VII. Comparative Research

Research Validation

The goal of *Reading Mastery* is to promote proficient reading and success for all students. From the onset of Project Follow Through, *Direct Instruction* programs including *Reading Mastery* (formally called the *Direct Instruction* System for Teaching and Remediation or *DISTAR*) have been among the most research-validated programs available. In the following section you will find studies conducted over the past 25 years that demonstrate the success of *Reading Mastery* (which includes the *Plus* and *Classic* editions) as compared to a variety of other reading programs for both general and special education populations.

General Education Populations

*Reading Mastery vs. basal readers.* Ashworth (1999) examined the effects of *Reading Mastery* and basal readers on the reading achievement of Grade 2 students. Basal readers are used by the majority of school districts to teach reading skills. They rely on meaning, whole word recognition, and context use as the basis of instruction.

This study was conducted over two years with two consecutive classes of Grade 2 students (N=20 and 16, respectively). The school chosen for this study was located in a small town in northern Georgia and consisted of 95% Caucasian students. Both classes were taught by the same teacher but by different approaches each year. The first class of Grade 2 students served as the control group and was taught with the basal readers. The second class, or experimental group, was taught using *Reading Mastery* in conjunction with consulting from J.P. Associates, Inc.

The Georgia Kindergarten Assessment Program served as a pretest. It assessed students in five areas: communicative capability (specifically addressing reading readiness), physical capability, logical and mathematics capability, personal capability, and social capability. The Iowa Test of Basic Skills (ITBS) served as the posttest. (All special education students were excluded from this study because they were not routinely given the ITBS.) Specifically, scores on vocabulary, comprehension, and spelling language were examined. The language area consisted of the following components: developmental language, shared characters class, spelling in context, capitalization, punctuation, context, and usage and expression. Pretest scores were compared to ensure both groups were equal.

As shown in Figure 1, the *Direct Instruction* group had higher average scores in each of the areas on the ITBS (i.e., vocabulary, comprehension, language). Also, the overall mean score on the ITBS for the *Reading Mastery* group was significantly higher than the basal reader group. Average increases were between 5% and 13% for the *Reading Mastery* group over the previous year’s scores from the basal readers.

*Reading Mastery vs. Harcourt Brace Jovanovich Basal Reading Program.* Sexton (1989) compared *Reading Mastery I Classic* (formerly called *DISTAR Reading I*) to the Harcourt Brace Jovanovich Basal Reading Program (HBJ). Both the experimental group (*Reading Mastery*) and the control group (HBJ) consisted of 40 randomly assigned Grade 1 African-American students from neighboring schools. Both schools were located in the southwestern U.S. and were rated as low socioeconomic status.

The School Language and Listening subtest of the Metropolitan Readiness Test (MRT) was used as a pretest. This subtest consisted of 18 items. Teachers read a passage and then students picked the best of three pictures most representative of the passage. Six months later the Slosson Intelligence Test (SIT) was administered and served as a posttest. The SIT addressed general comprehension, vocabulary and verbal fluency, judgment and reasoning, arithmetic reasoning, memory and concentration, and visual motor ability. Scores on the SIT were adjusted based on the results of the MRT (i.e., the MRT served as a covariant).
The experimental group received 120 minutes of instruction per day while the control group received HBJ along with supplemental language instruction for a total of 125 minutes per day.

As shown in Figure 2, posttest scores revealed that Reading Mastery Classic was significantly more effective in influencing SIT scores than was HBJ. Further, Reading Mastery Classic was equally effective for children with low and high initial language abilities.

**Reading Mastery and Corrective Reading with low-performing K–3 students.** Gunn, Biglan, Smolkowski, and Ary (2000) evaluated the effects of the Reading Mastery program and Corrective Reading (an SRA program) on the reading skills of 256 Grade K–3 students. The students came from nine schools across three school districts in three small Oregon communities. The sample included all Grade K–3 students who were either aggressive (n=100) or who performed below grade level on literacy skills (n=156). Seventeen students received special education services and 27 received Chapter 1 services. (Note: the number of students assessed across two years fluctuated. For example, complete data was obtained from 198 students after year two and partial data was obtained for six students.)

Students were grouped by ethnicity and grade and matched based on scores on the Walker-McConnell Test of Social Skills and on reading ability. The students were then randomly assigned to either an experimental group (Reading Mastery or Corrective Reading) or a control group.

