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ABSTRACT

Teachers of elementary and secondary mathematics and science have been the focus of increased attention in recent years. The Schools and Staffing Survey, conducted by the National Center for Educational Statistics in school year 1987-88, provides an opportunity to look at the characteristics of the professional men and women currently responsible for providing mathematics and science education to children in the United States. The analysis reported in this paper was performed on about 13,000 public and private school teachers who indicated that their teaching assignment included mathematics or science in grades 7-12. Presented are selected findings, technical notes, and tabular representations of the data analyzed in this study. Discussed are the distribution of teachers, teaching experience, educational experience, and problems reported by the teachers in the sample. (CW)

Characteristics of Mathematics and Science Teachers[1]

A Presentation to the
American Educational Research Association
April 19, 1990

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Introduction

Teachers of elementary and secondary mathematics and science have been the focus of increased attention in recent years. Many policy analysts argue that in order to prepare the Nation's children to compete in the global economy of the 21st century, improvement in the teaching and learning of mathematics and science must become a priority. Reports such as The Underachieving Curriculum--Assessing U.S. School Mathematics from an International Perspective[2] document the poor international standing of American children in these technological fields. The importance of mathematics and science teachers is underscored by their inclusion in the seven National Goals for Education developed by the Governors of the fifty States and President Bush. An objective of the fourth goal on mathematics and science calls for "the

[1]The results presented in this paper are from the new NCES Schools and Staffing Survey. Although they have undergone initial review, they should be viewed as preliminary, since additional processing to impute for missing values, etc. is yet to be done. We believe that the general patterns we are seeing will continue to hold when the data are finalized, but individual numbers may change.

[2]The second international mathematics study was conducted by the International Association for the Evaluation of Education Achievement. The report was authored by McKnight, Crosswhite, Dossey, Kifer, Swafford, Travers, and Cooney, and was released in January of 1987.

number of teachers with a substantive background in mathematics and science (to) increase by 50 percent" by the year 2000. The Schools and Staffing Survey, conducted by the National Center for Education Statistics in school year 1987-88, provides an opportunity to look at the characteristics of the professional men and women currently responsible for providing education to American children in these important fields. The analysis reported in this paper was performed on about 13,000 public and private school teachers who indicated that their teaching assigment included any classes in mathematics, computer science, biological/life science, or physical science in grades 7 to 12.[3] All comparison cited in the text of the paper are significant at the .05 level unless otherwise noted.

Selected Findings

Table 1 shows the distribution of mathematics and science teachers by sector, level, and selected characteristics such as sex, race, age, and marital status.

- Almost two-thirds of mathematics and science teachers are female. Among elementary school teachers, this proportion increases to over 80 percent. Only among public secondary school mathematics and science teachers do males predominate, comprising just over half of the teachers in that category.

[3]According to the definition of "elementary" and "secondary" school teachers provided in the technical notes below, this could include elementary school teachers who teach grades 7 or 8.

- Private school mathematics and science teachers are somewhat younger than public school teachers, with a higher proportion of these teachers falling into the "under 30" category.
- A higher proportion of public school mathematics and science teachers are married, while a higher proportion of private school teachers have never married. This may be correlated with the younger age of the private school workforce as well as the presence in some private schools of teachers belonging to religious orders.

Table 2 shows the number of years of full-time teaching experience that mathematics and science teachers have completed.

- Public school mathematics and science teachers have completed about 14 years of full-time teaching experience, while private school teachers have about 11 years.
- Overall, male teachers have somewhat more years of full-time experience than female teachers. When analyzed by sector, this result holds among public school mathematics and science teachers, but the difference is not statistically significant among private school teachers.

The number of years that mathematics and science teachers have taught in their current school is presented in table 3.

- Mathematics and science teachers in the public schools have been in their current schools longer than teachers in private schools (8.5 years and 9.4 years for public elementary

and secondary, respectively; 5.8 years and 6.2 years for private elementary and secondary, respectively.)

- Male teachers overall and in the public schools reported more years teaching in their current school than female teachers.
- Teachers in the South reported the fewest number of years teaching in their current school.

Table 4 shows the highest degree earned by public and private school mathematics and science teachers.

- Over 99 percent of all mathematics and science teachers have earned at least a bachelor's degree.[4]
- Secondary school teachers and public school teachers are more likely to have earned a master's degree than elementary school teachers and private school teachers.

