

Longitudinal Impact Study of the Effect of *Fast ForWord* on Students' Reading Achievement

Executive Summary

What was the purpose of the study?

This report presents findings of a three-year study of *Fast ForWord* on the academic progress of struggling readers in Duval County. *Fast ForWord* (FFW) is a technology-based intervention expected to have a direct effect on students' cognitive processing skills, which is then predicted to have a beneficial effect on reading progress. The object of the evaluation was to assess whether, and to what extent, participation in *Fast ForWord* over a period of time could be shown to have produced increased student gains on a state-mandated assessment of reading proficiency. Data for all students participating in *Fast ForWord* from February 2006 through May of 2008 were used in the analysis. Features of this intervention may suggest that time following participation in *Fast ForWord* is needed to allow for the interim development of cognitive processing skills before a discernible impact on reading will become evident. This study sought to permit a longer period of time to explore whether a lagged, or cumulative effect, on reading achievement may emerge than is evident by examining achievement strictly on an annual basis.

What procedures were followed?

For this analysis, developmental scale scores (DSS) in reading were used from the *Florida Comprehensive Assessment Test* (FCAT) administrations in the spring of 2005, spring of 2006, spring of 2007, and spring of 2008, resulting in a series of three (year to year) gain scores produced during this timeframe. Over a three-year period, students were introduced to *Fast ForWord* in a phased implementation, resulting in a total of **23,738** students in grades one through twelve participating by the end of school year 2007-2008. For evaluating impact on student progress, the study group was further refined to include those students present in Duval County schools continuously over the course of this three year period (2006 through 2008), and those students assessed annually on the FCAT (grades 4-10).

The gains of students who had received the *Fast ForWord* intervention over the past three years were compared with similar students who had not received the

intervention. Care was taken to ensure that a comparison group of students not receiving *Fast ForWord* was made up of demographic characteristics and performance levels as similar as possible to that of the treatment group.

The *Fast ForWord Longitudinal Impact Study* addressed four questions:

1. Were gains made by students involved in *Fast ForWord* (FFW) greater than those of a similar group of students who were not (Non-FFW) annually and cumulatively?

What were the results?

The annual gains of students participating in FFW in 2006, 2007, and cumulatively, were *significantly* higher than students in the Non-FFW group. The table shown below illustrates in **red** for the FFW group, the number of students (N), the average gain (Mean), and Standard Deviation for students who received the *Fast ForWord* treatment in each year and cumulatively, and in **blue** the same information is provided for students in the comparison group. Visually, one can see that average gains in each year seem to favor the FFW group, and that the cumulative gains made across the three-year span are considerably higher for students experiencing the intervention (405.07) than those who did not (221.84).

Student Gains Annually and Over Three Years (2006-2008)

| FCAT Gains | Group | N | Mean | Standard Deviation |
|----------------------|---------|-------|--------|--------------------|
| Gains in 2006 | FFW | 5219 | 117.93 | 234.39 |
| | Non-FFW | 5010 | 91.26 | 204.44 |
| | Total | 10229 | 104.87 | 220.62 |
| Gains in 2007 | FFW | 5219 | 57.40 | 226.09 |
| | Non-FFW | 5010 | 19.38 | 191.68 |
| | Total | 10229 | 38.78 | 210.79 |
| Gains in 2008 | FFW | 5219 | 77.79 | 191.08 |
| | Non-FFW | 5010 | 73.66 | 192.20 |
| | Total | 10229 | 75.77 | 191.63 |
| Gains over 2006-2008 | FFW | 5219 | 405.07 | 434.88 |
| | Non-FFW | 5010 | 221.84 | 430.37 |
| | Total | 10229 | 315.32 | 442.25 |

Carrying out statistical tests on these findings resulted in the conclusion that annual differences were statistically significant in 2006 and 2007, but not in 2008. Comparing the cumulative gains (2006-2008) made by students in FFW and Non-FFW groups, resulted in a clear finding of a statistically significant difference ($p < .0001$). This finding supports the suggestion that gains made by students over the course of the three-year period were not only greater than those of Non-FFW students, but to an extent that could not be explained by normal variation or individual student differences.

Another question explored was whether cumulative gains for students over the course of the three-year period were significantly impacted by the number of products completed and the level of lab implementation found in schools. Product completion was simply the number of lesson modules (called products) in the *Fast ForWord* planned sequence. It was described as *low* for completion of 1 product, *medium* for completion of 2-3 products, and *high* for more than 3 products. Implementation was assessed and monitored by program staff and represented a set of characteristics describing features of the instructional setting and processes necessary to ensure that students were receiving instruction in a manner faithful to the model as designed. Product completion was found to be a statistically significant factor, with a *moderate* completion level of 2-3 products related to the highest documented gains. The degree of lab implementation, however, did not seem to have a significant influence on product completion or academic growth. However, we should note that most schools in Duval County implemented lab elements at fairly high levels of fidelity, so what impact may have resulted from actual low levels of implementation were probably not documented in the current study.

