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America's Teachers: Profile of a Profession

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America's Teachers: Profile of a Profession

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FOREWORD

In 1987–88, the National Center for Education Statistics (NCES) conducted six major surveys that collected information on various aspects of the teaching profession. Each survey focused on different elements of the educational system, and thus provides a unique perspective on the teaching work force. The surveys included: the Schools and Staffing Survey (SASS), the National Assessment of Educational Progress (NAEP), the National Education Longitudinal Study of 1988 (NELS:88), the Common Core of Data (CCD), the Recent College Graduates Study (RCG), and the National Survey of Postsecondary Faculty (NSOPF).

This report draws from all of these surveys to profile America's teachers. It covers a wide variety of topics, ranging from the size and demographic characteristics of the teaching work force, teacher supply and demand, teacher education and qualifications, the use of resources in the school and classroom, teacher compensation, and teachers' opinions about various aspects of teaching and the teaching profession. The report provides an easily understood, nontechnical reference source for teachers, administrators, researchers, policymakers, parents, and the interested public.

Paul Planchon, Associate Commissioner
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HIGHLIGHTS

In 1987–88, the National Center for Education Statistics (NCES) conducted six major surveys that collected teacher data: the Schools and Staffing Survey (SASS), the National Assessment of Educational Progress (NAEP), the National Education Longitudinal Study of 1988 (NELS:88), the Common Core of Data (CCD), the Recent College Graduates Study (RCG), and the National Survey of Postsecondary Faculty (NSOPF). Each survey focused on different aspects of the educational system, and thus provides a unique perspective on the teaching work force. This report draws upon data from these surveys to profile America's teachers. (Unless otherwise indicated, all data refer to 1987–88.) Some highlights are as follows:

TEACHERS, SCHOOLS, AND STUDENTS

- In the fall of 1987, there were 2.6 million FTE teachers and 40 million students in the United States.
- Seventy-one percent of all teachers were female.
- The average age for teachers was 40 years.
- Eighty-seven percent of female teachers and 90 percent of male teachers were white, non-Hispanic.
- Public urban and suburban schools were similar in size.
- Relatively fewer minorities were in the teaching force than in the population they served. In public schools, 13 percent of teachers and 29 percent of students were minorities.

TEACHER SUPPLY AND DEMAND

- Eight percent of teachers were new to teaching, and 7 percent were returning to teaching after an absence of 1 year or more.
- Among 1985–86 bachelor's degree recipients, 12 percent were newly qualified teachers.
- Only 58 percent of newly qualified teachers were employed as teachers the year after they graduated.
- Twenty-eight percent of newly qualified teachers did not apply for teaching jobs.
- Fifty percent of public school administrators reported no difficulty in filling vacancies.
- Relatively few public school districts or private schools offered teachers incentives for teaching in locations or fields of shortage.
- Between 1987–88 and 1988–89, 8 percent of all teachers moved to different schools, and 6 percent left teaching.

TEACHER EDUCATION

- Thirty-nine percent of teachers majored in general education for their bachelor's degree (or associate's degree if they did not have a bachelor's degree).
- About one-half of all teachers earned an advanced degree.
- On average, teacher educators and other education faculty had lower base salaries and earned less income overall than did postsecondary faculty in other fields.

TEACHER QUALIFICATIONS

- A master's was the highest degree earned for 40 percent of public school teachers and 30 percent of private school teachers.
- Eighty-two percent of teachers reported that they were teaching the subject that they were best qualified to teach, and 94 percent held certification in their main teaching field.
- Forty-one percent of teachers had taught between 10 and 19 years, and 26 percent had taught 20 years or more.

HUMAN AND FISCAL RESOURCES

- Ninety percent of public school teachers and 84 percent of private school teachers were employed full time as teachers.
- Teacher assignments were associated with gender. In the public and private sector, females were more likely to teach kindergarten or general elementary, and males were more likely to teach mathematics, science, or social sciences.
- The average public school class size was 25.0 in 1987–88; for private schools, it was 21.7.

- Current expenditures per public elementary and secondary school student ranged from $2,454 to $7,151 in the 50 states and the District of Columbia.

Instructional Practices

- Teachers of self-contained classes at the K–4 level reported teaching English and language arts an average of 10.6 hours per week, arithmetic or mathematics 4.8 hours, and science and social studies/history about 2.5 hours per week each.
- NAEP fourth graders had teachers who reported spending about 44 percent of class time working in small groups and about 39 percent of class time providing individual instruction.
- About one-fourth of NAEP eighth graders had writing teachers who reported using a writing-to-learn method of teaching very often, whereas nearly 60 percent had teachers who reported using a grammar skill-based approach to writing very often.
- The percentage of NELS:88 eighth graders in public schools whose mathematics teachers reported covering algebra as a major topic was lower in schools with more than 20 percent minority enrollment than in schools with fewer minorities enrolled.
- Twenty-one percent of NELS:88 eighth graders had science teachers who never conducted science experiments or conducted them less than once a month.
- A majority of NELS:88 eighth graders had mathematics and science teachers who reported assigning from 1 to less than 3 hours of homework per week.
- A majority of NELS:88 eighth graders never used computers in their mathematics or science classes.

Teacher Compensation

- The average scheduled salary for a beginning teacher with a bachelor's degree was $17,180 for public school teachers and $12,389 for private school teachers.
- The average annual base salary was $24,345 for full-time elementary school teachers and $26,080 for their secondary school counterparts.
- Only 8 percent of public school teachers and 12 percent of private school teachers strongly agreed with the statement "I am satisfied with my teaching salary."
- Teachers were more likely to be offered medical, dental, and life insurance benefits in public schools than in private schools.
- Forty-three percent of teachers received income from a source other than a school in addition to their base salary.
- Relatively few teachers actually received any kind of incentive pay; many more strongly favored each type of pay incentive than received it.
- Recent college graduates who majored in education received lower salaries, on average, than did other recent college graduates.

Teachers' Opinions About Their Schools and Profession

- About 32 percent of newly qualified teachers who were teaching in 1987 reported that they became teachers because they enjoyed working with children, 30 percent because they found teaching satisfying, and 28 percent because they had always wanted to be a teacher.
- Private school teachers were more likely than public school teachers to find their superiors or peers at their schools extremely helpful in solving instructional or classroom management problems.
- At the secondary level, the most experienced public school teachers were less likely to be teaching lower achieving students.
- Public school teachers who did not rate school problems as serious were more likely than those who did to report that they certainly or probably would become teachers again.
- One-third of all teachers reported that they certainly would become teachers if they had the opportunity to return to college and make their career choices over again, and about one-quarter said that they probably would.
- Among those who left teaching between 1987–88 and 1988–89, nearly 18 percent of former public school teachers and about 12 percent of former private school teachers expected to return to teaching in 1989–90.

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CHAPTER 1 • INTRODUCTION

At the heart of the educational process is the interaction between teachers and students in the classroom. The quality of this interaction is greatly influenced by a variety of factors, including the backgrounds, qualifications, and attitudes of the teachers, the instructional practices used in the classroom, the working conditions and administrative constraints that teachers face, and the characteristics of the students. Because these aspects of teachers and teaching greatly affect the quality of the educational experience of students, the National Center for Education Statistics (NCES), the statistical agency of the U.S. Department of Education, is committed to collecting and disseminating data on the teaching profession.

Reflecting the importance of this information, every elementary and secondary school-based survey that NCES conducts collects data on teachers. The information collected ranges from basic counts of full-time-equivalent public school teachers obtained by surveying all public schools to detailed, individual-level data on the background, experience, training, teaching loads, and perceptions and attitudes of public and private school teachers gathered from large-scale sample surveys.

The 1987–88 school year was a watershed year for the collection of national data on teachers in the United States. NCES conducted six major surveys that collected teacher data that year: the Schools and Staffing Survey (SASS), the National Assessment of Educational Progress (NAEP), the National Education Longitudinal Study of 1988 (NELS:88), the Common Core of Data (CCD), the Recent College Graduates Study (RCG), and the National Survey of Postsecondary Faculty (NSOPF). Each survey focused on different aspects of the educational system, and thus provides a unique perspective on the teaching work force.

This report assembles data from all of these surveys to profile America's teachers and to provide an easily understood, nontechnical reference source for teachers, administrators, researchers, policymakers, parents, and the interested public. Where possible, it includes comparisons with teachers in other countries, but the lack of comparable data severely limits the opportunities to do so.

ORGANIZATION OF THE REPORT

The report is organized by topic rather than data source. Each chapter focuses on a different aspect of teachers or teaching, drawing relevant data from the different surveys to provide multiple perspectives on each issue. The tables show data by teacher and school characteristics and in some cases also by state (for public school teachers) or affiliation group (for private school teachers).[1]

As an introduction to the rest of the report, Chapter 2 contains basic descriptive information on the size and characteristics of the teaching work force.[2] To place this information in context, the chapter also includes data on schools and students and a comparison of the characteristics of new teachers with those of other recent college graduates. In Chapter 3, various aspects of teacher supply and demand are covered, such as sources of supply, indicators of shortages, strategies to deal with shortages, turnover, and attrition.

Teacher education and qualifications are dealt with next. Chapter 4 describes what teachers study and the faculty who teach teachers, while Chapter 5 looks at educational attainment, certification status, teaching experience, and how teachers' qualifications are related to their assigned teaching fields.

The focus of Chapters 6 and 7 is the use of resources in the school and classroom. The school-

[1]The reader should note that variation is often very great within state and within affiliation group. Consequently, state and affiliation group estimates may not accurately describe the situation in individual districts or schools.

[2]References to "teachers" in this report mean elementary and secondary school teachers except in the chapter on postsecondary faculty. See Appendix A for the definition of "teacher" in each survey.

level perspective is taken in Chapter 6, which describes teacher assignments and work loads. However, the classroom perspective is taken in Chapter 7, where instructional practices in the areas of reading, writing, and mathematics and science are discussed. Teacher compensation is addressed in some detail in Chapter 8.

Chapter 9 contains information on teachers' opinions about various aspects of teaching and the teaching profession, including their reasons for becoming teachers, views of their school as a workplace, perceptions of students' abilities, perceptions of the severity of various school problems, job satisfaction, and plans for the future. The report ends by looking at the future of teachers and teaching in the year 2000 (Chapter 10).

This report does not require or assume any statistical expertise on the part of its readers. For those interested, Appendix A provides detailed information about the various surveys and their sample designs, the overall accuracy of the estimates, and the statistical procedures used. All differences noted in the text are statistically significant at the $p \leq .05$ level using a two-tailed t-test with Bonferroni adjustments for multiple comparisons. The procedure is explained in Appendix A. Not all significant differences are discussed. Appendix B contains the standard errors for all estimates cited in comparisons and selected other estimates.

Sources of Data

This section briefly describes each of the NCES surveys used in this report and identifies the policy issues related to teachers and teaching that each is used to address. Appendix A contains more detailed information about each survey.

The Schools and Staffing Survey (SASS), one of the best available sources of data on teachers, is the most frequently cited source of data in this report. It is the largest and most thorough national survey of elementary and secondary school teachers ever undertaken. First conducted in 1987–88, SASS collected a wealth of information about public and private school teachers' demographic characteristics, education, qualifications, income sources, working conditions, and perceptions of the school environment and the teaching profession. SASS data can be used to compute state-level estimates for public school teachers and affiliation group estimates for private school teachers as well as national estimates. Because it is an integrated survey of teachers, principals, schools, and public school districts, teacher information can be linked to contextual data collected from school principals and public school district administrators.

The Teacher Followup Survey (TFS), a component of SASS, is a 1-year followup of some of the teachers who participated in SASS. It collects information on teachers who leave the teaching profession in the year following the SASS survey and on those who continue teaching, making it possible to determine who leaves, why they leave, where they go, and how they compare with nonleavers.

The National Assessment of Educational Progress (NAEP) and *the National Education Longitudinal Study of 1988 (NELS:88)* were both designed to provide data on students in elementary and secondary education, including their academic achievement. In order to understand the context of student learning, however, information was solicited from the students' teachers on the teachers' backgrounds, work assignments, and classroom instructional practices. NAEP, a cross-sectional survey of students, collected data from teachers who taught reading and writing to students who were in grades 4, 8, and 12 in 1987–88. NELS:88, a longitudinal survey of eighth-grade students initiated in 1988, collected data from English, social studies, mathematics, and science teachers of eighth graders in the 1987–88 school year. The information on mathematics and science instruction was much more detailed than the information on English and social studies.

NELS:88 and NAEP are the predominant data sources for information about classroom instructional practices. NAEP was used as the source of information on reading and writing instruction, because the information on instructional practices was more detailed in this survey than it was in NELS:88 and also included more than one grade level. NELS:88 was the source of information on mathematics and science instruction. Although NAEP and NELS:88

also collect information on teacher characteristics, educational background, and work load, these types of data are not tabulated in this report. Because this information was collected only from the teachers of students included in the survey sample, the teachers included in NAEP and NELS:88 are not nationally representative of teachers.

The Common Core of Data (CCD) annually collects data on all public elementary and secondary schools and school districts nationwide, providing data that are comparable across all states. It provides basic information and descriptive statistics on numbers of full-time-equivalent (FTE) teachers in each state. The CCD is used in this report to provide trend information and state-by-state comparisons of numbers of FTE teachers and pupil/teacher ratios in elementary and secondary public schools.

The Recent College Graduates Study (RCG) is a source of information on newly qualified teachers. In 1987, it surveyed recent bachelor's and master's degree recipients about their educational experiences and employment. RCG has a nationally representative sample of bachelor's and master's degree recipients, with a large oversample of education majors. One of the major objectives of RCG is to determine how many graduates become eligible or qualified to teach for the first time and how many are employed as teachers by teaching field in the year following graduation.

RCG provides information for this report about an important source of supply for teachers—newly prepared college graduates. These "newly qualified teachers" include both graduates who became teachers (regardless of whether they obtained a teaching certificate or participated in a formal teacher education program) and graduates who obtained a teaching credential but did not become teachers. Information is available on the newly qualified teachers who actually became teachers and the employment status and plans of those who did not become teachers. Reasons for entering or not entering the profession are explored, as well as teaching field and other teacher employment characteristics for newly qualified teachers who became teachers.

The National Survey of Postsecondary Faculty (NSOPF) focuses on postsecondary faculty rather than on elementary and secondary school teachers. It provides comprehensive national data on the backgrounds, responsibilities, work load, salary, benefits, and attitudes of full- and part-time faculty in various types of postsecondary institutions. Based on their teaching assignments, faculty members can be classified as teacher education faculty, other education faculty (for example, administration or research), and noneducation faculty. NSOPF allows comparisons among these groups in terms of their characteristics, backgrounds, and experience in various types of postsecondary institutions. It does not, however, provide data on the content or structure of teacher education programs nationally. Comprehensive information about teacher education programs is currently not available from NCES surveys.

In addition to the surveys described above, this report also presents information from international studies of education such as the Second International Mathematics Study (SIMS). Taken together, these data sources provide a comprehensive picture of teachers and teaching in the United States in 1987–88. Because NCES conducts many of these surveys on a regular basis, subsequent surveys will permit the examination of trends over time.

Comments about this report and suggestions for improvement are welcome. Please send your comments to:

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CHAPTER 2 • TEACHERS, SCHOOLS, AND STUDENTS

Who teaches, where, and under what conditions? To provide a context for later discussion of important issues related to teachers and teaching, this chapter reports on the total number of teachers in our nation's schools and describes the characteristics of the teaching force in terms of gender, age, and race–ethnicity. Because recent studies of the teaching profession have suggested that working conditions are key to attracting and retaining good teachers,[3] it also describes certain aspects of the teacher's workplace. To provide an overview of some important aspects of teachers' working conditions, this chapter presents data on school organization and size and on the characteristics of the students with whom teachers work each day. These data tell only part of the story about working conditions, however. Other aspects of teachers' working conditions, such as the amount of control teachers have over their work and the amount of support they receive from administrators, other teachers, and parents are discussed in Chapter 9.

NUMBER OF TEACHERS

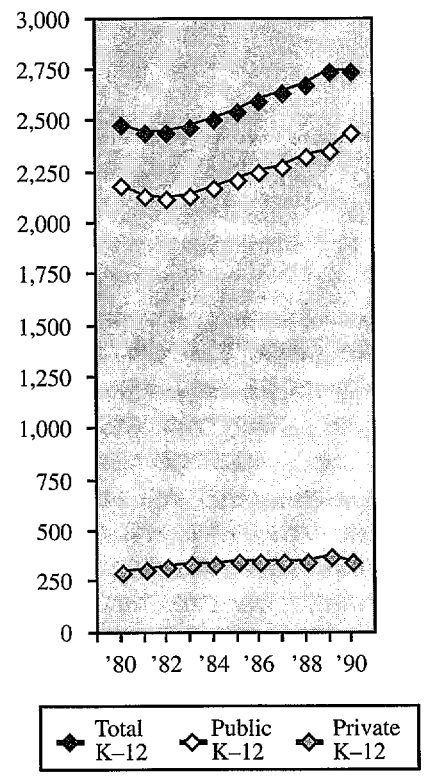
In the fall of 1987, there were 2.6 million FTE teachers and 40 million students in the United States.

The National Center for Education Statistics (NCES), through its Common Core of Data (CCD) survey, annually collects data from states on the number of full-time-equivalent (FTE) public school teachers by level. It obtains private school data through its Early Estimates surveys, periodic Private School Surveys, and the Schools and Staffing Survey (SASS). The data show a gradual increase in the total number of FTE teachers in public and private elementary and secondary schools over the past decade, from 2.5 million in the fall of 1980 to 2.8 million in the fall of 1990 (figure 2.1 and table 2.1). In 1987, the year for which most of the data in this report are presented, there were 2.6 million FTE teachers and 40 million students in the United States.[4] The vast majority of these teachers taught in public schools: 2.2 million in the fall of 1980, 2.3 million in the fall of 1987, and 2.4 million in the fall of 1990. In 1987, nearly 40 percent of all public school teachers taught in just seven states: California, Florida,

[3]See, for example, The Holmes Group, *Tomorrow's Teachers* (East Lansing, MI: 1986), and Carnegie Forum on Education and the Economy, Task Force on Teaching as a Profession, *A Nation Prepared: Teachers for the 21st Century* (New York: 1986).

[4]See U.S. Department of Education, National Center for Education Statistics, *Schools and Staffing in the United States: A Statistical Profile*, 1987–88 (Washington, D.C.: 1992), 7–8 for the total number of students in the United States and the number in each state.

Figure 2.1—Number of full-time-equivalent (FTE) teachers, by sector (in thousands): 1980–90



SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics 1992* (Washington, D.C.: 1992), 73.

Table 2.1—Number of full-time-equivalent (FTE) teachers, by sector and level: 1980–90

Year	Total			Public			Private		
	K–12	Elementary	Secondary	K–12	Elementary	Secondary	K–12	Elementary	Secondary
	(in thousands)								
1980	2,486	1,402	1,084	2,185	1,190	995	301	212	89
1981	2,440	1,404	1,037	2,127	1,183	945	[1]313	[1]221	[1]92
1982	2,458	1,413	1,045	2,133	1,182	951	[1]325	[1]231	[1]94
1983	2,478	1,428	1,050	2,139	1,166	953	337	240	97
1984	2,508	1,451	1,057	2,168	1,208	960	[1]340	[1]243	[1]97
1985	2,548	1,483	1,066	2,206	1,237	969	343	246	97
1986	2,592	1,521	1,071	2,244	1,271	973	[1]348	[1]250	[1]98
1987	2,632	1,564	1,068	2,279	1,307	973	[1]353	[1]257	[1]95
1988	2,668	1,604	1,064	2,323	1,353	970	[1]345	[1]251	[1]94
1989	2,734	1,662	1,072	2,357	1,387	970	[1]377	[1]275	[1]102
1990	2,751	1,680	1,072	2,397	1,426	972	354	254	100

[1]Estimated.

NOTE: Data for teachers are expressed in full-time-equivalents; distribution of unclassified teachers by level is estimated; and distribution of elementary and secondary school teachers by level is determined by reporting units. Kindergarten includes a relatively small number of nursery school teachers and students. Some data have been revised from previously published figures. Details may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics 1992* (Washington, D.C.: 1992), 73.

Illinois, New York, Ohio, Pennsylvania, and Texas (table 2.2). This concentration of teachers reflects a similar concentration of students: 42 percent of all students attended schools in these states.

Gender and Age

Basic demographic information on teachers is important to monitor because it can point to potential problems in the overall supply of teachers or of certain types of teachers. An aging teaching force, for example, might signal the need to enhance recruitment efforts, especially if student enrollments are rising. A decline in the proportion of female teachers could mean that females are being lured away from this traditionally female-dominated field to other professions. Further, a shortage of teachers from certain racial–ethnic groups could indicate the need to implement measures to increase the number of teachers from those groups.

The 1987–88 SASS, which collected information on gender, age, and race–ethnicity, can be used to profile teachers in terms of their demographic characteristics. The 1987 Recent College Graduates Study (RCG), which collected similar information, allows comparisons between newly qualified teachers and other recent college graduates. Comparisons between newly qualified teachers and those already in the teaching force can be made using RCG and SASS. Both types of comparisons are made in this report.

71 percent of all teachers were female.

Teaching has traditionally been a female-dominated profession, and it has remained so even though other attractive opportunities for college educated women have increased during the past few decades. The 1987–88 SASS data show that 71 percent of all teachers were female (table 2.3). The proportion was particularly high at the elementary level, where 88 percent were female, and the proportion of female teachers was higher in the private sector than in the public one. By comparison, in a sample of other

Table 2.2—Number of full-time-equivalent (FTE) public school teachers, by level and state: 1987

	Total	Elementary	Secondary	Unclassified
UNITED STATES	2,279,241	1,198,154	920,657	160,430
Alabama	37,716	20,239	17,477	(*)
Alaska	6,113	3,011	2,990	112
Arizona	30,707	22,322	8,385	(*)
Arkansas	25,572	12,148	12,106	1,318
California	195,864	139,435	56,195	234
Colorado	31,168	15,506	15,662	(*)
Connecticut	35,050	12,374	16,900	5,776
Delaware	5,951	2,907	3,044	(*)
District of Columbia	6,232	2,665	2,565	1,002
Florida	95,857	41,736	37,470	16,651
Georgia	62,280	33,847	21,407	7,026
Hawaii	7,684	4,230	3,280	174
Idaho	10,258	5,337	4,814	107
Illinois	105,217	58,844	30,098	16,275
Indiana	53,749	25,804	23,699	4,246
Iowa	30,873	15,917	14,017	939
Kansas	27,317	13,911	10,598	2,808
Kentucky	35,239	23,350	11,889	(*)
Louisiana	42,920	23,615	12,512	6,793
Maine	14,204	9,186	5,018	(*)
Maryland	40,093	19,891	20,202	(*)
Massachusetts	59,517	19,673	32,574	7,270
Michigan	79,972	30,531	40,294	9,147
Minnesota	42,132	21,803	20,329	(*)
Mississippi	26,930	15,064	11,866	(*)
Missouri	49,632	25,242	23,512	878
Montana	9,659	6,564	3,095	(*)
Nebraska	17,713	9,605	8,108	(*)
Nevada	8,348	4,579	3,769	(*)
New Hampshire	10,363	6,257	4,106	(*)
New Jersey	78,335	39,130	29,433	9,772
New Mexico	15,175	8,502	4,386	2,287
New York	170,236	78,455	67,372	24,409
North Carolina	59,771	30,483	21,067	8,221
North Dakota	7,632	4,958	2,674	(*)
Ohio	99,708	54,687	45,021	(*)
Oklahoma	34,515	15,950	14,991	3,574
Oregon	24,911	13,929	10,193	789
Pennsylvania	103,307	44,837	47,305	11,165
Rhode Island	8,934	3,974	3,761	1,199
South Carolina	35,701	23,138	12,563	(*)
South Dakota	8,172	4,780	3,339	53
Tennessee	42,082	26,462	15,620	(*)
Texas	187,159	96,826	86,211	4,122
Utah	17,124	9,251	5,916	1,957

Table 2.2—Number of full-time-equivalent (FTE) public school teachers, by level and state: 1987—Continued

	Total	Elementary	Secondary	Unclassified
Vermont	6,656	2,876	2,964	816
Virginia	59,928	33,919	25,525	484
Washington	38,344	18,677	16,005	3,662
West Virginia	22,702	10,956	7,985	3,761
Wisconsin	47,721	28,344	16,854	2,523
Wyoming	6,798	2,427	3,491	880

* Not available.

NOTE: Distribution of elementary and secondary teachers determined by reporting units. Teachers reported in full-time-equivalents. Details may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics 1990* (Washington, D.C.: 1990), 73.

Table 2.3—Number of teachers and percentage distribution by sex, by sector and selected teacher characteristics: 1987–88

	Number		Percent	
	Male	Female	Male	Female
TOTAL	747,946	1,871,144	28.6	71.4
PUBLIC	681,161	1,631,168	29.5	70.5
Teaching level				
Elementary	146,338	1,029,164	12.4	87.6
Secondary	534,823	602,004	47.0	53.0
Age				
Under 30 years	69,003	241,806	22.2	77.8
30–39 years	225,580	586,533	27.8	72.2
40–49 years	247,054	504,627	32.9	67.1
50 years or over	134,641	281,559	32.4	67.6
Teaching experience				
Beginning*	56,288	172,185	24.6	75.4
Experienced	624,874	1,458,983	30.0	70.0
PRIVATE	66,785	239,975	21.8	78.2
Teaching level				
Elementary	12,728	147,073	8.0	92.0
Secondary	54,057	92,902	36.8	63.2
Age				
Under 30 years	13,288	52,555	20.2	79.8
30–39 years	23,386	80,840	22.4	77.6
40–49 years	18,211	64,810	21.9	78.1
50 years or over	11,035	38,343	22.3	77.7
Teaching experience				
Beginning*	12,933	42,809	23.2	76.8
Experienced	53,852	197,166	21.5	78.5

*Beginning teachers have taught for 3 years or fewer. Experienced teachers have taught for 4 years or more.