The experimental group students received six to seven months of instruction in year one and nine months of instruction in year two. Additionally, 84 students attended summer sessions three days a week for five weeks, receiving reading instruction 30 minutes per day between years one and two.

Students were assessed and placed in Reading Mastery if they were beginning readers in Grades 1 or 2. Students in Grades 3 or 4 who had received reading instruction but were still nonreaders or reading below grade level were placed in the appropriate level of the Corrective Reading program.

Most students were taught in groups of two to three unless one-on-one instruction had to be provided. Students in both programs typically completed one lesson per day unless the students were English-deficient (i.e., ESL) and needed more time per lesson to have unfamiliar English vocabulary explained to them. The primary assessment used was the Woodcock-Johnson; specifically, the Letter-Word Identification, Word Attack, Reading Vocabulary, and Passage Comprehension subtests were used. Additionally, oral reading fluency was measured via three, one-minute reading samples.

As shown in Figure 3, the gain scores from before year one to after year one show that the students in the Reading Mastery and Corrective Reading programs outperformed the students in the control group in Letter-Word Identification, Word Attack, and oral reading fluency. The authors reported that the Hispanic students scored significantly lower than non-Hispanic students on oral reading fluency and almost significantly lower on Word Attack.
Figure 4 shows that the Reading Mastery and Corrective Reading group outperformed the control group in all assessments at the end of year two. The difference for oral reading fluency was statistically significant. Non-Hispanic students had a significantly greater gain in vocabulary and a near-significant greater gain in oral reading fluency than Hispanic students.

The authors also reported that students who spoke little English initially benefited from the Reading Mastery and Corrective Reading programs as much as other Hispanic students who spoke fluent English. However, these poor English speakers still significantly outperformed students who did not receive the programs. Finally, the authors indicated that the programs were equally effective across all grades and had similar effects for boys and girls.

Reading Mastery with low-performing Grade 6 students. Dowdell (1996) investigated the use of Reading Mastery (formerly called DISTAR Reading) with the 30 lowest-performing Grade 6 students on the Iowa Test of Basic Skills (ITBS). The students were from a primarily low-middle income area of Chicago. These 30 students were the lowest scoring students with stanines of 1, 2, and 3 and were instructed using Reading Mastery the following year. Other higher performing students (n=30) continued with the traditional school program and served as the control group. (The program used by the control group was not specified in this study.)

As shown in Figure 5, posttest scores from the 1995 ITBS revealed a gain of 1.06 or approximately one year of growth made by the students who received Reading Mastery. This gain was compared to 0.45, or less than a half-year gain by the students in the control group. By the end of the study, the Grade 6 control group students were at a mean grade equivalent of 6.45. The mean grade equivalent for the Reading Mastery group was 5.29.

Although the students instructed with Reading Mastery did not catch up with their peers as the author had hoped, they made significantly more gains in one year’s time than the control group. If those students had only made a gain of 0.45 or less, they would have continued to fall further behind their higher-performing peers.

Reading Mastery vs. Houghton-Mifflin Reading Series. Umbach, Darch, and Halpin (1989) compared Reading Mastery and the Houghton-Mifflin Reading Series (HM) with low-performing Grade 1 students. The participants in this study were 31 Grade 1 students in a rural community identified by their general education classroom teachers as students who were having difficulty in reading and in need of extra help. These students were randomly assigned to experimental Reading Mastery and comparison (HM) groups.

The Otis Lennon School Abilities Test and the Total Reading Score of the Woodcock Reading Mastery Test (WRMT) were used to compare the two groups prior to the intervention. No statistically significant differences were found between the two groups on either test. Both groups had IQ levels falling within the normal range.
The pretest (WRMT) included subtests in the areas of Letter Identification, Word Identification, Word Attack, Word Comprehension, and Passage Comprehension. Both groups received approximately 50 minutes of instruction every day with the focus on teaching students entry-level decoding and comprehension skills. The alternate form of the WRMT was used as a posttest.

As shown in Figure 6, the students instructed with Reading Mastery scored significantly higher on adjusted posttest mean raw scores on Word Identification (M=30.43) than did the HM group (M=17.07). On the Word Attack subtest, posttest mean raw scores were significantly higher for the experimental group (M=15.47) than the comparison group (M=1.00). The Reading Mastery group also significantly outperformed the HM group in Passage Comprehension (9.46 vs. 3.83). Finally, the Reading Mastery group outperformed the HM group in Total Reading (97.50 vs. 47.57).

