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ABSTRACT

The Perceptual Conditioning for Decoding Program, funded under a special grant from the New York State Legislature, was designed for the teaching of decoding as the first phase in learning to read to 1900 kindergarten through third grade students in eleven schools in Queens County, New York. For those target students not knowing the alphabet, a preliminary Alphabet Identification phase was used to train them in alphabet letter naming. Classes included in the program were those with students of relatively low reading scores. The remedial component of the program included additional decoding skill training. The main screening measure was the Word Analysis sub-test of the Durrell Analysis of Reading Difficulty. The program was staffed by a part-time coordinator, one full-time auxiliary trainer, one part-time teacher trainer, and sixteen part-time educational assistants. Specific evaluation objectives of the program were: (1) that 90% of the participants would identify 100 percent of a random list of the entire alphabet correctly; (2) that the decoding ability of participants in the first, second, and third grades would show a statistically significant difference between their real and anticipated post-test scores; (3) that those participants in the remedial component would show a statistically significant difference between their real and anticipated post-test scores; and, (4) that the program would parallel the program proposal. The first evaluation objective was accomplished by 91.95 percent of the participants. The second evaluation objective showed statistically significant results. Although the third evaluation objective, which dealt with the remedial component, produced mixed results, participants did make gains in their decoding skills. Program implementation paralleled the program proposal. On the basis of the program evaluation, it was recommended that the program be recycled. Tabled data are included in this report. (Author/BS)

EVALUATION REPORT

Function No. 20-63433

PERCEPTUAL CONDITIONING FOR DECODING

EVALUATION PERIOD
September, 1975 to June, 1976

Joseph S. Lechowicz, Ph. D.

An Evaluation of Selected New York City Umbrella Programs funded under a Special Grant of the New York State Legislature performed for the Board of Education of the City of New York for the 1975-1976 school year.

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CHAPTER 1. THE PROGRAM

The Perceptual Conditioning for Decoding Program was designed for the teaching of decoding, as the first phase in learning to read for 1900 K-3 students of 11 schools in Queens County, New York. (In late April, 1976, two additional schools with 240 target students entered the program). For those target students not knowing the alphabet, a preliminary Alphabet Identification phase endeavored to train them in alphabet letter naming. Some fourth graders and "Health Class" pupils were also included in the alphabet and decoding phases of the program.

District superintendents with consultation of school principals recommended schools in which the program operated. Classes included in the program tended to be those with students of relatively low reading scores. In addition a remedial component of instruction included (a) target students who were the weakest decoders, and (b) 4-6 grade students who were designated by their teachers for decoding remediation. The remedial component of the program generally included additional decoding skill training. The main screening device was the Word Analysis sub-test of the Durrell Analysis of Reading Difficulty.

The program was directly serviced by one part-time coordinator, one full-time auxiliary trainer, one part-time teacher trainer and sixteen part-time educational assistants. The coordinator directed the overall functioning of the pro-

gram including the training of personnel, testing and placement of students, and responsibility for matters of budget and personnel. The auxiliary trainer (a) assisted the coordinator in training teachers and educational assistants, (b) made monitoring field observations, (c) tested students for scheduling and placement, and (d) generally facilitated the program's functioning. The teacher trainer also assisted in training personnel and made monitoring field observation. A part-time evaluation consultant was hired to assist in program evaluation.

The educational assistants worked with the regular classroom teachers, as classes were divided in half for decoding instruction. Each instructor followed the program activities as outlined by Perceptual Conditioning for Decoding(Glass Analysis). Students received instruction four one-half hour sessions per week. The activities of each decoding session included (a) decoding individual words printed on flash cards, (b) reading at-sight words, and (c) at-sight reading from practice books correlated to the decoding instruction.

The decoding instruction included a drill sequence as designated by the Glass Analysis. This sequence of activities was used both in the regularly scheduled sessions and in the remedial sessions. The decoding program was supplemental to other reading instruction utilized by classroom teachers. The program's funding was accomplished by a special grant of the New York State Legislature performed for the New York City Board of Education. It was operational from late September, 1975 through June, 1976.

CHAPTER 2. EVALUATIVE PROCEDURES

Evaluation Objective #1: As a result of participation in the Alphabet Identification phase of the program, 90 percent of the pupil participants will identify verbally and correctly 100 percent of a "random list" of the entire alphabet.