NOTE: Details may not add to totals due to rounding or item nonresponse.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

countries, the percentage of first-level teachers who were female ranged from 42 percent to 90 percent (table 2.4).[5] In the United States, roughly one-half of the eighth-grade and advanced mathematics teachers were female, but in many other countries the percentages were much lower (table 2.5).

The average age for teachers was 40 years.

The average age of all teachers in the United States was 40 years in 1987–88 (table 2.6). Fifteen percent of all teachers in the United States were under 30 years, the age group in which teachers are most likely to leave teaching for other careers or homemaking, and 18 percent were over 50 years old, and thus approaching retirement. Private schools in the United States had proportionately more young teachers than did public schools: 22 percent of all private school teachers were under 30 years old, compared with 14 percent of public school teachers.

RACE–ETHNICITY

87 percent of female teachers and 90 percent of male teachers were white, non-Hispanic.

It is expected that by around the year 2000, about one-third of all Americans will be a member of a racial minority, and minority students already constitute a majority in 23 of the 25 largest city school systems.[6] This situation has created concern over the adequate representation of minority members within the teaching force. Many educators have emphasized that it is important for both minority and nonminority children to have teachers who serve as role models of successful minority professionals who are valued contributors to their communities.

[5]Because the organization of schooling varies so much from country to country, strictly comparable levels are difficult to find. The footnote in table 2.4 explains how first- and second-level were defined.

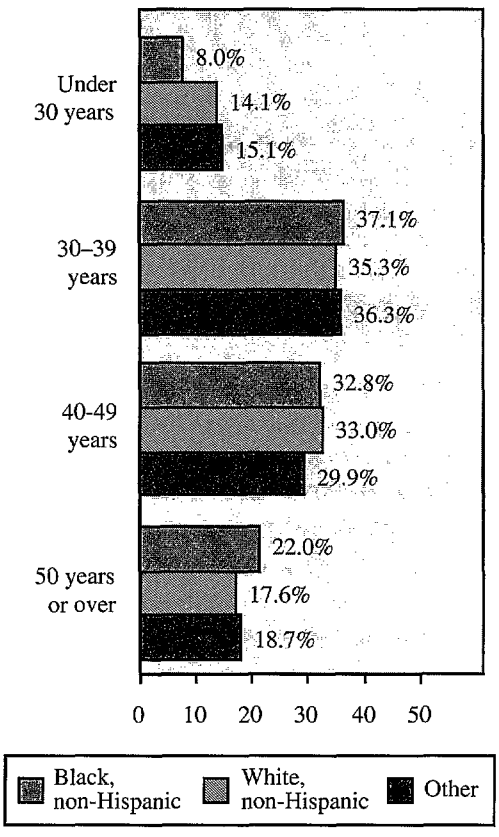
[6]Carnegie Forum on Education and the Economy, *A Nation Prepared: Teachers for the 21st Century* (New York: Author, 1986), 79.

The need for black teachers is particularly acute.[7] Among public school teachers, relatively fewer black, non-Hispanic teachers than teachers from other racial–ethnic backgrounds were under 30 years old (table 2.6). While 14 percent of white, non-Hispanic teachers and 15 percent of teachers in "other" racial–ethnic groups were under 30 years old, only 8 percent of black, non-Hispanic teachers were in this age group (figure 2.2).

Table 2.7 shows the number of male and female teachers by race–ethnicity. As a group, teachers are

[7]Patricia Alberg Graham, in "Black Teachers: A Drastically Scarce Resource," *Phi Delta Kappan* 68 (8) (April 1987), 598–605, noted that proportionately fewer blacks are attending college; fewer of those going to college are choosing teaching; and not enough of those who do choose teaching are passing teacher tests.

Figure 2.2—Percentage distribution of public school teachers by age, by race–ethnicity: 1987–88



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 2.4—Percentage of teachers who were female, by level and country: 1987–88

	First level	Second level first stage	Second level second stage
Austria	80.6	59.9	52.7
Belgium	74.7	(*)	52.8
Canada[1]	68.9	(*)	46.3
France[2]	67.0	60.9	49.7
Germany	79.6	45.7	35.0
Greece[3]	49.3	62.2	47.6
Ireland	76.3	(*)	[2]50.6
Italy	89.8	68.4	63.5
Japan	56.6	35.3	22.5
Netherlands	63.3	(*)	27.6
Norway	61.3	(*)	34.6
Spain	73.1	48.2	50.9
Sweden	68.1	(*)	43.8
Turkey	41.6	32.6	41.1
United Kingdom	78.1	50.4	50.6
Yugoslavia	71.5	54.2	48.3

*Not available.

[1]The figures refer only to teachers in schools providing education solely at the pre-primary level and the first six grades. These schools involve about 50 percent of the total number of pupils enrolled in first level education. Women make up 65.6 percent of the teachers in schools that provide both first and second level education.

[2]Public sector only.

[3]1986–87.

NOTE: "*First level education*, which is compulsory in every country, begins at age five, six or seven and lasts for some five or six years. In countries providing what they term a 'basic education,' generally covering the entire period of compulsory education, only the first six years are considered as first level education. *Second level-first stage education* is provided for pupils who have already completed first level education as defined above. This level corresponds very often to the end of compulsory schooling. In most countries this consists of a general education, although some (France, Greece, and the Netherlands) also provide vocational education which it would be more accurate to describe, at this stage, as 'pre-vocational' since it is not intended to prepare pupils for a particular trade or job. *Second* level-second stage education refers to general, technical and vocational education, and teacher training provided for students who have already completed second level-first stage education. It may either be 'terminal' (i.e., preparing students for entry directly into working life) or it may prepare students for third level education in the university or non-university sectors." Organization for Economic Cooperation and Development, *Education in OECD Countries 1987–88: A Compendium of Statistical Information*, 1990 Special Edition (Paris: Organization for Economic Cooperation and Development), 97.

SOURCE: Organization for Economic Cooperation and Development, *Education in OECD Countries 1987–88: A Compendium of Statistical Information*, 1990 Special Edition (Paris: Organization for Economic Cooperation and Development), 99–100.

predominantly white: in 1987–88, 87 percent of all female teachers and 90 percent of all male teachers were white, non-Hispanic (table 2.8). The proportion of black, non-Hispanic teachers was particularly small in the private sector. Only 3 percent of male private school teachers and 2 percent of female private school teachers were black, non-Hispanic, compared with 6 percent and 9 percent, respectively, in public schools. In both the private and public sectors, 4 percent of male teachers and 5 percent of female teachers belonged to racial–ethnic groups that were other than white, non-Hispanic or black, non-Hispanic. The racial–ethnic compositions of the teacher and student populations are compared below in the description of student characteristics.

The adequacy of the supply of minority teachers can be examined not just overall, but also with respect to where and what they teach.[8] In 1987–88, minority teachers were much more likely than white, non-Hispanic teachers to be teaching in schools with a student population that was more than 50 percent minority. In public schools, 59 per-

[8]In this report, "minority" includes all teachers other than white, non-Hispanic teachers.

Table 2.5—Percentage of eighth grade mathematics and advanced mathematics teachers who were female and their average years of experience in 15 countries (or provinces), by country or province: 1980–82

	Eighth grade		Advanced mathematics	
	Percent female	Average years of experience	Percent female	Average years of experience
Average	40.3	13	27.2	(*)
Belgium (Flemish)	51.3	15	25.9	(*)
Belgium (French)	50.5	15	33.8	(*)
Canada (British Columbia)	15.7	14	3.2	(*)
England/Wales	46.7	12	32.3	(*)
Finland	46.6	11	29.6	(*)
France	46.1	14	16.8	(*)
Hungary	77.1	14	59.6	(*)
Japan	22.6	17	37.3	(*)
Netherlands	9.3	11	5.3	(*)
New Zealand	35.2	10	22.8	(*)
Scotland	41.5	11	32.1	(*)
Sweden	20.4	12	17.3	(*)
Thailand	62.6	7	52.3	(*)
United States	50.5	14	48.0	(*)

*Not available.

SOURCE: Elizabeth Oldham, "Qualifications of Mathematics Teachers," paper prepared for the National Center for Education Statistics, August, 1986.

Table 2.6—Average age and percentage distribution of teachers by age, by sector and selected teacher characteristics: 1987–88

		Percent of teachers			
	Average age	Under 30 years	30–39 years	40–49 years	50 years or over
TOTAL	40.2	14.5	35.3	32.2	18.0
PUBLIC	40.4	13.6	35.5	32.8	18.2
Teaching level					
Elementary	40.2	14.4	36.4	30.6	18.5
Secondary	40.6	12.7	34.5	35.0	17.8
Race–ethnicity					
Black, non-Hispanic	41.8	8.0	37.1	32.8	22.0
White, non-Hispanic	40.2	14.1	35.3	33.0	17.6
Other*	40.1	15.1	36.3	29.9	18.7
PRIVATE	39.0	21.8	34.5	27.4	16.3
Teaching level					
Elementary	38.5	23.6	34.2	26.3	16.0
Secondary	39.5	19.8	34.8	28.7	16.7
Race–ethnicity					
Black, non-Hispanic	36.5	25.9	42.0	21.3	10.8
White, non-Hispanic	38.9	22.0	34.1	28.0	15.9
Other*	39.8	18.3	37.5	24.1	20.0

*Includes Asians, Pacific Islanders, Hispanics of any race, Native Americans, and other racial–ethnic categories.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 2.7—Number of teachers by race–ethnicity, sex, sector, selected teacher characteristics, and community type: 1987–88

	Male			Female		
	Black non-Hispanic	White non-Hispanic	Other[1]	Black non-Hispanic	White non-Hispanic	Other[1]
TOTAL	39,017	654,364	32,141	146,506	1,596,773	85,149
PUBLIC	37,229	594,448	29,324	141,776	1,378,045	73,777
Teaching level						
Elementary	10,282	123,673	7,514	88,734	866,904	49,261
Secondary	26,946	470,775	21,809	53,043	511,141	24,516
Age						
Under 30 years	3,030	60,399	3,653	11,016	216,404	11,871
30–49 years	11,736	195,916	11,456	53,287	495,646	25,609
40–49 years	13,750	218,518	8,500	43,737	427,330	22,130
50 years or over	8,263	116,450	5,578	30,138	229,140	13,562
Teaching experience						
Beginning[2]	2,732	47,437	3,772	10,715	148,669	10,222
Experienced	34,496	547,011	25,552	131,061	1,229,376	63,555
Community type						
Urban	18,165	121,786	11,285	70,864	297,246	30,529
Suburban	4,815	129,260	4,237	19,261	280,923	12,961
Rural–small city	10,926	299,831	10,662	40,453	706,095	24,338
PRIVATE	1,788	59,916	2,818	4,730	218,728	11,372
Teaching level						
Elementary	—	11,622	—	3,979	133,545	6,228
Secondary	—	48,294	2,465	—	85,183	5,144
Age						
Under 30 years	—	12,047	—	—	48,918	2,186
30–39 years	—	21,180	—	2,034	73,332	4,407
40–49 years	—	17,116	—	—	60,429	2,906
50 years or over	—	9,193	—	—	34,771	1,870
Teaching experience						
Beginning[2]	—	11,249	—	1,269	38,963	1,983
Experienced	—	48,667	2,002	3,460	179,765	9,389
Community type						
Urban	—	22,621	—	2,749	79,732	5,834
Suburban	—	13,631	—	—	54,524	2,359
Rural–small city	—	15,740	—	—	61,013	1,523

— Too few cases for a reliable estimate.

[1]Includes Asians, Pacific Islanders, Hispanics of any race, Native Americans, and other racial–ethnic categories.

[2]Beginning teachers have taught for 3 years or fewer. Experienced teachers have taught for 4 years or more.

NOTE: Details may not add to totals due to rounding or item nonresponse.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 2.8—Percentage distribution of teachers by race–ethnicity, by sex, sector, selected teacher characteristics, and school community type: 1987–88

	Male			Female		
	Black non-Hispanic	White non-Hispanic	Other[1]	Black non-Hispanic	White non-Hispanic	Other[1]
TOTAL	5.4	90.2	4.4	8.0	87.3	4.7
PUBLIC	5.6	89.9	4.4	8.9	86.5	4.6
Teaching level						
Elementary	7.3	87.4	5.3	8.8	86.3	4.9
Secondary	5.2	90.6	4.2	9.0	86.8	4.2
Age						
Under 30 years	4.5	90.0	5.4	4.6	90.4	5.0
30–39 years	5.4	89.4	5.2	9.3	86.3	4.5
40–49 years	5.7	90.8	3.5	8.9	86.6	4.5
50 years or over	6.3	89.4	4.3	11.0	84.0	5.0
Teaching experience						
Beginning[2]	5.1	87.9	7.0	6.3	87.7	6.0
Experienced	5.7	90.1	4.2	9.2	86.3	4.5
Community type						
Urban	12.0	80.5	7.5	17.8	74.6	7.7
Suburban	3.5	93.5	3.1	6.2	89.7	4.1
Rural–small city	3.4	93.3	3.3	5.2	91.6	3.2
PRIVATE	2.8	92.9	4.4	2.0	93.1	4.8
Teaching level						
Elementary	4.1	93.1	2.8	2.8	92.9	4.3
Secondary	2.4	92.8	4.7	0.8	93.5	5.6
Age						
Under 30 years	4.1	92.7	3.2	2.2	93.6	4.2
30–39 years	2.9	93.1	4.0	2.5	91.9	5.5
40–49 years	1.6	95.6	2.8	1.7	93.8	4.5
50 years or over	2.9	87.8	9.3	1.1	93.9	5.0
Teaching experience						
Beginning[2]	4.6	89.0	6.5	3.0	92.3	4.7
Experienced	2.3	93.8	3.9	1.8	93.3	4.9
Community type						
Urban	3.0	91.2	5.8	3.1	90.3	6.6
Suburban	1.9	97.5	0.6	1.1	94.8	4.1
Rural–small city	1.5	95.2	3.3	1.1	96.5	2.4

[1]Includes Asians, Pacific Islanders, Hispanics of any race, Native Americans, and other racial–ethnic categories.

[2]Beginning teachers have taught for 3 years or fewer. Experienced teachers have taught for 4 years or more.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

cent of Asian teachers, 64 percent of black, non-Hispanic teachers, and 64 percent of Hispanic teachers worked in schools with a student population that was more than 50 percent minority, compared with 16 percent of white, non-Hispanic teachers (table 2.9).

The SASS data also enable examination of the race–ethnicity of teachers by their main assignment field. The percentage of public school teachers who were white, non-Hispanic ranged from 87 percent to 90 percent in all teaching fields except bilingual education/English as a second language (table 2.10). Thirty-six percent of the bilingual education/English as a second language public school teachers were Hispanic. The percentage of private school teachers who were white, non-Hispanic ranged from 92 percent to 97 percent in all teaching fields. Tables 2.11 and 2.12 show the distribution of teachers by race–ethnicity in 1987–88, by state for public school teachers and by affiliation group for private school teachers.

The 1987 RCG allows comparisons of the demographic characteristics of newly qualified teachers and other recent college graduates. For this comparison, newly qualified teachers were defined as individuals 1) who received a bachelor's degree between July 1, 1985 and June 30, 1986, who became eligible or certified to teach during that period, and who had not been employed as teachers before receiving their degree; or 2) who were teaching without credentials, and who had not been employed as teachers before receiving their degree. Newly qualified teachers who received bachelor's degrees in 1985–86 were much more likely than other bachelor's degree recipients to be female (73 percent compared with 48 percent) (table 2.13). Newly qualified teachers and other 1985–86 bachelor's degree recipients were similar in terms of age and race–ethnicity.

SCHOOLS

About two-thirds of public and private schools were elementary in 1987–88 (table 2.14). In the public sector, another 25 percent were secondary, and 6 percent were combined elementary and secondary. The private sector had fewer secondary schools (9 percent) and more combined schools (27 percent) than did the public sector.

Public urban and suburban schools were similar in size.

In urban and suburban communities, the average public elementary school had about 500 students, and the average public secondary school had about 1,000. At both the elementary and secondary levels across all community types, private schools were smaller, on average, than were public schools. Among combined schools, public schools were significantly larger, on average, only in urban and rural areas.

In 37 percent of the public schools, the minority student population was less than 5 percent of the total, and in 21 percent of these schools, it was 50 percent or more (table 2.14). In contrast, almost one-half (46 percent) of the private schools were less than 5 percent minority, and only 14 percent were 50 percent or more minority. Roughly 40 percent of both public and private schools had minority populations between 5 percent and 50 percent.

STUDENT CHARACTERISTICS

Relatively fewer minorities were in the teaching force than in the population they served. In public schools, 13 percent of teachers and 29 percent of students were minorities.

SASS provides information on the diversity of the student population and the level of student poverty. In public schools, 71 percent of all students were white, non-Hispanic, 16 percent were black, non-Hispanic, 9 percent were Hispanic, 3 percent were Asian, and 1 percent were Native American (figure 2.3 and table 2.15). In the private sector, a greater proportion of the students were white, non-Hispanic (81 percent), and smaller proportions were black, non-Hispanic (8 percent), Hispanic (7 percent), and Native American (less than 1 percent). A comparison

Table 2.9—Percentage distribution of teachers by percentage minority (nonwhite) enrollment in the schools in which they taught, by sector and teacher race–ethnicity: 1987–88

	Percent minority enrollment in school		
	Less than 20%	20–49%	Greater than 50%
TOTAL	60.1	19.2	20.7
PUBLIC	58.2	20.0	21.8
Teacher race–ethnicity			
Native American	55.2	18.9	25.9
Asian	20.1	20.6	59.3
Black, non-Hispanic	11.9	24.1	64.0
Hispanic	18.7	17.0	64.3
White, non-Hispanic	64.3	19.8	15.8
PRIVATE	75.8	12.4	11.8
Teacher race–ethnicity			
Native American	68.2	14.6	17.2
Asian	10.9	8.6	80.5
Black, non-Hispanic	20.5	11.0	68.4
Hispanic	37.8	20.7	41.5
White, non-Hispanic	79.2	12.2	8.6

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "School Questionnaire" and "Teacher Questionnaire."

Table 2.10—Percentage distribution of teachers by race–ethnicity, by sector and main assignment field: 1987–88

	Native American	Asian/ Pacific Islander	Black, non-Hispanic	Hispanic	White, non-Hispanic
TOTAL	1.0	0.9	7.3	2.6	88.1
PUBLIC	1.0	0.9	8.0	2.6	87.5
Main assignment					
K-general elementary	0.9	1.1	8.8	2.6	86.5
Math/science	0.9	1.1	7.4	1.8	88.7
English, language arts	1.3	0.5	7.3	1.7	89.2
Social studies	0.9	0.7	6.4	2.6	89.4
Special education	1.3	0.8	9.1	2.0	86.8
Bilingual/ESL	0.8	5.3	5.4	36.4	52.1
Vocational education	1.0	0.2	6.7	2.2	90.0
Other	1.0	0.6	7.4	2.5	88.5
PRIVATE	0.9	1.2	2.2	2.7	93.1
Main assignment					
K-general elementary	0.9	0.8	3.1	2.0	93.2
Math/science	1.0	2.2	1.7	3.0	92.0
English, language arts	1.3	0.5	0.8	0.9	96.5
Social studies	1.0	2.7	1.8	2.3	92.2
Special education	—	0.0	3.0	0.0	96.1
Bilingual/ESL	—	—	—	—	—
Vocational education	—	—	—	—	—
Other	0.6	0.9	1.4	5.0	92.2

—Too few cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 2.11—Percentage distribution of public school teachers by race–ethnicity, by state: 1987–88

	Native American	Asian/ Pacific Islander	Black, non-Hispanic	Hispanic	White, non-Hispanic
TOTAL	1.0	0.9	8.0	2.6	87.5
State					
Alabama	0.6	—	20.8	0.8	77.5
Alaska	4.0	1.8	1.1	—	92.8
Arizona	3.2	—	0.7	7.0	88.7
Arkansas	0.2	0.0	11.5	0.6	87.8
California	1.3	3.5	4.0	6.0	85.2
Colorado	0.7	1.6	1.6	4.7	91.4
Connecticut	—	0.7	2.0	1.1	96.0
Delaware	—	—	12.5	—	86.0
Dist. of Columbia	—	0.0	81.7	2.3	14.8
Florida	1.4	0.3	13.1	4.8	80.4
Georgia	0.8	—	20.3	0.5	78.3
Hawaii	0.0	79.9	0.0	1.5	18.6
Idaho	0.9	—	0.0	0.7	98.1
Illinois	1.0	0.8	9.8	1.3	87.2
Indiana	1.3	—	3.3	1.0	94.4
Iowa	1.1	0.4	1.0	0.5	97.0
Kansas	1.8	—	2.3	1.3	94.5
Kentucky	0.9	0.0	2.3	1.5	95.3
Louisiana	—	0.0	30.3	1.0	68.5
Maine	2.5	0.0	0.0	—	97.3
Maryland	—	—	16.8	—	82.2
Massachusetts	1.0	0.6	1.9	1.5	94.9
Michigan	0.9	0.3	10.9	1.2	86.8
Minnesota	0.7	0.3	—	0.4	98.3
Mississippi	0.6	0.0	32.4	0.4	66.6
Missouri	1.3	0.0	3.5	0.4	94.8
Montana	2.6	—	—	0.8	96.3
Nebraska	0.8	—	1.0	0.9	97.0
Nevada	1.3	0.6	6.4	2.6	89.0
New Hampshire	0.6	—	—	1.1	97.7
New Jersey	1.1	0.3	7.2	2.8	88.6
New Mexico	3.2	0.7	1.4	21.3	73.4
New York	0.9	0.6	6.3	2.5	89.8
North Carolina	1.2	—	16.2	0.5	81.9
North Dakota	0.9	—	—	0.7	97.7
Ohio	0.8	0.1	6.1	0.3	92.7
Oklahoma	3.5	—	2.7	0.9	92.8
Oregon	1.1	1.1	0.6	1.3	95.8
Pennsylvania	0.9	0.3	5.8	0.6	92.4
Rhode Island	2.2	—	—	—	96.7
South Carolina	0.3	—	18.8	0.0	80.7
South Dakota	3.4	—	0.0	—	96.0
Tennessee	0.4	—	13.5	1.6	84.4
Texas	0.7	0.2	8.9	11.0	79.2
Utah	1.3	1.2	0.0	1.4	96.2

Table 2.11—Percentage distribution of public school teachers by race–ethnicity, by state: 1987–88—Continued

	Native American	Asian/ Pacific Islander	Black, non-Hispanic	Hispanic	White, non-Hispanic
Vermont	—	0.0	0.0	1.0	98.4
Virginia	0.5	0.3	16.8	0.5	81.9
Washington	0.7	2.1	1.3	0.4	95.5
West Virginia	1.6	—	1.7	0.9	95.5
Wisconsin	0.8	—	1.7	0.8	96.5
Wyoming	—	0.0	1.2	1.9	96.6

—Too few cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

of the racial–ethnic composition of the students and teachers shows that there were proportionately fewer minorities in the teaching force than in the population they served. In public schools, for example, 8 percent of the teachers, but 16 percent of the students were black, non-Hispanic; 3 percent of the teachers, but 9 percent of the students were Hispanic; and 1 percent of the teachers, but 3 percent of the students were Asian (tables 2.10 and 2.15).

Teachers worked with different racial–ethnic mixes of students depending on what level they taught, the type of community where their school was located, and whether their school was public or private (table 2.15). At the elementary level, public school students were less likely than private school students to be white, non-Hispanic (69 percent compared with 79 percent), and were more likely to be black, non-Hispanic (17 percent compared with 9 percent). The pattern was similar at the secondary level where 73 percent of public school students were white, non-Hispanic, compared with 81 percent of private school students; and 15 percent of public school students were black, non-Hispanic, compared with 6 percent of private school students. Urban public schools were 48 percent white, non-Hispanic and 30 percent black, non-Hispanic, while urban private schools were 72 percent white, non-Hispanic and 13 percent black, non-Hispanic. Suburban public schools were 77 percent white, non-Hispanic and 11 percent black, non-Hispanic, compared with suburban private schools, which were 87 percent white, non-Hispanic and 5 percent black, non-Hispanic.

Differences in the economic circumstances of students were evident within and across sectors (table 2.16). SASS collected data on the number of students in each school who were eligible for the federal free lunch program, which can be used as an indicator of the number of poor children in the school.[9] The data show that in 1987–88, 22 percent of all elementary public school students and 8 percent of all secondary public school students were identified as free lunch eligible.

Free lunch eligibility was associated with community type, particularly in the public schools, and with minority enrollment. Among public school elementary students, 31 percent of urban, 13 percent of suburban, and 21 percent of rural–small city students were free lunch eligible. At the secondary level, 9 percent of urban public school students, 5 percent of suburban, and 8 percent of rural–small city school students were free lunch eligible. Among public elementary schools that were less than 20 percent minority, 13 percent of students were free lunch eligible, compared with 33 percent of students in schools that were more than 20 percent minority. In public secondary schools, 5 percent of students from schools that were less than 20 percent minority were eligible, compared with 10 percent from schools that were more than 20 percent minority.

[9]The number of children who were reported free lunch eligible will be an underestimate of the number of poor children, because not all students who are eligible identify themselves as such (especially at the secondary level), and in the private sector not all schools participate in federal programs.

