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ABSTRACT

This paper reports on regression based methods for identifying exemplary schools. A distinction is made between schools which are maintaining an exceptional level of achievement and those which are improving their achievement in an extraordinary way. More schools were found which consistently exceeded expectations and fewer schools were found which improved extraordinarily, than would have been expected under a random model of school achievement. It was hypothesized that a strong tendency to persist in school practices and a great difficulty in altering them significantly would have this result. Results for mathematics were found to differ from those for reading and written expression. The greater opportunities for extracurricular learning in reading and written expression, compared to mathematics, were hypothesized to account for this. (Author)

Identification of Exemplary Schools: A Secondary Analysis of Sixth Grade Data from the California Assessment Program

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Running head: Identification of Exemplary Schools

ABSTRACT

This paper reports on regression based methods for identifying exemplary schools. A distinction is made between schools which are maintaining an exceptional level of achievement and those which are improving their achievement in an extraordinary way. More schools were found which consistently exceeded expectations and fewer schools were found which improved extraordinarily, than would have been expected under a random model of school achievement. It was hypothesized that a strong tendency to persist in school practices and a great difficulty in altering them significantly would have this result. Results for mathematics were found to differ from those for reading and written expression. The greater opportunities for extracurricular learning in reading and written expression, compared to mathematics, were hypothesized to account for this.

INTRODUCTION

John Locke, the philosopher, wrote that that all things excellent are as difficult as they are rare.[1] This certainly can be applied to the search for exemplary schools. Where standards of excellence in achievement are applied to sift even large numbers of schools, to locate those which exceed expectation, relatively few can be selected. The practices of these few can serve as examples to the others.

The California Assessment Program (CAP) annually tests and collects background information from over one quarter million sixth graders in over 4,000 schools. This permitted the construction of a multiple year data base containing achievement scores, as well as student, school and community background information. This data base provided an opportunity to examine school achievement in relation to relevant background information, and to identify schools with higher than expected mean achievement. Several regression based techniques for identifying exemplary schools are reported on and compared here. Of particular

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[1] This article was written for presentation at the annual meeting of the American Educational Research Association, Montreal, 1983. Thanks are owed to Dale Carlson, Director of the California Assessment Program for many valuable comments on this paper and for his encouragement. The views expressed here are not necessarily those of the California Department of Education.

interest was the distinction between schools which have maintained their exemplary status, and those which have improved extraordinarily.

The Coleman report (1966) implied that on the average schools had little effect on student achievement, independent of social class. This finding prompted efforts to locate effective schools, which, individually, might prove to be exceptions to the rule. One such effort was the California school effectiveness study (1977), which set out to find school factors related to achievement. A problem addressed by that study was that much of the variation in school mean achievement was related to student, school and community background factors, for example, social class. A solution to this problem had been proposed by Dyer (1966). School mean achievement scores are regressed on variables describing background characteristics which cannot be manipulated easily by schools, but are correlated with achievement. The difference between the obtained score and the regression prediction, a residual, was a measure of school effectiveness. Schools which scored much better than expected are identified and studied. Further studies by Dyer, Linn and Patton (1969), Klitgaard and Hall (1973), and Marco (1974) have extended and refined this approach. Austin's (1981) review article provided a thorough discussion of the use of the regression technique in exemplary school studies.

Dynamic and static categories of exemplary schools can be defined. The static category includes those which are at present achieving much higher than expected, and which have been at this level for several years. The dynamic category includes schools which are increasing their achievement extraordinarily. A tentative, working set of criteria for extraordinary improvement in achievement are proposed here. Using residuals it is possible to identify schools which are achieving at exceptionally high as well as exceptionally low levels. For the purposes of this study a school is said to have improved extraordinarily if sometime during the three year period under observation achievement has increased from an exceptionally low level to an exceptionally high level. Several cautions are in order. The first is the possible distortion of results by regression effects. Another caution regards the exclusion of schools which improved from an average or expected level of achievement to an exceptionally high level. The efforts of these schools are worthy of study, although the more convincing cases of improvement are those which are most extreme.

The main hypothesis examined here regards the comparison of schools which show extraordinary improvement, and how numerous they are, with schools which are maintaining an exceptional level of achievement. A related issue is the extent to which exemplary school status is restricted to specific content areas or is more general. A final question

regards the distributions of student scores in both types of schools, the extent to which the distributions are similar and the ways in which they change over years. The methods used here for locating different types of schools are statistical and rely on achievement scores and social background variables. While statistical methods are valuable for screening, the final determination of exemplary status should be made on the basis of expert judgment which can take into account the myriad facets of school environments which are relevant to achievement.

METHOD

Data Source. Achievement data were taken from the spring 1981 administration of the California Assessment Program's test, Survey of Basic Skills: Grade Six. The test assessed performance in reading, written expression and mathematics. The reading subtest contained items from four skill areas: word identification, vocabulary, comprehension and study locational skills. The written expression subtest assessed standard English usage, language choices, sentence recognition, sentence manipulation, capitalization and punctuation. The mathematics subtest covered arithmetic, geometry, measurement, probability and statistics. One hundred twenty eight items were reading, 128 are written expression and 160 mathematics. The items were distributed among sixteen unique forms. The test is administered according to a matrix sampling plan, with each student responding to one form.

Background information was provided by teachers during test administration on social class and English language fluency. This was used to calculate socioeconomic status (SES) and fluency indices for each school. The SES index is based on a classification of the occupations of the parents of sixth grade pupils. Teachers identified from the following list the category that corresponded most closely to the occupation of the pupil's father, mother or guardian: unknown; unskilled employees and welfare; skilled and semiskilled employees; semiprofessionals, clerical and sales workers and technicians; and executives, professionals and managers. The first two categories were assigned a value of 1; the third a value of 2; an the last two a value of 3. The student average of these values was the SES index.

The percent LES/NES was the percent of limited or non-English speaking students. Using state mandated criteria, teachers classified students according to four language proficiency categories: English only; fluent English and a second language; limited English and a second language; non-English speaking. The percent LES/NES was the percentage of students in the last two categories.

An additional background factor used to describe schools was percent AFDC. The AFDC figure was the percent of pupils whose families were receiving assistance under the Aid to Families with Dependent Children program. This figure was

calculated from information provided by districts on enrollment and AFDC participation.

Initially, the population included 4,089 schools. Those schools not having a complete set of achievement and background variable scores for three years were excluded. Affected were very small schools, which may not have had a sixth grade class some years, and schools which did not consistently provide background information. Complete data were obtained from 3713 schools.

Analysis. Weighted regressions of achievement scores on the three background variables were used to obtain predicted scores. Weights were the inverse of the school achievement score standard error. A linear function of the standard error was developed which defined a band of achievement for each school, symmetric around the predicted score, such that 25 percent of the schools in the state fell above the band, 25 percent fell below, and 50 percent fell within. This procedure was repeated for each content area every year. The actual achievement of a school was compared with the predicted band of achievement in order to calculate whether a school was above, below or within its band. The result of this calculation is called an ABW index. Mean achievement scores were calculated for the different three year combinations of ABW indices in each content area.

Individual student scores were used to create a profile for each school. The statewide distribution of student scores was divided into four equal groups by the state quartiles. The percentage of students scoring in each of these four statewide groups was calculated for each content area. An 'average' or 'typical' California school would have 25 percent of its students in each quarter. A high scoring school would have higher percents of students in the higher quarters. A low scoring school would be more strongly represented in the lower quarters. Mean percents of students in each quarter of the distribution were calculated for the different three year combinations of ABW indices in each content area.

RESULTS

A three year summary of the sixth grade multiple regression analyses is contained in Table 1. Standardized beta weights for the background variables and values of R-square are shown. The values of R-square were stable across years for all content areas. Reading and written expression values were in the .6 - .7 range, and were around .5 for mathematics. The standardized beta weights tended to be constant across years and content areas. An exception to this was the weight for percent LES/NES, which was smaller for mathematics than for the other content areas.

Counts of schools in selected ABW categories are shown in Table 2. The categories are defined by a three year sequence of ABW indices in a given content area. For example, a score below the band in 1979, within the band in 1980 and above the band in 1981 is indicated by the value BWA. Those categories are included which represent either a maintained level of exceptional achievement (AAA), or extraordinary improvement in achievement (BWA, BAA or BBA). There were 508 schools with AAA in at least one content area. Of these only 79 were AAA in all three content areas. Similar, although more extreme, results were found for BWA, BAA and BBA schools. Rarest of all were the BAA schools, 44 of which formed the initial pool, none attaining this status for all content areas.

Breakdowns of achievement means for three years of ABW indices are contained in Tables 3, 4 and 5. The breakdown variable for Table 3 was reading, for Table 4 mathematics, and for Table 5 written expression. A frequency count and percent of schools for each combination of indices is contained in the next two columns. The 1979, 1980 and 1981 achievement means for reading (R79, R80 and R81), written expression (W79, W80 and W81), and mathematics (M79, M80 and M81) are shown in the remaining columns.

