



A Testing Brief
Status v. Growth Models

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As you are aware, one of the end products of accountability testing is the rating of schools and districts within states. That is, after each year's administration of the state NCLB tests, a series of computations are done to determine whether or not a school or district (as well as the state as whole) made adequate yearly progress in teaching students the academic content deemed important in that state. Specifically, the adequate yearly progress (AYP) index for each school and district is computed for all students in reading/language arts and mathematics as a total group and for each of the various disaggregated groups (e.g., gender, race/ethnicity, special education). If the indexes computed exceed the target values for all sub groups and the total, a school or district is making AYP. There are other pieces that go into the school, district, and state report cards, but test scores drive the major part of all state accountability systems.

For all 50 states, Washington D.C., and Puerto Rico, the yearly release of test scores and AYP results has become a political and public relations event. Some would call it a nightmare. Many critics of the current system point to the unfairness of this model because it does not include student change over time. Typically called a status model, the current computations for NCLB accountability are concerned with the change in number of students who are proficient and above for each grade tested. In addition, the accountability systems check that the increase in students at or above proficiency is increasing at a rate that would ensure all students would be proficient or above in the year 2014. This goal includes all students taking the regular state assessment and any alternate or 2% tests that are in place within a given state.

The current NCLB model is called a status model as it compares the status of this year's 3rd-grade students with the status of last year's 3rd-grade students. There is no effort to track changes of individual students between one year and the next. In addition, this model is conjunctive in nature. That is, doing better in reading does not offset a poor performance in mathematics. This type of model can be very difficult to demonstrate gains or change over time and is extremely challenging in having all people cross the bar on both tests.

A growth model has been asked for by the states and until the fall of 2006, has not been something the USED would consider. However, 10 states have been given the opportunity to use a growth model in conjunction with their current AYP model as an experiment by USED. The fact is growth models or growth scores are not new. The three major norm-referenced tests have had a growth score or scale as part of the overall reporting package for a number of years prior to NCLB. In addition, every mother knows the growth scales associated with their baby's physical and mental growth. Hence, the belief

has arisen that including a growth model will make NCLB better, more fair, or somehow less onerous.

The bare basics of a growth model require the ability to track students over time. Preferably the ability to track students when they change schools, districts, and when students leave or enter the state is a key component of growth models. A second part of growth models is the ability to keep scores for multiple years of tests taken. An a priori decision about the expected growth curve must be made. That is, do we expect a year's worth of growth to be linear (i.e., equal number of points from year to year) or curvilinear (i.e., larger growth in the early years with less growth in subsequent years)? The content standards must lend themselves to measuring growth in that content area from one year to the next. Widely different content will not make a very good or stable growth model. The expectations of proficient from grade to grade must be similar or a growth score will not make much sense. That is, if a student makes a years work of growth (as defined by a state) but drops from proficient to basic, the growth model is not working well.

There are a large number of possible growth models that require the above characteristics be present but may have other requirements such as the ability to link teachers with students, courses taken by students, and other variables about the schools/districts linked back to the student. The table below provides a few examples of various growth models and some of the characteristics associated with those models.

<i>Some Examples of Growth Models</i>								
Model	Incorporates Demographics	Incorporates Standards	Simple To Explain	Must Track Students Over Time	Must Test In Consecutive Years	Requires Same Scale	Can Account for Missing Data	Controls for Regression
Score Change			X	X		X		
Z-Score				X				
Performance Category Count		X	X					
OLS Regression	X		X	X				
Structural Equation Modeling	X			X				X
Deviation From Passing (DFP)		X		X				
Mean Sigma Equating Method			X	X	X			X
Equipercntile Equating Method				X	X			X
Repeated Measures				X	X	X		X
Mixed Models: Hierarchical Linear	X			X		X	X	X

Adapted from: O'Malley, Vansickle, and Housson; CCSSO Large Scale Conference, June 2005

The use of the Growth Models under USED guidance is to first compute AYP using the status model along with any safe harbor calculations used in that state. This will be the official results, if there is a problem applying the growth model. In most AYP systems the index is a ratio of the number of students who are proficient and above divided by the total number of students in that grade. This is computed at the school, district, and state levels and for all of the disaggregated categories for NCLB. Once that is completed, the growth model is applied. In the simplest form, a student below proficiency but who did make the growth index set is counted as proficient and the numerator of

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the AYP calculation is incremented. Then the AYP calculations are recomputed. If there are no technical or policy issues with this computation and results, states may be able to use these growth results as their official AYP results.

Early data reported from the states with growth models indicate slight changes in the results between the two models. That is, in some cases the addition of a growth model “helps” a few schools make their AYP index and may “help” schools in terms of consequences associated with not making progress as defined by NCLB adequate yearly progress.

It must be noted here that as we approach the 2013-2014 school year, whether a growth model is used or not, more and more schools will be identified as “failing” or “problem” schools because the majority of the students in all categories must be proficient or above. Some states have standards that are quite high and these states will, most likely, have the most difficulty with the number of identified schools.