



# **State of California SAT & ACT Analysis**

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# Agenda

1. Problem Statement
2. Dataset
3. Data Limitation
4. Analysis
5. Recommendations

# Problem Statement

This project aims to analyse **2019 SAT and ACT scores of Year 12 students for districts in California**, to help the state **identify districts** with poorer performance, in order to allocate resources to help **keep students stay competitive**.

# Dataset

State of California's **SAT 2019** and **ACT 2019** were analysed:

- **Participation Rate** of each test
- **Students' performance** of each test based on benchmarks
- **Subject performance** of each test

SAT	ACT
Math	English
Evidence-based Reading & Writing	Math
Total	Reading
	Science
	Composite

# Tests Benchmarks

- SAT Benchmark:

Subject	Range	Benchmark
Evidence-Based Writing	200-800	$\geq 480$
Math	200-800	$\geq 530$
Total	400-1,600	$\geq 1,100$

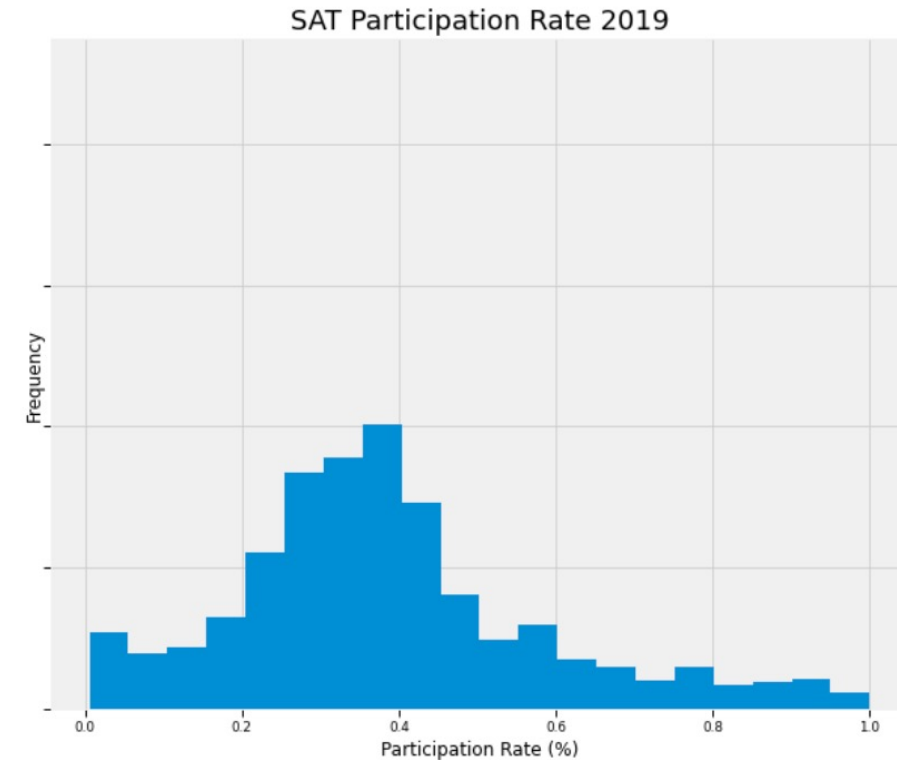
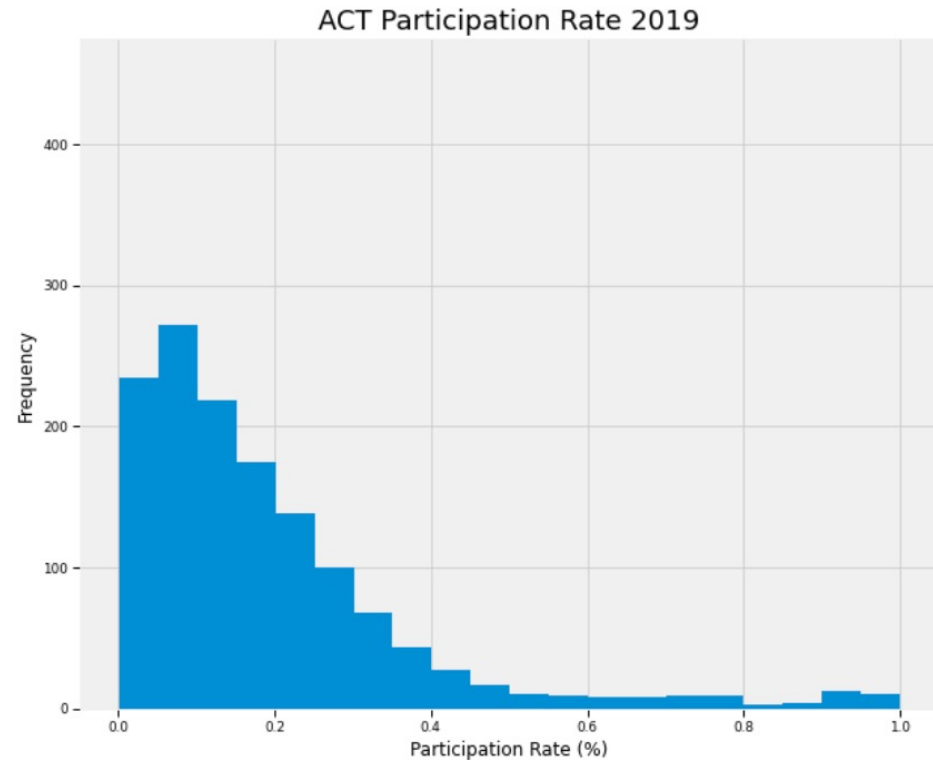
- ACT Benchmark:

Subject	Range	Benchmark
Reading	1-36	Average score $\geq 21$
English	1-36	
Math	1-36	
Science	1-36	

# Data Limitation

1. **Null values** within the datasets – they are replaced with mean values of State of California or removed if it cannot be replaced.
2. **Inconsistencies** existing due to data collection errors, resulting in irregular values.
3. **Lack of data** – unable to analyze results over several years to observe time level trends.
4. Hence, the conclusions and recommendations made are subjected to these data limitations.

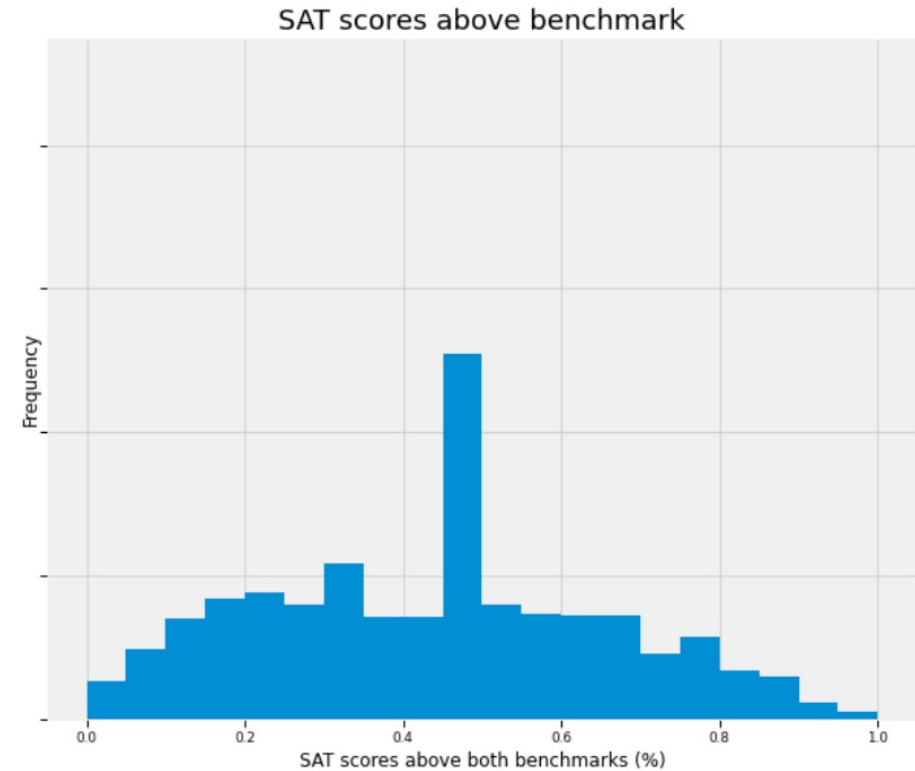
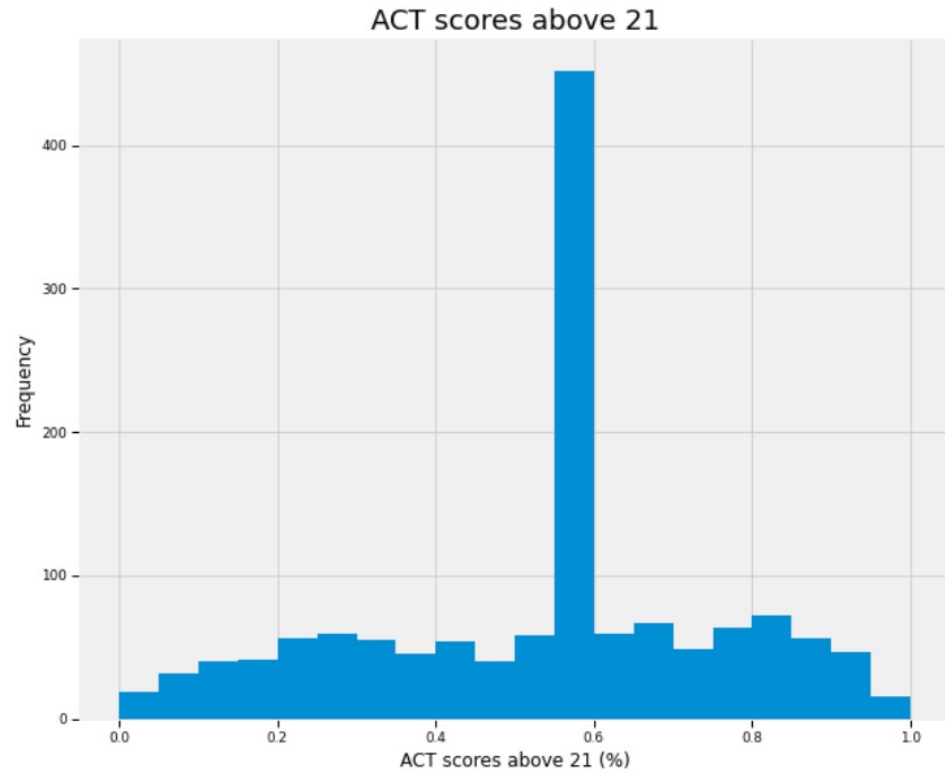
# Histogram



Both graphs are **positively skewed**, and clearly shows that the mean participation rate in both tests are towards the lower end.