The hypothesis that school practices have an effect on achievement, independent of social class is supported by the

data. This can be illustrated by supposing for a moment that school practices had no such effect, and that the background variables accounted for all the variation in achievement. It would then be a matter of chance whether a school was above the band (probability = .25), below the band (probability = .25) or within the band (probability = .5). Furthermore, classification in any one year or content area would be independent of classification in any other year or content area. Under the random assignment hypothesis the probability of being above the band for three years, AAA, would be (.25 x .25 x .25 = .015625), and the expected number of schools would be 58. The same would be true of BBB schools. The actual results were: in reading 244 with AAA and 244 with BBB; in written expression 243 AAA and 251 BBB; and in mathematics 299 AAA and 267 BBB. These are shown by the frequency bar graph of Figure 1.

AAA schools tended to have higher achievement in all content areas than schools in other categories. Reading achievement was higher for schools that were AAA in reading than for schools that were AAA in other content areas. The same pattern held for mathematics and written expression. BBB schools tended to have lower achievement in all content areas than schools in other categories. Reading achievement was lower for schools that were BBB in reading, than for schools that were BBB in other content areas. This was true, as well, for mathematics and written expression.

BWA schools included those below the band in 1979, within in 1980 and above in 1981, representing a steady increase in achievement. Under the assumption of random assignment the probability of this event would be (.25 x .50 x .25 = .03125), and the expected number of schools would be 116. There were 53 such schools in reading, 46 in written expression, and 39 in math, or one-third to one-half the number expected under the random assignment hypothesis. Examination of the BAA and BBA categories revealed a similar, but more extreme, pattern. The probability of randomly falling in either category was (.25 x .25 x .25 = .015625), and the expected number of schools was 58. Looking first at BAA, there were 12 schools in reading, 23 in written expression and 14 in mathematics. Looking at BBA, there were 24 in reading, 25 in written expression, and 19 in mathematics. Schools in the BWA, BAA or BBA categories exhibited a pattern of extraordinary improvement in achievement. Results are shown by the frequency bar graph in Figure 2. Far fewer such schools were found than would have been expected on a random basis.

Three year achievement trends were consistent with ABW classifications. Mean reading achievement of AAA schools was uniformly high: 75.45 in 1981, 75.20 in 1980, and 74.47 in 1979. Mean reading achievement of BBB schools was uniformly low: 57.31 in 1981, 56.74 in 1980, and 56.23 in 1979. An increasing trend was shown by BWA schools: 60.58

in 1979, 66.71 in 1980, and 71.65 in 1981. A decreasing trend was shown by AWB schools: 69.73 in 1979, 64.2 in 1980 and 60.05 in 1981. Mean achievement of BWA and AWB schools was within the extreme high and low scores of the AAA and BBB schools. These results are displayed in Figure 3. Similar patterns were found in written expression and mathematics.

A breakdown of achievement means by total ABW counts is contained in Table 6. The count was obtained by coding A = +1, W = 0 and B = -1. The coded results were summed across content areas and years. Schools with a total of -9 have been consistently below expectation, and those with a total of +9 have been consistently above expectation. Under the hypothesis of random assignment the probability of either extreme would be quite small, that is, .25 raised to the ninth power or .0000038, and .014 would be the expected number of schools. There were 71 schools with a count of -9, and 79 with a count of +9. Mean achievement generally increased one or two percentage points for each unit increase in the count. An exception to this trend was the increase in achievement of four to five points as the count increased from +8 to +9 for nearly all years and content areas.

Breakdowns of quartile percents for reading, written expression and mathematics are contained in Tables 7, 8 and

9. The layout here is similar to that of Tables 3, 4 and 5. The ABW category, the frequency and percent of schools in that category are contained in the first three columns on the left. The average percent of students from schools scoring in each quartile of the state distribution are contained in the remaining columns. The reading quartiles are designated as follows: for 1981 RQ1-RQ4, for 1980 R0Q1-R0Q4, and for 1979 R9Q1-R9Q4. 'Q1' represents the lowest quarter of the distribution, and 'Q4' represents the highest. A parallel notation was used for written expression and mathematics.

The profiles of students in AAA schools were similar across content areas and persisted over years with little change. Typically, the profiles were negatively skewed with more than a third of the students in the highest quarter and less than a fifth in the lowest. Distributions of students in BBB schools were similar across content areas and years. They were positively skewed with over a third of the students in the lowest quarter and less than a fifth in the highest.

Profiles of schools with increasing or decreasing achievement shifted from year to year. Given the relatively small number of schools in these categories the results are somewhat tentative. BWA schools exhibited a pattern of shift in profile that appeared to be the same for the three

content areas. This is shown in Figure 4 for mathematics. Each successive year there was a reduction in the percent of students in the lower two quarters, with the largest reductions in the lowest quarter. The largest gains were in the highest quarter, which more than doubled in size. Changes in reading and written expression profiles resembled those for mathematics.

The pattern for AWB schools was not consistent across content areas. The reading and written expression profiles of AWB schools resembled one another more closely than they did the mathematics profiles. Reading profiles for AWB schools are shown in Figure 5 and the corresponding math profiles in Figure 6. The main difference between these two sets was in the 1979 profiles. The reading distribution had a slight negative skew, compared to the relatively larger negative skew of mathematics. The 1981 distributions were roughly equivalent. The result was that relatively more students in mathematics were moved from the highest quarter into the lower quarters than was the case in reading. The mathematics profiles tended to be more sharply skewed; Between 1979 and 1981 Q1 in mathematics varied by a factor of about 2. The same was true for Q4. The differences were not as large for reading.

DISCUSSION

The multiple regressions, summarized in Table 1, were used to calculate school achievement residuals. The relative constancy of both weights and values of R-square across years and content areas supported the hypothesis that relevant variables were measured consistently. The lower weights for percent LES/NES in the mathematics regressions help explain the lower values of R-square for mathematics. A priori, one would not expect percent LES/NES to correlate with mathematics achievement, as highly as with the other, more verbally oriented, content areas. Another possibility is that nearly all mathematics instruction received by students is given in school. Instruction in reading and written expression has differed from mathematics in that it has been easier to practice and learn verbal skills at home. Given that childrens experiences in reading and written expression may partially depend on opportunities in the home environment, and hence depend more directly on social class, higher values of R-square would be expected.

The breakdowns of achievement by ABW category, shown in Tables 3, 4 and 5 favored the hypothesis that school practice did have an influence on achievement, independent of social class, over the hypothesis that assignment to ABW categories was a matter of chance. More schools than expected fell in the AAA and BBB categories, and fewer than expected fell in the BWA, BAA and BBA categories.

Regression effects related to the background variables in this study are not likely, since the method of calculating the score bands takes this into account. Examination of the achievement means for AAA and BBB schools did not reveal the changes one would expect to see with a regression effect. The possibility of regression to the mean cannot be entirely excluded. Calculation of the bands did not take into account all variables conceivably related to achievement. If a variable existed which was strongly correlated with achievement, weakly correlated with SES, percent LES/NES and percent AFDC, it could be the basis of a regression effect. A tentative interpretation of these results can be fashioned around a paraphrase of Newton's law of inertia: A body tends to continue in its path unless acted upon by an outside force. The reason there were so few improving schools is that the changes required to become a BWA, BBA or BAA school are too great for most institutions to undertake of their own accord. It is far easier to persist in old habits, even if they are negative, than it is to form new habits. The number of AWB schools was approximately the same as the number of BWA schools in each content area. It would appear that extraordinary changes in achievement, whether increases or decreases, are rare. The reason there were more schools than expected in the AAA and BBB categories likewise had to do with persistance of habits. Once a school has established a pattern of scoring above or below expectation,

that pattern tends to persist. Once by means of hard work a school has increased achievement, or through unfortunate circumstances its level of achievement has decreased, the school will tend to remain where it lands. This, of course, is the opposite of a random basis for classification. There were no data in this study to indicate the causes of higher or lower than expected achievement. Austin's (1981) paper contained an extensive discussion of the findings of many studies of this question.

The breakdown of achievement by total ABW count, shown in Table 6, was a synthesis of Tables 3, 4 and 5. The existence of more schools than expected with extreme totals of +9 or -9 supported the earlier finding that school practices had an effect on achievement. An additional finding was the relatively large jump in achievement for schools that were always above their bands. The 79 schools with a count of +9 can be compared to the 244 in reading, 243 in written expression and 299 in mathematics which were AAA. High performance in one area did not guarantee high performance in other areas. Among the schools that were exemplary in reading, or written expression, or mathematics, only a minority were exemplary in all areas. Examination of the achievement means revealed that schools which consistently exceeded expectation had higher average scores than schools which were AAA in any one area. Their achievement was much higher, as well, than the achievement

of schools with a count of +7 or +8. One can tentatively conclude that among the schools with superior achievemnent in one content area there was an elite which excels in all areas.

