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## ABSTRACT

This report is based on the same grade levels, assessment variables, and data described in TM 000 348. A composite achievement distribution for the upper third, middle third, and lower third of the school districts for grades 4 and 7 was computed. It was found that upper-third districts scored relatively high, middle third districts scored near the median, and lower-third districts scored relatively low, on the other variables. Exceptions were K-12 instructional expense per pupil in the lower-third districts at both grade levels, and percentage of teachers with master's degrees in the lower-third districts at the seventh grade level. A composite socioeconomic level distribution was also computed. It was found that upper-third socioeconomic status districts scored relatively high on all other measures except attitude toward school; middle-third districts scored near the median on the other measures; and lower-third districts scored relatively low on all other variables except attitude toward school. That is, there appeared to be an inverse relationship between socioeconomic status and attitude toward school at both grade levels. The study includes the distribution tables and explanations of and cautions on their use. See TM 000 324 and TM 000 345-8. (DG)

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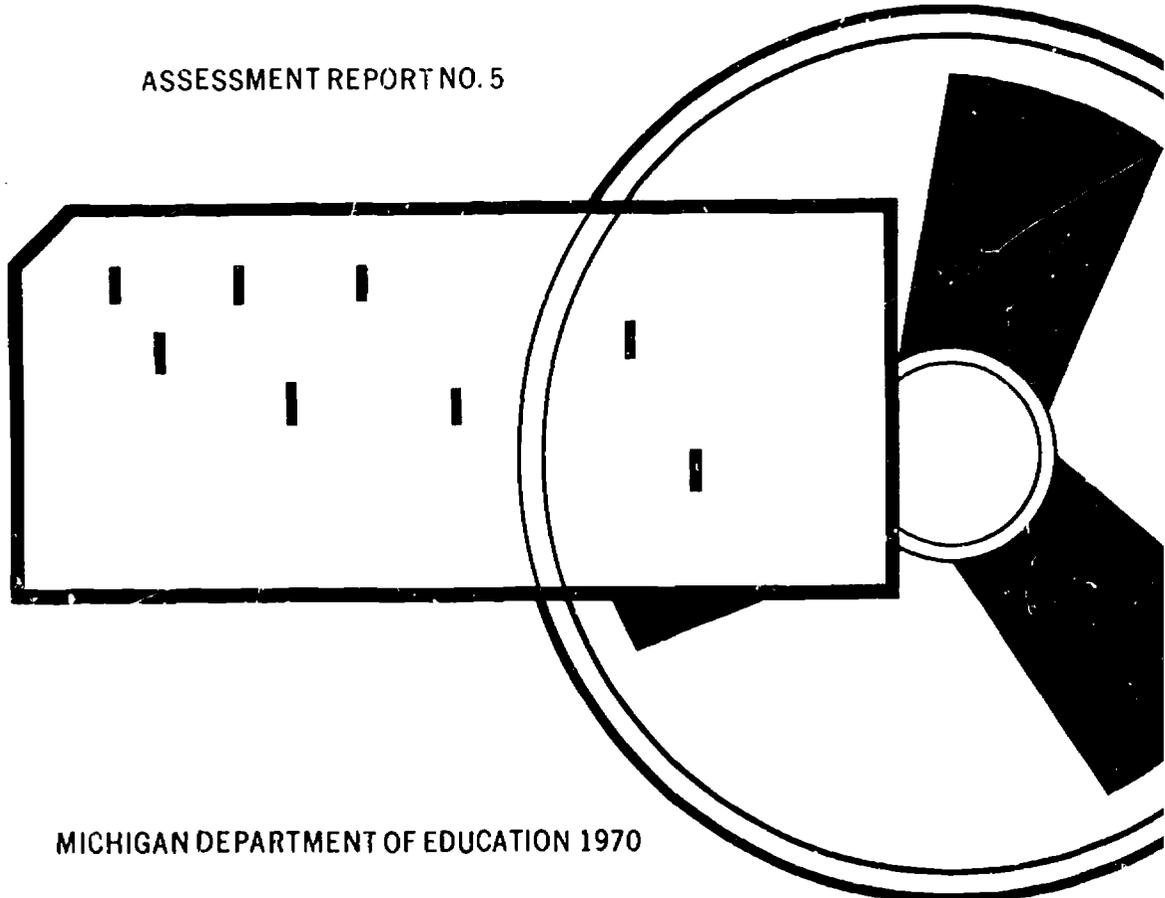
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# DISTRIBUTION OF EDUCATIONAL PERFORMANCE