At the outset of the program, target children in K - 3 grades were tested with a random set of the 26 alphabet letters. Those who did not identify at least 19 letters correctly remained in the alphabet identification component of the program. Thus, 486 target students were screened for alphabet study. As target students learned the alphabet letters, they were retested with a random list of letters; the correct identification of 19 or more letters demonstrated mastery and the student was phased into the decoding phase of training.

Final post-tests in alphabet identification were accomplished with 410 target students in May, 1976. The loss of target students was attributable to the (a)mobility of the students, and (b) absences during testing. The comparison results were studied through descriptive statistics.

Evaluation Objective #2: As a result of participation in the program for 60 percent or more of the sessions, the decoding level ability of pupil participants of the first, second and third grades will show a statistically significant difference between the real post-test score and the anticipated post-test score.

Target students who had mastered alphabet identification

were pre-tested and screened with the Word-Analysis subtest of the Durrell Analysis of Reading Difficulty. Thus 1467 students scoring below the fourth grade level were included in the decoding and remedial phases of the program. Target students were phased out the program throughout the year at the request of their teachers in consultation with project staff. Final post-tests were accomplished with 1070 decoding (and 194 remedial) students during May, 1976. Again loss of target students was attributable to (a) the mobility of students, i.e., early discharges of students or late entrants, or transfers to a class not participating in the program, or (b) absences during testing. All post-tests were given on a one-to-one basis. The data in the decoding phase of the program were analyzed by the real post-test vs. the anticipated post-test design.

Evaluation Objective #3: To determine whether, as a result of participation in the remedial component of the program for 60 percent or more of the scheduled sessions, the decoding level ability of pupil participants will show a statistically significant difference between the real post-test scores and the anticipated post-test scores.

The remedial phase of the decoding program included those target students selected by their teachers and/or the program staff as exceptionally weak in decoding skills. These selected students received two to four sessions per week of additional decoding skill training. Also any students in grades 4 - 6 and Health Class students in the program were seen

as partaking in the remedial phase of the program. The program staff insisted that the students here described as partaking in the remedial phase of the decoding program were a different treatment group from those students not partaking in remedial sessions. Hence they should be evaluated separately. These 194 target students were pre- and post-tested via the Word Analysis sub-test of the Durrell Analysis of Reading Difficulty. At the request of their teachers, they could be phased out of the remedial phase (remaining only in the regular decoding component) by intermediate post-testing. Final post-testing was completed during May, 1976 — all on a one-to-one basis. The data in the remedial phase of the program were analyzed by the real post-test vs. the anticipated post-test design.

Evaluation Objective #4: To determine the extent to which the program is implemented and the extent to which the program conforms with the description in the program proposal.

The evaluation of the fourth objective was accomplished through fourteen on-site field visits. All of the educational assistants were observed during instruction both in the classroom, and in small groups in remedial sessions. Also 43 teachers were observed utilizing the program. In all 768 target students were observed in the program. The coordinator, auxiliary trainer, teacher trainer, principals, and classroom teachers were interviewed. Field visits were scheduled so that each of the 11 target schools were monitored. Two schools, entering the program in April, 1976, were evaluated as to the fourth evaluation objective only.

CHAPTER 3. FINDINGS

The first evaluation objective stated: "As a result of participation in the Alphabet Identification phase of the program, 90 percent of the pupil participants will identify verbally and correctly 100 percent of a "random list" of the entire alphabet." The data on alphabet identification was gathered through post-tests of 410 target students participating in the program. These students were in grades K - 3 as well as a small number in ungraded Health Classes. Post-testing consisted in the presentation to each student of the 26 alphabet letters in a scrambled or "random" fashion. The evaluation objective called for 100 percent or 26 of 26 as mastery. The data showed that 377 of 410 students or 91.95 percent achieved mastery of alphabet letters. A summary of alphabet identification results is included in Tables 1 and 2.

