Defining a Year's Growth
Accountability for a Year's Growth
References

On Defining a Year's Growth

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Defining a Year's Growth
Accountability for a Year's Growth
References

Actual versus Aspirational Student Growth
Describing Actual Student Growth
Exploring the Range of Aspirational Outcomes

Actual versus Aspirational Student Growth

- It seems simple enough: Establish what constitutes a year's growth in a year's time for each student.

- This simplicity belies a subtle complexity.

- To adequately address the notion of a year's growth, actual growth must be distinguished from aspirational growth.

  Describe What is a current year's growth?
  Prescribe What should a current year's growth be?

- Answering the second question establishes a threshold distinguishing adequate from inadequate growth.

- To make such a distinction requires an answer to the first question which defines a norm: What is the range of growth currently observed?

- Aspirational growth should be possible—This is Linn's existence proof applied at the individual level [Linn, 2003].

Defining a Year's Growth · Actual versus Aspirational Student Growth
Accountability for a Year's Growth · Describing Actual Student Growth
References · Exploring the Range of Aspirational Outcomes

Describing Actual Student Growth

- Measuring student growth, even with a vertical scale, is not a simple task.
- Numerous States believe that placing their tests on a vertical scale will simplify 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.
    - However, the 4 inch increase becomes fully understandable only when placed in context of growth of other children between ages 3 and 4.
- In the following discussion student growth percentiles are introduced that provide a normative context to interpret student growth.

Defining a Year's Growth | Actual versus Aspirational Student Growth
Accountability for a Year's Growth | Describing Actual Student Growth
References | Exploring the Range of Aspirational Outcomes

Student Growth Percentiles

- A quantity of fundamental interest to norming student progress (i.e., conditional achievement) is:

$$\Pr(\textit{Current Achievement}|\textit{Past Achievement}). \tag{1}$$

- A student's growth percentile is the conversion of 1 to a percentile.
- Estimation of the conditional density used to calculate student growth percentiles is performed using quantile regression (Betebenner & Shang, 2007; Koenker, 2005).
- Consider a low achieving student demonstrating 90th percentile growth and a high achieving student demonstrating 10th percentile growth.
  - The low achieving student grew at a rate exceeding 90 percent of similar students.
  - The high achieving student grew at a rate exceeding just 10 percent of similar students.
  - In this sense, the low achiever's growth is more *exemplary* than the high achiever's.
- Growth percentiles allow for easy understanding and comparison of student growth.
- However, judgment of whether the student's growth was adequate requires external criteria.

Defining a Year's Growth   Actual versus Aspirational Student Growth
Accountability for a Year's Growth   Describing Actual Student Growth
References   Exploring the Range of Aspirational Outcomes

Performance Standards and Growth Percentiles

- Performance standards are the most obvious external criteria needed to define a year's worth of growth.
- If proficiency within 3 years is the achievement goal, then one can examine prior growth to estimate what growth percentile is sufficient to reach the desired outcome.
- For high achieving students, modest growth percentiles are required to maintain their position above proficiency whereas for some low achieving student sustained high growth percentiles are necessary.
- The process of defining a year's growth is a standard setting procedure.
- Clearly, defining a year's worth of growth for some students as 80th percentile or better sets a very high standard.
- And defining a year's growth for some students as 25th percentile or better sets a low standard.
- Growth standards should be equitable, reasonable, and desirable.

Defining a Year's Growth
Accountability for a Year's Growth   Achievement versus Growth
References

Achievement versus Growth

- If the goal is high achievement for all students, then reaching that goal requires low achieving students to have higher growth percentiles than high achieving students.
- As a consequence, accountability systems built toward high achievement demand more of schools serving predominantly low achieving students.
- "Growth analyses" do not circumvent this reality.
- Only by considering what is, what should be, and what is possible simultaneously, can growth models and their associated standards be equitable, just and truly informed.
- And only within this context can an ambiguous term like "a year's growth" be used intelligently in discussions about student progress.

Defining a Year's Growth
Accountability for a Year's Growth
References

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