Progress on a Tool to Support Educators in Creating Their Own Research Evidence

Robert Smith, Valeriy Lazarev, and Kylene Chinsio Shen
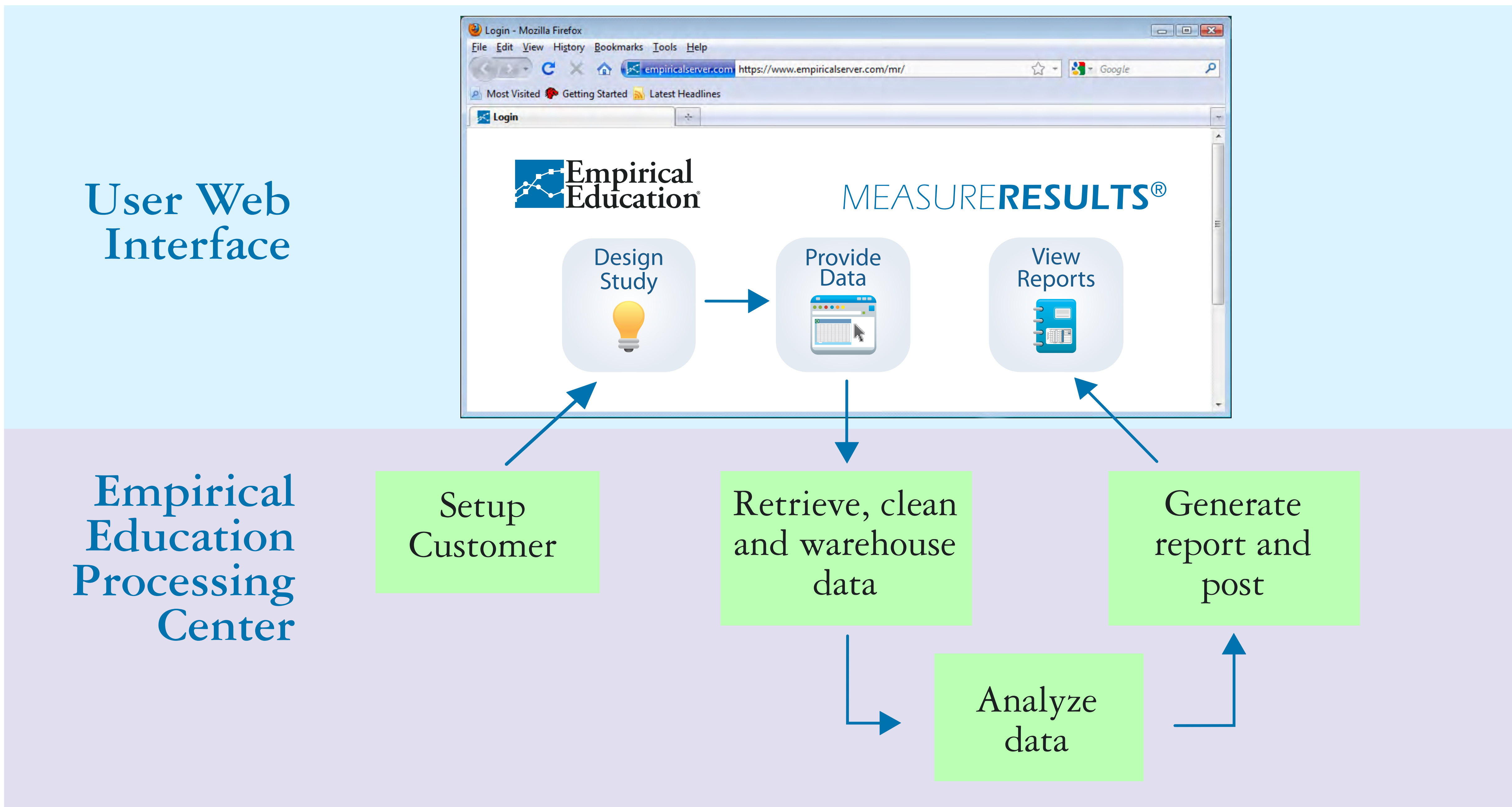## Empirical Education Inc.

Empirical Education

Introduction.

MeasureResults is a web-based tool that allows administrators to design and conduct their own efficacy studies.

- Subscription customers are provided with account logins and a customized setup on our web site. They use the study designer to answer questions about the program that leads to a concrete study plan, including specifications for data to be retrieved from the district's data warehouse).

- Our automated backend processing then cleans and warehouses the data and performs an analysis by selecting the appropriate analytical model for the study.

- The final step is to generate and upload a short report. Our staff monitors the process and reviews reports before delivery to the customer, generally within a few days of receiving the data.

