

New Directions in Student Growth The Colorado Growth Model

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Growth & Accountability: The Colorado Growth Model

How much growth & is it enough?

- Colorado begins conversations about education/educator quality by answering two questions:
 - How much growth did a student make?
 - Is it enough growth to reach or maintain proficiency?
- Answering these two questions in a credible and clear manner sets the stage for subsequent accountability discussions.
- Colorado has purposely separated the description (what is) from the determination of responsibility (who/what is responsible).
- This separation promotes greater ownership of results and participation in finding root causes.

Describing Student Growth

- Measuring student growth, even with a vertical scale, is not a simple task.
- Some believe a vertical scale simplifies the task of measuring student growth.
- Even with an interval (or ratio) scale, growth is not easy to interpret. Consider, for example, height.
 - A child might grow 4 inches between ages 3 and 4.
 - 4 inches is a well understood quantity.
 - The 4 inch increase becomes really meaningful only when understood alongside the growth of other 3 to 4 year olds.
- **Student growth percentiles** were developed to provide a normative context for describing student growth.

Reading

Achievement

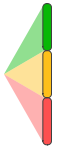


CSAP Reading Scale Score

Growth

Level

Percentiles



High

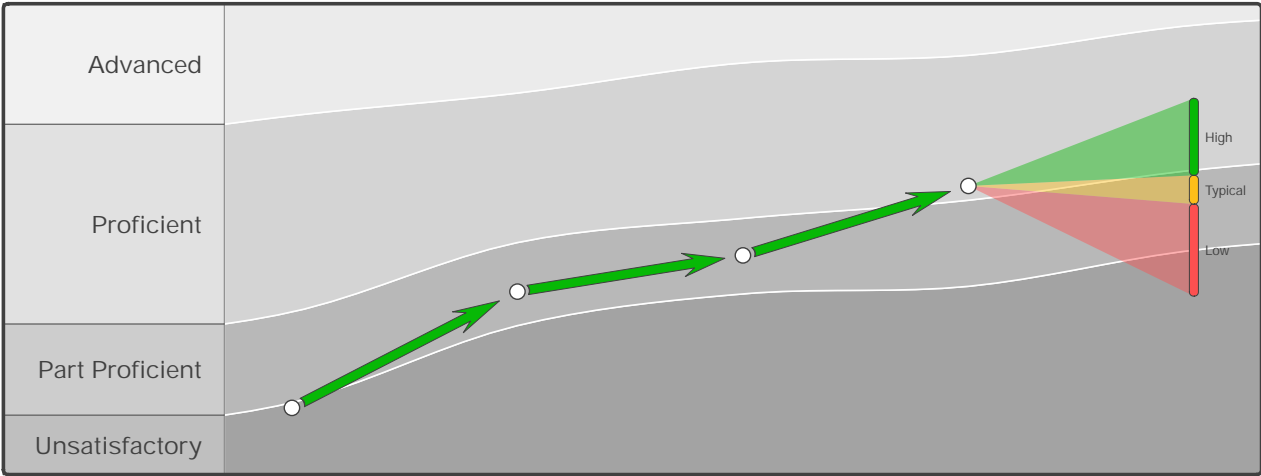
66th - 99th

Typical

35th - 65th

Low

1st - 34th



Grade 3
2006

Grade 4
2007

Grade 5
2008

Grade 6
2009

Next Year

Scale Score
Achievement Level

462
Unsatisfactory

539
Part Proficient

563
Part Proficient

609
Proficient

Achievement

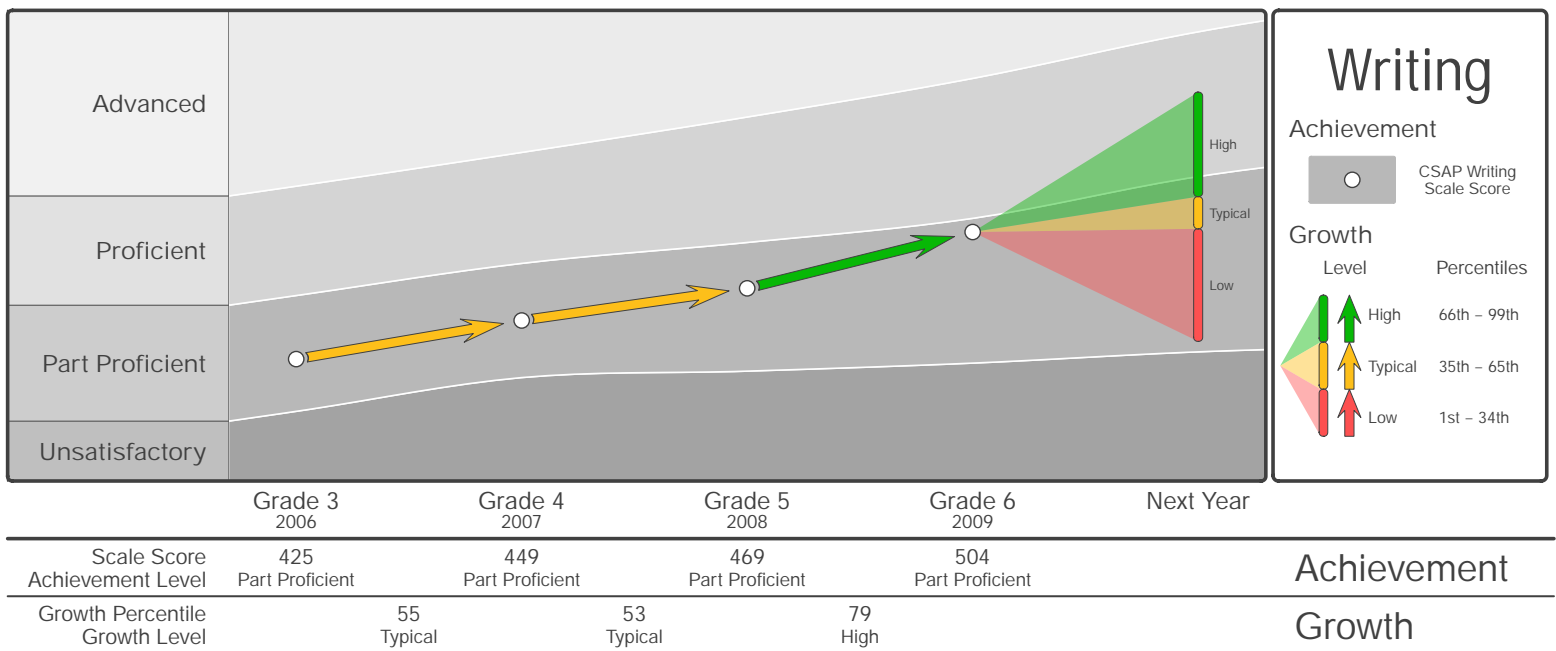
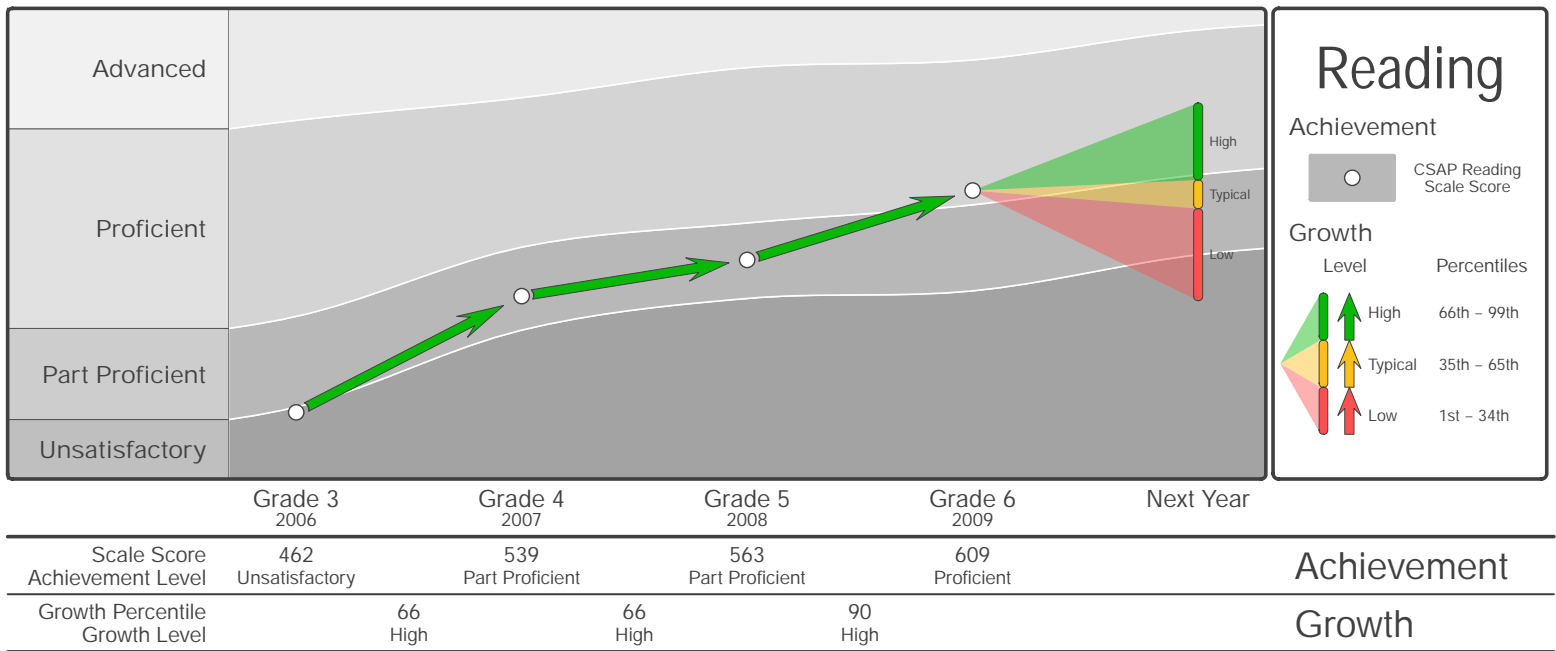
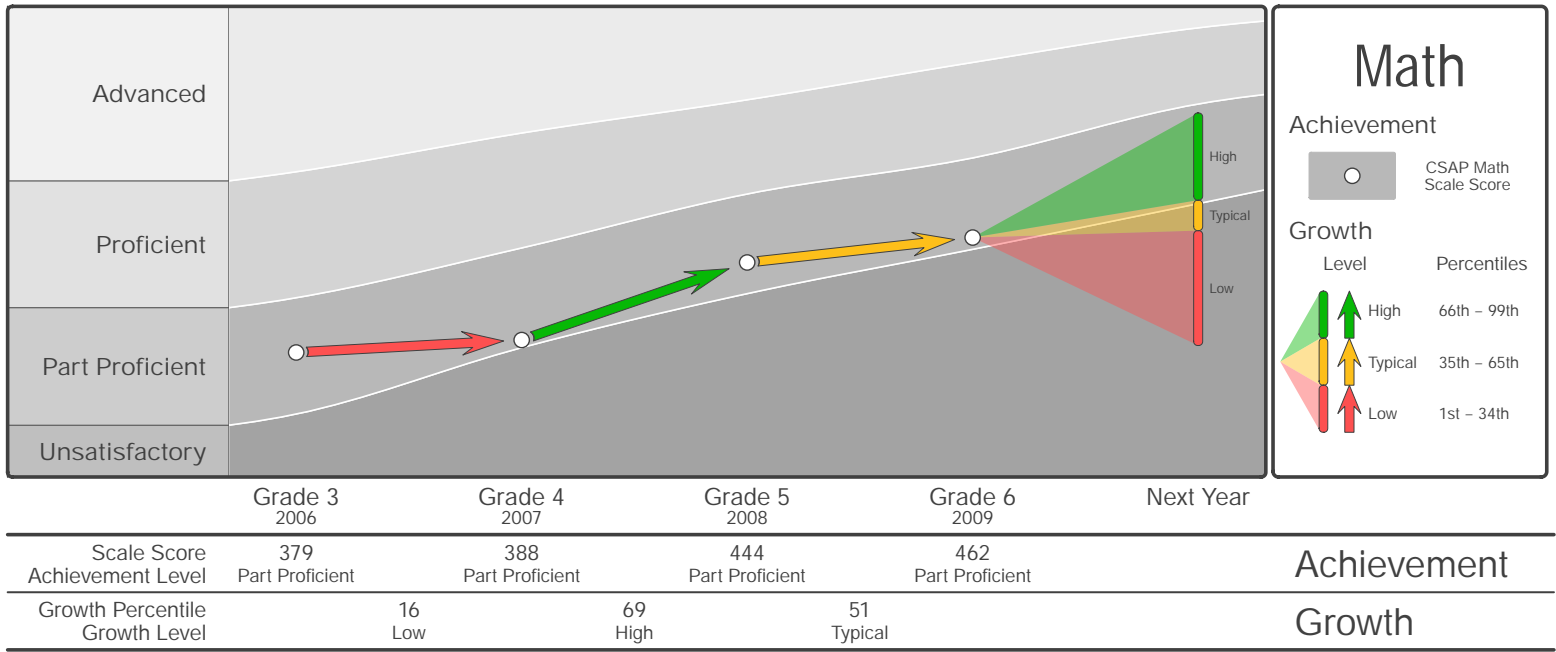
Growth Percentile
Growth Level

