

DOCUMENT RESUME

ED 400 240

SP 036 963

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 TITLE Teacher Attrition 1980-1996. Statistical Notes No. 002.
 INSTITUTION North Carolina State Dept. of Public Instruction, Raleigh.
 PUB DATE May 96
 NOTE 43p.
 PUB TYPE Statistical Data (110)

EDRS PRICE MF01/PC02 Plus Postage.
 DESCRIPTORS Elementary Secondary Education; *Faculty Mobility; Labor Turnover; *Public School Teachers; Scores; Teacher Background; *Teacher Characteristics; *Teacher Employment; *Teacher Persistence

IDENTIFIERS *North Carolina; NTE Test of Professional Knowledge

ABSTRACT

An analysis was conducted on the employment history of teachers hired in the North Carolina public schools from 1979-80 school year through 1996. Over 81,000 new teachers were hired in this period. Overall, the loss by the end of the second teaching year is 15-18 percent. Male teachers are more likely to leave (20 percent versus 15 percent for females). High school teachers leave at a higher rate with 35 percent gone after 5 years versus 28 percent of elementary school teachers. The National Teacher Examination (NTE) test scores of teachers leaving are higher than those staying. Teachers from the bottom quartile of colleges are much more likely to stay than those from the top quartile (26 percent from lowest quartile leaving versus 44 percent from the top quartile). The differences in the average test scores of the leavers and the stayers may be a matter of concern if the NTE test scores are a significant determinant of teacher performance. The average score differences of leavers and stayers may indicate a failure to retain better qualified teachers in the system. The appendix provides 24 attrition matrices. (JLS)

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statistical notes no: 002

Teacher Attrition

M. Engin Konanc

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TEACHER ATTRITION

1980-1996

M. Engin Konanc

Statistical Research and Data Center/Financial and Personnel Services
North Carolina Department of Public Instruction
May, 1996

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TEACHER ATTRITION 1980-1996

EXECUTIVE SUMMARY

- According to Teacher Certification File records, since the 1979-80 school year over 81,000 new teachers were hired in the N.C. public school system.
- Average NTE test scores of the new teachers hired show an increasing trend. This is true for both the *Professional Knowledge* test scores and the *Subject Area* test scores.
- The colleges that produce new teachers were divided into four groups or quartiles based on the average test score of their students who either have been or still are employed in the Public Schools. Over the years (1980-96), there has been an increase in the percentage of teachers coming from colleges in the third and fourth quartiles, with a corresponding decrease in the second quartile. The share of the first or bottom quartile remained stable at about 21 percent.
- By the end of the fifth year, a third of the teachers are leaving teaching activities.
- The loss by the end of the second year is around 15 to 18 percent for all teachers, except foreign language teachers (22 percent). The patterns of attrition over the years are similar for all subject areas investigated.
- Male teachers are much more likely to leave teaching than female teachers. By the end of the second year, 20 percent of male teachers are leaving teaching. In contrast, the loss of female teachers for the same period is 15 percent.
- High school teachers are leaving at a higher rate than the middle and elementary school teachers. At the end of five years, nearly 35 percent of the high school teachers and only 28 percent of the elementary teachers are gone.
- In general, NTE test scores of the teachers who leave are higher than those who stay. This is true for both the *Professional Knowledge* and the *Subject Area* test scores. The differences are statistically significant at the 0.05 level for English, math, science, and exceptional children teachers.
- The teachers coming from the bottom quartile of the colleges are much more likely to stay on than those coming from the top quartile of colleges. Only 26 percent of the lowest quartile teachers are leaving as opposed to 44 percent of those from the top quartile.
- The differences in the attrition patterns of teachers coming from the four quartiles of colleges change the composition of the remaining teaching force. Teachers from the top or upper two quartiles are leaving at a faster rate than those from the bottom two quartiles. Initially 37 percent of the teachers hired are coming from the top two quartiles of the colleges. But, of the teachers who remain in teaching, the fraction falls to 33 percent.

Introduction

This *Statistical Brief* presents some results of the analysis conducted on the employment history of teachers hired in the North Carolina Public schools since 1989-90 school year to present. The analysis was directed to answer the following questions: How many teachers were hired in each of the years under study? What was their average NTE test scores —required for certification— of each group hired? Which colleges produced these teachers, and what were the average test scores of graduates of each institution? How long did the teachers remain in teaching? How many left and when —attrition rates—? Were there differences in attrition patterns of different teacher groups? And finally, were there any significant differences in the test scores of those who left and those who stayed ?

The data for the analysis was extracted from the certification and payroll records in the Department's files. The only teachers included in the study were those who were hired in the Public Schools, as opposed to all teachers who were certified. Teachers who took non-teaching positions, even if they stayed in the school system, are regarded as having left classroom teaching.

One point that needs to be emphasized from the outset is this: People change occupations for many reasons. Even though it is not easy to determine and document, it is clear that there is some natural attrition rate in every profession. Information about the natural attrition rates is not available for two reasons. First, few professions are well defined in terms of what their individual members do. For example, the variety of jobs performed and employment areas for lawyers are much broader and far less uniform than they are for teachers. Second, there are no centralized employment records for other professions to assess their attrition rates.

Absence of such knowledge makes the results of the study, especially in terms of attrition rates, difficult to put in proper perspective. When we say a third of the teachers leave by the end of their fifth year, we do not know whether this is true or not for other professions, if this is a problem that needs to be addressed as a policy issue, or if we are observing a natural phenomenon that is common to other professions.

In certain parts of the analysis, NTE test scores are used either for classifications or comparisons. There are several types of tests that are administered by the NTS and taken by teachers as a part of the certification requirements. In the last two years, the new teachers are taking a new series of tests called "The PRAXIS Series," developed to replace the "old" tests. Since only the teachers hired in the last year took the new series, the analysis is confined to the "old" tests.

Specifically only two types of the "old tests" are used: The Professional Knowledge (PK) part of the old series designed to test the pedagogy knowledge of teacher candidates and is taken by all certified teachers. The other set of test scores used in the analysis are those of the "Subject Area " tests. There is a different test for each subject that the teacher seeks certification in.

The reader may note that the totals in different parts of the analysis may not be congruous. This is the result of incomplete records. For instance, if a teacher's record has a missing test score, that teacher is not included in the analysis requiring test scores, but would be included in other counts.

New Hires

<i>YEAR HIRED</i>	<i>NUMBER HIRED</i>
1980	6,417
1981	4,071
1982	2,852
1983	2,805
1984	3,401
1985	3,950
1986	4,377
1987	4,661
1988	4,972
1989	5,494
1990	5,026
1991	4,306
1992	4,563
1993	5,494
1994	5,995
1995	6,377

Table 1

Number of New Teachers Hired

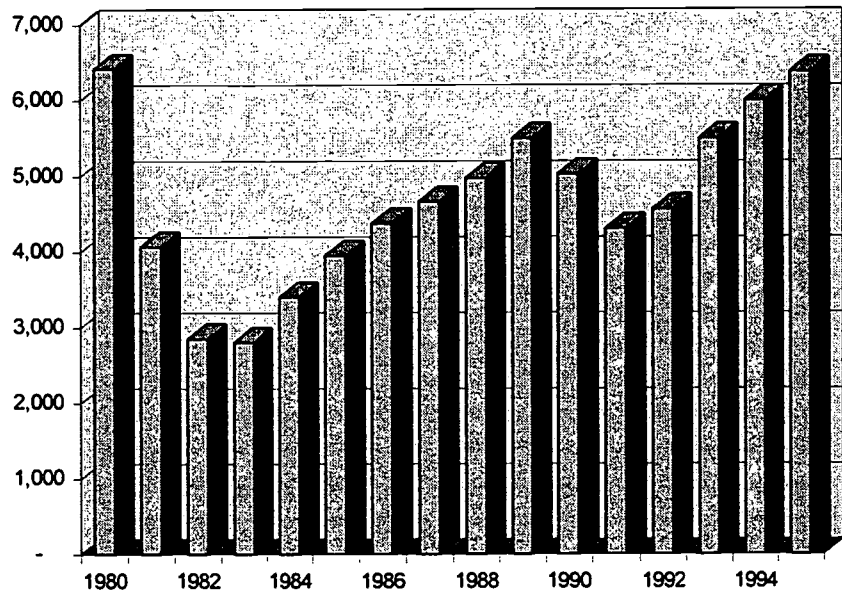


Figure 1

The numbers of new teachers hired since 1980 are shown in Table 1 and Figure 1. The number of new hires in a given year is the result of several factors. First, the change in the total number of students in the school system has a major impact on the number of teachers. The number of students has declined from 1980 to 1990 and has been going up since then. The second major factor is the introduction of new programs. The impact of the BEP from 1985 to 90 is evident. In fact, it is strong enough to reverse the downward pressure of declining enrollment over that period. The explicit attempt to reduce class size is another important factor that pushes up the number of classroom teachers and therefore the new teachers hired. A factor that depresses the number of new teachers hired is substantial increases in the teacher salaries. Other things being equal, a meaningful increase in the pay slows down the rate of retirements, and thus, reduces the number of new hires.