The profiles of students in each quarter of the state distribution, shown in Tables 7, 8 and 9, revealed a stability across years and content areas for AAA and BBB schools. The skewness of these profiles was consistent with the relatively high achievement of AAA schools and the lower achievement of BBB schools. For schools with changing achievement the profiles shifted year by year, permitting a more detailed examination of the effects of those changes on student achievement. These shifts should be interpreted cautiously, given the possibility of an unknown regression effect. The stability of the profiles of the AAA and BBB schools, however, argues against this liklihood. The data suggested that changes in BWA schools, those which were improving, affected students in all content areas in much the same way. The percent of students in the lower quarters decreased, and the percent in the higher quarters increased. By contrast, changes in AWB schools, those with decreasing achievement, affected the mathematics and reading profiles differently. There was a larger and more rapid decrease in the higher quarters of the distribution in mathematics than in reading. Mathematics involves skills which are almost exclusively learned in school, while reading involves skills

that students can practice at home and elsewhere. Such extracurricular practice in verbal skills would have the effect of slowing the increase in the lower quarters. Mathematics does not benefit as much from extracurricular practice, so that a negative changes in instruction resulted in more rapid growth of the lower quarters.

CONCLUSIONS

Regression based methods similar to those used here have been used by researchers for locating exemplary schools beginning with Dyer's work. Nearly all of these applications have involved the selection of a set of schools, based on the size of residuals calculated for one or more years of data. Rarely, if ever, has there been a search for schools that show extraordinary improvement. Such schools are even less numerous than those which, traditionally, have been labeled exemplary. How might a study of improving schools be of use? To illustrate this a distinction must be drawn between two concepts: maintaining the status quo; and change. Studies of exemplary schools reveal practices which involve maintaining a very high level status quo. This is a worthwhile endeavor and should be continued. Many schools, though, need models for change. Once achievement has increased they can work on maintaining it. To reach that high plateau of success, however, concrete and practical methods of change are needed. The relatively small number of schools found in this study which

exhibit extraordinary improvement would indicate that the necessary methods are neither very widespread nor obvious. More research is needed to understand what is going on in such schools.

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TABLE 1

Three Year Summary of Sixth Grade Multiple Regressions

Content Area	Background Variables	1980-81 Weights	1979-80 Weights	1978-79 Weights
Reading (R-square)		(.65)	(.63)	(.68)
	SES	.42	.40	.40
	AFDC	-.32	-.34	-.38
	LES/NES	-.24	-.25	-.25
Written (R-square) Expression		(.60)	(.56)	(.63)
	SES	.41	.38	.37
	AFDC	-.31	-.31	-.31
	LES/NES	-.22	-.24	-.24
Mathematics (R-square)		(.48)	(.47)	(.53)
	SES	.43	.40	.39
	AFDC	-.27	-.29	-.33
	LES/NES	-.13	-.13	-.16

TABLE 2

Counts of Exemplary Schools in Selected ABW Categories

Content Area	ABW Category			
	AAA	BWA	BAA	BBA
Reading or Writing or Math	508	127	44	58
Writing	243	46	23	25
Math	299	39	14	19
Reading	244	53	12	24
Math & Writing	125	5	4	4
Reading & Writing	117	5	1	5
Reading & Math	115	2	0	2
Reading & Writing & Math	79	1	0	1

Table 3

BREAKDOWN OF ACHIEVEMENT MEANS FOR THREE YEARS OF READING ABW INDICES

OBS	RABW	_FREQ_	PERCENT	R79	R80	R81	M79	M80	M81	W79	W80	W81
1		3713	100.00	67.42	67.81	68.37	59.51	60.05	60.66	65.21	65.74	66.56
2	AAA	244	6.57	74.47	75.20	75.45	66.30	67.01	67.42	71.09	72.44	72.75
3	AAB	31	0.83	70.97	71.50	61.95	62.15	62.03	59.43	66.90	65.63	63.56
4	AAW	156	4.20	75.00	74.86	70.41	65.52	65.84	63.35	72.14	71.72	69.30
5	ABA	21	0.57	67.72	59.35	69.76	58.16	56.43	61.11	64.50	59.82	65.52
6	ABB	21	0.57	64.05	56.20	57.21	55.95	51.08	51.65	59.32	56.42	55.74
7	ABW	46	1.24	72.28	60.78	67.94	60.17	55.23	58.88	65.65	59.93	64.58
8	AWA	148	3.99	74.19	69.32	74.84	64.91	62.89	65.51	71.23	68.82	70.80
9	AWB	50	1.35	69.33	64.15	60.05	60.27	57.57	56.17	64.59	62.70	60.48
10	AWW	221	5.95	73.14	69.18	69.48	62.90	61.10	60.99	69.26	67.51	67.49
11	BAA	12	0.32	64.67	74.25	76.34	58.19	64.14	66.33	65.02	72.03	73.82
12	BAB	20	0.54	53.45	67.50	57.00	49.08	58.24	53.91	54.46	64.63	59.29
13	BAW	36	0.97	60.50	73.41	69.52	56.92	63.76	61.70	62.03	68.31	67.10
14	BBA	24	0.65	58.74	60.28	68.43	53.71	54.82	59.50	57.70	59.81	65.24
15	BBB	244	6.57	56.83	56.74	57.32	50.54	51.33	52.11	54.82	55.51	56.50
16	BBW	135	3.64	60.20	60.14	66.33	54.36	54.97	58.38	59.68	59.78	64.10
17	BWA	53	1.43	60.58	66.71	71.65	56.62	59.07	61.35	62.55	64.27	66.88
18	BWB	134	3.61	60.52	65.44	61.41	54.56	57.38	55.26	59.26	62.43	60.71
19	BWW	206	5.55	61.09	66.98	67.51	55.20	58.50	58.75	60.73	63.98	65.15
20	WAA	169	4.55	69.02	74.54	74.75	61.74	65.05	65.77	67.08	71.01	72.01
21	WAB	28	0.75	65.25	70.47	64.85	56.93	59.05	56.86	64.15	66.00	61.69
22	WAW	230	6.19	70.06	75.37	70.58	61.87	64.84	62.51	68.06	71.25	69.18
23	WBA	50	1.35	66.64	61.21	72.85	56.89	56.05	62.29	62.73	61.74	68.31
24	WBB	125	3.37	62.83	58.21	59.43	55.22	53.60	54.16	60.42	57.06	58.64
25	WBW	233	6.28	67.08	62.67	68.18	58.41	56.94	59.91	64.61	62.30	66.19
26	WWA	235	6.33	68.73	68.79	74.36	61.04	61.06	64.54	66.95	67.78	71.17
27	WWB	207	5.58	66.56	66.68	62.12	58.43	58.02	57.25	64.71	64.57	62.91
28	WWW	634	17.08	69.40	69.92	69.96	60.74	61.36	61.78	66.88	67.48	68.16

Table 4

BREAKDOWN OF ACHIEVEMENT MEANS FOR THREE YEARS OF MATHEMATICS ABW INDICES

OBS	MABW	_FREQ_	PERCENT	R79	R80	R81	M79	M80	M81	W79	W80	W81
1		3713	100.00	67.42	67.81	68.37	59.51	60.05	60.66	65.21	65.74	66.56
2	AAA	299	8.05	73.82	74.10	74.25	69.94	70.75	70.82	72.61	73.39	73.50
3	AAB	16	0.43	70.77	70.69	64.09	64.01	66.17	53.55	69.25	68.47	63.12
4	AAW	165	4.44	72.53	73.27	71.37	67.82	68.14	62.75	70.98	71.75	68.82
5	ABA	11	0.30	66.25	62.85	68.26	62.15	52.56	65.37	64.38	60.19	68.34
6	ABB	26	0.70	67.00	63.91	63.44	63.43	52.98	53.39	63.93	58.83	61.80
7	ABW	32	0.86	69.52	62.39	67.15	64.35	52.22	58.07	66.46	59.96	63.97
8	AWA	119	3.20	71.18	69.39	72.69	66.21	60.74	67.26	69.34	67.03	71.11
9	AWB	42	1.13	68.76	66.98	66.39	64.35	59.60	54.80	67.27	65.58	64.11
10	AWW	205	5.52	71.57	69.32	69.40	65.92	60.68	61.36	69.91	66.89	67.23
11	BAA	14	0.38	65.76	71.84	71.40	54.10	69.76	70.36	61.70	72.85	72.54
12	BAB	7	0.19	60.33	65.56	63.89	49.77	62.83	51.43	55.60	66.71	60.03
13	BAW	43	1.16	63.91	71.72	69.89	53.70	66.81	60.87	61.98	70.14	66.83
14	BBA	19	0.51	66.17	65.92	73.19	55.58	55.67	68.05	62.78	63.88	70.20
15	BBB	267	7.19	60.66	61.32	61.78	51.49	51.93	52.21	58.19	58.66	59.64
16	BBW	144	3.88	62.63	63.02	66.56	52.31	52.69	58.67	60.31	60.49	64.19
17	BWA	39	1.05	64.77	66.80	70.92	52.88	58.72	66.26	62.00	63.89	70.01
18	BWB	156	4.20	62.79	65.78	63.09	51.55	57.51	53.00	60.14	63.28	61.06
19	BWW	229	6.17	64.45	66.90	67.88	53.65	58.95	59.76	61.89	64.56	65.86
20	WAA	147	3.96	68.89	72.68	73.36	60.91	68.02	68.81	66.58	71.72	72.93
21	WAB	28	0.75	65.76	69.08	65.72	59.34	65.70	53.58	64.39	68.92	63.93
22	WAW	165	4.44	69.80	72.20	70.46	61.00	66.68	61.90	67.78	70.67	68.98
23	WBA	37	1.00	64.91	62.64	67.51	57.40	53.16	65.33	63.51	61.16	67.03
24	WBB	157	4.23	64.83	62.71	63.46	56.48	52.58	53.50	62.12	60.51	61.41
25	WBW	230	6.19	65.39	62.92	66.56	57.48	53.24	58.98	62.96	60.47	64.66
26	WWA	214	5.76	68.71	69.33	71.48	60.33	60.98	66.88	66.44	67.28	70.83
27	WWB	225	6.06	65.92	66.01	64.34	57.96	58.24	54.51	63.84	64.28	62.32
28	WWW	677	18.23	68.13	68.64	69.04	59.62	60.10	60.59	65.63	66.12	66.84

