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ABSTRACT

Student bodies in each of 2 Leflore County schools in rural Mississippi (1 school practically all Negro and the other mainly white) are described in terms of their academic achievement in principal subject matter areas. In both schools, pupils are enrolled from grades 1 through 12, and standardized tests were administered at selected grade levels. The analysis and results of the study are presented for each school separately, and the assumption is made and supported that achievement patterns of the 2 schools are indeed different due to differing pupil backgrounds. The report concludes with a broad general summary of each school separately and a section for utilizing test results that may be equally applicable to both schools. Median achievement tables are presented for each school, followed by general recommendations (e.g., that a testing program can yield information as to what concepts and skills should or should not be taught to assist the teachers in identifying strengths and weaknesses in the instructional program). The work was prepared under Title III of the Elementary and Secondary Education Act. [Not available in hard copy due to marginal legibility of original document.] (AN)

Leflore County School District
Mississippi

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Volume III

Pupil Achievement- Comparison of Two Schools

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Distribution of Pupils in Two Leflore County Schools on the Basis of Achievement

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The purpose of this study was to describe the student bodies in each of two Leflore County schools in terms of their academic achievement in the principal subject matter areas. The two schools selected were the Amanda Elzy School and the Leflore County School. Both enroll pupils in grades 1-12 and both have a reasonably stable enrollment pattern in the sense that their attendance areas have been fairly stable over the past few years. The Amanda Elzy pupils are all, or practically all, Negro and the Leflore County School pupils have been pricipally White. The information supplied by members of the Leflore County Administrative and Supervisory Staff indicated that the one is reasonably representative of the local schools enrolling principally Negro pupils and the other of the local schools enrolling principally White pupils.

The analyses upon which this report is based were made for each school, separately. The results will be presented for each school, separately. The information supplied to the writer indicated that the achievement status in the Negro schools of Leflore County and the achievement status in the principally White schools of Leflore County differed both in degree and in kind, and that the underlying social, economic and cultural conditions of the families of the two pupil groups differed, also. By making separate analyses of the two schools the correctness of this information could be examined; and, if true, each situation could be brought into clear forms. Consolidating the data from the two schools prior to analysis might well produce a set of central tendencies that were really representative of no existing conditions and hence would have minimal, if any, validity for purposes of educational planning.

This study was made to serve the purposed of system-wide planning and this report is addressed primarily to those responsible for such planning. It is made in terms of percentages of pupil groups and not numbers of individual pupils. The actual numbers will change from school to school and from time to time, but the percentages in the several categories will not change until instructional programs and techniques are changed, and/or until the underlying social, economic, and cultural conditions of the families of the respective communities are changed. Effecting such changes is the central purpose of educational planning.

The writer believes that this report may be disappointing to classroom teachers because it does not contribute directly to the solution of the immediate problems of instructing individual pupils. Such problems are the proper concern of classroom teachers but a quite different type of analysis would be required to get at these problems. However, the individual problems are shaped to some considerable degree by the programs, and instructional techniques of the school and by underlying community conditions, and cannot be resolved independently of planned general change. To the extent that teachers understand this, and to the extent that they participate in the planning for such change, they may see value in this report.

The report is based upon an analysis of the scores of a sample of the pupils who participated in the May, 1968, testing program of Leflore County. This program included the Metropolitan Achievement Test Battery in the lower grades and the Iowa Test of Educational Development (ITED) in the high school grades. It also included tests of general academic ability, but these results were not considered by this investigator for two reasons. The scores were not presently in a form which would make meaningful analysis possible, and the well known correlation between ability and achievement would lead to a certain redundancy if both were considered in this type of study. In addition, the achievement of pupils in baisc subject areas is generally perceived by

most people involved in educational planning as being more central than is the general ability of the pupils.

The pupil population in each school was sampled by selecting for study grades 1,4,7,9, and 11 of the Amanda Elzy School and grades 1,4,7,9, and 11 of the Leflore County School. Data were not provided for Grade 1 of the Amanda Elzy School. Grades 1,4, and 7 represent the elementary portion of the school program and grades 9 and 11 the secondary portion. The pupils in grades 1,4, and 7 were administered the Metropolitan Battery and hence can be examined sequentially to determine trends, using the same basic measuring instrument. Grades 9 and 11 can be examined in the same manner because they were administered a common test. The systematic differences between the two tests make comparisons between grades 7 and 9 very hazardous and the writer suggests that they not be made except in the most general of terms.

The scores of all pupils tested in each grade were used in this analysis except the pupils in one room at the Amanda Elzy School. Their scores differed so markedly from those of the other pupils in their grade that they were set aside and made the subject of a special report to the school system.

The curriculum areas were also sampled. Certain areas were not included because no data were available on the achievement of the pupils in them. The tests which were included were those which collectively represented most of the cognitive areas of the curriculum. The specific areas and the specific tests are outlined below.

1. Vocabulary
    a. Metropolitan-Word Knowledge-Grades 1,4, and 7.
    b. ITED # 8-General Vocabulary-Grades 9 and 11.
2. Reading Comprehension
    a. Metropolitan-Reading-Grades 1,4, and 7.
    b. ITED # 5,6, and 7, combined.

Leflore County School:

The percentage distributions of Leflore County School pupils on the basis of their vocabulary scores are shown in Table 2. The distribution for the first grade shows that relatively small percentages of these pupils scored below the national average since no band below 50 had as many as 10% of the pupils. The data show that there were some pupils, 7%, who had very limited word knowledge. There was a total of 31% of the pupils who scored between the 60th and 70th percentile points. This group, and the 35% who scored above the 80th percentile indicate that the majority of the first grade pupils have very adequate vocabularies.

