



## First Narrative Report

Grant Number:

### Power4Kids Reading Initiative

Submitted by The Haan Foundation for Children and Mathematica Policy Research

Grant Coverage: May 2003 through May 2004

Report Coverage: May 2003 through June 2007

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## Report Overview

This report summarizes the first year (May 2003-May 2004) of the Power4Kids Reading Initiative. The report provides an overview of the study's goals, strategies and evaluation methods and describes our progress to date, including start-up activities, implementation of reading interventions, and data collection during the 2003-04 school year. This report also covers future plans, together with an overview of the analysis and reporting of the first year's data and two additional years of data collection, analysis, and reporting; and offers preliminary dissemination plans. The second narrative report, covering May 2004 – May 2005, will discuss in more detail the analysis of data collected in the first year, the results of that analysis, and the lessons learned from the study.<sup>1</sup>

### Project Summary

Recent research indicates that it is possible to accelerate the development of reading skills in older children with serious reading problems at a much faster pace than is typically observed in public school intervention programs. The interventions in the recent research have been more intensive and skillfully delivered than those typically provided in public school education. In addition, the interventions incorporate research-based principles of instruction, such as phonemic awareness, phonemic decoding, fluent text reading processes, and comprehension strategies.

Although there are promising methods for overcoming deficits in reading ability among older children, evidence on the effectiveness of these methods is generally limited to clinical settings. To learn about the effectiveness of intensive and well-implemented remedial reading programs for a broad range of students in a variety of school settings,

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<sup>1</sup> The first interim report on Year One findings will be reviewed in the summer of 2005, and we will release findings when peer review is complete.

the Haan Foundation for Children and the Institute of Education Sciences along with twelve funding partners launched the Power4Kids Reading Initiative, which includes a rigorous evaluation of four remedial reading programs. The Haan Foundation's scientific advisory board selected the reading programs, which include some of the most common programs available. Two of the programs were classified as "word-level" reading programs and two as "word-level plus comprehension" reading programs. The programs' developers trained teachers to implement the programs, and teachers provided about 100 hours of instruction over a seven-month period to groups of three children.

The evaluation addresses three questions:

- Can children who have reading difficulties in late elementary school acquire adequate reading skills in a reasonably short period of time if they are taught with intensity and skill?
- Can current interventions close the gap for all critical reading skills, such as accuracy, comprehension, and fluency?
- Do some children benefit more or less from these intensive and well-implemented reading interventions? What are the characteristics of children that interact with participation in the interventions?

To answer these questions, we are conducting a large-scale, longitudinal evaluation comprising three main elements. The first element of the evaluation is an impact study of the four interventions based on a scientifically rigorous design—an experimental design that uses random assignment. Schools were randomly assigned evenly across the four intervention programs. Then, within each school, eligible children in grades 3 and 5 were randomly assigned to a treatment group or to a control group. Children defined as eligible included those with scores at or below the 30th percentile on a word-level reading test and scores at or above the 5th percentile on a verbal ability test.

The second element of the evaluation is an implementation study that has two components: (1) an exploration of the similarities and differences in reading instruction offered in the four intervention programs, and (2) a description of the regular instruction that these students would have received in the absence of the interventions and the regular instruction received during the time not spent in the interventions. We had proposed to include a third component, a cost-effectiveness study. This component was not implemented, however, as we were unable to obtain funding.

The third element of the evaluation is a functional neuroimaging study of the brain basis of reading disability and remedial intervention. A sample of children selected to participate in the reading interventions are being given functional magnetic resonance imaging (fMRI) to address the question of what brain characteristics are the root cause of reading disability and how effectively remedial intervention restructures brain functions.

Test data and other information on students, parents, teachers, classrooms, and schools are being collected multiple times over a three-year period. Interim reports will be prepared after each round of data collection, and the final report will be completed in 2007.

The evaluation findings have the potential to shape public policy in education. First, the findings could show that it is possible to permanently alter the trajectory of reading growth in children even after they have failed to learn how to read successfully during the first years of instruction. Second, the findings may show that it is possible to normalize the reading skills of most children with reading difficulties in a relatively short time. Further, given that some of the nation's most commonly used reading intervention programs will be evaluated, the findings could provide guidance to schools about the types of programs that can be used most effectively in the school setting to help them address reading difficulties in older children based on entering student characteristics.