The percentage of public and private school mathematics and science teachers who think that each of several problems is a "serious problem" at their school is presented in table 5.

- For all of the problems analyzed, a higher percentage of public school teachers than private school teachers felt that the problem was serious at their school.

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[4]See Bobbitt and McMillen, "Teacher Training, Certification, and Assignment," presented at AERA, Boston, April 17, 1990 for a discussion of the relationship between teachers' major field of study at the bachelor's degree level or higher and their primary assignment field.

- Student absenteeism was cited by the largest percentage of teachers (13.6% overall; 20.7% in public schools; 5% in private schools) as a serious problem in their school.
- Other problems which over 10% of the teachers overall felt were serious were student use of alcohol and student tardiness.

This paper has provided a snapshot of public and private mathematics and science teachers in school year 1987-88. While certainly not exhaustive, these analyses have begun the process of investigating and understanding these teachers, who play a crucial role in achieving an important National Goal for Education: "By the year 2000, U.S. students will be first in the world in mathematics and science achievement."

Technical Notes

The data for this paper were collected on the Public and Private School Teachers Questionnaires, two of seven questionnaires comprising the 1987-88 Schools and Staffing Survey (SASS), a survey developed by the U.S. Department of Education's National Center for Education Statistics, and conducted by the U.S. Bureau of the Census.

The SASS was a mail survey which collected public and private sector data on the Nation's elementary and secondary teaching force, aspects of teacher supply and demand, teacher workplace conditions, characteristics of school administrators, and school policies and practices. The seven questionnaires of the SASS are as follows:

1. The Teacher Demand and Shortage Questionnaire for Public School Districts (LEA's).
2. The Teacher Demand and Shortage Questionnaire for Private Schools.
3. The School Administrator Questionnaire.
4. The Public School Questionnaire.
5. The Private School Questionnaire.
6. The Public School Teachers Questionnaire.
7. The Private School Teachers Questionnaire.

Sample selection

All 56,242 public and 11,529 private school teachers in the teacher samples were selected from the 9,317 public and 3,513 private school samples.[5]

A list which included all full-time and part-time teachers, itinerant teachers, and long-term substitutes was obtained from each sample school. Within each school, teachers were stratified by experience; one stratum included new teachers, and a second stratum included all other teachers. New teachers were those who, counting the 1987-88 school year, were in the first, second, or third year of their teaching career in either a public or private school system. Within each teacher stratum, teachers were sorted by subject (General Elementary Education, Special Education; Mathematics, Science, English, Social Science, Vocational Education, other.).

The public and private school teacher samples were each designed to include a basic sample and a Bilingual/ESL(English as a Second Language) supplement. The bilingual/ESL supplement included teachers who use a native language other than English to instruct students with limited English proficiency (bilingual) and teachers providing students with limited English proficiency with intensive instruction in English (ESL). The supplement was funded by the Department of Education's Office of Bilingual Education in Minority Affairs (OBEMLA) in order to obtain more reliable estimates of bilingual/ESL education teachers.

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[5] The other SASS samples were as follows: 5594 public school districts, and the administrators (principals) of schools in the public and private school samples.

The basic sample of teachers required for each of the public and private school strata was allocated to the sample schools in each stratum so that the teacher weights were equal. The specified average teacher sample size for each sample school (4, 8, and 6 teachers for each public elementary, secondary, and combined school, respectively, and 4, 5, and 3 teachers for each private elementary, secondary, and combined school, respectively) was then allocated to the two teacher strata to obtain an oversampling of new private school teachers at a fixed rate, and proportional allocation of public school teachers. Finally, a systematic sampling scheme was then applied to select the basic sample within each teacher stratum. An independent systematic sampling scheme was applied to bilingual teachers in each sample school to select the bilingual supplement. To control the number of teachers in each of the six bilingual strata (California, Texas, Florida, Illinois, New York, and all other States), the supplement was subsampled systematically with equal probabilities by stratum. Teachers selected in both the supplement and the basic sample were unduplicated so that each teacher appears only once.