The distribution for the fourth grade indicates that there is a relatively large percentage of this class who have made normal to very good progress in vocabulary development. The extremes are each represented by a few pupils. This analysis shows that most of the members have made quite normal to excellent progress. There are at least 6% who have serious vocabulary deficiencies.

The distribution for the seventh grade indicates a bunching of pupils at the middle of the range and a small percentage of pupils near the top. The bottom of the achievement scale shows larger percentages of pupils having restricted vocabularies than were found in either grades 4 or 7.

The distribution at the ninth grade level based on another test suggests that a larger than normal percentage of pupils in this grade are weak or seriously handicapped in vocabulary development. There appears to be a group, 23% who scored above the 70th percentile that have made quite good progress. There is no evidence that any pupils in this class would rank among the top 10% of ninth graders.

The data are reported in Tables which have some of the characteristics of Figures. Each table has horizontal lines representing the limits of each decade or ten percentile band. Ten percent of the norm groups scored between each pair of horizontal lines. The column on the left is the Norm Column. The numbers entered just below each horizontal line report the percentage of the Norm population for each test who scored below that line. This column should be read upward, because the percentages are cumulative starting at the bottom. The space between pairs of lines can be interpreted as containing the ten percent of the norm group who scored between the lower and upper of the two lines. For instance the space bounded by the 60 line on the bottom and the 70 line on the top is the position on the scale figuratively occupied by pupils scoring between 60 and 69, inclusive. Ten percent of the norming sample scored in each space.

The percentage of the Amanda Elzy or the Leflore County school scoring in each space is entered by grade just beneath the top line of each paid. For example, if one observes that in the space between 60 and 70 in the norm column, the number "12" is entered just beneath the 70 line in the first grade column, such an entry means that 12 % of the local first grade group scored between 60 and 69, inclusive. Furthermore such an entry means that 2 % more of the local first graders scored at this level than did the group on whom the test was normed, because exactly 10% of the norm group scored in the 60-69 percentile band. Numbers larger than 10 indicate concentrations of local pupils and entries less than 10 mean that there was a smaller percentage of local than of the norming group whose achievement was within the range indicated.

Comparisons may be made directly among grades 1, 4, and 7 because these grades were tested with the same battery, namely the Metropolitan. Direct comparisons should not be made between any of these grades and either grade 9 or grade 11, because they were tested with another test battery, namely the ITED. Grades 9 and 11 can be compared.

The analyses in each area will be presented and briefly discussed.

Vocabulary

The Vocabulary test results are presented first because of the relationship between the knowledge of words, their meanings and connotations, and achievement in all other curricular areas. A good vocabulary test is the best single predictor of academic success. Pupils scoring in the two lower bands of the Tables to be presented may be expected to have serious, indeed very serious problems, in reading a level of achievement in their school subjects that will be satisfying to them or satisfactory to their teachers. The information contained in the vocabulary tables may contribute much to the explanation of subject matter distributions presented in later tables. In this and in each succeeding area, the Amanda Elzy school will be considered first and the Leflore County School second.

Amanda Elzy School:

The data in Table 1 report the percentage distributions of the pupils in grades 4, 7, 9, and 11 in the Vocabulary area. The Table as a whole indicates that the pupils in this school are greatly handicapped in their knowledge of the meanings and connotations of words of the type that they will need to use in all of their school subjects. From 62-80% of the pupils in each grade scored in the lowest 20 percentile band of the scale. There were relatively few whose attainment in this area was equivalent to the better half of typical American school children.

TABLE I

VOCABULARY

PERCENTAGE DISTRIBUTION OF AMANDA ELZY PUPILS BY
DECADES OF PUBLISHERS' PERCENTILE SCALES
GRADES REPORTED SEPARATELY

NATIONAL NORM	METROPOLITAN Word Knowledge			ITED # 8 General Vocabulary	
	A M A N D A E L Z Y G R A D E S				
	1	4	7	9	11
90		1	0	0	0
80		0	0	1	0
70		0	0	0	0
60		0	0	1	4
50		0	3	6	1
40		0	4	2	12
30		4	5	11	6
20		15	11	17	12
10		23	20	25	29
		57		37	36

The results for the fourth and seventh grades indicate a need for a continued program of vocabulary building. It must be recognized that the limited cultural opportunities of these children, the low educational levels of many of their parents and older siblings, and their restricted range of experiences are factors contributing to their inadequacies. These facts make it all the more important that the school recognize that an integral part of the instruction in each school subject must be provision for vocabulary development and that such development must include both common words and the technical words associated with each subject area.

The situation in grades seven and nine is perceptibly better. Any one, or any combination of three factors may have produced this apparent improvement. The first is the tests themselves. The ITED test was used at the secondary level and its content may have been more familiar to the pupils. The second factor may have been the provision for vocabulary development in the eighth and higher grades. The third factor may have been drop-out. Pupils who were most seriously handicapped simply quit school before the close of the ninth grade. The data reported document the problem and the school should determine the causes and establish a program which will improve the competencies of the pupils.

Leflore County School:

The percentage distributions of Leflore County School pupils on the basis of their vocabulary scores are shown in Table 2. The distribution for the first grade shows that relatively small percentages of these pupils scored below the national average since no band below 50 had as many as 10% of the pupils. The data show that there were some pupils, 7%, who had very limited word knowledge. There was a total of 31% of the pupils who scored between the 60th and 70th percentile points. This group, and the 35% who scored above the 80th percentile indicate that the majority of the first grade pupils have very adequate vocabularies.

The distribution for the fourth grade indicates that there is a relatively large percentage of this class who have made normal to very good progress in vocabulary development. The extremes are each represented by a few pupils. This analysis shows that most of the members have made quite normal to excellent progress. There are at least 6% who have serious vocabulary deficiencies.