Table 5

BREAKDOWN OF ACHIEVEMENT MEANS FOR THREE YEARS OF WRITTEN EXPRESSION ABW INDICES

OBS	LABW	_FREQ_	PERCENT	R79	R80	R81	M79	M80	M81	W79	W80	W81
1		3713	100.00	67.42	67.81	68.37	59.51	60.05	60.66	65.21	65.74	66.56
2	AAA	243	6.54	73.63	74.37	74.62	67.15	68.29	68.11	74.17	75.09	75.33
3	AAB	18	0.48	74.42	72.93	66.29	68.56	65.73	60.28	75.23	75.18	60.57
4	AAW	153	4.12	72.81	73.01	70.85	65.28	65.55	62.89	72.98	73.25	68.14
5	ABA	8	0.22	68.42	62.31	72.12	60.15	56.96	67.66	74.39	58.02	74.27
6	ABB	22	0.59	61.14	57.97	59.71	55.71	51.20	52.51	61.25	53.90	56.16
7	ABW	45	1.21	69.61	63.42	67.16	60.39	55.50	59.23	69.69	58.38	65.30
8	AWA	160	4.31	70.80	69.00	71.29	63.25	61.51	64.02	71.24	66.07	72.35
9	AWB	51	1.37	65.54	64.26	61.93	58.91	56.93	54.38	67.23	62.55	57.48
10	AWW	222	5.98	71.77	70.01	70.12	63.87	61.83	62.44	71.89	67.40	67.96
11	BAA	23	0.62	64.43	73.22	72.70	59.17	66.57	68.03	59.00	75.21	75.66
12	BAB	15	0.40	60.75	65.99	62.08	54.24	60.97	55.32	56.39	66.91	57.61
13	BAW	47	1.27	66.41	70.57	68.46	56.96	63.93	61.18	59.17	73.55	67.01
14	BBA	25	0.67	64.08	64.74	69.75	55.58	56.84	63.64	59.10	59.17	71.57
15	BBB	251	6.76	53.29	50.65	59.32	51.08	51.84	52.41	54.49	54.97	56.08
16	BBW	157	4.23	62.10	62.56	65.63	54.36	54.74	57.92	57.32	58.20	63.68
17	BWA	46	1.24	65.16	67.39	70.06	56.52	59.99	63.63	59.59	64.51	73.10
18	BWB	116	3.12	60.96	64.34	62.11	52.95	56.04	54.63	56.62	62.38	58.28
19	BWW	206	5.55	63.40	66.57	67.66	55.74	58.33	58.83	59.30	65.04	65.88
20	WAA	162	4.36	69.77	72.62	73.73	61.89	65.90	66.77	66.37	73.67	74.06
21	WAB	31	0.83	63.65	65.01	61.96	55.48	57.82	55.15	60.77	66.65	58.09
22	WAW	201	5.41	70.89	73.55	71.36	62.83	65.24	62.76	67.99	73.39	69.16
23	WBA	48	1.29	65.29	62.59	68.47	56.56	55.28	60.64	62.81	57.14	69.00
24	WBB	140	3.77	62.25	60.22	61.18	55.01	53.27	54.43	60.43	56.39	57.25
25	WBW	237	6.38	66.11	64.12	67.12	57.98	56.33	59.10	64.17	59.35	65.50
26	WWA	207	5.58	69.17	69.59	72.84	60.73	60.76	64.88	66.61	67.05	73.63
27	WWB	245	6.60	66.33	66.68	64.75	57.97	58.71	56.80	64.21	64.90	60.45
28	WWW	634	17.08	69.52	69.91	70.29	60.83	61.27	61.83	67.10	67.59	67.90

Table 6

BREAKDOWN OF ACHIEVEMENT MEANS BY TOTAL ABH COUNTS

OBS	TOTAL	_FREQ_	PERCENT	R79	R80	R81	M79	M80	M81	H79	H80	H81
1	.	3713	100.00	67.42	67.81	68.37	59.51	60.05	60.66	65.21	65.74	66.56
2	-9	91	2.45	56.35	56.92	57.49	49.15	49.90	50.46	53.79	54.17	55.87
3	-8	83	2.24	57.04	57.97	57.77	49.97	51.21	51.23	54.49	55.99	55.67
4	-7	84	2.26	60.47	60.38	61.54	53.32	52.68	54.14	57.92	57.42	58.75
5	-6	135	3.64	59.60	60.21	60.96	52.64	53.04	53.66	57.33	57.81	58.92
6	-5	186	5.01	61.36	61.69	63.03	53.25	54.22	55.19	58.35	57.14	60.68
7	-4	232	6.25	62.94	63.39	64.20	54.18	55.03	56.06	60.53	61.36	62.22
8	-3	281	7.57	64.81	65.12	65.63	56.28	57.18	57.72	62.64	62.77	63.59
9	-2	300	8.08	66.40	66.23	67.53	58.07	57.62	58.72	64.10	63.66	65.16
10	-1	296	7.97	66.71	67.17	67.77	58.02	58.55	59.44	64.00	64.84	65.40
11	0	315	8.48	68.47	68.42	68.87	59.89	60.27	60.69	66.08	66.39	67.20
12	1	300	8.08	69.29	69.42	69.84	61.12	61.45	62.07	67.11	67.31	68.38
13	2	308	8.30	69.87	70.19	70.64	62.03	62.18	63.05	67.64	68.18	69.01
14	3	264	7.11	70.65	71.79	71.67	62.62	63.42	63.64	68.78	69.29	69.99
15	4	218	5.87	70.63	71.90	72.42	62.99	64.11	64.70	68.85	69.84	71.22
16	5	183	4.93	71.97	72.46	72.50	64.57	64.92	65.00	69.91	70.83	70.74
17	6	153	4.12	73.58	73.41	74.22	65.66	66.40	66.86	71.31	72.43	72.71
18	7	127	3.42	73.65	74.08	74.42	67.20	68.35	68.06	72.03	73.60	72.80
19	8	78	2.10	73.37	73.36	73.69	67.64	67.97	68.33	72.56	72.14	72.92
20	9	79	2.13	76.01	77.16	77.41	71.26	72.39	72.53	75.49	77.07	77.36

