TARGETING REMEDIATION BY PREDICTING 3RD GRADE RETENTION

Results in a Nutshell

If the 2nd Grade NRT score is **Less than or Equal to the 31st percentile,** then Predict 3rd Grade SSS of **Level 1** and Grade Retention

If the 2nd Grade NRT score is **Greater than or Equal to the 32nd percentile,** then Predict 3rd Grade SSS of **Level 2 to 5.**

Expected Prediction Success Rate:
For Standard Curriculum Students: **86%**
For Exceptional Student Education Students: **82%**
For Limited English Proficient Students: **69%**

Introduction

Recent revisions of the Florida School Code by the Florida Legislature include a major component focusing on proficiency in reading. In particular, grade 3 students who do not score at level 2 or higher on the FCAT SSS Reading Test must be retained, unless exempted for special circumstances. This new requirement has resulted in the retention of thousands of 3rd graders in this district over the last two years. The impact on the lives of the students and their families is inestimable. Additionally, the restructuring of grade level membership has put considerable strain on the schools and the system as a whole. Clearly, any help in predicting which students may be in jeopardy of not "passing" the FCAT Reading test in 3rd grade would be a welcome contribution to providing targeted academic remediation to the students most in need.

The Prediction Model

This study addresses an approach to the early identification of students who may be at risk of scoring at level 1 on their 3rd grade FCAT Reading Test. Although the FCAT SSS tests are not administered to students in 2nd grade, M-DCPS does administer the Stanford Achievement Test NRT to 2nd graders. The fact that the 2nd grade NRT test is the most recent, similar type of data makes it a credible choice for a

predictor of 3rd grade SSS performance. Although other academic and demographic factors could be added to the prediction model, the ease of communicating and applying a simple prediction rule make the single-variable model most desirable.

The Data

Scores on the 2004 FCAT SSS Reading test for all 3rd graders were matched by student identification with scores from the 2003 Stanford Achievement Test NRT Reading test. The analysis sample included 23,264 students (20,573 Standard Curriculum; 2,021 Exceptional Student Education; and 670 Limited English Proficient). A similar sample from the previous year's matched students was used to verify the prediction rule and validate the estimation of prediction success.

Establishing the Association

The graph below depicts the relationship between the 3rd Grade SSS scores and the 2nd Grade NRT scores for a 10 percent random subsample of the students. The correlation is .745, sufficiently strong for meaningful prediction. For ease of interpretation, the recommended prediction rule will be in terms of the percentile scores on the 2nd Grade NRT test and the binary condition of Level vs. Levels 2-5 on the 3rd Grade SSS test.

2nd Grade NRT Scale Score
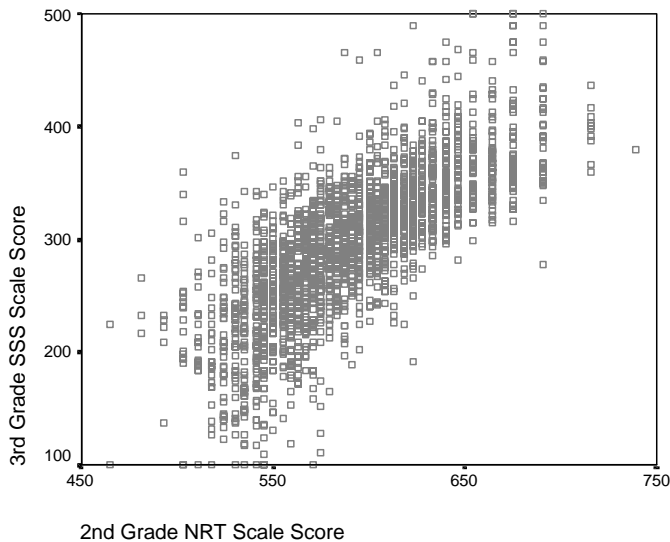
Calculating the Cutoff

A simple linear regression was performed on the Standard Curriculum subgroup of the analysis sample. The resulting formula was:

204.6 + 1.735 * (2nd Grade NRT Percentile) = (Estimated 3rd Grade SSS Scale Score)

The scale score that separates the Level 1 from the higher levels on the 3rd grade test is 285. Solving for this value in the above equation establishes the cutoff scores for prediction at the 31st percentile. Thus the general prediction rule becomes: ***if the 2nd Grade NRT percentile is 31 or less, predict Level 1 performance on the 3rd Grade SSS test; if the 2nd Grade NRT percentile is greater than 31, predict performance above Level 1 on the 3rd Grade SSS test.***

Evaluating Prediction Success

The table below presents the results of applying the prediction rule for the Standard Curriculum students in the sample.

	Predicted Level 1	Predicted Levels 2-5
Actual Level 1	12.7% Correct	6.2% Error
Actual Levels 2-5	7.7% Error	73.4% Correct

The overall success rate for predicting the performance for the students in the sample is 86.1%. The same rule applied to the verification sample resulted in a similar success rate.

The relationship between 2nd Grade performance and 3rd Grade performance for Exceptional Student Education (ESE) students and Limited English Proficient (LEP) students is slightly weaker than that for Standard Curriculum students. Because of this, the success rates when applied to these populations are also lower. For the ESE students, using the same prediction rule, the success rate was 82.2%, and for the LEP students, the success rate was 69%.

Graduated Probabilities

A simple cutoff rule, while easy to apply, may not be the most practical advice for the classroom teacher. Often, the teacher's task is to identify a subgroup of the class that is most likely to benefit from special attention. In this regard, it may be beneficial to assess the relative potential benefits at different levels of student performance.

The probability of performing above Level 1 on the 3rd Grade test increases as the percentile standing on the 2nd Grade test increases. This relationship is depicted in the graph on the opposite side of this page. For 10 percent ranges of scores on the 2nd Grade test, the probabilities of Level 1 vs. Levels 2-5 are shown on the graph. Teachers may wish to take these probabilities into consideration when trying to assess the relative necessity for remediation.

Predicting Success on the 3rd Grade FCAT

Percentile on the 2nd Grade NRT (y-axis)

Probability of Level 1/Levels 2-5 on the 3rd Grade SSS (x-axis)

Legend: ■ Level 1   ▨ Levels 2 - 5

y-axis categories (top to bottom): From 90 to 99, From 80 to 89, From 70 to 79, From 60 to 69, From 50 to 59, From 40 to 49, From 30 to 39, From 20 to 29, From 10 to 19, From 0 to 9

x-axis: 0%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%