The distribution for the seventh grade indicates a bunching of pupils at the middle of the range and a small percentage of pupils near the top. The bottom of the achievement scale shows larger percentages of pupils having restricted vocabularies than were found in either grades 4 or 7.

The distribution at the ninth grade level based on another test suggests that a larger than normal percentage of pupils in this grade are weak or seriously handicapped in vocabulary development. There appears to be a group, 23% who scored above the 70th percentile that have made quite good progress. There is no evidence that any pupils in this class would rank among the top 10% of ninth graders.

The distribution for the eleventh grade shows a tendency for these pupils to bunch above the national median and for a somewhat smaller than normal percentage to fall below, particularly in the lowest 10%.

As a broad generalization, the data in Table 2 indicate that vocabulary development in the Leflore school is about normal, allowing for the usual variability from grade to grade. The school seems to have a smaller than normal percentage of its pupils with really excellent vocabularies. If there are not factors associated with the particular pupils in grades 7 and 9, the school should be concerned about its program for vocabulary development of the slower pupils in grades 6-9.

TABLE 2

VOCABULARY

PERCENTAGE DISTRIBUTION OF LEFLORE COUNTY SCHOOL PUPILS BY
DECADES OF PUBLISHERS' PERCENTILE SCALES
GRADES REPORTED SEPARATELY

NATIONAL NORM	METROPOLITAN Word Knowledge:			ITED # 8 General Vocabulary	
	GRADES				
	1	4	7	9	11
90	3	4	0	0	8
80	32	11	2	12	1
70	7	10	6	11	17
60	11	15	11	4	18
50	20	13	15	15	14
40	6	19	23	9	12
30	9	9	9	11	7
20	5	13	13	11	9
10	0	2	12	12	9
	7	4	9	15	5

Reading

The data upon which the analyses of Reading Achievement are based were divided from the Metropolitan Reading Test in grades 1,4, and 7. The data reported for grades 9 and 11 were obtained by combining the scores on three ITED tests. These three tests were:

ITED # 5, Ability to Interpret Reading Materials in the Social Studies

ITED # 6, Ability to Interpret Reading Materials in the Natural Sciences

ITED # 7, Ability to Interpret Literary Materials.

Thus the scores reported represent the general ability of these pupils to read and interpret the kinds of materials with which they must deal throughout much of their school day. The distributions on the three tests were quite similar indicating that there was no one area in which the attainment of these pupils was noticeably different from that in either or both of the other two. Under these conditions it was appropirate to combine the distributions and they are here reported as reading scores.

Amanda Elzy School:

The Reading distributions for grades 4,7,9 and 11 are reported in Table 3. These distributions have many of the characterstics of the distributions reported in Table I because of the close interrelationship between reading and the knowledge of the meanings of the words to be read. The percentages of the pupils in the lowest 20 percentile band are so large that these functional non-readers constitute the majority of each grade. It should also be noted that larger percentages of these pupils scored above the 40th percentile than was true in vocabulary and that these percentages become larger at the higher grades, particularly grades 9 and 11.

TABLE 3

READING

PERCENTAGE DISTRIBUTIONS OF AMANDA ELZY PUPILS BY DECADES OF PUBLISHER'S PERCENTILE SCALES GRADES REPORTED SEPARATELY

NATIONAL NORM	METROPOLITAN Reading	ITED # 5,6,and 7. Interpret Social Science Nat. Science; Literary
	AMANDA ELZY GRADES	
	1 4 7 9 11	
90	1 0 0 1	
80	3 0 0 1	
70	0 0 1 1	
60	0 0 3 4	
50	3 1 7 4	
40	4 4 6 7	
30	12 1 11 11	
20	3 5 18 16	
10	36 24 27 23	
	38 65 27 32	

The fourth grade distribution shows 74% in the lowest 20 percentile band. The remaining 26% may be classified as slow to very good readers. The seventh grade shows 89% in the lowest 20 percentile band and the remaining 11% who would be classified as slow to average readers. This downward shift may be attributable to the specific pupils involved, but it is equally likely to be attributable to the failure on the part of the school program to provide for the sustained development of reading skills during the intermediate and lower Junior high school grades. The 65% of the seventh graders scoring below the tenth percentile should be a matter of grave concern to the instructional staff.

The ninth and eleventh grade distributions should be considered good in the light of the lower grade records in reading and vocabulary. They also suggest that teaching the pupils to read, and to understand what they read in their textbooks and supplementary materials may well be the most important knowledge that the teachers in the respective courses can impart.

Leflore County School:

The percentage distributions of the pupils in the Leflore County School on the basis of their Reading scores are shown in Table 4. The data suggest that a larger than normal percentage of first grade pupils would be classified as somewhat slow readers, 20-40 percentile, and a full quota of the pupils that are poor readers, below the 20th percentile. The upper half of the range is necessarily under-represented because of the larger than normal percentages of slow readers.

The fourth grade distribution suggests that a relatively large percentage of these pupils are just good average readers. The percentage of pupils who probably have serious reading problems is relatively small and the percentage in the top two bands is somewhat larger than normal.

The seventh grade distribution shows a tendency to general weakness and the percentages at the bottom should be matters of real concern. There are relatively few really good readers in this class, if the test scores are reliable. The reader will recall that the distribution on the word knowledge test was quite similar to the Reading distribution. The ninth and the eleventh grades are quite similar in many respects. Both have relatively large percentages of their pupils in the middle bands. The ninth grade seems to have relatively more very good achievers. Allowing for chance factors in these relatively small groups, these two grades seem to be quite typical of American high school pupils.

