

DOCUMENT RESUME

ED 282 970

UD 025 584

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**TITLE** Analysis of School District Records to Study the Effectiveness of Chapter 1 Programs and To Conduct a Longitudinal Study of Students Involved in Chapter 1 Programs over a Five Year Period. Final Report.  
**INSTITUTION** Columbus Public Schools, OH. Dept. of Evaluation Services.  
**SPONS AGENCY** Office of Educational Research and Improvement (ED), Washington, DC.  
**PUB DATE** 30 Sep 86  
**CONTRACT** 400-86-0031  
**NOTE** 71p.  
**PUB TYPE** Reports - Evaluative/Feasibility (142)  
**EDRS PRICE** MF01/PC03 Plus Postage.  
**DESCRIPTORS** \*Academic Achievement; Compensatory Education; \*Educationally Disadvantaged; Elementary Education; Enrollment; \*Program Effectiveness; Remedial Reading; Special Education; \*Special Programs; Student Participation  
**IDENTIFIERS** Columbus Public Schools OH; \*Education Consolidation Improvement Act Chapter 1

**ABSTRACT**

This report describes a longitudinal study of pupils who were enrolled in the Columbus (Ohio) Public Schools as grade 1 students at the beginning of the 1979-80 year. Using existing pupil records, information was obtained for a 5-year period regarding pupils' service in the Chapter 1 program, other categorical programs, and special education programs. Information was also obtained regarding the reading achievement level of pupils who received the Chapter 1 treatment. The report is divided into five parts. Part I provides the findings on 11 research questions. These concerned the average number of years that students received the services of Chapter 1 and other categorical program service; enrollment of students who currently receive Chapter 1 services in relation to other categorical programs service and prior school years; the performance of former program participants on achievement tests and whether program benefits are sustained over time; and the education experience and academic progress of former Chapter 1 students. Parts II-IV describe characteristics of the school district and the special programs it offered between 1979 and 1984. Part III describes the data base that was used in the study, as well as other information in interpreting the findings in Part I. Finally, Part V contains a summary of the findings. The report includes 35 statistical tables.  
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5-22-81

Analysis of School District Records to Study  
the Effectiveness of Chapter 1 Programs and  
to Conduct a Longitudinal Study of Students  
Involved in Chapter 1 Programs  
over a Five Year Period

(Prepared for the Office of Educational Research and Improvement,  
U.S. Department of Education Pursuant to  
Contract No. 400-86-0031)

FINAL REPORT  
SEPTEMBER 30, 1986

ED282970



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## Introduction

Over the years there has been a continuing interest in both Chapter 1 service and the effect of Chapter 1 service on pupil achievement. This report describes a longitudinal study of pupils who were enrolled in the Columbus Public Schools as first-graders at the beginning of the 1979-80 school year. Using existing computerized pupil records maintained by the school district, information was obtained for a five year period regarding pupils' service in Chapter 1 programs, other categorical programs, and special education programs. Information was also obtained regarding the reading achievement level of pupils who received the Chapter 1 treatment.

The findings of the study are reported in response to 11 research questions which are divided into two categories. The seven questions in research category 1 deal with the program service patterns of pupils in the study. The four questions in research category 2 deal with the educational experiences and longitudinal reading achievement levels of pupils who had received the Chapter 1 treatment in previous years.

The report is organized into five parts. Part I provides the findings regarding the 11 research questions. Parts II-IV provide descriptive information regarding the school district and relevant programs that were provided during the five years of the study. Part III provides a description of the database that was used in the study, as well as other information that is helpful in interpreting the findings in Part I. The reader who wishes to have a thorough understanding of the findings should read Part III. Finally, Part V contains a summary of the findings.

The reader should be aware of some terms that are used in the study. CMF refers to the Consolidated Master File that was developed to answer the research questions (see Part III for a description). In the report a distinction is made between program "service" and program "participation". To be served a pupil had to be enrolled in the program for one or more days. To be a participant the pupil had to have met the program attendance criterion. That is, the pupil received the Chapter 1 treatment. The criterion for program participation varied from year to year; but to meet the criterion, the pupil had to have actually received program service for approximately 110 days.

The authors express their appreciation to the following personnel who contributed to the preparation of this report: (a) compensatory education building personnel who year after year provided pupil program service information and test data; (b) personnel from the district's Department of Federal and State Programs who provided information regarding program descriptions and budget for the years covered by the study; (c) personnel from the district's Department of Evaluation Services who year after year collected and edited thousands of pupil program service records and test data records; and (d) Karen Rockhold of the district's Department of Evaluation Services who provided valuable assistance and advice in tabulating data and who typed all drafts and the final copy.

## Part I. Research Findings

### Research Category 1

#### 1.1 What is the average number of years that students receive Chapter 1 services?

Of the 5676 pupils on the CMF, 2049 (36.1%) were served by Chapter 1 during the five-year period. Of the 3395 pupils in the school district all five years, 1533 (45.2%) were served by Chapter 1. Table 1 indicates that the average Chapter 1 service for all pupils in the study was .67 years. For those pupils who were served by Chapter 1 at least one year, the average was 1.85 years. Corresponding averages for those pupils who were in the district all five years have been included as an indication of Chapter 1 service without losses due to mobility.

Tables 2 and 3 show the number of pupils served by Chapter 1 for each possible pattern of service. The first of these is based on all pupils on the CMF. The second is limited to those pupils who were in the district all five years.

Of the 3395 pupils who were in the district all five years, 1522 (44.8%) were black students and 1648 (48.5%) were female students. The number of pupils in the subsidized lunch program was 2147 which is 63.2% of that group. For the 1533 of those pupils who were served by Chapter 1 at least one year, 763 (49.8%) were black, 699 (45.6%) were female, and 1200 (79.6%) were in the subsidized lunch program.

Table 1  
Chapter 1 Program Service  
for Pupils on the CMF

Classification	Number of Years in Chapter 1						Total	Avg.	SD
	0	1	2	3	4	5			
All pupils	3627	1018	536	318	136	41	5676	.67	1.09
In program at least 1 year		1018	536	318	136	41	2049	1.85	1.04
In district all 5 years	1862	675	415	275	127	41	3395	.90	1.23
In district all 5 years and in program at least 1 year		675	415	275	127	41	1533	1.99	1.09
In program as 1st grader		499	323	218	114	41	1195	2.06	1.14

Table 2

Pattern of Chapter 1 Program Service for  
Pupils on the CMF

Years in Program	Years					No. of Pupils	% of Pupils
	79-80	80-81	81-82	82-83	83-84		
1	X					499	49.0
		X				213	20.9
			X			106	10.4
				X		70	6.9
					X	130	12.8
2	X	X				178	33.2
	X		X			44	8.2
	X			X		36	6.7
	X				X	65	12.1
		X	X			53	9.9
		X		X		25	4.7
		X			X	30	5.6
			X	X		30	5.6
				X	X	18	3.4
					X	57	10.6
3	X	X	X			81	25.5
	X	X		X		22	6.9
	X	X			X	44	13.8
	X		X	X		13	4.1
	X		X		X	21	6.6
	X			X	X	37	11.6
		X	X	X		19	6.0
		X	X		X	30	9.4
		X		X	X	25	7.9
				X	X	26	8.2
4	X	X	X	X		28	20.6
	X	X	X		X	35	25.7
	X	X		X	X	23	16.9
	X		X	X	X	28	20.6
		X	X	X	X	22	16.2
5	X	X	X	X	X	41	100.0

Table 3

Pattern of Chapter 1 Program Service for  
Pupils in School District All Five Years

Years in Program	Years					No. of Pupils	% of Pupils
	79-80	80-81	81-82	82-83	83-84		
1	X					286	42.4
		X				147	21.8
			X			79	11.7
				X		57	8.4
					X	106	15.7
-----							
2	X	X				126	30.4
	X		X			28	6.7
	X			X		22	5.3
	X				X	56	13.5
		X	X			41	9.9
		X		X		23	5.5
		X			X	27	6.5
				X	X	26	6.3
				X	X	17	4.1
					X	49	11.8
	-----						
3	X	X	X			64	23.3
	X	X		X		18	6.5
	X	X			X	40	14.5
	X		X	X		13	4.7
	X		X		X	19	6.9
	X			X	X	32	11.6
		X	X	X		16	5.8
		X	X		X	26	9.5
		X		X	X	24	8.7
				X	X	23	8.4
-----							
4	X	X	X	X		24	18.9
	X	X	X		X	33	26.0
	X	X		X	X	22	17.3
	X		X	X	X	26	20.5
		X	X	X	X	22	17.3
-----							
5	X	X	X	X	X	41	100.0

1.2 What is the average number of years that students receive other categorical program service?

Of the 5676 pupils on the CMF, 880 (15.5%) were served by other categorical programs during the five-year period. Of the 3395 pupils in the school district all five years, 682 (20.1%) were served by other categorical programs.