**Goal** to shift peak of curve towards the right.

# Histogram

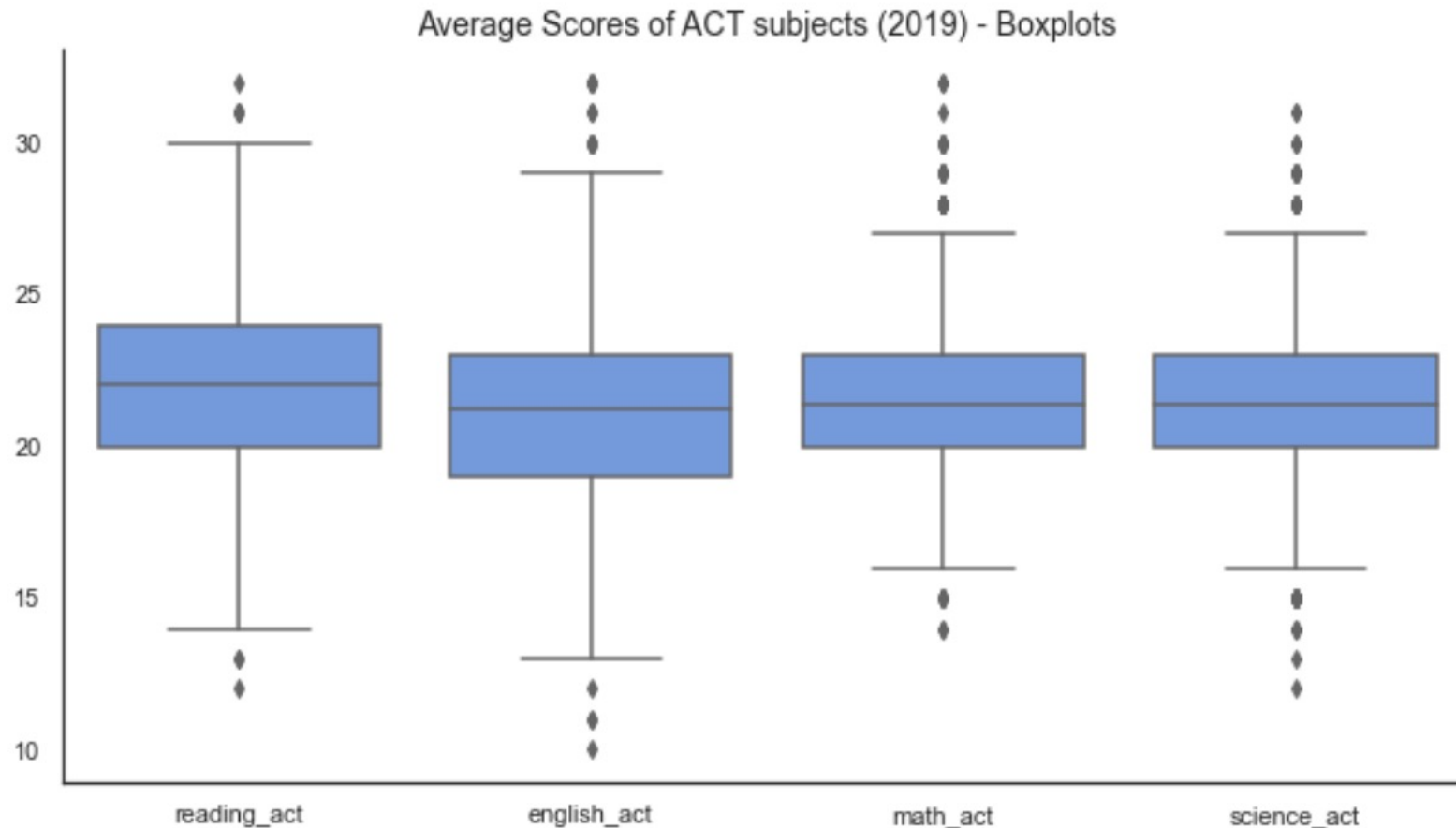


**Negative correlation** of participation rate vs % of people obtaining above benchmark scores.

Hence the slight shift if the curve to the right, with ACT scores shifting more than SAT scores.



