The Impact of Dr. Randall Sprick’s *Foundations* Program on Student Performance in Broward County Public Schools

Gary P. Cross, Ph.D.

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Impact of Foundations on Student Performance

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Executive Summary

This study investigated the impact of Dr. Sprick’s Foundations program on the performance of students on standardized assessments and the behaviors of both elementary and middle school students within their school environments in Broward County Public Schools. The report includes the academic year, 2003-2004, as the baseline year, and 2004-2005 as the first year of implementing Foundations. Measurements involved both standardized tests of mathematics and reading and detrimental student behaviors, such as absenteeism and suspensions. To further refine this study, students were disaggregated by race, gender and level of implementation of the project.

To identify the effect of Foundations on students’ performance (both standardized test scores and behavioral outcomes such as suspensions), we compared performance in Foundations’ schools with performance in a comparison group of schools. To control for pre-existing differences in the groups, we included students’ previous-year performance in all analyses. We analyzed the data in a multilevel model, which corrects for students “nested” within schools. This nesting can create artificial differences between the groups that would mask the effect of Foundations, a problem that is solved by using the multilevel model.

Major Findings

Foundations is designed to significantly improve the learning environment. Over the years personnel from participating schools and the faculty of Foundations have observed that improving the atmosphere for learning can make a difference in academic achievement over time. It would be highly unusual to expect those differences within the first year of the program. There was one intriguing and consistent finding, however: middle school females significantly improved in math and reading.

In this study, detrimental behaviors included absences, suspensions, and “events”.

- Middle school students in Foundations had significantly more absences than students in school not participating in the program. Further research should be conducted to better determine the nature of this observed difference.
- Middle school students of color had significantly more suspensions than white students.
- Females in middle schools engaged in significantly fewer detrimental behaviors.
- There were significantly more “events” among students of color for 2004-2005.

Finally, middle schools rated high in implementing Foundations, when compared
to those low in implementation, had significantly fewer students of color and males engaging in “events”.

Middle schools were separated into two categories, low and high implementing schools. Overall, absenteeism was essentially the same for high and low implementing schools. Within middle schools designated as high in implementation, detrimental student behaviors and suspensions were significantly reduced for students of color. The last result was that males in high implementation middle schools significantly reduced their absenteeism. In summary, high implementation is persistently associated with positive results for middle school students.

For middle schools participating in Foundations, 33% of them improved their Florida School Grades in school year, 2004-2005, after one year, while 4% of non-participating middle schools experienced an improved school grade. Eight percent of the Foundations schools received a lower grade, as compared with 19% of non-participating schools.

The contextual effect pervaded the findings of this study. The environment by itself influenced the outcomes beyond what would be expected. This was not originally part of the research but the results were pronounced and definite. There were significantly improved performances in elementary schools; and in middle schools, students of color and male students scored significantly better on math and reading assessments when compared to students in lower performing schools. Certainly active practitioners of schoolwide improvement programs have observed the contextual effect, but it needs further investigation in actual school settings to better understand the full range of its dynamics.

Foundations is just one of Broward County Public Schools’ initiatives to help it meet its educational mission. Although this report shares results from the first year of its implementation, the findings are consistent with that mission. Future participation in and research on Foundations should make an on-going contribution to Broward County Public Schools.
The Impact of Dr. Randall Sprick’s *Foundations* Program on Student Performance in Broward County, Florida

Background

In the academic year of 2004-2005, Broward County Public Schools began a three-year implementation of Dr. Sprick’s *Foundations* program in 18 schools (12 middle schools, four elementary schools, one high school and one alternative center). *Foundations* is a nationally-recognized program designed for schoolwide improvement. Broward County is the sixth largest school district in the nation.

School improvement is a central issue in systematic, continuous activities for learning. The basic assumption of this research is that the school wields enormous influence over student learning, safety, and the entire educational atmosphere.

School improvement research has been conducted and synthesized for more than two decades. A brief review of this literature includes: effective school research (Purkey & Smith, 1983); school-based management (Cotton, 1992); school restructuring and high-performance schools (Newman & Wehlage, 1995; Darling-Hammond, 1996; Mohrman & Lawler, 1996); methods and practices for school improvement (Sprick, 1995; Sprick, Garrison & Howard, 2002a; Sprick, Garrison & Howard, 2002b; Sprick, Garrison & Howard, 2002b; Sprick, Wise, Marcum, Haykin, Howard & Garrison, 1998); and characteristics of high-performance schools (Shannon, 2003).

At the heart of school improvement is what individual schools do to improve within the guidelines and policies of the district. Dr. Sprick, a nationally recognized practitioner who promotes continuous improvement at the school level, refers to this as “site-based” (Sprick, 1995; Sprick, Garrison, & Howard, 2002a). Others have observed that individual schools within a single district vary widely in implementing improvements even though all schools were provided definite models and resources for change (Murphy and Datnow, 2003).

From both quantitative and qualitative research cited above and a host of other reported research, the findings support one overriding conclusion: *when schools improve, the performance of their students improves.*

With preliminary data indicating that the implementation of *Foundations* does improve schools, Dr. Sprick has committed substantial resources to conduct research on the impact of *Foundations* in the participating schools of Broward County with subsequent studies to follow.
Introduction

In the 2004-2005 school year, 12 middle schools and four elementary schools in Broward County Public Schools implemented Dr. Sprick’s Foundations program for schoolwide improvement. This research compared Florida State School Grades, reading and mathematic performance, customer survey grades, and detrimental student behaviors. There were 26 middle schools and four randomly selected elementary schools used for comparison. Formally, the title for this study is: “A Longitudinal Study of the Impact on K-12 Schools in Broward County Public Schools Implementing Dr. Randall Sprick’s Foundations Program, Using a Quasi-Experiment Design with Comparison Groups.”