User Web Interface

Empirical Education Processing Center

Setup Customer → Retrieve, clean and warehouse data → Analyze data → Generate report and post

Issues and Solutions.

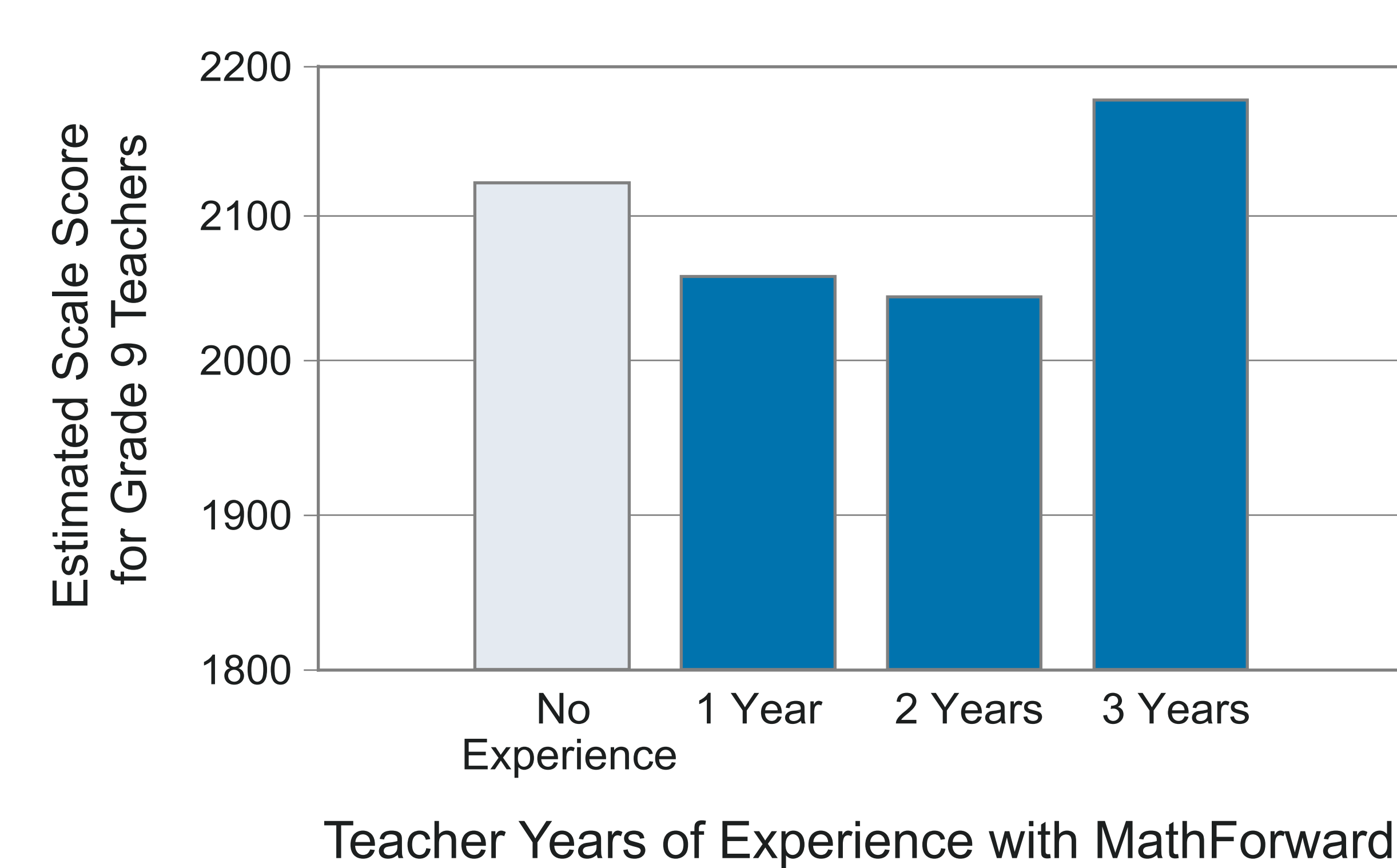| Issues	Solutions
1. Identification of treatment and control groups: level and incidence of treatment, multiple/continuous treatments, contaminated control groups.	Integrate teacher surveys into the process
2. Transparence/salience of study planner dialog	Professional development, human language summaries
3. Issues with data request compliance	
A) Data may be stored in separate databases.	A) Programmatic interfaces to data management systems most widely used by districts
B) Personnel designing the study may not be familiar with the databases.	B) Professional development: teaching the users to use *their* data systems, possibly helping to reconfigure data systems to make them better suited for analysis.
4. Missing and/or "noisy" data	Develop a sensitivity analysis module that would use imputation and simulation techniques to produce a range of estimates

Study Examples.

Richardson Independent School District

Research Question*: Did 9th grade students of teachers who had more years experience with TI-MathForward outperform other students?