Table 7

BREAKDOWN OF QUARTILE MEANS FOR THREE YEARS OF READING ABW INDICES

RABW	FREQ	PERCENT	RQ1	RQ2	RQ3	RQ4	ROQ1	ROQ2	ROQ3	ROQ4	R9Q1	R9Q2	R9Q3	R9Q4
	3713	100.00	25.92	24.68	24.84	25.26	24.72	25.47	25.28	25.24	24.45	25.20	25.61	25.52
AAA	244	6.57	17.27	22.30	27.34	33.86	15.40	22.76	27.84	34.59	15.49	22.78	28.61	33.88
AAB	31	0.83	34.06	26.35	21.77	18.40	20.27	24.07	26.87	30.23	22.21	21.03	26.90	31.29
AAW	156	4.20	22.90	23.81	25.26	28.02	15.42	22.76	28.26	33.76	14.94	21.35	28.77	35.13
ABA	21	0.57	23.38	25.57	25.81	25.24	36.57	25.19	21.95	16.29	22.90	26.05	26.33	24.71
ABB	21	0.57	41.90	26.57	17.57	13.95	40.43	26.67	18.19	14.71	29.43	25.43	23.19	21.95
ABW	46	1.24	25.59	25.22	25.54	23.65	33.96	26.91	22.58	17.82	19.56	22.33	27.93	32.16
AWA	148	3.99	17.92	21.90	27.40	33.05	22.38	25.31	26.64	26.32	16.50	22.10	27.50	34.65
AWB	50	1.35	37.82	25.56	20.10	18.00	29.50	25.96	24.10	20.86	22.00	24.00	27.82	27.06
AWW	221	5.95	23.86	24.91	25.73	25.83	22.75	24.89	26.17	26.52	17.00	22.99	28.70	31.90
BAA	12	0.32	18.58	19.58	27.33	34.50	16.08	24.50	26.50	32.92	25.92	23.25	25.17	20.67
BAB	20	0.54	43.00	25.10	19.16	15.22	28.67	27.16	24.00	26.80	48.10	24.56	19.39	14.53
BAW	36	0.97	24.85	24.89	27.33	25.00	18.61	23.50	28.25	31.19	33.11	26.64	22.53	19.51
BBA	24	0.65	26.88	23.83	24.71	24.58	34.92	27.71	20.96	16.42	35.83	27.80	21.04	15.25
BBB	244	6.57	41.60	25.99	18.63	14.08	40.34	26.67	18.84	14.24	40.11	26.10	19.07	14.90
BBW	135	3.64	28.56	25.41	24.85	21.76	35.41	27.26	20.86	17.53	34.04	27.46	21.00	17.92
BWA	53	1.43	22.77	23.46	26.98	27.66	25.96	27.32	23.71	24.40	34.04	26.58	22.54	18.84
BWB	134	3.61	35.00	25.93	22.05	17.15	27.32	26.76	23.98	21.94	33.49	26.61	22.18	17.86
BWW	206	5.55	26.50	25.52	24.92	23.42	25.36	26.95	24.84	23.21	32.59	27.31	22.26	18.55
WAA	169	4.55	18.73	21.85	27.18	33.10	15.68	22.98	28.75	32.95	21.78	24.95	26.78	26.65
WAB	28	0.75	34.46	25.75	21.21	18.57	20.39	24.32	27.39	27.89	26.68	27.29	24.18	21.86
WAW	230	6.19	22.11	25.25	26.56	27.38	15.11	22.84	28.93	34.10	20.35	25.30	27.60	27.91
WBA	50	1.35	22.04	22.94	26.82	30.42	33.16	28.86	21.51	19.10	25.92	27.96	24.65	24.61
WBB	125	3.37	38.58	25.94	19.70	16.48	37.92	26.66	20.15	15.85	30.66	26.38	22.73	20.44
WBW	233	6.28	25.42	25.32	24.83	24.53	31.46	26.53	22.58	19.52	24.21	26.20	25.54	24.26
WWA	235	6.33	18.75	22.21	27.56	32.35	22.69	26.47	26.13	25.55	22.10	26.00	27.39	25.65
WWB	207	5.58	33.73	26.77	22.04	18.87	26.07	26.02	25.46	23.77	25.56	26.27	25.67	24.08
WWW	634	17.08	22.73	25.47	25.97	26.26	21.15	25.75	27.00	26.51	21.09	25.37	26.90	26.94

Table 8

BREAKDOWN OF QUARTILE MEANS FOR THREE YEARS OF MATHEMATICS ABW INDICES

MABW	_FREQ_	PERCENT	MQ1	MQ2	MQ3	MQ4	M0Q1	M0Q2	M0Q3	M0Q4	M9Q1	M9Q2	M9Q3	M9Q4
	3713	100.00	25.82	24.74	24.85	25.64	25.02	25.21	25.35	25.77	24.70	25.07	25.61	25.80
AAA	299	8.05	14.01	18.17	24.31	44.61	12.51	17.99	25.75	45.91	12.41	18.08	25.88	45.31
AAB	16	0.43	36.13	30.07	22.56	15.00	18.27	24.71	24.07	40.19	18.57	23.87	30.31	31.06
AAW	165	4.44	21.49	24.20	26.98	27.98	14.36	20.24	26.11	40.37	13.66	20.28	25.99	41.13
ABA	11	0.30	17.18	21.82	27.91	33.09	34.55	29.73	22.73	14.30	25.89	24.55	23.55	30.73
ABB	26	0.70	36.38	28.38	21.23	15.83	36.27	28.84	23.52	15.13	19.73	25.60	29.72	30.12
ABW	32	0.86	26.72	28.28	26.72	20.17	36.63	27.50	22.19	14.60	19.07	21.25	28.84	32.63
AWA	119	3.20	16.95	20.05	26.57	36.43	23.03	25.29	26.02	26.31	15.60	21.36	26.87	37.13
AWB	42	1.13	34.50	27.00	23.80	15.63	26.17	24.85	27.43	22.76	19.03	22.79	27.05	34.05
AWW	205	5.52	23.75	24.74	26.42	25.57	23.00	25.94	26.55	26.02	16.34	21.33	27.64	36.39
BAA	14	0.38	11.93	19.07	24.64	44.36	13.31	18.69	26.00	44.29	32.36	28.50	22.71	16.43
BAB	7	0.19	38.43	30.00	21.14	12.17	17.86	24.86	29.29	28.00	37.71	29.57	23.43	9.29
BAW	43	1.16	24.63	25.00	25.51	25.45	15.64	20.59	27.17	37.60	32.40	27.65	25.24	15.30
BBA	19	0.51	14.67	20.95	25.63	39.53	28.05	29.63	27.05	16.11	23.95	27.95	25.74	18.33
BBB	267	7.19	39.32	27.43	20.63	12.95	37.67	27.99	21.48	13.11	37.03	27.71	21.47	13.85
BBW	144	3.88	28.13	25.73	25.17	21.46	35.45	28.53	22.47	14.24	34.90	28.12	22.92	14.58
BWA	39	1.05	17.18	22.05	26.97	34.23	25.97	26.67	25.38	22.64	33.33	28.51	22.97	15.58
BWB	156	4.20	38.10	27.59	22.02	14.75	27.45	27.79	26.43	19.70	37.20	28.13	22.33	14.74
BWW	229	6.17	25.83	26.14	25.49	22.86	25.56	26.53	26.13	22.64	33.00	28.18	23.31	16.16
WAA	147	3.96	15.79	20.50	25.44	40.04	14.70	20.33	26.64	39.44	22.22	25.00	26.53	27.77
WAB	28	0.75	38.64	26.56	21.37	16.96	16.00	23.54	27.15	35.43	25.32	23.36	24.71	26.61
WAW	165	4.44	22.76	25.36	25.65	27.16	15.01	21.93	27.52	36.13	20.83	25.72	27.49	26.99
WBA	37	1.00	17.97	23.32	28.14	32.42	35.86	27.42	22.86	15.43	27.03	27.95	25.62	21.44
WBB	157	4.23	35.38	29.00	22.17	13.95	36.07	28.21	22.41	13.93	27.60	27.48	25.93	19.46
WBW	230	6.19	27.35	26.16	25.51	21.26	35.63	27.45	22.31	15.55	26.30	26.54	25.97	21.30
WWA	214	5.76	17.64	21.32	25.82	36.23	23.19	24.84	26.45	26.56	22.63	24.82	26.93	26.40
WWB	228	6.06	34.34	28.04	23.03	15.74	26.41	26.79	25.59	22.38	25.49	27.07	25.88	22.24
WWW	677	18.23	24.95	25.15	26.11	24.31	23.39	26.24	26.64	24.46	23.31	25.46	26.76	24.93

