Rural Education, Volume 1, Number 2, Winter, 1983

Increased Student Achievement in Reading: One District's Strategies[1]

LINDA A. MEYER[2]

This evaluation research report looks at the changes in reading performance for the students in one rural school district from 1965 through 1980. During those years, the district moved from 28.5 per cent of its second grade students at or above grade level to 88.2 per cent at or above grade level. Similar gains are demonstrated in first and third grade. These gains are discussed in terms of: (1) phonics first, then basal reading instruction; (2) sponsorship; and monitoring and evaluation that resulted from the district's participation as a Follow Through site in the federally supported Follow Through Program.

In 1968 Follow Through was born. The federal government selected 138 communities to become Follow Through sites, and 19 educational centers at universities or corporations to become Follow Through sponsors. Each sponsor had a specific educational approach, varying from the open classroom advocated by the Bank Street College of Education to the highly structured direct instruction approach of the University of Oregon. Follow Through was designed to be a multi-model approach: Sponsors operating within public school districts were to be free to develop programs. They could use the materials and techniques of their choice.

In 1977 Abt Associates, an independent consultant under Office of Education contract, published an extensive longitudinal evaluation of the first two cohorts (5-6 years) of Follow Through. After examining sites involving the nine largest sponsors, the report cited Oregon as producing the greatest improvement in Basic Skills Achievement (word knowledge, math computation, spelling, and language) among low income children [9]. The site described in this article was not part of the Abt evaluation, but the school district and the sponsor each collected comparable data on it.

Additional data collected by the sponsor [1] show Oregon students performing on the average at the 82nd percentile in reading on the Wide Range Achievement Test (WRAT), the 40th percentile in Metropolitan Achievement Test (MAT) reading, about the 53rd percentile in WRAT and MAT arithmetic, about the 50th percentile on WRAT and MAT spelling, and at the 51st percentile on MAT Language.

In this article I shall describe the evolution of the reading program in one rural site, the improvement in reading that resulted, and the conditions of implementation in which the changes took place. The implementation changed because of the combined efforts of the sponsor directing from the outside and the district personnel evaluating and making modifications from the inside. The new practices were assimiliated because the project replaced existing practices. Rosenshine [6] has concluded that assimilation is most likely to occur with the replacement of practices, an emphasis on training that focuses on practical issues, and with curriculum materials developed by the project staff. The East Las Vegas site exemplifies each of these conditions.

The site described here is the East Las Vegas School District in Las Vegas, New Mexico, population 15,000. Las Vegas is about halfway between Santa Fe and Taos. The primary industry is ranching. It is important to study the Las Vegas site because it is the highest-performing site that Oregon sponsors, significantly higher than the Oregon sites as a whole. The high performance of the site may be due, in part to the students' entry into the Follow Through program at higher percentile levels than the average Follow Through student from other sites. But, this initial advantage is offset somewhat by the fact that the East Las Vegas students are first graders when they enter Follow Through, and they have just three years in the program, whereas most of the Oregon sites have four year Follow Through programs that begin in kindergarten.

Setting

Las Vegas has two school districts, despite the town's small size. The East District was one of the original Office of Education candidate districts for Follow Through site status in 1966. The West district was not selected as an OEFT candidate, and to date has not implemented a Follow Through-type program in its schools. Economically and ethnically, however, the two districts are quite similar. East Las Vegas selected the Direct Instruction Model of Follow Through for its elementary schools in 1967. Most of the students in the seven classes at each grade level have Spanish surnames. In fact, seventy-eight per cent of the students come from homes where Spanish has a dominating influence. A majority of the students (52%) are Title I eligible. Each classroom

[1]I would like to acknowledge contributions by Ann Costello and Lucille Stanfield who supervised the teachers and paraprofessionals, and Guy Jacobus, the Director of the project in East Las Vegas. Glenda Ann Hewlitt was the Project Manager for the first six years of the project. She initiated many of these changes. Russell Gersten helped with the data analysis and interpretation.

[2]From the University of Illinois at Urbana-Champaign, Center for the Study of Reading, 51 Gerty Drive, Champaign, Illinois 61820, U.S.A.

employed a teacher and an aide through the 1979-1980 school year.