Trends of NTE Professional Knowledge Test scores

<i>YEAR HIRED</i>	<i>AVG. PK. TEST SCORE</i>
1980	602.40
1981	601.78
1982	606.43
1983	606.51
1984	606.27
1985	608.67
1986	611.87
1987	611.49
1988	628.78
1989	628.33
1990	621.91
1991	620.41
1992	627.67
1993	628.02
1994	635.71
1995	640.69

Table 2

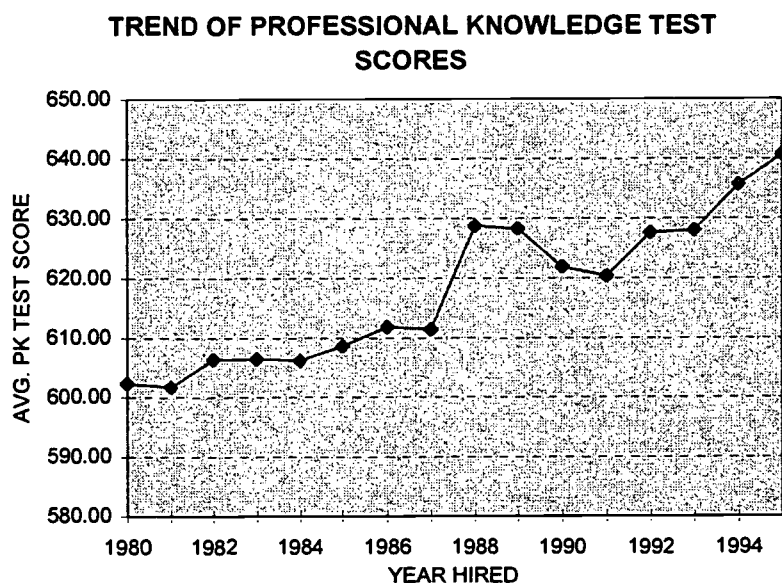


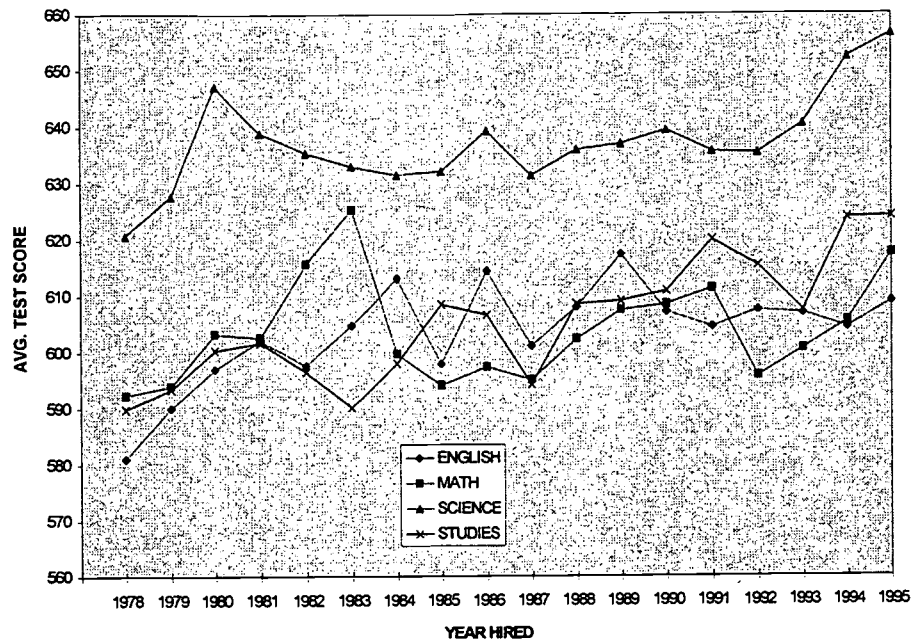
Figure 2

As the numbers of newly hired teachers increase over the 15 year time period under study, has there been a change in the average test scores of the teachers hired in each year? Table 2 and Figure 2 show the trend of average annual test scores of the new teachers hired. The only test scores that can be aggregated over teachers in different certification areas are the Professional Knowledge test scores. The data shows a clear upward trend over the years.

Trends in Subject Area Test Scores

The pattern of subject area test scores over the years included in the analysis is similar to the trend in Professional Knowledge test scores. The average test scores of teachers hired each year in selected subject areas are shown in Table 3 and plotted in Figure 3. A slight upward trend is evident in the four subjects plotted, and again reflects the impact of increased minimum score requirements for licensure.

AVERAGE SUBJECT AREA TEST SCORE TRENDS



YEAR HIRED	MUSIC ART DANCE						
	ENGLISH	FOREIGN LANGUAGE	EXCEPT. CHILDREN	MATH	SCIENCE	SOCIAL STUDIES	
1978	581.1	594.4	633.2	592.4	598.4	620.8	589.9
1979	590.1	603.1	640.4	594.0	603.5	627.8	593.4
1980	597.0	577.8	637.3	603.3	614.0	647.2	600.3
1981	602.0	607.2	640.1	602.6	602.1	638.9	601.7
1982	597.6	616.7	638.9	615.7	609.9	635.4	596.5
1983	604.8	614.8	628.7	625.3	614.5	633.0	590.2
1984	613.2	616.7	621.1	599.7	604.7	631.5	598.0
1985	597.9	614.2	633.0	594.1	608.2	632.1	608.5
1986	614.4	638.2	641.3	597.4	607.1	639.3	606.6
1987	601.1	637.5	638.9	595.0	611.1	631.4	594.3
1988	608.1	598.6	642.5	602.3	615.6	635.9	608.6
1989	617.4	609.1	645.3	607.5	613.2	637.0	609.1
1990	607.2	622.8	655.5	608.5	616.2	639.4	610.9
1991	604.5	615.5	655.7	611.3	612.6	635.6	619.9
1992	607.5	603.7	658.7	595.7	619.8	635.4	615.4
1993	606.9	610.3	658.9	600.5	616.6	640.5	607.4
1994	604.3	617.5	666.9	605.5	632.7	652.4	623.9
1995	609.0	630.4	664.2	617.5	632.3	656.4	624.0

Table 3

Institutional sources of new teachers

There are many institutions of higher education in and out of state that train teachers. Academic standards and prestige of these institutions vary. A natural question that arises is this: "If teacher colleges can be classified into groups according to the test scores of their alumni, is there a shift in the composition of new teachers from low to high test score institution groups over the years?" To answer this question, the average Professional Knowledge (PK) test scores of alumni of each institution were computed. Next, the institutions were sorted according to the average alumni test scores –from low to high– and then they were categorized into four quartiles according to their average alumni PK test scores. The institutions that provided less than fifty new teachers over the study period were not included in this procedure.

The numbers and percent of new teachers coming from each category of schools over the years are shown in Table 4. The table shows only those teachers coming from institutions that supplied 50 or more teachers. The bottom numbers in each cell of the table show the percent of teachers in each quartile that were hired in that year. It is clear from the data that the percentage of teachers coming from the bottom half of the colleges has declined, while the top half has increased. For instance, in 1980 two thirds (66 percent) of the teachers came from colleges which were in the first and second quartiles. In 1995 only 60 percent of the new teachers came from the two bottom quartiles.

There is a decline in the contribution of the second quartile colleges to the total. Their "market share" is being taken over by the schools in the third and fourth quartiles. The fraction of teachers in the total coming from the bottom quartile of colleges has not changed very much.

This movement from the second quartile to the third and fourth quartiles explains part of the upward drift in the annual average PK test scores observed in the prior section.

Institutional sources of new teachers

Frequency Row Pct	QUARTILE OF COLLEGES				Total 4 Hired
	1	2	3		
1980	1061 20.42	2418 46.54	1116 21.48	601 11.57	5196
1981	724 22.06	1480 45.09	709 21.60	369 11.24	3282
1982	453 20.15	1064 47.33	438 19.48	293 13.03	2248
1983	457 20.83	985 44.90	458 20.88	294 13.40	2194
1984	591 21.85	1221 45.14	552 20.41	341 12.61	2705
1985	657 21.73	1305 43.15	657 21.73	405 13.39	3024
1986	723 21.97	1405 42.69	705 21.42	458 13.92	3291
1987	872 24.09	1536 42.43	829 22.90	383 10.58	3620
1988	811 21.79	1598 42.93	854 22.94	459 12.33	3722
1989	886 22.51	1660 42.17	866 22.00	524 13.31	3936
1990	732 20.63	1447 40.77	836 23.56	534 15.05	3549
1991	630 20.26	1332 42.84	731 23.51	416 13.38	3109
1992	687 20.51	1378 41.13	861 25.70	424 12.66	3350
1993	836 21.01	1602 40.26	1022 25.68	519 13.04	3979
1994	930 21.64	1696 39.47	1092 25.41	579 13.47	4297
1995	998 22.32	1733 38.76	1121 25.07	619 13.84	4471
1996	805 21.01	1523 39.75	962 25.11	541 14.12	3831
Total	12853	25383	13809	7759	59804

Table 4

Attrition rates

Attrition rates of the newly hired teachers of each school year are combined by means of an attrition matrix. An example of the attrition matrix for *all teachers* is given in Figure 5. The "Stub" shows the years in which the new teachers were hired. The rows of the matrix show the number of teachers surviving at the end of the year (shown in the column heading) from the group of teachers hired during the year shown in the "Stub." For instance, in the 1979-80 school year 6,407 new teachers were hired. Of this number, 5,568 remained at the end of the 1980-81 school year, and only 3,067 at the end of the 1993-94 school year.

The entries in the main diagonal show the number of teachers hired each year. The sum of the main diagonal entries shown at the bottom cell of the "C1" column is the total number of new teachers hired between the 1979-80 and the 1995-96 school years. The sum of the first diagonal entries above the main diagonal is the total number of teachers who survived their second year (62,525). The other entries in "C1," from the bottom to the top, show the total survivors at the end of the corresponding year in "C2." The partial diagonal sums—in column "C3"—show the number of teachers that had a chance to survive a certain number of years. For instance only those who came in 1979-80 school year had a chance to survive 17 years. In fact the entries in the column labeled "C3" are the consecutive cumulative sums of the main diagonal entries starting from the top left of the matrix. For instance, the entry in the third row of this column (13,340) shows the total number of teachers who had a chance of being in the system for 15 years—those who were hired in years 1980-82. The figure (13,340) is the sum of main diagonal entries in the first through the third rows.

The ratio of the entries in column "C1" to the corresponding entries in column "C3" shows the percent surviving by the end of the years shown in column "C2". These are the *survival rates* by years. The *attrition rates* are the complement of the survival rates to 100 percent.

The important point to observe is that the rates computed are not from one or two cohort groups, but from a combination of all feasible cohorts. Therefore they are very reliable for the first ten or so years because they are based on the experience of more than 32,000 teachers that were hired over a decade. The survival rates in each of the 17 years are plotted in the diagram below the attrition matrix.

Attrition matrices for a number of subgroups of teachers were computed to determine if there were any differences in the attrition patterns of different groups. The classification for the groups was based on the gender of the teachers, the level of school they teach in (elementary, middle, and high school), and the subject matters the teachers were certified in. The matrices and the attrition diagrams of each group are included in the Appendix.