The sample sizes were as follows:

Public nonbilingual	53,394
Public bilingual	2,848
Private nonbilingual	11,248
Private bilingual	281

Data collection

The Teacher Questionnaires were mailed to the sampled schools in February 1988. Approximately 10 days after this mailout, a letter was sent to the survey coordinator in each school identifying the school's sample teachers and requesting the coordinator to remind the the sample teachers to complete and return their questionnaires. Approximately six weeks after the mailout, a second set of questionnaires, for sample teachers who had not returned the first questionnaire, was sent in a package to the school coordinators for distribution to nonresponding teachers. During the time of this second mailout, each coordinator was telephoned and asked to remind those teachers who had not returned the first questionnaire to complete the second one and mail it back. A telephone follow-up was conducted during April, May, and June. Due to the large number of nonrespondents and the necessity for completing the follow-up prior to the closing of schools for the summer, only a subsample of nonresponding teachers was included in this effort. This subsample of nonresponding teachers had their weights adjusted to represent the nonresponding teachers who were not selected for the followup.

Questionnaire response rates

Weighted response rates were 86.4 percent for the Public School Teachers Questionnaire and 79.1 percent for the Private School Teachers Questionnaire.

Item descriptions

The Public School Teacher Questionnaire is shown in the Appendix. With a few exceptions (see Appendix) it is identical to the Private School Teacher Questionnaire.

Effects of item nonresponse

There was no explicit imputation for item nonresponse. Not imputing for item nonresponse leads to a bias in the estimates. In tables which present averages, the nature of this bias is unknown. Table 2, average years of full-time teaching experience, was based on the sum of questionnaire items 8a-2 and 8b-2, years of full-time teaching in public and private schools, respectively. The item response rates for item 8a-2 (years of full-time teaching in public schools) were 99.7% and 72% for public and private school teachers, respectively. The item response rates for item 8b-2 (years of full-time teaching in private schools) were 49% and 95.8% for public and private school teachers, respectively. The response rate of 49% for public school teachers on item 8b-2 and the response rate of 72% for private school teachers on item 8a-2 could be attributable to the failure of public school teachers with no private school teaching experience and private school teachers with no public school teaching experience to check the appropriate "None" box on the questionnaire. Table 3, years teaching in current school, was based on an item which had a 98.9% response rate among public school teachers and a 99% response rate among private school

teachers. Caution must be exercised in the use or interpretation of estimates from an unimputed data file, especially estimates with low response rates.

Standard errors

The estimates in these tables are based on samples and are subject to sampling variability. Standard errors were estimated using a balanced repeated replication procedure that incorporates the design features of this complex sample survey. The standard errors provide indications of the accuracy of each estimate. If all possible samples of the same size were surveyed under the same conditions, an interval of 1.96 standard errors below to 1.96 standard errors above a particulr statistic would include the universe value in approximately 95 percent of the cases. Note, however, that the standard errors in the tables do not take into account the effects of biases due to item nonresponse, measurement error, data processing error, or other systematic error.

Definition of teacher

For purposes of this survey, a teacher was any full-time or part-time teacher whose primary assignment was teaching in any teaching in any of grades K-12. Itinerant teachers were included, as well as long-term substitutes who were filling the role of a regular teacher on an indefinite basis. Teachers classified as

Elementary or Secondary had to meet one of the following conditions:

Elementary

A teacher who checked the "ungraded" option only in item 24 (which asks for grades being taught) and was designated as an Elementary teacher on the list of teachers obtained from each sample school (code "0", "1", or "2" for variable name TSUBJ in the tape documentation).

A teacher who checked 6th grade or lower and no grade higher than 6th in item 24, or 6th grade or lower and "ungraded" and no grade higher than 6th.

A teacher who checked 6th grade or lower and 7th grade or higher and entered a primary assignment code of "01", "02", or "03" in item 16a.

A teacher who checked 7th and 8th grades only in item 24 and entered a primary assignment code of "01", "02", or "03" in item 16a.

A teacher who checked 6th grade or lower and 7th grade or higher in item 24 and entered a primary assignment code of Special Education in item 16a and was designated as an Elementary teacher on the list of teachers obtained from each sample school (code "0", "1", or "2" for variable name TSUBJ).

A teacher who checked 7th and 8th grades only in item 24 and entered a primary assignment code of Special Education in item 16a and was designated as an Elementary teacher on the list of

teachers obtained from each sample school (code "0", "1", or "2" for variable name TSUBJ).