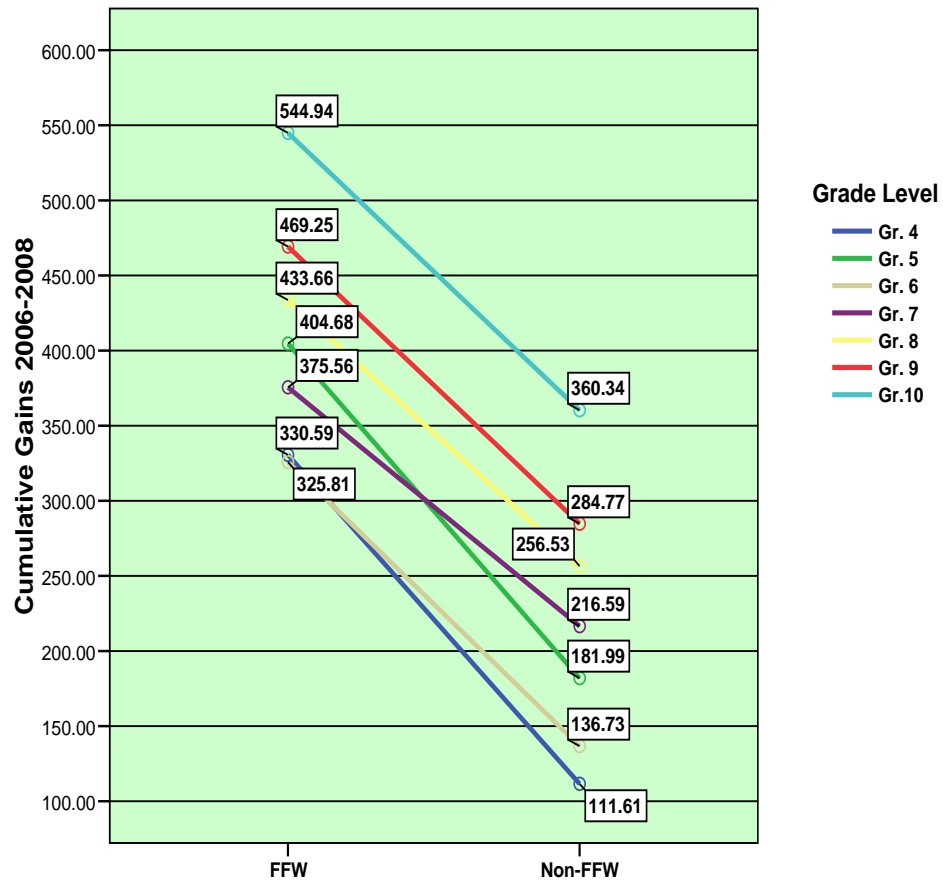
2. Were gains made by students significantly *different* at certain grade levels? Or by particular NCLB subgroups of students (i.e., *free/reduced or paid lunch, SWD status, LEP status, or race*)?

What were the results?

Testing for significant differences by subgroup was also something of importance to the study, and was done by comparing the size and pattern of

gains made by students in particular subgroups who did (FFW) and did not (Non-FFW) receive the treatment. The graph below illustrates those findings:

Cumulative Student Gains (2006-2008) by Grade Level



If a treatment, or program, has the same general effect on students in all subgroups, then the pattern of gains will be approximately the same for each. In the same way, we would not expect the influence of *Fast ForWord* to be much different from one grade level to the next. However, there are certain grade levels (primarily at grades four and five) where impact on students from exposure to *Fast ForWord* is greater than the effect seen at other grade levels. The pattern of gains for each grade level is shown in the graph above as different colored lines; on the right are average gains for students who did not participate in *Fast ForWord*, and on the left are the gains of *Fast ForWord* students. If the impact from *Fast ForWord* at various grade levels was consistent, the lines drawn in the graph would be parallel. Note that the **royal blue** and **green lines** indicating performance gains of fourth and fifth grade students are not parallel (*they cross other grade level lines*). This illustrates that the impact of *Fast ForWord* on students at these grade levels seems to be

even greater than the general advantage seen for students at other grade levels participating in the intervention.