The general patterns of attrition are very similar for the different subject areas that were analyzed: 83 to 85 percent of the teachers survive through their second year. The only exception is the attrition pattern for foreign language teachers where the loss is almost 22 percent. The attrition rates by the end of 17 years are between 60 to 66 percent.

TEACHER ATTRITION STUDY

STUB	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	C1	C2	C3	PERCENT SURVIVING
1980	6,417	5,568	5,121	4,842	4,636	4,423	4,259	4,032	3,886	3,736	3,602	3,483	3,357	3,227	3,067	2,894	2,616	2,616	17	6,417	40.77
1981	0	4,071	3,451	3,215	3,005	2,845	2,728	2,585	2,482	2,390	2,290	2,212	2,125	2,040	1,927	1,832	1,657	4,551	16	10,488	43.39
1982	0	0	2,852	2,460	2,280	2,126	2,005	1,878	1,809	1,736	1,658	1,591	1,520	1,464	1,395	1,310	1,177	6,076	15	13,340	45.55
1983	0	0	0	2,805	2,423	2,222	2,065	1,923	1,833	1,754	1,685	1,623	1,562	1,485	1,403	1,316	1,191	7,655	14	16,145	47.41
1984	0	0	0	0	3,401	3,002	2,789	2,595	2,477	2,326	2,223	2,115	2,031	1,930	1,843	1,731	1,550	9,658	13	19,546	49.41
1985	0	0	0	0	0	3,950	3,454	3,147	2,965	2,812	2,661	2,528	2,440	2,311	2,189	2,072	1,865	12,071	12	23,496	51.37
1986	0	0	0	0	0	0	4,377	3,677	3,383	3,108	2,913	2,765	2,641	2,506	2,353	2,202	1,963	14,697	11	27,873	52.73
1987	0	0	0	0	0	0	0	4,661	4,085	3,741	3,495	3,282	3,111	2,924	2,716	2,476	2,228	17,728	10	32,534	54.49
1988	0	0	0	0	0	0	0	0	4,972	4,247	3,889	3,614	3,414	3,186	2,963	2,738	2,439	21,167	9	37,506	56.44
1989	0	0	0	0	0	0	0	0	0	5,494	4,621	4,176	3,878	3,587	3,344	3,079	2,718	25,168	8	43,000	58.53
1990	0	0	0	0	0	0	0	0	0	0	5,026	4,217	3,854	3,497	3,207	2,956	2,575	29,340	7	48,026	61.09
1991	0	0	0	0	0	0	0	0	0	0	0	4,306	3,612	3,272	2,970	2,687	2,354	33,565	6	52,332	64.14
1992	0	0	0	0	0	0	0	0	0	0	0	0	4,563	3,808	3,383	3,028	2,623	38,411	5	56,895	67.51
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	5,494	4,490	3,909	3,240	44,428	4	62,389	71.21
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,995	4,751	3,805	52,186	3	68,384	76.31
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,377	4,659	62,525	2	74,761	83.63
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,436	81,197	1	81,197	100.00

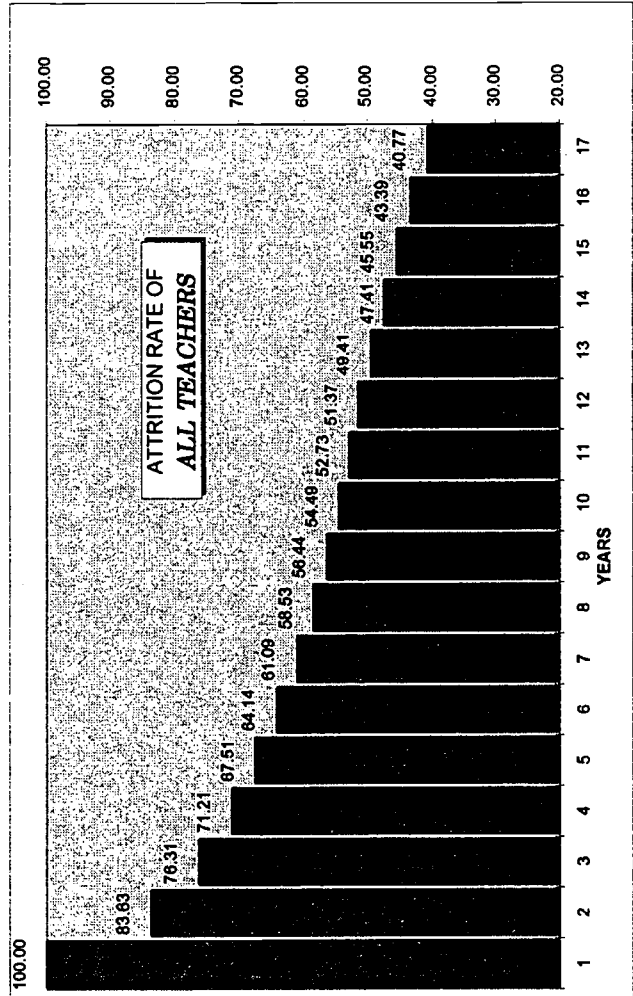


Figure 5

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The patterns of attrition for different groups of teachers for some selected number of years are shown in Table 5 .

PERCENT RETAINED BY SELECTED TEACHER GROUPS

<i>TEACHER GROUPING</i>	<i>Percent retained at the end of</i>			
	<i>2nd Year</i>	<i>5th year</i>	<i>10th year</i>	<i>15th year</i>
All teachers	83.63	67.51	54.49	45.55
Female teachers	84.67	68.90	56.80	48.18
Male teachers	79.96	62.25	46.31	35.07
Elementary teachers	86.94	72.31	59.78	51.31
Middle School teachers	86.11	71.79	58.35	49.25
High School teachers	82.21	65.49	52.49	43.80
English teachers	83.66	68.06	55.42	46.34
Exceptional Children teachers	85.61	69.63	57.91	46.48
Foreign Language teachers	78.75	62.11	51.64	42.75
Mathematics teachers	83.48	68.38	55.55	50.15
Music, Art, Dance teachers	83.78	64.50	54.42	45.30
Science teachers	83.28	67.73	54.89	48.29
Social Studies teachers	84.29	69.72	56.56	48.35

Table 5

Male teachers show greater attrition rates than female teachers for all the selected years. In fact, at the end of 15 years, nearly 65 percent of the male teachers have left in contrast to 52 percent of the female teachers.

The second point to observe is that the attrition rate among high school teachers is higher than the attrition rate of middle and the elementary school teachers. While slightly over 51 percent of the elementary teachers survive their 15th year, only 44 percent of the high school teachers do so. The difference between the attrition rates of elementary and middle school teachers is quite small.

Teachers certified in different subjects show a remarkable similarity in their attrition patterns. The only exception is the foreign language teachers who have higher attrition rates than the other groups. The observed differences among the groups are greater after the 5th year. However, one should remember that the number of cohorts involved in obtaining 15 year experience is much smaller than that of 5 years. In other words, the number of teachers involved in the computation of attrition rates beyond 10 years gets smaller and therefore the rates may be far less stable.

Differences Between Those Who Leave and Those Who Stay

In the preceding sections we showed that by the end of the 5th year about a third of the teachers leave teaching. Are there any differences in the NTE test scores of those who leave and those who stay? In this section the results of the analysis that answer this question will be discussed.

The averages of both NTE Professional Knowledge and Subject Area test scores were computed for those who left and those who stayed past the 5th year of their employment. The differences in the averages of *leavers* and *stayers* were tested for statistical significance. The details of statistical tests for each group of teachers are available at the Statistical Research and Data Center. The results of the statistical tests are summarized in Table 6.

DIFFERENCES IN THE AVERAGE TEST SCORES OF THOSE WHO LEFT AFTER THEIR FIFTH YEAR AND THOSE WHO REMAINED

TEACHERS CERTIFIED IN	SUBJECT AREA TEST			PROFESSIONAL KNOWLEDGE TEST		
	MEAN SCORE OF THOSE THAT		DIFFERENCE STATISTICAL SIGNIFICANT?	MEAN SCORE OF THOSE THAT		DIFFERENCE STATISTICAL SIGNIFICANT?
	LEFT	STAYED		LEFT	STAYED	
ENGLISH	618.19	605.51	YES	664.39	663.25	YES
EXCEPTIONAL CHILDREN	654.38	648.81	NO	662.40	660.84	YES
FOREIGN LANGUAGE	617.47	622.63	NO	662.86	662.79	NO
MATHEMATICS	623.37	594.82	YES	663.93	661.17	YES
MUSIC, ART, DANCE	618.92	614.08	NO	660.06	659.11	NO
SCIENCE	645.33	632.36	YES	664.49	662.19	YES
SOCIAL STUDIES	620.72	611.76	YES	663.25	662.56	NO

Table 6

With the exception of foreign language teachers, in all categories of subject areas those who left have higher test scores than those who stayed on. However the differences are not statistically significant at 0.05 level for all groups. In terms of PK test scores, difference for every group is statistically significant, except for the teachers certified in exceptional children, foreign language and music, art and dance. The reversal of the difference pattern for the foreign language teachers may be explained by the fact that some of these teachers are native speakers who received education degrees. The differences in the subject area test scores are similar to those of the PK scores except for social studies.

To the extent that the test scores measure academic credentials of the new teachers, the "better qualified" teachers seem to leave first, at least in English, science, and mathematics.

The next question is : Are there differences between *leavers* and *stayers* in terms of the colleges that produced these teachers? To answer this question the classification of colleges into quartiles by the method described in an earlier section is employed, and the leavers and stayers at the end of 5 years of employment are grouped into these four quartiles. The results are shown in Table 7.