Study Design: Interrupted time series

Outcome Measures: Texas Assessment of Knowledge and Skills (TAKS) Mathematics

Data sources: District supplied

Teacher Years of Experience with MathForward

Findings: Yes, 9th grade students of teachers who had more experience with MathForward performed higher.
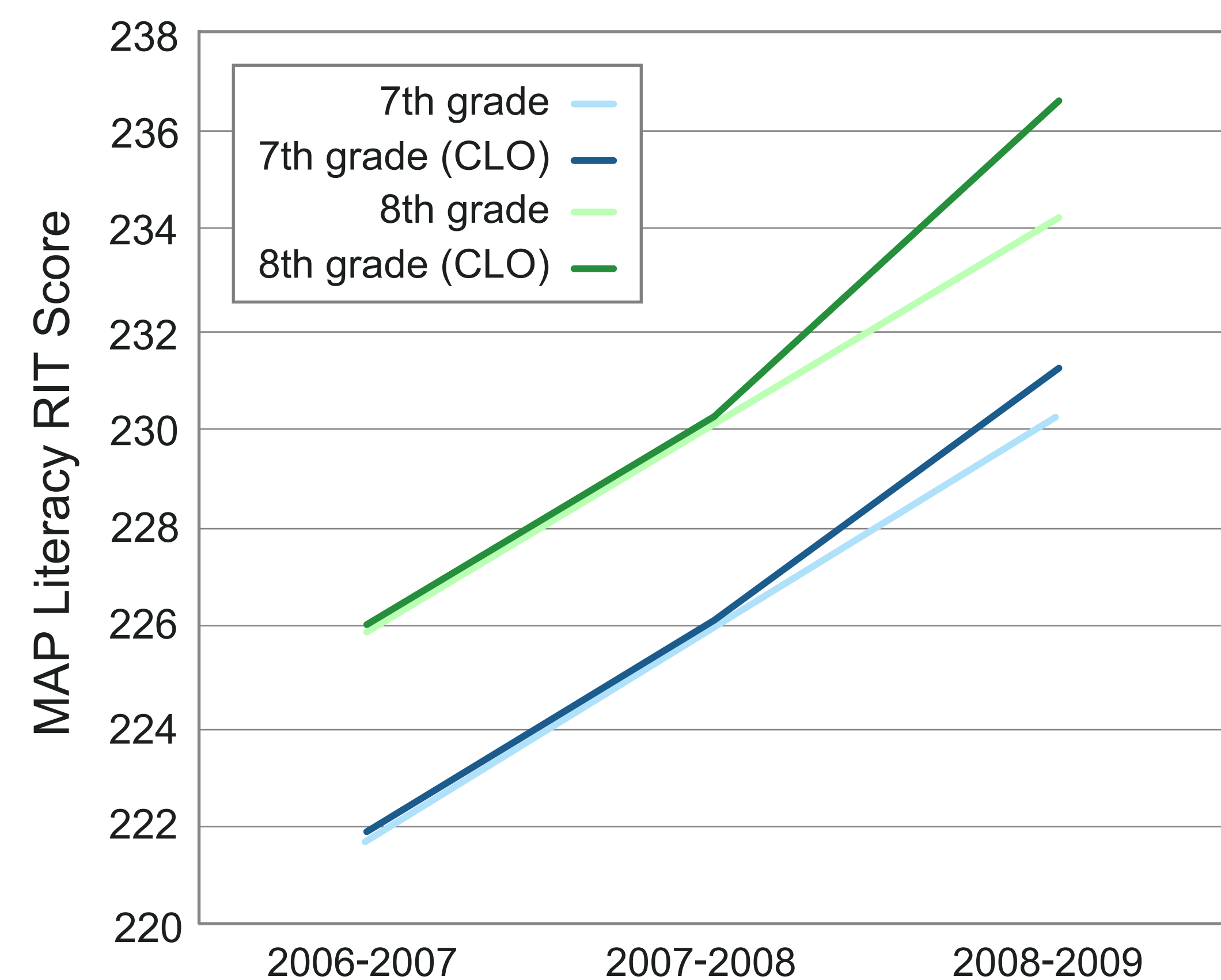
*Excerpted from full report

Poway Unified School District

Research Question: Has CompassLearning Odyssey Reading (CLO) had a positive impact on overall middle school student literacy scores throughout the district?