## **Progress Toward Goals**

### ***Start-up Activities***

From May to August 2003, the team of Allegheny Intermediate Unit (AIU), American Institutes for Research, the Florida Center for Reading Research at Florida State University, the Haan Foundation for Children, and Mathematica Policy Research met with district and school officials within the AIU to discuss the Power4Kids Reading Initiative. Twenty-eight districts and 52 schools agreed to participate in the evaluation. Some schools were paired (based on geographic proximity) to create "school units" that contained (1) both third- and fifth-grade and (2) enrollment allowing for the identification of a sufficient number of struggling readers.

We formed 40 school units and randomly assigned them to one of four reading intervention programs. Only one district and its two schools (which formed one school unit) withdrew from the study, due to lack of time to obtain approval from all necessary officials. We hired and trained 39 teachers (and 4 substitutes) from the 50 participating schools to provide the intervention.

At the beginning of the 2003-04 school year, we asked schools to identify their most struggling readers in the third and fifth grade, and we hired and trained 39 local staff (substitute and retired teachers) to administer tests to these students. The test examiners administered two screening tests to 1,502 students: the Peabody Picture Vocabulary Test (PPVT), on which students had to meet a minimum level of verbal ability (the 5th percentile or above), and the Test of Word Reading Efficiency (TOWRE), on which students had to score below a ceiling on word reading proficiency (the 30th percentile or below). Nearly seven of every 10 students (69 percent, or 1,042 students) were determined to be eligible for the study.

We sent consent packets to parents of each eligible student. The packets included a letter and a Q&A brochure explaining the Power4Kids Reading Initiative, a consent form

for parents, and an assent form for students. Three of every four parents (75 percent, or 779 parents) returned the necessary forms consenting to participate in the study. As consents were received for students, we administered a battery of eight baseline tests to those students. We achieved test administration rates ranging from 99.7 percent to 100 percent for the eight tests.

After completing the baseline, we randomly assigned about six of every 10 students (59 percent, or 458 students) to the treatment group and about four of every 10 (41 percent, or 314 students) to the control group. (Seven of the 779 students were not assigned: three were at schools where we did not reach the three-student minimum for forming an intervention group, and four were at a partner school where children in their grade were not selected.)

### ***Teacher Training and Support***

Representatives of the four reading programs used in the interventions trained the intervention teachers. Initial training was provided in a week-long session before school began. All of the teachers (including substitutes) convened in one setting but spent most of the training time working with trainers from the specific reading intervention program to which they were assigned. During the week, a few training hours were devoted to explaining the purposes of the study and the logistics of student selection, formation of reading groups, student assessments, and record keeping. We estimate that, on average, teachers received training related to the delivery of their reading intervention programs for about 6.5 hours per day, or 32.5 hours for five days.

Next, teachers practiced delivering the interventions for about 7 weeks with groups of fourth-grade students from participating schools. During this practice period, trainers provided weekly training and observed the teachers. During the implementation phase with third and fifth graders, program providers made at least monthly follow-up visits with the teachers. Providers could increase their follow-up support to model more closely the typical support given to teachers involved in their programs, and all four interventions chose to do so. Teachers received nearly 24 hours of instruction in the practice period and a total of 38 hours of professional development during the nine months practice-and-implementation period.

### ***Implementing the Interventions***

The study plan called for delivering as close to 100 hours of instruction as possible in 60-minute sessions, five days a week, to groups of three students. After random assignment to the intervention or control group within each school unit, the intervention students were placed in instructional groups according to their classroom schedules. An attempt was also made to match students in the instructional groups as closely as possible based on their initial levels of word reading skill so that instruction could be targeted to student needs more effectively, but this was not always possible given the small numbers of students assigned to the interventions at each grade. Most teachers taught four groups a day.

In planning the study, we recognized that groups occasionally would not be able to meet or would have to cut short their instruction. School assemblies, snow days, and school closings for other reasons sometimes prevented groups from receiving instruction, and individual students were absent on some days. To offset these unavoidable irregularities, we implemented the following strategies:

- Intervention groups were scheduled to run for more than 100 days so that, on average, students would accumulate 100 hours of intervention.
- Substitute teachers were hired and trained so that groups could meet when the regular teacher was absent.
- A local coordinator worked with classroom teachers and administrators at the participating schools to try to minimize disruptions to the intervention groups.
- Intervention teachers were asked to conduct make-up sessions for students who missed significant amounts of group time.