AND RELATED FACTORS

# IN MICHIGAN

ASSESSMENT REPORT NO. 5



MICHIGAN DEPARTMENT OF EDUCATION 1970

TM 000 349

## State Board of Education

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## FOREWORD

The Michigan Assessment Program was initiated by the State Board of Education, supported by the Governor, and funded by the Legislature through enactment of Public Law 307 in August, 1969. The goal of the Program is to provide educators and citizens with information regarding the status and progress of Michigan's educational system so that they may make more informed decisions about education in the State.

Three major purposes guided the design and operation of the 1969-70 Michigan Assessment Program. The three purposes were:

1. to gather data which would show the levels of educational performance and the levels of certain factors related to performance within Michigan's geographic regions and community types;
2. to gather data which would indicate the ways in which educational performance and certain factors related to performance are distributed in Michigan; and
3. to provide local school district officials and citizens with information regarding their own school district and its schools.

Data gathered regarding the second purpose is presented in this, the second, public report of the findings of the Assessment Program, Distribution of Educational Performance and Related Factors in Michigan (Lansing, Mich.: Assessment Report No. 5, Michigan Department of Education, 1970).

Thanks are due to a large number of individuals and groups for making the Michigan Assessment Program a reality: the State Board of Education for proposing it, the Governor and Legislature for actively supporting it, and Michigan educators for assisting with it. The Program was designed and administered by the Bureau of Research, Evaluation, and Assessment, Michigan Department of Education, with the counsel of several ad hoc advisory groups.

John W. Porter,  
Acting Superintendent of  
Public Instruction

## INTRODUCTION

This report contains educational distribution tables for Michigan. The tables were designed to answer two important questions:

1. DO SCHOOL DISTRICTS THAT SCORE IN THE UPPER (OR MIDDLE, OR LOWER) THIRD OF A RANKING OF MICHIGAN DISTRICTS ON COMPOSITE ACHIEVEMENT ALSO SCORE RELATIVELY HIGH (OR IN THE MIDDLE OR RELATIVELY LOW) ON CERTAIN OTHER ASSESSMENT MEASURES?
2. DO SCHOOL DISTRICTS THAT SCORE IN THE UPPER (OR MIDDLE, OR LOWER) THIRD OF A RANKING OF MICHIGAN DISTRICTS ON SOCIOECONOMIC STATUS ALSO SCORE RELATIVELY HIGH (OR IN THE MIDDLE, OR RELATIVELY LOW) ON CERTAIN OTHER ASSESSMENT MEASURES?

The first of these questions was asked because of the importance of knowing what factors bear a relationship to how well children achieve in Michigan's schools. The second question was asked for Michigan because a great deal of previous research indicates that students' background characteristics have a strong influence not only on their achievement level, but also on the levels at which their schools are supported and on the characteristics of the teachers employed in these schools.<sup>1</sup>

This report has five sections. The first summarizes the findings presented in the report. The second states three precautions that must be exercised in interpreting the findings. The third section presents definitions of the Assessment measures used in the report. The fourth section gives an explanation of how the educational distribution tables were prepared. The fifth section contains the educational distribution tables and brief summaries of the findings presented in each table.

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<sup>1</sup>For a review and discussion of previous research which has examined the question of what factors influence student performance in schools see: Research into the Correlates of School Performance: A Review and Summary of Literature. (Lansing, Michigan: Michigan Department of Education, Assessment Report No. 3, 1970).

## I. SUMMARY OF THE FINDINGS

### COMPOSITE ACHIEVEMENT DISTRIBUTION:

DO SCHOOL DISTRICTS THAT SCORE IN THE UPPER (OR MIDDLE, OR LOWER) THIRD OF A RANKING OF MICHIGAN DISTRICTS ON COMPOSITE ACHIEVEMENT ALSO SCORE RELATIVELY HIGH (OR IN THE MIDDLE, OR RELATIVELY LOW) ON CERTAIN OTHER ASSESSMENT MEASURES?

