Plano Independent School District

Student Achievement Growth Model Summary

August, 2008

Plano ISD's growth model measures academic growth of individual students and groups of students with respect to diversity in cognitive ability, achievement history, special needs, income level, and English proficiency. The model is used for students in grades Kindergarten through Grade 11 in Math, Reading, Science, and Language Usage. The model may also extend to End-of-Course type testing in Algebra, Geometry, English Language Arts, Biology, Chemistry, and Physics.

Measurement Scale: A significant attribute of Plano ISD's growth model is the use of a computer adaptive measure of achievement. Due to its accuracy and its wide single scale, Plano ISD uses Northwest Evaluation Association's (NWEA) Measure of Academic Progress (MAP). Through the statistical analyses of Plano ISD students relative to TAKS, it has been determined that the TAKS test provides valid measures for a relatively small percent of the students in the district (approximately 35%) whose achievement scores in the neighborhood of 2100. Since, Plano ISD is interested in measuring more of its student population than less, the district needs an instrument that provides a very wide scale, one that can measure several grade levels in one administration. While the MAP scale is developed using the same psychometric scaling technique as TAKS (Rasch IRT), the computer adaptive process provides efficient selection of appropriate items for individual test takers. The MAP scale can measure a range of achievement from Kindergarten through 11th grade. The stability of a single scale does not require vertical scaling techniques that often cause statistical problems with many other growth models.

Model Characteristics: The Plano ISD growth model is termed in literature as a Linear Growth Curve (LGC) Model which is created using Hierarchical Linear Model (or mixed linear model) techniques. The important attributes of an LGC is initial status and rate of growth. The model takes into consideration a student's cognitive starting point (using an ability measure, CogAT, combined with previous achievement history on MAP) along with statistically significant demographic attributes: English proficiency, income level, and ethnicity. The model charts rate of growth relative to initial status to produce an effect size of improvement. As a result, a campus or teacher's group of students is compared in terms of rates of expected growth relative to initial status. Additionally, one campus or one teacher does not have an advantage in reaching proficiency expectations more easily than another campus or teacher due to only the differences in students that are not within campus or teacher control.

Uses for the Model: The Plano ISD growth model is useful to the district in isolating the effect of programs, interventions, and educational environments (campus and classroom). The growth model quantifies performance in terms of months of instruction so that the effectiveness of instruction can be evaluated in terms of rates of learning versus months of treatment. Additionally, it is important to recognize the student effect of Plano ISD's model. The intuitive nature of MAP's common scale invites students to become intimately involved in their own goal setting performances. As a result, test administrations are personally meaningful to students as well as eagerly anticipated by them.