LEAVERS AND STAYERS BY COLLEGE TYPE

	QUARTILE OF COLLEGES				
	FIRST	SECOND	THIRD	TOP	
<i>GONE</i>	532	1,129	745	516	2,922
	0.18	0.39	0.25	0.18	0.32
	0.26	0.30	0.35	0.44	
<i>HERE</i>	1,489	2,640	1,402	670	6,201
	0.24	0.43	0.23	0.11	0.68
	0.74	0.70	0.65	0.56	
<i>TOTAL HIRED</i>	2,021	3,769	2,147	1,186	9,123
<i>PCT. HIRED</i>	0.22	0.41	0.24	0.13	

Figure 7

There are three entries in each cell in the main body of the table. In each cell, from top to bottom, the first number is the number of teachers that fell into that classification. The second number is the percent of the teachers in the row group that fell into that cell. And finally, the last entry in the cell is the percent of teachers that fell into the quartile shown in the column heading. For instance, 745 teachers who left within 5 years came from the third quartile of the colleges; 25 percent of those who left were from the third quartile colleges; and finally, 35 percent of all those who graduated from the third quartile of the colleges left the system by the end of their fifth year.

The row and column margin cells are to be interpreted as follows: Entries in the bottom row cells are the total number of teachers that came from each quartile of colleges whether they left or stayed. The bottom numbers in these cells show the percent of teachers that came from each quartile. The far right column shows the number and percent of those who stayed or left ignoring the college classification.

What do the numbers tell us? First, the majority of the teachers, about 63 percent, are coming from the bottom two quartiles of the colleges. Second, 43 percent of the leavers are from the top half of the colleges even though the percent of teachers that come from that group is 37 percent of all teachers. So, a greater proportion of the teachers from the top half of the colleges are leaving. Third, while only 56 percent of the teachers that came from the top quartile of colleges remain in the system, 74 percent of those who came from the bottom quartile remain in the system. That is to say, those who came from the top quartile of colleges are less likely to stay in the system than those who came from the bottom half of the colleges.

Conclusion

The analysis revealed some positive trends and some trends that are hard to gauge. Increasing average NTE test scores is clearly a positive trend. Another positive trend is the increase in the number of teachers coming from the top two quartiles of colleges. In recent years, there is a clear evidence that, in the total, the share of teachers coming from the top two quartiles of colleges has increased.

The absence of attrition information for other professions makes it difficult to assess the observed teacher attrition patterns. Is fifteen percent loss at the end of the second year of employment unusual enough to require attention, or is it something natural that happens in all professions? We were unable to answer these questions.

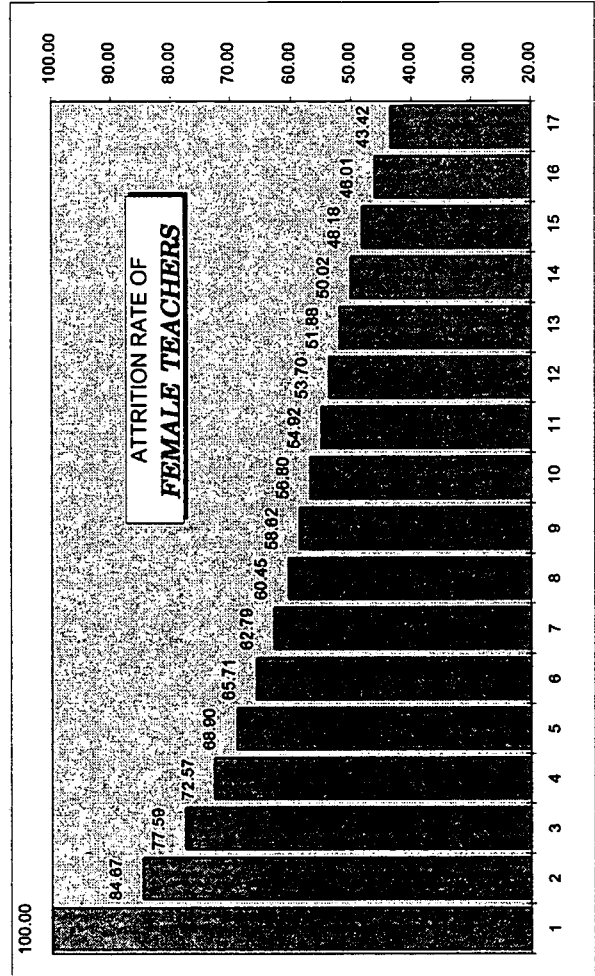
The differences in the average test scores of the *leavers* and *stayers* may be a matter of concern if the NTE test scores are a significant determinant of teacher performance. The average score differences of the *leavers* and *stayers* in the core subject areas may indicate that we are failing to retain better qualified teachers in the system.

APPENDIX

ATTRITION MATRICES

TEACHER ATTRITION STUDY

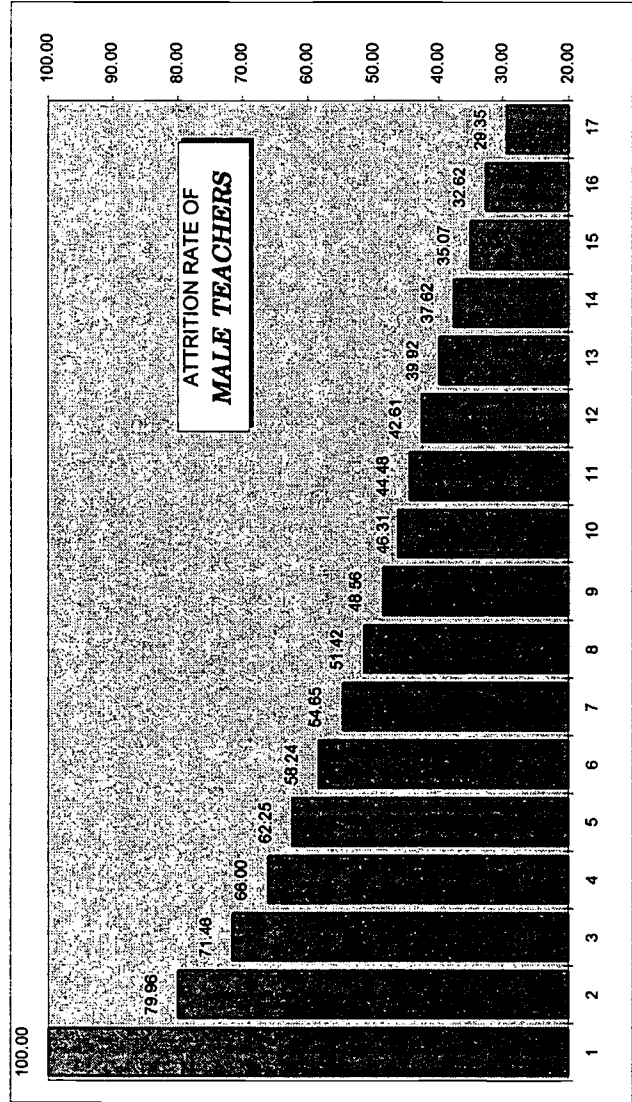
STUB	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	PERCENT SURVIVING
1980	5,175	4,531	4,181	3,965	3,799	3,649	3,520	3,353	3,241	3,118	3,011	2,923	2,819	2,725	2,602	2,472	2,247	5,175
1981	0	3,252	2,774	2,598	2,434	2,317	2,228	2,124	2,044	1,980	1,910	1,846	1,778	1,712	1,622	1,551	1,405	3,877
1982	0	0	2,230	1,944	1,810	1,701	1,611	1,515	1,470	1,416	1,359	1,311	1,255	1,215	1,161	1,090	982	5,135
1983	0	0	0	2,185	1,897	1,755	1,643	1,537	1,468	1,410	1,362	1,310	1,270	1,219	1,154	1,086	987	6,424
1984	0	0	0	0	2,674	2,379	2,209	2,067	1,976	1,860	1,785	1,708	1,643	1,566	1,498	1,413	1,272	8,050
1985	0	0	0	0	0	3,129	2,757	2,516	2,389	2,270	2,148	2,055	1,985	1,885	1,781	1,690	1,529	10,012
1986	0	0	0	0	0	0	3,419	2,883	2,666	2,459	2,308	2,202	2,108	2,013	1,888	1,776	1,599	12,118
1987	0	0	0	0	0	0	0	3,454	3,057	2,826	2,657	2,503	2,391	2,255	2,115	1,954	1,763	14,495
1988	0	0	0	0	0	0	0	0	3,924	3,415	3,135	2,931	2,768	2,592	2,410	2,232	2,000	17,260
1989	0	0	0	0	0	0	0	0	0	4,361	3,705	3,351	3,127	2,894	2,705	2,490	2,206	20,434
1990	0	0	0	0	0	0	0	0	0	0	4,010	3,394	3,116	2,839	2,606	2,416	2,116	23,743
1991	0	0	0	0	0	0	0	0	0	0	0	3,458	2,937	2,671	2,431	2,213	1,945	27,119
1992	0	0	0	0	0	0	0	0	0	0	0	0	3,706	3,139	2,820	2,532	2,187	30,989
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	4,380	3,640	3,189	2,644	35,819
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,660	3,773	3,068	41,911
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,953	3,703	49,928
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,651	63,621
																		1
																		63,621
																		100.00



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TEACHER ATTRITION STUDY

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	PERCENT SURVIVING
1980	1,138																	1,138
1981		955	864	804	769	709	677	624	593	568	543	514	492	458	424	382	334	17
1982			613	557	518	477	452	417	395	369	344	330	314	297	277	254	230	16
1983				548	457	413	374	347	318	295	278	249	237	221	209	196	172	15
1984					556	475	424	385	354	333	315	294	284	268	243	228	212	190
1985						642	555	517	469	444	413	385	340	317	300	275	236	13
1986							741	630	571	523	491	464	428	413	387	371	347	12
1987								891	736	662	601	559	519	492	456	430	396	337
1988									1,088	919	813	744	691	639	592	533	474	424
1989										972	769	698	632	600	552	513	473	411
1990											1,054	852	768	700	644	599	551	479
1991												968	782	701	626	573	514	437
1992													781	623	555	498	439	380
1993														792	618	517	460	403
1994															1,045	796	675	556
1995																1,231	916	687
1996																	1,286	875
																		1,152
																		15,623
																		1
																		15,623
																		100.00