Table 4 indicates that the average categorical program service was .19 years. For those pupils who were served by other categorical programs at least one year, the average was 1.19 years. Corresponding averages for those pupils who were in the district all five years have been included as an indicator of categorical program service without losses due to mobility.

Tables 5 and 6 show the number of pupils served in other categorical programs for each possible pattern of service. The first of these is based on all pupils on the CMF. The second is limited to those pupils who were in the district all five years.

Demographic information about the 3395 pupils who were in our district all five years is supplied in the findings of research question 1.1. Of the 682 pupils in that group served by some categorical program other than Chapter 1 for one or more years, 446 (65.4%) were black, 252 (37%) were female, and 518 (76.0%) were in the subsidized lunch program.

Table 4  
Categorical Program Service for  
Pupils on the CMF

Classification	Years in Other Categorical Program <sup>a</sup>					Total	Avg.	SD
	0	1	2	3	4			
All pupils	4796	723	147	9	1	5676	.19	.46
In program at least 1 year		723	147	9	1	880	1.19	.43
In district all 5 years	2713	548	124	9	1	3395	.24	.53
In district all 5 years and in program at least 1 year		548	124	9	1	682	1.21	.45
In program as 1st grader		225	100	9	1	335	1.36	.55

<sup>a</sup> No five year column appears since other categorical program service was not available to these students during the 1983-84 school year (see Part III for program information).

Table 5  
 Pattern of Other Categorical Program  
 Service for Pupils on the CMF

Years in Program	Years <sup>a</sup>				No. of Pupils	% of Pupils
	79-80	80-81	81-82	82-83		
1	X				225	31.1
		X			330	45.6
			X		129	17.8
				X	39	5.4
-----						
2	X	X			91	61.9
	X		X		6	4.1
	X			X	3	2.0
		X	X		36	24.5
		X		X	3	2.0
			X	X	8	5.4
-----						
3	X	X	X		7	77.8
	X	X		X	1	11.1
	X		X	X	1	11.1
		X	X	X	0	0.0
-----						
4	X	X	X	X	1	100.0

<sup>a</sup> Patterns including the 1983-84 school year did not occur since other categorical program service was not available in pertinent grades.

Table 6

Pattern of Other Categorical Program Service  
for Pupils in School District All Five Years

Years in Program	Years <sup>a</sup>				No. of Pupils	% of Pupils
	79-80	80-81	81-82	82-83		
1	X				167	30.5
		X			246	44.9
			X		100	18.2
				X	35	6.4
-----						
2	X	X			76	61.3
	X		X		6	4.8
	X			X	3	2.4
		X	X		30	24.2
		X		X	3	2.4
			X	X	6	4.8
-----						
3	X	X	X		7	77.8
	X	X		X	1	11.1
	X		X	X	1	11.1
		X	X	X	0	0.0
-----						
4	X	X	X	X	1	100.0

<sup>a</sup> Patterns including the 1983-84 school year did not occur since other categorical program service was not available in pertinent grades.

- 1.3 What proportion of students who currently receive Chapter 1 services also receive other categorical programs service? How is this similar to or different from prior school years?

Table 7 reports by year the number and percent of pupils served in Chapter 1 only and those pupils served in Chapter 1 and other categorical programs. During the second and third years of the study, both the number and percent of pupils served in both Chapter 1 and other categorical programs were considerably greater than for the other three years of the study.

While the number of other categorical programs available (see Part III for program information) can explain some of the changes in the number and percent of pupils served in both Chapter 1 and other categorical programs, availability alone was not always related to service. For example, in 1980-81 pupils would have been served in a state funded counseling program or the Emergency School Aid Act (ESAA) program. The major goal of both of these programs was the same as that of Chapter 1 (i.e., to improve reading achievement). During that year, 14.5% of all pupils served by Chapter 1 were served in other categorical programs. The following year, 1981-82, the ESAA component was dropped, leaving only the state funded counseling program. However, during 1981-82 the percent of pupils served in Chapter 1 and other categorical programs rose to 17.3%. The data in Table 7 do show that when all other categorical programs were no longer available, both the number and percent of pupils served in Chapter 1 increased substantially.

Table 7

## Participation in Chapter 1 and Other Categorical Programs

Year	Chapter 1 Only		Groups Chapter 1 & Catg. Prog.		Total in Chapter 1	Total CMF Pupils in School	% of CMF Pupils in Chapter 1
	N	%	N	%	N		
	79-80	1175	98.3	20	1.7		
80-81	743	85.5	126	14.5	869	4481	19.4
81-82	492	82.7	103	17.3	595	4295	13.9
82-83	481	95.8	21	4.2	502	3892	12.9
83-84 <sup>a</sup>	632	100.0	0	0.0	632	3760	16.8

<sup>a</sup> Other categorical programs were not available to the students in the study during the 1983-84 school year.

- 1.4 In prior years what proportion of students served in Chapter 1 were eventually placed in a special education program and in what type of program were they placed?

Tables 8 and 9 contain information regarding the special education programs provided to pupils who were formerly served by Chapter 1. The information in the tables was developed by working backward beginning with the 1982-83 school year. For each year, the pupils who last received Chapter 1 service that year were determined. Their special education program in a subsequent year was determined, and these pupils were excluded from consideration for any former year. Pupils not in the district for a given year were included in the "none" category in the tables. For example, there were 502 pupils who received Chapter 1 service in the 1982-83 school year. Table 8 shows that 468 (93.2%) were not in a special education program at the beginning of the 1983-84 school year. In reviewing these tables the reader should be aware that pupils in the district were not served simultaneously in Chapter 1, Developmentally Handicapped, or the Severe Learning Disabilities programs. In general, pupils in Chapter 1 are not served by special education.

The summary in Table 9 shows that 11.0% of the 1919 pupils served in Chapter 1 were in a special education program in some subsequent year. Of the 212 pupils in special education programs, over 61% were in the Severe Learning Disability program.

The 1919 pupils who were served by Chapter 1 were 44.0% black and 44.3% female. Of those pupils whose socio-economic status could be determined, 79.8% were eligible for the subsidized lunch program. The 212 pupils who were eventually placed in a special education program were 42.5% black and 27.4% female. Approximately 78.2% of this group was in the subsidized lunch program.

Table 8  
Special Education Programs\* of  
Previous Chapter 1 Pupils by Year

Year in Chapter 1	Special Education Year/Program															Total	
	80-81			81-82				82-83			83-84						
	E	L	None	E	H	L	S	None	E	L	None	A	E	L	S		None
1979-80	27	16	521	6	1	7	3	504	1	4	499	4	2	14	1	478	564
1980-81				7		12		446	1	10	435	2	2	22	3	406	465
1981-82									1	7	380	3	3	17	2	355	388
1982-83												8	4	21	1	468	502

\*A=Communication-Speech/Language  
E=Developmentally Handicapped  
H=Hearing Impaired  
L=Severe Learning Disability  
S=Severe Behavior Disability

Table 9  
 Summary of Special Education Programs\*  
 of Previous Chapter 1 Pupils

Year in Chapter 1	Special Education Program										Summary				Total
	A		E		H		L		S		Spec.Ed.		None		
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
1979-80	4	.7	36	6.4	1	.2	41	7.3	4	.7	86	15.3	478	84.7	564
1980-81	2	.4	10	2.2	0	0.0	44	9.5	3	.6	59	12.7	406	87.3	465
1981-82	3	.8	4	1.0	0	0.0	24	6.2	2	.5	33	8.5	355	91.5	388
1982-83	8	1.6	4	.8	0	0.0	21	4.2	1	.2	34	6.8	468	93.2	502
<b>Total</b>											212	11.0	1707	89.0	1919

\*A=Communication-Speech/Language  
 E=Developmentally Handicapped  
 H=Hearing Impaired  
 L=Severe Learning Disability  
 S=Severe Behavior Disability

1.5 What proportion of students placed in other categorical programs over the past 2 years received, but are no longer receiving Chapter 1 services? What proportion continue to receive Chapter 1 services?

