Junior (~17%), ~3K Newly Joined (~3%).
* KPI – Total Teachers: ~100K (aggregate across experience groups).

### How to Interpret

* Check whether states with higher M.Ed/PhD proportions show higher average student scores when filtered.
* Compare experience distribution with outcomes; large senior cohorts can correlate with stability but consider continuous training needs.
* Use the 'Training Completed' slicer to isolate the effect of training on performance metrics.

# Sheet 3: Infrastructure Impact

Purpose: Understand how infrastructure availability influences outcomes and digital readiness.

## Visuals & Insights

* Clustered Bars – Total Classrooms & Teachers by State: Compares resource scale (classrooms) vs staffing (teachers).
* Clustered Bars – Total Classrooms, Computers, Internet-Accessed Schools, Library-Accessed Schools by State: Multi-metric infrastructure comparison.
* Slicers – Internet Access (Yes/No) and Library (Yes/No): Filter states to assess how access impacts other KPIs.
* KPI – Fully Digital Schools: States meeting digital criteria (e.g., Internet = Yes and Computers > 0).

### How to Interpret

* Look for states with high computers-per-school and internet penetration; check if those correspond to higher student scores.
* Use library access as a secondary academic support indicator and analyze its relation with English/Science performance where available.

# Sheet 4: Attendance vs Performance

Purpose: Assess the relationship between student attendance and performance.

## Visuals & Insights

* Line/Scatter – Avg Student Score by Attendance (%): The score trend appears relatively flat across the attendance spectrum in this report.
* Bar – Avg Student Score by Attendance Category (Low, Medium, High): Category-wise averages are very close (~67.74–67.80), suggesting a weak or negligible correlation in the aggregated view.

### How to Interpret

* At aggregate/state level, attendance may not strongly predict average scores; consider school-level or subject-level drilldowns.
* Investigate whether attendance interacts with socio-economic status or teacher training to produce stronger effects.

# Sheet 5: Socio-Economic Factors

Purpose: Understand how family background relates to outcomes.

## Visuals & Insights

* Bar – Student Score vs Parent Education Level: Post-Graduate families show the highest average (~67.90), closely followed by Graduate/Higher Secondary groups.
* Bar – Avg Student Score by Family Income: Low/High/Medium are all close (~67.75–67.82), indicating limited separation in aggregate.

### How to Interpret

* Parent education shows a modest positive association with student scores; use this to prioritize mentorship/parent outreach in lower-education cohorts.
* Income bands alone may not differentiate performance strongly; combine with infrastructure/teacher filters for more nuanced insights.

# Sheet 6: All School Data (Tabular)

Purpose: Provide a single table for state-level KPIs and totals to support cross-checking and export.

## Columns & Usage

* State, Avg Student Score, Average Attendance, Internet Access %, Library Access %
* Total Classrooms, Total Computers, Internet-Accessed Schools, Library-Accessed Schools, Fully Digital Schools
* Use this as a base table for custom measures and to validate numbers shown on visual pages.

## Key Observations from the Table

* Overall averages are tightly clustered, suggesting uniformity across states with small effect sizes between groups.
* Infrastructure totals are large, and internet/library access rates are ~80%/70% respectively at the aggregate level.
* Fully Digital Schools total is ~27.5K, reflecting strong but improvable digital readiness.

# Recommended Next Steps

* Drill into school-level variation to detect pockets of excellence or need hidden by state averages.
* Segment analysis by subject (Math/Science/English) to see if infrastructure or teacher variables have subject-specific effects.
* Run correlation or regression at school level for stronger inference (attendance × training × infrastructure).
* Add a proper Date dimension and track changes over time if data spans multiple months/years.

# Appendix: Reproduction Steps in Power BI

1. Load all five datasets (Performance, Attendance, Socio-Economic, School Infrastructure, Teacher).
2. Clean data: standardize Yes/No fields; normalize state names; ensure numeric types for counts and percentages; remove duplicates.
3. Model relationships: Student→Attendance (1:1 on Student ID), Student→Socio-Economic (1:1), Socio-Economic→School Infrastructure (Many→1 on School ID), and connect Teacher with State via a State dimension if needed.
4. Create DAX measures: Average Score, Avg Attendance, Fully Digital Schools, Internet/Library Access %, Teacher Experience mix.
5. Build visuals per sheet as outlined; add slicers (State, Internet Access, Library, Training Completed).
6. Validate results with the All School Data table and compare totals/percentages.