Although all of the schools implementing Foundations received the appropriate training, it is important to recognize that schools do have the latitude to select their own issues for schoolwide improvement and implement changes at their own pace. Foundations is designed to use a process cycle for continuous improvement using a clear “school” vision, to develop leadership teams and to make “data-based” decisions. It focuses on upgrading “common areas” by uncovering the causes of misbehaviors and addressing them in a proactive, productive manner. The overarching goal of Foundations is to improve safety, produce an effective, fair and consistent system for discipline, and promote positive behavioral support for students.

Dr. Sprick observed that changes occur over time. His nearly thirty years as an agent for schoolwide improvement has taught him to expect more student behaviors to be influenced in the second and third years and more beyond those years. Foundations is usually introduced to schools over a three year period of time. There are schools that use it long after the third year, especially because it adheres to a process improvement model.

Broward County Public Schools is a highly motivated school district that is truly committed to the success of all of its students. Its motto is: “Transforming Education…One Student at a Time”. As a school district it is engaged in many activities and projects that help it live up to its motto and to achieve its educational mission.

Following the background and introduction sections of this report are the three additional sections. In the Methodology section, the methods used for the advanced analyses of the data are described. The Results section provides a detailed analysis of the effect Foundations had on the dependent variables. The final section concludes with a summary that discusses the findings.
Methodology

Data

For these analyses, data were used from all of the middle schools, involving approximately 32,000 students. In the data for elementary schools, there were four schools implementing Foundations and four schools that were not involved, about 5,000 students. The students attended schools in Broward County Public Schools between 2003-2005.

Because the students’ achievement and the schools’ demographic traits varied widely, it was important to select suitable statistical techniques to account for differences. Several analytical options were considered. Finally it was decided that given the nested dataset (students within schools) and the fact that sample sizes were widely divergent among schools, the most appropriate analytical strategy was a multilevel model. Therefore, a series of hierarchical linear models were used to estimate the effects of Foundations, race and gender on a variety of outcomes. Each outcome was a variable from the 2005 school year and each model contained the identical variable from the 2004 school year as a covariate. By following this protocol, all outcomes hold 2004 levels constant. Because 2004 variables were treated as covariates, there were two-level models with students at level 1 and schools at level 2.

In all models, contextual effects (i.e., the effect of being in a particular school) were controlled by including 2004 school means as a level 2 variable. Unless otherwise noted, all models allowed random intercepts and slopes. All variables were grand mean centered.

Below is an example of the model, with 2005 NRT math scale scores as the dependent variable.

Level-1 Model

\[ Y = B_0 + B_1*(SEX) + B_2*(RACE) + B_3*(MathNRT04) + R \]

Level-2 Model

\[ \begin{align*}
B_0 &= G_{00} + G_{01}*(SELECT) + G_{02}*(MathNRT04) + U_0 \\
B_1 &= G_{10} + G_{11}*(SELECT) + G_{12}*(MathNRT04) + U_1 \\
B_2 &= G_{20} + G_{21}*(SELECT) + G_{22}*(MathNRT04) + U_2 \\
B_3 &= G_{30} + U_3
\end{align*} \]
In this study, normed-scale scores were used. To more effectively account for this statistical condition, analyses with regard to math and reading scores were conducted at each grade level. This procedure provides some protection against faulty interpretation; it does not eliminate the problem. In addition, conducting multiple analyses requires cautious interpretation of the findings.

The baseline student data were recorded prior to the adoption of Foundations in the academic year, 2003-2004. Cohort I comprised all the data used in school year 2004-2005. All data were retrieved by the Research and Evaluation Department within the Broward County Public Schools. There were two exceptions: the Customer Survey grades by Parents, Staff and Students, and the Florida State School Grades were available on the Broward County Public Schools’ website.

Student-level data were collected across the baseline year and the first Cohort year. The attrition of students from the study reflected primarily students who moved and the small minority of students who were absent when tests were taken. There was no evidence that the natural shrinkage of subjects had any adverse effect on this research.

Test Scores

School districts in Florida use Sunshine State Standards (SSS) and Norm Referenced Test (NRT). Sunshine State Standards are criterion-referenced assessments. That is, they are test used to determine students’ level of achievement in a curriculum. Norm Referenced Tests reveal how students are performing relative to other students. Both assessments are used for reading and mathematics.

Results

Below are tables indicating the impact of Foundations on the mean level of performance for math and verbal scores as well as the impact of Foundations on race and gender slopes. Following the tables are discussions on these variables, as well as details about absences, events, and suspensions.

All the dichotomous variables were coded as follows:

Race: 0 = non-white; 1 = white
Gender: 0 = male; 1 = female
Foundations: 0 = no; 1 = yes

<table>
<thead>
<tr>
<th>2004 Grade Level</th>
<th>Mean</th>
<th>Race Slope</th>
<th>Gender Slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd</td>
<td>2.75***</td>
<td>7.50</td>
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<td>4th</td>
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<td>6th</td>
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</tr>
<tr>
<td>7th</td>
<td>0.13</td>
<td>-0.17</td>
<td>-0.96</td>
</tr>
</tbody>
</table>

* p < .10 ** p < .05 *** p < .01

### Impact of Foundations on NRT 2005 Reading mean and slopes controlling for gender, race, and 2004 NRT Reading Scores.

<table>
<thead>
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<th>Race Slope</th>
<th>Gender Slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd</td>
<td>-0.19</td>
<td>-1.82</td>
<td>2.63**</td>
</tr>
<tr>
<td>4th</td>
<td>-1.51</td>
<td>-1.14</td>
<td>0.78</td>
</tr>
<tr>
<td>5th</td>
<td>-2.88</td>
<td>-1.16</td>
<td>-0.30</td>
</tr>
<tr>
<td>6th</td>
<td>1.12</td>
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</tr>
<tr>
<td>7th</td>
<td>-0.38</td>
<td>1.82</td>
<td>2.04**</td>
</tr>
</tbody>
</table>