Secondary

A teacher who checked the "ungraded" option only in item 24 and was designated as a Secondary teacher on the list of teachers obtained from each sample school (code "0", "1", or "2" for variable name TSUBJ in the tape documentation).

A teacher who checked 6th grade or lower and 7th grade or higher in item 24 and entered a primary assignment code greater than 03 in item 16a.

A teacher who checked 9th grade or higher, or 9th grade or higher and "ungraded".

A teacher who checked 7th and 8th grades only in item 24 and entered a primary assignment code of "04" or higher but not Special Education in item 16a.

A teacher who checked 7th and 8th grades only in item 24 aand entered a primary assignment code of Special Education in item 16a and was designated as a Secondary teacher on the list of teachers obtained obtained from each sample school (code "03" or higher for variable name TSUBJ).

All other teachers who checked 6th grade or lower and 7th grade or higher in item 24, or 7th and 8th grades only, and were not categorized above as either Elementary or Secondary.

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For More Information

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Appendix

Differences between the Public and Private School Teachers Questionnaires

The following items on the Private School Teachers Questionnaire have response options that differ from those for the corresponding items on the Public School Teachers Questionnaire.

Item Number	Response options
11	1. Same as Public 2. Same as Public 3. Deleted 4. Teaching in a different school in this state 5-11. Same as Public
23	1. Same as Public 2. Same as Public 3. Same as Public The Private School Teachers Questionnaire has a fourth "Code for Certification" as follows: 4. Full certification by accrediting or certifying

body other than state

37a

1. Same as Public
2. Teaching in another private school
3. Deleted
4. Teaching in a public school
5-13. Same as public

37b

1. Same as public
2. Teaching in another private school
3. Deleted
4. Teaching in a public school
5-13. Same as public

Table 1.--Percent of mathematics and science teachers by sector, level, and selected characteristics: 1987-88

Characteristic	Total	Public		Private	
		Elementary	Secondary	Elementary	Secondary
Total teachers	100.0%	100.0%	100.0%	100.0%	100.0%
Sex					
Male	37.8	16.4	51.1	15.3	37.3
Female	61.8	83.1	48.5	84.7	62.4
Not reported	0.4	0.5	0.3	0.0	--
Race					
Am. Indian, Aleut, Eskimo	1.1	1.1	1.1	1.7	0.9
Asian or Pacific Islander	1.3	1.4	1.1	1.3	1.8
Black	8.2	11.7	7.6	4.1	2.5
White	87.6	83.7	88.6	91.1	92.7
Not reported	1.8	2.0	1.6	1.8	2.0
Ethnic origin					
Hispanic	2.7	3.8	2.2	3.1	2.3
Non-Hispanic	95.2	93.5	96.1	94.1	95.3
Not reported	2 1	2.6	1.7	2.8	2.4
Age					
Less than 30	13.1	11.2	12.2	24.5	19.2
30 to 39	32.0	32.8	31.6	28.2	34.0
40 to 49	34.3	33.4	36.3	28.1	38.4
50 or more	13.2	30.8	18.9	17.0	17.0
Not reported	1.4	1.8	1.0	2.3	1.5
Marital Status					
Married	72.3	75.6	75.1	60.2	62.9
Widowed, divorced, or separated	10.5	12.9	10.0	7.0	7.4
Never married	16.2	14.6	14.1	29.6	28.0
Not reported	1.0	1.0	0.8	3.3	1.7
Region					
Northeast	22.1	18.5	21.8	29.9	32.8
West	24.9	23.6	25.4	32.1	21.3
South	34.8	38.2	35.2	22.4	28.8
North central	18.1	19.8	17.7	15.6	17.1

--Too few cases for a reliable estimate.
NOTE: Details may not add to totals due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1987-88.