Table 2.12—Percentage distribution of private school teachers by race–ethnicity, by private school type: 1987–88

	Native American	Asian/ Pacific Islander	Black, non-Hispanic	Hispanic	White, non-Hispanic
TOTAL	0.8	0.9	2.2	2.9	93.2
Private school type					
Religious	0.8	0.9	2.2	3.1	92.9
Nonsectarian	0.6	1.0	1.9	2.0	94.4
Private school category					
Assembly of God	0.0	—	3.5	—	94.0
Baptist	—	—	1.2	1.6	96.7
Calvinist	0.0	0.0	—	0.0	99.0
Christian	0.0	0.4	2.3	1.0	96.3
Episcopal	—	6.1	2.5	0.8	90.6
Friends	0.0	—	7.1	0.0	92.8
Jewish	—	0.0	—	1.8	97.3
Lutheran	1.2	—	3.0	—	95.3
7th Day Adventist	—	2.9	8.2	6.7	81.9
Roman Catholic	1.2	0.9	2.1	4.1	91.8
Other: Religious	0.0	—	1.9	2.6	95.6
Exceptional children	—	0.0	1.5	0.0	94.5
Montessori	—	11.1	5.6	3.6	79.2
Nat. Ass. of Indep. Schools	0.5	—	—	2.7	96.2
Other: Nonsectarian	0.5	0.6	2.9	1.3	94.7
9-Category typology					
Catholic					
-Parochial	1.3	0.7	2.4	3.3	92.3
-Diocesan	1.3	1.1	2.0	2.5	93.1
-Private order	0.6	1.5	0.8	8.8	88.3
Other Religious					
-Conservative Christian	—	—	1.0	2.1	96.7
-Affiliated	0.5	1.8	2.7	1.6	93.5
-Unaffiliated	—	0.2	4.3	1.3	94.1
Nonsectarian					
-Regular	0.4	0.3	1.4	1.9	96.0
-Special emphasis	0.7	2.9	2.0	2.8	91.5
-Special education	1.5	0.0	4.3	0.0	94.2
NAIS membership status					
Not Nat. Ass. of Indep. Schools	0.9	0.8	2.4	3.0	92.9
Nat. Ass. of Indep. Schools	0.3	1.8	0.8	2.0	95.1

—Too few cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 2.13—Percentage distribution of 1985–86 bachelor's degree recipients by age, sex, and race–ethnicity, by whether or not they were newly qualified teachers: 1987

	Age		Sex		Race–ethnicity		
	Less than 25 years	25 years or more	Male	Female	Black, non-Hispanic	White, non-Hispanic	Other
TOTAL	58.8	41.2	49.2	50.8	4.4	87.6	8.0
Newly qualified teachers	59.7	40.3	27.4	72.6	5.0	87.8	7.2
Other bachelor's degree	58.7	41.3	52.2	47.8	4.3	87.6	8.1

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987 Survey of 1985–1986 College Graduates.

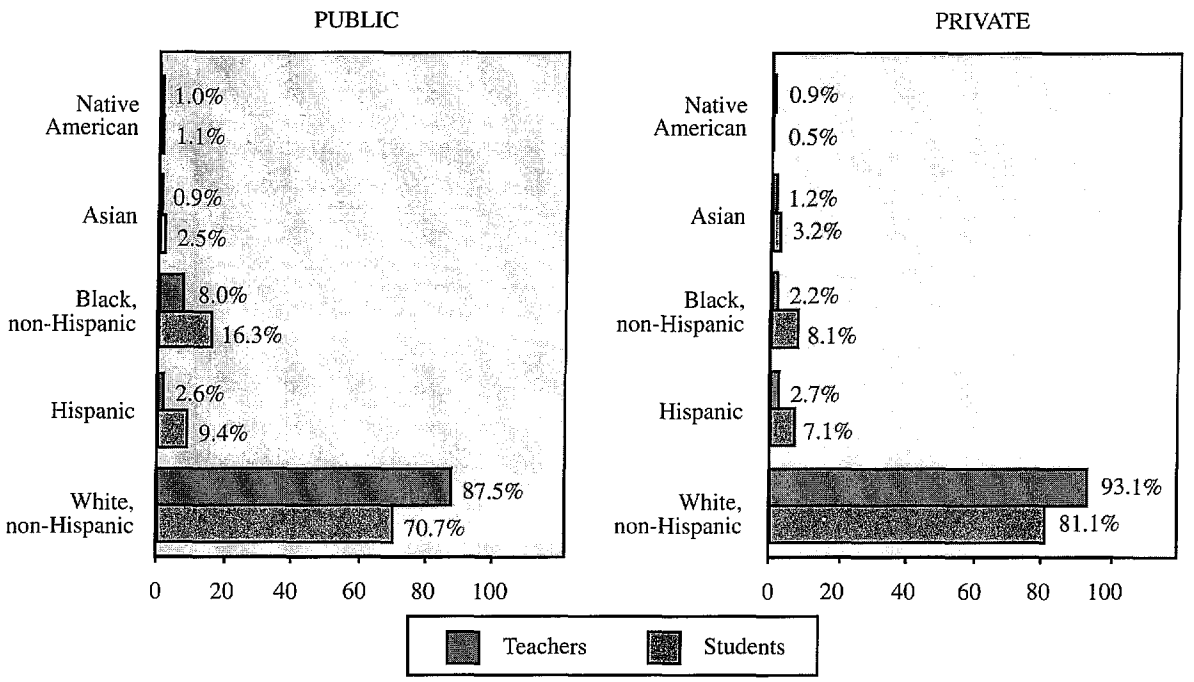
Table 2.14—Percentage distribution of schools by level, average school size, and percentage distribution of schools by minority enrollment, by sector: 1987–88

	Total	Public	Private
PERCENT OF SCHOOLS			
School level			
Elementary	68.1	69.5	63.7
Secondary	20.6	24.6	9.1
Combined	11.3	5.9	27.2
AVERAGE SCHOOL SIZE			
Urban			
Elementary	441	549	216
Secondary	925	1,097	383
Combined	262	367	221
Suburban			
Elementary	437	513	215
Secondary	970	1,027	543
Combined	286	324	276
Rural–small city			
Elementary	318	365	116
Secondary	525	543	232
Combined	231	341	126
PERCENT OF SCHOOLS			
Percent minority enrollment			
Less than 5%	39.5	37.2	46.1
5–19%	23.9	22.7	27.7
20–49%	17.4	19.1	12.4
50% or more	19.2	21.1	13.8

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "School Questionnaire."

Figure 2.3—Percentage distribution of teachers and students by race–ethnicity, by sector: 1987–88



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 2.15—Percentage distribution of students by race–ethnicity, by sector and selected school characteristics: 1987–88

	Public					Private				
	Native American	Asian/ Pacific Islander	Black, non-Hispanic	Hispanic	White, non-Hispanic	Native American	Asian/ Pacific Islander	Black, non-Hispanic	Hispanic	White, non-Hispanic
TOTAL	1.1	2.5	16.3	9.4	70.7	0.5	3.2	8.1	7.1	81.1
School level										
Elementary	1.2	2.5	16.9	10.2	69.2	0.4	3.3	9.3	7.7	79.3
Secondary	0.8	2.7	15.2	8.3	73.0	0.2	4.0	5.8	9.2	80.7
Combined	2.3	1.4	16.6	5.9	73.8	0.8	2.5	6.9	4.4	85.5
Community type										
Urban	0.7	4.1	29.6	17.4	48.2	0.2	4.4	12.5	11.1	71.8
Suburban	0.5	3.6	11.1	7.4	77.4	0.3	3.0	5.2	4.4	87.2
Rural–small city	1.6	1.1	10.2	5.2	81.8	1.1	1.5	3.5	3.3	90.6
Region										
Northeast	0.2	2.6	14.4	8.4	74.3	0.1	2.3	10.7	7.1	79.8
Midwest	0.8	1.3	12.6	3.1	82.3	0.4	1.3	6.9	4.5	87.0
South	1.0	1.1	25.6	8.0	64.3	0.2	1.6	7.7	6.7	83.8
West	2.5	6.4	5.9	20.1	65.1	1.9	11.1	6.2	13.0	67.9

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "School Questionnaire."

Table 2.16—Percentage of students who were eligible for free or reduced-price school lunch by sector, level, and selected school characteristics: 1987–88

	Total			Public			Private		
	Elementary	Secondary	Combined	Elementary	Secondary	Combined	Elementary	Secondary	Combined
TOTAL	20.1	6.8	1.7	22.1	7.5	1.6	4.8	0.8	2.2
Community type									
Urban	26.8	7.9	1.8	30.9	9.3	1.6	6.0	0.6	2.7
Suburban	11.5	4.2	0.3	13.0	4.7	0.2	1.7	—	—
Rural–small city	19.6	7.3	2.2	20.7	7.7	2.2	5.6	0.9	2.6
Region									
Northeast	17.0	5.4	1.8	19.2	6.4	1.5	5.8	—	3.2
Midwest	16.8	5.5	1.8	18.2	6.2	1.8	7.6	—	1.7
South	23.9	8.3	2.0	26.0	9.1	2.0	2.3	—	—
West	20.4	6.8	0.8	22.2	7.4	0.8	2.1	—	—
Minority enrollment									
Less than 20%	11.6	4.4	1.5	13.1	5.1	1.5	3.2	0.8	1.8
20% or more	30.8	9.7	1.8	32.5	10.4	1.7	9.1	—	3.3

— Too few cases for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "School Questionnaire."

CHAPTER 3 • TEACHER SUPPLY AND DEMAND

The supply of and demand for elementary and secondary school teachers periodically become issues of public concern and debate, particularly during times when the demand for teachers appears to threaten to outstrip supply. Perhaps more than any other profession, the labor and job markets for teachers are heavily dependent upon population changes. Increases or decreases in birth or immigration rates affect the demand for teachers in general, the demand for specific kinds of teachers (for example, elementary versus secondary), and the supply of teachers (that is, the number of teachers seeking jobs).[10]

During the 1980s, research findings suggested that the 1990s might be a decade in our nation's history where the demand for teachers would overtake the supply due to increasing enrollments and declines in the proportions of college graduates, particularly women and minority group members, who become teachers.[11] Other researchers have predicted that the nation will have enough teachers, but have suggested that if the demand increases, the quality of newly hired teachers may decline, and progress toward improving education may be inhibited.[12] Most recently, researchers who have studied teacher attrition among Indiana teachers have concluded that the rates at which teachers have left the profession have declined steadily since the mid-1960s, and that the shortages predicted in the 1980s may not materialize for a decade or more.[13]

In addition to demographic shifts and changes in labor market forces, public policy can affect teacher supply and demand. State governments and local school boards, for instance, can increase or decrease teachers' salaries and benefits, and can alter the working conditions and work loads of teachers. By improving teachers' salaries or working conditions, policymakers can encourage former teachers, currently in the teacher "reserve pool," to return to the classroom, thereby increasing the proportion of experienced teachers who participate in the nation's teacher work force.[14] To the extent that such policies do affect teacher supply and demand, legislators and administrators can contribute, in part, to creating or solving difficulties. Therefore, understanding how various policy decisions affect teacher supply and demand becomes an important undertaking.

Data relevant to a number of teacher supply and demand issues are discussed elsewhere in this report. For instance, Chapter 5 discusses teachers' qualifications, and Chapter 10 presents projections of the demand for new hires into the 21st century. Estimating the relationship between teacher supply and demand amounts to more than simply comparing the number of students with the number of teachers. For example, in the last decade or so, some have predicted that the quality of the teacher work force may decline in the coming years because districts, out of necessity, will hire teachers with lower levels of academic achievement and teaching experience in order to meet the demands created by increasing enrollments. In order to fully understand the complexity of teacher supply and demand it would be necessary to conduct complex statistical analyses to study the interaction of population trends,

[10]Increases in birth rates have traditionally been associated with a decline in teacher supply because as more women have children and stay home to rear them, fewer women remain in the labor market as teachers. See J.A. Sweet and L.A. Jacobsen, "Demographic Aspects of the Supply and Demand for Teachers," in *Handbook of Teaching and Policy*, ed. L.S. Shulman and G. Sykes (New York: Longman, 1983). Changes in women's labor force participation, however, may affect this traditional pattern in a number of ways. Although in recent years fewer women have chosen to leave the labor force for long periods of time in order to rear children, schools and school districts face increasing competition from other occupations for the professional services of college-educated women.

[11]See, for example, L. Darling-Hammond, *Beyond the Commission Reports: The Coming Crisis in Teaching* (Santa Monica, CA: RAND Corporation, 1984), and D.W. Grissmer and S.N. Kirby, *Teacher Attrition: The Uphill Battle to Staff the Nation's Schools* (Santa Monica, CA: RAND Corporation, 1987).

[12]R.J. Murnane, J.D. Singer, J.B. Willett, J.J. Kemple, and R.J. Olsen, *Who Will Teach? Policies that Matter* (Cambridge, MA: Harvard University Press, 1991).

[13]D.W. Grissmer and S.N. Kirby, *Patterns of Attrition Among Indiana Teachers, 1965–1987* (Santa Monica, CA: RAND Corporation, 1992).

[14]Murnane et al., 1991.

economic conditions, and labor force participation among women. Such analyses are beyond the scope of this report. In this chapter, the issue of teacher supply and demand is specifically addressed by focusing on the sources of the teacher work force, indicators of teacher shortages, the methods used by school administrators to cope with teaching vacancies and shortages, and the rates of turnover within and attrition from the teaching profession in the late 1980s.[15]

Sources of Supply

8 percent of teachers were new to teaching, and 7 percent were returning to teaching after an absence of 1 year or more.

Although many lament the turnover among teachers, implying that many teachers are inexperienced, teachers with at least some experience made up the largest proportion of teachers in both public and private schools in 1987–88. The Schools and Staffing Survey (SASS) data indicate that 85 percent of 1987–88 teachers had taught during the previous year (1986–87), 8 percent of 1987–88 teachers were new to teaching, and 7 percent were returning to teaching after 1 year or more out of the classroom (table 3.1). Private school teachers were more likely than public school teachers to be new to teaching or to be returning to the classroom in 1987–88 (figure 3.1).

In the wake of concerns about having an adequate supply of teachers in the coming years, some have suggested that the reserve pool—qualified teachers who are not currently teaching—may be an important source of teachers as demand increases in the 1990s.[16] Table 3.1 provides some indication of where the teacher reserve pool can be found by including data concerning the activities of teachers who rejoined the teaching force in 1987–88. About 40 percent of teachers who returned to the classroom in 1987–88 had spent the previous year homemaking or child rearing, and about 20 percent had worked outside of education (table 3.1). Approximately another 20 percent had been engaged in other activities during 1986–87, including teaching at the postsecondary level, working in a nonteaching job in education, looking for work, working in a military position, or performing some other activity. Fifteen percent of returning teachers had been enrolled in college in 1986–87, and about 3 percent had been retired.

Among 1985–86 bachelor's degree recipients, 12 percent were newly qualified teachers.

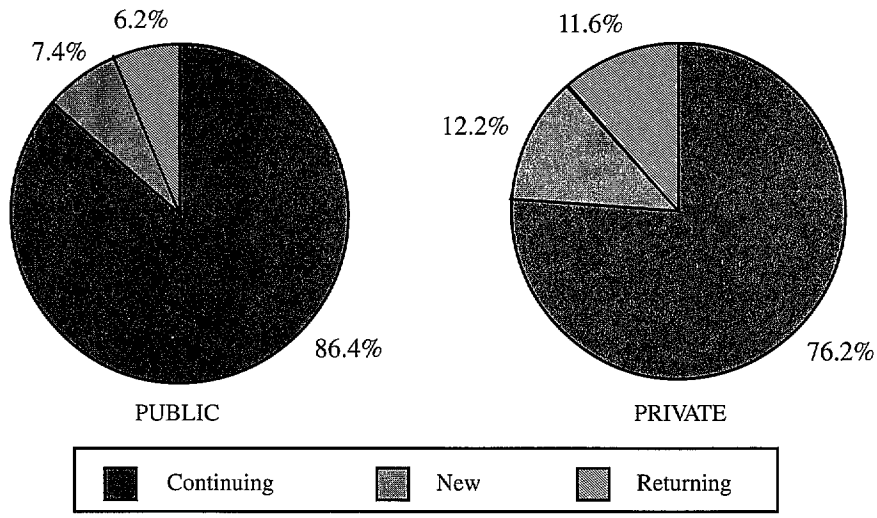
Traditionally, however, new college graduates have been the primary source of additional teachers. In the 1987 Survey of 1985–86 Recent College Graduates, conducted by NCES, a number of specific questions were asked about 1985–86 college graduates' training and experience in teaching. Among the approximately 933,100 bachelor's degree recipients in 1985–86, 12 percent (112,100) were newly qualified teachers (table 3.2).[17] The percentage of graduates who were newly qualified

[15]Other NCES analyses of the SASS data provide more detailed information on the topics covered in this chapter. For a more detailed examination of the characteristics of newly hired teachers in 1987–88, including data on their demographic characteristics, qualifications, and activities in the year prior to hiring, see M.R. Rollefson, "Sources of Newly Hired Teachers in the U.S.: Results of the 1987–88 Schools and Staffing Survey" (paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA, April, 1992). NCES studies on teacher attrition and turnover include the following: S.A. Bobbitt, E. Faupel, and S. Burns, *Characteristics of Stayers, Movers, and Leavers: Results from the Teacher Followup Survey* (Washington, D.C.: U.S. Department of Education, Office of Educational Research and Improvement, National Center for Educational Statistics, NCES 91-128, 1991); S.A. Bobbitt and S. Whitener, "Why Do Teachers Leave Teaching?: Results from the Teacher Followup Survey" (paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA, April, 1992); and K.J. Gruber, "Destinations of Movers and Leavers: Where Do They Go?" (paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA, April, 1992).

[16]Murnane et al., 1991.

[17]See Chapter 2 for the definition of "newly qualified teachers." The RCG definition requires the individual to 1) have graduated in 1985–86; 2) never have taught before June 30, 1986; and 3) have become eligible or certified to teach sometime between July 1, 1985 and June 30, 1986. A broader definition might require only two of these three conditions. This analysis is limited to bachelor's degree recipients.

Figure 3.1—Percentage distribution of teachers by whether they were continuing, new, or returning teachers, by sector: 1987–88



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

teachers varied according to the field of study in which the graduates had majored. After education majors, 76 percent of whom were newly qualified teachers, graduates who had majored in the humanities were the second most likely group to be newly qualified teachers (15 percent).

Only 58 percent of newly qualified teachers were employed as teachers the year after they graduated.

The number of recent college graduates who become qualified to teach is an indicator of the number of potential teachers, but not all those who become qualified actually teach. Of all recent bachelor's degree recipients, 10 percent were employed as teachers, 75 percent were employed in other occupations, and 15 percent were not employed (table 3.3). As one might expect, newly qualified teachers were more likely to teach than were other bachelor's degree recipients: whereas 58 percent of newly qualified teachers were employed as teachers, only 4 percent of other bachelor's degree recipients were teaching in 1987. Among those who were not employed, newly qualified teachers were more likely than other bachelor's degree recipients to cite family responsibilities as the main reason for not being employed.[18]

Another important, and related, question concerns the career plans of new entrants to the teaching work force. If newly qualified teachers consider teaching to be a short-term job or a stepping stone to other careers, that has implications for the teacher supply. In 1987, 18 percent of newly qualified teachers who were teaching viewed their current principal job as temporary (table 3.4). However, newly qualified teachers who were teaching were more likely than those who were not teaching to report that their job

[18]In Dan Lortie's classic study of the teaching profession, *Schoolteacher: A Sociological Study* (Chicago: University of Chicago Press, 1975), he found that, among women in particular, the work schedule of teachers and its compatibility with family responsibilities was an incentive for entering the profession. More recent studies of teachers' reasons for entering the profession, however, have not found time compatibility to be a potent attractor to teaching. See M.D. Andrew, "The Characteristics of Students in a Five Year Teacher Education Program," *Journal of Teacher Education* 34 (1) (1983): 20–23; and Harris and Associates, *The American Teacher 1990, New Teachers: Expectations and Ideals, Part I: Entering the Classroom* (New York: Metropolitan Life Insurance Company, 1990). Thus, the data presented in table 3.3 are consistent with previous research.

Table 3.1—Percentage distribution of teachers by whether they were continuing, new, or returning teachers and percentage distribution of returning teachers by main activity in 1986–87, by sector and selected teacher characteristics: 1987–88

				Returning teachers' 1986–87 activity				
	Continuing (taught in 1986–87)	New in 1987–88	Returning in 1987–88	Attending college	Working outside education	Home-making/ child-rearing	Retired	Other
TOTAL	84.9	8.1	7.0	14.6	21.1	38.8	2.7	22.8
PUBLIC	86.4	7.4	6.2	13.6	20.8	39.5	0.9	25.2
Teaching level								
Elementary	86.9	6.9	6.2	12.5	16.9	47.5	0.7	22.4
Secondary	85.7	8.1	6.2	15.1	25.8	29.5	1.1	28.6
Sex								
Male	83.5	10.3	6.2	14.8	45.0	—	2.9	36.8
Female	87.0	6.8	6.2	13.4	16.1	47.1	0.5	23.0
Age								
Under 30 years	22.2	69.0	8.9	36.5	29.6	17.0	0.0	17.0
30–39 years	84.2	5.6	10.2	8.7	18.3	52.1	0.0	21.0
40–49 years	93.6	1.3	5.1	15.0	18.4	34.0	0.0	32.5
50 years or over	97.5	0.4	2.1	12.1	35.7	7.4	11.6	33.2
Highest degree earned								
BA/BS or less	80.8	12.6	6.6	7.0	23.8	42.2	0.8	26.2
MA/MS or more	92.5	1.7	5.8	21.7	17.3	36.2	0.9	23.9
PRIVATE	76.2	12.2	11.6	17.2	21.8	36.9	7.6	16.4
Teaching level								
Elementary	75.5	12.5	11.9	13.9	18.2	39.9	—	16.8
Secondary	77.1	11.8	11.1	21.4	26.3	33.3	—	16.0
Sex								
Male	67.8	21.5	10.7	32.2	35.9	0.0	—	21.1
Female	77.7	10.6	11.7	15.1	19.8	42.1	—	15.8
Age								
Under 30 years	20.1	66.5	13.4	24.6	48.0	12.3	0.0	15.2
30–39 years	76.6	8.6	14.9	14.9	18.6	50.2	—	15.4
40–49 years	88.4	2.0	9.6	17.9	21.5	41.4	0.0	19.2
50 years or over	89.9	1.3	8.8	—	—	—	—	—
Highest degree earned								
BA/BS or less	71.2	16.7	12.0	13.0	27.3	32.5	11.1	16.1
MA/MS or more	85.4	4.0	10.7	26.4	10.0	46.5	0.0	17.1

—Too few cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 3.2—Number of bachelor's degree recipients and newly qualified teachers who received their degree during the 1985–86 academic year, and percentage of all 1985–86 bachelor's degree recipients who were newly qualified teachers, by major field of study: 1987

Major field of study	Bachelor's degree recipients	Newly qualified teachers	Percent newly qualified teachers
TOTAL	933,100	112,100	12.0
Professional fields	507,500	75,100	14.8
Business and management	242,400	3,900	1.6
Education	84,200	63,900	75.9
Engineering	89,900	2,500	2.8
Health professions	65,000	3,500	5.3
Public affairs/social services	26,100	1,300	5.2
Arts and science fields	333,200	30,100	9.0
Biological science	37,800	2,500	6.6
Mathematics, computer science, and physical sciences	92,500	6,000	6.4
Social sciences	81,200	5,500	6.7
Humanities	82,700	12,300	14.8
Psychology	39,100	3,900	9.9
Other fields	88,900	6,400	7.2

NOTE: Details may not sum to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *New Teachers in the Job Market, 1987 Update* (Washington, D.C: 1990), 7.

Table 3.3—Percentage distribution of 1985–86 bachelor's degree recipients by employment status and percentage distribution of those not employed by main reason not employed, by whether or not they were newly qualified teachers: 1987

	Employment status			Main reason not employed					
	Employed as teacher	Employed as non-teacher	Not employed	Attending school	Family responsibilities	Could not find a job	Did not want a job	Laid off	Other
TOTAL	10.2	74.7	15.1	49.8	7.3	15.1	3.3	3.4	21.0
Newly qualified teachers	57.8	31.3	11.0	47.7	16.2	15.3	4.7	2.9	13.1
Other bachelor's degree	3.7	80.6	15.7	50.1	6.4	15.1	3.2	3.5	21.7

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987 Survey of 1985–86 College Graduates.

Table 3.4—Percentage distribution of employed 1985–86 bachelor's degree recipients according to their descriptions of principal job, by whether or not they were newly qualified teachers and teaching status: 1987

	Possible career potential	Definite career potential	Temporary job/ other
TOTAL	24.6	44.7	30.7
Newly qualified teachers	26.2	40.5	33.2
Teaching	30.2	51.9	17.9
Not teaching	20.4	23.9	55.7
Other bachelor's degree	24.4	45.3	30.4
Teaching	26.7	47.8	25.5
Not teaching	24.3	45.2	30.5

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987 Survey of 1985–86 College Graduates.

had possible or definite career potential. Other recent bachelor's degree recipients were about equally likely to think of their principal jobs as having career potential whether or not they were teaching.

28 percent of newly qualified teachers did not apply for teaching jobs.

Finally, in order to increase the pool of teacher candidates, policymakers would want to know why some newly qualified teachers do not seek teaching positions. Table 3.5 presents data that shed some light on this issue. As shown in the table, 28 percent of newly qualified teachers did not apply for teaching jobs, and a number of newly qualified teachers expressed more or less negative attitudes toward teaching. For instance, 21 percent reported that at the time of the survey they had no interest in teaching, 6 percent were discouraged from teaching by their student teaching experience, 7 percent were offered jobs with larger salaries or more prestige, and 6 percent did not like their teaching conditions. Others did not apply for teaching positions because they felt unprepared: 21 percent of newly qualified teachers wanted to obtain more education before applying for a teaching position, and 5 percent felt they were not yet ready for a job. In addition, 3 percent of newly qualified teachers reported that teaching positions were too difficult to get, and 32 percent had other reasons for not applying for a teaching position.

INDICATORS OF TEACHER SHORTAGES

Whereas the preceding tables address questions concerning the supply of teachers, in this section the demand for teachers is at issue, specifically the question of whether schools and school districts have experienced teacher shortages. As discussed in the introduction, the issue of teacher shortage can, and must, be addressed from a number of perspectives; this section describes several indicators of teacher shortage available from the SASS data set.

Public school districts and private schools filled almost all of their approved teaching positions in 1987–88. Of the more than 2 million teaching positions approved by public school districts in 1987–88, only about 1 percent were either vacant or withdrawn due to lack of qualified applicants (table 3.6). Private schools approved about 330,000 positions, of which about 1 percent each were either vacant or withdrawn.