There were also statistically significant differences noted for the gains of students seen by *grade level*, by *gender*, and by *students with disabilities* as groups. Girls seemed to respond more favorably to the *Fast ForWord* intervention than did boys with average cumulative gains of 215, as compared to 168. In addition, and perhaps not surprisingly, the NCLB student subgroup of *Students with Disabilities* did not experience the same degree of benefit from the program as *Students without Disabilities*. Relatively speaking, the small size of this group (approximately 1200) compared to the much larger group of *Students without Disabilities* (approximately 9,000), coupled with wide variability in these scores makes it difficult to draw any real conclusions about the reason for this discrepancy.

3. Were student gains significantly higher when the implementation level at their schools was greater, or when more FFW products were completed?

What were the results?

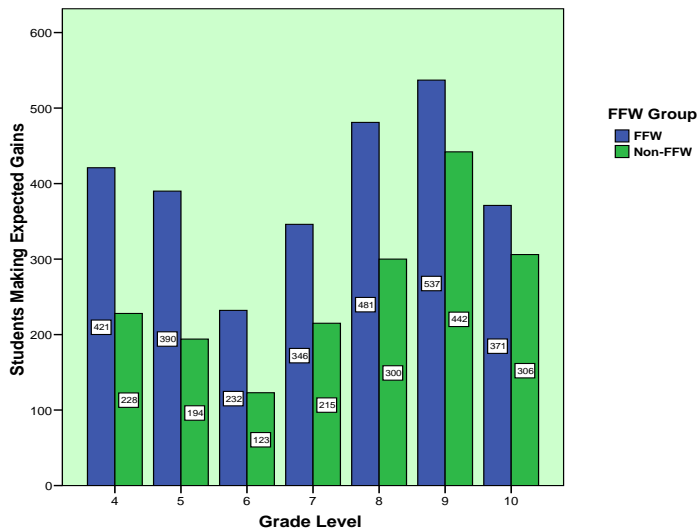
The primary focus of this study has been to determine whether exposure to *Fast ForWord*, if allowed time, would jump start language processing skills thought to be necessary for students to make rapid and substantive progress in developing reading proficiency. Since longer term success was the primary goal, we needed a measure of growth that could show that longer term perspective. For students who are functioning significantly below grade level in reading (Levels 1 or 2 on the FCAT), there are identified minimum margins of growth for each grade level. These growth goals are defined in developmental scale scores, and reflect what is considered to represent a “year’s growth” at each grade level from one year to the next on the FCAT in reading. We used these annual growth expectations, by grade level, to determine the number of points students would be expected to accumulate across years of the study (2006-2008).

4. What was the practical impact of *Fast ForWord* on students in terms of the proportion of students meeting standards for making necessary growth gains as compared to similar *Non-Fast ForWord* students in the district?

What were the results?

The actual number of points gained for each student was summed across school years 2006, 2007, and 2008 to create a cumulative gain. The graph below compares students in FFW versus Non-FFW groups who achieved the multi-year expected growth gains. By visual comparison, it is clear that more students who had participated in FFW (blue) than had not (green) made the expected amount of multi-year growth.

Comparison of Students Making Expected Multi-Year Growth



The number of points accumulated by FFW and Non-FFW students was compared, and the proportion of students making expected growth was clearly greater (53.2%) for FFW students than for Non-FFW students (36.1%). But was the difference statistically significant? A procedure called chi-square analysis comparing the proportions of groups was used, and confirmed that the difference in proportion of students achieving multi-year growth was statistically significant ($\chi^2 = 41.3$, $p < .001$). In other, more practical terms, this difference in proportions of students tested, resulted in a difference of **970** more students reaching expected growth standards.

Conclusions

In summary, it is clear that *Fast ForWord* has been successful at accelerating the reading progress made by struggling readers. It is also evident that schools generally implemented the program consistently and in a fashion that was faithful to the

instructional design intended. The support provided by the company (Scientific Learning) to ensure that classrooms and schools maintained fidelity to the model was likely one of the features that made the program as successful as it appears to be to date. Students who completed 2-3 products at a level determined appropriate for them (based on diagnostic placement) made optimum growth as measured over the course of this three-year study. This study was intended to determine in a broad sweep the overall impact of *Fast ForWord* on large groups of students. There are indications, however, that certain subgroups of students seem to be more and less responsive to *Fast ForWord* in the current lab settings. It may be helpful going forward to further explore whether modified and varied settings are conducive to higher levels of accelerated progress for particular groups of students.

A joint project by the Schultz Center for Teaching and Leadership and Duval County Public Schools.

For more information contact:

Katherine P. Divine, Ph.D.
Research Design and Evaluation
Schultz Center for Teaching and Leadership

Dawn Botkin, Ph.D.
Instructional Research and Accountability
Duval County Public Schools