In summary, these distributions suggest that the first grade reading program may need some attention with respect to the provision for assistance to pupils who may be only a bit slow in starting. The later primary and early intermediate programs have served these fourth graders quite well. If this seventh grade class is representative, there may be need to examine the intermediate and early Junior high school reading programs very carefully.

The children represented by the percentages in the lower two bands of this table need help. They most likely can be readily idertified because of poor performance in most subjects.

TABLE 4

READING

PERCENTAGE DISTRIBUTION OF LEFLORE COUNTY SCHOOL PUPILS
BY DECADES OF PUBLISHER'S PERCENTILE SCALES
GRADES REPORTED SEPARATELY

NATIONAL NORM	METROPOLITAN Reading			ITED # 5,6 and 7. Interpret Social Sciences Nat. Science; Literary	
	LEFLORE COUNTY GRADES				
	1	4	7	9	11
90	5	4		3	13
80	14	19	4	7	10
70	7	4	11	10	6
60	9	13	4	13	10
50	9	9	2	18	12
40	4	17	13	13	11
30	14	15	11	9	14
20	16	6	19	8	11
10	13	11	21	8	7
	9	2	15	11	6

Language

There is no Language test included in the Metropolitan first grade battery. The fourth grade battery includes a two part test and seventh grade battery a four part test. A total language score is obtained at each grade level by adding the respective part scores. The analyses presented were made in terms of the Total Language score at the fourth and at the seventh grade level.

The data at grades nine and eleven were the scores on ITED # 3, Correctness and Appropriateness of Expression. The content of the two batteried possesses enough in common to justify their being reported under the general heading of language, but their differences are so great that direct comparisons between the Metropolitan and ITED distributions should be avoided.

Amanda Elzy School:

Table 5 presents the percentage distributions of the pupils in grades 4,7,9, and 11 in the bread area of Language. The table reports that 80-85% of the pupils in grades 4 and 7 scored in the lowest 20 percentile band. This is quite similar to the distributions reported in the two preceding sections, and the contributing causes are probably much the same. Whatever may be the causes, the data document the fact that an excessively large percentage of these pupils are functionally incapable of handling standard English. They certainly have only small competence in recognizing and using the conventions of written English, and most probably fare little better in using oral English correctly and effectively.

The data also show that a small percentage have attained satisfactory to very good competence in English. This suggests that the school program, or other efforts, are successful in teaching standard English usages to some of the children. These techniques and or materials should be identified and explorted to the fullest.

The improvement between grades nine and eleven is real and substantial, if it is not produced by the selective dropping out of the poorer students. Drop-out cannot account for all of the difference because none of the ninth grade scored in the upper 30% of the percentile scale. The reasons for the apparent lack of improvement between grades four and seven and for the most probably real improvement between grades nine and eleven should be determined and every effort made to start the improvement earlier in the school program.

TABLE 5

LANGUAGE

PERCENTAGE DISTRIBUTION OF AMANDA ELZY PUPILS BY
DECADES OF PUBLISHERS' PERCENTILE SCALES
GRADES REPORTED SEPARATELY

NATIONAL NORM	METROPOLITAN Total Language		ITE.. # Correctness and approp. of Expression	
	A M A N D A E L Z Y G R A D E S			
	1	4 7	9	11
90		3 0	0	3
80		1 1	0	0
70		1 0	0	5
60		1 1	1	2
50		0 0	2	12
40		2 4	4	8
30		1 5	5	14
20		3 4	11	16
10		16 15	19	11
		72 70	58	29

Leflore County School:

The entries in Table 6 report the percentage distributions of the pupils in grades 4,7, and 11 in the area of Language. There was no test in this area at the first grade level.

The distributions indicate that at the fourth grade the general achievement in language was quite good. The relatively large percentages who scored above the 60th percentile are impressive and relatively low percentages scored below the 30th percentile.

The contrast between the distribution at the fourth grade and the distributions at the three higher grades is stricking. The ninth grade is heavily represented at the bottom, poorly represented above the 60th percentile and apparently has no really good students in language. The ninth grade shows a concentration at the lower levels and a poor representation in the top three bands. The eleventh grade shows a concentration between the 20th and 60the percentiles and an absence of pupils in the top third of the range.

These data suggest a normal to quite good language development in the lower grades. If these seventh, ninth and eleventh grade classes are reasonably representative of the children of the community, the language program of the upper intermediate and all higher grades is deficient. Bluntly, too many of these pupils cannot speak and write like literate Americans, if these results are valid.

TABLE 6

LANGUAGE

PERCENTAGE DISTRIBUTION OF LEFLORE COUNTY SCHOOL PUPILS BY
DECADES OF PUBLISHERS' PERCENTILE SCALES
GRADES REPORTED SEPARATELY

NATIONAL NORM	METROPOLITAN Total Language			ITED # 3 Correctness and Appropriateness of Expression	
	LEFLORE-COUNTY GRADES				
	1	4	7	9	11
90		15		1	
80		12		2	
70		7	7	1	
60		22	6	10	1
50		4	12	11	8
40		19	9	17	17
30		9	21	12	32
20		4	11	21	27
10		4	12	9	8
		4	22	16	7

Social Studies

The test administered to the seventh grade was the Metropolitan Social Studies Information Test. Grades nine and eleven were administered the ITED # 1, Social Concepts test. The specifications and the content of the two tests differed, but both attempt to assess outcomes of instruction in the social studies area. Direct comparisons between the two tests should be made with caution.