* p < .10 ** p < .05 *** p < .01
**Impact of Foundations on SSS 2005 Math mean and slopes controlling for gender, race, and 2004 SSS Math Scores.**

<table>
<thead>
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<tbody>
<tr>
<td>3rd</td>
<td>2.27</td>
<td>2.10</td>
<td>-0.19</td>
</tr>
<tr>
<td>4th</td>
<td>-0.98</td>
<td>-1.69</td>
<td>-2.17**</td>
</tr>
<tr>
<td>5th</td>
<td>-8.04**</td>
<td>1.51</td>
<td>6.26***</td>
</tr>
<tr>
<td>6th</td>
<td>-0.99</td>
<td>3.20*</td>
<td>3.20**</td>
</tr>
<tr>
<td>7th</td>
<td>-4.04**</td>
<td>-0.28</td>
<td>0.83</td>
</tr>
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* p < .10 ** p < .05 *** p < .01

**Impact of Foundations on SSS 2005 Reading mean and slopes controlling for gender, race, and 2004 SSS Reading Scores.**

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<tbody>
<tr>
<td>3rd</td>
<td>2.25</td>
<td>2.39</td>
<td>-1.42</td>
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<tr>
<td>4th</td>
<td>0.88</td>
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<tr>
<td>5th</td>
<td>2.71</td>
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<td>-0.71</td>
</tr>
<tr>
<td>6th</td>
<td>2.07</td>
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<tr>
<td>7th</td>
<td>-0.17</td>
<td>1.45</td>
<td>-0.63</td>
</tr>
</tbody>
</table>

* p < .10 ** p < .05 *** p < .01
3rd Grade Students in the 2003-2004 School Year

**NRT Scores**

**Math**

Means: Controlling for gender, race (white or non-white), and 2004 NRT math scale score at the individual level, as well as 2004 NRT math scale score and intervention status at the school level, the mean 2005 NRT math scale score was 634.38. On average, students in the Foundations schools had 2005 NRT math scale scores that were 2.75 points higher, a difference which was statistically significant \( t(138) = 3.38, p < .01 \).

Race: Controlling for gender and 2004 NRT math scale score at the individual level, as well as 2004 NRT math scale score and intervention status at the school level, the slope for race was significantly positive, \( t(138) = 5.39, p < .01 \), indicating that white students outperformed students of color.

Gender: Controlling for race, 2004 NRT math scale score, and intervention status at the individual level, as well as 2004 NRT math scale score and intervention status at the school level, there were no significant differences between males and females. Being in a Foundations school resulted in a marginally greater slope, \( t(138) = 1.68, p = .10 \), suggesting that females slightly outperformed males in Foundations schools. There was a significant effect of math scores at the school level, \( t(138) = -2.03, p < .05 \), suggesting that males performed better than females in schools with higher math means scores.

**Reading**

Means: Controlling for gender, race (white or non-white) and 2004 NRT reading scale score at the individual level, as well as 2004 NRT reading scale score and intervention status at the school level, the mean 2005 NRT reading scale score was 632.78.

Race: Controlling for gender and 2004 NRT reading scale score at the individual level, as well as 2004 NRT reading scale score and intervention status at the school level, there were no significant differences in races.

Gender: Controlling for race, 2004 NRT reading scale score, and intervention status at the individual level, as well as 2004 NRT reading scale score and intervention status at the school level, the slope for gender was significantly positive, \( t(138) = 10.44, p < .01 \), indicating that female students outperformed male students. Females benefited more from being in a Foundations school, \( t(138) = 2.08, p < .05 \).
SSS Scores

Math

Means: Controlling for gender, race (white or non-white) and 2004 SSS math scale score at the individual level, as well as 2004 SSS math scale score and intervention status at the school level, the mean 2005 SSS math scale score was 320.75.

Race: Controlling for gender and 2004 SSS math scale score at the individual level, as well as 2004 SSS math scale score and intervention status at the school level, there were no significant differences between races.

Gender: Controlling for race and 2004 SSS math scale score at the individual level, as well as 2004 SSS math scale score and intervention status at the school level, the slope for gender was significantly positive, $t(138) = 3.85, p < .01$, indicating that female students outperformed male students.

Reading:

Means: Controlling for gender, race (white or non-white) and 2004 SSS reading scale score at the individual level, as well as 2004 SSS reading scale score and intervention status at the school level, the mean 2005 SSS reading scale score was 315.66.

Race: Controlling for gender and 2004 SSS reading scale score at the individual level, as well as 2004 SSS reading scale score and intervention status at the school level, the slope for race was significantly positive, $t(138) = 3.79, p < .01$, indicating that white students outperformed students of color.

Gender: Controlling for race and 2004 SSS reading scale score at the individual level, as well as 2004 SSS reading scale score and intervention status at the school level, the slope for gender was significantly positive, $t(138) = 5.41, p < .01$, indicating that female students outperformed male students. Being in a Foundations school did not impact gender differences.

4th Grade Students in the 2003-2004 School Year

NRT Scores

Math

Means: Controlling for gender, race (white or non-white) and 2004 NRT math scale score at the individual level, as well as 2004 NRT math scale score and intervention status at the school level, the mean 2005 NRT math scale score was 658.87.
Race: Controlling for gender and 2004 NRT math scale score at the individual level, as well as 2004 NRT math scale score and intervention status at the school level, the slope for race was significantly positive, $t(137) = 2.06, p < .05$, indicating that white students outperformed students of color.

Gender: Controlling for race and 2004 NRT math scale score at the individual level, as well as 2004 NRT math scale score and intervention status at the school level, there were no gender differences.