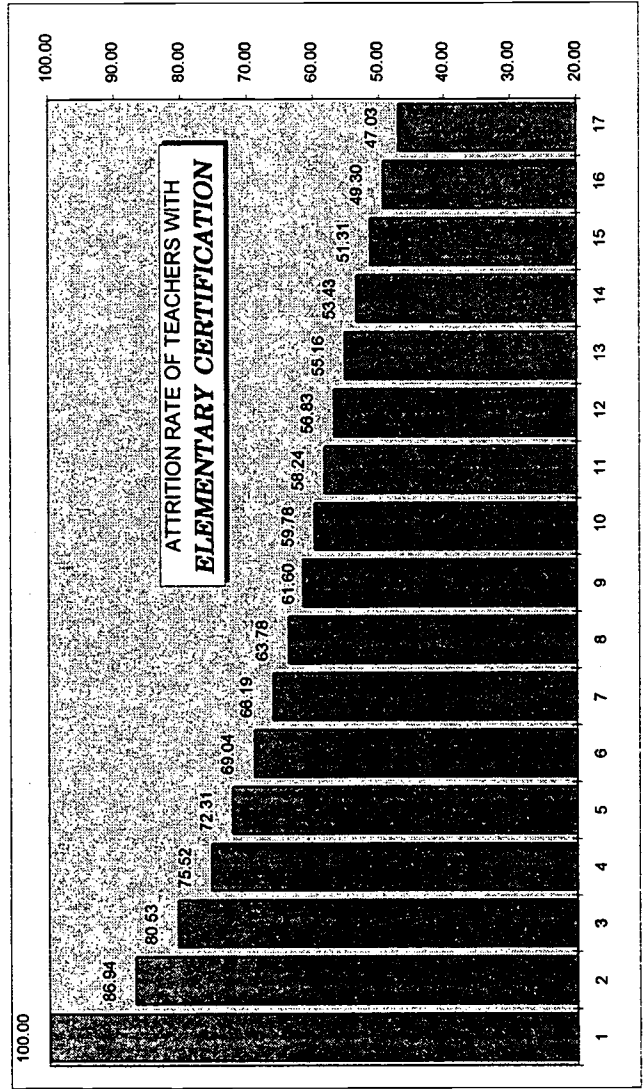


MALE TEACHERS

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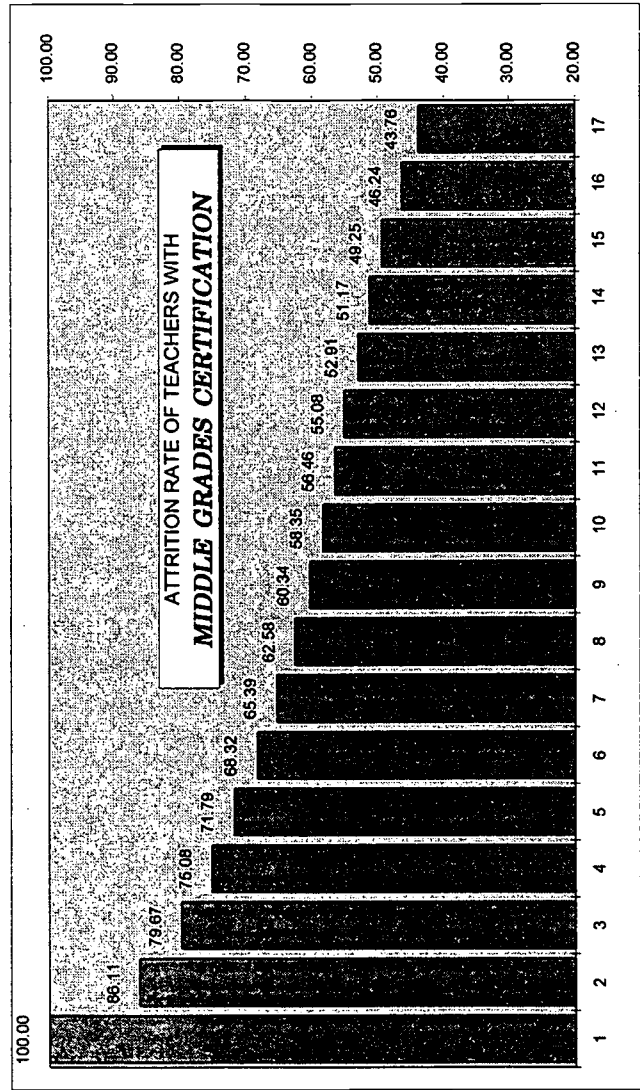
TEACHER ATTRITION STUDY

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	PERCENT SURVIVING		
1980	2,928	2,613	2,433	2,331	2,252	2,167	2,099	2,002	1,937	1,876	1,824	1,769	1,713	1,659	1,587	1,513	1,377	2,928	47.03	
1981	0	1,780	1,537	1,458	1,372	1,308	1,264	1,203	1,162	1,124	1,088	1,059	1,024	986	939	894	808	2,321	16	4,708
1982	0	0	1,110	984	926	873	832	787	769	734	704	680	648	624	602	561	504	2,985	15	5,818
1983	0	0	0	1,099	972	908	853	810	775	743	717	693	675	651	620	588	537	3,696	14	6,917
1984	0	0	0	0	1,377	1,248	1,183	1,098	1,051	988	955	915	882	837	803	755	686	4,575	13	8,294
1985	0	0	0	0	0	1,741	1,573	1,454	1,380	1,319	1,255	1,202	1,170	1,111	1,052	994	911	5,703	12	10,035
1986	0	0	0	0	0	0	1,841	1,587	1,491	1,374	1,297	1,233	1,191	1,139	1,074	1,024	938	6,917	11	11,876
1987	0	0	0	0	0	0	0	1,865	1,665	1,542	1,465	1,400	1,333	1,254	1,178	1,092	982	8,214	10	13,741
1988	0	0	0	0	0	0	0	0	1,998	1,781	1,650	1,554	1,478	1,388	1,302	1,210	1,078	9,695	9	15,739
1989	0	0	0	0	0	0	0	0	0	2,164	1,893	1,730	1,640	1,538	1,443	1,339	1,191	11,418	8	17,903
1990	0	0	0	0	0	0	0	0	0	0	2,034	1,772	1,644	1,511	1,402	1,305	1,140	13,197	7	19,937
1991	0	0	0	0	0	0	0	0	0	0	0	1,827	1,609	1,470	1,342	1,233	1,087	15,025	6	21,764
1992	0	0	0	0	0	0	0	0	0	0	0	0	1,967	1,711	1,553	1,412	1,240	17,160	5	23,731
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	2,318	2,002	1,775	1,467	19,672	4	26,049
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,388	2,016	1,684	22,901	3	28,437
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,704	2,112	27,075	2	31,141
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,617	33,758	1	33,758



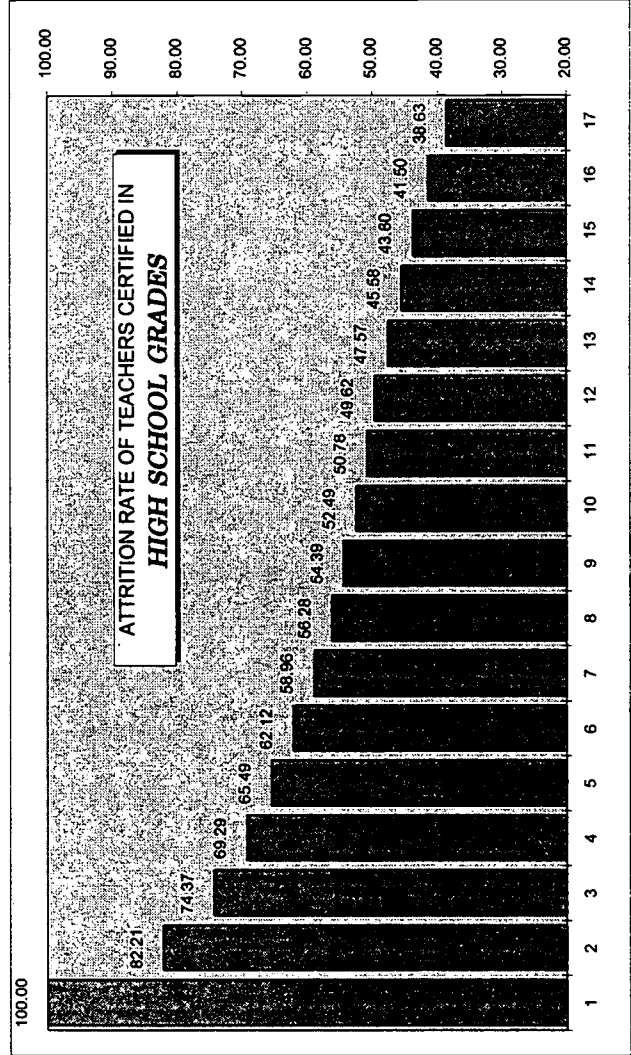
TEACHER ATTRITION STUDY

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	PERCENT SURVIVING	
1980	1,724	1,614	1,545	1,502	1,433	1,383	1,306	1,252	1,203	1,157	1,110	1,072	1,030	984	924	835	835	1,908	43.76
1981	0	1,267	1,122	1,058	1,002	954	914	862	823	785	753	729	702	675	638	605	544	1,468	46.24
1982	0	0	876	787	748	711	673	637	619	588	562	543	515	492	469	445	406	1,995	49.25
1983	0	0	0	872	794	740	697	660	624	592	570	548	534	513	486	452	406	2,519	51.17
1984	0	0	0	0	1,057	967	920	847	818	760	733	700	674	639	607	558	496	3,164	52.91
1985	0	0	0	0	0	1,228	1,121	1,034	973	923	858	816	789	761	722	681	622	3,970	55.08
1986	0	0	0	0	0	0	1,313	1,128	1,039	974	914	866	830	779	729	680	609	4,811	56.46
1987	0	0	0	0	0	0	0	1,238	1,100	1,011	958	906	854	801	754	689	620	5,694	58.35
1988	0	0	0	0	0	0	0	0	1,141	995	927	862	817	762	709	653	577	6,577	60.34
1989	0	0	0	0	0	0	0	0	0	1,148	989	875	810	752	708	658	578	7,540	62.58
1990	0	0	0	0	0	0	0	0	0	0	909	772	718	655	603	560	469	8,472	65.39
1991	0	0	0	0	0	0	0	0	0	0	0	834	699	635	572	508	446	9,422	68.32
1992	0	0	0	0	0	0	0	0	0	0	0	0	893	741	667	604	511	10,541	71.79
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	1,029	832	729	587	11,797	75.08
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,092	853	674	13,389	79.67
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,068	786	15,390	86.11
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	924	18,797	100.00