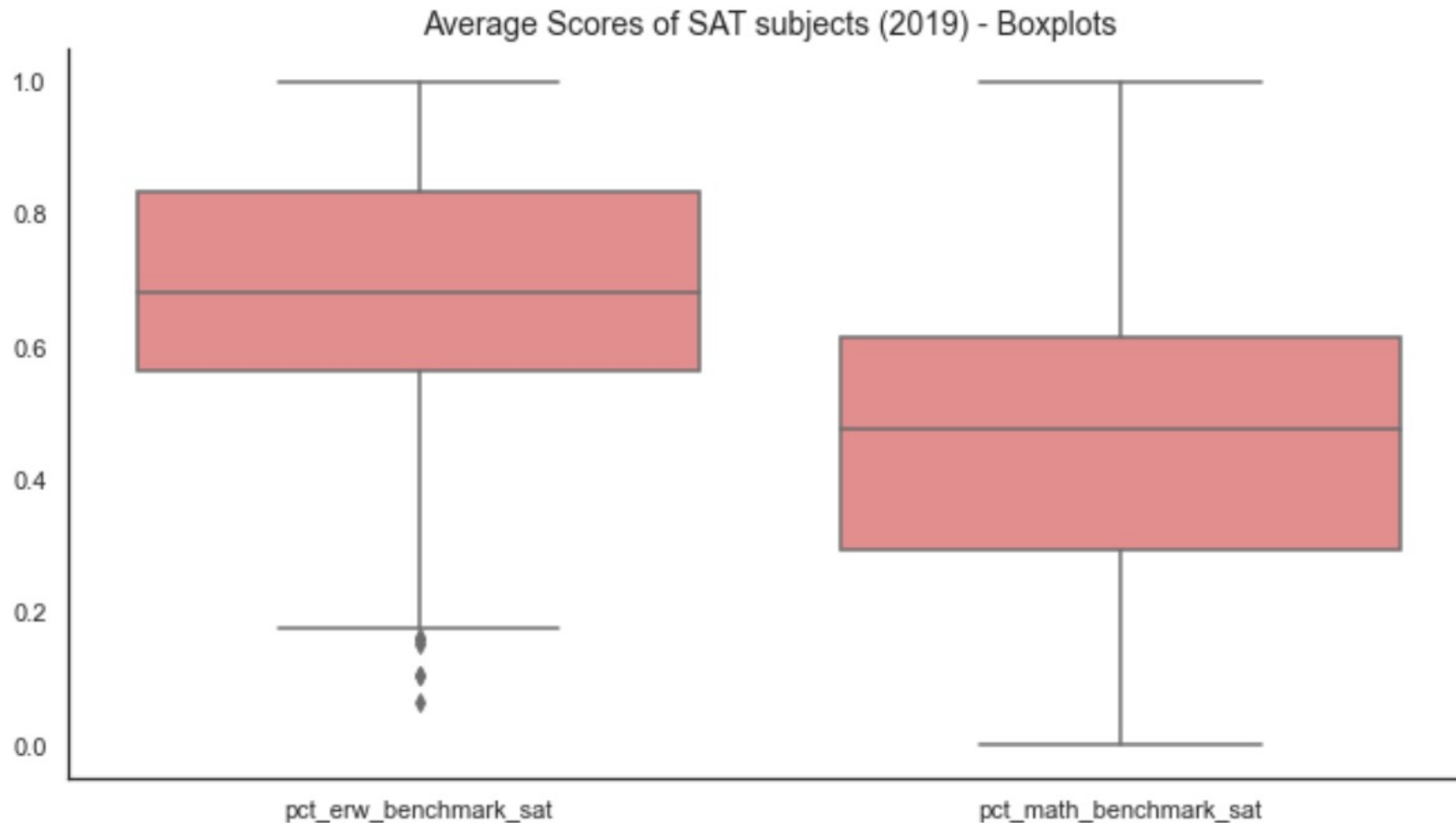
# Box Plot



Students are **most competent** in the reading section of the ACT.

English, Math, and Science sections in the ACTs have **similar means**, but English is the **most dispersed**, with the widest min-max range, as well as outliers.