In general, the answer to this question was "yes." At both the fourth and seventh grades, those districts that scored in the upper third of the State's districts on composite achievement scored relatively high on the other measures; those districts that scored in the middle third on composite achievement scored near the median on the other measures; and those districts that scored in the lower third on composite achievement scored relatively low on the other measures. At the fourth grade level there was one exception to this: those districts scoring in the lower third on composite achievement scored at the same level on K-12 instructional expense per pupil as those districts scoring in the middle third on composite achievement. At the seventh grade level there were two exceptions: those districts with scores in the lower third on composite achievement had slightly higher levels on per cent of teachers with masters degrees and K-12 instructional expense per pupil than districts with scores in the middle third on composite achievement.

## **SOCIOECONOMIC STATUS DISTRIBUTION:**

**DO SCHOOL DISTRICTS THAT SCORE IN THE UPPER (OR MIDDLE, OR LOWER) THIRD OF A RANKING OF MICHIGAN DISTRICTS ON SOCIOECONOMIC STATUS ALSO SCORE RELATIVELY HIGH (OR IN THE MIDDLE, OR RELATIVELY LOW) ON CERTAIN OTHER ASSESSMENT MEASURES?**

In general, the answer to this question was "yes." At both the fourth and seventh grades, those districts that scored in the upper third of the State's districts on socioeconomic status scored relatively high on all other measures except attitude toward school; those districts that scored in the middle third on socioeconomic status scored near the median on the other measures; and those districts that scored in the lower third on socioeconomic status scored relatively low on all other measures except attitude toward school. There appeared to be an inverse relationship between socioeconomic status and attitude toward school at both grade levels.<sup>2</sup>

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<sup>2</sup>While this inverse relationship appears in the distribution tables prepared for the State as a whole, it may not appear when distribution tables are prepared for the individual regions and community types within Michigan. These tables will be presented in a later public report of the 1969-70 Assessment Program.

## II. CAUTIONS

Following are cautions that must be exercised in the interpretation of the report's findings. The first and third of these cautions are basically the same as those given in Assessment Report Number 4. The second has been modified somewhat due to the different nature of the data presented in this report.

1. The 1969-70 Michigan Assessment Program was a very large and complex undertaking. It gathered a great deal of data from 320,000 students in approximately 3,200 schools in over 600 school districts across the State. Therefore, the results are, of necessity, complicated. In this report, the data are presented in the form of educational distribution tables for the fourth and seventh grades in public schools throughout the State. Explanations of these distribution tables are provided to help you interpret the information they present. You are cautioned not to go beyond the types of interpretations presented.

2. You are cautioned against drawing conclusions about cause-and-effect relationships between factors which the Assessment Program measured. The educational distribution tables display the levels at which districts which were high, middle, or low on composite achievement--or socioeconomic status--scored on the remaining Assessment measures. The distribution tables only show levels of groups of districts and do not show cause-and-effect relationships. For example, those districts at a high level on the measure of socioeconomic status are also at a high level on K-12 instructional expense per pupil. However, this does not prove that the high level of socioeconomic status is the reason these districts were also at a high level on the measure

of K-12 instructional expense per pupil, even though high socio-economic status is likely one of the principal causes of high K-12 instructional expense per pupil. These data, therefore, should not be interpreted to reject the possibility that cause-and-effect relationships exist. The data presented in this report are inadequate to either support or reject conclusions about cause-and-effect relationships. A future report in the Assessment series will further explore the question of relationships among Assessment measures; however, it is extremely difficult to establish cause-and-effect from the kinds of relationships shown in educational research.

3. It should be recognized that socioeconomic status is extremely difficult to index and measure accurately. It is likely that in some districts--especially those in which only a few youngsters responded to the socioeconomic status items of the Assessment Battery--the socio-economic status score, as measured by the students' responses, may not accurately reflect the socioeconomic background of a given district.

### III. DEFINITIONS OF THE ASSESSMENT MEASURES

The Assessment measures on factors which were gathered from Michigan school districts for inclusion in this report are listed and defined below.