As indicated in Part III, other categorical programs were not available to the students in this study during the 1983-84 school year. In the fourth year of the study, 56 of the 3892 CMF pupils in the school district were served by other categorical programs. Of the 56 pupils: (a) 31 (55.4%) received but were no longer receiving Chapter 1 service; (b) 13 (23.2%) received and continued to receive Chapter 1 service; and (c) 12 (21.4%) never received Chapter 1 service.

1.6 What is the frequency with which pupils who exit other categorical programs are placed in Chapter 1?

Table 10 contains information regarding the number and percent of pupils who exited other categorical programs and were served in a subsequent year in Chapter 1. The information in the table was developed by working backward beginning with the 1982-83 school year. A pupil was considered to have exited a program if the pupil was served in a given year in other categorical programs and was not served in other categorical programs in the next year.

The summary in Table 10 shows that 880 pupils exited other categorical programs between the 1979-80 and 1982-83 school years. Of this number, 330 (37.5%) were subsequently served in Chapter 1.

Table 10

Pupils Exiting Other Categorical Programs  
and Placed in a Chapter 1 Program

Year in Other Categorical Programs	Chapter 1 Service Year								Summary		Total No. Exited
	80-81		81-82		82-83		83-84				
	N	%	N	%	N	%	N	%	N	%	
1979-80	48	21.3	13	5.8	13	5.8	13	5.8	87	38.7	225
1980-81			69	16.4	36	8.6	24	5.7	129	30.6	421
1981-82					46	25.8	28	15.7	74	41.6	178
1982-83							40	71.4	40	71.4	56
<b>Total</b>									<b>330</b>	<b>37.5</b>	<b>880</b>

Of the 880 pupils who exited a categorical program other than Chapter 1, 540 (61.4%) were black and 328 (37.3%) were female. Of those pupils who subsidized lunch status could be determined, 74.5% received free or reduced price lunches. Table 10 shows that 330 of those pupils were later placed in Chapter 1. That group included 225 (68.2%) black students, 119 (36.1%) female students, and approximately 83.2% of them were in the subsidized lunch program.

1.7 What is the frequency with which students who exit Chapter 1 are placed in other categorical programs?

Table 11 contains information regarding the number and percent of pupils who exited a Chapter 1 program and were served in a subsequent year in other categorical programs. The information in the table was developed by working backward beginning with the 1982-83 school year. A pupil was considered to have exited Chapter 1 if the pupil was served in a given year in Chapter 1 and was not served in Chapter 1 in the next year.

The summary in Table 11 shows that 1773 pupils exited Chapter 1 between the 1979-80 and 1982-83 school years. Of this number, 91 (5.1%) were subsequently served in other categorical programs.

Table 11  
Pupils Exiting a Chapter 1 Program  
and Placed in Other Categorical Programs

Year in Chapter 1 Program	Categorical Service Year <sup>a</sup>						Summary		Total No. Exited
	80-81		81-82		82-83		N	%	
	N	%	N	%	N	%			
1979-80	25	4.0	13	2.1	6	1.0	44	7.0	629
1980-81			25	4.9	5	1.0	30	5.8	513
1981-82					17	4.4	17	4.4	388
1982-83							0	0.0	243
<b>Total</b>							<b>91</b>	<b>5.1</b>	<b>1773</b>

<sup>a</sup>Other categorical programs were not available to students in the study during the 1983-84 school year.

Of the 1773 pupils who exited Chapter 1, 763 (43.0%) were black, 781 (44.0%) were female, and approximately 79.4% were in the subsidized lunch program. Table 11 shows that 91 of those pupils were later served by some categorical program other than Chapter 1. That group included 54 (59.3%) black students and 20 (22.0%) female students. Of the 88 pupils whose subsidized lunch code could be determined, 70 (76.9%) were in the subsidized lunch program.

## Research Category 2

2.1 How do former program participants score on the achievement tests they must take?

2.2 Is there evidence that the gains made while in Chapter 1 program are sustained over time?

The posttest given to Chapter 1 pupils all five years of the study was the Reading Survey Test (Form JS) of the Metropolitan Achievement Tests (MAT; 1978).

The level for each grade was as follows:

Grade 1	Primer
Grade 2	Primary 1
Grade 3	Primary 2
Grade 4	Elementary
Grade 5	Intermediate

The longitudinal test given to pupils as part of the district's citywide testing program was the Reading Comprehension test of the Comprehensive Tests of Basic Skills (CTBS; 1968). Form Q, Level 2 was given at the fourth grade and Form R, Level 2 was given at the fifth grade. The normal curve equivalent (NCE) was used for all analyses reported in this section of the report. When reviewing the findings in this section, the reader should keep in mind that in order for a pupil to be served by Chapter 1, the pupil must have scored below the 33<sup>rd</sup>ile (1979-80 to 1981-82) or the 36<sup>th</sup>ile (1982-83) on a nationally standardized, norm-referenced test of reading achievement.

In order to make a fair comparison of the achievement level change from posttest to longitudinal test, it was necessary to consider test error so that confidence intervals could be developed. Several methods for doing this were investigated. After taking into consideration technical difficulties, the variables on the CMF, and the desire to provide a fair portrayal of achievement change, the following two methods were used. Both methods involved building a confidence interval around the longitudinal test score (i.e., CTBS). The confidence interval used was plus or minus one standard error of the measurement expressed in NCE points. When posttest means and longitudinal means were being compared (see Tables 12-15), the confidence interval was based on the standard error using the mean as if it were a pupil's score. When determining the percent of pupils who sustained their posttest gains (see Table 16), the confidence interval was based on the standard error of each pupil's score.

A "X" in Tables 12-14 indicates that a pupil was a Chapter 1 participant and was posttested. A participant is defined as a pupil who actually attended the Chapter 1 program for at least 80 percent of the days of the program for a given year. This indicates attendance of approximately 110 days for any given year. An "O" in Tables 12-14 indicates that a pupil was not served by Chapter 1 at all during the year. To be included in the analysis a pupil could not have been served by Chapter 1 the year of the longitudinal test. There is a duplication of pupil scores across Tables 12-14. The reader should be aware of the small number of pupils in some Chapter 1 participation patterns reported in these tables.

Tables 12 and 14 contain data for pupils who took the longitudinal test in the grade that was appropriate for the year of the study. These data show that overall there was only a slight difference in the posttest and longitudinal test means. This difference was well within the confidence interval so that on average the Chapter 1 gains were sustained for pupils in both tables. These data also show that as years of participation in Chapter 1 increased there was a decrease in the average NCE score on the posttest and the longitudinal test. It should be remembered that if a pupil scored above the program selection cutoff on the posttest, in all likelihood the pupil would not be served the next year in Chapter 1. It is of interest to note that all the pupils in Tables 12 and 14 took the longitudinal test in a grade appropriate for normal grade progress. Further, except for the group of pupils with four years of Chapter 1 participation, the average NCE for all other groups was above the 33<sup>rd</sup>ile. Data in Table 13 show that, for pupils who took the longitudinal test as fourth-graders the fifth year of the study, the longitudinal mean actually exceeded the posttest mean.