Table 9

BREAKDOWN OF QUARTILE MEANS FOR THREE YEARS OF
WRITTEN EXPRESSION ABW INDICES

LABW	_FREQ_	PERCENT	WQ1	WQ2	WQ3	WQ4	W0Q1	W0Q2	W0Q3	W0Q4	W9Q1	W9Q2	W9Q3	W9Q4
	3713	100.00	25.85	24.81	24.80	25.35	24.76	25.32	25.43	25.50	24.49	25.44	25.34	25.71
AAA	243	6.54	16.52	19.29	27.65	37.22	14.58	20.21	27.40	38.97	14.53	20.30	28.21	38.31
AAB	18	0.48	33.72	25.72	19.50	22.29	13.94	20.61	27.94	39.83	14.94	17.47	30.69	39.33
AAW	153	4.12	23.40	23.64	26.39	26.89	15.70	21.85	28.01	35.38	15.28	21.77	27.80	36.20
ABA	8	0.22	17.00	21.75	24.75	36.50	32.00	32.88	19.57	20.57	15.14	21.43	30.25	37.75
ABB	22	0.59	41.27	25.91	19.67	14.71	41.00	25.68	19.86	14.10	29.23	25.09	24.59	21.09
ABW	45	1.21	25.40	27.80	24.82	23.16	34.91	26.67	21.60	18.18	20.88	23.98	27.22	31.31
AWA	160	4.31	18.99	22.70	26.59	32.87	23.27	27.09	25.94	24.95	16.91	23.06	28.12	33.12
AWB	51	1.37	37.00	28.12	20.53	15.00	30.00	25.39	23.92	21.75	24.00	23.54	25.94	29.31
AWW	222	5.98	23.23	24.92	26.00	26.64	22.08	24.65	27.24	26.70	16.39	22.68	27.77	34.28
BAA	23	0.62	13.52	21.65	30.35	35.65	12.14	23.30	27.48	37.61	34.70	26.77	22.14	19.36
BAB	15	0.40	35.40	29.67	20.80	15.14	22.79	26.47	27.33	24.93	36.40	26.27	23.27	15.07
BAW	47	1.27	25.11	25.60	25.65	25.62	15.64	21.34	30.87	35.17	32.89	26.89	22.57	19.53
BBA	25	0.67	22.83	21.21	25.83	32.92	33.20	25.80	23.08	18.67	31.48	28.24	22.44	18.58
BBB	251	6.76	40.47	26.97	18.95	13.94	39.39	28.03	19.15	13.77	38.64	27.87	19.96	13.95
BBW	157	4.23	28.90	27.11	23.52	20.79	34.17	28.00	21.53	16.73	34.39	28.11	21.23	16.58
BWA	46	1.24	20.17	20.31	28.13	33.59	24.82	29.46	25.07	22.22	31.35	27.57	23.46	18.43
BWB	116	3.12	36.67	26.83	20.32	16.32	28.69	26.56	24.40	20.59	35.84	27.42	20.64	16.23
BWW	206	5.55	26.05	25.62	25.27	23.30	24.70	26.44	25.92	23.18	31.84	27.21	22.50	18.99
WAA	162	4.36	16.57	21.70	27.31	34.37	15.22	21.83	28.72	35.70	22.14	26.12	26.28	26.06
WAB	31	0.83	37.06	26.13	20.48	16.87	23.65	23.65	27.20	27.27	29.68	26.52	24.77	19.03
WAW	201	5.41	21.12	25.45	26.42	27.49	14.70	23.12	28.23	34.65	20.23	25.15	27.23	28.42
WBA	43	1.29	24.44	23.79	24.85	26.94	36.50	28.94	21.07	17.11	26.44	27.98	24.21	21.88
WBB	140	3.77	38.28	27.79	19.93	14.90	37.29	27.63	20.75	15.21	30.66	26.92	23.28	19.81
WBW	237	6.38	26.36	26.52	24.75	22.57	32.95	27.13	22.43	18.17	24.93	26.52	26.27	22.99
WWA	207	5.58	17.53	21.74	27.72	34.16	22.45	25.34	27.33	24.22	21.60	27.21	25.80	26.22
WWB	245	6.60	33.48	26.81	22.81	18.24	25.33	25.98	25.66	23.97	25.00	27.06	25.36	23.70
WWW	634	17.08	23.20	25.04	25.87	26.28	21.67	25.36	26.86	26.92	21.47	25.06	26.53	27.37