**SOCIOECONOMIC STATUS (SES):** The Assessment Battery which was given to students included thirteen questions which were designed to gather information regarding students' socioeconomic background. These responses were not compiled on an individual student basis; rather,

scores were compiled for each district which participated in the Assessment Program. The SES measure is assumed to be indicative of students' perceptions of such things as the educational level of their parents and the r general economic level.

ATTITUDE TOWARD SCHOOL: The Assessment Battery also included several questions which were designed to gather information regarding students' attitudes toward their schools. These responses were also compiled for each district and developed into a measure assumed to be indicative of students' attitudes toward school.

PER CENT OF TEACHERS WITH MASTERS DEGREES: The per cent of teachers in each district who had completed at least a masters degree was computed from records held in the Michigan Department of Education.

K-12 INSTRUCTIONAL EXPENSE PER PUPIL: The K-12 instructional expense per pupil was also computed for each district from records held in the Michigan Department of Education. It was computed by dividing the district's total instructional expense (less community college instructional expense) by the number of pupils in the district (as of the fourth Friday of the school year).

VOCABULARY: The Assessment Battery included fifty verbal analogy problems which measured students' knowledge of the meanings of words and their relationships. The vocabulary score was obtained from the number of correct responses to these problems.

COMPOSITE ACHIEVEMENT: The Assessment Battery also included sections of questions and problems in reading, English expression, and mathematics. The composite achievement score was obtained by averaging the scores of these three sections of the Battery. Please note that vocabulary is not included under composite achievement.

#### IV. EXPLANATION OF THE DISTRIBUTION TABLES

Educational distribution tables have been prepared using fourth and seventh grade data. The distribution tables were built from average school district data. That is, the tables were constructed from average district scores, not directly from students' scores.

The tables designed to show the distribution of Assessment measures in terms of composite achievement were constructed as follows:

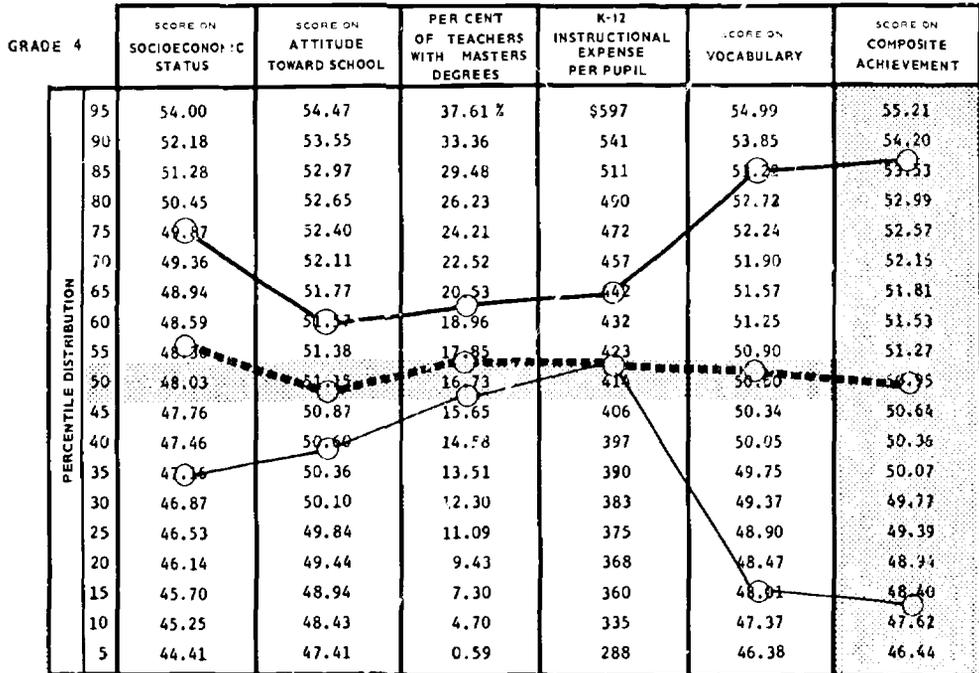
1. A percentile distribution was prepared for each of the Assessment measures. Each percentile distribution is a ranking of district scores which is divided into one hundred equal parts. Each part has an equal number--one per cent--of the total number of district scores. Percentile distributions are useful in showing where a percentile score lies in relation to other scores. A score which is at the fiftieth percentile is at the median or middle of the distribution; a score at the seventy-fifth percentile is above seventy-five per cent--or three-quarters--of the scores in the distribution.
2. The State's school districts were ranked in order according to their score on composite achievement and this ranking was divided into thirds. There were "upper," "middle," and "lower" thirds according to composite achievement.
3. The average district score on composite achievement was computed for each third of the districts. There was an average score for the "upper third" districts; an average score for the "middle third" districts; and an average score for the "lower third" districts.
4. The average scores on the remaining Assessment measures were computed for the upper third, middle third, and lower third districts. There was an average score on socioeconomic status, attitude toward school, per cent of teachers with masters degrees, K-12 instructional expense per pupil, and vocabulary computed for each of the three sets of districts.
5. In order to graphically portray these scores they were placed onto the percentile distributions constructed in step one (above).