Table 2.--Average years of full-time teaching experience of mathematics and science teachers, by sector, level, and selected characteristics: 1987-88

Characteristic	Total	Public		Private	
		Elementary	Secondary	Elementary	Secondary
Total teachers	13.6	13.9	14.0	10.8	11.0
Sex					
Male	15.6	15.4	16.1	11.3	12.0
Female	12.3	13.6	11.8	10.7	10.4
Not reported	16.0	--	--	--	--
Race					
Am. Indian, Aleut, Eskimo	12.9	12.5	13.0	--	--
Asian or Pacific Islander	13.8	16.2	14.0	--	--
Black	15.5	15.8	15.7	10.6	11.5
White	13.4	13.6	13.9	10.8	10.9
Not reported	13.2	13.2	13.4	--	--
Ethnic origin					
Hispanic	10.9	10.7	11.3	--	--
Non-Hispanic	13.6	13.9	14.1	10.8	10.9
Not reported	15.8	16.9	15.8	--	15.3
Age					
Less than 30	3.1	3.1	3.2	3.1	2.5
30 to 39	9.5	10.0	9.7	7.7	8.0
40 to 49	15.8	15.7	16.4	13.1	12.5
50 or more	23.2	22.6	23.5	23.1	23.9
Not reported	15.6	17.4	15.6	--	--
Marital Status					
Married	14.0	14.0	14.7	10.1	10.8
Widowed, divorced, or separated	15.3	16.5	15.0	13.6	11.9
Never married	10.5	11.0	9.7	11.9	11.1
Not reported	12.5	--	13.8	--	--
Region					
Northeast	14.3	14.4	15.4	10.1	11.3
West	14.3	15.0	14.6	12.2	11.2
South	12.7	13.3	12.6	10.5	11.8
North central	13.3	13.2	14.3	9.8	8.7

--Too few cases for a reliable estimate.
NOTE: Details may not add to totals due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1987-88.

Table 3.--Average years teaching in current school of mathematics and science teachers, by sector, level, and selected characteristics: 1987-88

Characteristic	Total	Public		Private	
		Elementary	Secondary	Elementary	Secondary
Total teachers	8.7	8.5	9.4	5.8	6.2
Sex					
Male	10.7	9.5	11.3	6.0	7.2
Female	7.5	8.3	7.4	5.7	5.7
Not reported	10.0	--	--	--	--
Race					
Am. Indian, Aleut, Eskimo	7.9	7.6	8.2	--	--
Asian or Pacific Islander	9.0	9.7	9.0	--	--
Black	9.2	9.5	9.4	4.7	3.7
White	8.7	8.4	9.4	5.7	6.3
Not reported	8.3	7.4	9.1	--	--
Ethnic origin					
Hispanic	6.2	6.5	6.4	--	--
Non-Hispanic	8.7	8.6	9.5	5.7	6.3
Not reported	9.9	9.8	10.9	--	6.9
Age					
Less than 30	2.5	2.4	2.6	2.5	2.1
30 to 39	6.3	6.2	6.6	4.7	5.2
40 to 49	10.1	9.7	10.8	6.8	7.4
50 or more	14.4	13.5	15.7	10.7	10.9
Not reported	9.8	10.0	10.9	--	--
Marital Status					
Married	9.2	8.8	10.0	5.9	6.9
Widowed, divorced, or separated	8.7	9.2	8.9	6.9	4.8
Never married	6.4	6.8	6.8	5.0	5.2
Not reported	8.3	--	9.5	--	--
Region					
Northeast	10.0	9.8	11.4	5.4	6.6
West	9.8	9.8	10.4	6.8	7.0
South	7.5	7.6	7.6	6.0	6.0
North central	8.1	7.6	9.1	4.3	5.1

--Too few cases for a reliable estimate.
NOTE: Details may not add to totals due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1987-88.

Table 4.--Percent of mathematics and science teachers, by sector, level, and highest degree earned: 1987-88

Characteristic	Total	Public		Private	
		Elementary	Secondary	Elementary	Secondary
Total teachers	100.0%	100.0%	100.0%	100.0%	100.0%
No degree	0.4	0.1	0.2	3.8	1.6
Associate's degree	0.4	--	0.5	1.1	1.2
Bachelor's degree	51.2	55.8	46.8	68.6	53.3
Master's degree	39.9	36.3	43.7	24.8	37.0
Education specialist	6.8	6.9	7.7	1.3	3.7
Ph.D.	1.0	0.6	1.0	--	2.9
First professional	0.2	0.2	0.2	--	0.3

--Too few cases for a reliable estimate.
NOTE: Details may not add to totals due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1987-88.