FIGURE 1
NUMBERS OF SCHOOLS CONSISTENTLY ABOVE (AAA)
OR BELOW (BBB) EXPECTATION FOR THREE YEARS

FREQUENCY BAR CHART

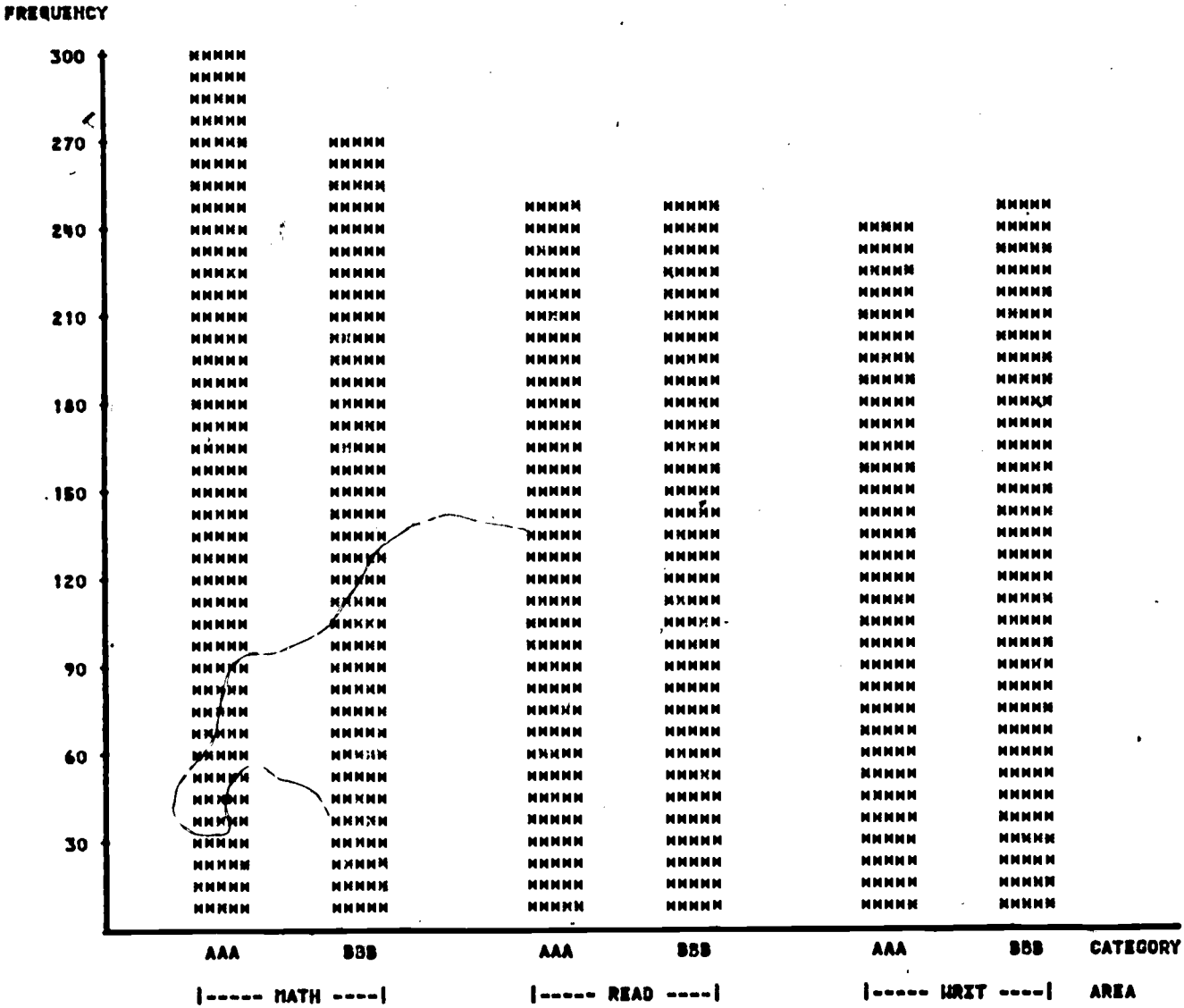


FIGURE 2
NUMBERS OF SCHOOLS WITH IMPROVING ACHIEVEMENT
RELATIVE TO EXPECTATION

FREQUENCY BAR CHART

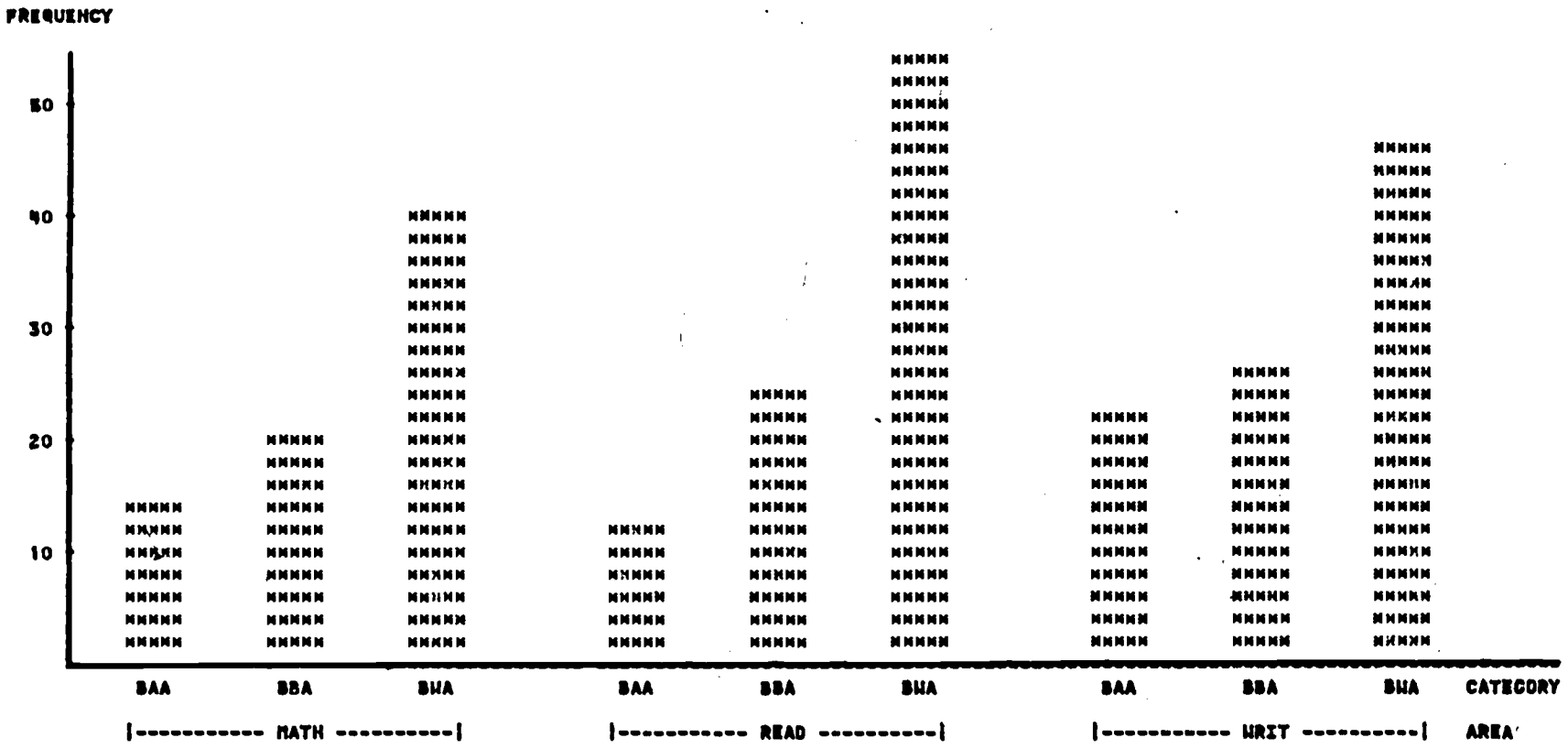


FIGURE 3
THREE YEAR READING ACHIEVEMENT TRENDS OF HIGH ACHIEVING (AAA) LOW ACHIEVING (BBB), IMPROVING (BWA) AND DECLINING (AWB) SCHOOLS

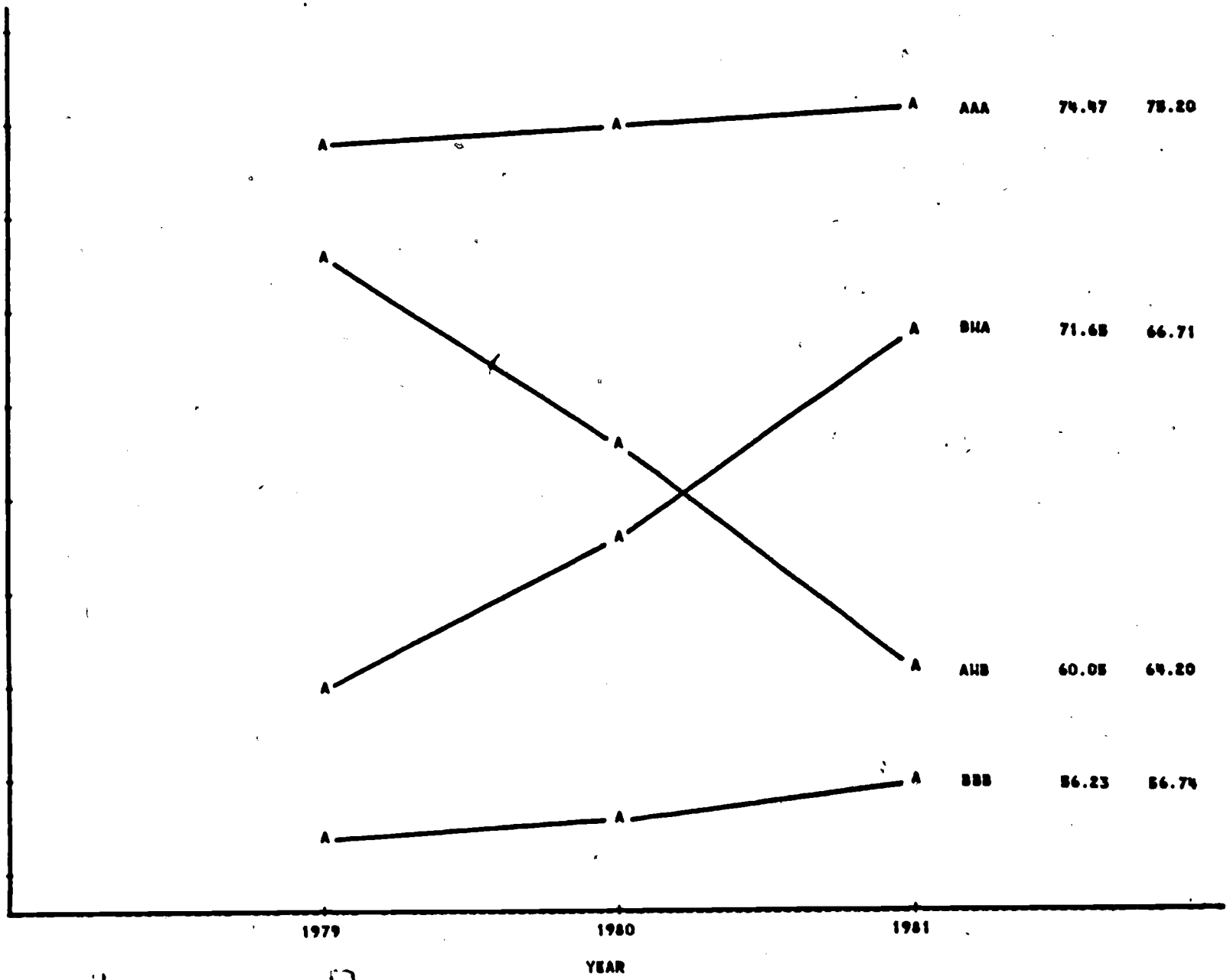
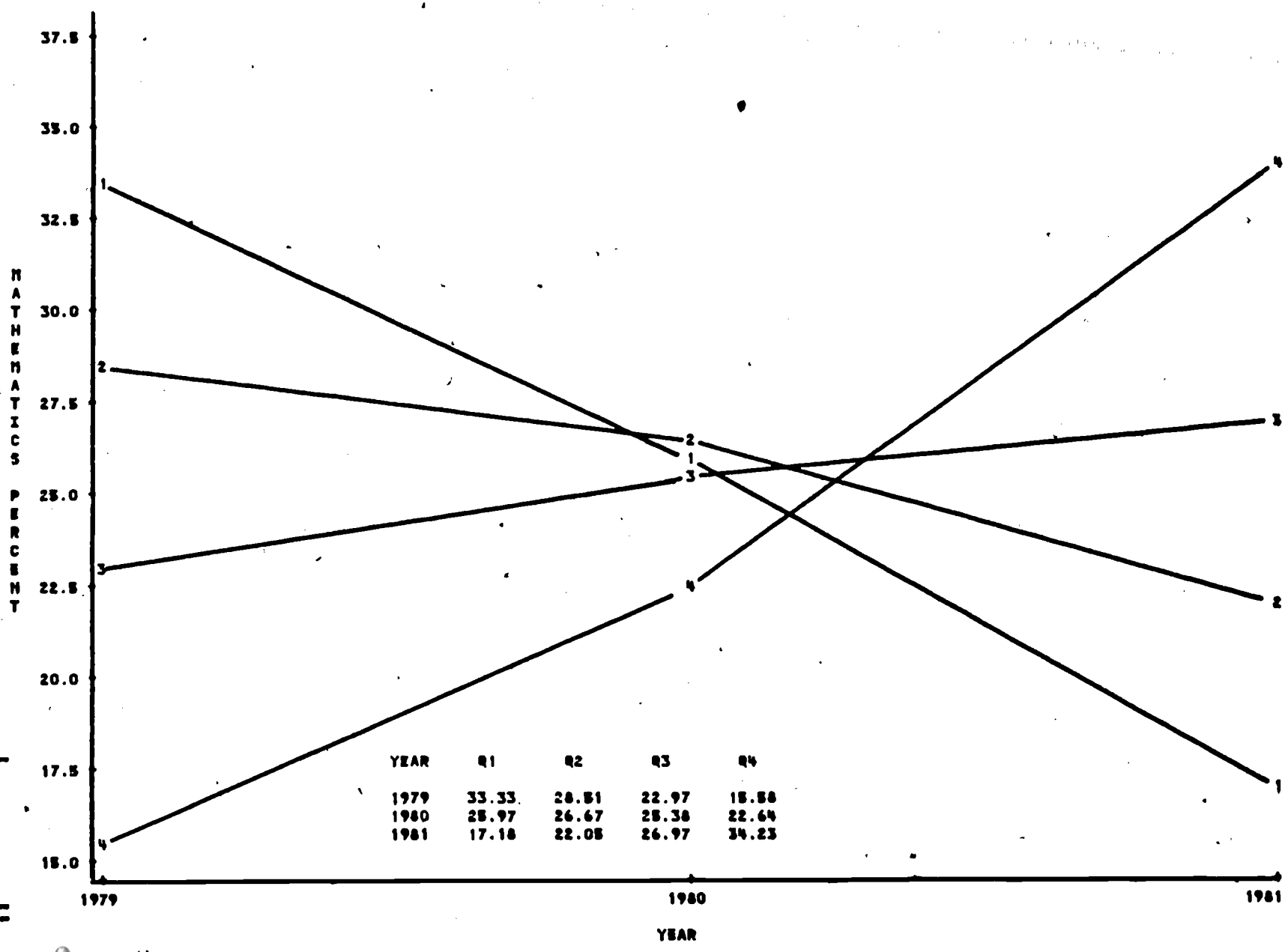
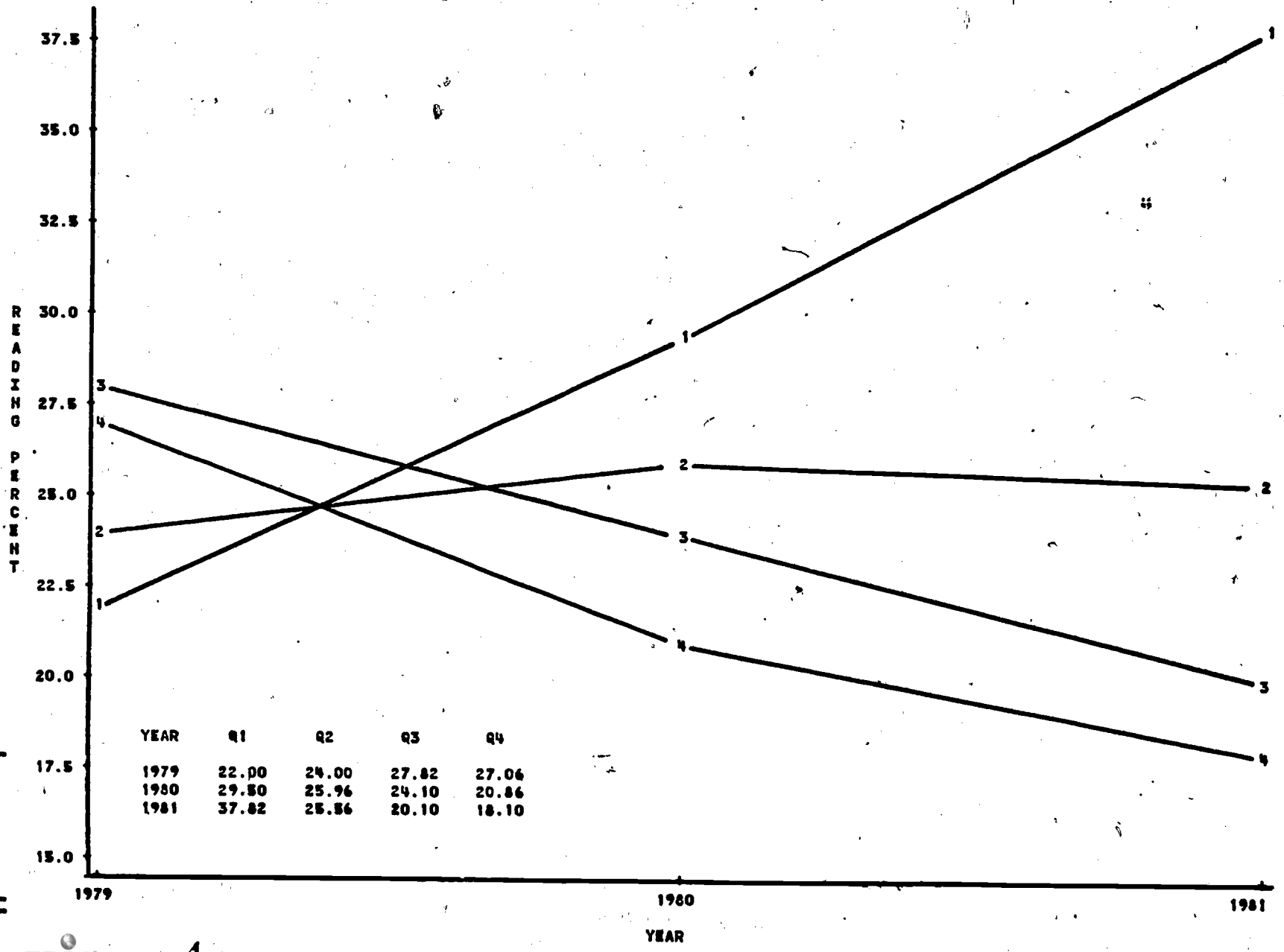