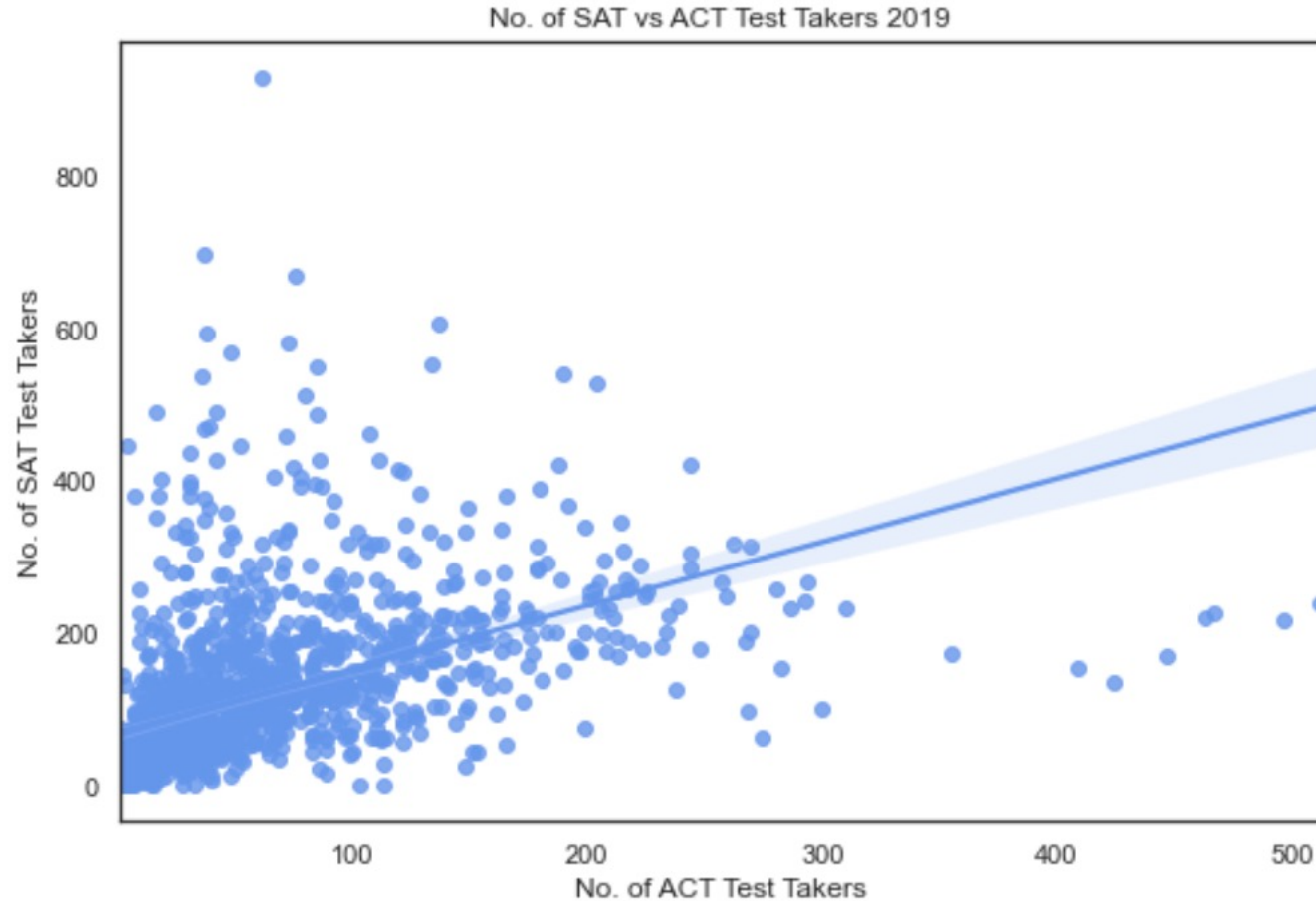
# Box Plot



Most students are competent in the **Evidence Based Writing (EBW)** section of the SATs, as compared to math due to the higher min and median value.

However, **Math is a lot more dispersed**, with the full min-max range.

# Scatter Plot



**Upward trend** between number of SAT and ACT test takers.

As number of SAT test takers increase, the number of ACT test takers can potentially increase as well.

# Recommendation

- **Subsidized Test fees & College Fairs**
  - Level 1
  - Level 2
- **Subsidized Tuition & Education**
  - Districts
  - Education

# Subsidized Test fees & College Fairs

- Level 1

District	School
Adelanto Elementary	San Diego Workforce Innovation High [Borrego Springs Unified]
Trona Joint Unified	California STEAM San Bernardino
Warner Unified	

- Level 2

District	Test Type
Borrego Springs Unified	ACTs
Meridian Elementary	ACTs
Liberty Elementary	SATs
Harmony Union Elementary	SATs

# Subsidized Tuition & Education

- Improve education quality:

District	School
Golden Plains Unified	0% above benchmark for ACT and SAT
Williams Unified	0% above benchmark for SAT

- ACT specific:
  - Focus on English in order to close the skill difference between students.
- SAT specific:
  - Focus on Math in order to close the skill difference between students.