66
High

66
High

90
High

Growth



Student Growth Percentiles

Should we be surprised with a child's current achievement given their prior achievement?

- Student growth percentiles answer this question.
- Consider a low achieving student with 75th percentile growth and a high achieving student with 25th percentile growth.
 - The low achieving student grew at a rate exceeding 75 percent of similar students.
 - The high achieving student grew at a rate exceeding just 25 percent of similar students.
 - The low achiever's growth is more *exemplary* (probabilistically) than the high achiever's.
- Value judgments (e.g., good, bad, enough, adequate, . . .) about student growth require external criteria.

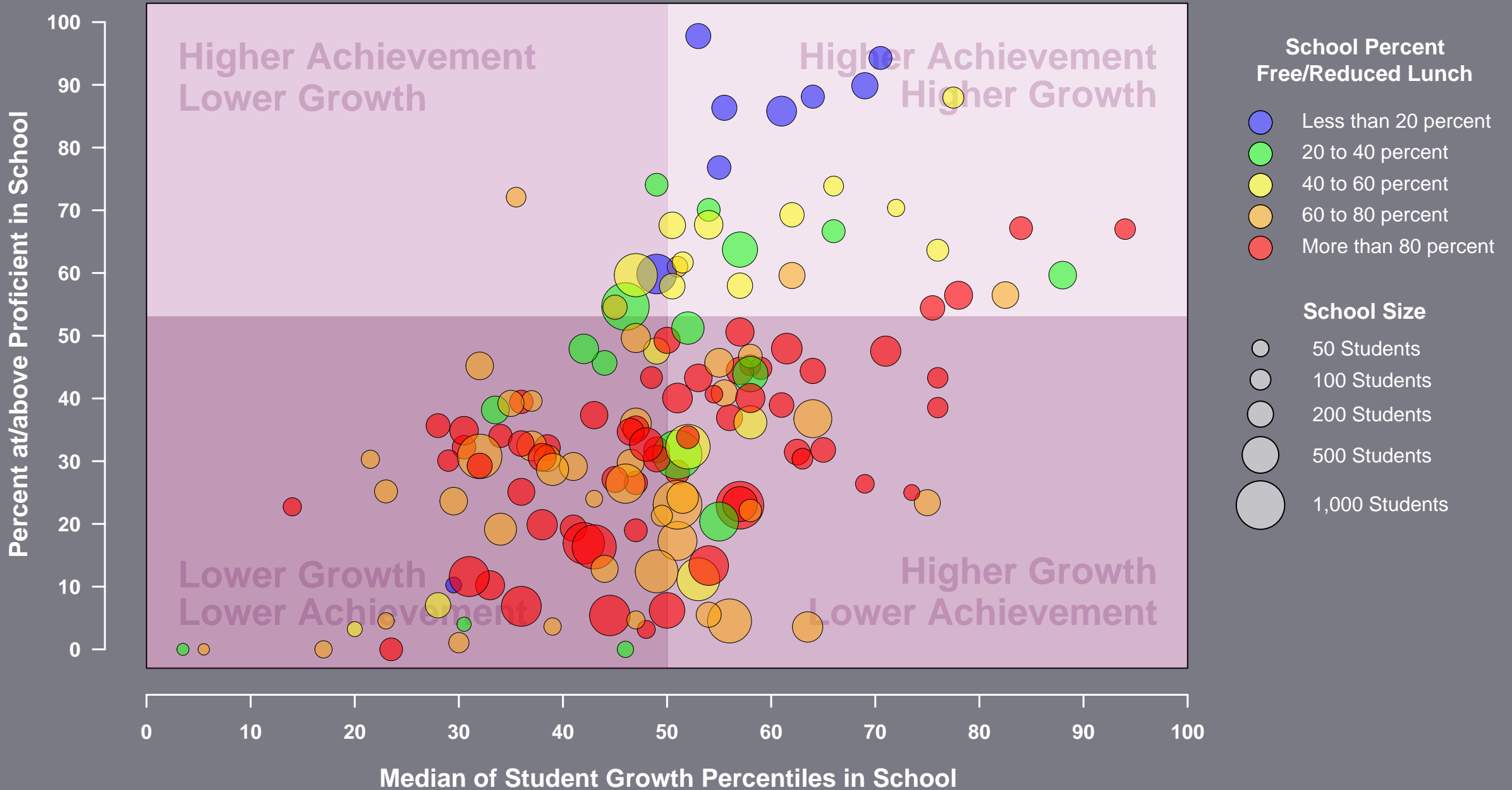
The Colorado Growth Model

- The Colorado Growth Model is based upon the open source Student Growth Percentile (SGP) methodology [Betebenner, 2008, Betebenner, 2009]
- The model is a norm *and* criterion-referenced growth model that answers *both* questions: *How much?* and *Is it enough?*
- The software and visualizations used with the SGPs are free and open source.
- Currently over two dozen states are investigating or utilizing the model.

Going from Students to Schools

- It's of interest to examine schools/classrooms where students demonstrate, on average, extraordinarily high and low student growth.
- To summarize the student growth percentiles associated with a school/classroom (or other grouping) Colorado calculates the median of the student growth percentiles.
- If students were randomly assigned to schools, expect to see a median of 50.
- Values greatly above or below 50 are of interest in identifying best practices or providing extra support.
- Examining growth with achievement sheds new light on school/classroom performance.

District C: 2008 CSAP Math School Results
Student Growth versus Student Achievement by Percent Free/Reduced Lunch



Integrating Norm- and Criterion Referenced Growth

- The major challenge facing ESEA reauthorization is, ultimately, how to balance norm and criterion referenced based definitions of quality.
- NCLB is fundamentally a criterion-referenced accountability system stipulating universal proficiency.
- Criterion referenced growth models adopt this ethical mandate to distinguish enough/not enough.
- Value-added models (and the norm-referenced part of the Colorado Growth Model) are norm-referenced and use statistical expectation to distinguish enough/not enough.
- The former is “fairer” to students the latter to personnel/institutions.