Table 15 presents a summary of an unduplicated set of scores using the longitudinal score that occurred nearest in time following the Chapter 1 posttest score. These data show that overall there was only a slight difference in the posttest and longitudinal test means. This difference was well within the confidence interval so that on average the Chapter 1 gains were sustained. Table 16 contains the change classifications for the unduplicated set of 576 scores. The table provides the frequencies and percents both with and without the application of the confidence interval. With the confidence interval applied to the data, 65.8% of the 576 pupils at least sustained their posttest level.

Table 12

Reading Achievement Scores of Former  
Chapter 1 Participants Who Took the Longitudinal  
Test as Fourth-Graders the Fourth Year

Years of Participation	Pattern of Participation	No. of Pupils	Posttest NCE		Longitudinal NCE	
			Avg.	SD	Avg.	SD
1	X 0 0	128	53.57	13.30	48.68 <sup>b</sup>	12.77
	0 X 0	82	47.58	15.40	50.70 <sup>b</sup>	12.84
	0 0 X	49	46.18	11.80	44.62 <sup>b</sup>	13.51
	-----		259	50.28	14.08	48.55 <sup>b</sup>
2	X X 0	32	49.86	17.23	46.83 <sup>b</sup>	10.85
	X 0 X	8	47.73	14.17	43.90 <sup>b</sup>	11.80
	0 X X	22	41.75	9.91	37.12 <sup>b</sup>	12.40
	-----		62	46.70	14.90	43.00 <sup>b</sup>
3	X X X	19	44.08	13.64	39.05 <sup>b</sup>	14.83
	-----		19	44.08	13.64	39.05 <sup>b</sup>
Total		340	49.28	14.29	47.01 <sup>b</sup>	13.28

Note. Using the standard error of measurement for the longitudinal test, a confidence interval was developed for the mean of the longitudinal test scores for each pattern of participation. The posttest mean was compared to the confidence interval around the longitudinal mean, and the following superscript letters were assigned:

<sup>a</sup>posttest mean greater than the upper limit of the confidence interval of longitudinal test; Chapter 1 gain was not sustained.

<sup>b</sup>posttest mean within confidence interval of longitudinal test; Chapter 1 gain was sustained.

<sup>c</sup>posttest mean less than the lower limit of the confidence interval of longitudinal test; Chapter 1 gain was exceeded.

Reading Achievement Scores of Former  
Chapter 1 Participants Who Took the Longitudinal  
Test as Fourth-Graders the Fifth Year

Years of Participation	Pattern of Participation	No. of Pupils	Posttest NCE		Longitudinal NCE	
			Avg.	SD	Avg.	SD
1	X O O O	52	31.01	17.42	48.84 <sup>c</sup>	11.86
	O X O O	23	41.98	23.75	43.50 <sup>b</sup>	17.78
	O O X O	20	42.58	16.36	42.71 <sup>b</sup>	13.60
	O O O X	14	43.56	9.21	43.21 <sup>b</sup>	16.81
		109	37.06	18.69	45.87 <sup>c</sup>	14.54
2	X X O O	27	43.18	18.46	52.83 <sup>c</sup>	15.02
	X O X O	7	46.79	7.25	46.09 <sup>b</sup>	18.63
	X O O X	8	40.86	10.64	37.88 <sup>b</sup>	23.33
	O X X O	4	47.70	21.98	42.18 <sup>b</sup>	8.63
	O X O X	1	67.70	0.00	52.10 <sup>a</sup>	0.00
	O O X X	5	37.34	9.59	35.68 <sup>b</sup>	15.49
	52	43.57	15.82	47.14 <sup>b</sup>	17.31	
3	X X X O	7	51.39	10.57	37.96 <sup>a</sup>	20.20
	X X O X	3	52.17	4.89	43.57 <sup>a</sup>	28.74
	X O X X	3	45.17	7.67	44.67 <sup>b</sup>	2.50
	O X X X	1	32.30	0.00	36.50 <sup>b</sup>	0.00
	14	48.86	9.72	40.49 <sup>a</sup>	18.09	
4	X X X X	5	40.76	3.75	34.12 <sup>a</sup>	8.65
		5	40.76	3.75	34.12 <sup>a</sup>	8.65
Total		180	39.96	17.45	45.49 <sup>c</sup>	15.53

**Note.** Using the standard error of measurement for the longitudinal test, a confidence interval was developed for the mean of the longitudinal test scores for each pattern of participation. The posttest mean was compared to the confidence interval around the longitudinal mean, and the following superscript letters were assigned:

<sup>a</sup>posttest mean greater than the upper limit of the confidence interval of longitudinal test; Chapter 1 gain was not sustained.

<sup>b</sup>posttest mean within confidence interval of longitudinal test; Chapter 1 gain was sustained.

<sup>c</sup>posttest mean less than the lower limit of the confidence interval of longitudinal test; Chapter 1 gain was exceeded.

Table 14

Reading Achievement Scores of Former  
Chapter 1 Participants Who Took the Longitudinal  
Test as Fifth-Graders the Fifth Year

Years of Participation	Pattern of Participation	No. of Pupils	Posttest NCE		Longitudinal NCE	
			Avg.	SD	Avg.	SD
1	X 0 0 0	99	53.76	14.90	49.54 <sup>b</sup>	15.38
	0 X 0 0	73	48.65	14.42	49.93 <sup>b</sup>	13.78
	0 0 X 0	34	47.78	12.85	46.32 <sup>b</sup>	13.47
	0 0 0 X	24	45.70	12.29	49.70 <sup>b</sup>	13.09
		230	50.41	14.44	49.21 <sup>b</sup>	14.35
2	X X 0 0		51.48	19.60	50.90 <sup>b</sup>	11.16
	X 0 X 0	5	51.64	17.01	41.74 <sup>a</sup>	6.49
	X 0 0 X	3	36.60	8.14	37.57 <sup>b</sup>	3.80
	0 X X 0	15	42.81	11.59	41.05 <sup>b</sup>	11.46
	0 X 0 X	8	39.48	18.94	45.15 <sup>c</sup>	17.41
	0 0 X X	7	38.87	18.94	39.13 <sup>b</sup>	17.31
	56	45.08	17.13	44.44 <sup>b</sup>	13.06	
3	X X X 0	15	46.59	11.54	41.41 <sup>b</sup>	16.08
	X X 0 X	1	34.40	0.00	30.70 <sup>b</sup>	0.00
	X 0 X X	0	-	-	-	-
	0 X X X	3	25.47	22.32	44.43 <sup>c</sup>	7.55
	19	42.62	14.99	41.32 <sup>b</sup>	14.67	
4	X X X X	3	41.63	3.41	28.73 <sup>a</sup>	19.36
	3	41.63	3.41	28.73 <sup>a</sup>	19.36	
Total		308	48.88	15.12	47.65 <sup>b</sup>	14.45

Note. Using the standard error of measurement for the longitudinal test, a confidence interval was developed for the mean of the longitudinal test scores for each pattern of participation. The posttest mean was compared to the confidence interval around the longitudinal mean, and the following superscript letters were assigned:

<sup>a</sup>posttest mean greater than the upper limit of the confidence interval of longitudinal test; Chapter 1 gain was not sustained.

<sup>b</sup>posttest mean within confidence interval of longitudinal test; Chapter 1 gain was sustained.

<sup>c</sup>posttest mean less than the lower limit of the confidence interval of longitudinal test; Chapter 1 gain was exceeded.

Table 15

Summary of Unduplicated Reading Achievement Scores of Former  
Chapter 1 Participants Who Took the Longitudinal  
Test as Either Fourth- or Fifth-Graders

Years of Participation	No. of Pupils	Posttest NCE		Longitudinal NCE	
		Avg.	SD	Avg.	SD
1	397	46.10	16.75	47.75 <sup>b</sup>	13.48
2	133	44.35	15.59	44.38 <sup>b</sup>	14.88
3	38	43.81	13.91	39.72 <sup>b</sup>	15.16
4	8	41.09	3.40	32.10 <sup>a</sup>	12.55
Total	576	45.47	16.21	46.22 <sup>b</sup>	14.17

Note. Using the standard error of measurement for the longitudinal test, a confidence interval was developed for the mean of the longitudinal test scores for each pattern of participation. The posttest mean was compared to the confidence interval around the longitudinal mean, and the following superscript letters were assigned:

<sup>a</sup>posttest mean greater than the upper limit of the confidence interval of longitudinal test; Chapter 1 gain was not sustained.