Teachers' certification status and the extent to which teachers teach outside their fields of certification also might indicate teacher shortages in particular fields. If too few certified teachers are available to teach in a given field, administrators may resort to

Table 3.5—Percentage of newly qualified teachers who did not apply for teaching jobs and percentage distribution of those who did not apply by main reason for not seeking a teaching position, by major field: 1987

		Main reason for not seeking teaching position							
	Did not apply	No interest in teaching	Wanted more education	Not ready for a job	Teaching jobs are too hard to get	Student teaching was discouraging	Received more money/ prestige elsewhere	Did not like teaching conditions/ pay	Other
TOTAL	27.9	21.1	20.6	5.1	2.8	6.0	6.9	6.0	31.6
Major field									
Education	13.4	5.2	17.5	10.3	3.5	12.8	9.0	8.2	33.6
Math/science/ engineering	40.2	28.2	23.8	—	—	4.3	5.8	6.4	26.0
Soc. science/ public affairs	48.3	28.3	21.3	—	5.7	3.3	—	8.3	29.0
Humanities	46.2	17.7	23.8	6.6	—	3.4	10.1	4.9	33.4
Other	53.4	30.8	20.4	—	—	2.3	5.5	2.2	34.2

—Too few cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987 Survey of 1985–86 College Graduates.

Table 3.6—Number of FTE teaching positions that were approved and number and percentage of approved positions that were vacant or withdrawn in public school districts and private schools, by region: 1987–88

	Number of approved positions	Number		Percent	
		Vacant[1]	Withdrawn[2]	Vacant[1]	Withdrawn[2]
PUBLIC	2,339,920	15,989	6,989	0.6	0.4
Region					
Northeast	510,439	5,013	453	0.9	0.1
Midwest	588,622	3,893	1,587	0.3	0.4
South	832,656	4,861	3,263	0.8	0.4
West	408,203	2,221	1,685	0.4	0.7
PRIVATE	326,734	2,157	2,588	0.7	1.0
Region					
Northeast	94,793	807	609	0.9	0.9
Midwest	87,838	555	790	0.6	1.0
South	91,959	494	830	0.7	1.3
West	52,145	301	359	0.8	0.9

[1]Includes positions temporarily filled by a substitute.
[2]Includes positions abolished.

NOTE: Details may not sum to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Demand and Shortage Questionnaire."

assigning teachers to teach in fields other than those in which they are certified. Among public school teachers, 89 percent had obtained regular or standard certification in their main teaching fields, 8 percent had probationary or temporary certification, and 3 percent had no certification in their main teaching fields (table 3.7). About 65 percent of public school teachers had another assignment in addition to their main teaching assignment. Nearly 54 percent of public school teachers with another assignment had regular or standard certification in their other teaching assignment field, and 41 percent had no certification in their other teaching assignments.[19]

At first one might think that this apparently high percentage of public school teachers who teach in fields in which they have not been certified indicates a teacher shortage. However, this is not necessarily true: the proportion of teachers with other assignments may be related to enrollment within a school. To balance the number of teachers and the number of students in particular classes, a teacher's time may be spread across two or more fields. This could happen even in years when there are plenty of teachers for the number of students. Moreover, teachers could be teaching in "other" fields very closely related to their teaching field. For example, if a teacher certified in English literature were teaching drama, one would probably be less likely to consider that teacher unqualified to teach in the "other" field than if that same teacher were teaching physics without certification in that field. Therefore, the proportion of teachers who have been assigned to teach in fields of noncertification does not serve as a very good indicator of teacher shortages.

50 percent of public school administrators reported no difficulty in filling vacancies.

The individuals who hire teachers are perhaps in the best position to assess the market for teachers. Ten percent of public school administrators reported that their schools had no teaching vacancies in 1987–88, and 50 percent reported that it was not at all difficult to find qualified applicants to fill their teaching vacancies (figure 3.2 and table 3.8). Fourteen percent reported that filling teaching vacancies was generally difficult, and 26 percent reported that it was difficult in some fields. Public school administrators in urban areas were especially likely to find it generally difficult to fill teaching vacancies. Administrators in private schools were more likely than administrators in public schools to report that they had no teaching vacancies in 1987–88 and were more likely to report that it was generally difficult to fill them. Table 3.9 shows the percentage distribution of public school administrators who had vacancies by difficulty in finding applicants by state, and table 3.10 shows the same percentage distribution of private school administrators by affiliation group.

Coping with Shortages

When administrators have teaching vacancies that cannot be filled with a qualified teacher, they must find some way to cover those vacancies. The SASS data indicate that administrators' tendencies to use various methods to cope with unfilled vacancies varied with school sector and level (figure 3.3 and table 3.11). For example, administrators in private schools were more likely than administrators in public schools to hire part-time or itinerant teachers and to increase the number of classes that individual teachers taught (although this latter strategy was not used extensively in either public or private schools). Public school administrators in elementary schools were more likely than their secondary school counterparts to hire substitute teachers. Administrators in secondary schools of both sectors were more likely than elementary school administrators to cancel courses, increase class sizes, and increase the number of classes that teachers taught.

Relatively few public school districts or private schools offered teachers incentives for teaching in locations or fields of shortage.

One way of coping with shortages in specific locations (public districts) or in specific fields (public

[19]Teacher certification is less of an indicator of teacher shortage in the private sector because certification is not required by many private schools.

Table 3.7—Percentage distributions of teachers by certification status in their main and other assignment fields and percentage of teachers with another assignment, by sector, teaching level, and selected school characteristics: 1987–88

	Certification status in main assignment field				Percent teachers with other assign-ments	Certification status in other assignment field			
	Regular/ standard	Proba-tionary/ tempor-ary	Full, other than state†	None		Regular/ standard	Proba-tionary/ tempor-ary	Full, other than state†	None
TOTAL	84.1	8.2	(*)	7.2	63.4	48.8	5.0	(*)	45.7
PUBLIC	88.7	8.2	(*)	3.2	64.8	53.8	5.4	(*)	40.8
Teaching level									
Elementary	88.4	9.1	(*)	2.5	73.0	42.7	5.2	(*)	52.1
Secondary	89.0	7.2	(*)	3.8	56.5	60.0	5.5	(*)	34.5
Community type									
Urban	86.3	8.6	(*)	5.2	66.1	49.1	5.3	(*)	45.5
Suburban	90.6	7.0	(*)	2.4	66.4	54.1	4.5	(*)	41.4
Rural–small city	89.3	8.2	(*)	2.5	63.5	55.7	5.7	(*)	38.7
Region									
Northeast	87.0	9.3	(*)	3.8	69.6	48.2	6.3	(*)	45.5
Midwest	90.9	7.0	(*)	2.1	64.9	59.5	5.5	(*)	35.0
South	88.6	7.9	(*)	3.5	63.0	52.6	4.9	(*)	42.4
West	88.1	8.6	(*)	3.3	62.4	52.6	5.0	(*)	42.4
PRIVATE	52.5	8.8	3.6	35.2	52.9	24.5	3.3	2.5	69.8
Teaching level									
Elementary	55.6	11.0	3.5	30.0	62.4	19.7	3.1	3.1	74.0
Secondary	49.1	6.3	3.7	40.9	42.7	27.4	3.4	2.0	67.1
Community type									
Urban	52.9	8.3	3.4	35.4	49.9	26.2	3.3	3.1	67.4
Suburban	50.9	10.2	4.0	34.9	55.7	24.1	4.0	1.0	71.0
Rural–small city	55.3	9.2	2.6	33.0	52.7	23.7	2.8	1.6	71.8
Region									
Northeast	45.0	12.9	2.6	39.5	53.2	22.5	2.9	1.8	72.9
Midwest	68.7	9.3	2.4	19.7	51.0	32.6	3.5	2.4	61.5
South	49.6	5.1	4.9	40.3	53.9	22.0	3.4	2.3	72.3
West	45.1	8.8	3.4	42.7	50.6	21.2	3.7	2.0	73.1

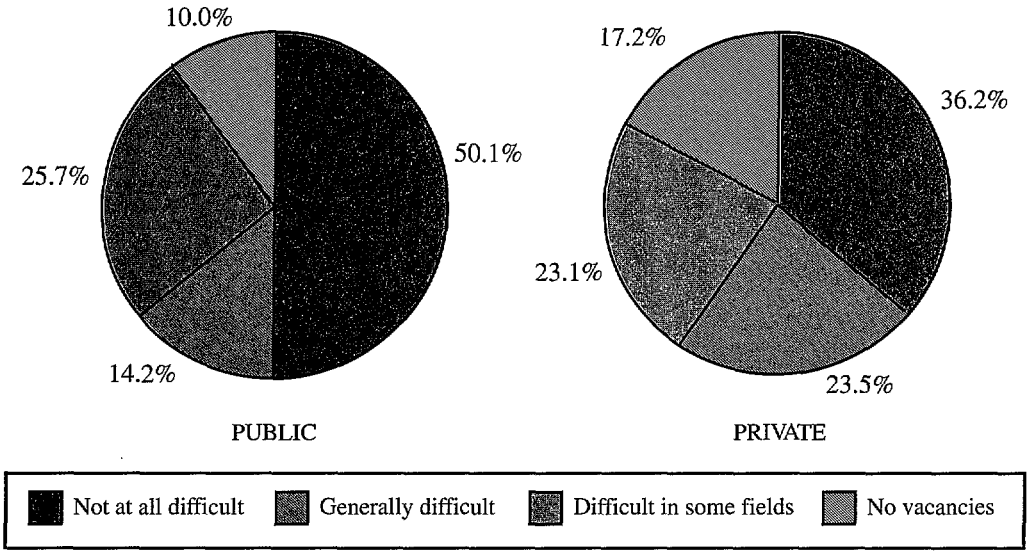
*Not applicable.

†This response choice was not available to public school teachers.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Figure 3.2—Percentage distribution of school administrators by reported difficulty finding qualified applicants to fill teaching vacancies, by sector: 1987–88



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Administrator Questionnaire."

Table 3.8—Percentage distribution of school administrators by reported difficulty finding qualified applicants to fill teaching vacancies, by sector and selected school characteristics: 1987–88

	Public				Private			
	Not at all difficult	Generally difficult	Difficult in some fields	No vacancies	Not at all difficult	Generally difficult	Difficult in some fields	No vacancies
TOTAL	50.1	14.2	25.7	10.0	36.2	23.5	23.1	17.2
School level								
Elementary	56.0	13.4	20.2	10.4	36.5	27.0	18.7	17.9
Secondary	37.4	14.7	38.3	9.6	39.1	12.1	38.7	10.0
Combined	35.8	19.1	34.8	10.3	34.3	20.0	29.0	16.7
Community type								
Urban	43.9	21.2	26.2	8.8	35.2	27.1	24.8	12.8
Suburban	57.0	12.1	22.7	8.1	37.0	20.6	27.4	15.0
Rural–small city	50.7	11.8	26.1	11.4	36.5	21.8	20.0	21.7
Region								
Northeast	45.7	17.3	27.4	9.6	28.2	30.0	31.4	10.3
Midwest	58.0	8.8	20.9	12.4	39.9	20.0	17.1	23.0
South	44.0	17.7	30.3	8.0	35.2	21.7	25.9	17.2
West	53.3	12.9	22.6	11.3	41.6	24.2	20.0	14.2

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Administrator Questionnaire."

Table 3.9—Percentage distribution of public school administrators by reported difficulty in finding qualified applicants, by state: 1987–88

	Not at all difficult	Generally difficult	Difficult in some fields	No vacancies
TOTAL	50.1	14.2	25.7	10.0
Alabama	54.0	18.7	17.3	10.0
Alaska	46.3	8.1	23.0	22.6
Arizona	48.3	16.3	28.8	6.6
Arkansas	46.4	18.8	30.3	4.5
California	46.8	16.1	24.0	13.1
Colorado	63.0	6.7	23.4	7.0
Connecticut	47.8	14.9	21.9	15.5
Delaware	41.9	19.3	26.8	12.0
Dist. of Columbia	13.5	56.6	27.8	—
Florida	36.6	18.7	43.8	—
Georgia	37.5	20.1	37.4	5.0
Hawaii	49.2	14.6	34.9	—
Idaho	52.5	15.4	24.6	7.5
Illinois	44.1	15.0	27.3	13.7
Indiana	59.2	10.1	20.4	10.3
Iowa	59.5	6.1	24.5	10.0
Kansas	56.2	13.1	21.5	9.2
Kentucky	48.5	14.3	22.4	14.8
Louisiana	29.2	36.4	26.5	7.9
Maine	32.8	19.4	35.7	12.2
Maryland	52.9	15.5	27.1	4.4
Massachusetts	44.1	15.5	33.3	7.1
Michigan	57.9	4.8	22.6	14.7
Minnesota	67.4	5.2	18.3	9.2
Mississippi	25.2	25.2	38.8	10.8
Missouri	59.7	8.8	21.5	10.0
Montana	63.7	7.3	17.4	11.6
Nebraska	58.4	7.1	17.6	16.9
Nevada	54.7	16.7	26.7	—
New Hampshire	30.0	18.7	34.1	17.2
New Jersey	45.6	21.5	25.6	7.2
New Mexico	45.7	15.3	31.8	7.1
New York	42.1	21.8	30.3	5.8
North Carolina	43.6	20.9	32.3	3.2
North Dakota	69.1	—	13.0	17.2
Ohio	57.8	9.0	18.4	14.8
Oklahoma	56.4	7.3	21.5	14.9
Oregon	60.5	7.4	21.1	10.9
Pennsylvania	55.1	9.6	22.4	12.9
Rhode Island	57.8	11.0	19.1	12.1
South Carolina	46.3	17.0	33.9	2.9
South Dakota	57.3	13.4	15.8	13.5
Tennessee	41.4	17.4	29.6	11.6
Texas	42.9	15.4	34.9	6.8
Utah	56.1	19.2	15.9	8.8

Table 3.9—Percentage distribution of public school administrators by reported difficulty in finding qualified applicants, by state: 1987–88—Continued

	Not at all difficult	Generally difficult	Difficult in some fields	No vacancies
Vermont	49.1	17.6	22.5	10.8
Virginia	53.9	14.6	22.0	9.5
Washington	65.6	8.7	15.5	10.1
West Virginia	49.4	8.9	24.1	17.6
Wisconsin	70.2	6.2	17.6	6.0
Wyoming	61.6	—	16.7	19.5

—Too few cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Administrator Questionnaire."

districts or private schools) is to offer teachers incentives for teaching in those locations or fields. However, relatively few public school districts or private schools did so. For teaching in a location of shortage, 3 percent of public school districts offered teachers an increase on the salary schedule, 2 percent offered some other pay increase, and 1 percent offered a cash bonus (table 3.12). Private schools were more likely than public schools to offer each of these types of incentive for teachers to teach in fields of shortage.

Even if no general shortages are apparent, it is nonetheless possible that teachers in specific teaching fields, specific geographical locations, certain types of communities, or particular schools are in short supply. Tables 3.13 and 3.14 provide data on the efforts of public school districts and private schools to increase the supply of teachers in specific teaching fields by offering teachers pay incentives for teaching in those fields or opportunities to retrain so that they might teach in fields of shortage without cost to them. The data in table 3.13 are consistent with those in table 3.12 in that relatively few public school districts or private schools offered pay incentives in any teaching field or in specific teaching fields.

Comparisons between tables 3.13 and 3.14 suggest that public school districts and private schools use pay incentives and retraining differently. Whereas private schools offered teachers retraining and pay incentives in one or more fields about equally, a larger proportion of public school districts offered retraining than offered pay incentives. More public school districts used retraining than used incentives in all seven field categories. In comparison, private schools were more likely to offer free retraining than pay incentives in three fields out of seven: special education, mathematics, and computer science.

Teacher Turnover and Attrition

Persistent questions about the teacher work force concern the rates of turnover (the proportion of teachers who leave their schools) and attrition (the proportion of teachers who leave the profession) among teachers. Both turnover and attrition among the nation's teachers may inhibit students' progress. For example, in schools where many teachers leave, and therefore where many new teachers must be hired, students' progress may suffer because of insufficient continuity or stability in their schools' staffs or because the efforts of administrators are diverted from school improvement activities. Furthermore, when teachers not only leave their schools but also their profession, their teaching experience and expertise are withdrawn from the teacher

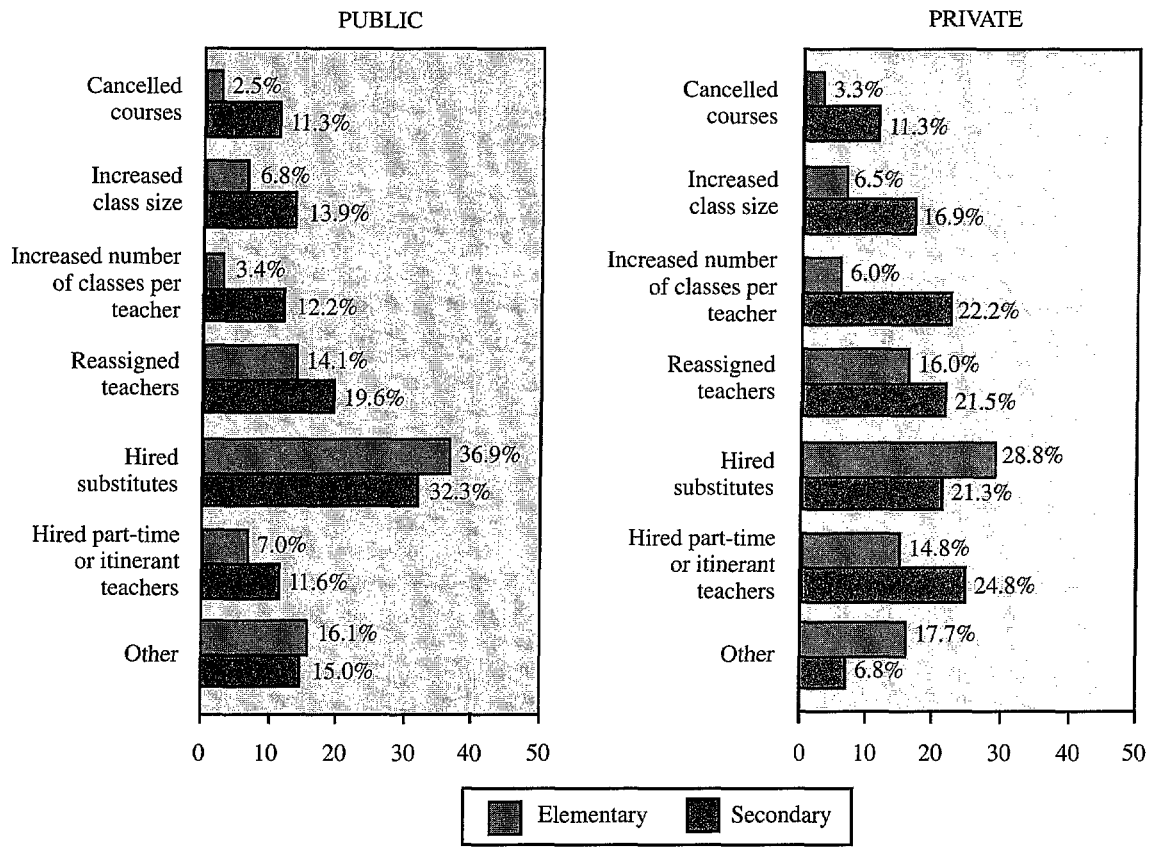
Table 3.10—Percentage distribution of private school administrators by reported difficulty finding qualified applicants to fill teaching vacancies, by private school type: 1987–88

	Not at all difficult	Generally difficult	Difficult in some fields	No vacancies
TOTAL	36.2	23.5	23.1	17.2
Private school type				
Religious	38.0	23.6	21.8	16.5
Nonsectarian	27.9	23.6	30.4	18.1
Private school category				
Assembly of God	54.0	14.9	18.6	12.5
Baptist	27.4	25.5	23.1	24.1
Calvinist	51.8	9.5	21.2	17.5
Christian	53.0	20.9	13.5	12.7
Episcopal	53.6	22.2	21.8	2.5
Friends	52.6	17.8	24.4	5.2
Jewish	15.4	36.4	40.5	7.7
Lutheran	40.9	12.5	9.2	37.4
7th Day Adventist	37.2	15.3	12.3	35.2
Roman Catholic	35.8	27.0	27.3	10.0
Other: Religious	39.3	24.4	15.1	21.1
Exceptional children	19.6	32.7	35.0	12.7
Montessori	31.2	22.4	14.2	32.3
Nat. Ass. of Indep. Schools	37.7	17.7	40.2	4.5
Other: Nonsectarian	25.9	24.3	30.6	19.2
9-Category typology				
Catholic				
-Parochial	33.8	31.5	24.6	10.1
-Diocesan	41.6	19.2	28.6	10.6
-Private order	37.5	12.1	42.3	8.1
Other Religious				
-Conservative Christian	41.0	19.2	17.5	22.4
-Affiliated	41.6	17.0	15.6	25.8
-Unaffiliated	35.7	29.6	18.3	16.4
Nonsectarian				
-Regular	29.4	20.4	34.5	15.7
-Special emphasis	29.3	22.6	25.9	22.2
-Special education	21.2	33.7	29.2	15.9
NAIS membership status				
Not Nat. Ass. of Indep. Schools	36.1	23.9	22.5	17.5
Nat. Ass. of Indep. Schools	35.6	18.3	42.4	3.8

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey.

Figure 3.3—Percentage of school administrators who used various methods to cover unfilled vacancies in their schools, by sector and level: 1987–88



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Administrator Questionnaire."

work force, perhaps lowering its effectiveness.[20] This problem may be especially acute if, as some have suggested, the most qualified teachers are the most likely to leave.[21]

In the 1987–88 SASS, school administrators were asked how many teachers had left and how many had joined their schools' staffs between October 1986 and October 1987. Turnover was greater in the private sector than in the public: an average of 20 percent of teachers in the private sector had left their schools, and an average of 23 percent had been added to private schools' staffs between fall 1986 and 1987, compared with public schools where 10 percent of teachers had left their schools and 13 percent had been added (table 3.15). In both the public and private sectors, rates of separation were higher in elementary schools than in secondary schools, and in schools with enrollments of less than 150 than in larger schools. The rate of addition was higher in private elementary schools than in private secondary schools.

Between 1987–88 and 1988–89, 8 percent of all teachers moved to different schools, and 6 percent left teaching.

Rates of turnover, however, do not indicate how many teachers leave the profession in a year's time.

[20]Thus, one returns full circle to the issue of teacher supply—if experienced teachers can be rehired from the reserve pool, creating in effect a revolving door of teachers, the negative effect of teacher attrition may be mitigated.

[21]See, for example, L. Darling-Hammond, *Beyond the Commission Reports*, and Murnane et al., *Who Will Teach?*

Table 3.11—Percentage of school administrators who used various methods to cover unfilled vacancies in their schools, by sector and selected school characteristics: 1987–88

	Cancelled courses	Increased class size	Increased number of classes per teacher	Re-assigned teachers	Hired substitutes	Hired part-time or itinerant teachers	Other
TOTAL	5.1	9.0	7.3	16.7	34.0	11.0	16.2
PUBLIC	5.0	8.8	6.2	16.1	36.2	8.5	15.9
School level							
Elementary	2.5	6.8	3.4	14.1	36.9	7.0	16.1
Secondary	11.3	13.9	12.2	19.6	32.3	11.6	15.4
Combined	9.2	9.7	11.4	27.2	36.3	10.4	16.3
Community type							
Urban	3.8	8.1	5.1	15.9	51.4	8.5	14.6
Suburban	3.9	8.0	5.2	12.0	36.6	8.4	15.4
Rural–small city	6.0	9.3	6.7	17.7	29.0	8.3	16.6
Region							
Northeast	4.2	8.1	6.5	14.0	47.9	10.0	13.2
Midwest	5.7	9.4	7.6	12.7	30.6	8.2	17.5
South	5.1	8.4	4.9	20.5	33.4	7.6	16.9
West	5.0	9.0	5.5	15.9	36.0	8.5	14.4
PRIVATE	5.4	9.6	10.9	18.8	26.7	19.2	17.0
School level							
Elementary	3.3	6.5	6.0	16.0	28.8	14.8	17.7
Secondary	11.3	16.9	22.2	21.5	21.3	24.8	6.8
Combined	8.6	13.7	18.5	24.6	24.0	27.8	18.8
Community type							
Urban	5.7	11.3	11.4	18.9	28.4	18.3	15.1
Suburban	7.3	9.0	10.0	16.4	28.1	20.3	13.1
Rural–small city	4.4	8.0	11.4	20.4	24.1	20.2	21.0
Region							
Northeast	4.9	7.8	12.1	19.0	34.9	21.9	13.9
Midwest	6.4	9.5	8.8	18.7	22.1	13.1	16.9
South	4.5	12.1	13.7	21.6	24.3	21.2	16.7
West	6.7	8.5	9.5	15.4	25.8	23.6	21.7

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Administrator Questionnaire."

Table 3.12—Percentage of public school districts and private schools that used various pay incentives to recruit and retain teachers in less desirable locations and in fields of shortage, by public school district and private school size: 1987–88

	Less desirable locations			Fields of shortage		
	Cash bonus	Increase in salary schedule	Other pay increase	Cash bonus	Increase in salary schedule	Other pay increase
PUBLIC	1.1	3.3	1.8	1.1	2.8	1.8
District size						
Less than 1,000	0.9	4.3	2.2	0.7	3.1	2.1
1,000 to 4,999	1.3	2.1	1.3	1.2	2.2	1.1
5,000 to 9,999	1.4	2.4	2.0	1.7	3.1	2.3
10,000 or more	1.9	2.9	1.3	3.6	3.2	2.4
PRIVATE	(*)	(*)	(*)	2.4	7.3	5.0
School size						
Less than 150	(*)	(*)	(*)	1.8	4.5	4.3
150 to 499	(*)	(*)	(*)	2.7	9.4	5.4
500 to 749	(*)	(*)	(*)	3.7	9.2	7.6
750 or more	(*)	(*)	(*)	3.2	13.0	4.5

*Not applicable. This information was not collected from private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Demand and Shortage Questionnaire."