FIGURE 1 is an exact copy of the educational distribution table that was constructed using fourth grade data. It is used as an example of how the tables were constructed. It was prepared as follows:

**FIGURE 1**  
**COMPOSITE ACHIEVEMENT DISTRIBUTION**

**AVERAGE SCORES ON SIX ASSESSMENT MEASURES  
FOR DISTRICTS CLASSIFIED INTO UPPER, MIDDLE,  
OR LOWER THIRDS ON COMPOSITE ACHIEVEMENT**

— UPPER THIRD  
■ MIDDLE THIRD  
— LOWER THIRD



1. A percentile distribution was prepared for each of the Assessment measures using fourth grade data. These percentile distributions show that the median district in the State had a score of 48.03 on socioeconomic status, 51.15 on attitude toward school, 16.73% on per cent of teachers with masters degrees, and so on. The numbers are shown in FIGURE 1 and are highlighted by the shaded strip that runs through the median score for each measure.

2. The State's school districts were ranked in order according to their score on fourth grade composite achievement and this ranking was divided into thirds. Thus there were upper, middle, and lower thirds according to fourth grade composite achievement.

3. The average district score on composite achievement was computed for each third of the districts. Thus the average score on composite achievement was 53.77 for the upper third districts; 50.53 for the middle third districts; and 48.09 for the lower third districts.

4. The average scores on the remaining Assessment measures were computed for the upper third, middle third, and lower third districts. The average score on socioeconomic status was 49.87 for the upper third districts; 48.36 for the middle third districts; and 47.18 for the lower third districts. The average score on attitude toward school was 51.58 for the upper third districts; 51.06 for the middle third districts; and 50.56 for the lower third districts. And so on.

5. In order to graphically portray these scores they were placed onto the percentile distribution shown in FIGURE 1. The average score for the upper third districts on composite achievement which was computed as 53.77 is indicated by a small circle between the scores 53.53 and 54.20 on the percentile distribution. It may be seen that this score fell at about the eighty-seventh percentile in the State-wide distribution. Likewise, the score on socioeconomic status for the upper third districts which was computed as 49.87 fell at the seventy-fifth percentile; and the score on attitude toward school for the upper third districts which was computed as 51.58 fell at about the sixtieth percentile.

Finally, the scores of the upper third districts were connected by a heavy line; the scores of the middle third districts were connected by a broken line; and the scores of the lower third districts were connected by a thin line. These lines clearly indicate an affirmative answer to the question "Do school districts that score in the upper (or middle, or lower) third of a ranking of Michigan districts on composite achievement also score relatively high (or in the middle, or relatively low) on certain other Assessment measures?" (The only exception in the table is K-12 instructional expense per pupil, in which the lower third districts scored at the same level as the middle third districts.)

The tables designed to show the distribution of Assessment measures in terms of socioeconomic status were constructed in the same manner. The only difference is that the districts were first ranked and divided on socioeconomic status instead of composite achievement.

## V. THE EDUCATIONAL DISTRIBUTION TABLES

NOTE: In the summaries of the tables the term: "near the median" is arbitrarily used to describe those scores falling between the forty-fifth and fifty-fifth percentiles.