TABLE 7

SOCIAL STUDIES

PERCENTAGE DISTRIBUTION OF AMANDA ELZY PUPILS BY DECADES OF PUBLISHERS' PERCENTILE SCALES. GRADES REPORTED SEPARATLLY

NATIONAL NORM	METROPOLITAN Social Studies			ITED # 1 Social Concepts	
	AMANDA ELZY GRADES				
	1	4	7	9	11
90			0	0	3
80			0	0	3
70			1	1	7
60			0	1	1
50			2	0	7
40			5	8	10
30			2	5	6
20			16	21	27
10			25	47	15
			49	17	21

Amanda Elzy School:

The percentages of the pupils in grades 7, 9 and 11 scoring in each decade of the percentile scale of their respective Social Studies test are reported in Table 7.

The distribution for the seventh grade shows that 74% scored in the lowest 20 percentile band of the Metropolitan Social Studies Information test, and additional 16% earned scores ranging from 20-29 percentile points, and 10% of the grade scored above the 30th percentile point. The previously documented deficiencies in reading, language and vocabulary no doubt contributed directly to the ability of these pupils to study the content of their social studies courses and to their ability to read and to respond to the test items. The consequences of their deficient knowledge about American social and political institutions and the manner of their operation must be viewed with utmost gravity by all who believe that the outcomes of instruction in social studies contribute to good citizenship.

The distributions for grades 9 and 11 indicate that the eleventh grade as a group is substantially more knowledgeable in social studies than is the ninth grade. A reduction from 64 to 36 % in the botton 20 percentile band is significant and the generally larger percentages in the upper bands is also significant. The data reported afford no clues as to the causes of the improvement between grades 9 and eleven, but they should be determined and every effort made to apply them at successively lower grades. It sometimes happens that part of the academically poorer pupils dropping out of school. If it is determined that drop-out is a contributing cause, it certainly should not be extended to lower grades.

Leflore County School:

The distributions in the Social Studies area are reported in Table 8 for grades 7, 9 and 11. Tests in this area were not available at the lower grades sampled in this study.

The distribution of pupils in the seventh grade shows about three levels and a thin distribution above the median. The distributions in the ninth grade and in the eleventh grade generally show normal achievement near the median and a somewhat general tendency for quite good representations in the upper portions of the range. The 21% in the two lower bands of the ninth grade is about normal and the eleventh grade r presentation near the bottom is less than normal.

The writer wishes to observe that the social studies is a particularly difficult area in which to construct tests which are generally valid for all schools. The tests apparently sampled the content studied by the ninth and eleventh graders quite well, and they had achieved well in the program presented. The Metropolitan Social Studies Test content may not have sampled the Leflore Curriculum adequately. The scattering of pupils above the 70th percentile may have read extensively and learned the material in this way. The consideration of the content validity of the seventh grade test is a matter which the faculty should attend to.

At the same time, the general content and methods of instruction in social studies probably merits attention. The test performance of this present class suggests that for whatever reasons, 63% of these simply have not achieved much in Social Studies.

TABLE 8

SOCIAL STUDIES

PERCENTAGE DISTRIBUTION OF LEFLORE COUNTY SCHOOL PUPILS BY DECADES OF PUBLISHERS' PERCENTILE SCALES.
GRADES REPORTED SEPARATELY

NATIONAL NORM	METROPOLITAN Social Studies Information			ITED # 1 Social Concepts	
	LEFLORE COUNTY GRADES				
	1	4	7	9	11
90			2	10	15
80			3	2	11
70			2	11	20
60			6	16	1
50			4	7	12
40			9	24	17
30			11	4	6
20			17	5	12
10			22	16	3
			24	5	3

Science

The tests administered in this section were the Metropolitan Science test at the seventh grade level and ITED # 2, Backgroung in the Natural Sciences at grades 9 and 11. These tests differed somewhat in their content and in the competencies required of the pupils, and so direct comparisions should not be made between grades which took the different tests. Science tests were not administered to grades 1 and 4.

Amanda Elzy School:

The percentage distribution of science scores of the seventh grade reported in Table 9, show 76% scoring in the bottom 20 percentile band. The range is very restricted because only 1 % of the pupils scored above the 50th percentile. The ninth grade distribution terminates at the 69th percentile and the eleventh grade at the 79th. The eleventh grade distribution indicates a greater pe' entage of pupils in the bottom twenty percentile band than in the ninth grade.

The deficiencies of these pupils in reading and related language competencies almost certainly impede their progress in science. These distributions raise serious questions about the science program itself. Why is there a larger concentration of eleventh grade science pupils at the bottom than of ninth grade? This points to a possible lack of a high school science program or to a system of counseling which effectively removes science study from the programs of study of these pupils. With all of the appeal which science has for many American high school pupils, why are there no pupils in the upper bands, and few above the mid-point of the scale? It seems to this writer that the science program of the Amanda Elzy School is in need of immediate attention. He also wishes to point out that many of the pupils in each grade need a type of instruction which will permit them to profit from the courses in which they enroll.

Leflore County School:

Science tests were administered in grades 7, 9 and 11. The percentage distributions of the pupils on the basis of their science scores are shown in Table 10.

The distribution of the pupils in Grade 7 indicates an inadequacy in science on the part of a relatively large percentage of this class. Thirty eight percent of this class scored in the bottom twenty percent of the scale. The distribution between 30-80 percentile points is quite normal. There are relatively few, 4%, who could be considered very good science students.

Whether this distribution indicates a weakness in the science program or a general weakness as students on the part of some 35-40% of these individuals cannot be determined from these data. The general character of the program may profit from a careful review. The type of instruction needed by a relatively large percentage of this class group certainly needs immediate attention.

The achievement in science on the part of the ninth and eleventh grade pupils appears to be quite normal. The small percentage of the eleventh grade scoring in the lower two percentile bands is particularly noticeable. The fact that the ninth and eleventh grade distributions are quite good suggests that the seventh grade distributions may be more accurately attributable to the students, or to their instruction, than to the science program in general.