Table 3.13—Percentage of public school districts and private schools that used pay incentives to attract teachers to various fields of shortage, by public school district and private school size: 1987–88

	Any field	Special education	Math-ematics	Computer science	Physical sciences	Biological sciences	Bilingual/ ESL education	Other
PUBLIC	5.4	2.2	2.7	1.2	1.7	1.3	0.8	2.7
District size								
Less than 1,000	5.7	1.8	3.2	1.5	1.8	1.5	0.6	3.2
1,000 to 4,999	4.4	2.1	1.9	0.9	1.5	1.0	0.7	1.9
5,000 to 9,999	6.9	4.2	1.8	0.6	1.2	1.2	0.9	3.0
10,000 or more	8.4	4.9	3.9	1.6	2.5	2.2	4.1	3.6
PRIVATE	12.5	1.5	4.2	2.3	3.5	2.9	0.7	9.5
School size								
Less than 150	9.7	1.8	2.6	1.0	2.2	1.6	—	7.5
150 to 499	14.6	1.3	4.9	3.2	3.9	3.6	1.3	11.7
500 to 749	15.0	1.1	9.9	3.4	8.7	4.3	1.1	7.3
750 or more	16.8	—	7.6	5.3	9.5	6.8	0.0	9.9

—Too few cases for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Demand and Shortage Questionnaire."

Table 3.14—Percentage of public school districts and private schools that offered free retraining to prepare staff members to teach in various fields of shortage, by public school district and private school size: 1987–88

	Any field	Special education	Math-ematics	Computer science	Physical sciences	Biological sciences	Bilingual/ ESL education	Other
PUBLIC	11.7	4.9	5.3	4.6	4.3	3.8	3.0	6.6
District size								
Less than 1,000	9.7	3.2	3.1	4.0	2.8	2.4	1.9	6.4
1,000 to 4,999	12.3	6.1	7.1	5.3	5.4	5.2	3.8	6.2
5,000 to 9,999	16.8	7.9	7.6	4.8	6.5	5.8	3.6	7.4
10,000 or more	22.8	11.6	12.9	6.2	10.0	7.4	8.5	12.1
PRIVATE	13.7	3.9	6.2	7.5	4.7	4.1	1.0	7.5
School size								
Less than 150	15.1	4.9	5.9	8.6	5.0	4.4	1.1	8.3
150 to 499	12.5	3.4	6.8	6.7	4.7	4.0	0.9	6.6
500 to 749	14.4	2.1	4.8	8.1	3.5	4.0	—	9.6
750 or more	10.3	—	5.9	1.9	1.7	—	—	6.6

—Too few cases for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Demand and Shortage Questionnaire."

Table 3.15—Average percentage of teacher separations and additions between October 1986 and October 1987, by sector and selected school characteristics: 1987–88

	Public		Private	
	Separations[1]	Additions[2]	Separations[1]	Additions[2]
TOTAL	9.8	13.3	20.3	22.6
School level				
Elementary	10.1	13.5	21.2	22.7
Secondary	8.7	12.5	15.1	14.6
Combined	11.7	13.7	19.7	25.0
School size				
Less than 150	15.2	16.7	23.3	26.5
150 to 499	9.6	13.0	17.8	19.4
500 to 749	8.6	11.8	13.4	13.7
750 or more	8.7	14.0	11.6	12.1
Minority enrollment				
Less than 20%	9.1	12.1	19.8	22.4
20% or more	10.9	15.1	21.5	23.3

[1]"Percent separations" is the percentage of a school's 1986 staff who had left the school by October 1, 1987.

[2]"Percent additions" is the percentage of a school's 1987 staff who had not taught in the school in October 1986.

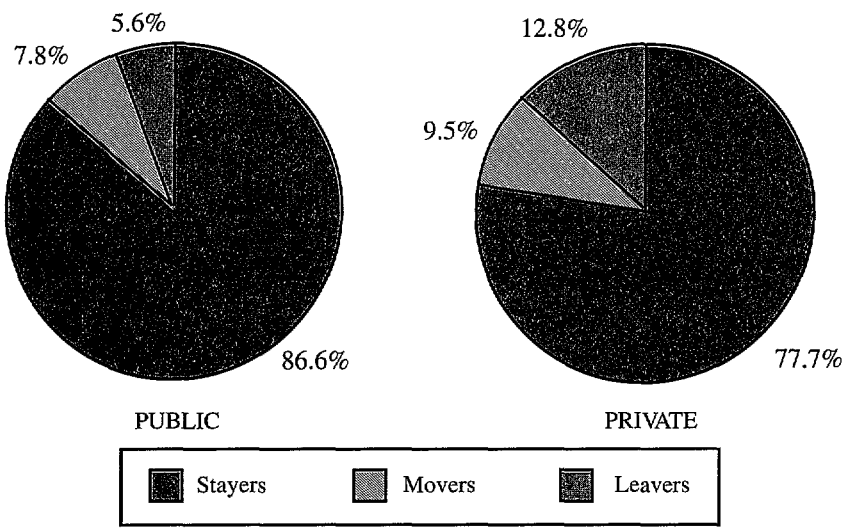
SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "School Questionnaire."

The Teacher Followup Survey provides data concerning teachers' tendencies to stay in their schools, change schools, or leave the profession altogether between 1987–88 and 1988–89. A large proportion of teachers in 1987–88 remained in their jobs 1 year later: 86 percent of teachers were still teaching in the same schools in 1988–89, and 8 percent had changed schools (table 3.16). Within 1 year after the initial administration of SASS was completed, a total of 6 percent of teachers had left teaching: 1 percent of teachers had switched to nonteaching jobs in elementary and secondary schools, another 1 percent had left teaching for occupations outside of education, less than 1 percent had returned to college, nearly 2 percent were homemakers or rearing children, and 2 percent were engaged in other activities. Private school teachers were more likely than public school teachers to change schools and to leave teaching (figure 3.4). Specifically, private school teachers were more likely than public school teachers to leave for employment outside of education, to return to college, and to be homemakers or to rear children.

Why do teachers change schools? Between 1987–88 and 1988–89, teachers were more likely to change schools because they or their families were moving, or because of school staffing actions such as reassignments, than because they were seeking better teaching assignments, were dissatisfied with their 1987–88 schools, or wanted better salaries or benefits (table 3.17). Teachers' reasons for moving varied with the types of moves they made. For example, about one-half of the public school teachers who moved to different districts moved because of a family or personal move. About one-half of the public school teachers who moved within their district did so because of a school staffing action. Of the public school teachers who moved to private schools, about one-third did so because of a family or personal move and about one-third moved because of dissatisfaction with their previous school. About one-half of the private school teachers who moved to public schools moved for better salary or benefits.

Why do teachers leave teaching? Understanding why teachers leave the profession may help policymakers improve the working conditions of teachers or make other changes that will encourage talented people both to become teachers and to remain in the profession. Teachers were most likely to report that their primary reason for leaving teaching was a family or

Figure 3.4—Percentage distribution of 1987–88 teachers by whether they were teaching in the same school (stayers), had moved to another school (movers), or had left teaching (leavers), by sector: 1988–89



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988–89 Teacher Followup Survey.

Table 3.16—Percentage distribution of 1987–88 teachers by primary occupational status in 1988–89, by sector, selected teacher characteristics, and public school class achievement level: 1988–89

			Leavers					
	Stayers[1]	Movers[2]	Total leavers[3]	Non-teaching job in education	Job outside education	Attending college or university	Home-making or child-rearing	Other[4]
TOTAL	85.6	8.0	6.4	1.0	1.4	0.4	1.8	1.8
PUBLIC	86.6	7.8	5.6	1.0	1.0	0.3	1.5	1.8
Teaching level								
Elementary	85.1	9.4	5.5	0.7	0.5	0.2	2.1	2.0
Secondary	88.2	6.2	5.7	1.3	1.5	0.4	0.9	1.6
Sex								
Male	87.7	7.2	5.0	1.2	1.6	0.3	0.0	1.9
Female	86.1	8.1	5.8	0.9	0.7	0.3	2.1	1.8
Age								
Under 30 years	75.3	15.1	9.6	1.5	2.6	1.0	4.0	0.5
30–39 years	86.2	8.8	5.1	0.8	1.0	0.3	2.4	0.6
40–49 years	91.7	5.9	2.3	1.0	0.6	0.1	0.3	0.3
50 years or over	86.3	3.9	9.8	0.8	0.7	0.0	0.2	8.1
Race–ethnicity								
Black, non-Hispanic	86.2	8.7	5.1	3.1	0.4	0.1	0.1	1.4
White, non-Hispanic	86.5	7.8	5.8	0.8	1.1	0.3	1.7	1.9
Other	88.6	8.3	3.1	0.8	0.3	0.2	0.9	0.9
Highest degree earned								
BA/BS or less	85.9	8.6	5.6	0.5	1.1	0.4	2.1	1.5
MA/MS or more	87.4	7.0	5.6	1.4	0.9	0.2	0.9	2.2
Years teaching experience								
3 or less	76.2	15.1	8.6	0.9	3.1	1.1	2.6	0.9
4–9	81.8	11.6	6.5	0.5	1.7	0.4	3.6	0.3
10–19	89.4	6.7	3.8	1.1	0.5	0.2	1.1	0.9
20 or more	89.4	4.0	6.6	1.0	0.5	0.1	0.1	4.9
Class achievement								
Lower	84.2	9.1	6.6	1.2	1.5	0.4	1.9	1.6
Average	89.0	6.4	4.6	0.8	0.7	0.2	0.9	2.0
Higher	84.2	9.5	6.3	0.6	0.9	0.5	3.1	1.2
Mixed	86.7	8.2	5.0	1.0	0.8	0.2	1.5	1.5
Main assignment								
Kindergarten	90.6	6.2	3.0	0.2	0.3	—	1.2	1.3
General elementary	85.4	9.0	5.6	0.6	0.3	0.2	2.3	2.2
Math/science	88.7	5.9	5.5	1.4	1.6	0.5	0.6	1.4
English/ language arts	86.2	6.2	7.6	1.6	1.3	0.3	2.3	2.1
Social studies	90.3	4.7	5.0	0.5	1.1	0.2	0.3	2.9
Special education	80.0	12.7	7.3	1.9	1.2	0.3	2.2	1.7
Bilingual/ESL	78.2	13.7	8.0	1.5	0.8	0.4	4.1	1.2
Vocational education	90.8	2.5	6.6	1.0	3.8	—	0.2	1.6
Other	87.9	7.7	4.4	0.7	1.1	0.4	0.8	1.4

Table 3.16—Percentage distribution of 1987–88 teachers by primary occupational status in 1988–89, by sector, selected teacher characteristics, and public school class achievement level: 1988–89—Continued

			Leavers					
	Stayers[1]	Movers[2]	Total leavers[3]	Non-teaching job in education	Job outside education	Attending college or university	Home-making or child-rearing	Other[4]
PRIVATE	77.7	9.5	12.8	1.2	4.5	1.3	3.8	2.0
Teaching level								
Elementary	76.5	10.9	12.6	1.1	3.0	1.5	4.5	2.5
Secondary	79.0	8.1	12.9	1.2	6.1	1.0	3.0	1.6

—Too few cases for a reliable estimate.
[1]Stayers were teachers who were teaching in the same school.
[2]Movers were teachers who left one school to teach at another.
[3]Leavers were teachers who left teaching.
[4]"Other" includes teachers who were retired, disabled, or had some other occupational status.

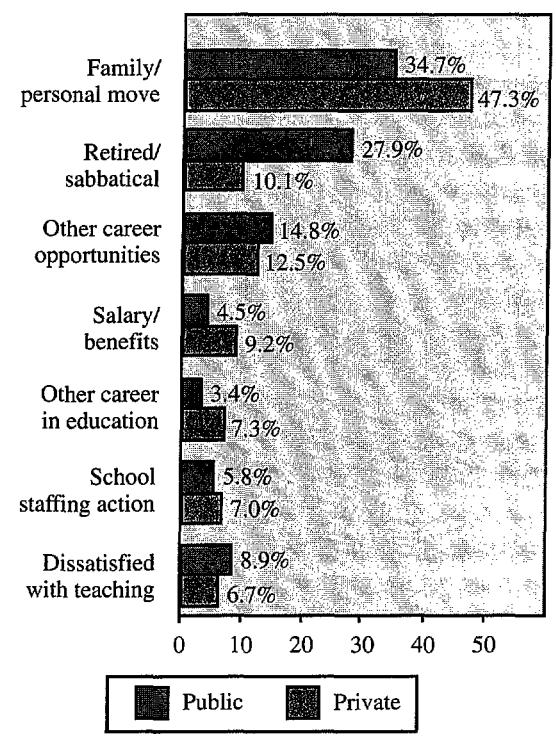
NOTE: Percentages of stayers, movers, and total leavers may not add to 100, and percentages of leavers by occupational status may not sum to total percentage of leavers due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988–89 Teacher Followup Survey.

personal move (38 percent) (table 3.18). However, many left for reasons that suggest a dissatisfaction with teaching: 14 percent of 1987–88 teachers left the profession because they wanted to pursue career opportunities outside of education, 8 percent because they were dissatisfied with teaching, and 6 percent because they wanted to improve their salaries or benefits. Private school teachers were more likely than public school teachers to leave in order to improve their salaries or benefits (figure 3.5). Public school teachers were more likely than private school teachers to retire or take a sabbatical, which is consistent with the data in Chapter 2 concerning public–private differences in teachers' ages.

Teachers may leave the classroom without leaving schools altogether. Fifteen percent of those who left classroom teaching left for nonteaching careers in elementary and secondary schools (table 3.19).[22] Among these leavers, teachers who had been teaching in private schools were more likely than

Figure 3.5—Percentage distribution of 1987–88 teachers who left teaching (leavers) by main reason for leaving the teaching profession, by sector: 1988–89



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988–89 Teacher Followup Survey.

[22]Note that this percentage, which is based on what teachers were actually doing at the time of the followup, is greater than the percentage of leavers whose main reason for leaving teaching was an alternative career in education (4 percent, table 3.18). This may have occurred because some of the teachers who left for other reasons (salary, family, or personal move, for example) may have been in other elementary or secondary school occupations the following year, and thus may be included in the 15 percent shown in table 3.19.

Table 3.17—Percentage distribution of teachers who left their previous schools (movers) by main reason for moving, by sector, type of move, and selected teacher characteristics: 1988–89

	Family/ personal move	Better salary or benefits	Better teaching assignments	School staffing action	Dissatisfaction with previous school
TOTAL	30.7	9.1	17.9	30.1	12.2
PUBLIC	31.6	5.8	18.3	32.1	12.3
Type of move					
Public–public, same district	16.8	0.4	23.2	49.9	9.7
Public–public, diff. district	51.8	12.7	12.6	8.6	14.2
Public–private	33.1	—	5.7	20.7	32.3
Sex					
Male	23.9	7.3	15.9	35.0	18.0
Female	34.5	5.3	19.0	30.9	10.4
Age					
Under 30 years	38.5	9.4	16.4	23.4	12.4
30–39 years	30.7	5.6	15.7	34.1	13.9
40–49 years	30.2	3.2	21.2	34.1	11.3
50 years or over	16.9	2.4	21.4	50.7	8.6
Race–ethnicity					
Black, non-Hispanic	21.7	7.1	15.0	54.0	—
White, non-Hispanic	33.1	5.3	17.3	30.6	13.6
Other	27.2	6.6	36.7	23.2	6.3
Years of teaching experience					
3 or less	37.8	9.3	15.2	28.2	9.4
4–9	34.5	6.0	19.2	25.9	14.5
10–19	26.5	5.2	17.6	39.9	10.7
20 or more	30.2	—	23.3	28.5	17.1
Highest degree earned					
BA/BS or less	35.7	7.5	15.4	29.7	11.6
MA/MS or more	25.8	3.3	22.3	35.5	13.2
PRIVATE	25.3	30.0	15.5	17.7	11.5
Type of move					
Private–public	17.6	50.7	14.3	7.4	10.0
Private–private	31.2	11.2	16.3	28.2	13.1

—Too few cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988–89 Teacher Followup Survey.

Table 3.18—Percentage distribution of teachers who left teaching (leavers) by main reason for leaving the teaching profession, by sector and selected public school teacher characteristics: 1988–89

	Family/ personal move[1]	Retirement or Sabbatical	Other career opportunities[2]	Salary or benefits	Alternative career in education[3]	School staffing action[4]	Dissatisfaction with teaching
TOTAL	37.6	23.8	14.3	5.6	4.3	6.1	8.4
PUBLIC	34.7	27.9	14.8	4.5	3.4	5.8	8.9
Sex							
Male	11.4	30.6	23.6	10.1	6.0	6.9	11.4
Female	43.3	26.8	11.4	2.5	2.5	5.4	8.1
Age							
Under 30 years	52.6	9.1	14.6	3.2	6.3	8.2	6.1
30–39 years	54.0	5.0	16.3	6.0	4.7	5.2	8.7
40–49 years	18.8	12.6	30.8	11.9	3.3	11.6	11.0
50 years or over	9.0	71.9	6.4	0.4	0.1	1.8	10.4
Race–ethnicity							
Black, non-Hispanic	12.6	52.6	24.1	4.3	1.2	4.1	—
White, non-Hispanic	36.6	25.8	14.3	4.0	3.6	6.1	9.7
Other	40.9	26.1	12.0	10.7	3.6	3.2	3.5
Years teaching experience							
3 or less	44.9	1.9	18.4	6.0	7.8	12.2	8.8
4–9	61.9	3.8	9.4	4.0	4.4	6.5	10.0
10–19	36.2	17.5	19.7	6.6	3.1	5.2	11.7
20 or more	7.6	69.7	12.2	1.9	0.7	2.4	5.5
Highest degree earned							
BA/BS or less	47.7	21.3	10.5	3.0	4.2	6.5	6.8
MA/MS or more	20.3	35.2	19.6	6.1	2.6	4.9	11.3
PRIVATE	47.3	10.1	12.5	9.2	7.3	7.0	6.7

—Too few cases for a reliable estimate.

[1]Includes teachers who left teaching because of family or personal moves, pregnancy or child rearing, or health reasons.

[2]Includes teachers who left teaching to pursue other careers or to take courses in order to improve career opportunities outside education.

[3]Includes teachers who left teaching to take courses in order to improve career opportunities in the field of education.

[4]School staffing actions include reductions in force, layoffs, school closings, school reorganizations, and reassignments.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988–89 Teacher Followup Survey.

Table 3.19—Percentage of leavers who left teaching for other elementary or secondary school occupations and percentage distribution of those leavers by nonteaching occupation, by sector and selected public school teacher characteristics: 1988–89

	Percent of leavers who left for other elementary or secondary school occupations	Leavers' 1988–89 nonteaching occupations		
		Administrators	Other professionals	Others
TOTAL	15.3	39.3	42.7	17.9
PUBLIC	17.2	35.9	46.8	17.3
Sex				
Male	23.6	69.4	17.9	12.7
Female	14.9	16.3	63.7	20.0
Age				
Under 30 years	15.9	11.8	58.9	29.4
30–39 years	15.2	46.5	40.3	13.2
40–49 years	42.8	29.7	55.6	14.7
50 years or over	8.3	—	—	—
Race–ethnicity				
Black, non-Hispanic	60.1	—	—	—
White, non-Hispanic	13.6	35.2	44.3	20.5
Other	25.6	—	—	—
Years of teaching experience				
3 or less	10.9	—	—	—
4–9	8.2	48.1	19.4	32.5
10–19	28.6	32.9	62.0	5.1
20 or more	15.8	46.2	33.6	20.2
Highest degree earned				
BA/BS or less	9.3	9.2	41.5	49.4
MA/MS or more	25.7	46.5	49.0	4.5
PRIVATE	9.2	61.1	16.9	22.0

—Too few cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988–89 Teacher Followup Survey.

those who had been teaching in public schools to become administrators. Furthermore, among public school leavers who began other careers in elementary and secondary education, males were more likely than females to become administrators, and females were more likely than males to assume other professional positions such as counselors, librarians, or support personnel for other teachers (such as resource teachers).

Almost one-third of the teachers who left for jobs outside of education became managers or professionals (table 3.20). Public school teachers who were male or who had earned a bachelor's degree or less were about as likely to become salespersons as they were to become managers or professionals. Among all teachers who left, 18 percent became salespersons, 13 percent became administrative support personnel or supervisors, 10 percent became clerical workers, 9 percent became postsecondary school teachers, 8 percent entered other occupations, 7 percent became service workers, 3 percent became engineers or scientists, and 2 percent became technicians.

Table 3.20—Percentage distribution of leavers who were employed outside elementary and secondary education by occupation, by sector and selected public school teacher characteristics: 1988–89

	Managers & professionals	Engineers & scientists	Postsecondary teachers	Technicians	Sales	Administrative support/ supervisors	Clerical	Service occupations	Other
TOTAL	30.5	2.8	8.7	2.3	18.4	12.8	10.1	7.0	7.5
PUBLIC	30.7	2.9	9.9	3.6	21.0	4.2	11.1	8.1	8.6
Sex									
Male	26.0	4.6	7.9	3.9	20.2	—	14.3	9.4	12.3
Female	35.8	—	12.0	3.2	21.8	7.3	7.5	6.7	4.6
Highest degree earned									
BA/BS or less	24.1	1.8	3.3	4.2	25.6	4.4	15.5	9.1	12.0
MA/MS or more	40.5	4.6	19.7	2.6	14.2	3.8	4.4	6.6	3.7
Main assignment									
K–general elementary	25.9	—	—	—	36.2	0.0	7.2	8.7	—
Math/science	20.4	9.1	9.9	9.6	16.9	3.2	5.8	9.2	15.8
English/ language arts	23.6	0.0	30.9	—	20.6	—	10.1	—	4.9
Other	37.7	0.0	6.1	1.0	19.8	5.7	14.2	8.4	7.1
PRIVATE	30.2	2.5	6.8	0.2	14.4	26.3	8.7	5.2	5.7

—Too few cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988–89 Teacher Followup Survey.

CHAPTER 4 • TEACHER EDUCATION

Excellence in our schools presupposes a large corps of well-trained teachers. The school reform proposals of the 1980s encouraged many to take a serious look at teacher education, and raised questions about what teachers needed to know in order to participate fully in the various school reform initiatives and how they should prepare themselves for this participation. Two major reports issued in 1986, *A Nation Prepared: Teachers for the 21st Century* and *Tomorrow's Teachers*, called for sweeping changes in the roles of teachers and in teacher education, focusing particularly on the appropriate content for teacher education at the undergraduate and graduate levels and on the relationship between elementary and secondary schools and schools of education.[23]

The 1987–88 Schools and Staffing Survey (SASS) collected information on teachers' educational backgrounds. When examined in conjunction with teacher characteristics, these data provide useful information on who studied what and when. SASS also collected information on teachers' participation in continuing education courses. However, in this survey, teachers were only asked about courses that required 30 or more hours of classroom instruction. In reality, teachers participate in a wide variety of professional development activities that do not require this level of classroom time. To date, very little systematic information has been collected on teachers' participation in these types of activities.

INITIAL PREPARATION OF TEACHERS

The initial preparation of teachers typically culminates in an undergraduate degree, although some states require an additional year of study before certification. Those who plan to teach at the elementary level commonly have an undergraduate major in education, with only a modest amount of coursework in other subjects beyond their institution's general education requirements. Those who plan to teach in high school, on the other hand, tend to major in the academic discipline in which they plan to teach and take only a few education courses. Current calls for reform have advocated that elementary school teachers pay greater attention to academics and that secondary teachers take more education coursework.[24]

One frequently debated issue is whether teachers should be allowed to major in education at the undergraduate level at all or whether they should be required to major in another field and postpone their professional education until the graduate level. Both the Carnegie Forum and Holmes Group reports recommended that prospective teachers be required to earn a bachelor's degree in arts or science in order to obtain a thorough grounding in the subjects they plan to teach, and that they delay their professional education until the graduate level. These reports also called for the development of a new curriculum leading to a master's degree in teaching that includes school internships and residencies. These recommendations are still being debated. From a practical standpoint, the structure and content of teacher education programs are driven by state certification requirements.

39 percent of teachers majored in general education for their bachelor's degree (or associate's degree if they did not have a bachelor's degree).

In fact, relatively few teachers now major in a field other than education at the undergraduate level (table 4.1). The SASS data show that 39 percent of all teachers majored in general education (that is, elementary, pre-elementary/early childhood education,

[23]Carnegie Forum on Education and the Economy, *A Nation Prepared: Teachers for the 21st Century*, and The Holmes Group, *Tomorrow's Teachers*.

[24]See, for example, Carnegie Forum on Education and the Economy, *A Nation Prepared: Teachers for the 21st Century*, 69–71.

Table 4.1—Percentage distribution of teachers by major field of study for bachelor's degree (or associate degree if no bachelor's degree), by sector and selected teacher characteristics: 1987–88

	Education fields of study					General fields of study				
	General education	Math/ science education	Other subject area education[1]	Special education	Other education	Math/ science engineering[2]	Social sciences[3]	Letters/ languages[4]	Business[5]	Other[6]
TOTAL	38.8	2.0	25.6	4.8	0.7	7.0	7.0	5.6	1.4	7.3
PUBLIC	38.9	2.1	26.7	5.1	0.6	6.7	6.7	5.0	1.4	6.9
Teaching level										
Elementary	64.7	0.4	12.7	6.8	0.6	1.1	4.7	2.4	0.7	5.9
Secondary	11.9	3.9	41.3	3.3	0.6	12.6	8.8	7.8	2.2	7.8
Sex										
Male	14.8	3.4	41.7	1.5	0.6	12.8	11.7	4.4	2.5	6.6
Female	48.8	1.5	20.5	6.5	0.6	4.2	4.6	5.3	1.0	7.0
Highest degree earned										
BA/BS or less	42.7	1.9	26.8	5.3	0.6	5.7	5.3	3.8	1.4	6.4
MA/MS or more	34.6	2.2	26.6	4.8	0.6	7.8	8.2	6.4	1.5	7.4
Years teaching experience										
3 or less	37.0	2.9	22.2	7.1	0.7	7.6	4.8	4.3	2.5	10.9
4–9	38.8	1.4	27.1	9.6	0.5	5.2	4.4	4.1	1.2	7.6
10–19	39.4	2.0	27.1	5.0	0.5	6.2	7.1	5.5	1.0	6.1
20 or more	38.8	2.3	27.4	0.9	0.6	8.4	8.4	5.3	1.8	6.0
PRIVATE	38.1	1.1	16.7	2.6	1.3	8.9	9.2	10.0	1.4	10.7
Teaching level										
Elementary	60.3	0.4	9.3	4.1	1.4	2.3	6.4	5.2	1.1	9.5
Secondary	14.4	1.9	24.5	1.1	1.2	16.0	12.1	15.1	1.7	12.0
Sex										
Male	13.6	1.7	21.8	0.6	1.5	14.6	18.1	10.1	2.8	15.1
Female	44.9	1.0	15.2	3.2	1.3	7.2	6.7	10.0	1.0	9.4
Highest degree earned										
BA/BS or less	44.7	1.2	17.1	3.1	1.3	6.4	7.3	7.0	1.6	10.3
MA/MS or more	25.6	1.0	15.8	1.7	1.3	13.7	12.6	15.7	1.1	11.4
Years teaching experience										
3 or less	36.4	1.3	14.7	3.6	1.1	11.1	7.1	6.6	2.7	15.4
4–9	38.5	1.2	17.6	4.2	1.6	6.9	7.8	9.8	1.1	11.4
10–19	38.7	1.4	17.3	1.7	1.2	8.6	9.9	11.5	0.8	9.0
20 or more	37.9	0.5	15.9	0.6	1.3	10.9	12.3	10.9	1.7	7.9

[1]Includes majors in the education of agriculture, art, business, commerce, distribution, English as a second language, English, foreign languages, home economics, industrial arts, vocational–technical, music, physical education, health, reading, and social studies–social sciences, and in bilingual education.