**AVERAGE SCORES ON SIX ASSESSMENT MEASURES  
FOR DISTRICTS CLASSIFIED INTO UPPER, MIDDLE,  
OR LOWER THIRDS ON COMPOSITE ACHIEVEMENT**

— UPPER THIRD  
 ■■■ MIDDLE THIRD  
 - - - LOWER THIRD

GRADE 4

PERCENTILE DISTRIBUTION	GRADE 4						
	SCORE ON SOCIOECONOMIC STATUS	SCORE ON ATTITUDE TOWARD SCHOOL	PER CENT OF TEACHERS WITH MASTERS DEGREES	K-12 INSTRUCTIONAL EXPENSE PER PUPIL	SCORE ON VOCABULARY	SCORE ON COMPOSITE ACHIEVEMENT	
95	54.00	54.47	37.61 %	\$597	54.99	55.21	
90	52.18	53.55	33.36	541	53.85	54.20	
85	51.28	52.97	29.48	511	51.22	53.53	
80	50.45	52.65	26.23	490	52.72	52.99	
75	49.87	52.40	24.21	472	52.24	52.57	
70	49.35	52.11	22.52	457	51.90	52.16	
65	48.94	51.77	20.53	442	51.57	51.81	
60	48.59	51.37	18.96	432	51.25	51.53	
55	48.31	51.38	17.85	423	50.90	51.27	
50	48.03	51.33	16.73	414	50.80	50.95	
45	47.76	50.87	15.65	406	50.34	50.64	
40	47.46	50.60	14.58	397	50.05	50.36	
35	47.16	50.36	13.51	390	49.75	50.07	
30	46.87	50.10	12.36	383	49.37	49.77	
25	46.53	49.84	11.09	375	48.90	49.39	
20	46.14	49.44	9.43	368	48.47	48.94	
15	45.70	48.94	7.30	360	48.01	48.40	
10	45.25	48.43	4.70	335	47.37	47.62	
5	44.41	47.41	0.59	288	46.38	46.44	

GRADE 7

PERCENTILE DISTRIBUTION	GRADE 7						
	SCORE ON SOCIOECONOMIC STATUS	SCORE ON ATTITUDE TOWARD SCHOOL	PER CENT OF TEACHERS WITH MASTERS DEGREES	K-12 INSTRUCTIONAL EXPENSE PER PUPIL	SCORE ON VOCABULARY	SCORE ON COMPOSITE ACHIEVEMENT	
95	54.74	55.87	37.77 %	\$599	54.87	55.05	
90	52.24	54.89	33.55	543	53.52	53.94	
85	51.15	54.35	29.70	512	52.81	53.25	
80	50.31	53.88	26.50	491	52.32	52.73	
75	49.58	53.48	24.38	474	51.95	52.20	
70	49.04	53.14	22.74	459	51.57	51.88	
65	48.53	52.83	20.83	444	51.16	51.57	
60	48.11	52.55	19.15	434	50.85	51.27	
55	47.78	52.28	18.06	421	50.55	50.99	
50	47.47	52.03	16.97	411	50.27	50.72	
45	47.08	51.57	15.90	408	50.00	50.42	
40	46.50	51.22	14.85	400	49.73	50.12	
35	46.22	50.87	13.80	392	49.47	49.81	
30	45.87	50.49	12.65	385	49.19	49.53	
25	45.43	50.09	11.47	378	48.89	49.24	
20	44.99	49.66	10.13	371	48.51	48.92	
15	44.52	49.25	8.09	363	48.17	48.51	
10	43.90	48.19	5.68	345	47.24	47.89	
5	42.86	46.70	1.30	315	46.21	46.83	

**DO SCHOOL DISTRICTS THAT SCORE IN THE UPPER (OR MIDDLE, OR LOWER) THIRD OF A RANKING OF MICHIGAN DISTRICTS ON COMPOSITE ACHIEVEMENT ALSO SCORE RELATIVELY HIGH (OR IN THE MIDDLE, OR RELATIVELY LOW) ON CERTAIN OTHER ASSESSMENT MEASURES?**

**SUMMARY OF THE GRADE 4 COMPOSITE ACHIEVEMENT DISTRIBUTION:**

1. Those districts that scored in the upper third on composite achievement scored highest on all other measures. They were at the seventy-fifth percentile on socioeconomic status, the sixtieth percentile on attitude toward school, the sixty-fourth percentile on per cent of teachers with masters degrees, the sixty-fifth percentile on K-12 instructional expense per pupil, and the eighty-fifth percentile on vocabulary.