Study Design: Interrupted time series with comparison group

Outcome Measures: NWEA MAP

Data sources: District supplied

Findings: Positive effect of CLO on literacy achievement for 7th and 8th grade students. No significant effects for 6th graders.
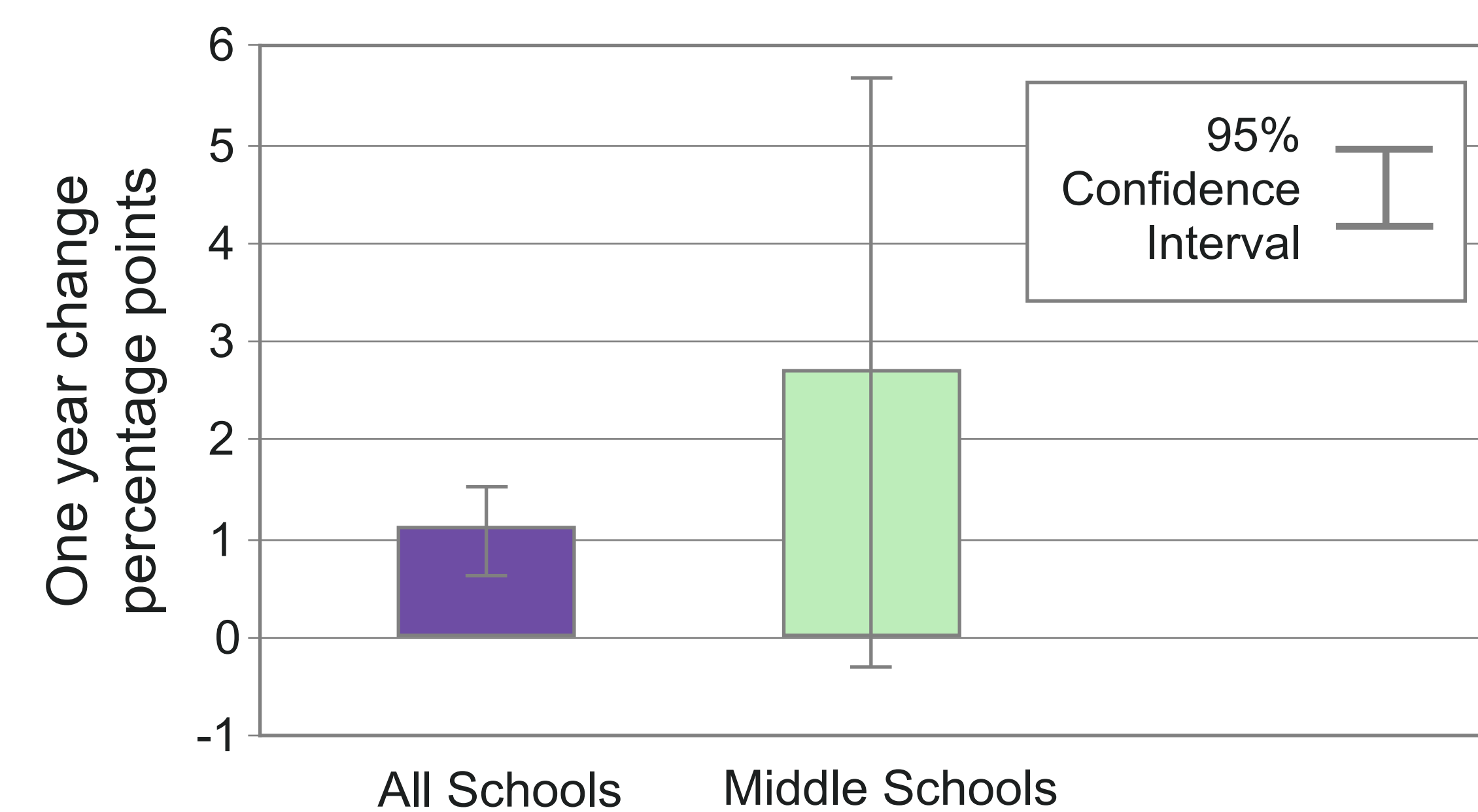
Statewide K-12 School-level Behavioral Intervention

Research Questions: How does this K-12 behavioral intervention impact school-wide performance in Math and English, as well as school-wide discipline issues?

Study Design: Comparison group

Outcome Measures: Math and English state assessments and expulsion/suspension rates

Data sources: State department of education website and NCES website

Findings: School-wide student achievement was not impacted by the presence of this K-12 intervention. However, student expulsion/ suspension rates decreased on average by the equivalent of 18 percentile points.

Conclusion/Discussion.

1. Educational authorities (school districts and states) appear to have substantial amounts of data and sufficient IT expertise to prepare datasets necessary for program evaluations.

2. Interventions tend to roll out gradually (within district or state) which implies that ITS with a nonequivalent comparison group is a dominant design.

3. Using MeasureResults, routine program evaluations can be designed by educational administrators who have limited background in statistics and do not specialize in educational research. Evaluations can be executed automatically or with minimal intervention by an analyst, allowing for low cost and short turnaround times.

4. MeasureResults is the "statistician on call."