[2]Includes majors in biological/life science, computer and information sciences, engineering, mathematics, chemistry, physics, geology/earth science, and other physical sciences.

[3]Includes majors in economics, history, political science and government, sociology, and other social sciences.

[4]Includes majors in foreign languages, English, literature, speech, and classics.

[5]Includes majors in business and management.

[6]Includes all other majors.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

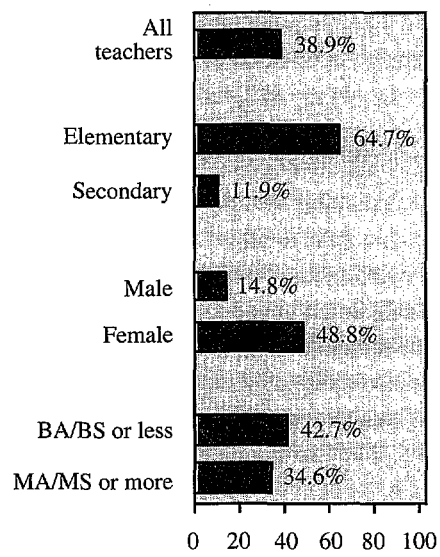
or secondary education) for their bachelor's degree (or associate's degree if they did not have a bachelor's degree). Another 2 percent majored in mathematics or science education, 26 percent in other subject areas in education,[25] 5 percent in special education, and 1 percent in other education fields. The rest majored in fields other than education. The tendency to major in general education does not appear to have changed over time: for both public and private teachers, the percentage was about the same regardless of their years of experience.

Elementary school teachers were much more likely than secondary school teachers to have majored in general education as undergraduates. Among public school teachers, 65 percent of elementary school teachers majored in education, but only 12 percent of secondary school teachers did so (figure 4.1 and table 4.1). The corresponding percentages were similar for private school teachers: 60 percent and 14 percent (table 4.1). Differences by gender existed as well for public and private school teachers, with females being more likely than males to have majored in general education. Teachers whose highest degree earned was a bachelor's degree or less were more likely than those with more education to have majored in general education at the undergraduate level (43 percent compared with 35 percent in the public sector, and 45 percent compared with 26 percent in the private sector).

Both public and private school teachers were equally likely to have majored in general education, but public school teachers were more likely than private school teachers to have majored in another subject area in education or special education. These differences may be related to teachers' educational backgrounds and to different teaching opportunities in public and private schools. A greater percentage of public school teachers have master's and education specialist's degrees (see Chapter 5), the level at which training in these specialty areas often takes place. Also, public schools, because they are larger and serve a more diverse student population, are likely to have more opportunities for teachers who have specialized in areas such as special education. Furthermore, public school teachers sometimes provide special education services to private schools.

Private school teachers, on the other hand, were more likely than public school teachers to have majored in certain academic subjects including mathematics, science, or engineering; social science; letters or language; and "other" noneducation fields. These differences may be related to certification requirements. That is, private school teachers are not subject to the same certification requirements as are public school teachers and

Figure 4.1—Percentage of public school teachers who majored in general education for their bachelor's degree (or associate's degree, if no bachelor's degree), by selected teacher characteristics: 1987–88



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

[25]Includes majors in the education of agriculture, art, business, commerce, distribution, English as a second language, English, foreign languages, home economics, industrial arts, vocational–technical, music, physical education, health, reading, and social studies–social sciences, and in bilingual education.

Table 4.2—Percentage of teachers who earned various degrees, by sector and field of bachelor's degree: 1987–88

	No higher degree	MA/MS			Doctorate	
		In education	In other field	Education specialist	In education	In other field
TOTAL	50.8	37.7	7.2	5.9	0.5	0.3
Field of BA/BS						
Education	55.6	39.2	2.5	5.1	0.4	0.0
Other field	41.8	34.4	19.1	7.6	0.6	0.9
PUBLIC	49.7	39.8	6.6	6.3	0.5	0.2
Field of BA/BS						
Education	54.0	40.8	2.5	5.5	0.4	0.0
Other field	40.3	36.8	17.9	8.2	0.6	0.5
PRIVATE	59.5	22.4	11.5	2.9	0.2	1.1
Field of BA/BS						
Education	70.8	23.5	2.5	1.9	0.3	0.1
Other field	49.0	21.9	25.1	4.0	0.2	2.7

NOTE: Percentages add to more than 100 percent because teachers may have earned more than one advanced degree.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

sometimes are employed without formal training in education.

About one-half of all teachers earned an advanced degree.

Table 4.2 provides information on the relationship between teachers' undergraduate and graduate degrees. Approximately one-half of all teachers earned an advanced degree, with a master's in education being by far the most common degree (earned by 38 percent of all teachers). Public school teachers were more likely than private school teachers to earn a master's degree in education (40 percent compared with 22 percent), and private school teachers were more likely than public school teachers to earn a master's degree in another field (12 percent compared with 7 percent). Interestingly, teachers whose bachelor's degree was in education were less likely than those whose bachelor's degree was in another field to earn an advanced degree in a field other than education and were more likely to earn a master's degree in education. Teachers with a bachelor's degree in education were not very likely to earn a master's degree in a field other than education (3 percent).

Another aspect of teacher education frequently of interest is the congruence between what teachers studied in college and their main assignment field. Assigning teachers to a field other than one in which they majored may be an indicator of teacher shortages, although not necessarily a good one, especially in smaller schools where many teachers commonly have responsibilities in more than one subject area (see Chapter 3). According to the SASS data, more than one-half (55 percent) of all teachers majored in their main teaching field, and another 12 percent minored in their main teaching field for their highest degree earned (table 4.3). The remaining 34 percent neither majored nor minored in their main teaching field. Note, however, that teachers who did not major or minor in their main teaching field for their highest degree earned may have done so for an earlier degree, or may have completed coursework in the field but not earned a

Table 4.3—Percentage distribution of teachers by whether they majored, minored, or neither majored nor minored in their main or other teaching field for their highest earned degree, by selected teacher characteristics: 1987–88

	Main field			Other field		
	Major in field	Minor in field	Neither major nor minor	Major in field	Minor in field	Neither major nor minor
TOTAL	54.7	11.8	33.5	54.1	38.7	7.2
PUBLIC	55.1	11.7	33.3	52.8	39.3	7.9
Teaching level						
Elementary	61.5	9.1	29.4	54.0	40.2	5.8
Secondary	48.2	14.4	37.4	52.4	39.0	8.6
Highest degree earned						
Less than BA/BS	58.0	3.2	38.8	—	—	—
BA/BS	61.8	15.8	22.3	45.2	49.3	5.5
MA/MS	49.0	6.9	44.1	62.9	25.7	11.3
More than MA/MS	38.5	8.3	53.2	63.8	26.2	9.9
Years of teaching experience						
3 or less	59.1	15.2	25.7	48.4	45.8	5.8
4–9	56.8	14.3	28.9	53.6	38.9	7.5
10–19	54.0	10.7	35.2	54.8	37.4	7.8
20 or more	53.8	9.8	36.4	50.5	39.4	10.1
PRIVATE	52.2	12.8	35.0	61.7	35.2	3.1
School level						
Elementary	56.8	10.5	32.7	60.2	37.0	—
Secondary	47.2	15.4	37.4	62.4	34.4	3.3
Highest degree earned						
Less than BA/BS	49.8	8.9	41.3	—	—	—
BA/BS	54.9	15.7	29.4	52.8	43.0	4.2
MA/MS	48.1	7.6	44.3	81.4	17.4	1.2
More than MA/MS	43.1	8.6	48.2	70.3	29.7	0.0
Years of teaching experience						
3 or less	54.1	14.7	31.2	57.6	40.0	2.4
4–9	54.1	12.4	33.6	58.4	38.9	2.7
10–19	50.4	12.6	37.0	63.5	32.5	4.1
20 or more	50.6	12.1	37.3	71.8	25.1	3.1

—Too few cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

degree. Public school teachers were slightly more likely than private school teachers to have majored in their main teaching field.

Continuing Education

The education of teachers does not stop with their initial training; formal and informal training continues throughout a teacher's career. Teachers are typically required to continue their education through school- or district-sponsored professional development activities, graduate programs, self-directed study, or some combination of these activities. In addition, many teachers voluntarily enroll in programs or summer institutes to keep up-to-date in their fields or teaching methodology or to advance on the salary schedule. Continuing education programs also provide experienced teachers who wish to change fields with an opportunity to learn about other fields. Because most teachers are, in fact, continuing teachers (Chapter 3), continuing education is already a vast enterprise. If major school reforms are implemented, one can expect it to grow further.

In 1987–88, about one-third (34 percent) of all teachers reported that they had taken teaching-related inservice or college courses requiring 30 or more hours of classroom study during the 2 school years before the survey (table 4.4). Most frequently, these courses were relevant to the teacher's main assignment field. Public school teachers of English or language arts/reading, social studies/science, and bilingual/ESL education were the least likely to take courses related to their own fields.

Comparisons with Other Countries

Although it would be very useful to be able to compare the educational backgrounds of teachers in the United States with those of their counterparts in other countries, very few comparable data are available on this topic. However, because of the current interest in mathematics and science education at the international level, efforts have been made to assemble data comparing the education of mathematics and science teachers across countries. Table 4.5 shows that the average years of postsecondary education for science teachers of 10-year-old children ranged from 1 year in Nigeria to 4.5 years in the Philippines, with the United States at 3.3 years. For science teachers of slightly older children (14 years old), the averages ranged from 1.5 years in China to 5.7 years in Finland. The average in the United States was 3.4 years of postsecondary education for the teachers of 14-year-old children.

Table 4.6 compares the average number of semesters of postsecondary credit in mathematics pedagogy, general pedagogy, and general mathematics for teachers of eighth-grade students. In each of these areas, the United States was among the countries with the highest averages.

Teachers of Teachers

On average, teacher educators and other education faculty had lower base salaries and earned less income overall than did postsecondary faculty in other fields.

The quality of teacher education is closely linked to the quality of the faculty who train teachers and to the structure and content of teacher education programs. Education faculty are frequently criticized for being too far removed from the K–12 education system, and students in teacher education programs have often complained that many of their teachers have not been in the classroom for years.

College and university faculty who teach prospective teachers straddle two cultures—higher education and the K–12 educational system—but over the past 25 years or so, the culture of the college or university has become the dominant one. As the research mission has gained preeminence on college campuses at the expense of teaching and service, scholarly work has taken precedence over professional education. Despite faculty efforts to appear more scholarly and research oriented, teacher education programs still typically have low status on college and university campuses and tend to be resource poor relative to other departments. Recommendations for revitalizing schools and departments of education to place greater emphasis

Table 4.4—Percentage of teachers who had taken inservice training or college courses in the past 2 years and percentage distribution of those who did by the assignment field for which the training or courses were relevant, by sector and teacher's main assignment field: 1987–88

		Assignment field for which training or courses were relevant[1]							
	Any field	Kinder-garten–general elemen-tary	Math/ science	English/ Language arts/read-ing	Social studies/ science	Special education	Bilin-gual/ ESL	Vocational education	All others
TOTAL	33.8	27.1	16.7	9.8	3.7	10.8	1.4	2.1	28.4
PUBLIC	34.7	26.9	16.5	9.9	3.8	11.0	1.5	2.3	28.1
Main assignment									
K–general elementary	35.3	64.8	11.5	7.7	0.6	3.5	1.0	—	11.0
Math/science	36.3	4.9	66.0	1.4	1.1	3.5	0.4	0.3	22.2
English/language arts/ reading	34.2	8.3	5.7	55.9	2.1	3.0	1.1	0.3	23.6
Social studies	31.9	4.6	8.8	4.0	53.7	2.3	0.4	0.9	25.3
Special education	39.4	10.5	5.2	3.7	1.0	66.6	0.3	0.8	11.9
Bilingual/ESL	44.2	16.2	4.5	10.8	—	0.9	53.2	0.0	14.2
Vocational education	41.7	0.8	6.8	1.0	—	6.4	0.0	70.3	14.6
Other	30.7	6.6	8.4	3.1	1.3	4.0	0.9	1.0	74.5
PRIVATE	26.9	29.4	18.0	8.6	3.1	8.2	0.3	0.5	31.8
Main assignment									
K–general elementary	27.7	58.6	10.0	6.6	1.8	4.7	0.4	—	17.5
Math/science	29.2	6.7	61.1	1.1	0.8	7.8	—	—	2.2
English/language arts/ reading	22.3	10.6	8.7	54.1	2.4	4.8	0.0		0.0
19.5									
Social studies	19.9	12.0	—	5.4	35.3	6.5	—	0.0	38.0
Special education	38.1	12.0	4.5	4.1	0.0	71.5	0.0	0.0	—
Bilingual/ESL	—	—	—	—	—	—	—	—	—
Vocational education	—	—	—	—	—	—	—	—	—
Other	26.5	5.3	9.0	1.4	2.6	3.4	—	1.1	76.8

—Too few cases for a reliable estimate.

[1]Teachers could mark only one assignment field. Courses had to require 30 or more hours of classroom training.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 4.5—Average years of postsecondary education for teachers of science, by country: 1983–85

	Average years postsecondary education (Population 1)[1]	Average years postsecondary education (Population 2)[2]	Average years postsecondary science education (Population 2)[2]
Australia	3.5	4.6	2.5
Canada (French speaking)	[3.9]	[4.8]	[1.3]
China[4]	(*)	1.5	(*)
England	3.5	4.3	(*)
Finland	4.1	5.7	3.9
Ghana[4]	(*)	4.2	3.3
Hong Kong	1.9	2.8	2.3
Hungary	2.9	4.0	2.6
Israel	2.6	4.8	3.6
Italy (grade 8)	(*)	4.1	2.8
Italy (grade 9)	(*)	4.2	3.2
Italy	0.9	(*)	(*)
Japan	3.3	3.8	2.3
Korea	2.1	4.1	2.6
Netherlands[4]	(*)	5.3	3.0
Nigeria	1.1	4.8	3.9
Norway	3.3	4.7	3.5
Papua New Guinea[4]	(*)	3.4	1.6
Phillipines	4.5	4.8	0.8
Poland	3.8	4.1	2.4
Singapore	2.7	3.6	2.8
Sweden (grade 3)	2.0	(*)	(*)
Sweden (grade 4)	2.0	(*)	(*)
Sweden (grade 7)	(*)	2.0	0.5
Sweden (grade 8)	(*)	2.0	0.5
Thailand[4]	(*)	4.0	2.5
United States	3.3	3.4	2.1
Zimbabwe[4]	(*)	3.4	1.8

[]Data supplied by National Centers from other data sources.
*Not available.

NOTE: Canada (English speaking) did not collect any teacher data. It should also be noted that England, Norway and Sweden did not administer several questions because they were deemed either unacceptable (e.g. infringement of one's privacy) to the teacher or in the case of China, unavailable.

[1]"Population 1" was defined as "all students aged 10:0 to 10:11 on the specified date of testing or all students in the grade where most 10 year olds were to be found on the specified date of testing" (T.N. Postlethwaite and D.E. Wiley, *The IEA Study of Science II: Science Achievement in Twenty-three Countries* [Oxford: Pergamon Press, 1992], 3). The figures reported here are averages of data from samples taken from this population.

[2]"Population 2" was defined as "all students aged 14:0 to 14:11 on the specified date of testing or all students in the grade where most 14 year olds were to be found on the specified date of testing" (T.N. Postlethwaite and D.E. Wiley, *The IEA Study of Science II: Science Achievement in Twenty-three Countries* [Oxford: Pergamon Press, 1992], 3). The figures reported here are averages of data from samples taken from this population.

[3]Did not participate in Population 2 data collection.

[4]Did not participate in Population 1 data collection.

SOURCE: T.N. Postlethwaite and D.E. Wiley, *The IEA Study of Science II: Science Achievement in Twenty-three Countries* (Oxford: Pergamon Press, 1992), 19, 28–29.

Table 4.6—Average number of semesters of postsecondary credit in mathematics pedagogy, general pedagogy, and general mathematics earned by teachers of eighth-grade (U.S. equivalent) students in 15 countries: 1980–82

Country	Mathematics pedagogy	General pedagogy	General mathematics
TOTAL	1.7	2.4	4.4
Belgium	3.1	3.4	3.6
Canada (British Columbia)	1.6	2.9	7.5
Canada (Ontario)	1.3	2.8	2.3
England/Wales	0.9	1.3	1.8
Finland	0.9	1.4	6.1
France	1.4	1.1	5.1
Hong Kong	1.4	1.3	2.0
Hungary	2.0	4.2	6.1
Israel	2.1	2.6	4.2
Japan	3.5	4.0	5.9
Luxembourg	1.1	1.7	3.5
New Zealand	1.4	2.4	4.0
Scotland	1.4	1.5	5.3
Sweden	1.0	1.9	2.1
Thailand	2.7	3.1	7.4
United States	3.7	5.0	8.0

SOURCE: International Association for the Evaluation of Educational Achievement, Second International Mathematics Study, Elizabeth Oldham, "Qualifications of Mathematics Teachers," paper prepared for the National Center for Education Statistics, August 1986.

on professional education are at odds with the focus on the research mission, and place education faculty in a difficult position.[26]

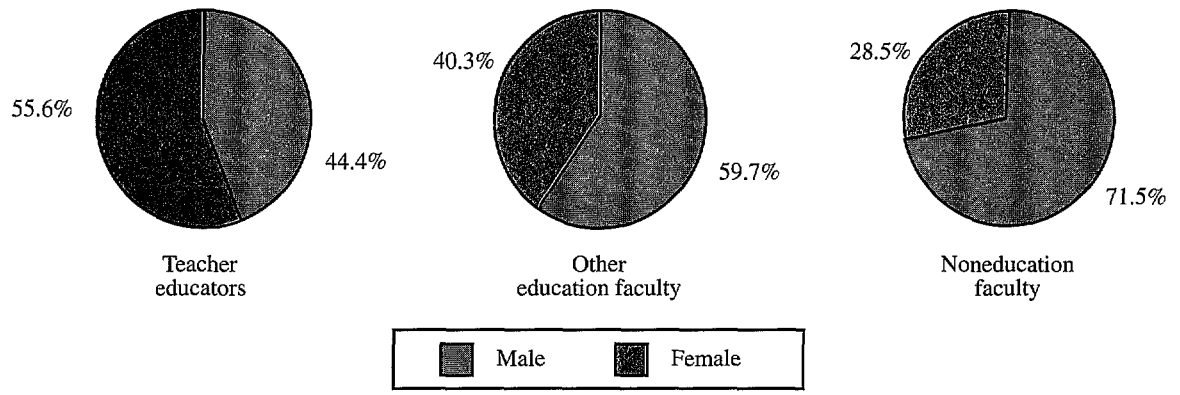
The National Survey of Postsecondary Faculty, conducted in the fall of 1987 and spring of 1988, collected data that enable comparisons of teacher educators, other education faculty, and noneducation faculty. Teacher educators are those who teach preelementary, elementary, secondary, adult and continuing education, other general education, or teacher education in specific subjects. Other education faculty are those who teach subjects such as curriculum and instruction, education administration, evaluation and research, or educational psychology.

Teacher educators and other education faculty differed from noneducation faculty with respect to some demographic characteristics. For example, although only 29 percent of noneducation faculty were female, 56 percent of teacher educators and 40 percent of other education faculty were female (figure 4.2 and table 4.7). This pattern reflects the fact that teacher educators are often former teachers, and teaching has traditionally been a female-dominated occupation. Education faculty other than teacher educators were more concentrated in the 55- to 64-year-old group than were noneducation faculty (table 4.8). Teacher educators were the least likely to have doctorates.

When all sources of earned income are considered (base salaries, other institutional sources, outside consulting, and other work), noneducation faculty earned the most, with an average of $50,671 per year, followed by education faculty other than teacher educators, with an average of $41,649

[26]The place of education faculty in colleges and universities is discussed at length in John I. Goodlad, *Teachers for Our Nation's Schools* (San Francisco: Jossey-Bass, 1990), and Geraldine Jonçich Clifford and James W. Guthrie, *Ed School* (Chicago: University of Chicago Press, 1988).

Figure 4.2—Percentage distribution of full-time regular postsecondary faculty by sex, by type of faculty: Fall 1987



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988 National Survey of Postsecondary Faculty.

Table 4.7—Percentage distributions of full-time regular postsecondary faculty by sex and race–ethnicity, by faculty type: Fall 1987

	Sex		Race–ethnicity		
	Male	Female	Black, non-Hispanic	White, non-Hispanic	Other
TOTAL	70.0	30.0	3.2	89.6	7.2
Faculty type					
Teacher educators	44.4	55.6	5.6	91.5	2.8
Other educational faculty	59.7	40.3	6.8	87.6	5.7
Noneducational faculty	71.5	28.5	2.9	89.6	7.4

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988 National Survey of Postsecondary Faculty.

Table 4.8—Percentage distribution of full-time regular postsecondary faculty by age, percentage with a doctorate or first professional degree, and percentage with tenure, by faculty type: Fall 1987

	Age					Doctorate or first pro-fessional	Tenured
	Under 30	30–44	45–54	55–64	65 or over		
TOTAL	3.8	45.1	29.9	17.7	3.4	68.5	46.6
Faculty type							
Teacher educators	3.5	43.3	28.0	23.4	1.8	54.5	44.7
Other educational faculty	4.4	33.9	32.7	25.3	3.8	69.1	51.9
Noneducational faculty	3.8	45.8	29.9	17.1	3.4	69.0	46.3

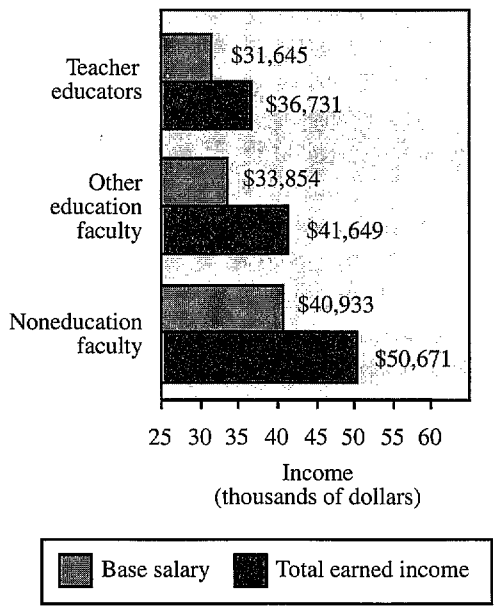
NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988 National Survey of Postsecondary Faculty.

(figure 4.3 and table 4.9). Teacher educators earned the least, averaging $36,731 per year. Teacher educators and other education faculty also had lower annual base salaries than did noneducation faculty ($31,645 and $33,854, compared with $40,933). Outside consulting income was much less available to teacher educators, who averaged $605 per year, than to other education faculty, who averaged $2,250, or to noneducation faculty, who averaged $3,588.

Most teacher educators (90 percent), other education faculty (87 percent), and noneducation faculty (84 percent) reported that they were "somewhat" or "very" satisfied with their jobs overall (table 4.10). All three reported similar levels of satisfaction for many aspects of their jobs, such as their work load, authority over courses taught, time available to students, and the quality of their colleagues, program, and department. However, different types of faculty varied in their satisfaction with some aspects of their jobs. For example, teacher educators were somewhat more likely than other education or noneducation faculty to be satisfied with the quality of their undergraduate students, and other education faculty were more likely than noneducation faculty to be satisfied with the quality of their graduate students.

Figure 4.3—Average total earned income and average base salary for full-time regular postsecondary faculty, by discipline: Fall 1987



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988 National Survey of Postsecondary Faculty.

Table 4.9—Average earned income for full-time regular postsecondary faculty, by source of income and faculty type: Fall 1987

	Total earned income	Base salary	Other income from institution	Earned as outside consultants	Other
TOTAL	$49,735	$40,257	$3,722	$3,417	$2,339
Faculty type					
Teacher educators	36,731	31,645	2,795	605	1,686
Other educational faculty	41,649	33,854	3,779	2,250	1,766
Noneducational faculty	50,671	40,933	3,755	3,588	2,395

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988 National Survey of Postsecondary Faculty.

Table 4.10—Percentage of full-time regular postsecondary faculty who were *somewhat satisfied* or *very satisfied* with various aspects of their job, by faculty type: Fall 1987

	Job overall	Work load	Authority over courses taught	Time available to students	Quality of colleagues/ program/ department	Quality of graduate students	Quality of undergraduate students
TOTAL	84.3	73.7	79.8	72.8	82.7	47.9	62.8
Faculty type							
Teacher educators	90.1	77.2	82.2	66.8	82.8	51.7	77.9
Other educational faculty	86.8	72.3	77.9	68.6	84.7	60.5	66.5
Noneducational faculty	84.0	73.7	79.8	73.3	82.6	47.1	62.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988 National Survey of Postsecondary Faculty.

