



Education Case Study

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Business issue

Education outcomes (based on standard numeracy and literacy tests) were low for schools located in a large, less affluent region of the state. This occurred despite a number of targeted initiatives applied by the Education department over the previous five years. These included teacher training, using new teaching approaches, investment into school infrastructure, anti-bullying measures, teacher incentives, community initiatives, improved parent-teacher communication, connection with Universities and changing teacher/student ratio.

There was little understanding about which, if any, initiatives had had the most effect and, therefore, where future resources should be invested.

Solution

We used the department's own data:

- State numeracy and literacy test results over the previous 5 years.
- Initiatives and events delivered by Education department over that time.

We augmented this with additional public data:

- Economic conditions in the region and their dynamics over the 5 years. For example:
 - demographics
 - household income
 - number of children per household
 - percentage of renters vs home-owners
 - unemployment levels
 - interest rate changes
 - property prices in the area

Using analytics techniques we identified which levers were the most effective in improving literacy and numeracy results and to what extent.

Findings

Accounting for the region specifics, the key factor driving numeracy and literacy outcome was the ratio of teacher per number of students. Improving this number led to improvement of test results.

Benefits

The solution delivered a shared understanding of the key drivers of student literacy and numeracy, and therefore the relevance of previous intervention programs to improving these key measures. It further allowed the organisation to make evidence-based decisions regarding future intervention programs and initiatives. Moreover, the analysis was transparent, defensible and repeatable.

Approach

The approach used the power of contemporary Data Science methods and was transparent, repeatable, scientifically valid and accurate.

Data Science, also referred to as Advanced Analytics or Predictive Analytics, is an analysis approach that provides businesses with accurate What-If scenarios and evidence-based proactive decision-making tools.

- It is based on predictive analysis of domain-specific organisational data. If an outcome of interest to the business can be measured, then Data Science methods can determine which factors influence it and to what extent - and based on the delivered insights, suggest the call to action.
- It has been proven and pressure-tested globally across many industries. It has been a key to the success of Google and Amazon. It is used by leading banks, insurers, telcos, retailers, manufacturers, utilities and governments to gain insight into how to efficiently improve business outcomes including:
 - government program investment efficiency
 - K-12 and higher education learning outcomes
 - student recruitment and attrition.