TEACHER ATTRITION STUDY

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996		PERCENT SURVIVING		
1980	3,042	2,656	2,450	2,316	2,222	2,105	2,024	1,907	1,835	1,754	1,687	1,623	1,552	1,486	1,409	1,313	1,175	1,175	3,042	38.63	
1981	0	1,920	1,639	1,520	1,429	1,346	1,283	1,215	1,150	1,109	1,066	1,025	977	934	875	827	746	2,059	16	4,962	41.50
1982	0	0	1,353	1,162	1,070	1,009	951	887	852	813	773	739	701	671	632	595	530	2,766	15	6,315	43.80
1983	0	0	0	1,320	1,139	1,041	968	902	855	815	782	752	718	677	634	589	524	3,480	14	7,635	45.58
1984	0	0	0	0	1,632	1,446	1,333	1,248	1,182	1,107	1,048	994	949	893	855	791	701	4,408	13	9,267	47.57
1985	0	0	0	0	0	1,788	1,544	1,393	1,228	1,157	1,091	1,044	983	928	886	790	701	5,486	12	11,055	49.62
1986	0	0	0	0	0	0	2,071	1,699	1,536	1,411	1,308	1,238	1,179	1,101	1,029	952	834	6,665	11	13,126	50.78
1987	0	0	0	0	0	0	0	2,362	2,036	1,840	1,708	1,588	1,502	1,414	1,311	1,203	1,080	8,130	10	15,488	52.49
1988	0	0	0	0	0	0	0	0	2,406	1,992	1,810	1,668	1,573	1,459	1,337	1,234	1,099	9,732	9	17,894	54.39
1989	0	0	0	0	0	0	0	0	0	2,576	2,099	1,872	1,709	1,569	1,465	1,345	1,184	11,520	8	20,470	56.28
1990	0	0	0	0	0	0	0	0	0	0	2,324	1,914	1,718	1,543	1,408	1,301	1,120	13,440	7	22,794	58.96
1991	0	0	0	0	0	0	0	0	0	0	0	1,932	1,568	1,406	1,268	1,149	1,002	15,361	6	24,726	62.12
1992	0	0	0	0	0	0	0	0	0	0	0	0	1,904	1,534	1,333	1,179	1,013	17,440	5	26,630	65.49
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	2,358	1,865	1,601	1,324	20,086	4	28,988	69.29
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,555	1,959	1,537	23,460	3	31,543	74.37
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,674	1,877	28,129	2	34,217	82.21
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,341	36,558	1	36,558	100.00

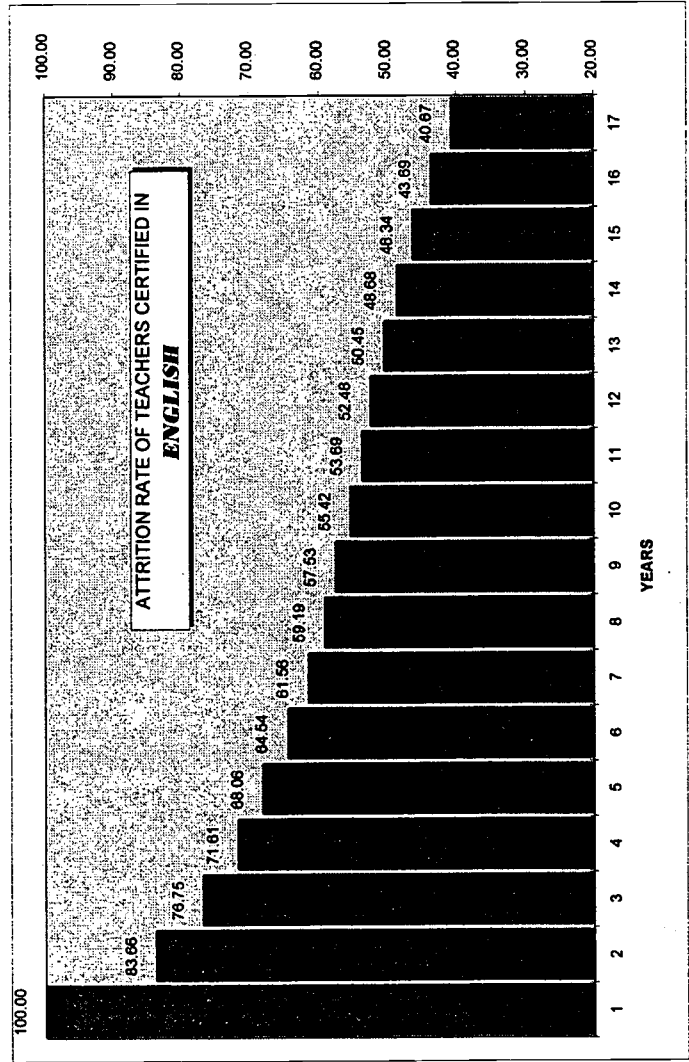


HIGH SCHOOL TEACHERS

BEST COPY AVAILABLE

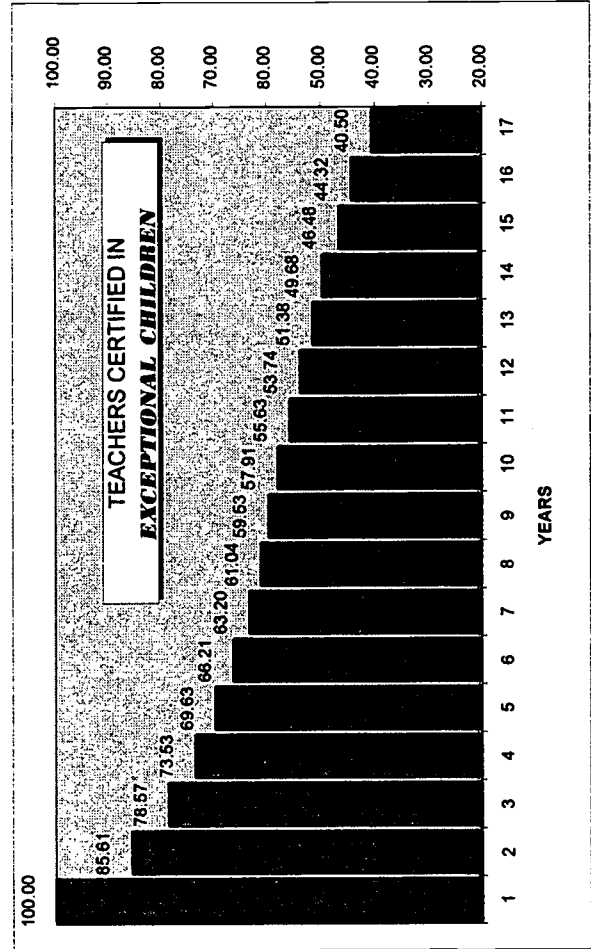
TEACHER ATTRITION STUDY

STUB	PERCENT SURVIVING																				
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	C1	C2	C3	
1980	1,694	1,501	1,395	1,330	1,288	1,224	1,177	1,112	1,074	1,033	996	959	915	881	829	775	689	689	17	1,694	40.87
1981	-	1,041	909	856	811	775	735	689	655	631	600	579	556	531	495	470	420	1,195	16	2,735	43.69
1982	-	-	737	639	593	568	543	510	488	467	446	424	398	376	363	344	310	1,609	15	3,472	46.34
1983	-	-	-	684	604	555	512	480	455	435	423	411	400	382	359	332	303	2,023	14	4,156	48.68
1984	-	-	-	-	843	760	717	659	632	590	568	541	518	486	464	427	381	2,522	13	4,999	50.45
1985	-	-	-	-	-	939	833	773	721	677	626	592	566	547	515	489	439	3,116	12	5,938	52.48
1986	-	-	-	-	-	-	1,017	863	792	734	681	641	618	575	534	490	426	3,734	11	6,955	53.69
1987	-	-	-	-	-	-	-	1,056	913	823	775	731	692	649	606	549	482	4,440	10	8,011	55.42
1988	-	-	-	-	-	-	-	-	1,000	831	759	697	656	612	567	531	474	5,184	9	9,011	57.53
1989	-	-	-	-	-	-	-	-	-	958	773	690	631	571	537	486	425	5,901	8	9,969	58.19
1990	-	-	-	-	-	-	-	-	-	-	772	626	575	508	454	405	333	6,612	7	10,741	61.58
1991	-	-	-	-	-	-	-	-	-	-	-	682	534	472	421	378	333	7,360	6	11,403	64.54
1992	-	-	-	-	-	-	-	-	-	-	-	-	688	553	489	425	363	8,229	5	12,091	68.06
1993	-	-	-	-	-	-	-	-	-	-	-	-	-	785	621	542	429	9,221	4	12,876	71.81
1994	-	-	-	-	-	-	-	-	-	-	-	-	-	-	870	655	519	10,550	3	13,746	76.75
1995	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	869	612	12,227	2	14,615	83.66
1996	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	799	15,414	1	15,414	100.00