CHAPTER 5 • TEACHER QUALIFICATIONS

One focus of the current school reform debate concerns efforts to build and ensure a well-trained work force.[27] However, the real issues underlying the debate have to do with teacher performance. Qualifications are often cited as accessible, if imperfect, proxies. While the qualifications of teachers alone do not assure success in the classroom, there is some agreement that teacher quality is linked to training, experience, and the match between skills and teaching assignments.

This debate extends from questions concerning whether teacher training, experience, and certification are consistently related to quality to questions concerning how much training and experience and what kind of certification are necessary to ensure that a teacher is truly qualified. In a forthcoming report on public school teacher qualifications, NCES researchers report that using different definitions of teaching in and out of field had profound effects on their estimates of the percentage of teachers who were teaching "out of field." Using the 1987–88 Schools and Staffing Survey (SASS) data, the report compared the proportions of teachers who were teaching out of field using alternative definitions. These definitions used four combinations of three variables as indicators of teachers' qualifications: teachers' certification in their main assignment fields, teachers' certification in all the fields in which they teach, and the field in which teachers earned their highest degrees.[28] The study showed widely ranging estimates of the proportions of public elementary and secondary teachers teaching out of field depending on the definition used. Whereas 2 percent of all public elementary and secondary school teachers had no certification in their main assignment fields, 7 percent of teachers lacked full certification in their main assignment field. When the authors included teachers' college education in the definition of teaching out of field, the percentage of teachers who were teaching out of field increased further. For example, the percentage of secondary teachers who neither were fully certified nor had majored in their teaching fields ranged from 10 percent among teachers of foreign language classes to 27 percent among teachers of mathematics classes. Clearly the definition of "qualified" that one uses has substantial impact on whether one believes that concern about the qualifications of public elementary and secondary school teachers is warranted.

Three indicators of teacher qualifications are described in this chapter: educational attainment, which offers a measure of the quantity or amount of teacher preparation (and may be indirectly associated with the "quality" of qualifications); certification status, which offers a measure of the degree to which teachers meet minimum public school teaching standards and qualifications set by their state; and years of teaching experience, which offers a measure of on-the-job professional growth, persistence, and commitment to teaching as a profession. It should be understood that while these indicators are perceived as important within the teaching profession, there is not a strong empirical basis upon which to assert the degree to which each is related to teacher quality or classroom effectiveness. At the same time, there is increasing interest in teacher assessments, particularly as they relate to student learning and achievement. Assessments may, in the future, provide measures of teacher quality and effectiveness that the imperfect proxies discussed in this chapter are designed to describe.[29]

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[27]For an overview, see Joseph Murphy, ed., *The Educational Reform Movement of the 1980s* (Berkeley: McCutchan, 1990); and Denis P. Doyle, Bruce S. Cooper, and Roberta Trachtman, *Taking Charge: State Action on School Reform in the 1980s* (Indianapolis: Hudson Institute, 1991).

[28]Marilyn M. McMillen and Sharon A. Bobbitt, *Teacher Training, Certification, and Assignment in Public Schools*, Statistical Analysis Report, U.S. Department of Education, forthcoming.

[29]These issues are reviewed in Thomas L Good and Mary M. McCaslin, "Teaching Effectiveness," *Encyclopedia of Educational Research* (New York: Macmillan Publishing Co., 1992), 1,373–388.

EDUCATIONAL ATTAINMENT

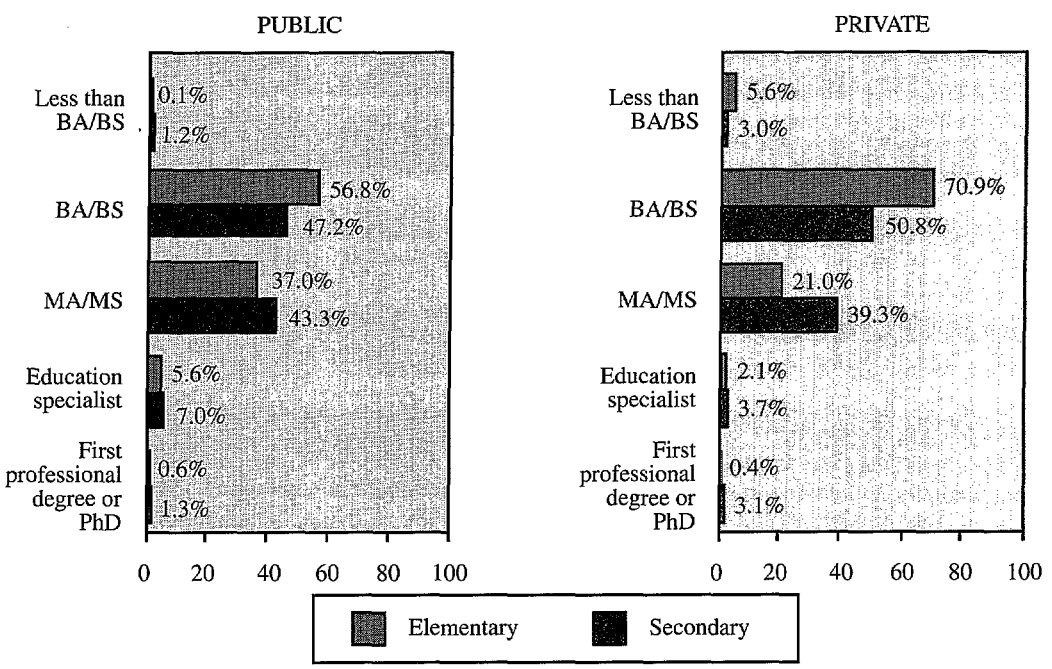
A master's was the highest degree earned for 40 percent of public school teachers and 30 percent of private school teachers.

While evidence suggests a modest relationship between educational attainment and teacher effectiveness,[30] academic credentials are an important aspect of teacher preparation. In SASS, teachers were asked about each degree they had earned. Although the vast majority of teachers had earned at least a bachelor's degree, teachers in public and private schools differed in their educational attainment (table 5.1). In public schools, only 1 percent of teachers had earned less than a bachelor's degree, compared with 4 percent of teachers in private schools. A larger percentage of public school teachers than private school teachers had earned more than a bachelor's degree. In public schools, 40 percent of teachers had earned a master's degree, and 6 percent had earned an education specialist degree. Among private school teachers, 30 percent had earned a master's degree, whereas 3 percent had earned an education specialist degree. Only very small percentages of either type of teacher had earned a Ph.D. or first-professional degree (1 percent of public school teachers and 2 percent of private school teachers).

For teachers in both sectors, highest degree earned varied with teaching level. Public and private secondary school teachers were more likely to have earned a master's or a professional or Ph.D. degree as their highest degree than were their elementary school counterparts (figure 5.1). Moreover, secondary school teachers were less likely than those teaching in elementary school to have earned a bachelor's as their highest degree.

[30]See, for example, Judith Bodenhausen, "Does Academic Background of Teachers Affect the Performance of Their Students?" (paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, April 5–9, 1988); John L. Knapp et al., "Should a Master's Degree Be Required of All Teachers?" *Journal of Teacher Education* 41 (2) (March–April 1990): 27–37; and Eleanor Lazarus, "Equity and Excellence in Arts Education," *Design for Arts in Education*, 90 (6) (July–August 1989): 30–32.

Figure 5.1—Percentage distribution of teachers by highest degree earned, by sector and level: 1987–88



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 5.1—Percentage distribution of teachers by highest degree earned, by sector and selected teacher characteristics: 1987–88

	Public					Private				
	Less than BA/BS	BA/ BS	MA/ MS	Education specialist	First professional or PhD	Less than BA/BS	BA/ BS	MA/ MS	Education specialist	First professional or PhD
TOTAL	0.6	52.1	40.1	6.3	0.9	4.4	61.3	29.8	2.9	1.7
Teaching level										
Elementary	0.1	56.8	37.0	5.6	0.6	5.6	70.9	21.0	2.1	0.4
Secondary	1.2	47.2	43.3	7.0	1.3	3.0	50.8	39.3	3.7	3.1
Sex										
Male	1.7	44.1	45.0	7.5	1.6	2.3	50.9	38.2	3.6	5.0
Female	0.2	55.4	38.0	5.7	0.6	4.9	64.1	27.5	2.7	0.8
Race–ethnicity										
Black, non-Hispanic	0.5	49.9	42.5	5.7	1.4	5.0	70.6	16.9	3.5	4.0
White, non-Hispanic	0.6	52.2	40.2	6.2	0.8	4.1	61.3	30.2	2.8	1.6
Other	1.1	56.7	31.9	8.2	2.1	6.4	61.4	24.9	4.7	2.6
Years teaching experience										
3 or less	1.2	85.4	11.3	1.4	0.6	9.0	78.0	11.1	0.7	1.2
4–9	1.0	66.1	29.2	3.1	0.5	4.5	67.1	25.0	1.8	1.6
10–19	0.6	45.3	46.0	7.0	1.0	2.6	56.0	35.8	3.6	2.0
20 or more	0.2	39.6	49.8	9.2	1.2	2.6	44.4	45.7	5.5	1.8
Age										
Under 30 years	0.3	82.8	15.5	1.1	0.3	4.7	83.4	11.4	0.4	—
30–39 years	0.4	53.3	40.7	5.2	0.5	4.8	59.3	31.4	3.1	1.4
40–49 years	0.7	44.1	46.1	7.8	1.3	3.3	51.7	39.3	3.1	2.6
50 years or over	1.3	42.2	45.6	9.3	1.6	4.5	52.4	34.7	5.1	3.3
Main assignment										
Kindergarten	0.1	64.6	30.4	4.1	0.8	11.3	70.7	14.5	2.5	—
General elementary	0.0	60.3	35.2	4.2	0.3	4.6	73.5	20.1	1.6	0.3
Math/science	0.0	47.6	44.4	6.6	1.3	1.9	53.2	37.6	3.6	3.9
English/ language arts	—	45.9	44.4	8.4	1.3	2.0	46.2	45.3	5.0	1.5
Social studies	—	44.9	45.8	7.0	2.2	1.6	55.7	38.2	2.1	2.4
Special education	0.1	43.9	45.1	10.1	0.8	1.1	57.4	37.6	2.3	1.6
Bilingual/ESL	0.5	51.4	37.3	8.9	1.9	—	—	—	—	—
Vocational education	24.1	40.5	28.7	6.1	0.5	—	—	—	—	—
Other	0.3	50.9	41.5	6.2	1.0	6.0	53.7	33.7	3.9	2.7

—Too few cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Among both males and females, public school teachers were less likely than private school teachers to have earned a bachelor's as their highest degree, and were more likely than private school teachers to have earned a master's or an education specialist degree (table 5.1). In public schools, a larger proportion of females than males had earned a bachelor's as their highest degree, while a larger percentage of males than females had earned a master's, education specialist, or a professional or Ph.D. degree.

Table 5.2 shows the percentage distribution of public school teachers by highest degree earned for each state. Table 5.3 reports the same information for private school teachers, by private school affiliation.

The academic qualifications of new and prospective teachers have become an issue of substantial interest to those concerned with the quality of the teacher work force. For instance, as reported by the National Commission on Excellence in Education, "Too many teachers are being drawn from the bottom quarter of graduating high school and college students."[31] Other studies have raised similar concerns.[32] Such studies have compared high school class rank percentiles, scholastic aptitude test scores, and collegiate grade-point averages of students in teacher training programs with those of other college students.[33] Although the findings of these studies have not been conclusive, some research suggests that the SAT scores of students enrolled in teacher education programs were slightly lower than those of other students, while the cumulative grade-point averages in college were similar for both groups.

The 1987 Recent College Graduates Study (RCG), which collected data on the educational and postdegree work experience of people who had obtained a bachelor's degree, also provides important information on the academic qualifications of teachers. Moreover, the RCG Study enables a comparison of the grade-point averages of newly qualified teachers (individuals who received a bachelor's degree between July 1, 1985 and June 30, 1986, who became eligible or certified to teach during that time, and who had not been employed as teachers before receiving their degree[34]) with the grade-point averages of other college graduates. Even if these newly qualified teachers were not teaching at the time the survey was conducted, they represent a potential source of teacher supply. Among the graduates surveyed, 48 percent of newly qualified teachers self-reported grade-point averages exceeding 3.25, compared with 42 percent of other bachelor's degree recipients (table 5.4). This finding indicates that among recent graduates, those who were newly qualified to teach achieved at least as well or better while they were enrolled in college than did other graduates.[35]

CERTIFICATION

Teacher certification policies figure prominently in current state school reform debates. Almost all states now require that public school teachers pass certification tests in their specialty area. At the same time, another trend associated with issues of teacher shortage has emerged. To expand the pool of eligible teachers, especially in areas of critical shortage, more than one-half the states (39 as of 1991) say they are implementing alternative certification.[36] Most of these alternative certification routes have been designed to recruit individuals who have at least a bachelor's degree in a field other than teaching. These certification routes typically include formal

[31]National Commission on Excellence in Education, *A Nation at Risk: The Imperatives for Educational Reform* (Washington, D.C., 1983), 22.

[32]See, for example, E. Boyer, *High School: A Report on Secondary Education in America* (New York: Harper and Row, 1983); and The Carnegie Foundation for the Advancement of Teaching, *The Condition of Teaching: A State by State Analysis* (Princeton: Princeton University Press, 1983).

[33]For an overview of these issues, see Victor S. Vance and Phillip C. Schlechty, "The Distribution of Academic Ability in the Teaching Force: Policy Implications," *Phi Delta Kappan* 64 (1) (September 1982): 22–27; Dorothy K. Stewart, "The Characteristics of Teacher Candidates," *Journal of Teacher Education* 32 (2) (March/April 1987): 52–54; Robert L. Fisher and Marilyn E. Feldmann, "Some Answers about the Quality of Teacher Education Students," *Journal of Teacher Education* 36 (3) (May/June 1985): 37–40.

[34]Not all newly qualified teachers entered teaching directly upon graduation. Some took nonteaching positions or went on to graduate school. At the time of the 1987 survey, of the newly qualified teachers with bachelor's degrees in 1987, 39 percent were not employed as teachers.

[35]It has been argued that students in teacher education programs may take "easier" courses than other students, or that grades are artificially inflated in teacher education programs. If this is true, questions could be raised about the meaning of this finding. Such comparisons, however, cannot be made with these data. This issue is discussed in articles cited in footnote 32 above.

[36]Emily Feistritzer and David Chester, *Alternative Teaching Certification: A State by State Analysis* (Washington, D.C.: National Center for Education Information, 1991), 13.

Table 5.2—Percentage distribution of public school teachers by highest degree earned, by state: 1987–88

	Less than BA/BS	BA/BS	Higher than BA/BS
TOTAL	0.6	52.1	47.3
Alabama	1.1	40.3	58.6
Alaska	—	59.2	40.8
Arizona	—	56.3	43.4
Arkansas	0.3	66.5	33.3
California	0.1	55.3	44.6
Colorado	0.3	50.4	49.2
Connecticut	0.9	22.6	76.5
Delaware	1.4	65.2	33.4
Dist. of Columbia	—	42.5	56.2
Florida	0.9	58.7	40.4
Georgia	0.7	44.9	54.4
Hawaii	—	53.6	45.9
Idaho	0.5	72.4	27.1
Illinois	—	51.4	48.5
Indiana	0.7	14.9	84.5
Iowa	0.7	65.5	33.8
Kansas	—	53.3	46.6
Kentucky	1.1	23.6	75.4
Louisiana	0.8	53.2	46.0
Maine	—	68.8	31.0
Maryland	0.9	41.0	58.1
Massachusetts	1.6	46.3	52.2
Michigan	—	39.7	60.2
Minnesota	0.3	64.6	35.1
Mississippi	0.5	56.7	42.8
Missouri	0.9	52.4	46.7
Montana	0.0	75.6	24.4
Nebraska	—	61.2	38.5
Nevada	—	47.0	52.4
New Hampshire	2.2	65.2	32.6
New Jersey	0.6	57.6	41.8
New Mexico	—	47.2	52.6
New York	0.4	31.9	67.7
North Carolina	1.2	66.9	31.8
North Dakota	0.7	82.2	17.1
Ohio	1.2	55.0	43.8
Oklahoma	0.6	54.9	44.6
Oregon	0.0	53.9	46.1
Pennsylvania	0.8	47.6	51.6
Rhode Island	0.0	37.1	62.9
South Carolina	0.9	50.0	49.1
South Dakota	—	82.0	17.5
Tennessee	1.5	52.0	46.5
Texas	1.0	64.3	34.7
Utah	0.6	73.3	26.1

Table 5.2—Percentage distribution of public school teachers by highest degree earned, by state: 1987–88—Continued

	Less than BA/BS	BA/BS	Higher than BA/BS
Vermont	0.8	57.5	41.6
Virginia	0.9	61.4	37.7
Washington	0.6	68.8	30.6
West Virginia	0.7	51.7	47.6
Wisconsin	0.0	63.2	36.8
Wyoming	0.0	70.7	29.3

—Too few cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

instruction and mentoring while teaching, and may or may not be restricted to areas of shortages or to specific grade levels.

Therefore, reformers are simultaneously working in two directions—strengthening requirements, on the one hand, and developing alternative ways of bringing talented, capable people into teaching, on the other. Ultimately traditional distinctions will probably give way to a more complicated array of certification models. (However, today a teacher is either certified or not.) But certification is clearly related to standards, and certification policies affect the supply of teachers, the social composition of the teacher corps, teacher education, and more. Although the link to teacher quality is uncertain, certification is a highly visible indicator of professionalism, hence a cornerstone of efforts to enhance the quality of the work force.

82 percent of teachers reported that they were teaching the subject that they were best qualified to teach, and 94 percent held certification in their main teaching field.

In the best of circumstances, all teachers would teach only those subjects in which they were well qualified. In SASS, teachers were asked whether they thought that they were, in fact, teaching the subject area that was most suitable for them. Most teachers (82 percent) reported that they were teaching such subjects, and 94 percent held some type of certification in their main teaching field (table 5.5). In both public and private sectors, most teachers reported that their main assignment was the one in which they were best qualified to teach. However, a large proportion of public and private sector teachers with other assignments did not feel that they were teaching in a field for which they were best or second best qualified.

Although differences were apparent across sectors in the extent to which teachers were teaching the subjects that they were most qualified to teach, these differences may reflect the fact that not all teachers in private schools are subject to compulsory, state-mandated certification requirements, or, if they are, the certification requirements may be less than those required in the public schools of that state. Among public school teachers, 97 percent reported that they were certified in their main teaching field, compared with 68 percent of private school teachers. At the same time, 82 percent of public school teachers reported that they were teaching in the area in which they were best qualified, as were 76 percent of private school teachers.[37] It is interesting to note that such a large proportion of private school teachers

[37]No doubt there are many reasons why private school teachers attain certification: Some may teach in private schools that do require certification; some may receive higher salaries if they are certified; some may have taught in public schools (where certification was required); others may want to teach in the public schools sometime in the future, and have left that option open by becoming certified; and some teachers may have achieved certification without knowing where they would be employed (that is, in a public or a private school).

Table 5.3—Percentage distribution of private school teachers by highest degree earned, by private school type: 1987–88

	No degree	AA	BA/BS	MA/MS	Ed. Spec.	First prof.	PhD
TOTAL	2.9	1.5	62.5	28.6	2.9	0.2	1.4
Private school type							
Religious	3.2	1.5	65.3	26.3	2.5	0.3	0.8
Nonsectarian	1.6	1.5	51.2	37.7	4.4	0.1	3.5
Private school category							
Assembly of God	12.2	2.1	73.8	10.3	—	0.0	0.0
Baptist	5.4	7.4	70.7	15.6	0.8	0.0	0.0
Calvinist	—	—	69.3	29.6	—	0.0	0.0
Christian	4.1	1.2	67.6	21.4	3.1	—	2.4
Episcopal	0.7	—	53.8	38.0	5.3	—	1.8
Friends	—	0.0	57.2	35.5	2.3	—	3.6
Jewish	—	3.6	50.5	36.2	5.4	1.3	2.0
Lutheran	4.2	1.0	72.7	20.7	1.3	—	0.0
7th Day Adventist	1.4	—	46.7	46.4	4.1	0.0	—
Roman Catholic	1.6	0.7	66.4	27.9	2.4	0.3	0.8
Other: Religious	12.8	3.6	59.1	20.5	3.5	0.0	0.4
Exceptional children	0.0	—	46.7	47.5	2.2	0.0	3.4
Montessori	3.5	6.4	66.3	19.4	3.8	—	—
Nat. Ass. of Indep. Schools	1.7	0.3	44.4	45.0	2.4	0.0	6.2
Other: Nonsectarian	1.5	2.0	55.7	32.7	6.3	—	1.5
9-Category typology							
Catholic							
-Parochial	2.0	0.9	72.6	21.7	2.1	0.2	0.5
-Diocesan	1.0	—	62.9	33.2	2.0	—	0.5
-Private order	—	0.3	49.2	42.4	4.3	—	2.2
Other Religious							
-Conservative Christian	6.7	3.9	69.3	18.2	1.9	—	0.0
-Affiliated	2.4	1.0	61.5	30.5	3.2	0.3	0.9
-Unaffiliated	10.8	4.8	60.0	19.5	3.0	—	1.9
Nonsectarian							
-Regular	1.4	1.6	48.9	40.2	3.4	0.0	4.5
-Special emphasis	2.6	1.6	52.9	34.0	6.5	—	2.3
-Special education	0.0	0.5	59.0	34.3	3.8	—	1.6
NAIS membership status							
Not Nat. Ass. of Indep. Schl.	3.1	1.7	65.0	26.3	2.9	0.3	0.7
Nat. Ass. of Indep. Schools	1.6	0.2	46.4	43.5	3.0	—	5.3

—Too few sample cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 5.4—Percentage distribution of 1985–86 bachelor's degree recipients by college grade-point average, by whether or not they were newly qualified teachers: 1987

	Grade-point average				No graded courses
	3.25 to 4.00	2.25 to 3.24	1.25 to 2.24	Less than 1.25	
TOTAL	42.7	54.3	2.9	—	0.1
Newly qualified teachers	47.8	50.5	1.7	—	—
Other bachelor's degree	42.0	54.8	3.1	—	0.1

—Too few cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987 Survey of 1985–86 College Graduates.

Table 5.5—Percentage distribution of teachers by self-reported qualifications in their main or other teaching assignment fields and percentage of teachers certified in their main or other assignment fields, by sector and assignment field: 1987–88

	Best qualified	Second best qualified	Neither first nor second best qualified	Certified in assignment
TOTAL	81.7	5.3	13.0	93.9
PUBLIC	82.4	5.1	12.5	97.4
Main assignment				
Kindergarten	71.7	5.2	23.0	98.4
General elementary	84.3	2.4	13.3	98.9
Math/science	75.3	10.4	14.3	94.3
English/language arts	82.7	7.4	9.8	96.6
Social studies	87.7	5.9	6.4	97.4
Special education	76.0	7.0	17.0	97.2
Bilingual/ESL	57.3	12.6	30.2	87.6
Vocational education	87.6	4.4	8.0	97.6
Other	88.1	3.3	8.6	97.7
Other assignment				
Kindergarten	19.0	22.8	58.1	57.4
General elementary	31.8	40.2	28.0	65.2
Math/science	14.6	42.6	42.8	63.8
English/language arts	17.0	36.1	46.8	66.0
Social studies	20.1	43.1	36.8	68.2
Special education	14.5	31.7	53.8	71.1
Bilingual/ESL	14.2	29.7	56.1	51.4
Vocational education	17.6	31.3	51.1	65.2
Other	18.6	36.6	44.7	64.3
PRIVATE	75.9	6.8	17.3	68.1
Main assignment				
Kindergarten	67.7	7.8	24.5	71.7
General elementary	73.8	3.2	23.0	75.9
Math/science	69.6	13.3	17.1	63.7
English/language arts	79.0	11.4	9.6	63.0
Social studies	85.0	6.5	8.4	67.6
Special education	70.8	11.2	18.0	79.0
Bilingual/ESL	—	—	—	—
Vocational education	—	—	—	—
Other	83.4	4.8	11.8	59.0
Other assignment				
Kindergarten	24.8	26.8	48.4	35.2
General elementary	15.0	40.9	44.0	31.7
Math/science	14.7	37.8	47.4	33.5
English/language arts	21.9	37.5	40.6	34.1
Social studies	23.2	38.1	38.7	42.6
Special education	30.7	32.1	37.2	49.6
Bilingual/ESL	—	—	—	—
Vocational education	—	—	—	—
Other	13.8	36.0	50.2	27.8

—Too few cases for a reliable estimate.
NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

have been certified, even though this is not always a requirement of the states. Further, it is important to recognize that private school teachers who are not certified may be as well qualified to teach as those who are certified. Certification status does not assure skill in the classroom; it only signifies completing specified state requirements and attaining a certificate enabling one to teach in public schools.

Public and private school teachers differed in terms of their main field of certification. For instance, in public schools, 99 percent of teachers with main assignments in general elementary said that they were certified in that field, compared with 76 percent of private school teachers. Among those with main assignments in math/science, 94 percent of public school teachers reported that they were certified in that subject area, as opposed to 64 percent of private school teachers. Moreover, 97 percent of public school teachers with main assignments in English/language arts said that they were certified in that field, in comparison with 63 percent of private school teachers. Table 5.6 reports the percentage distribution of public school teachers by certification in main assignment field by state.

EXPERIENCE

41 percent of teachers had taught between 10 and 19 years, and 26 percent had taught 20 years or more.