Reading:

Means: Controlling for gender, race (white or non-white) and 2004 NRT reading scale score at the individual level, as well as 2004 NRT math scale score and intervention status at the school level, the mean 2005 NRT reading scale score was 654.71.

Race: Controlling for gender and 2004 NRT reading scale score at the individual level, as well as 2004 NRT reading scale score and intervention status at the school level, the slope for race was significantly positive, $t(137) = 4.21, p < .01$, indicating that white students outperformed students of color. Being in a Foundations school did not impact racial differences, however students of color performed better in schools with higher 2004 reading scores, $t(137) = -2.07, p < .05$.

Gender: Controlling for race and 2004 NRT reading scale score at the individual level, as well as 2004 NRT reading scale score and intervention status at the school level, the slope for gender was significantly positive, $t(137) = 3.86, p < .01$, indicating that female students outperformed male students.

SSS Scores

Math

Means: Controlling for gender, race (white or non-white) and 2004 SSS math scale score at the individual level, as well as 2004 SSS math scale score and intervention status at the school level, the mean 2005 SSS math scale score was 338.10.

Race: Controlling for gender and 2004 SSS math scale score at the individual level, as well as 2004 SSS math scale score and intervention status at the school level, the slope for race was significantly positive, $t(137) = 2.93, p < .01$, indicating that white students outperformed students of color.

Gender: Controlling for race and 2004 SSS math scale score at the individual level, as well as 2004 SSS math scale score and intervention status at the school level, the slope for gender was significantly positive, $t(137) = 8.42, p < .01$, indicating that female students outperformed male students. The gender gap was significantly more narrow in Foundations schools, $t(137) = -2.61, p < .05$. 

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Reading

Means: Controlling for gender, race (white or non-white) and 2004 SSS reading scale score at the individual level, as well as 2004 SSS reading scale score and intervention status at the school level, the mean 2005 SSS reading scale score was 306.33.

Race: Controlling for gender and 2004 SSS reading scale score at the individual level, as well as 2004 SSS reading scale score and intervention status at the school level, the slope for race was significantly positive, $t(137) = 5.41, p < .01$, indicating that white students outperformed students of color. Being in a Foundations school did not impact racial differences, however racial differences were reduced in schools with higher 2004 SSS reading scores.

Gender: Controlling for race and 2004 SSS reading scale score at the individual level, as well as 2004 SSS reading scale score and intervention status at the school level, the slope for gender was significantly positive, $t(137) = 6.28, p < .01$, indicating that female students outperformed male students.

5th Grade Students in the 2003-2004 School Year

NRT Scores

Math

Means: Controlling for gender, race (white or non-white) and 2004 NRT math scale score at the individual level, as well as 2004 NRT math scale score and intervention status at the school level, the mean 2005 NRT math scale score was 673.17.

Race: Controlling for gender and 2004 NRT math scale score at the individual level, as well as 2004 NRT math scale score and intervention status at the school level, the slope for race was significantly positive, $t(138) = 2.32, p < .05$, indicating that white students outperformed students of color. Being in a Foundations school did not impact racial differences, however racial differences were exacerbated in schools with higher 2004 NRT math scores, $t(138) = 2.49, p < .05$.

Gender: Controlling for race and 2004 NRT math scale score at the individual level, as well as 2004 NRT math scale score and intervention status at the school level, there were no differences between gender, however males performed closer to females in schools that had higher math means than in schools with lower math means, $t(138) = 2.49, p < .05$. 
Reading

Means: Controlling for gender, race (white or non-white) and 2004 NRT reading scale score at the individual level, as well as 2004 NRT reading scale score and intervention status at the school level, the mean 2005 NRT reading scale score was 664.86.

Race: Controlling for gender and 2004 NRT reading scale score at the individual level, as well as 2004 NRT reading scale score and intervention status at the school level, the slope for race was significantly positive, \( t(138) = 2.57, p < .05 \), indicating that white students outperformed students of color.

Gender: Controlling for race and 2004 NRT reading scale score at the individual level, as well as 2004 NRT reading scale score and intervention status at the school level, the slope for gender was significantly positive, \( t(138) = 10.35, p < .01 \), indicating that female students outperformed male students.

**SSS Scores**

Math

Means: Controlling for gender, race (white or non-white) and 2004 SSS math scale score at the individual level, as well as 2004 SSS math scale score and intervention status at the school level, the mean 2005 SSS math scale score was 319.22. On average, students in the Foundations schools had 2005 SSS math scale scores that were 8.04 points lower, a difference which was statistically significant, \( t(138) = -2.41, p < .05 \).

Race: Controlling for gender and 2004 SSS math scale score at the individual level, as well as 2004 SSS math scale score and intervention status at the school level, there were no differences between white students and students of color.

Gender: Controlling for race and 2004 SSS math scale score at the individual level, as well as 2004 SSS math scale score and intervention status at the school level, the slope for gender was significantly positive, \( t(138) = 4.19, p < .01 \), indicating that female students outperformed male students. The gender gap widened in Foundations schools, with females outperforming males, \( t(138) = 4.95, p < .01 \).

Reading:

Means: Controlling for gender, race (white or non-white) and 2004 SSS reading scale score at the individual level, as well as 2004 SSS reading scale score and intervention status at the school level, the mean 2005 SSS reading scale score was 303.93.

Race: Controlling for gender and 2004 SSS reading scale score at the individual level, as well as 2004 SSS reading scale score and intervention status at the school level, the slope for race was significantly positive, \( t(138) = 4.91, p < .01 \), indicating that white students
outperformed students of color. The race gap significantly widened in Foundations schools, with white students obtaining higher scores than students of color, $t(138) = 4.65, p < .01$. In general, the racial gap narrowed in schools with higher mean reading scores, $t(138) = -2.13, p < .05$.