Before completing the first week of the intervention, four parents of students assigned to the intervention pulled their children from the study, and nine parents removed their children from the intervention but allowed them to remain in the study (for purposes of testing and other data collection). Because those actions took place before the intervention had started or within the first week of the intervention, we filled the intervention slots with the next candidates from the list of control students. After the first week of the intervention, five students withdrew from the study (including three intervention students), and five students dropped the intervention. We did not fill intervention slots for those students. We continue, however, to collect data for all students who dropped the intervention (though not for those who withdrew from the study).

During the course of the first year, a small number of children transferred to other schools: 10 moved to other in-study schools, including seven intervention students (two intervention students ended up at schools using the same reading program, and they continued to receive the intervention). Another 19 children, including seven intervention students, transferred to out-of-study schools. In total, from 425 to 445 students (depending on the month) participated in the intervention during the first year.

### ***Test Administration and Other Data Collection***

The testers (local substitute and retired teachers trained to administer the tests) administered several rounds of test batteries during the first year. They gave a “mini-test” to 98 percent of the treatment students after 17 hours of intervention, a midpoint battery to 98 percent of all students after 50 hours, a second mini-test to 97 percent of treatment students after 75 hours, and a follow-up battery to 97 percent of all students (at roughly 96 hours of intervention). For the mini-tests (which averaged just five minutes),

we attempted to test only students still at an in-study school. At all other test points, we tested children within a 100-mile radius of their original school.

For the impact evaluation, we collected information from several different respondent groups, including classroom teachers (99 percent for the first teacher survey and 98 percent for the second teacher survey), students (97 percent), and parents (99 percent at baseline and 94 percent at follow-up). We also extracted data from students' school records (98 percent). For the implementation evaluation, we collected information from principals and intervention teachers.

### ***Preliminary fMRI Analyses (2003 -2005)***

The results from the fMRI studies indicated that prior to intervention, children who were poor readers (defined primarily in terms of poor word decoding skills) showed underactivation in cortical regions believed to be involved in phonological assembly (namely, left parietal areas). Immediately following treatment, the brain activation in these regions increased substantially, coming to more closely resemble that of good readers. This increase in brain activity corresponded to an increase in the children's word recognition ability, as assessed by standard reading measures. These findings indicate that intensive reading interventions both improve word recognition ability in poor readers, and closed much of the gap in their brain function during reading tasks, including sentence comprehension. These poor decoders' comprehension performance was not very bad to start with, and didn't change much with the intervention.

The change in the brain activity related to phonological processing indicates a potential springboard for improved comprehension performance in follow-up tests, 1 and 2 years after the intervention. Many theories of reading propose that poor word decoding skills consume processing resources that could otherwise be allocated to comprehension processes. As the improved phonological skills (measured by test and the fMRI results) become consolidated, these readers will have the opportunity to further develop their comprehension skills in the course of all of their reading (not just during reading instruction).

The preliminary analyses of the brain activity of these children at 1 year after intervention support this position. In particular, the parietal underactivation gap is completely closed (indicating further gains in word decoding skills), and new frontal activation appears, indicating the development of new comprehension skills.

### **Future Plans**

In the fall of 2004 we began analyzing the data from the first year. We assessed the impact of the four intervention programs on the treatment groups in comparison with the control groups immediately after the end of the reading interventions. Currently, we are completing the first interim report, which will include detailed estimates of the impacts, including the impact of being selected for any of the interventions, the impact of being

selected to participate in a word-level intervention, and the impact of each of the individual intervention programs. The report will also provide impacts for various subgroups, including students with weak and strong initial word attack skills, students with low or high beginning vocabulary scores, and students who either qualified or did not qualify for free or reduced-price school lunches.

Future reports will focus on the impacts of the interventions one and two years after they ended. We are currently processing second-year data and expect to release a report on that data (which includes improvements on Pennsylvania state assessments) within the next six months. In spring 2006, we plan to administer the third and final round of follow-up tests (the Institute of Education Sciences currently has a grant request for this activity under review), and will again collect school records, teacher surveys, and student surveys. We will release Year 3 findings in 2007.