TABLE 1

Mastery of Alphabet Letter Naming by Pupils

Mastery vs. Non-Mastery	Number of Pupils	Percent of Pupils
Mastery (100 %)	377	91.95
Non-Mastery	33	8.05
Total	410	100.00

These totals included (a) 164 of 181 kindergarten students at mastery or 90.61 percent; (b) 183 of 193 first graders at mastery or 94.82 percent; and (c) 28 of 33 third graders at mastery or 84.84 percent. Only three third graders and Health Class students partook in the alphabet identification phase.

TABLE 2.

Letter Naming of Alphabet Letters by Pupils

Number of Letters	Number of Pupils	Percent of Pupils
26	377	91.95
25 - 21	5	1.22
20 - 16	6	1.46
15 - 11	13	3.17
10 - 6	7	1.71
5 - 0	2	0.49
Total	410	100.00

The results demonstrated overwhelmingly that the alphabet identification phase of the program was successful and effective. For purposes of evaluation, kindergarten students were screened and post-tested in this phase of the program only. However, first, second, third graders and"Health Class" students who took part in alphabet identification training, were also included and evaluated in the decoding and remedial phases of the program.

The second evaluation objective stated: "As a result of participation in the program for 60 percent or more of the sessions, the decoding level ability of pupil participants of the first, second and third grades will show a statistically significant difference between the real post-test scores and and the anticipated post-test score." Data analysis of the 1070 target students in grades 1 - 3 participating in the decoding phase of the program was done for each grade separately based on pre- and post-test scores on the Word-Analysis subtest of the Durrell Analysis of Reading Difficulty. The t-ratios were as follows: (a) for first graders: t = 7.19

($p < .001$); (b) for second graders: $t = 14.01$ ($p < .001$); (c) for third graders: $t = 4.15$ ($p < .001$). Table 3 contains a summary of relevant data for students in the decoding phase.

TABLE 3

Pre- and Post-Test Results for Students in Decoding

Grade	N	Pre-Test Date	Pre-Test Mean	Predicted Post-Test Mean	Actual Post-Test Date	Actual Post-Test Mean	t Value	Sig.
1	421	10/75	1.38	4.38	5/76	5.70	7.19	$p < .001$
2	452	10/75	3.73	6.73	5/76	8.44	14.01	$p < .001$
3	197	10/75	5.68	8.68	5/76	9.29	4.15	$p < .001$

The scores on the Word-Analysis subtest of the Durrell are reported in a categorical nature, i.e., non-decoders, low first grade, middle first grade, high first grade, low second grade, etc., up to high sixth grade. For purposes of evaluation, the numbers from one to 19 were assigned to each interval with a value "1" assigned to the category of non-decoder, "2" to the category of low first grade, etc. The assumption was made that the intervals were equal and continuous. Hence a numerical change of three would represent one year's improvement.

Analysis of the tables indicates that all target students in grades 1-3 of the decoding program improved more than one grade level in decoding skill during the seven to eight month period between pre- and post-testing. Second graders demonstrated the greatest increase, approximately one year and six months. First graders showed a gain of about one year and five months and third graders gained one year and two months. These results parallel those of the 1974-75 project

and seem to indicate that according to the test used, second grade students show the greatest gain in decoding skills; first graders show less gain than second graders and the gain of third graders is significant though least of the three levels. These highly significant results year after year indicate the effectiveness of the program in training students decoding skills as a first step in reading.

The third evaluation objective stated: "To determine whether, as a result of participation in the remedial component of the program for 60 percent or more of the scheduled sessions, the decoding level ability of pupil participants will show a statistically significant difference between the real post-test score and the anticipated post-test score." Target students were defined as participants in the remedial component of the decoding program if (a) they were in grades 4 - 6 or in Health (ungraded) Classes, or (b) they were in grades 1 - 3 and received added skill training in decoding, over and above the four sessions per week given them with their classmates.

Analysis of data derived from pre- and post-test scores of 31 students in grades 4 - 6 of the remedial phase showed a t-ratio of 1.93 ($p < .05$). For 40 Health Class(ungraded) students, the results were non-significant ($t = -1.01$). For 123 target students in grades 1 - 3 of the remedial phase, the results of the test of significance showed non-significant results($t = -2.60$) when comparing actual post-test scores

with the anticipated post-test scores. The tests of significance for the three groups were derived by comparison of actual post-test scores and anticipated post-test scores. Table 4 contains a summary of relevant data for students in the remedial component of the decoding program.