FIGURE 4
PERCENT OF STUDENTS SCORING IN EACH QUARTER OF THE STATE DISTRIBUTION OF MATHEMATICS SCORES FOR IMPROVING (BHA) SCHOOLS



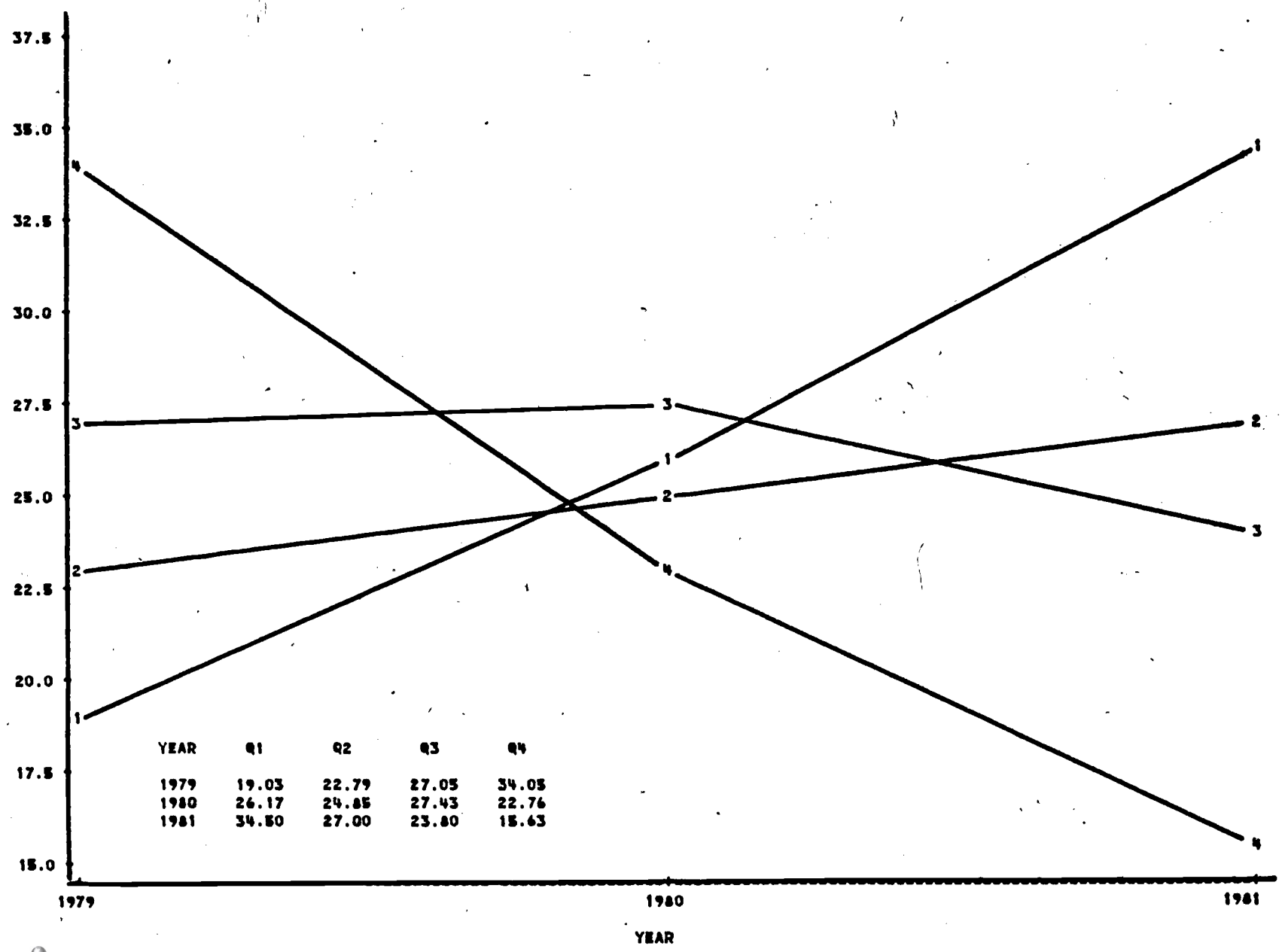
YEAR	Q1	Q2	Q3	Q4
1979	33.33	28.51	22.97	15.58
1980	25.97	26.67	25.38	22.64
1981	17.18	22.05	26.97	34.23

FIGURE 5
PERCENT OF STUDENTS SCORING IN EACH QUARTER OF THE
STATE DISTRIBUTION OF READING SCORES FOR
DECLINING (AHB) SCHOOLS



YEAR	Q1	Q2	Q3	Q4
1979	22.00	24.00	27.82	27.06
1980	29.50	25.96	24.10	20.86
1981	37.82	25.56	20.10	18.10

FIGURE 6
PERCENT OF STUDENTS SCORING IN EACH QUARTER OF THE
STATE DISTRIBUTION OF MATHEMATICS SCORES FOR
DECLINING (AWB) SCHOOLS



YEAR	Q1	Q2	Q3	Q4
1979	19.03	22.79	27.05	34.05
1980	26.17	24.85	27.43	22.76
1981	34.50	27.00	23.80	15.63