Gender: Controlling for race and 2004 SSS reading scale score at the individual level, as well as 2004 SSS reading scale score and intervention status at the school level, there were no differences based on gender, although males performed closer to females in schools with higher mean reading scores, $t(138) = -2.82, p < .01$.

### 6th Grade Students in the 2003-2004 School Year

#### NRT Scores

**Math**

**Means:** Controlling for gender, race (white or non-white) and 2004 NRT math scale score at the individual level, as well as 2004 NRT math scale score and intervention status at the school level, the mean 2005 NRT math scale score was 685.10.

**Race:** Controlling for gender and 2004 NRT math scale score at the individual level, as well as 2004 NRT math scale score and intervention status at the school level, the slope for race was significantly positive, $t(42) = 4.97, p < .01$, indicating that white students outperformed students of color. The race gap widened in schools participating in Foundations, with white students performing even higher $t(42) = 2.76, p < .01$.

**Gender:** Controlling for race and 2004 NRT math scale score at the individual level, as well as 2004 NRT math scale score and intervention status at the school level, the slope for gender was significantly positive, $t(43) = 7.44, p < .01$, indicating that female students outperformed male students. Being in a Foundations school did not impact the gender gap.

**Reading**

**Means:** Controlling for gender, race (white or non-white) and 2004 NRT reading scale score at the individual level, as well as 2004 NRT reading scale score and intervention status at the school level, the mean 2005 NRT reading scale score was 671.83.

**Race:** Controlling for gender and 2004 NRT reading scale score at the individual level, as well as 2004 NRT reading scale score and intervention status at the school level, the slope for race was significantly positive, $t(42) = 6.01, p < .01$, indicating that white students outperformed students of color. The race gap widened in schools participating in Foundations, with white students performing even higher $t(42) = 3.54, p < .01$. 

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Gender: Controlling for race and 2004 NRT reading scale score at the individual level, as well as 2004 NRT reading scale score and intervention status at the school level, the slope for gender was significantly positive, $t(42) = 8.19, p < .01$, indicating that female students outperformed male students.

**SSS Scores**

Math

Means: Controlling for gender, race (white or non-white) and 2004 SSS math scale score at the individual level, as well as 2004 SSS math scale score and intervention status at the school level, the mean 2005 SSS math scale score was 313.86.

Race: Controlling for gender and 2004 SSS math scale score at the individual level, as well as 2004 SSS math scale score and intervention status at the school level, the slope for race was significantly positive, $t(42) = 2.50, p < .05$, indicating that white students outperformed students of color. White students benefited even more from being in a **Foundations** school, an effect that was marginally significant $t(42) = 1.75, p = .09$.

Gender: Controlling for race and 2004 SSS math scale score at the individual level, as well as 2004 SSS math scale score and intervention status at the school level, there was no gender effect on 2005 SSS math scores. There was a gender gap, however, for students in **Foundations** schools, with females outperforming males, $t(42) = 2.34, p < .05$. There was also a significant school effect, such that the gender gap was narrowed in schools with higher mean math scores, $t(42) = -5.56, p < .01$.

Reading

Means: Controlling for gender, race (white or non-white) and 2004 SSS reading scale score at the individual level, as well as 2004 SSS reading scale score and intervention status at the school level, the mean 2005 SSS reading scale score was 305.85.

Race: Controlling for gender and 2004 SSS reading scale score at the individual level, as well as 2004 SSS reading scale score and intervention status at the school level, the slope for race was not significant, indicating that white students and students of color performed similarly. However there was a marginally significant race gap in **Foundations** schools, with white students obtaining higher scores than students of color, $t(42) = 1.90, p = .06$.

Gender: Controlling for race and 2004 SSS reading scale score at the individual level, as well as 2004 SSS reading scale score and intervention status at the school level, the slope for gender was significantly positive, $t(42) = 18.93, p < .01$, indicating that female students outperformed male students. Females benefited even more from being in a **Foundations** school, $t(42) = 3.33, p < .01$. 
Impact of Foundations on Student Performance
Gary P. Cross, Ph.D.

7th Grade Students in the 2003-2004 School Year

NRT Scores

Math

Means: Controlling for gender, race (white or non-white) and 2004 NRT math scale score at the individual level, as well as 2004 NRT math scale score and intervention status at the school level, the mean 2005 NRT math scale score was 701.68.

Race: Controlling for gender and 2004 NRT math scale score at the individual level, as well as 2004 NRT math scale score and intervention status at the school level, the slope for race was significantly positive, \( t(39) = 4.35, p < .01 \), indicating that white students outperformed students of color.

Gender: Controlling for race and 2004 NRT math scale score at the individual level, as well as 2004 NRT math scale score and intervention status at the school level, the slope for gender was significantly positive, \( t(39) = 2.05, p < .05 \), indicating that females outperformed males.

Reading

Means: Controlling for gender, race (white or non-white) and 2004 NRT reading scale score at the individual level, as well as 2004 NRT reading scale score and intervention status at the school level, the mean 2005 NRT reading scale score was 695.91.

Race: Controlling for gender and 2004 NRT reading scale score at the individual level, as well as 2004 NRT reading scale score and intervention status at the school level, the slope for race was significantly positive, \( t(39) = 4.79, p < .01 \), indicating that white students outperformed students of color.

Gender: Controlling for race and 2004 NRT reading scale score at the individual level, as well as 2004 NRT reading scale score and intervention status at the school level, the slope for gender was significantly positive, \( t(39) = 13.07, p < .01 \), indicating that female students outperformed male students. The gender gap widened in Foundations schools, with females benefiting more, \( t(39) = 2.37, p < .05 \).

SSS Scores

Math

Means: Controlling for gender, race (white or non-white) and 2004 SSS math scale score at the individual level, as well as 2004 SSS math scale score and intervention status at the school level, the mean 2005 SSS math scale score was 321.81. On average, students in
the *Foundations* schools had 2005 SSS math scale scores that were 4.04 points lower, a difference which was statistically significant, $t(39) = -2.50, p < .05$.