<sup>b</sup>posttest mean within confidence interval of longitudinal test; Chapter 1 gain was sustained.

<sup>c</sup>posttest mean less than the lower limit of the confidence interval of longitudinal test; Chapter 1 gain was exceeded.

Table 16

Unduplicated Reading Achievement Change Score Category  
of Former Chapter 1 Participants Who Took the  
Longitudinal Test as Either Fourth- or Fifth-Graders  
Reported With and Without the Confidence Interval Applied

Years of Participation	Change Classification	Without Confidence Interval		With Confidence Interval	
		No. of Pupils	Percent of Pupils	No. of Pupils	Percent of Pupils
	Loss	192	48.4	134	33.7
	No Change	3	.8	119	30.0
	Gain	202	50.9	144	36.3
1		397		397	
	Loss	70	52.6	45	33.8
	No Change	4	3.0	43	32.4
	Gain	59	44.4	45	33.8
2		133		133	
	Loss	20	52.6	14	36.8
	No Change	2	5.3	15	39.5
	Gain	16	42.2	9	23.7
3		38		38	
	Loss	7	87.5	4	50.0
	No Change	0	-	4	50.0
	Gain	1	12.5	0	0.0
4		8		8	
Overall	Loss	289	50.2	197	34.2
	No Change	9	1.6	181	31.4
	Gain	278	48.3	198	34.4
Total		576		576	

### 2.3 What educational experiences have Chapter 1 students had since they left the program?

Tables 17-21 give the other categorical program patterns and special education patterns for Chapter 1 participants after their last year of Chapter 1 participation. A participant is defined as a pupil who actually attended the Chapter 1 program for at least 80 percent of the days of the program for a given year. This indicates attendance of approximately 110 days for any given year. To be included in the analysis, a pupil had to be in the district all five years of the study. A "X" in Tables 17-21 indicates service and an "O" indicates no service.

Table 21 presents a summary of Tables 17-20. This summary shows that of the 848 Chapter 1 participants, 111 (13.1%) were served in special education and 230 (27.1%) were served by other categorical programs. These data also show that 544 (64.2%) were not served by either special education or other categorical programs and 37 (4.4%) were served by both some year after being a Chapter 1 participant.

Table 17

Other Categorical Programs and Special Education Service Patterns  
for Pupils Who Were Chapter 1 Participants for the Last Time  
the First Year of the Study

Other Categorical Programs Pattern	Special Education Pattern								Total
	00000	0000X	000XX	00X0X	00XX0	00XXX	0XXX0	0XXXX	
00000	168	7	2		1	8	2	10	198
000X0	3								3
00X00	6								6
00XX0									
0X000	6	3				1			10
0X0X0									
0XX00	2								2
X0000									
X00X0									
X0X00									
XX000									
XX0X0									
XXX00									
XXXX0									
<b>Totals</b>	<b>185</b>	<b>10</b>	<b>2</b>		<b>1</b>	<b>9</b>	<b>2</b>	<b>10</b>	<b>219</b>

Table 18

Other Categorical Programs and Special Education Service Patterns  
for Pupils Who Were Chapter 1 Participants for the Last Time  
the Second Year of the Study

Other Categorical Programs Pattern	Special Education Pattern							Total
	00000	0000X	000XX	00X0X	00XX0	00XXX	OXXXO	
00000	153	18	5			2		178
000X0	2							2
00X00	8	1	1					10
00XX0	1							1
0X000	19	3	2			1		25
0X0X0	1							1
0XX00	4		1					5
X0000	15	2	1			1		19
X00X0	1							1
X0X00		2						2
XX000	1							1
XX0X0								
XXX00	1							1
XXXX0								
<b>Totals</b>	<b>206</b>	<b>26</b>	<b>10</b>			<b>4</b>		<b>246</b>

Table 19

Other Categorical Programs and Special Education Service Patterns  
for Pupils Who Were Chapter 1 Participants for the Last Time  
the Third Year of the Study

Other Categorical Programs Pattern	Special Education Pattern								Total
	00000	0000X	000XX	00X0X	00XX0	00XXX	0XXX0	0XXXX	
00000	111	12							123
000X0	6								6
00X00	20	6							26
00XX0									
0X000	22	1							23
0X0X0									
0XX00	5	2							7
X0000	8	1							9
X00X0									
X0X00	2								2
XX000	5								5
XX0X0	1								1
XXX00									
XXXX0									
<b>Totals</b>	<b>180</b>	<b>22</b>							<b>202</b>

Table 20

Other Categorical Programs and Special Education Service Patterns  
for Pupils Who Were Chapter 1 Participants for the Last Time  
the Fourth Year of the Study

Other Categorical Programs Pattern	Special Education Pattern							Total	
	00000	0000X	000XX	00X0X	00XX0	00XXX	OXXXO		OXXXX
00000	112	6		1					119
000X0	4								4
00X00	11								11
00XX0	1								1
0X000	16	4							20
0X0X0									
0XX00	3	3							6
X0000	11								11
X00X0									
X0X00		1							1
XX000	6								6
XX0X0									
XXX00	1								1
XXXX0	1								1
<b>Totals</b>	<b>166</b>	<b>14</b>		<b>1</b>					<b>181</b>

Table 21

Summary of Other Categorical Programs and Special Education Service Patterns for Pupils Who Were Chapter 1 Participants for the Last Time Any of the First Four Years of the Study

Other Categorical Programs Pattern	Special Education Pattern								Total
	00000	0000X	000XX	00X0X	00XX0	00XXX	0XXX0	0XXXX	
00000	544	43	7	1	1	10	2	10	618
000X0	15								15
00X00	45	7	1						53
00XX0	2								2
0X000	63	11	2			2			78
0X0X0	1								1
0XX00	14	5	1						20
X0000	34	3	1			1			39
X00X0	1								1
X0X00	2	3							5
XX000	12								12
XX0X0	1								1
XXX00	2								2
XXXX0	1								1
<b>Totals</b>	<b>737</b>	<b>72</b>	<b>12</b>	<b>1</b>	<b>1</b>	<b>13</b>	<b>2</b>	<b>10</b>	<b>848</b>

#### 2.4 Were Chapter 1 students ever retained in grade?

Table 22 contains grade retention information for pupils who were Chapter 1 participants one or more years and were in the school district all five years. To be a Chapter 1 participant, the pupil had to attend the Chapter 1 program at least 80 percent of the program days. This represents approximately 110 days of program attendance in any given year.

The data in Table 22 indicate that of the 1255 Chapter 1 participants in the district all five years, 680 (54.2%) were never retained in grade. Of the 575 Chapter 1 participants who were retained, 324 (56.3%) were retained in the first grade only. Students who were retained but caught up had one of the following grade patterns: 11245, 11345, 12245, 12335, 13445 so that they were fifth-graders in the last year of the study.

Subsequent analysis revealed that of the 680 pupils who were never retained, 115 were Chapter 1 participants for three or more years. One interpretation of this finding is that Chapter 1 supported these pupils in maintaining a normal grade progression.

The 680 Chapter 1 participants who were never retained in grade were comprised of: 326 (47.9%) black pupils, 326 (47.9%) female pupils, and 558 (76.2%) pupils in the subsidized lunch program. The remaining 575 Chapter 1 participants were comprised of: 293 (51.0%) black pupils, 235 (40.9%) female pupils, and 482 (83.8%) pupils in the subsidized lunch program.