2. Those districts that scored in the middle third on composite achievement scored at or near the median on all the other Assessment measures.

3. Those districts that scored in the lower third on composite achievement scored lowest on the other measures. The only exception was on K-12 instructional expense per pupil. Here the districts in the lower third scored at the fifty-third percentile, the same level as the districts in the middle third.

**SUMMARY OF THE GRADE 7 COMPOSITE ACHIEVEMENT DISTRIBUTION:**

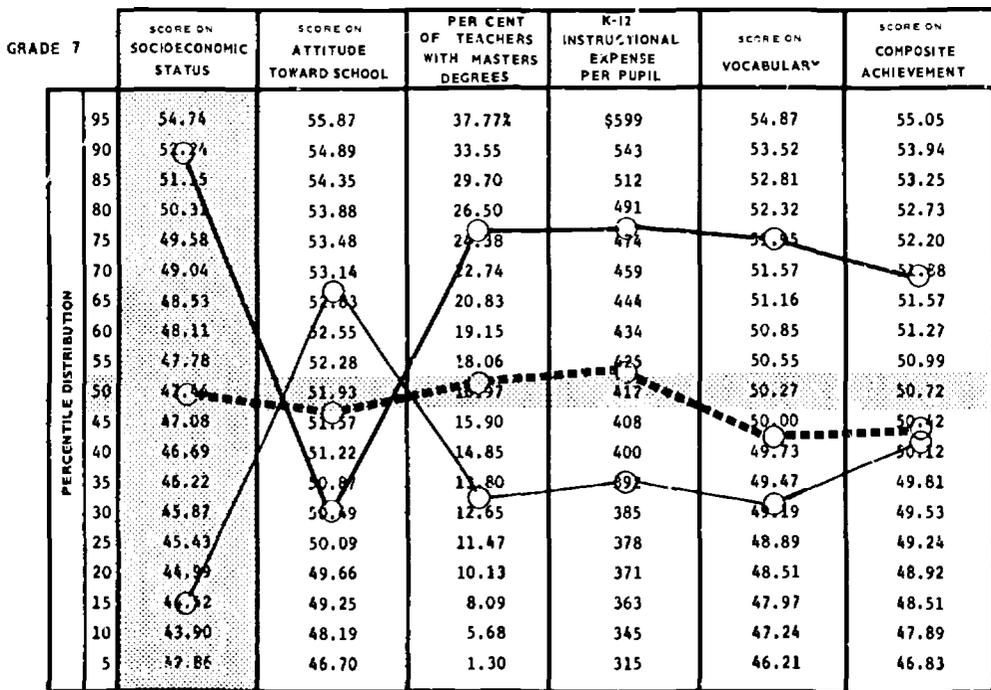
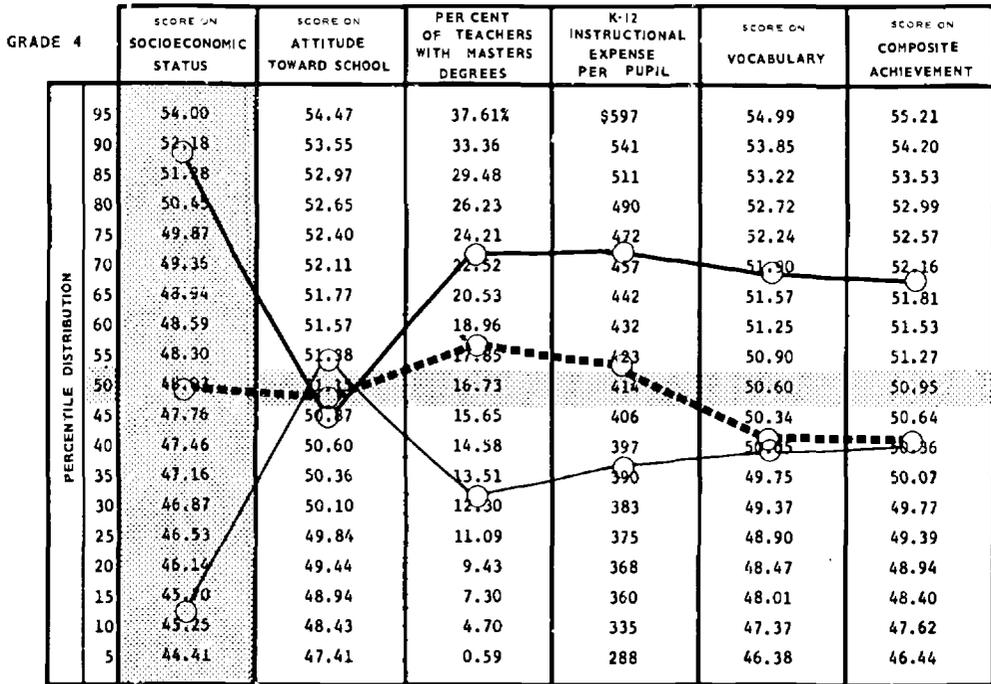
1. Those districts that scored in the upper third on composite achievement scored highest on all of the measures except attitude toward school. They were at the seventy-fourth percentile on socio-economic status, the sixty-seventh percentile on per cent of teachers with masters degrees and K-12 instructional expense per pupil, and the eighty-fifth percentile on vocabulary. These districts scored at the fifty-first percentile on attitude toward school.