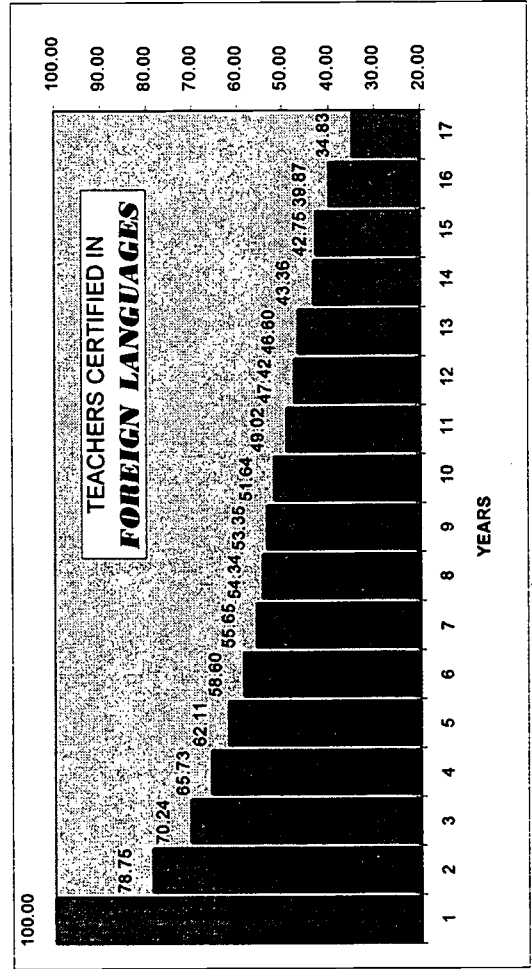
TEACHER ATTRITION STUDY

STUB	PERCENT SURVIVING																				
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	C1	C2	C3	
1980	2,153	1,918	1,768	1,686	1,603	1,543	1,491	1,407	1,360	1,303	1,254	1,224	1,170	1,131	1,049	979	872	872	17	2,153	40.50
1981	.	1,376	1,239	1,167	1,095	1,050	1,013	964	934	901	862	827	778	745	695	651	585	1,564	16	3,529	44.32
1982	.	.	996	892	838	772	735	675	650	628	600	566	548	528	506	467	403	2,103	15	4,525	46.48
1983	.	.	.	934	846	794	740	696	674	653	629	608	588	551	507	471	419	2,712	14	5,459	49.68
1984	983	894	834	773	740	687	639	599	571	540	516	498	418	3,310	13	6,442	51.38
1985	1,070	976	883	854	802	748	713	690	631	599	575	502	4,037	12	7,512	53.74
1986	937	818	746	670	635	611	587	571	540	500	429	4,700	11	8,449	55.63
1987	960	871	809	750	713	664	624	592	541	491	5,449	10	9,409	57.91
1988	1,068	934	848	768	713	663	611	555	485	6,237	9	10,477	59.53
1989	1,426	1,224	1,113	1,029	941	859	771	660	7,265	8	11,903	61.04
1990	1,166	955	868	788	708	642	557	8,260	7	13,069	63.20
1991	896	767	693	620	543	467	9,246	6	13,965	66.21
1992	1,074	892	798	708	593	10,472	5	15,039	69.63
1993	1,099	853	728	614	11,867	4	16,138	73.53
1994	1,136	885	685	13,572	3	17,274	78.57
1995	1,083	751	15,715	2	18,357	85.61
1996	1,030	19,387	1	19,387	100.00



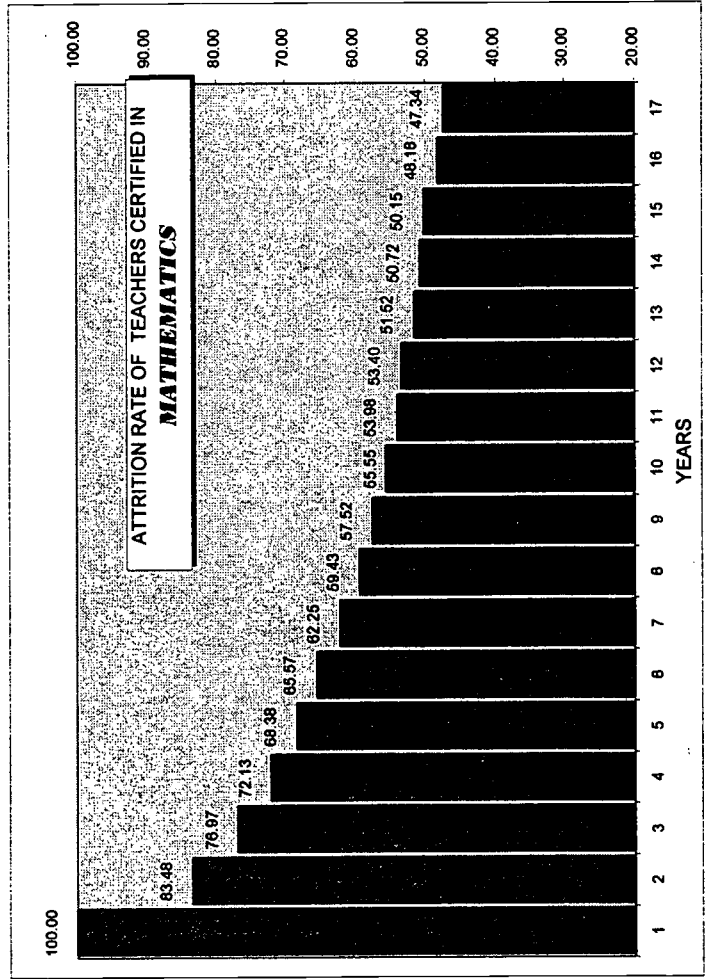
TEACHER ATTRITION STUDY

STUB	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	PERCENT SURVIVING
1980	178	150	139	132	127	121	114	108	105	102	98	93	90	85	79	73	62	178
1981	0	128	104	95	87	80	75	72	69	69	64	62	59	58	54	53	49	306
1982	0	0	94	81	77	69	68	59	58	57	57	55	51	47	45	42	39	400
1983	0	0	0	82	69	62	55	50	47	46	45	42	42	38	36	33	28	482
1984	0	0	0	0	121	104	96	91	86	82	80	75	74	71	66	60	55	603
1985	0	0	0	0	0	152	126	114	109	99	94	92	90	85	78	73	63	755
1986	0	0	0	0	0	0	161	126	119	111	105	104	97	91	83	73	61	916
1987	0	0	0	0	0	0	0	151	128	116	109	100	96	89	82	74	66	1,067
1988	0	0	0	0	0	0	0	0	200	168	154	144	133	121	111	102	87	1,267
1989	0	0	0	0	0	0	0	0	0	345	297	263	240	222	205	179	157	1,612
1990	0	0	0	0	0	0	0	0	0	0	343	275	244	217	197	176	150	1,955
1991	0	0	0	0	0	0	0	0	0	0	0	260	202	176	152	136	118	2,215
1992	0	0	0	0	0	0	0	0	0	0	0	0	208	161	137	122	102	2,423
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	259	184	152	125	2,682
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	285	209	140	2,967
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	270	165	3,237
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	249	3,486
																		100.00



TEACHER ATTRITION STUDY

STUB	YEAR																	PERCENT SURVIVING			
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	C1	C2	C3	
1980	564	510	483	475	461	445	428	406	391	374	362	341	329	316	299	286	267	267	17	564	47.34
1981	0	453	407	384	372	351	338	322	309	295	281	273	265	249	237	226	204	490	16	1017	48.18
1982	0	0	323	301	287	277	254	239	228	216	202	200	188	181	169	160	147	672	15	1340	50.15
1983	0	0	0	324	288	268	250	230	214	206	198	189	181	177	165	151	131	844	14	1684	50.72
1984	0	0	0	0	469	419	394	356	345	316	299	282	269	249	242	226	201	1089	13	2133	51.52
1985	0	0	0	0	0	515	449	415	393	369	352	322	313	297	278	261	236	1414	12	2648	53.40
1986	0	0	0	0	0	0	609	528	487	434	404	381	363	342	321	293	257	1758	11	3257	55.98
1987	0	0	0	0	0	0	0	662	578	530	489	466	437	412	380	354	321	2177	10	3918	55.55
1988	0	0	0	0	0	0	0	0	549	462	432	400	381	348	308	284	252	2570	9	4468	57.52
1989	0	0	0	0	0	0	0	0	0	487	391	347	308	279	267	250	215	2945	8	4955	58.43
1990	0	0	0	0	0	0	0	0	0	0	425	345	313	279	259	249	211	3,349	7	5380	62.25
1991	0	0	0	0	0	0	0	0	0	0	0	397	307	278	254	225	202	3,788	6	5777	65.57
1992	0	0	0	0	0	0	0	0	0	0	0	0	517	420	387	339	280	4,304	5	6294	68.38
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	616	490	435	348	4,984	4	6910	72.13
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	577	439	333	5,763	3	7487	76.97
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	608	422	6,756	2	8093	83.48
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	512	8,605	1	8,605	100.00

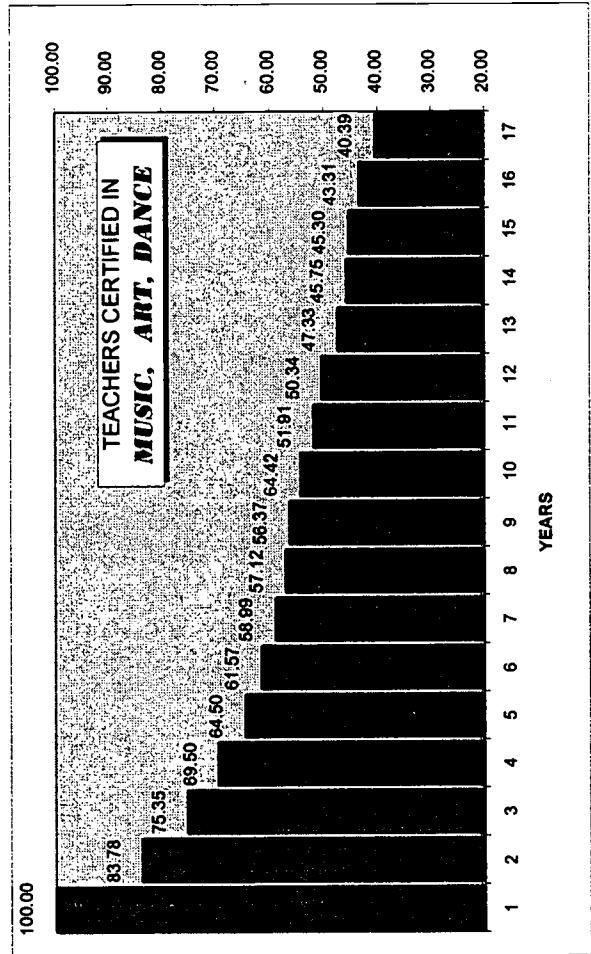


MATHEMATICS TEACHERS

Prepared by STAT. RESEARCH AND DATA CTR.