Table 22

## Retention of Pupils in the School District All Five Years

Retention Category	Participated in Chapter 1 At Least One Year		Never Participated in Chapter 1	
	N	%	N	%
Never Retained	680	54.2	1722	80.5
Retained but Caught Up	17	1.4	27	1.3
Retained and Did Not Catch Up	558	44.5	391	18.3
Total	1255		2140	

Part II. Characteristics of the School District  
and Special Programs 1979-80 - 1983-84

General Description

During the first year of the study the school district implemented a pupil reassignment plan in order to comply with a federal court order to desegregate the district. One of the results of the reassignment plan was to make schools similar in terms of race, pupil achievement, and socioeconomic status. This tended to equalize the opportunity for pupils to enter Chapter 1 and other categorical programs across schools.

Table 23 gives a description of the Chapter 1 and other categorical programs (i.e., DPPF, ESAA and P. L. 81-874) available in the district during the time period covered by the study. The goal of all the Chapter 1, ESAA, and P.L. 81-874 programs listed in the table was to improve academic achievement by providing direct instructional services to pupils. The state DPPF programs listed in the table had several goals, one of which was to improve academic achievement. The DPPF programs provided a variety of services other than direct instructional services to staff and pupils across the five-year time period.

Table 23

Number of Pupils Served by Program and Year  
from 1979-80 through 1983-84

Program	79-80	80-81	81-82	82-83	83-84
<u>Chapter 1/Title I</u>					
Pre-K	619				
All-Day K	542	505	415	407	451
CLEAR (Reading)	6459	8885	5968	4695	4332
Orphaned/Neglected, and Delinquent	140	143	54	165	214
CLEAR-CAI-Elementary			70	423	1040
CLEAR-CAI-Middle				274	540
Elementary BMIP (Mathematics)	948	1162	787		
<u>DPPF (State Funds)</u>					
Pre-K		593	436		
Instruc. Aides (K)			509	785	685
Instruc. Aides (Gr. 1)		1671	1686	1631	1599
Gen. Instr. Aides					
Ed. Aides (Elem & Sec)					
Parent Coord. Aides					
Secondary Developmental Reading (SDR)	2487	972	810	582	429
SDR-CAI				261	337
Home School Community Agents (HSCA)	1440	1560	1200	1200	1200
Elementary Counseling	13625	11302	9367	6953	7444

Table 23 (Continued)

Number of Pupils Served by Program and Year  
from 1979-80 through 1983-84

Program	79-80	80-81	81-82	82-83	83-84
<u>ESAA</u>					
Compensatory Ed. Services					
a. Primary Language Development	1067				
b. Intermed. Lang. Development	686				
c. CLEAR (name change from a & b)		1479			
d. Basic Math Improvement	230				
<u>P.L. 81-874</u>					
Project Move Ahead	224				

Programs funded by Chapter 1 in this five-year period were Pre-Kindergarten (Pre-K), All Day Kindergarten, OND, CLEAR, CLEAR-CAI-Elementary, CLEAR-CAI-Middle, and Elementary BMIP. Pre-Kindergarten (Pre-K) was designed to build a background of learning experiences that would prepare pupils for kindergarten. All Day Kindergarten provided underachieving kindergarten pupils with an additional half day of instruction. The Orphaned, Neglected, and Delinquent (OND) component provided instruction in reading and mathematics, as well as general tutoring, to pupils residing in institutions. The Compensatory Language Experiences and Reading (CLEAR) program served pupils in grades kindergarten through 8 who were underachieving in reading. Beginning in 1981-82, two projects within the CLEAR program featured computer assisted instruction (CAI). CLEAR-CAI-Elementary served pupils in grades 4-5, and CLEAR-CAI-Middle

served pupils in grades 6-8. The Basic Mathematics Improvement Program served pupils who were underachieving in mathematics.

Programs funded by the State Disadvantaged Pupil Program Fund (DPPF) included Secondary Developmental Reading (SDR), SDR-CAI, Home School Community Agents (HSCA), Project Move Ahead, Elementary Counseling, and several programs utilizing aides. The Pre-K program, noted above as a Chapter 1 project, was funded for two of its years under DPPF funds. Three of the programs utilizing aides (General Instructional Aides, Elementary and Secondary Educational Aides, and Parent Coordinator Aides) provided diverse services in the school setting. Instructional Aides (serving grades K and 1) were trained to provide direct instructional services in language and reading to selected pupils in the classroom setting. SDR provided instruction to secondary school pupils who were underachieving in reading. A subset of this program was SDR-CAI, which utilized computer assisted instruction in the teaching of reading. The HSCA program provided services to help disruptive pupils make positive adjustments to those elements in their lives that were interfering with their success in school. Elementary Counseling provided counseling services to elementary pupils who were having difficulties regarding social skills, self-image, and academic achievement in order to improve reading achievement.

Programs funded by ESAA included the Primary and Intermediate Language Development programs, combined in the second year and renamed ESAA-CLEAR, and the ESAA Basic Mathematics Improvement Program (BMIP). These programs were used to extend compensatory instruction in reading and mathematics to schools not served by the Chapter 1 CLEAR and BMIP programs.

Funds from P.L. 81-874 were used to operate Project Move Ahead. This project gave eighth grade pupils, who were two or more years overage the opportunity to "move ahead" from eighth grade to tenth grade to rejoin their peers.

The reader is reminded that due to the grade level of the pupils in the study, they did not have the opportunity to be served in all programs shown in the table. Because of the district's desegregation, more schools qualified for the limited Chapter 1 resources. However, funds from the federal ESAA provided additional resources to extend compensatory education services to those pupils in schools that qualified for the Chapter 1 program but were not receiving the service.

#### Pupil Demographics

Table 24 shows pupil demographics for the district, Chapter 1, and other categorical programs across the five years of the study. The table contains information for only those pupils for whom demographic data were collected. This includes all pupils listed in the "district" column in the table and all Chapter 1 pupils. The pupils counted in the "other categorical" columns in the table are a subset of the pupils given in Table 23 for programs other than Chapter 1. The table reveals that the district's racial composition changed during the years of the study. The district had a black pupil population of 39.1% in 1979-80. In 1983-84 school year, the district was composed of 44.2% black pupils. The percent of black Chapter 1 pupils was stable across the five years covered by the study with approximately half of the Chapter 1 pupils being black.

Table 24

Pupil Demographics for District,  
Chapter 1 Programs and Other Categorical Programs

Total No. of Pupils	District				Total No. of Pupils	Chapter 1				Total No. of Pupils	Other Categorical	
	Race		Sex			Race		Sex			Race	
	% Non- Black	% Black	% Female	% Male		% Non- Black	% Black	% Female	% Male		% Non- Black	% Black
6342	60.9	39.1	48.4	51.6	8708	50.9	49.1	45.3	54.7	5929	35.8	64.2
2069	59.7	40.3	48.5	51.5	10695	49.6	50.4	45.2	54.8	4237	40.0	60.0
0062	58.0	42.0	48.3	51.7	7294	48.7	51.3	44.8	55.2	2680	42.6	59.4
8651	56.9	43.1	48.6	51.4	5964	50.8	49.2	44.0	56.0	2325	47.5	52.5
7336	55.8	44.2	48.4	51.6	6577	49.1	50.9	44.6	55.4	3734	49.8	50.2

ly pupils for whom demographic data were collected. See Table 23 for total counts of pupils served.

Expenditures

Table 25 gives information regarding the expenditures for the district, Chapter 1, and other categorical programs during the time of the study. The information shows that the general fund district budget increased during the years of the study as had the Chapter 1 budget. However, the proportion of the Chapter 1 budget to the district budget was not maintained. Rather, it gradually decreased except for the last year of the study (1983-84) where a slight upturn was noted. Funds for other categorical programs were sharply reduced in 1981-82. The reason was that the district no longer qualified for the federal ESAA funding.