TABLE 9

SCIENCE

PERCENTAGE DISTRIBUTION OF AMANDA ELZY PUPILS BY DECADES OF PUBLISHERS' PERCENTILE SCALES. GRADES REPORTED SEPARATELY

NATIONAL NORM	METROPOLIAN Science			ITED # 2 Natural Sciences	
	AMANDA ELZY GRADES				
	1	4	7	9	11
90			0	0	0
80			0	0	0
70			0	0	1
60			1	1	3
50			0	2	3
40			3	13	2
30			7	11	7
20			13	18	15
10			25	26	16
			51	29	53

TABLE 10

SCIENCE

PERCENTAGE DISTRIBUTION OF LEFLORE COUNTY SCHOOL PUPILS BY DECADES OF PUBLISHERS' PERCENTILE SCALES.
GRADES REPORTED SEPARATELY

NATIONAL NORM	METROPOLIAN Science			ITBD # 2 Natural Science	
	LEFLORE COUNTY GRADES				
	1	4	7	9	11
			2	10	6
90					
			2	13	12
80					
			7	19	12
70					
			12	5	18
60					
			7	11	15
50					
			8	15	9
40					
			15.	5	14.
30					
			9.	6	12
20					
			12	4	
10					
			26.	12	2

Arithmetic Computation

The test in Arithmetic Computation was a part of the Metropolitan Achievement Test Battery and no comparable test was included in the ITED Battery. For this reason scores are not reported in Tables 11 and 12 for grades 9 and 11.

TABLE 11

ARITHMETIC COMPUTATION

PERCENTAGE DISTRIBUTION OF AMANDA ELZY PUPILS BY DECADES OF PUBLISHERS' PERCENTILE SCALES. GRADES REPORTED SEPARATELY

NATIONAL NORM	METROPOLITAN Arithmetic Computation	ITED # None
	AMANDA ELZY GRADES	
	1 4 7 9 11	
90	0 0	
80	0 0	
70	0 1	
60	0 0	
50	0 0	
40	0 1	
30	0 2	
20	6 5	
10	19 26	
	75 65	

Amanda Elzy School:

The percentage distributions of the percentile scores of the pupils in grades 4 and 7 in Arithmetic Computation are reported in Table 11. The concentrations at the bottom of the scales is even more marked than in the previously presented Tables.

The causes of the concentration of 94% of the fourth grade pupils and 91% of the seventh grade pupils in the lower 20 percentile band are not clear. Tenerally pupils who have deficiencies in language and reading are not as handicapped in computation as in other subjects because the number system and the number notation are something of a "foreign language" to most children. The language, the skills, and the concepts must be directly taught. Very obviously, they are simply not being taught in this school, or at least not being taught with any appreciable degree of success.

The writer suspects that the causes may be multiple. The school may be attempting to introduce a program instruction with which the teachers are unfamiliar and about which they may have fear and misgivings. If this is the case, the results document the fact that the teachers need help. The program may not provide sufficient time to teach the skills needed. If so, the importance of the subject and the time requirements should be reviewed. It may also be true that many of these teachers simply do not know the subject matter and/or are afraid of it. Some provision by which competent teachers can be made availbble to teach arithmetic computation should be found, if necessary.

Leflore County School:

The percentage distributions of the arithmetic computations scores of the pupils in grades 1,4, and 7 are reported in Table 12. These distributions indicate that the pupils in grades one and four tend to have attained greater achievement in this area than do children in these grades, nationally. The full range of achievement is covered by these grades, but the fact that 23 adn 24% scored in the top ten percentile band is particularly noticeable. The data suggest that arithmetic computation is included in the program of the primary and, at least the lower, elementary grades and that it is well taught.

The distribution for the seventh grade stands in sharp contrast. Eighty percent of these pupils scored below the national median. These data, in and of themselves, do not give the causes of the contrast between these pupils and those in the lower grades, but the causes should be a matter of concern to those who plan the program and instruction in this school.

Historically, arithmetic computation is one of the 3-R's; that is one of the three oldest elements of the American public school curriculum. The basic reason for its early introduction into and survival in, the competitive curriculum of our public schools is that the ability to manipulate numbers is one of the most practical of the outcomes of common school education. At every trun, Americans in every walk of life and daily in their lives need to add, subtract, multiply and divide whole numbers, common fractions, and decimals.

It is true that the instruction has often been rote and distasteful to pupils and teachers alike. In an effort to alleviate these conditions, so-called "new mathematics" has been introduced in many schools. The purpose of the new programs is to make the skills meaningful-not to extinguish the skills or to eliminate the need for them.

It is clear that for excessively large percentages of these seventh grade pupils, achievement in computational skills has been at a low level. The faculty should recognize this as a problem area for this class. If it is a weakness of the program they have followed, the program needs immediate attention. If it is a result of unfortunate instruction, this, too should be corrected.

TABLE 12

ARITHMETIC COMPUTATION

PERCENTAGE DISTRIBUTION OF LEFLORE COUNTY SCHOOL PUPILS BY DECADES OF PUBLISHERS' PERCENTILE SCALES.
GRADES REPORTED SEPARATELY

NATIONAL NORM	METROPOLITAN Arithmetic Computation			ITED # None
	LEFLORE COUNTY GRADES			
	1	4	7	9 11
90	23	24	0	
80	16	11	2	
70	9	4	3	
60	14	11	3	
50	7	6	2	
40	7	11	15	
30	11	8	23	
20	2	11	17	
10	6	6	26	
	5	8	9	

Arithmetic Problem Solving and Concepts

The distributions of the scores in the broad area of Arithmetic Problem Solving and Concepts are reported in Tables 13 and 14. The ITED Test # 4, "Ability of Do Quantitative Thinking" differs somewhat from the Metropolitan tests, but the underlying understandings and cognative skills have enough in common to justify their being reported and considered as two tests in the same area. The items require the pupil to read for the purpose of identifying the quantitative elements of the situation presented, to create a logical mathematical pattern into which the elements can be fitted, and then to solve the pattern for its missing element or elements by performing the proper number manipulations. The importance of these abilities in the daily lives of the American people seems to this writer not to be open to question.