Table 5.--Percent of mathematics and science teachers who think that each of several problems is a "serious problem" in their school: 1987-88

School problem	Total teachers	Public	Private
Student absenteeism	18.6%	20.7%	5.0%
Student use of alcohol	12.3	13.6	4.1
Student tardiness	12.0	13.2	4.4
Student drug abuse	8.9	9.9	2.3
Verbal abuse of teachers	8.9	9.7	3.4
Student pregnancy	7.2	8.3	0.6
Students cutting class	7.0	7.9	1.2
Vandalism of school property	6.1	6.8	1.8
Physical conflicts among students	5.6	6.2	2.0
Robbery or theft	3.1	3.3	1.6
Teacher absenteeism	2.4	2.7	0.9
Student possession of weapons	1.9	2.1	0.6
Physical abuse of teachers	1.0	1.0	1.1

--Too few cases for a reliable estimate.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1987-88.

Table 1S.--Standard errors for percent of mathematics and science teachers by sector, level, and selected characteristics: 1987-88 (table 1)

Characteristic	Total	Public		Private	
		Elementary	Secondary	Elementary	Secondary
Sample size	13,307	3,080	8,139	961	1,127
Sex					
Male	0.52	0.79	0.66	1.56	2.05
Female	0.54	0.79	0.67	1.56	2.16
Not reported	0.37	0.51	0.33	0.00	--
Race					
Am. Indian, Aleut, Eskimo	0.08	0.16	0.10	0.51	0.23
Asian or Pacific Islander	0.13	0.21	0.15	0.90	0.70
Black	0.37	0.77	0.42	1.01	0.63
White	0.39	0.84	0.40	1.83	1.15
Not reported	0.13	0.23	0.16	0.54	0.52
Ethnic origin					
Hispanic	0.17	0.44	0.19	0.78	0.86
Non-Hispanic	0.23	0.60	0.25	1.01	1.02
Not reported	0.14	0.35	0.14	0.76	0.50
Age					
Less than 30	0.33	0.73	0.38	1.76	1.96
30 to 39	0.47	0.86	0.59	1.92	1.96
40 to 49	0.51	1.01	0.67	1.72	1.80
50 or more	0.34	0.77	0.51	1.30	1.78
Not reported	0.12	0.25	0.12	0.66	0.39
Marital Status					
Married	0.51	0.89	0.60	2.50	1.56
Widowed, divorced, or separated	0.36	0.80	0.41	0.98	1.10
Never married	0.46	0.83	0.48	2.10	1.48
Not reported	0.11	0.16	0.11	1.30	0.52
Region					
Northeast	0.47	0.86	0.52	2.43	2.47
West	0.38	0.70	0.50	2.30	1.57
South	0.51	0.91	0.50	2.18	2.59
North central	0.31	0.72	0.35	1.23	1.51

--Too few cases for a reliable estimate.
NOTE: Details may not add to totals due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1987-88.

Table 2S.--Standard errors for average years of full-time teaching experience of mathematics and science teachers, by sector, level, and selected characteristics: 1987-88 (table 2)

Characteristic	Total	Public		Private	
		Elementary	Secondary	Elementary	Secondary
Total teachers	0.08	0.20	0.10	0.36	10.96
Sex					
Male	0.12	0.43	0.15	0.95	0.69
Female	0.12	0.22	0.13	0.45	0.45
Not reported	1.87	--	--	--	--
Race					
Am. Indian, Aleut, Eskimo	0.58	1.55	0.67	--	--
Asian or Pacific Islander	0.82	1.27	1.15	--	--
Black	0.31	0.42	0.45	2.21	3.56
White	0.09	0.21	0.10	0.35	0.46
Not reported	0.69	1.46	0.76	--	--
Ethnic origin					
Hispanic	0.44	0.64	0.58	--	--
Non-Hispanic	0.08	0.19	0.10	0.36	0.48
Not reported	0.80	1.67	0.67	--	3.21
Age					
Less than 30	0.06	0.12	0.08	0.17	0.14
30 to 39	0.09	0.17	0.10	0.26	0.32
40 to 49	0.14	0.30	0.15	0.55	0.49
50 or more	0.22	0.37	0.22	1.33	1.43
Not reported	0.81	1.46	0.99	--	--
Marital Status					
Married	0.09	0.18	0.11	0.34	0.44
Widowed, divorced, or separated	0.31	0.47	0.39	1.47	1.38
Never married	0.21	0.51	0.24	1.02	0.95
Not reported	0.76	--	1.02	--	--
Region					
Northeast	0.23	0.40	0.26	0.65	0.87
West	0.18	0.35	0.20	0.78	0.67
South	0.18	0.33	0.19	0.74	0.71
North central	0.20	0.36	0.26	0.58	0.68

--Too few cases for a reliable estimate.
NOTE: Details may not add to totals due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1987-88.