TABLE 4

Pre- and Post-Test Results for Students in Remedial Decoding

Group	N	Pre-Test Date	Pre-Test Mean	Predicted Post-Test Mean	Actual Post-Test Date	Actual Post-Test Mean	t Value	Sig.
Grades 4-6	31	10/75	6.42	9.42	5/76	10.23	1.93	$p < .05$
Health Class	40	10/75	4.70	7.70	5/76	7.35	-1.01	ns
Grades 1 - 3	123	10/75	1.64	4.64	5/76	4.08	-2.60	ns

As explained above for Evaluation Objective #2, the Word-Analysis subtest of the Durrell reports scores in categories or intervals. Again the numbers from one to 19 were assigned to each interval beginning with non-decoder, low first grade, etc. The assumption of continuity and equality within intervals was made. Again a numerical change of three would represent one year's gain.

Despite the fact that the statistical analysis for the remedial phase gave mixed results, an examination of the data will show definite gains in decoding skills within this needy population. Students in grades 4 - 6 gained approximately one year and two months in decoding skill. Health Class students gained about nine months. Those students in grades 1 - 3 receiving the added decoding instruction gained eight months in decoding skills within the seven-to-eight month pre- post-

testing period. It seems apparent that added skill training to slow decoders did not adequately bring about the gains desired. Hence the question of time effectiveness arises. Since educational assistants schedule between 20 and 30 percent of their instructional time for remedial instruction, could part of this time be used more effectively?

Finally the project staff requested a statistical review of data derived from 35 foreign students receiving decoding instruction. From field visits, it was apparent that decoding skill training was successful with a small number of foreign speaking monitored. Anticipated gains for such a diverse population as Italian, Russian, Greek, Spanish, Korean, Israeli, etc., students could not be obtained. However, data analysis for 35 foreign speaking students in decoding showed the t-ratio to be 6.42 ($p < .01$) based on pre- and post-test scores of the Word-Analysis subtest of the Durrell. Table 5 summarizes the data for foreign students.

TABLE 5

Pre- and Post-Test Results for Foreign Students

Test	N	Pre-Test Mean	Post-Test Mean	t Value	Sig.
Word Analysis subtest	35	2.17	5.83	6.42	$p < .001$

These results indicate a gain of approximately one year and two months in decoding skills during the pre- post testing period. Such gains are remarkable when compared with gains made by the target population as a group.

The fourth evaluation objective stated: "To determine the extent to which the program is implemented and the extent to which the program conforms with the description in the program proposal." Field visits and interviews with principals, classroom teachers and project staff revealed that the program implementation did parallel the Program Proposal in terms of (a) staff, (b) objectives, (c) program activities, and (4) instrumentation.

The responsibility for the over-all functioning of the program lies with the coordinator. The auxiliary trainer exercised the daily direction, supervision and maintainence of the program and its objectives. The smoothness with which the program progressed was a result of her effectiveness and dedication. She was aptly assisted in training and monitoring of teachers and educational assistants by the part-time teacher trainer. However, the sixteen educational assistants as a group were excellent in their enthusiasm and dedication for the program, effectiveness and high professional attitude as educators, and rapport and discipline with children. The classroom teachers were exceptionally positive and complimentary toward these educational assistants. The overall excellent calibre of the program staff helped insure the completion of the program objectives.

The equipment of the decoding conditioning program included (a) decoding cards, (b) "flash-cards" containing sight words, and (c) practice books designated for specific decoding lessons. Each classroom teacher and each educational as-

sistant was never seen lacking needed instructional equipment. The decoding cards in booklet form were in the process of revision during the latter part of the program. Some teachers and educational assistants questioned whether the new materials were as effective as the older "flash card" materials.

The activities of the program were well understood and carried out. Each participating class was usually divided in two groups with the classroom teacher instructing the more advanced decoders and the educational assistant(s), the rest of the students in the program. Strict 25 - 30 minute conditioning periods were observed in each class, four times per week. Each session included 15 minutes of decoding individual words as presented on flash cards, as follows:

1. Identify the whole word and the letters and sound of the target cluster.
2. Give the sound(s) and ask for the letter or letters.
3. Give the letter or letters and ask for the sounds.
4. Take away the letters and ask for the remaining sound.