**Race:** Controlling for gender and 2004 SSS math scale score at the individual level, as well as 2004 SSS reading scale score and intervention status at the school level, the slope for race was significantly positive, $t(39) = 8.24, p < .01$, indicating that white students outperformed students of color. Being in a *Foundations* school did not impact the difference between races. However, the racial gap was narrowed in schools with higher 2004 SSS reading means, $t(39) = -3.40, p < .01$.

**Gender:** Controlling for race and 2004 SSS math scale score at the individual level, as well as 2004 SSS math scale score and intervention status at the school level, the slope for gender was significantly positive, $t(39) = 3.66, p < .01$, indicating that females outperformed males.

**Reading**

**Means:** Controlling for gender, race (white or non-white) and 2004 SSS reading scale score at the individual level, as well as 2004 SSS reading scale score and intervention status at the school level, the mean 2005 SSS reading scale score was 303.12.

**Race:** Controlling for gender and 2004 SSS reading scale score at the individual level, as well as 2004 SSS reading scale score and intervention status at the school level, the slope for race was significantly positive, $t(39) = 5.10, p < .01$, indicating that white students outperformed students of color.

**Gender:** Controlling for race and 2004 SSS reading scale score at the individual level, as well as 2004 SSS reading scale score and intervention status at the school level, the slope for gender was significantly positive, $t(39) = 7.47, p < .01$, indicating that female students outperformed male students.

**Absences**

Because absences represent count data, a model with a Poisson distribution was fit. Considering the size of the data set and the modal response of 0 or very few absences, the model did not converge with random residual parameters. Thus, residual parameters for the slopes were fixed at 0. Results below are based on the population-average model with robust estimation of standard errors.

Controlling for gender, race, and 2004 absences at the individual level, as well as mean number of absences at the school level, students in *Foundations* schools had 1.12 times
the absence rate in 2005 as students who were not in Foundations schools. This difference was statistically significant, $t(182) = 2.26, p < .05$.

Controlling for gender and 2004 absences at the individual level, as well as mean number of absences and intervention status at the school level, there were no differences between white students and students of color in the number of absences in 2005. However students of color in Foundations schools had significantly more absences in 2005, $t(188889) = -2.31, p < .05$.

Controlling for race and 2004 absences at the individual level, as well as mean number of absences and intervention status at the school level, males had significantly more absences than females, $t(188889) = -4.63, p < .01$. Being in a Foundations school did not impact this gender gap. Comparing middle schools, which were coded in terms of low versus high implementation of Foundations, high implementation schools had a significantly smaller gender gap than low implementation schools, $t(62166) = 2.12, p < .05$

**Events**

Events are a summation of all types of behavior that is in violation of school policies (e.g., alcohol/drugs, fighting, etc.). Because number of events represents count data, a model with a Poisson distribution was fit. Considering the size of the data set and the modal response of 0 events, residual parameters for the slopes were fixed at 0. Results below are based on the population-average model with robust estimation of standard errors.

Controlling for gender, race, and 2004 events at the individual level, as well as mean number of events at the school level, there was no significant difference in number of events in 2005 based on whether or not a school participated in Foundations. There was, however, a large effect of mean number of events in a school for 2004, $t(182) = 5.59, p < .001$. Schools with higher number of events in 2004 had a much higher rate of events in 2005.

Students of color were significantly more likely to have events in 2005, controlling for gender and 2004 events at the individual and school level, $t(188889) = -11.69$ and this result was even greater in Foundations schools, $t(188889) = -5.01, p < .01$. Comparing middle schools, which were coded in terms of low versus high implementation of Foundations, the race gap was smaller in schools with high implementation than in those with low implementation, $t(62166) = 3.23, p < .01$.

Males were significantly more likely to have events in 2005, controlling for race and 2004 events at the individual and school level, $t(188889) = -28.83$, although the gender gap was significantly reduced in Foundations schools, $t(188889) = 2.86, p < .01$.  

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**Suspensions**

Because suspensions (in days) represent count data, a model with a Poisson distribution was fit. Considering the size of the data set and the modal response of 0 or very few suspensions, residual parameters for the slopes were fixed at 0. Results below are based on the population-average model with robust estimation of standard errors.

Controlling for gender, race, and 2004 suspensions at the individual level, as well as mean number of suspensions at the school level, there was no significant difference in days of suspension in 2005 based on whether or not a school participated in **Foundations**. There was, however, an effect of mean days of suspension in a school for 2004, $t(182) = 7.77, p < .01$. Schools with more mean days of suspensions in 2004 had a much higher mean in 2005 than schools with fewer days of suspensions in 2004.

Students of color were significantly more likely to have more days of suspensions in 2005, controlling for gender and 2004 days of suspension at the individual and school level, $t(188889) = -7.25$ and this difference was even greater in **Foundations** schools, $t(188889) = -2.44, p < .01$. Comparing middle schools, which were coded in terms of low versus high implementation of **Foundations**, the race gap was smaller in schools with high implementation than in those with low implementation, $t(62166) = 2.60, p < .05$.

Males were significantly more likely to have more days of suspension in 2005, controlling for race and 2004 days of suspension at the individual and school level, $t(188889) = -14.07$, although the gender gap was significantly reduced in **Foundations** schools, $t(188889) = 3.19, p < .01$.

**Customer Survey Data**

**Details of the Analysis**

A loglinear analysis was conducted with school level (elementary/middle), year (2004/2005), rater (student/teacher/parent), and grade (A/B/C/D/F) as variables. Results indicated that the four way interaction was not significant, nor were the interactions of level x year, rater x grade x year, and level x rater x year. All other main effects and interactions were significant.