Evolution of Direct Instruction Reading

Prior to 1966 the meaning-emphasis method with traditional basals was the principal approach for teaching beginning reading. The district employed a variety of materials in reading instruction. Children frequently found themselves studying from a different basal series in each of their first three grades, adding the problem of inconsistent approach and vocabulary to the preexisting problems of second language and poverty. The district did not use published language programs in the primary grades. Reading periods lasted about 30 minutes a day in first grade. In second and third grade, additional reading time was added in other content areas, but the basic 30 minute reading group continued. There was little monitoring of teacher and student achievement, though the administrators in the district recognized the need to do more. Classroom organization was "traditional," with classes divided into three groups for reading.

Phase I: Baseline

In 1966 things began to change. Under a Follow Through grant, East Las Vegas instituted a new program of reading in its first grade classes. In these rooms, traditional small group teaching with its high proportion of loosely-supervised silent reading and its independent seatwork gave way to small-group instruction with high levels of corrective feedback. Students who failed to master basic skills were recycled back through their programs until they could perform all steps in the sequence successfully. Teacher aides were assigned to every classroom, and teachers and supervisors focused on the lowest performers. They adapted teaching techniques to guarantee greater success for more students.

Yet district personnel knew that their pupils' reading scores were still low. (See Table 1) Seventy-seven per cent of third graders were below grade level. They determined that the meaning-emphasis approach, which they had been using, was unsuccessful with a high percentage of the students. They wanted to find materials that included more practice on a greater number of pre-reading and reading concepts. They also wanted materials in which the student practice was directly related to the teacher's presentation. At about the same time that the teachers and supervisors were looking for more successful techniques for teaching beginning reading, the federal government selected East Las Vegas to become a Follow Through site. Follow Through funding meant two things, additional funds for materials, supervisors, and paraprofessional aides, and adoption of a "sponsor" with the committment to implement the sponsor's program.

Phase II: Changes Initiated by the Sponsor

In 1969 the district adopted the Direct Instruction (University of Oregon) Follow Through Model. The adoption brought about major changes, including:

1. *The use of carefully designed teaching materials.* The Direct Instruction model specifies the materials for use in reading, language, and arithmetic. These materials are published by S.R.A. They are known as Distar Reading, Language, and Arithmetic. Concepts are introduced in small steps (e.g. letter

Table 1

Percentage of Students At National Norm or Above Stanford Achievement Test

	First Grade		Second Grade		Third Grade	
Year	Number of Students	Percentages	Number of Students	Percentages	Number of Students	Percentages
1965-1966			238	28.5	215	21.3
1966-1967			259	31.2	228	23.6
1967-1968			234	32.4	227	26.7
1968-1969	(Before intervention)		276	43.4	248	29.0
1969-1970	(After intervention)		243	40.8	254	37.8
1970-1971	309	46.2	220	51.8	276	36.0
1971-1972	213	53.5	282	51.1	218	39.0
1972-1973	208	69.7	217	52.9	277	57.0
1973-1974	174	60.9	190	54.7	203	70.4
1974-1975	189	65.8	167	72.4	184	72.8
1975-1976	166	73.4	169	65.6	160	73.1
1976-1977	182	78.5	160	80.9	175	69.7
1978-1979	152	98.6	187	94.1	165	83.6
1979-1980	145	99.3	168	88.2	188	82.5

*Prior to 1971 testing was done in the fall of the year, therefore, First Grade students were not tested.

sounds before letter names, and sound blending before whole word reading). Often the teacher demonstrates what the children are to do before they begin to practice. Once the teacher is convinced that the children are performing well on the concept, they begin independent practice. Concepts that will be used late in a program are taught as separate subskills earlier. See Engelmann and Carnine [3] for more detailed descriptions of this theory of instructional design.

2. *More small-group teaching time.* Students are taught in groups of six to ten. They are more actively involved in small group instruction. They fool around less, and receive more feedback. Teachers can monitor the students' progress more effectively. Students are ability grouped for reading, language, mathematics, and bi-lingual instruction.