Tests in this area were not administered to first grade pupils, so the presentations will be limited to grades 4,7,9, and 11.

Amanda Elzy School:

The percentage distributions of the scores for grades 4,7,9 and 11 in Arithmetic Problem Solving and Concepts are presented in Table 13. These data indicate that the majority of the pupils in grades 4 and 7 achieve at very low levels in this area. Their scores indicate that some of the pupils were more successful in this area than in Arithmetic Computation. The ninth and eleventh grade pupils who took the ITED test were more successful than were the lower grade pupils. There is also a marked improvement in the distribution of the eleventh grade over the ninth grade.

These distributions suggest that better provision may be made in the general mathematics program for the development of concepts and understandings than skills. They also suggest that the ITED may be a more valid measure of the content of the curriculum of this school than is the Metropolitan. It is also possible that the instructional program at the eighth or ninth grade level is particularly effective in teaching these pupils arithmetic. If so, it certainly should be extended downward in the grades.

TABLE 13

ARITHMETIC CONCEPTS AND PROBLEM SOLVING

PERCENTAGE DISTRIBUTION OF AMANDA ELZY PUPILS BY GRADES REPORTED SEPARATELY

NATIONAL NORM	METROPOLITAN Problem Solving and Concepts			ITED # 4 Quantitative Thinking
	AMANDA ELZY GRADES			
	4	7	9	11
90	0	0	0	2
80	2	0	0	2
70	0	0	0	4
60	1	0	2	8
50	3	1	4	4
40	0	3	4	7
30	3	3	14	16
20	8	11	29	5
10	32	27	17	23
	51	55	30	29

Leflore County School:

The distributions of the scores reported in Table 14 indicate that the pupils in the fourth and ninth grades are distributed in a quite normal manner, perhaps somewhat higher than the pupils nationally. About half of each class scored above and below the publishers' norms and both classes contained pupils at the top and bottom. The pupils in the eleventh grade show a very definite tendency to cluster above the median and at the top of the publishers' percentile scale. These distributions suggest that the program which the pupils in these three grades have followed, and the instruction that they have received have been good.

Again, the seventh grade distributions show a clustering in the lower half of the scale. Their deficiencies in computational skills contributed to their poor performance of this test, and very probably their deficiency in quantitative reading and analytical skills compounded their handicaps. A class in which 74% of the pupils score below the median on a test that has been as well standardized as has this Metropolitan test, is a class that need attention.

If the problems indicated in the seventh grade distribution are program problems, the total mathematics program needs attention. Patching the defects of computation, or patching the defects on concepts alone will not do the job. If the problems inhere in the capabilities of these particular pupils, the faculty should consider the types and kinds of remediation which they should receive immediately, and proceed to give that remediation.

TABLE 14

ARITHMETIC CONCEPTS AND PROBLEM SOLVING

PERCENTAGE DISTRIBUTION OF LEFLORE COUNTY SCHOOL PUPILS BY DECADES OF PUBLISHERS' PERCENTILE SCALES
GRADES REPORTED SEPARATELY

NATIONAL NORM	METROPOLITAN Problem Solving and Concepts		ITED # 4 Quantative Thinking	
	LEFLORE COUNTY GRADES			
	1	4	7	9	11
		12	0	8	23
90		9	4	17	11
80		4	3	17	9
70		13	5	16	17
60		13	4	6	17
50		15	20	21	6
40		9	6	0	5
30		9	30	9	3
20		4	13	12	5
10		12	15	4	4

Summary

This report was organized as parallel reports of two individual schools on the assumption that the achievement patterns were indeed different. The preceding analyses have supported the validity of that assumption. This report will conclude with a broad, general summary of each school separately and a section of suggestions for utilizing test results that may be equally applicable to both schools.

In a broad general way, we may view the achievement of the pupils in a grade, or of the pupils in a subject area over all grades in terms of the performance at the median. This means that in each case we examine the point in each scale above which, and below which, 50% of the pupils scored. The implication is not made, and the inference should not be drawn, that all pupils should score at, or above this point. It is the point that best describes the general achievement of a grade, or of the pupils in all grades studying a particular subject. It offers those responsible for instructional planning a convenient way of viewing a situation and a basis for deciding whether or not to take some type of action or to permit the existing situation to continue. Those situations in which progress is quite normal will most likely be considered less pressing than those in which median achievement is low.

Median achievement tables will be presented for each school and these will be followed by a few general suggestions.

Amanda Elzy School:

Table 15 reports the medians of grades and of subject areas for the Amanda Elzy school. The entries in the body of this table indicate that the median of the score distributions in each subject in each grade ranged from the seventh to the twenty-eighth percentile. The bottom line of the table shows that the median of the median subject matter scores in each grade ranged from the ninth to the eighteenth percentile on the pupil percentile scale. This should not be interpreted as meaning, for instance, that the fourth grade at this school scored at the ninth percentile of the fourth grades of the nation because the publisher did not publish a distribution of schools. It does, however, furnish a way of looking at the median performance over all subjects.

The right hand column reports the median achievement in each subject area over all grades. It should be interpreted as explained above. The data in this column may be used to rank the subject areas on the basis of the achievement of the pupils in all grades. These data suggest that Arithmetic Computation is probably the weakest and Social Studies probably the strongest.