To determine the nature of the significant effects involving the grade variable, a series of crosstabulations was conducted, which revealed the following results.
Grades

A test of partial associations was significant for grade, $\chi^2_{p} (4, N = 31,250) = 5986.60, p < .001$.

Analysis of grades, indicates that across the sample, there were more As, Bs, and Cs than would be expected by chance and fewer Ds and Fs than would be expected by chance.

Grade x Level

A test of partial associations was significant for the grade by school level interaction, $\chi^2_{p} (4, N = 31,250) = 4851.32, p < .001$.

Analysis by school level indicates that the largest difference was with respect to A grades, with more As given for elementary schools (69.6%) than middle schools (16%) across participants. The next largest difference was with respect to C grades, with more Cs given to middle (30.8%) than elementary schools (6.7%). Similarly there were more Ds, Fs and Bs given to middle schools (12.9%, 9.7%, and 30.6% respectively) than elementary schools (1.9%, 2.0%, and 19.9% respectively).

Grade x Year

A test of partial associations was significant for the grade by school-year interaction, $\chi^2_{p} (4, N = 31,250) = 27.33, p < .001$.

The largest difference in grades given between 2004 and 2005 were for Ds, Bs, and As, with slightly fewer Ds in 2005 (11.1%) than in 2004 (11.9%), but also fewer Bs in 2005 (28.4%) than in 2004 (30%). There were more As in 2005 (23.7%) than in 2004 (22.1%).

Grade x Rater

A test of partial associations was significant for the grade by rater interaction, $\chi^2_{p} (8, N = 31,250) = 830.64, p < .001$.

Relative to teachers (2.2%) and parents (2.0), students (9.9%) were particularly likely to give their school an F. A similar pattern was found with respect to Ds and Cs, with students being more likely to use these grades than parents or teachers. For parents, 71.4% gave schools an A or B grade, while for teachers this number was a close 71.5%. Students gave an A or B grade 48.6% of the time.

Grade x Level x Year

A test of partial associations was significant for the three way interaction of grade by level by school-year, $\chi^2_{p} (4, N = 31,250) = 50.30, p < .001$. 
The number of A and B grades increased in elementary schools from 87.4% in 2004 to 91.4% in 2005. A grades in middle schools remained relatively constant between the years, decreasing slightly from 47.1% in 2004 to 46.1% in 2005. The number of D and F grades decreased for elementary schools from 2004 (4.3%) to 2005 (3.4%), while they remained exactly the same at 22.6% for middle schools.

**Grade x Level x Rater**

A test of partial associations was significant for the three way interaction of grade by level by rater, \( partial \chi^2 (8, N = 31,250) = 148.89, p < .001 \).

Elementary school students were particularly likely to give As and Bs (90.1%) as compared to middle school students (43.6%). A similar pattern was found for teachers, 83.8% of whom gave As and Bs for elementary schools, but only 68.3% gave As and Bs for middle schools. Similarly, 89.2% of parents gave As and Bs for elementary schools, while only 65.6% gave As and Bs for middle schools.

For students, similar patterns were found for the other grades. For elementary schools, 2.1% of students gave Fs, while 1.8% gave Ds, and 6% gave Cs. For middle schools these numbers were higher, with 10.8% of students giving Fs, 13.9% giving Ds, and 31.7% giving Cs.

Teachers diverged somewhat from this pattern with similar numbers providing an F grade for elementary and middle schools. For middle school, 6.4% of teachers gave Ds, while for elementary school 3.8% did. Teachers gave far more Cs in middle school (23.2%) than in elementary school (9.8%). Parents exhibited a similar pattern, with roughly equivalent numbers giving Fs for elementary (1.3%) and middle schools (2.2%), while the number giving Ds and Cs were much higher for middle school (6.4% & 25.7% respectively) than for elementary schools (1.4% & 8.1% respectively).

**Grade x Rater x Year:**

A test of partial associations was not significant for the three way interaction of grade by rater by school-year, \( partial \chi^2 (8, N = 31,250) = 9.41, p = .31 \).

**A Comparative Analysis of FCAT School Grades**

This portion of the report focuses on the Florida Comprehensive Assessment Test (FCAT) School Grades of all middle schools in Broward County Public Schools.

For the research there were two groups of schools: those implementing Dr. Sprick’s *Foundations* (treatment group), and those not involved with this schoolwide
improvement project (comparison group). The Foundations project was implemented in the academic year 2004-2005 in 12 middle schools while the remaining 26 middle schools did not implement the program. The FCAT School Grades for the academic year 2003-2004 were compared with the FCAT School Grades for 2004-2005 and separated into the treatment group and the comparison group.

For the purposes of this report, there are two results that stand out when comparing school grades for 2003-2004 with 2004-2005.

1. There was a 33% improvement in school grades for middle schools participating in Foundations. However, for comparison schools there was only a 4% improvement.

2. Only one out of the 12 middle schools implementing Foundations received a lower grade than the previous year— an 8% decline (the school with a lower grade was one characterized as having “modest” involvement with Foundations). In the comparison middle schools, five of the 26 received lower grades for a 19% decline.

Summary

The results from this research did not provide an overall pattern. Therefore, to add clarity to the summary it is divided into six sections: Academic Performance, Detrimental Student Behaviors, Level of Foundations Implementation, Customer Survey Data, Florida State School Grades and Contextual Effect.

Academic Performance

In the 2005 school year, fourth graders that participated in Foundations schools performed significantly better on the NRT math test. However during the same academic year, Foundations schools had significantly lower scores than comparison schools for fifth and eighth grade levels on SSS math scores.

When comparing the data on the racial gap (white students/students of color), students in Foundations schools scored significantly lower on both math and reading scores for 7th grade students in the 2005 school year. For students of color in the 6th grade in the 2005 school year, students in Foundations showed a wider gap in SSS reading scores when compared to white students. There were no other statistically significant differences.