3. *Active student response.* Students and teachers talk a lot. Students respond hundreds of times in a 30 minute period, and teachers offer some feedback to each response. Most of the responses are oral. This is highly interactive teaching. Oral practice is followed by independent worksheets that require the students to use skills they have just learned and practiced during the group sessions.

4. *Emphasis on correction procedures.* The materials have procedures specified within them for correcting the most predictable mistakes. Errors often require additional practice on early concepts; teachers are trained to anticipate common errors. A great deal of teacher training time is spent practicing correction procedures.

5. *Criterion-referenced testing of student performance in reading, language, arithmetic, and Spanish.* Students take tests in one of the three basic skills areas every two weeks. These tests serve the purpose of monitoring both the students and the teachers. With these monitoring procedures, the program supervisors know where students are strong and where they are weak, when to accelerate, or review. The supervisors can also determine whether teachers are effective.

6. *Time on task.* About seventy-five per cent of the school day is allocated to basic skills instruction. This was a great increase over time scheduled in previous years. Students get rewards for working either independently, or with the teacher in small groups. The goal is to have students working hard all of the time that they have assignments.

In the earlier years of the project, the core curriculum in grades 1, 2, and 3 was the materials specified by the sponsor in reading, language, and arithmetic. As the program evolved and teachers became more skilled in direct instruction teaching techniques, the curriculum expanded to include systematic instruction in a variety of basal readers. The evolution was accomplished by the consultant from Oregon working with the East Las Vegas supervisory and curricular staffs.

Phase III: Refinements made by the Site

When supplementary reading in basals was first introduced in third grade, it was hoped this would help prepare students for the transition into fourth grade. But, it was soon discovered that students needed more time to get ready for the type of reading matter and instruction that fourth grade held. It was also believed that the students could start reading basals earlier than third grade. Teachers and supervisors wanted to introduce materials with expanded reading vocabularies. They also wanted the students to read more material at each grade level. They wanted to increase the variety and amount of reading material to increase fluency. Chall [2] has since prescribed in-level practice for these very reasons.

In 1974 basal reading began in the first grades. Students who had finished about 90 per cent of the sponsor's level one reading program started reading in the basal. The lessons included reading in the direct instruction materials and in one of the basals. The supervisors were concerned that students would have trouble with less consistent vocabularies or a "traditional" typefaces because Distar reading uses a special Helvetica typeface that includes 40 lower case symbols and capital I, several joined letters (e.g. th, sh), or modified letters (p, b, a, g), to minimize confusion in the orthography. Careful observations by the supervisors and teachers proved that the students barely noticed the differences in type. Few children had difficulty. Could it be that the children could move even faster?

East Las Vegas found part of the answer in a direct instruction reading program a little less than half the length of the program that they had been using. They began using this accelerated program in all first grades in 1976. Children who need to move a little more slowly return to the longer program for a few lessons. When they can again move faster, they return to the shorter program. With the faster program, the basals were introduced sooner. The students were reading more, faster.

Once done with the shorter direct instruction program, students began the second-level direct instruction reading program. Basal practice continued without interruption. Teachers either scheduled two reading groups for each group of students, or the students read from both reading programs in a 60 minute reading group. Ginn 360, Houghton Mifflin, Economy, and Scott Foresman are the most common basals used. Typically, teachers used the "easiest" basal first. As soon as groups finished the book, they began the same level in a different series. Practice in several series at the same level provided exposure to new vocabulary of comparable difficulty.

The direct instruction reading programs concentrate on literal comprehension, so beginning in 1978, inservice training programs for teachers focused on developing inferential questions for the direct instruction programs and the basal readers. There has been a marked increase in the percentage of inferential questions asked during oral reading. Teachers concentrate on questions such as, "Why do you think Jane told him to do that?" and "How was the turtle like the horse?"—questions for which the children have to figure out the answers.