Table 25

District, Chapter 1, and Other Categorical  
Program Expenditures

Year	District		Chapter 1			Other Categorical		
	Pupils	Budget	Pupils Served	Budget	% District Budget	Pupils Served	Budget	% District Budget
1979-80	76342	\$152,350,235	8708	\$5,270,839	3.5	19759	\$5,822,117	3.8
1980-81	72069	154,746,837	10695	5,982,852	3.9	17577	4,597,962	3.0
1981-82	70062	172,694,532	7294	5,537,852	3.2	14008	2,926,193	1.7
1982-83	68651	189,882,801	5964	4,754,040	2.5	11412	2,943,943	1.5
1983-84	67336	212,540,802	6577	5,707,140	2.7	11694	3,248,528	1.5

### Part III. Description of the Database

#### General Description

The database used was the Consolidated Master File (CMF). The CMF was specifically designed to answer the research questions of the study. The CMF was composed of approximately 150 variables on pupils who were enrolled in the school district as first-graders at the beginning of the 1979-80 school year. Data from the 1979-80 through 1983-84 school years were collected on these pupils. After edits were applied to the CMF, there were 5676 pupils on the CMF.

Figure 1 gives the school district files used to create the CMF. The CMF was used to answer the research questions in Figures 2 and 3.

Table 26 gives the number and percent of the original 5676 pupils who were in the school district for each of the five years of the study. Tables 27 and 28 give demographic data for the first and last years of the study. A comparison of these tables shows that pupils who left the school district were non-minority female and male pupils.

The first year for which the subsidized lunch indicator was available was the 1981-82 school year. In that year, 61.5% (2643) of the 4295 CMF pupils in the school district were receiving a subsidized lunch. By the last year of the study, 65.5% (2462) of the 3760 CMF pupils in the school district were receiving a subsidized lunch.

## REVISED AFTER PLANNING MEETING (6/11-12/86)

File	File Description	Data Fields Included in CMF
PIF	The Program Involvement File for each year has information on every student involved in a compensatory program, pretest and posttest scores on standardized achievement tests (if appropriate), school(s) of service, days of program attendance and enrollment, hours of program treatment, and basic demographic information. There are multiple programs.	program code student number days of enrollment days of attendance hours of treatment test information reading test scores
TSTMSTR	The districtwide test file (TSTMSTR) for each year has test results in mathematics and reading for each student in grades 4-8. The same test battery was used from 1979-80 through 1983-84.	student number school test information reading test scores
SMF	The Student Master File is the basic file of student information for the school system and includes basic demographic data regarding the student, a free or reduced price lunch field (starting in 1981-82), and a field on involvement in special education. The SMF is a dynamic file that is updated weekly. However, the district retains a copy of the file in October of each year which reflects the official enrollment of the district for purposes of state funding programs.	student number school grade sex free or reduced price lunch ethnic code special education code birthdate

Figure 1. Representation and description of the data files integrated into the Consolidated Master File (CMF).

## REVISED AFTER PLANNING MEETING (6/11-12/86)

## Research Category 1

- 1.1 What is the average number of years that students receive Chapter 1 services?
- 1.2 What is the average number of years that students receive other categorical programs service?
- 1.3 What proportion of students who currently receive Chapter 1 services also participate in other categorical programs? How is this similar to or different from prior school years?
- 1.4 In prior years what proportion of students served in Chapter 1 were eventually placed in a special education program and in what type of program were they placed?
- 1.5 What proportion of students placed in other categorical programs over the past 2 years received, but are no longer receiving Chapter 1 services? What proportion continue to receive Chapter 1 services?
- 1.6 What is the frequency with which students who exit other categorical programs are placed in Chapter 1?
- 1.7 What is the frequency with which students who exit Chapter 1 are placed in other categorical programs?

Figure 2. Research questions relating to patterns of service to children

## REVISED AFTER PLANNING MEETING (6/11-12/86)

## Research Category 2

- 2.1 How do former program participants score on the achievement tests they must take?
- 2.2 Is there evidence that the gains made while in Chapter 1 program are sustained over time?
- 2.3 What educational experiences have Chapter 1 students had since they left the programs?
- 2.4 Were Chapter 1 students ever retained in grade?

Figure 3. Research questions relating to long-term accomplishments of children served by Chapter 1

Table 26

CMF Pupils in the School District  
for the Five Years of the Study

Year	No. of CMF Pupils	% of Original CMF Pupils	% Loss of CMF Pupils
1979-80	5676		
1980-81	4481	78.9	21.1
1981-82	4295	75.7	24.3
1982-83	3892	68.6	31.4
1983-84	3760	66.2	33.8

Table 27

Demographics for CMF Pupils in the  
School District in 1979-80

Sex	Race											
	Non-Minority		Black		Spanish Surname		Asia American		American Indian		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Female	1766	63.5	977	35.1	10	.4	27	1.0	1	0.0	2781	49.0
Male	1827	63.1	1026	35.4	6	.2	36	1.2	0	0.0	2895	51.0
Total	3593	63.3	2003	35.3	16	.3	63	1.1	1	0.0	5676	

Table 28

Demographics for CMF Pupils in the  
School District in 1983-84

Sex	Race											
	Non-Minority		Black		Spanish Surname		Asia American		American Indian		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Female	1002	55.1	800	44.0	4	.2	11	.6	1	.1	1818	48.4
Male	1067	54.9	863	44.4	3	.2	9	.5	0	0.0	1942	51.6
Total	2069	55.0	1663	44.2	7	.2	20	.5	1	0.0	3760	

### Chapter 1 Pupil Selection and NRT Tests Used

During the first year of the study the school district implemented a pupil reassignment plan in order to comply with a federal court order to desegregate the district. One of the results of the reassignment plan was to make schools similar in terms of race, pupil achievement, and socioeconomic status. This tended to equalize the opportunity for pupils to enter Chapter 1 and compensatory programs across schools. To be selected for Chapter 1, a pupil had to score at or below the 33%ile on a norm-referenced test for the years through 1981-82 and the 36%ile for the years beginning in 1982-83. The pretest could not be used as the selection test. Pupils were rank ordered on their selection test score, and pupils with the lowest scores were selected for the program.

The Reading Survey Test of the Metropolitan Achievement Tests (MAT; 1978) was used to pretest and posttest Chapter 1 pupils. Form JS was used for all testing. Since only posttest scores were used in this study, only the posttest scores are given here. These were by grade:

- Grade 1    Primer
- Grade 2    Primary 1
- Grade 3    Primary 2
- Grade 4    Elementary
- Grade 5    Intermediate

The longitudinal test scores used in this study were obtained from the school district's citywide testing program at grades four and five. The score used in the analysis was the normal curve equivalent (NCE) from the Reading Comprehension test of the Comprehensive Tests of Basic Skills (CTBS; 1968). Form Q, Level 2 was used with the fourth-graders and Form R, Level 2 was used with the fifth-graders.

Description of Programs Serving the CMF Pupils

Table 29 gives information regarding the Chapter 1 and other categorical programs included in the study. The basic goal for all these programs was to take pupils who were one or more years below grade level and to increase their reading achievement level. The major approach used in the Comprehensive Language Experiences and Reading (CLEAR) program is to use a variety of language materials and resources to improve reading skills. The elementary counseling program, which was funded by the state, used counseling techniques along with reading materials to improve reading skills.

Table 29  
Chapter 1 and Other Categorical  
Program Information

Year	Program Name	Fund Source	Grades Served	Pupils Served	Minimum Attendance Days for Longitudinal Study
1979-80	CLEAR	ESEA Title I	K-8	6459	112
	CLEAR	ESAA	1-6	1753	-
1980-81	CLEAR	ESEA Title I	K-8	8885	108
	CLEAR	ESAA	1-5	1479	-
	Elem. Counseling	State DPPF	2-4	674 <sup>a</sup>	-
1981-82	CLEAR	ESEA Title I	K-8	6038	111
	Elem. Counseling	State DPPF	2-4	527 <sup>a</sup>	-
1982-83	CLEAR	ECIA Chapter 1	K-8	5392	112
	Elem. Counseling	State DPPF	2-3	297 <sup>a</sup>	-
1983-84	CLEAR	ECIA Chapter 1	K-8	5912	110

<sup>a</sup>Includes only pupils who received direct instruction in reading. See Table 23 for the count of all pupils served.

During the five years of this study, the school district had a full range of special education programs. Programs were available for pupils with severe learning and behavioral problems, pupils with communication problems, and pupils having low-incidence handicapping conditions.