Table 3S.--Standard errors for average years teaching in current school of mathematics and science teachers, by sector, level, and selected characteristics: 1987-88 (table 3)

Characteristic	Total	Public		Private	
		Elementary	Secondary	Elementary	Secondary
Total teachers	0.07	0.14	0.09	0.25	0.19
Sex					
Male	0.14	0.39	0.16	0.62	0.46
Female	0.10	0.18	0.12	0.28	0.25
Not reported	1.16	--	--	--	--
Race					
Am. Indian, Aleut, Eskimo	0.53	1.01	0.66	--	--
Asian or Pacific Islander	0.67	1.09	0.91	--	--
Black	0.29	0.52	0.38	1.09	1.36
White	0.08	0.14	0.10	0.26	0.21
Not reported	0.45	0.89	0.57	--	--
Ethnic origin					
Hispanic	0.36	0.67	0.43	--	--
Non-Hispanic	0.07	0.15	0.09	0.25	0.20
Not reported	0.56	1.07	0.70	--	1.08
Age					
Less than 30	0.05	0.10	0.07	0.20	0.13
30 to 39	0.08	0.16	0.10	0.36	0.24
40 to 49	0.14	0.27	0.18	0.51	0.37
50 or more	0.25	0.50	0.26	0.83	0.93
Not reported	0.51	0.97	0.82	--	--
Marital Status					
Married	0.09	0.15	0.11	0.29	0.23
Widowed, divorced, or separated	0.18	0.33	0.36	1.18	0.48
Never married	0.16	0.43	0.22	0.49	0.54
Not reported	0.72	--	1.18	--	--
Region					
Northeast	0.21	0.38	0.26	0.47	0.41
West	0.16	0.31	0.21	0.52	0.43
South	0.12	0.26	0.13	0.60	0.38
North central	0.14	0.23	0.24	0.32	0.48

--Too few cases for a reliable estimate.
NOTE: Details may not add to totals due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1987-88.

Table 4S.--Standard errors for percent of mathematics and science teachers, by sector, level, and highest degree earned: 1987-88 (table 4)

Characteristic	Total	Public		Private	
		Elementary	Secondary	Elementary	Secondary
Sample size	13,307	3,080	8,139	961	1,127
No degree	0.10	0.04	0.04	1.23	0.58
Associate's degree	0.05	--	0.08	0.42	0.40
Bachelor's degree	0.49	1.05	0.48	2.06	1.81
Master's degree	0.42	1.01	0.51	1.80	1.86
Education specialist	0.21	0.48	0.28	0.37	0.85
Ph.D.	0.09	0.20	0.12	--	0.64
First professional	0.04	0.06	0.05	--	0.20

--Too few cases for a reliable estimate.
NOTE: Details may not add to totals due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1987-88.

Table 5S.--Standard errors for percent of mathematics and science teachers who think that each of several problems is a "serious problem" in their school: 1987-88 (table 5)

School problem	Total teachers	Public	Private
Student absenteeism	0.43%	0.47%	0.54%
Student use of alcohol	0.40	0.43	0.50
Student tardiness	0.41	0.47	0.59
Student drug abuse	0.28	0.31	0.36
Verbal abuse of teachers	0.29	0.31	0.59
Student pregnancy	0.26	0.30	0.24
Students cutting class	0.30	0.32	0.33
Vandalism of school property	0.24	0.27	0.39
Physical conflicts among students	0.29	0.32	0.43
Robbery or theft	0.19	0.22	0.33
Teacher absenteeism	0.18	0.19	0.27
Student possession of weapons	0.12	0.13	0.23
Physical abuse of teachers	0.04	0.10	0.36

--Too few cases for a reliable estimate.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1987-88.

Appendix 16

END

U.S. Dept. of Education

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Date Filmed

March 29, 1991