Raw scores were converted into grade equivalency scores on Total Reading at the end of the year. As shown in Figure 7, students instructed through Reading Mastery were performing at a 2.0 grade level in reading compared to a 1.3 grade level in reading for the HM group. In comprehension, Reading Mastery students performed at a 1.9 grade level while students in HM scored at the 1.5 grade level.

Interestingly, children taught through Reading Mastery demonstrated more enthusiasm for reading as seen by frequent requests to take their storybooks home. The comparison group seldom sought extra opportunities to read.

Inexperienced vs. experienced Direct Instruction teachers. Brent, DiObida, and Gavin (1986) investigated the efficacy of using Reading Mastery to increase reading abilities in the Camden Direct Instruction Project with Grade 2 students. The two experimental groups consisted of a group of 26 students taught in Grades 1–2 by inexperienced Direct Instruction teachers (year one group) and the other group of 32 students taught in Grades 1–2 by experienced Direct Instruction teachers who had used Direct Instruction for more than one year (year two group). Both control groups (N=33, N=29) were in classrooms with experienced traditional teachers.

Students in Grade 2 were regularly tested in October and April using the Comprehensive Test of Basic Skills (CTBS) Level D, Form U. This test provided four scores: Word Attack, Vocabulary, Comprehension, and Total Reading. The April test scores were analyzed using the October scores as a covariant. Each of the four measures also was analyzed using covariants.
As shown in Figure 8, the experienced Reading Mastery group had significantly higher scores than the three other groups. No other statistically significant differences between group means were noted. An analysis of October means, gain means, and unadjusted April means showed that Reading Mastery was a more effective program for the experienced second-year group for Word Attack, Vocabulary, and Total Reading. This second-year group’s percentile rank also surpassed the national average of 50% on the CTBS.

Reading Mastery vs. diagnostic-prescriptive remediation. Branwhite (1983) compared Reading Mastery II Classic (formerly called DISTAR Reading II) and another reading intervention technique with 14 students (mean age of eight years, seven months) in an urban middle school. Each of those students had been assigned to a remedial reading group due to delays in reading (range of 20–40 months behind their average peers with a mean delay of 31.92 months delay). IQs for these students ranged from 74 to 108.

Seven of the students were assigned to Reading Mastery II while the other seven were taught using diagnostic-prescriptive remediation (DPR). DPR consisted of criterion-referenced assessment of phonic skills, small group teaching of sound and word discrimination, individualized activities based on phonic work cards, and a selection of phonically based published reading materials. Both the Reading Mastery group and the DPR group received 35 minutes of instruction per day by the same teacher over 110 school days. No significant differences in IQ or reading age were noted between the two groups at the onset.

The Schonell’s Graded Word Reading Test was used as a pretest and posttest. Halfway through the program, at 55 days, both groups were tested.
As shown in Figure 9, the mean age gain in months was 10.17 months for the Reading Mastery group and 6.06 months for the DPR group. No significant differences were noted between students in each group. At this stage, it was clear that Reading Mastery provided a more rapid acceleration of reading; thus, all 14 students received Reading Mastery in the second 55-day period.

In the second phase, an additional 7.54 month gain was made by the original Reading Mastery group. The DPR group, which was switched to Reading Mastery, made an average of 12.2 months gain in the second half of the program. (One student was excluded from the study due to infrequent attendance.) Again, no significant differences were found between students in each group.

Figure 9: Average gain in months for each group.

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Figure 10 shows a comparison of both groups versus an “optimistic rate of 12 months gain,” a conventional predicted gain for these students in one school year. The Reading Mastery group and the combined DPR (first 55 days) and Reading Mastery (last 55 days) group far exceeded the predicted level of gains, allowing them to learn faster than normal and catch up to their peers more easily.

Corrective Reading/DISTAR (now called Reading Mastery) with elementary school “poor” readers. Richardson, DiBenedetto, Christ, and Press (1978) investigated the effects of two methods of teaching reading to elementary school “poor” readers. One of the programs was Corrective Reading (CR)/DISTAR Reading (RM).

The CR/RM group contained 36 New York City students in Grades 2–6. These students scored in the lower quartile on the city’s standardized reading test and/or had been recommended by their teachers for remedial reading. These students also met the criteria for study involvement by being at least seven months below their chronological age (Grade 2 students) or by being at least one year below their chronological age on one of two subtests of the Peabody Individual Achievement Test (PIAT). The mean age for the students was 10.0 (range 7.0–12.7); the students had average full scale, verbal, and performance IQs of 81 (range 59–110), 81 (range 59–103), and 84 (range 61–117), respectively.