If a single index of the general, overall status in this school is ever needed, the entry in the lower right hand corner constitutes the broadest possible summary. It indicated that the median achievement of all pupils, in all subjects, in all grades reported was the fourteenth percentile. This is a kind of central point from which grades, subject matters and pupils are distributed.

TABLE 15

MEDIANS OF GRADES AND OF SUBJECT AREAS
OF AMANDA ELZY SCHOOL.[1]

Subject		GRADES				Med.
Area		4	7	9	11	Grade
Vocabulary		09	09	15	14	12
Reading		13	08	18	17	15
Language		07	07	09	26	08
Social Studies			10	17	25	17
Science			09	28	09	09
Arithmetic Computation		07	08			07
Arithmetic Problem Solving & Concepts		09	09	21	19	14
Median Score		09	09	18	19	14

1. The norm for this table is 50 for each cell.

Leflore County School:

Table 16 reports the medians of grades and subject areas for the Leflore County School. This Table indicates that the median of the score distributions in each grade over all the subjects included in this testing program ranged from 19 in grade seven to 63 in grade one. Three grade medians were above the publishers' norm group medians, the ninth grade was practically at the theoretical national median, and the seventh grade was definitely below that standard.

Viewing this Table by subject areas, the median pupil, taken over all grades tested, scored above the theoretical national median in Arithmetic Computation, Science, Arithmetic Concepts and Problem Solving, and Vocabulary; practically up to the median in Reading and Social Studies; and definitely below the median in Language. The order of achievement was in the order given in the sentence preceding.

If any useful purpose is to be served by citing a single index of the achievement level in Leflore County School, the entry in the lower right corner of this table is the most appropriate. It is the 52nd percentile. More importantly, this table points out the subject area, namely language, and the grade group, namely the seventh that would seem to be in the greatest need of attention.

For purposes of remediation, erroneous answers marked by the larger percentages of pupils are very useful. The focus at this point is upon the types of mistakes made by pupils who miss the question, indicating that they do not possess the area of knowledge, concepts or skills represented by that question. For instance, if a large percentage of pupils respond to the computational exercise "25+16" by marking the answer "31." they are indicating that the need to be re-taught the process of carrying from the units to the tens column in addition.

Teachers should keep in mind the fact that test items represent an area of knowledge, a set of concepts, or a type of skill and use the test information to plan instruction in these terms. Teaching the answers to specific questions destroys the benefits that might be gained from a testing program.

Those responsible for testing programs should provide for the full use of the information attainable through the use of machine scorable answer sheets. The IBM 1230 which is presently used can, with computer back-up, supply all the information suggested above, and so so at small additional cost. This school system should formulate plans to use the information obtainable and exercise its influence to see that its data processing center does furnish it, and furnish it quite immediately after the tests are administered.

TABLE 16

MEDIANS OF GRADES AND OF SUBJECT AREAS
OF LEFLORE COUNTY SCHOOL.[1]

Subject Area	GRADES					Med.
	1	4	7	9	11	Grade
Vocabulary	63	52	43	40	55	52
Reading	39	49	27	50	50	49
Language		62	32	33	32	33
Social Strdies			22	48	57	48
Science			31	57	59	57
Arith. Computation	69	61	29			61
Arith.Prob.Solv.&Concepts		51	28	58	66	55
Median Score	63	52	29	49	56	52

1. The Norm for this Table is 50 for each cell.

General Suggestions:

While it should not be the function of a testing program to dicatate the content of the curriculum or the methods of instruction, it can yield information which should contribute to professional planning and decision making. The greatest contribution can be made when the test scoring agency provides an item analysis in addition to a total score. The item analysis is simply a report of the numer and percentage of the pupils taking the test who marked each response to each question.

Teachers can take a copy of the test and clsssify the questions in somewhat the following manner:

	ITEMS	
	IN CURRIC.	NOT IN
Should be taught	1 3 8	5 7
Should not be taught	2	6

By simply recording the item numbers of a test in the proper cell of the Table above, a good idea can be obtained about how well the test fits the present curriculum and how well it would fit a new curriculum that may be developed. The above entries for an hypothetical eight item test shows that items 1,3 and 8 represent knowledge, concepts or skills that are in the curriculum and should be taught; that items 5 and 7 represent knowledge, concepts or skills that are not in the curriculum, but should be; that item 2 represents knowledge, a concept or a skill that is in the curriculum, but should not be; and that item 6 represents knowledge, a concept or a skill that is not and should not, be in the curriculum.

The percentage of the pupils answering each question correctly may be added as a decimal to each question number thus: 1.85; 2.35;---6.10, 7.42---. These should be read: Item 1 (which is in the curriculum and s should assist the teachers in identifying strengths and weaknesses in the instructional program.

For purposes of remediation, erroneous answers marked by the larger percentages of pupils are very useful. The focus at this point is upon the types of mistakes made by pupils who miss the question, indicating that they do not possess the area of knowledge, concepts or skills represented by that question. For instance, if a large percentage of pupils respond to the computational exercise "25+16" by marking the answer "31." they are indicating that the need to be re-taught the process of carrying from the units to the tens column in addition.

Teachers should keep in mind the fact that test items represent an area of knowledge, a set of concepts, or a type of skill and use the test information to plan instruction in these terms. Teaching the answers to specific questions destroys the benefits that might be gained from a testing program.

Those responsible for testing programs should provide for the full use of the information attainable through the use of machine scorable answer sheets. The IBM 1230 which is presently used can, with computer back-up, supply all the information suggested above, and so so at small additional cost. This school system should formulate plans to use the information obtainable and exercise its influence to see that its data processing center does furnish it, and furnish it quite immediately after the tests are administered.