A short time was sometimes spent reading frequently appearing "sight-words." The final ten minutes of the session were devoted to sight reading in booklet readers prepared by Dr. Glass to parallel the decoding of cluster words. The main objective of the decoding conditioning session was skill building in word attack. The program was very well received by the students, especially at the kindergarten and first grades. Their group response to recitation was unanimous. As the age of the students increased, however, some

seemed to be restless and lost attention more easily. With second and third graders, smaller groups functioned better. Teachers reported that the decoding conditioning was especially beneficial to slow learners since it greatly increased their confidence in reading.

The concept of drill work was acceptable to some teachers only because of positive results with students. A small minority were lax in following the program daily. It was a tribute to the project staff that their influence with administrators and teachers kept these lapses to a minimum.

Activities of the program on the teacher-training level included training sessions in understanding the Perceptual Conditioning method and periodic follow-up meetings. Teachers' comments regarding such training sessions were positive.

Instrumentation of target students was well organized. The Word Analysis subtest of the Durrell Annalysis of Reading Difficulty was used for both pre- and post-testing and as a screening device. Teachers periodically consulted with the project staff and requested that superior decoders be screened out of the program. Those achieving the fourth grade level of decoding ability were released from the program. Remedial students were accepted for the additional decoding instruction through requests of teachers in consultation with the project staff. The beginning of the program paralleled that of the school year which was delayed by a labor dispute and rescheduling of teachers and students. These delays affected the teacher-training workshops as well as the early organization and pre-testing of the program.

Although the Program Proposal specified a target population of 1700 from 11 schools, 1879 were enrolled at the outset. Approximately 279 students moved or transferred out of the program during the year. In April, 1976, the program was expanded to include two more schools with 240 pupils. The two added schools were observed as integrating the program into the 1- 3 grades. These schools were not included in the first three evaluation objectives.

Recommendations of the 1974-75 school year evaluation study for this project were the following:

1. "The program be extended to serve the remedial population..." Funds were not made available for extension of the program to an additional population. The training of Health Class(ungraded) students was an apparent service to a new group of remedial students.

2. "It is recommended that funds be allowed for necessary additional staff who could work with youngsters who are in need of close supervision in order to learn..." Budget restrictions prevented the hiring of additional staff. Such students were attempted to be serviced by giving additional decoding instruction over and above that given to classmates.

CHAPTER 4. SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

The first evaluation objective concerning the mastery of alphabet letters for K - 3 students was accomplished by 91.95 percent of pupil participants. These results gave strong evidence of the effectiveness of alphabet identification training.

The second evaluation objective measured differences between real post-test scores and anticipated post-test scores for students in grades 1 - 3 participating in decoding skill training. The gains in post-test scores of work-attack skills was highly significant at each level. Second graders gained one year and six months; first graders, one year and five months and third graders improved one year and two months during the pre- post-testing period.

The third evaluation objective dealing with the remedial component of the program produced mixed results. In the case of remedial students in grades 4 - 6, the gain in decoding skills was significant. Gain scores of Health Class (ungraded) students in decoding were not significant. Finally results of participants in grades 1 - 3 receiving additional decoding instruction failed significantly to show anticipated gains. However, each of these groups did gain eight or more months in decoding skills during the pre- post-testing period. Finally it can be noted that foreign-speaking students showed definite gains in decoding skills — about one year and two months.

Lastly, the program implementation parallelled the Program Proposal. Therefore, based upon the extent to which the evaluation objectives were achieved, it is strongly recommen-

ded that the program be recycled.

Recommendations in redesigning the project are as follows:

1. The project staff should seriously evaluate the effectiveness of added instructional time given remedial students in grades 1 - 3. From statistical analysis, the added attention given slow students, apparently does not produce the desired gains on par with other classmates. Hence such instructional time might be better utilized with more restless students in smaller groups or with another needy population.

2. Promising results have been evidenced with foreign-speaking students. Project staff should actively seek foreign-speaking, perhaps bi-lingual, students as participants in order to more quickly integrate them as fully functioning students.

3. Because of the effectiveness of the program with general decoding students, the program staff must be maintained at its present level. If commitments to new schools are to be honored, two additional staff are necessary.