### ***Sustainability and Continuation***

Many of the Power4Kids schools decided to continue the programs based on their impression of healthy student reading improvement. The Power4Kids teachers, the classroom teachers, and the principals in the participating schools are convinced that the Power4Kids intervention model made much greater progress toward closing the reading gap than they had previously experienced with other intervention programs and practices. We had discouraged this activity by asking that broad implementation wait for impact findings. However, the perceived progress was strong enough that more than 50% of the schools found funds in their budgets to continue and expand the Power4Kids model.

Once we are able to release the findings, our intention is to sponsor a group meeting with all superintendents, principals, and teachers in the study to share the data and help them move toward scaling the successful programs. With help from the AIU, both professional development and identification of targeted interventions by subgroups can easily be attained for all schools in the districts. Additionally, after the findings are released, two prominent Pittsburgh foundations (Heinz Endowments and Grable Foundation) have expressed sincere interest in assisting with the initial cost of the scale-up project.

### ***National Adoption***

The Power4Kids model is a straightforward prescription, if you will. Because of the punctiliously implemented model, schools nationwide can expect to obtain the same effects as in the investigation if they follow the outlined structure: students entering characteristics; teacher criterion; professional development; instructional group size; and, hours of intervention.

### **Dissemination Plans**

The Power4Kids team plans to disseminate its findings to policymakers, the research community, and practitioners through conference presentations and journal publications.

In addition to the above dissemination and with financial assistance from the Power4Kids funding partners, the Haan Foundation for Children will lead a *Release of Research Outreach Activities*, targeting messages to the general public, teachers, principals, superintendents, parents, congress, and education policymakers (local, state and federal). The dissemination will be directed toward a variety of media types, including newspapers, magazines, online networks, radio, and television, as well as to membership organizations.

The Haan Foundation for Children has funded a documentary-video that is being produced by two-time Emmy Award winner Mark Muheim, Muheim Productions. It will primarily convey its message through sound bites, which were filmed with teachers, parents, and superintendents in Summer 2004 at the end of the intervention year. Additionally, a B-Roll and VNR will be produced and, once data findings are ready for release, will be sent to outlets in top U. S. markets. We are in discussion with writers of Op-Ed pieces for the New York Times, Washington Post, and Wall Street Journal. A Capitol Hill briefing is planned for October 2005. More details about the dissemination plan will be provided in future narrative reports.

### **Project President's First Year's Thoughts**

The profound importance of rigorous research in education has never been clearer to me. This study illumines the strengths, the limits, the intricacies, and the critical conditions necessary to move closer to closing the reading gap in American schools. In sum, I believe this study investigates and demonstrates the strengths and developmental limits of word-level and word-level+ interventions along with the linguistic, and economic conditions that effect them, and the complex mix of factors that go into reading development over time. We are blessed as a nation to have this study. It takes giant steps towards clarifying which intervention programs work best for whom, and which do not. Knowing what *does* work is no more important to our educators and policy makers than knowing what *does not*. I will write more on “lessons learned” and “recommendations” in subsequent reports, but for now I would like to share a few thoughts with you:

The biggest surprise to me in the study was the willingness of the teachers and principals to be participants, and the genuine interest and support received from the school communities. I had not before truly understood the frustrations of teachers whom undoubtedly want to teach their students how to read, and how discouraged, limited, and unskilled these teachers feel when they fail. The Power4Kids teachers accepted the professional development as if it quenched an overbearing thirst. Their gratitude was exhilarating; many have gone on to become master trainers in their school district and each and every teacher has become an ambassador for Power4Kids—a great gift, in and of itself.

I am also moved by the readiness of the parent population and children to support the project. Even as control-group participants, the heartfelt eagerness to lend a hand for



the greater good was inspiring. Although I must say that listening to the children express, with sorrow, their desperation to read left an indelible mark on me. Their pain from *not* reading was more than I can bear. It is as if they, even as children, understand that reading failure is a key part of their identity; that it impacts their happiness and will, ultimately, impact their future. Their sadness has accentuated my personal commitment to push forward in education research.

There is a weighty need for much more evaluation in this complex arena of national reading attainment and it will be nowhere more evident than in the importance of this study's outcomes.

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### **Program Providers:**

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