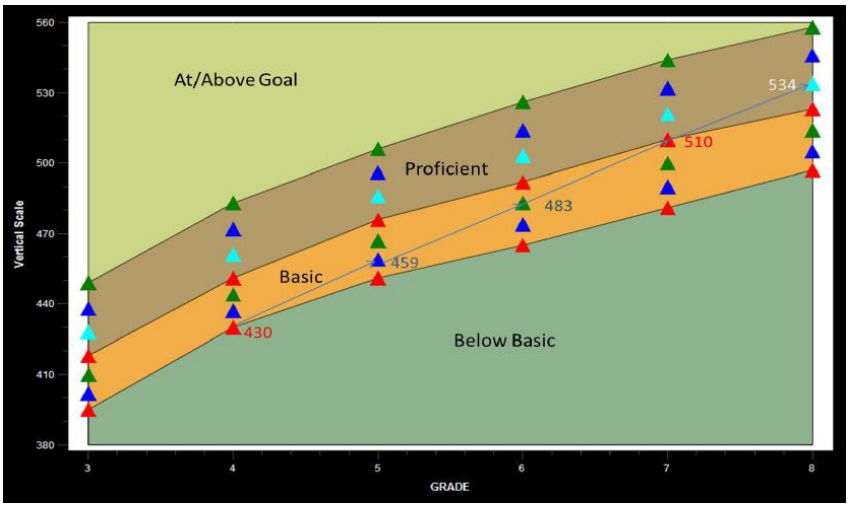
Connecticut's Approach to Developing a Student Growth Model using the Smarter Balanced Assessment

In Connecticut, the Smarter Balanced Assessment in ELA/Literacy and mathematics will be used for measuring student achievement growth. In spring 2015, Connecticut students will be taking the Smarter Balanced ELA/Literacy and mathematics in grades 3-8. In both subjects, the test scores are vertically scaled across grades and would facilitate tracking student growth within the same subject across grades, despite differences in test content and difficulty.

Each vertical scale ranges from 2000-3000 score points. By subtracting a student's current score (e.g., a grade 5 score of 2400 in mathematics) from the student's previous score in the same subject (e.g., a grade 4 score of 2300 in mathematics), a teacher or administrator can assess the individual student's growth in mathematics performance over a one year period (a growth of 100 points in this example). Teachers and administrators can use achievement growth information with other academic information about students to plan for student instruction.

The CSDE will utilize the vertical scale to create a growth model based on the expectation that all students in grades 4 through 8 should demonstrate growth each year in each tested subject. Desired and achievable growth targets will be set in ELA/Literacy and mathematics for all students entering grades 4 through 8 to reach in that year.



The CSDE has a proven track record of successfully creating a vertical scale score based growth model. After constructing a vertical scale for its CMT assessment through a rigorous linking study in 2007, the CSDE analyzed CMT results to construct its growth model. In that approach, using achievement level cut scores on the vertical scale, two equidistant interim cut points were calculated for achievement levels of Basic, Proficient and Goal. This produced three gain-score targets, low, mid-, and high scores, for each of these CMT score bands. End-of-year achievement target scores were set for students in grades 4-8, based on scores and achievement levels from the previous year. Growth targets were set such that each student must grow one-third of the difference between adjacent performance levels (e.g., low to mid-basic, mid to high basic, high basic to proficient). The vertical scale, performance levels and intermediate level vertical scale cuts within each CMT achievement level for mathematics is presented below. The paper titled "The Development of Connecticut's Vertical Scale and Growth Model" discusses the model and its development in great detail. This model is in alignment with the criterion-referenced federal definition of "Student growth" i.e., *a change in student achievement for an individual student between two or more points in time*.

The development of the new growth model based on the Smarter Balanced assessment will incorporate the lessons learned from the development of the prior model. One expected enhancement is with respect to students performing at the lowest achievement level. In the prior model, students who performed at the lowest level in the CMT had a constant target of reaching the next level. In the new model, however, it is expected that students at the lowest achievement level will have targets that are based on their vertical scale scores. At the other end of the spectrum, it is expected that students performing at the highest level will also have growth targets to reach the following school year.

The primary aggregate metric that is expected to be generated from the growth model is termed the "Success Rate"; it is the percentage of students in the group (e.g., district, school, subgroup, class) who meet their individual growth targets in the subject.

The individualized targets in ELA/Literacy and mathematics will be established through ongoing collaborations with various stakeholders, including classroom teachers, subject matter experts, school principals, superintendents, CSDE staff, policy leaders, and measurement experts. The CSDE will begin the process of engaging stakeholders after it receives the results from the first operational assessment. A detailed timeline for development of the new growth model is provided below. As the timeline indicates, the CSDE will finalize the model after the second administration of the Smarter Balanced assessment. This model will serve as an important component of the statewide school accountability system and also inform the educator evaluation and support process starting with the 2016-17 school year.

Timeline for Development of a Longitudinal Student Growth Model for Smarter Balanced Assessments (Grades 3-8)

Target Date	Activity	Notes
August - September 2015	Receive, review, validate, and certify the full dataset based on the 2014-15 administration of the Smarter Balanced assessments.	
October 2015	Using certified data, conduct tests of the vertical scale to ensure the soundness of the scale and identify/resolve any challenges.	
November 2015	Given that 90 percent of Connecticut districts participated in the 2013-14 Smarter Balanced field test, explore the feasibility of using field test data to supplement data from the 2014-15 census assessment.	It may be possible to use item parameters from the field test to complement the census data.
December 2015	Using preliminary data (i.e., single year of census test), run scenarios to explore the importance of the achievement level cut points for measuring growth on the vertical scale.	Other reviews may include comparisons of average scale scores from grade to grade, analyses of score distributions across the grades and within achievement levels, identification of student scores that may cross the scale into another grade, and analyses of standard errors.

Target Date	Activity	Notes
January 2016	Internal review of preliminary findings, including small scale preliminary growth standard setting using impact data.	Internal reviews will include representatives from across the agency including staff from the Academic, Performance, Turnaround, Talent, and Student Supports Offices.
February - March 2016	Share preliminary information with and seek feedback from the SBE, LEA representatives, including teachers, community groups, and other education stakeholders.	The CSDE anticipates that during this time period adjustments may be made to the proposed model based on input from the field.
April 2016	Draft white paper explaining the approach to measuring growth.	
July 2016	Apply model to Year 2 (2015-16) Smarter Balanced census data.	
September 1, 2016	Update white paper to reflect Year 2 findings and disseminate.	
2016-17 School Year	Full Implementation of statewide approach to measuring student growth on the state assessment in grades 4 through 8 in Smarter Balanced ELA/Literacy and mathematics for teachers of tested grades and subjects.	

The vertical scale enables the evaluation of growth achieved by the same kids over time. A district/school will not be deemed successful on this metric simply because it enrolls students who are historically high performing. Success on this metric is earned by helping all students, whether low or high performing, to achieve adequate growth from one year to the next.

Practitioners have long awaited the inclusion of academic growth as an indicator in district/school accountability. They are generally more supportive of using academic growth than achievement status to evaluate the effectiveness of a district/school.