Recent preliminary analyses of audio taped reading groups show that first grade teachers now ask about 85 per cent literal questions and 15 per cent inferential questions. Second grade teachers are asking about fifty per cent literal and fifty per cent inferential questions. Third grade teachers emphasize inferential understanding with up to 75 per cent inferential questions. Recent research by Hansen and Pearson [4] produced similar findings. Low-performing students receiving inferential strategy practice gained significantly on standardized tests. It seems that low performers need help relating what they know to what is in the text. Written comprehension questions are assigned as boardwork as early as first grade.

The children copy and answer these questions for independent work. Boardwork gradually expands to include vocabulary study.

When direct instruction reading was used alone, teachers scheduled thirty minute reading groups. Teacher-directed reading instruction time has now doubled. In addition to the 60 minutes a day of teacher-directed instruction, students spend approximately 30 minutes a day working independently. Thus, Time on Task, or Academically Engaged Time [10] emerges as another important change that has correlated positively with student achievement in other settings [7; 8]. The common findings are that greater amounts of time on task produces greater student achievement.

Language instruction has accelerated, too. Classroom observations by supervisors and criterion test performance suggested as early as 1975 that the children could move quickly through the direct instruction language program in first grade. In the fall of 1977 all first graders began in the second level language program. They skipped the first level completely. While the lowest-performing students had a few problems with the first few lessons, the children mastered the concepts. Everyone agreed that the students gained more from starting in the second level. It is possible that the early shift to more complex language instruction has contributed greatly to the gains in reading comprehension. As Jenkins and Osborn [5] have pointed out, low-performing children need direct instruction in oral and written language. It is not surprising that improved reading comprehension skills could result.

The emphasis has shifted in all grades from the implementation of particular programs to mastering concepts by a certain time. Talk centers more around where a first, second, or third grader "should be." Teachers work from hierarchical lists of concepts. They are responsible for checking their students out. Each child is accelerated as much as possible. So, students are moving faster because they begin at higher levels, and they move as quickly as possible through each level.

These accelerated procedures are possible in part because students are monitored every two weeks on continuous progress tests, and because the staff are fairly stable and sophisticated. They use the test data to determine if the students have mastered what they were taught. They use the norm-referenced data to guide their selection of concepts.

A great deal has happened in East Las Vegas. The program has evolved as different materials have been tried and modified to meet the needs of the students. Twelve cohorts of students have completed the program. The data show the *gradual,* consistent gains in reading that have resulted.

Evaluation

The Metropolitan Readiness Test (Level II-Form P) was used as a pretest for first graders. The Metropolitan Achievement Test (MAT), the Stanford Achievement Test (SAT), achievement tests of rigorously demonstrated validity, and the Comprehensive Test of Basic Skills (CTBS) were used to evaluate the program. The University of Oregon staff trained testing personnel, supervised, and analyzed data on the MAT for cohorts 2 through 6. Testers used checklists during testing. If standardization procedures were violated, the data were discarded. The SAT, MAT, and CTBS scores collected were required for the New Mexico testing program. East Las Vegas counseling personnel supervised and monitored that testing. The test publishers scored and analyzed the data.

The Data

The data from the years 1965 through 1980 show gradual but consistent improvement in reading. On the one-way ANOVA performed across cohorts on the proportion of students at or above grade level at the end of third grade on either the SAT Complete Battery or Total Reading, the proportion of students at or above grade level differed to a statistically signficant degree ($F[3,3004] = 65.2$, $p<.001$). The percentage of East Las Vegas students in first grade reaching or surpassing the national norm on the SAT Total Battery has *always* increased. Table 1 shows only 28.5 per cent of the district's second grade students at or above grade level in 1965-1966, before implementation of the Direct Instruction program. Over seventy-two per cent of the second graders were at or above grade level by 1975, and almost 90 per cent were at or above grade level in 1980. The third grade scores are similar. In 1966 only 21.3 per cent of the third graders were at or above national norms, by 1980, over 82 per cent were meeting national norms.

East Las Vegas students perform significantly higher than students in two school districts selected as comparison groups. These districts border East Las Vegas and are similar ethnically and economically. The students were tested as part of the New Mexico testing program. Results in Table 2 are for 1976, 1977, and 1978 on the SAT.