With regards to gender there were statistically significant increases of female scores on SSS math test scores in the 6th and 7th grades in 2005 for Foundations schools. Females also significantly widened the gender gap for SSS readings scores in the 7th grade and
NRT reading scores in the 8th grade. The gender gap significantly decreased only on SSS math test scores for 5th grade.

Concerning the impact of Foundations on academic performance, there were inconsistent findings. However, there is a preponderance of evidence from this study that shows female students in Foundations performed consistently better in middle schools. This was true for both math and reading scores. This is especially intriguing because there were no conflicting data. Obviously this finding will need more investigation.

**Detrimental Student Behaviors**

Most of the detrimental student behaviors were observed in middle schools. The number of events were negligible in elementary schools, therefore, the following observations pertain to students in middle schools.

Overall, students in Foundations had more absences than students not in Foundations schools, even though the differences were significant, they were persistently small. Concerning suspensions in Foundations schools, students of color had significantly more suspensions than white students. Female students in Foundations engaged in significantly fewer detrimental student behaviors than male students.

“Events” were detrimental student behaviors that violated the schools policy, including: fighting, threats, drug and alcohol abuse, etc. In the school year, 2004-2005, there was a significant increase of “events” over the previous year. Middle school students who were in schools designated as high in implementing Foundations experienced significantly fewer “events” for students of color and males when compared with middle schools who were low in implementing Foundations.

Detrimental student behavior undermines the time available for learning for all students, whether they are engaged in such behaviors or simply a witness to them. It was reported that many of the schools participating in Foundations were composed of challenging demographic characteristics. There is a genuine reluctance to attribute the findings related to student behaviors to this factor. This area would benefit from more in-depth research and analysis.

**Level of Foundations Implementation**

The middle schools were disaggregated into two levels of implementing Foundations: low and high. The director of middle schools for Broward County Public Schools, who has extensive knowledge about Foundations and is deeply involved with implementing Foundations in Broward County, determined that seven middle schools were “low” implementers and five were “high”.
In general, high implementing middle schools provided results that were impressive. First, regarding absenteeism, **Foundations** schools with high implementation had no significant difference in absenteeism than schools not using **Foundations**. Second, when comparing suspensions and detrimental student behaviors between white students and students of color, schools high in implementing **Foundations** significantly decreased both suspensions and detrimental student behaviors. Finally, in a comparison of females and males, male absenteeism in schools with high implementation of **Foundations** significantly decreased.

The findings regarding the level of implementation are consistent in the study. High implementation of **Foundations** had consistently positive outcomes on student behaviors in this study, while low implementation appears to produce virtually the same results as no implementation in the first year. There is definitely the need for further research into this area.

**Customer Survey Data**

The inclusion of the single graded item on the “Customer Survey” for students, teachers, and parents in elementary and secondary schools was to establish a baseline that could be used in the future. Only two findings are reported now. First, elementary school grades across all participating groups were significantly higher than middle school grades. Second, middle school students graded their schools significantly lower than either their teachers or parents.

**FCAT School Grades**

When comparing middle schools that implemented **Foundations** in the school year 2004-2005 with those that did not, 33% improved the FCAT School Grades, while those the other middle schools had a 4% improvement. Only one of the middle schools implementing **Foundations** received a lower score, an 8% decline. For the middle schools not participating, at any level, in **Foundations**, five out of twenty six received lower grades from the state of Florida. That represented a 19% decline for the FCAT School Grades.

While the results are impressive and suggest a strong link between **Foundations** and improved FCAT School Grades, it is prudent not to overstate the results. Given education and learning occur over time, more research over a longer period of time could provide meaningful data for subsequent analysis and interpretation. Because this is the first of this type of study on **Foundations**, it would be advisable to continue this kind of research. Finally, within the scope and purpose of this research, **Foundations** appears to have had a significant impact on the school grades of participating middle schools.
Contextual Effect

Especially in field research, a contextual effect is sometimes observed. That is, by being in the specific environment there is a significant impact beyond normal expectations. Although not an original part of this study, the contextual effect occurred with such frequency it could not be ignored. Specifically in this research, statistically significant contextual effects were found in the following conditions:

- Fifth grade students of color (2004-2005) scored better on both reading assessments, the NRT and the SSS, in schools with higher reading scores.
- Sixth grade students of color (2004-2005) scored better on the NRT math assessment in schools with higher math scores.
- Sixth grade students of color (2004-2005) scored better on the SSS reading assessment in schools with higher reading scores.
- Seventh grade male students (2004-2005) scored better on the SSS math assessment in schools with higher reading scores, in this instance narrowing the gender gap in math.
- Eighth grade students of color (2004-2005) scored better on the SSS math assessment in schools with higher math scores.

With all of the comparisons made in this study, the opposite of the contextual effect was not recorded once. That is, schools with higher math and reading assessments did not result in lower scores for any of the disaggregated comparison groups. From this study, the contextual effect was definite and pronounced.

This research definitely adds to our knowledge about schoolwide improvement through Foundations, especially given the scope of this study. There are additional issues raised that need continued exploration. First, there should be follow-up studies in Broward County Public Schools to detect the longitudinal effects of Foundations. Also to better determine how universal the effects are, it would be essential to study other educational venues across the nation. Second, further research should address the crucial factors that contribute to schoolwide improvement. By understanding those dynamic factors, practitioners could accelerate student outcomes by focusing more on what truly makes meaningful differences. At the same time, it is hoped that such inquiries as this one would stimulate more academic research into schoolwide improvement programs. Third, there needs to be more detailed explorations of the differences, found in this research, between the level of implementing school-wide improvement projects. Although these areas for further inquiry are apparent from this research, there are others that will surface regarding how Foundations affects the educational milieu and student learning.
Bibliography