- Colorado, in its recently released school and district performance frameworks, has tried to reconcile these two competing demands.
<http://www.schoolview.org/PerformanceFrameworks.asp>

Descriptive Accountability

“This is the difference between a retrospective question of identifying fault as opposed to a prospective strategy to engineer some corrective measure, almost independent of considering whether there was blame-worthiness. And to move away from the blame-worthiness paradigm toward something that is more regulatory in nature. Where one might seize upon disparities or circumstances that are for some reason deemed unacceptable and engineer the interventions needed to bring about the necessary change. . . . It’s the no-fault gap closing strategy in which the effort is to build a consensus about a vision of an improved society rather than figure out where’s the person we want to pillory.”

Christopher Edley (2006)

Web 2.0: Data Visualization and Social Networking

- The Colorado Department of Education has embraced advanced data visualization as a means of communicating complex data in a manner that is accessible to non-technically inclined audience (e.g., parents).
- The goal: Transform conversations about education through active engagement with data (i.e., evidence).
- Colorado's efforts have received tremendous interest and recognition:
 - Recognized by Adobe for innovative uses of their technology as an Adobe Max Award finalist in October, 2009.
 - 2010 NCME Award for Outstanding Dissemination of Educational Measurement Concepts to the Public.
 - 15 states signing MOUs to co-develop a cloud-based analysis and data visualization platform in a non-proprietary fashion.
- Work has just begun in to extend Colorado's efforts in multiple states including Indiana, Nevada, New Hampshire, Nevada, Rhode Island, Virginia, and West Virginia with many more to come.

Web 2.0: Data Visualization and Social Networking

With a collaborative spirit, with a collaborative platform where people can upload data, explore data, compare solutions, discuss the results, build consensus, we can engage passionate people, local communities, media and this will raise—incredibly—the amount of people who can understand what is going on.

And this would have fantastic outcomes: the engagement of people, especially new generations; it would increase knowledge, unlock statistics, improve transparency and accountability of public policies, change culture, increase numeracy, and in the end, improve democracy and welfare.

E. Giovannini, Chief Statistician, OECD. June 2007

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