Table 2

Mean Grade Equivalent Scores on SAT for East Las Vegas Follow Through vs. Neighboring Non-Follow Through Comparison District

	End of First Grade				End of Second Grade				End of Third Grade			
	FT		Comparison		FT		Comparison		FT		Comparison	
Year	N	G.E.	N	G.E.	N	G.E.	N	G.E.	N	G.E.	N	G.E.
1975-76	111	2.34	165	1.80	81	3.05	173	2.40	101	3.90	172	3.10
1976-77	130	2.53	179	2.20	118	3.95	170	2.50	98	4.35	187	3.20
1977-78	183	2.20	170	1.95	163	3.20	175	2.60	120	4.00	168	3.40

The East Las Vegas students perform at higher levels than the comparison students in SAT Total Reading scores for all three years for which data are available. These differences persist across the three grade levels during which the Follow Through program is administered.

Implications

Two important questions remain. What have we learned from studying this district? What are the implications for districts that find themselves in positions similar to that of East Las Vegas in 1965, but who want to make dramatic changes in student achievement? The answer is complicated because of the magnitude and number of changes made over a period of years. Three categories of changes emerge.

1. *Sponsorship.* The district worked successfully to implement with a sponsor. The sponsor brought expertise in teacher training as well as direct instruction programs to the district. Then the sponsor representatives and the district staff implemented those programs and techniques in classrooms and evaluated the results. The ongoing evaluation led to the major change in the instructional program. The key issue here is that the district worked closely with an outside group of specialists, and together they effected change inside the district.

2. *Phonics first, then phonics and basal reading.* Reading instruction has evolved so that the direct instruction phonics first program is used until students are decoding accurately. Then the direct instruction programs are used with basal readers for a period of about two and a half years. Direct instruction techniques are used with both types of reading programs, and particular emphasis is paid to inferential comprehension questions in second and third grades. The natural outgrowth of these increased programs has been the doubling of teaching time for reading instruction each day. Language programs are used in first, second, and third grades to teach concepts and thinking processes critical to reading comprehension.

3. *Monitoring and evaluation.* Major advances took place in evaluation. The ongoing criterion-referenced testing provided frequent data for determining which individual teachers and students needed help, while norm-referenced data identified major areas of strength and weakness.

It is doubtful that any one of these changes could have produced the results obtained by the combined changes that together have produced these dramatic changes in student achievement.

References

1. Becker, W.C., & Engelmann, S.E. *Analysis of achievement data on six cohorts of low income children from 20 school districts in the University of Oregon Direct Instruction Follow Through* (Model Through Progress Technical Report #78-1). Unpublished manuscript, University of Oregon, 1978.

2. Chall, J.S. *Five stages of reading.* Unpublished manuscript. Cambridge, Mass: Harvard University, 1979.

3. Engelmann, S.E., & Carnine, D.W. *Theory of instruction: Principles and applications.* New York: Irvington Publishers, 1982.

4. Hansen, J., & Pearson, P.D. *An instructional study: Improving the inferential comprehension of good and poor readers in 4th grade.* In progress technical report, Center for the Study of Reading, Urbana, Illinois, 1981.

5. Jenkins, J.R., & Osborn, J.H. What next after decoding? Instruction and research in reading comprehension. *Exceptional Education Quarterly,* Spring, 1981, *2*:1.

6. Rosenshine, B.V. *Implementation and staff development.* Unpublished manuscript, Urbana, Illinois: University of Illinois, 1980.

7. Rosenshine,-B.V., & Berliner, D.C. Academic engaged time. *British Journal of Teacher Education,* 1978, *4,* 3-16.

8. Stallings, J.A. Beyond academic engaged time. *Educational Researcher,* Winter, 1980.

9. Stebbins, L.B., St. Pierre, R.G., Proper, E.C., Anderson, R.B., & Cerva, T.R. *Education as experimentation: A planned variation model. Volumes IV A-D. An evaluation of follow through.* Cambridge, Mass: Abt Associates, 1977.

10. Stevens, R., & Rosenshine, B.V. Advances in research on teaching. *Exceptional Education Quarterly,* Spring, 1982, *2*:1.