2. Those districts that scored in the middle third on composite achievement scored at or near the median on all the other Assessment measures. These districts scored above those in the upper and lower thirds on attitude toward school.

3. Those districts that scored in the lower third on composite achievement scored lowest on the other measures except per cent of teachers with masters degrees and K-12 instructional expense per pupil. Here the districts in the lower third scored slightly above the districts in the middle third.

**AVERAGE SCORES ON SIX ASSESSMENT MEASURES  
FOR DISTRICTS CLASSIFIED INTO UPPER, MIDDLE,  
OR LOWER THIRDS ON SOCIOECONOMIC STATUS**

— UPPER THIRD  
- - - MIDDLE THIRD  
— LOWER THIRD



DO SCHOOL DISTRICTS THAT SCORE IN THE UPPER (OR MIDDLE, OR LOWER) THIRD OF A RANKING OF MICHIGAN DISTRICTS ON SOCIOECONOMIC STATUS ALSO SCORE RELATIVELY HIGH (OR IN THE MIDDLE, OR RELATIVELY LOW) ON CERTAIN OTHER ASSESSMENT MEASURES?

**SUMMARY OF THE GRADE 4 SOCIOECONOMIC STATUS DISTRIBUTION:**

1. Those districts that scored in the upper third on socioeconomic status scored highest on all other measures except attitude toward school where they were lowest. They were at the seventy-first percentile on per cent of teachers with masters degrees, the seventy-third percentile on K-12 instructional expense per pupil, the seventieth percentile on vocabulary, and the sixty-eighth percentile on composite achievement. They were at the forty-fifth percentile on attitude toward school.
2. Those districts that scored in the middle third on socioeconomic status scored near the median on attitude toward school, above the median on per cent of teachers with masters degrees, near the median on K-12 instructional expense per pupil, and below the median on vocabulary and composite achievement.
3. Those districts that scored in the lower third on socioeconomic status scored lowest on the measures of per cent of teachers with masters degrees, K-12 instructional expense per pupil, and vocabulary. They were highest on attitude toward school. They were at the same level (forty-first percentile) on composite achievement as were the districts in the middle third.

**SUMMARY OF THE GRADE 7 SOCIOECONOMIC STATUS DISTRIBUTION:**

1. Those districts that scored in the upper third on socioeconomic status scored highest on all other measures except attitude toward school where they were lowest. They were at the seventy-sixth percentile on per cent of teachers with masters degrees, the seventy-seventh percentile on K-12 instructional expense per pupil, the seventy-sixth percentile on vocabulary, and the sixty-ninth percentile on composite achievement. They were at the thirty-first percentile on attitude toward school.
2. Those districts that scored in the middle third on socioeconomic status scored near the median on all measures except vocabulary and composite achievement where they were slightly below the median.
3. Those districts that scored in the lower third on socioeconomic status scored lowest on the other measures, except attitude toward school where they scored highest.

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