Two teachers were assigned to teach the CR/RM students. Both teachers had at least one year of experience using the programs. The teachers also received a two-day training course from SRA. Daily 45-minute sessions were conducted from mid-January through the third week in May. Thus, students had the opportunity to be exposed to 75 sessions. The students attended 84% (64) of the sessions receiving over 45 hours of total instruction.

The posttest measures used to test the effects of the CR/RM programs alone included the PIAT (Reading Recognition and Comprehension subtests) and the Gilmore Oral Reading Test (Accuracy and Comprehension).

As shown in Figure 11, the CR/RM programs improved student performance in all areas. The gain shown on the PIAT Reading subtest was statistically significant.
DISTAR vs. Johnny Right-to-Read. Summerell and Brannigan (1977) compared DISTAR Reading (now called Reading Mastery) to Johnny Right-to-Read with 12 boys and 12 girls in Grade 2. All students were in the average intelligence range but scored poorly on the Stanford Achievement Test and demonstrated poor school performance the preceding year. The Johnny Right-to-Read program stressed the development of sound-symbol relationships in a step-by-step progression and used behavior modification procedures, along with a special alphabet where five synthetic vowel characters were used to promote a consistent one-to-one sound symbol relationship.

Both programs were used for one academic year. DISTAR (Reading Mastery) was used in isolation for 30 minutes a day while Johnny Right-to-Read was used 20 minutes a day in conjunction with regular reading instruction in the classroom for an additional 30 minutes a day. All students were pretested and posttested using two subtests (Word Meaning and Paragraph Meaning) of the Stanford Achievement Test: Primary Battery. The two groups were equated for age, intelligence, initial reading level, and socioeconomic background.

As shown in Figure 13, the DISTAR (Reading Mastery) group gained 0.8 grade equivalencies compared to 0.6 for Johnny Right-to-Read.

Special Education Populations

Reading Mastery vs. Addison Wesley's Meet the Superkids. O'Connor, Jenkins, Cole, and Mills (1993) examined the effects of Reading Mastery Classic compared to Addison Wesley’s Meet the Superkids and the Superkids’ Club with 81 Grade K students with special needs in transitional classes over a 4-year period. Each year, students were randomly assigned to one of two groups using either Reading Mastery (n=43) or Superkids (n=38).

All students were tested using the McCarthy Scales of Children’s Abilities at the onset of the program, producing verbal, perceptual-performance, and quantitative scores that combined to form a general cognitive index (GCI). The Test of Early Reading (TERA) was also administered as a pretest to all students. The TERA assessed general knowledge of shapes, common symbols, letter names, matching, and word reading. The California Achievement Test (CAT) was introduced in the second year of the study as an additional pretest. This test examined reading readiness and yielded scores for Visual Recognition, Sound Recognition, Vocabulary, Comprehension, and Total Reading. Although only one statistically significant difference in pretest scores was observed (comprehension subtest of the CAT), all of the pretest scores favored Superkids; thus, an analysis of covariance was computed to adjust posttest scores.
The **Reading Mastery** group completed between 50 lessons of **Reading Mastery I** and 20 lessons of **Reading Mastery II**. The **Superkids** completed between the 13 letterbooks of **Meet the Superkids**; the first five letterbooks in the **Superkids’ Club**. Reading instruction for each of the two groups lasted 30 minutes per day.

At the end of Grade K, posttest scores on the TERA and CAT did not reveal any statistically significant differences between the two groups. The authors then investigated whether a certain number of lessons in a program were required to demonstrate greater gains. They calculated median progress points for each group (**Reading Mastery I**, lesson 140; **Superkids Letterbook**, 13) and found the “advanced progress” **Reading Mastery** students significantly outperformed the “limited progress” students on CAT Total Reading, Visual Recognition, and Comprehension, and on the TERA posttest. In comparison, the limited and advanced progress students in **Superkids** did not show statistically significant differences on any of the reading measures. The advanced progress **Reading Mastery** and **Superkids** groups were then compared.

As shown in Figure 14 (below), all scores favored **Reading Mastery** with one being statistically significant (CAT Sound Recognition subtest).