Table 30 gives information regarding the CMF pupils served in Chapter 1, other categorical programs, and special education for each of the five years of the study.

Table 30

## CMF Pupils Served in Various Programs

Year	CMF Pupils	Chapter 1		Other Categorical		Special Ed.	
		N	%	N	%	N	%
1	5676	1195	21.1	335	5.9	62	1.1
2	4481	869	19.4	469	10.5	164	3.7
3	4295	595	13.9	188	4.4	230	5.4
4	3892	502	12.9	56	1.4	240	6.2
5 <sup>a</sup>	3760	632	16.8	0	0.0	381	10.1

<sup>a</sup> Other categorical programs were not available to the students in the study during year five of the study.

Data Analysis

The Statistical Package for the Social Sciences (SPSS-X) was used to merge the required pupil data from the three major files maintained by the school district. SPSS-X was used to compute pupils' grade patterns, service patterns in various programs, and participation patterns (see definition below).

The analysis for Category 1 questions focused on describing the various service patterns within Chapter 1, other categorical programs, and special education, as well as the combination of service patterns across these three program areas. The analyses for Category 2 questions focused on pupils who were described as Chapter 1 participants. A Chapter 1 participant for a given year was defined as a pupil who attended 80 percent of the Chapter 1 program days for that year. This represented an attendance of approximately 110 days. The reason participation rather than service was used in the analyses of Category 2 questions was to study pupils who had received the Chapter 1 "treatment." SPSS-X was used extensively to complete the analyses for Categories 1 and 2.

## Part IV. Chapter 1 Program Services

### Major Changes in Chapter 1 Services

During the time period covered by the study, there were several major changes in the types of Chapter 1 services provided in the school district. First, the Basic Mathematics Improvement Program (BMIP) was dropped after the third year of the study. Chapter 1 services were provided only in the area of reading the last two years of the study. BMIP was dropped because of budgetary considerations and the thinking that reading was essential to all subject matter and, therefore, should be given priority. Second, computer assisted reading instruction was introduced the third year of the study. This was done in an attempt to provide services to more pupils per teacher. Third, because of the introduction of another categorical program (Instructional Aide Program) in the first grade starting in 1980-81, Chapter 1 gave less emphasis in the first grade and thus provided greater resources to other grades for the remaining years of the study.

### Achievement of Chapter 1 Pupils

The achievement test used in Chapter 1 was the Reading Survey Test of the Metropolitan Achievement Tests (MAT; 1978). Tables 31-35 give the pretest and posttest normal curve equivalent (NCE) for Chapter 1 pupils for each of the five years of the study. Pretest and posttest results are given for only the program that could have served the pupils in the study (i.e., Comprehensive Language Experiences and Reading (CLEAR). These tables show the average NCE change score by year and grade. It should be noted that for each of the five years, the average NCE change score represented a gain of more than one NCE point for each month of program service between the time of the pretest and the time of the posttest.

1979

1

1

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1

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1

Table 35

1983-84 Chapter 1 Comprehensive Language Experiences and Reading (CLEAR) Results  
 Minimum, Maximum, Average, and Standard Deviation of the  
 Pretest and Posttest Normal Curve Equivalents (NCE)  
 Reported by Grade Level for MAT Reading Survey Test

Grade	Number of Pupils	Pretest				Posttest				Average Change
		Min.	Max.	Average NCE	Standard Deviation	Min.	Max.	Average NCE	Standard Deviation	
K	22	1.0	33.7	13.1	10.9	27.2	64.9	51.9	10.9	38.8
1	233	1.0	64.9	26.5	16.9	1.0	74.7	47.2	16.1	20.7
2	839	1.0	61.0	32.5	12.3	1.0	79.6	41.3	15.8	8.9
3	563	1.0	72.8	32.1	14.2	1.0	86.9	39.9	14.2	7.7
4	489	1.0	93.3	32.7	11.9	1.0	69.3	33.3	12.8	0.6
5	528	1.0	77.0	28.2	12.8	1.0	82.7	35.1	12.1	7.0
6	664	1.0	79.6	29.8	12.8	1.0	86.9	39.1	10.8	9.3
7	264	1.0	54.2	32.4	10.8	1.0	75.8	36.3	13.6	3.9
8	87	1.0	77.0	29.2	13.7	1.0	63.5	36.0	15.2	6.7
Total	3689			30.8	13.2			38.7	14.2	7.9

### District Policies and Practices Regarding Resource Allocation

Chapter 1 funds are allocated to the district by the Ohio Department of Education, Division of Federal Assistance. These funds are determined by the number of pupils who are considered disadvantaged as indicated by the pupils' subsidized lunch category. Schools are ranked in order by the percent of qualifying pupils in the schools' enrollment. Those schools having the highest percent are considered to have the highest priority for allocated services. There are exceptions to the above rule in that schools with large attendance and large numbers of disadvantaged pupils are given a higher priority even though their subsidized lunch percent may not show the greatest need.

### District Policy Regarding Pupil Selection

For all five years of the study, pupils were selected for Chapter 1 services in the following manner. To be selected for Chapter 1, a pupil had to score at or below the 33%ile on a norm-referenced test for the years through 1981-82 and the 36%ile for the years beginning in 1982-83. The pretest could not be used as the selection test. Pupils were rank ordered on their selection test score, and pupils with the lowest score were selected for the program. Pupils in the district were not served simultaneously in Chapter 1, Developmentally Handicapped, or Severe Learning Disabilities programs. In general, the pupils in Chapter 1 are not served by special education.

### Part V. Summary

This report describes a longitudinal study of pupils who were enrolled in the Columbus Public Schools as first-graders at the beginning of the 1979-80 school year. Using existing computerized pupil records maintained by the school district, information was obtained for a five year period regarding pupils' service in Chapter 1 programs, other categorical programs, and special education programs. Information was also obtained regarding the reading achievement level of pupils who received the Chapter 1 treatment. Pupil demographic data and budget information were also collected. Data from these various sources were used to answer the study's 11 research questions.

The following is a summary of major findings of the study.

1. The Chapter 1 program served 36.1% of the 5676 pupils in the study. The Chapter 1 program served 45.2% of the pupils who were in the district for all five years of the study.
2. The average years of service for pupils served by Chapter 1 was 1.85 years. The average years of service for pupils served by Chapter 1 and who were in the district all five years of the study was 1.99 years.
3. Other categorical programs served 15.5% of the 5676 pupils in the study. Other categorical programs served 20.1% of the pupils who were in the district for all five years of the study.
4. The average years of service for pupils served by other categorical programs was 1.19 years. The average years of service for pupils served by other categorical programs and who were in the district all five years of the study was 1.21 years.
5. Approximately 11% of the pupils in the study were served in special education after having been served in Chapter 1. Of the pupils served in special education, over 61% were served in the Severe Learning Disability program.

6. Of the 880 pupils who exited other categorical programs, 330 (37.5%) were subsequently served by Chapter 1. Other data showed that in one year of the study, 17.3% of the pupils served in Chapter 1 were also served by other categorical programs.
7. Of the 1773 pupils who exited Chapter 1, only 91 (5.1%) were subsequently served by other categorical programs.
8. Approximately two-thirds of the pupils who received the Chapter 1 treatment sustained their Chapter 1 posttest reading achievement level on a longitudinal test given at least one year after the posttest. On average, pupils who received the Chapter 1 treatment for one or two years sustained their posttest reading levels. Pupils who received Chapter 1 treatment for three or four years tended not to sustain their posttest reading levels. Regardless of the years the pupils received the Chapter 1 treatment, their longitudinal test scores tended to be considerably higher than the selection test scores that established their eligibility for Chapter 1. This means that, while pupils in Chapter 1 for more than two years tended to score lower on the longitudinal test than on the posttest, the pupils did not usually return to the low achievement level that was the reason for their placement in Chapter 1.
9. Of the 1255 pupils who received the Chapter 1 treatment one or more years and were in the district all five years, 54.2% were never retained in grade. An additional 1.4% were retained, but caught up so that they were in the fifth grade the fifth year of the study.