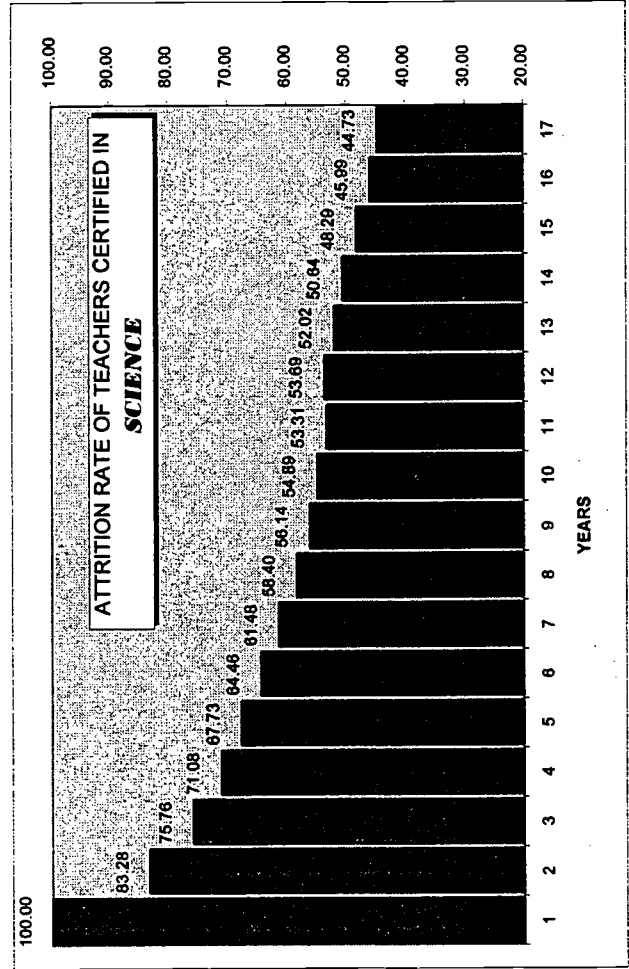
TEACHER ATTRITION STUDY

STUB	YEAR																	PERCENT SURVIVING		
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	C1	C2	C3
1980	510	457	414	382	364	348	337	322	311	294	281	268	257	250	239	221	206	206	17	510
1981	0	319	271	253	237	222	213	211	202	196	190	186	181	172	162	153	138	359	16	829
1982	0	0	224	186	167	152	142	132	123	119	115	112	106	102	97	93	85	477	15	1,053
1983	0	0	0	254	210	191	169	150	144	139	135	125	121	112	108	103	93	598	14	1,307
1984	0	0	0	0	248	224	203	191	180	173	162	154	147	140	135	127	107	736	13	1,555
1985	0	0	0	0	0	231	199	181	173	162	155	147	140	134	129	123	113	899	12	1,786
1986	0	0	0	0	0	0	256	209	194	179	169	162	154	147	141	135	117	1,060	11	2,042
1987	0	0	0	0	0	0	0	286	259	238	227	202	195	187	177	164	146	1,267	10	2,328
1988	0	0	0	0	0	0	0	0	388	339	305	278	256	251	233	212	198	1,531	9	2,716
1989	0	0	0	0	0	0	0	0	0	542	441	393	352	325	304	285	253	1,861	8	3,258
1990	0	0	0	0	0	0	0	0	0	0	468	397	350	315	289	262	220	2,198	7	3,726
1991	0	0	0	0	0	0	0	0	0	0	0	328	265	230	201	183	157	2,496	6	4,054
1992	0	0	0	0	0	0	0	0	0	0	0	0	281	237	203	177	150	2,796	5	4,335
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	341	279	248	217	3,250	4	4,676
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	363	282	227	3,797	3	5,039
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	363	271	4,526	2	5,402
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	357	5,759	1	5,759



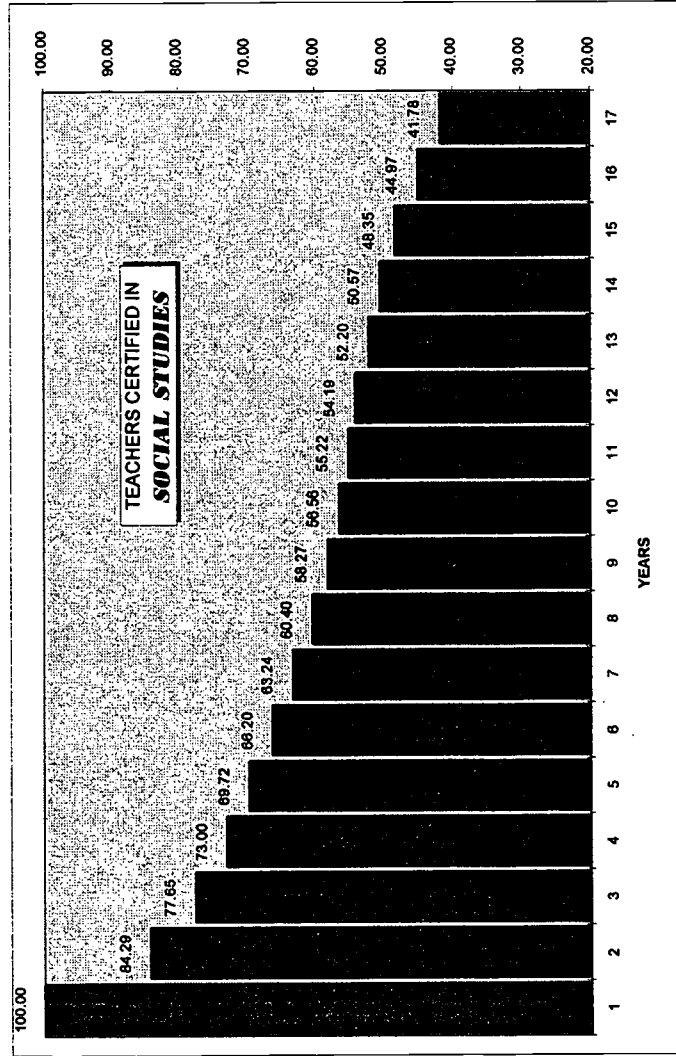
TEACHER ATTRITION STUDY

STUB																		PERCENT			
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	C1	C2	C3	SURVIVING
1880	749	672	632	611	597	572	556	530	506	485	463	450	435	413	398	374	335	335	17	749	44.73
1881	0	489	435	412	395	373	360	338	314	301	288	288	270	258	237	220	200	200	16	1248	45.89
1882	0	0	361	333	316	296	282	263	251	239	230	225	213	203	184	176	159	159	15	1809	48.29
1883	0	0	0	409	380	353	338	322	305	287	281	276	264	257	242	221	196	196	14	2018	50.64
1884	0	0	0	0	554	482	464	435	418	388	359	346	333	311	296	275	240	240	13	2572	52.02
1885	0	0	0	0	0	643	569	510	478	445	417	398	363	351	327	313	288	288	12	3215	53.89
1888	0	0	0	0	0	0	728	597	537	488	467	441	418	377	353	323	272	272	11	3943	53.31
1887	0	0	0	0	0	0	0	812	701	634	594	551	522	463	439	409	379	379	10	4755	54.89
1888	0	0	0	0	0	0	0	0	664	552	507	459	429	388	364	323	283	283	9	5419	56.14
1889	0	0	0	0	0	0	0	0	0	590	460	409	381	350	334	312	277	277	8	6009	58.40
1890	0	0	0	0	0	0	0	0	0	0	522	424	392	349	318	299	251	251	7	6531	61.48
1891	0	0	0	0	0	0	0	0	0	0	0	447	347	312	285	251	211	211	6	6978	64.46
1892	0	0	0	0	0	0	0	0	0	0	0	0	498	395	337	308	261	261	5	7477	67.73
1893	0	0	0	0	0	0	0	0	0	0	0	0	0	618	484	418	331	331	4	8095	71.08
1894	0	0	0	0	0	0	0	0	0	0	0	0	0	0	594	463	350	350	3	8889	75.76
1895	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	625	453	453	2	9314	83.28
1896	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	567	567	1	10,642	100.00



TEACHER ATTRITION STUDY

STUB	PERCENT SURVIVING																				
	1980	1981	1982	1983	1984	1985	1988	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	C1	C2	C3	
1980	1,424	1,273	1,204	1,149	1,108	1,059	1,024	959	924	887	855	822	791	759	718	673	595	595	17	1424	41.78
1981	.	942	826	790	745	700	679	640	610	580	585	546	522	505	477	453	391	1084	16	2366	44.97
1982	.	.	598	524	503	481	456	430	411	393	372	363	341	327	313	292	262	1433	15	2984	48.35
1983	.	.	.	546	479	443	421	401	376	356	345	338	327	306	288	272	247	1775	14	3510	50.57
1984	747	674	646	599	582	547	528	497	478	446	419	380	341	2222	13	4257	52.20
1985	818	744	679	629	608	584	537	515	497	474	452	411	2750	12	5075	54.19
1986	1,017	858	784	734	677	633	608	575	528	492	445	3364	11	6092	55.22
1987	963	835	769	712	671	630	587	546	491	436	3990	10	7055	56.56
1988	890	843	843	780	720	677	639	594	545	482	4688	9	8045	58.27
1989	951	951	951	782	691	634	585	549	514	449	5434	8	8996	60.40
1990	795	659	609	553	511	469	395	6,192	7	9791	63.24
1991	694	586	527	477	426	366	6,941	6	10485	66.20
1992	863	754	665	426	371	7,772	5	11148	69.72
1993	597	503	409	8,689	4	11902	73.00
1994	925	712	587	9,960	3	12827	77.65
1995	910	646	11,579	2	13737	84.29
1996	728	14,465	1	14,465	100.00





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