![Figure 14: Adjusted posttest scores on the California Achievement Subtests (CAT) and Total Reading and on the Test of Early Reading (TERA) for the Direct Instruction (Reading Mastery) group and the Superkids group.](image-url)
Reading Mastery vs. basal readers with students with learning disabilities. Kuder (1990) compared Reading Mastery (formerly called DISTAR Reading) to a basal reader group with 48 students with learning disabilities in seven self-contained special education classrooms (mean age = eight years, 10 months). Half of the students were instructed using Reading Mastery, while the other half received instruction through a basal reader with supplementation of other outside materials.

Although pre-treatment reading scores were not obtained, all students were tested with the Peabody Picture Vocabulary Test-Revised (PPVT-R). The groups were then equated on the basis of age, sex, race, and PPVT-R scores. Both groups received seven months of instruction and were then posttested using the Woodcock Reading Mastery Test (WRMT). No statistically significant differences were found after seven months of instruction. However, the authors speculated that the Reading Mastery group students were significantly poorer readers initially and may have made greater progress overall.

In order to test this possibility, students were again assessed at the end of the second year. After the second year, 34 of the students were located and retested using the WRMT. Eighteen of the students were receiving their second year of Reading Mastery, eight continued to receive the basal reader instruction, and the remaining eight had switched to Reading Mastery.

As shown in Figures 15 and 16, greater gains were seen for the Reading Mastery groups at year two in reading grade and reading age; however, none of the differences reached statistical significance.

Changes in year one and two reading scores also were examined. The Reading Mastery groups made the most progress on Word Identification and Word Attack subtests with the changes in Word Identification being statistically significant.

Longitudinal effects of Direct Instruction reading. Gersten and Maggs (1982) studied the cognitive and academic progress of 12 adolescents whose IQs on entry to the program placed them in the high moderate range of mental retardation. These students were evaluated again after five years of DISTAR Language (now called Language for Learning) and DISTAR Reading (now called Reading Mastery) instruction.

The group started DISTAR Language I initially and after 18 months began DISTAR Reading I. After five years, the group was nearly finished with DISTAR Language III and had just started DISTAR Reading III.
The Stanford-Binet was used to assess pre- and post-program scores. After correction for regression was made, the mean IQ at entry was 41.9 (SD = 2.6). As shown in Figure 17, at the end of five years the mean IQ was 50.6 (SD = 5.4). This is a gain of over a half of a standard deviation. If this effect was due to regression alone, the mean IQ would have been 44.8 on the posttest, still over a third (0.36) of a standard deviation gain.

In addition to IQ gains, these students were also performing at a late Grade 3 level in reading as assessed by Australian standardized tests in reading and language.

**DISTAR vs. Palo Alto Reading Program.** Stein and Goldman (1980) compared the effects of DISTAR Reading (now called Reading Mastery) and the Palo Alto Reading Program on primary students with learning disabilities. Both programs had been shown to be effective for students with average learning abilities. Although the Palo Alto Reading Program was phonics-based and emphasized decoding and comprehension skills, greater flexibility was allowed on the part of the teacher in that program. In addition, less stress was placed on student mastery of each step before moving on to the next skill in the program. DISTAR Reading required mastery of all skills by all students before moving on.

Group one (DISTAR Reading) consisted of 26 boys and four girls between the ages of six and eight. The mean IQ for this group was 98.7. The average time spent in the DISTAR Reading program was 10.9 months. Group two (Palo Alto Reading Program) was made up of 25 boys and 8 girls between the ages of six and eight with an average IQ of 101.4.

The average time spent on Palo Alto Reading was 10.8 months. Both groups spent 60 minutes per day on reading instruction. Students in both groups were average or above average in intelligence but were easily distracted, were overactive, had problems attending, and had difficulty staying on task.

Scores on the Peabody Individual Achievement Test (PIAT) were used as pretests and posttests. After the pretest, the groups were not found to be significantly different in reading recognition or reading comprehension.

As shown in Figure 18, posttest scores revealed a significant difference between the mean scores of each group, indicating the outcomes for the DISTAR Reading group were considerably better. The mean gain in raw scores in combined reading recognition and reading comprehension for DISTAR was 15.88 months and 7.50 months for Palo Alto Reading. Therefore, the students in the DISTAR group made greater gains than would be expected of students without disabilities. This difference between scores was attributed to the program differences, since other variables that could have accounted for the difference were controlled.

The authors concluded the DISTAR (Reading Mastery) program’s emphasis on skill mastery and the breakdown of specific components of reading may have contributed to the higher degree of success found with the DISTAR Reading program.