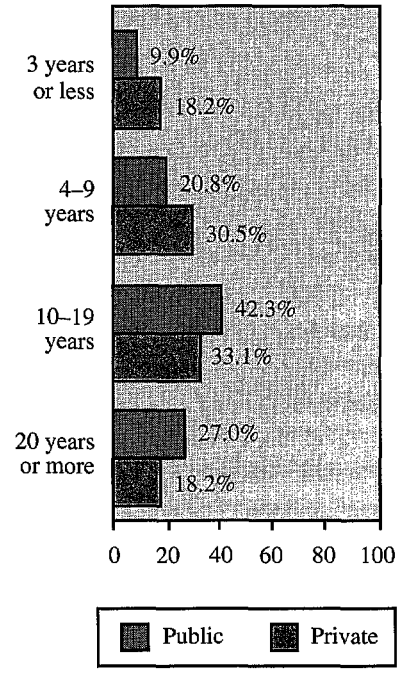
American teachers have considerable classroom experience, as shown in figure 5.2 and table 5.7. In 1987–88, public school teachers averaged 14.5 years of teaching experience, while private school teachers averaged 12 years. Most teachers had taught for more than 10 years. For example, 41 percent had taught between 10 and 19 years, and 26 percent had taught 20 years or more. Most teachers (77 percent) reported that they had always taught full time (table 5.7).

Public school teachers, both elementary and secondary, tended to be more experienced, to have taught at least 10 years, and to have always taught full time, compared with their private school counterparts. This is not surprising given the fact that private school teachers tend to be younger than public school teachers, as was noted in Chapter 2.

In the public schools, there were differences in employment status and in teaching experience between males and females. Male teachers were more likely than female teachers to have always worked full time. On average, female teachers had taught for fewer years than male teachers (about 14 years compared with 16 years). Female teachers were more likely than male teachers to have taught for 3 years or less (11 percent compared with 8 percent), and were less likely to have taught 20 years or more (24 percent compared with 35 percent).

Public school teachers were also more likely than their private school counterparts to have had additional training in the last 2 years (table 5.8).

Figure 5.2—Percentage distribution of teachers by total number of years taught, by sector: 1987–88



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 5.6—Percentage distribution of public school teachers by type of certification in main assignment field, by state: 1987–88

	Regular	Probationary	Temporary	None
TOTAL	88.7	2.9	5.2	3.2
Alabama	94.3	2.0	2.0	1.7
Alaska	90.6	0.0	—	8.7
Arizona	86.7	3.0	6.1	4.2
Arkansas	93.1	1.2	3.5	2.2
California	86.2	3.5	6.6	3.8
Colorado	91.4	2.3	2.8	3.5
Connecticut	77.1	6.7	14.3	1.9
Delaware	89.7	3.1	3.2	4.0
Dist. of Columbia	72.8	12.5	5.4	9.3
Florida	82.7	4.5	6.3	6.5
Georgia	88.9	3.4	5.7	2.0
Hawaii	84.9	6.9	2.3	5.9
Idaho	93.7	0.7	4.2	1.4
Illinois	86.8	1.2	6.6	5.4
Indiana	93.3	1.0	4.1	1.6
Iowa	93.8	1.4	3.2	1.6
Kansas	96.2	—	2.1	1.5
Kentucky	89.0	1.8	8.1	1.1
Louisiana	88.7	1.9	4.3	5.1
Maine	83.3	5.9	7.8	2.9
Maryland	90.4	3.4	3.7	2.4
Massachusetts	91.1	—	3.1	5.7
Michigan	86.8	3.4	7.3	2.5
Minnesota	91.8	3.8	2.8	1.6
Mississippi	93.6	1.5	3.9	0.9
Missouri	95.6	0.4	2.6	1.4
Montana	91.4	4.5	2.8	1.3
Nebraska	89.5	7.5	1.1	1.8
Nevada	87.8	3.2	4.6	4.4
New Hampshire	89.3	3.0	2.7	5.0
New Jersey	95.4	—	1.6	2.8
New Mexico	92.0	—	3.8	3.6
New York	81.2	4.9	8.6	5.3
North Carolina	87.8	6.0	3.5	2.6
North Dakota	96.2	2.1	0.8	0.9
Ohio	89.0	1.2	8.7	1.1
Oklahoma	92.7	1.1	3.8	2.4
Oregon	88.9	5.6	3.4	2.1
Pennsylvania	91.1	3.3	3.7	1.9
Rhode Island	91.0	2.8	4.1	2.1
South Carolina	92.3	—	2.9	4.7
South Dakota	96.6	1.6	1.0	0.8
Tennessee	86.2	6.5	4.6	2.7
Texas	88.0	2.2	6.1	3.7
Utah	91.8	1.9	4.0	2.3

Table 5.6—Percentage distribution of public school teachers by type of certification in main assignment field, by state: 1987–88—Continued

	Regular	Probationary	Temporary	None
Vermont	86.4	10.8	1.4	1.4
Virginia	87.4	4.1	4.0	4.5
Washington	88.0	5.5	4.2	2.4
West Virginia	86.3	4.2	7.2	2.4
Wisconsin	93.9	1.6	4.0	0.5
Wyoming	94.6	1.1	3.1	1.2

—Too few cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 5.7—Percentage of teachers who had taught full time, part time, or both; average number of years taught; and percentage distribution of teachers by total number of years taught, by sector and selected teacher characteristics: 1987–88

	Percent always full time	Percent always part time	Percent both full time and part time	Average number of years taught	Percent of teachers by total number of years taught			
					3 or less years	4 to 9 years	10 to 19 years	20 years or more
TOTAL	77.2	1.2	21.6	14.2	10.8	21.9	41.2	26.0
PUBLIC	78.8	0.8	20.4	14.5	9.9	20.8	42.3	27.0
Teaching level								
Elementary	77.2	0.7	22.2	14.2	10.4	21.6	42.6	25.3
Secondary	80.5	0.9	18.6	14.9	9.3	20.0	41.9	28.8
Sex								
Male	88.1	0.4	11.5	16.3	8.3	16.2	40.5	35.0
Female	74.9	0.9	24.2	13.8	10.6	22.8	43.0	23.7
Race–ethnicity								
Black, non-Hispanic	87.5	0.6	11.9	16.1	7.5	16.4	43.1	33.0
White, non-Hispanic	77.7	0.8	21.5	14.4	9.9	21.2	42.3	26.5
Other	82.0	0.7	17.3	13.3	13.6	23.1	40.7	22.7
Marital status								
Married	77.9	0.8	21.3	14.8	7.8	20.4	44.7	27.1
Not married	81.0	0.7	18.2	13.8	15.6	22.0	35.6	26.8
Dependents (other than spouse)								
None	81.4	0.8	17.8	14.7	15.5	21.3	30.9	32.3
One or more	77.0	0.7	22.2	14.5	6.0	20.5	50.2	23.4
PRIVATE	65.1	4.6	30.2	12.0	18.2	30.5	33.1	18.2
Teaching level								
Elementary	67.0	3.6	29.4	11.3	19.0	32.7	32.5	15.9
Secondary	63.0	5.8	31.1	12.7	17.3	28.2	33.7	20.8

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Overall, 35 percent of public school teachers had more than 30 hours of additional training in the last 2 years, compared with 27 percent of teachers in private school. Teachers who were newer to the profession were more likely to have had recent inservice training of 30 hours or more, perhaps reflecting new credentialing and advancement requirements, but possibly also because new teachers want to reach higher levels of the salary scale, which requires additional education. Among public school teachers with 1 to 2 years of experience, 50 percent had more than 30 additional hours of training, in contrast with 25 percent of those with more than 20 years of experience. Further, in general, teaching experience was related to degree attainment. In both the public and private sectors, teachers with 5 or more years of experience were more likely to have a master's degree or more than were teachers with less than 5 years of experience.

How do American teachers compare with teachers from other countries in terms of their teaching experience? One survey conducted in the early 1980s—the Second International Mathematics Study (SIMS)—enables comparisons across 15 countries of students' teachers in their last year of high school. The mean years of teaching experience for teachers sampled from the United States was 17 years. This equaled or exceeded experience levels among teachers from all but one country participating in the survey (table 5.9). Similarly, across this survey sample, American teachers compared favorably with teachers from other countries in terms of the number of years they had taught mathematics to high school students.

Table 5.8—Percentage of teachers with various levels of certification, education, and training, by sector and number of years of teaching experience: 1987–88

	Public			Private		
	Certification in main assignment	Master's degree or more	30 hours or more of inservice training in past 2 years	Certification in main assignment	Master's degree or more	30 hours or more of inservice training in past 2 years
TOTAL	97.4	47.3	34.7	67.8	34.4	26.9
Years of teaching experience						
1–2	93.8	12.0	50.4	51.5	12.8	38.0
3–4	96.0	18.3	40.6	58.6	17.8	29.2
5–10	97.3	37.2	39.2	68.2	30.2	28.5
11–15	97.9	52.1	35.9	73.8	41.2	25.2
16–20	98.0	59.7	32.1	75.6	47.0	22.0
More than 20	97.7	60.0	25.4	74.1	53.8	19.4

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 5.9—Average years of teaching experience and average years teaching mathematics at current level for secondary school mathematics teachers[1] in 20 countries: 1980–82

	Number of years teaching	Number of years teaching mathematics at current level
Belgium (Flemish)	15	11
Belgium (French)	15	10
Canada (British Columbia)	17	11
Canada (Ontario)	16	11
England and Wales	14	12
Finland	15	11
Hong Kong	9	6
Hungary	16	10
Israel	17	12
Japan	17	9
New Zealand	13	7
Scotland	14	[2](*)
Sweden	18	8
Thailand	10	6
United States	17	10

[1]These data were obtained from teachers of Population B students. The universe from which the "Population B" sample was drawn was defined as "all students who are in the normally accepted terminal grade of the secondary education system and who are studying mathematics as a substantial part of their academic program."

[2]This item omitted in Scotland.

SOURCE: K.J. Travers, R.A. Garden, & M. Raier, "Introduction to the Study," in D.F. Robitaille and R.A. Garden (Eds.), *The IEA Study of Mathematics II: Contexts and Outcomes of School Mathematics* (Oxford: Pergamon Press, 1989, 43).

CHAPTER 6 • HUMAN AND FISCAL RESOURCES

This chapter describes how schools use the human and fiscal resources available to them. Decisions around human and fiscal resources

> . . . have significant implications for the types of learning environments offered to students and for working conditions experienced by instructional personnel. . . . [A]lternative staffing arrangements are related to many current high-priority issues of school policy. . . such as how to attract and hold outstanding teachers . . . [and] how to upgrade student learning of higher order skills throughout the curriculum and ensure the learning success of all students.[38]

Four measures related to the deployment of resources are discussed in this chapter: teacher staffing patterns and assignments, teacher work loads, how teachers spend their time inside and outside of the classroom, and expenditures on students. These measures indicate how scarce resources are allocated in schools, and they provide a perspective on how the school work environment is organized. Under any circumstances, resource allocation issues will be central to school policy debates in the 1990s as policymakers and educators at state and local levels look for ways of responding to reform mandates focused on improving the quality of the teaching force and enhancing classroom instructional standards.

CURRENT EMPLOYMENT STATUS

90 percent of public school teachers and 84 percent of private school teachers were employed full time as teachers.

Teaching is full-time work in American schools. The Schools and Staffing Survey (SASS) found that 90 percent of all teachers held full-time assignments in 1987–88. Another 5 percent worked as teachers half time or more, but not full time, and just 1 percent worked as teachers less than half time (table 6.1). Public school teachers were more likely to be teaching full time than were their private school counterparts. Additional information related to teachers' employment status may be found in Chapter 2 (number of FTE teachers) and Chapter 5 (teachers' experience as full- and part-time teachers).

Not all teachers who were employed full time in schools had full-time classroom responsibilities (table 6.2). Among those who worked full time, but only taught part time, 34 percent were resource persons for other teachers (for example, department heads and curriculum coordinators), 21 percent were administrators (for example, principals and assistant principals), and 8 percent were nonteaching specialists (for example, counselors and librarians). Gender differences were apparent. Among public sector teachers, males were more likely than females to be administrators or coaches, and females were more likely than males to be resource persons. Teachers with a master's degree or more were more likely than those with a bachelor's degree or less to be resource persons.

ASSIGNMENTS

Staffing patterns influence and reflect, among other things, teacher supply and demand, school personnel policies, class configurations and size, and teacher satisfaction on the job. Figure 6.1 and table 6.3 show teachers' main assignments. Across the entire teaching work force, more than one-third of the teachers were assigned to kindergarten and general elementary positions, 13 percent were assigned to positions in mathematics or science, 10 percent in English or language arts, 10 percent in special education, and 6 percent in social sciences.

[38]James M. McPartland and Ralph Fessler, "Staffing Patterns," in Marvin C. Alkin, ed., *Encyclopedia of Educational Research, Vol. 4* (New York: Macmillan, 1992), 1,252.

Table 6.1—Percentage distribution of teachers by whether they were full time, part time, itinerant, or long-term substitutes, by sector and selected teacher characteristics: 1987–88

		Regular part time			
	Regular full time	50% or more and less than full time	Less than 50%	Itinerant*	Long-term substitute*
TOTAL	89.5	4.5	1.2	4.4	0.4
PUBLIC	90.3	3.6	0.8	4.9	0.5
Teaching level					
Elementary	89.3	3.2	0.6	6.4	0.6
Secondary	91.3	4.0	1.0	3.3	0.4
Sex					
Male	91.5	2.7	1.0	4.4	0.3
Female	89.8	3.9	0.7	5.0	0.5
Age					
Under 30 years	89.0	3.4	0.8	6.0	0.9
30–39 years	89.2	4.1	0.8	5.4	0.5
40–49 years	90.9	3.6	0.8	4.3	0.5
50 years or over	92.4	2.7	0.8	3.9	0.2
Highest degree earned					
BA/BS or less	90.4	3.7	0.8	4.5	0.6
MA/MS or more	90.2	3.4	0.8	5.3	0.3
Years of teaching experience					
Beginning	87.3	4.4	1.1	4.9	2.3
Experienced	90.6	3.5	0.8	4.9	0.3
Marital status					
Married	89.9	4.1	0.8	4.9	0.4
Not married	91.4	2.2	0.8	4.9	0.7
Dependents (other than spouse)					
None	91.1	2.7	0.7	5.0	0.5
One or more	89.8	4.2	0.8	4.8	0.4
PRIVATE	83.8	11.4	3.9	0.8	0.1
Teaching level					
Elementary	88.5	8.6	2.0	0.8	0.1
Secondary	78.6	14.4	6.0	0.9	0.1

*Itinerant and long-term substitutes may be full or part time.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 6.2—Percentage distribution of part-time teachers who were full-time school employees by their other school assignment,* by sector and selected teacher characteristics: 1987–88

	Administrator	Nonteaching specialist	Resource person	Support staff	Coach	Other
TOTAL	20.9	8.3	33.8	0.9	7.3	28.8
PUBLIC	16.2	8.5	35.4	0.8	7.4	31.7
Teaching level						
Elementary	4.2	5.1	43.3	—	6.2	40.4
Secondary	22.5	10.3	31.3	0.7	8.0	27.2
Sex						
Male	23.2	7.0	24.7	0.9	13.6	30.6
Female	9.5	10.0	45.6	0.7	1.8	32.5
Highest degree earned						
BA/BS or less	11.2	5.5	18.8	1.9	16.8	45.9
MA/MS or more	18.6	10.0	43.4	—	2.8	24.9
PRIVATE	40.6	7.4	26.9	1.7	7.1	16.3

—Too few cases for a reliable estimate.

*Teachers could mark only one.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

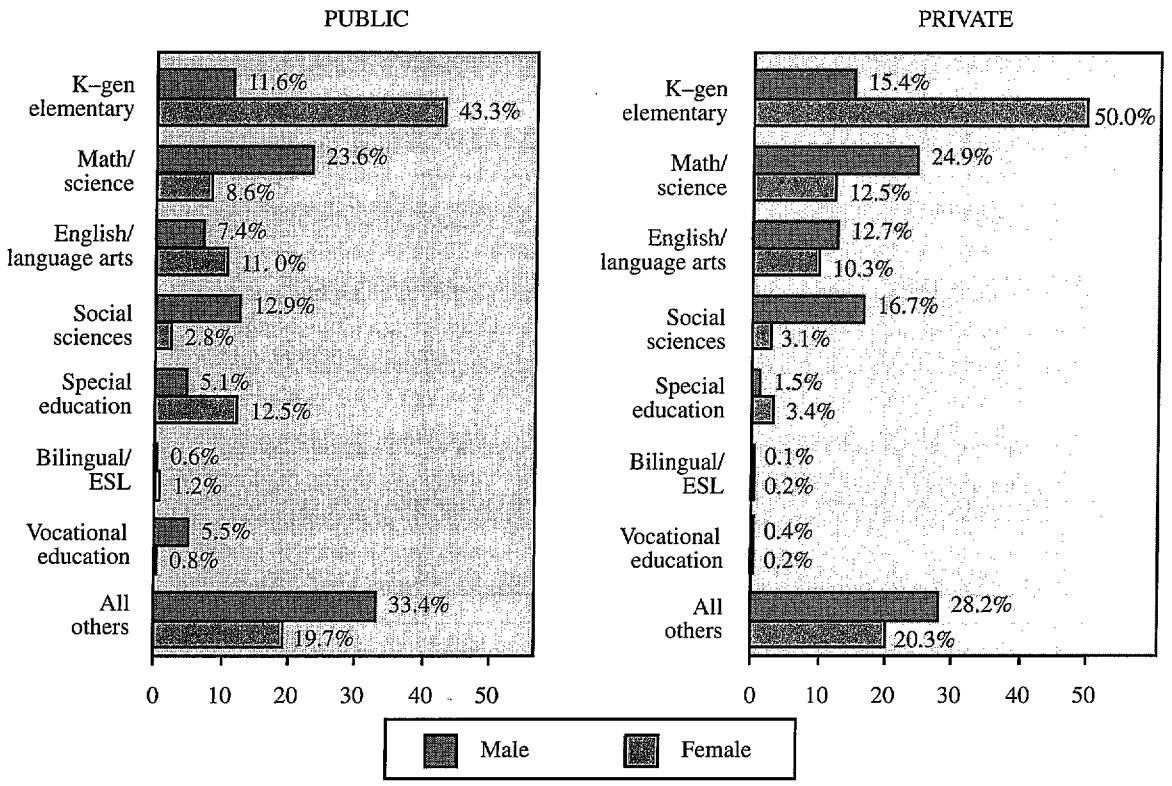
Teacher assignments were associated with gender. In the public and private sector, females were more likely to teach kindergarten or general elementary, and males were more likely to teach mathematics, science, or social sciences.

Among public school teachers, females were more likely than males to be teaching kindergarten and general elementary and English or language arts, while males were more likely to be teaching mathematics or science and social sciences. Among private school teachers, females were also more likely than males to be teaching kindergarten and general elementary, and males were more likely to be teaching mathematics or science and social sciences.

The academic degrees that teachers had earned were also associated with their teaching assignments. In both public and private schools, teachers with a bachelor's degree or less were more likely to be teaching kindergarten or elementary than were those with a master's degree or more. Further, teachers with a master's degree or more were more likely to be teaching mathematics or science and English or language arts than were those with a bachelor's degree or less. Chapter 4 discusses an important related issue—the match between teachers' college majors and their teaching field.

Gifted education represents a special category of classroom instruction. The National Education Longitudinal Study of 1988 (NELS:88), which surveyed exclusively eighth-grade students and their teachers, found that 16 percent of eighth graders had mathematics teachers who reported teaching gifted students. Twelve percent of eighth graders' science teachers, 13 percent of their English teachers, and 12 percent of their social studies teachers reported the same (table 6.4). In each subject area,

Figure 6.1—Percentage distribution of teachers by main assignment field, by sector and gender: 1987–88



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

eighth-grade public school students were more likely than their private school counterparts to have had a teacher who provided instruction for the gifted.

The SASS data help to describe the stability of teachers' assignments (table 6.5). In the survey, teachers were asked about both their current and previous assignments. Over the course of their teaching careers, it was found that some teachers' assignments remained the same, while others changed fields one or more times. As noted in Chapter 3, school districts and administrators often adjust teaching assignments in response to staffing vacancies and shortages. Such shifts may affect the quality of classroom instruction, teacher morale, and professional commitment. Overall, 71 percent of teachers surveyed in 1987–88 reported that they had never had a change of field, but there was quite a range in the amount of change across fields. In the public sector, while 81 percent of general elementary and vocational education teachers had never had a change in assignment, only 48 percent of bilingual/English as a second language teachers and 46 percent of kindergarten teachers had never changed fields. In the private sector, 82 percent of general elementary teachers had never had a change in assignment, as compared with kindergarten teachers, of whom only 49 percent had never changed fields.

Teaching Load

There is considerable interest among both policymakers and practitioners in the nature of the teaching day. Issues of class size, contact time with stu-

Table 6.3—Percentage distribution of teachers by main assignment field, by sector and selected teacher characteristics: 1987–88

	K–general elementary	Math/ science	English/ language arts	Social sciences	Special education	Bilingual/ ESL education	Vocational education	All others
TOTAL	35.0	13.3	10.1	5.8	9.5	0.9	1.9	23.6
PUBLIC	34.0	13.0	10.0	5.8	10.3	1.0	2.2	23.8
Teaching level								
Elementary	66.8	2.5	3.8	0.7	12.5	1.3	0.0	12.4
Secondary	0.0	23.9	16.4	11.0	8.1	0.8	4.4	35.6
Sex								
Male	11.6	23.6	7.4	12.9	5.1	0.6	5.5	33.4
Female	43.3	8.6	11.0	2.8	12.5	1.2	0.8	19.7
Race–ethnicity								
Black, non-Hispanic	37.7	12.2	9.2	4.6	11.9	0.7	1.8	21.9
White, non-Hispanic	33.7	13.3	10.2	5.9	10.3	0.6	2.2	24.0
Other	34.8	11.1	7.5	5.3	9.2	9.0	1.6	21.5
Highest degree earned								
BA/BS or less	39.3	11.8	8.7	4.9	8.6	1.0	2.6	23.1
MA/MS or more	28.1	14.4	11.4	6.7	12.2	1.1	1.6	24.5
PRIVATE	42.4	15.2	10.8	6.0	3.0	0.2	0.2	22.1
Teaching level								
Elementary	81.4	2.9	3.1	0.7	4.1	0.2	0.0	7.6
Secondary	—	28.6	19.2	11.8	1.8	0.2	0.5	37.8
Sex								
Male	15.4	24.9	12.7	16.7	1.5	0.1	0.4	28.2
Female	50.0	12.5	10.3	3.1	3.4	0.2	0.2	20.3
Race–ethnicity								
Black, non-Hispanic	61.4	12.0	3.7	5.0	4.2	0.0	0.0	13.7
White, non-Hispanic	42.6	15.0	11.2	6.0	3.1	0.1	0.2	21.8
Other	33.3	19.9	6.2	7.7	—	—	—	30.2
Highest degree earned								
BA/BS or less	50.9	12.8	7.9	5.3	2.7	0.2	0.2	20.1
MA/MS or more	26.4	19.9	16.3	7.5	3.6	0.1	—	25.9

—Too few cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 6.4a—Percentage of eighth-grade students whose teachers provided instruction for the gifted, and the percentage of those teachers who received any education for teaching the gifted, by teaching field, sector, and public school region: 1988

	Math			Science		
	Teach gifted	Gifted education		Teach gifted	Gifted education	
		Yes	No		Yes	No
TOTAL	16.3	48.4	51.5	11.6	70.8	29.2
PUBLIC	17.7	49.8	50.0	12.4	70.8	29.2
Region						
Northeast	20.5	38.5	61.5	10.5	55.3	44.7
Midwest	19.1	50.4	49.0	11.0	75.8	24.2
South	13.8	56.9	43.1	9.9	70.5	29.5
West	21.5	50.5	49.5	20.8	74.8	25.2
PRIVATE	5.5	12.4	87.6	6.0	70.7	29.3

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, "Eighth Grade Student and Teacher Questionnaires."

Table 6.4b—Percentage of eighth-grade students whose teachers provided instruction for the gifted, and the percentage of those teachers who received any education for teaching the gifted, by teaching field, sector, and public school region: 1988

	English			Social studies		
	Teach gifted	Gifted education		Teach gifted	Gifted education	
		Yes	No		Yes	No
TOTAL	13.4	82.2	18.8	12.3	72.2	27.8
PUBLIC	14.8	82.9	18.1	13.0	71.9	28.1
Region						
Northeast	14.6	64.3	35.7	16.0	52.4	47.6
Midwest	14.7	83.7	16.3	8.6	65.0	35.0
South	13.3	89.8	13.0	12.1	79.3	20.7
West	18.1	85.6	14.4	17.7	83.0	17.0
PRIVATE	4.6	66.4	33.6	6.0	78.0	22.0

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, "Eighth Grade Student and Teacher Questionnaires."

Table 6.5—Percentage of teachers who had not changed assignment field, and percentage distribution of teachers who had changed assignment field by their previous assignment field, by sector and current assignment field: 1987–88

	No change in assignment field	Teachers' previous assignment field								
		Kindergarten	General elementary	Math/science	English/language arts	Social studies	Special education	Bilingual/ESL	Vocational education	All others
TOTAL	71.3	1.9	8.9	3.7	3.3	1.6	3.2	0.3	0.2	5.6
PUBLIC	71.0	1.9	8.9	3.8	3.3	1.6	3.4	0.3	0.2	5.6
Main assignment										
Kindergarten	46.4	0.0	40.6	0.9	1.8	—	2.7	0.4	0.0	6.9
General elementary	81.2	5.1	0.0	1.7	3.0	0.7	3.1	0.3	0.0	4.8
Math/science	62.9	0.3	9.5	14.5	2.7	2.1	0.8	0.2	0.4	6.7
English/language arts	62.1	0.7	17.5	2.1	4.5	4.1	1.2	0.4	0.0	7.3
Social studies	68.4	0.4	8.0	4.4	7.0	0.0	1.3	0.2	0.2	10.1
Special education	54.5	1.0	15.7	1.2	2.6	2.0	17.4	0.3	0.3	5.1
Bilingual/ESL	48.0	1.1	24.9	0.6	5.5	1.5	1.1	3.1	0.0	14.2
Vocational education	81.3	0.0	1.0	2.9	1.0	2.1	0.9	—	0.0	10.7
Other	78.9	0.6	7.6	2.9	3.3	1.8	0.9	0.4	0.3	3.3
PRIVATE	73.1	1.9	8.8	3.4	3.2	2.0	1.9	0.2	0.0	5.5
Main assignment										
Kindergarten	49.2	0.0	32.7	0.6	1.9	1.4	2.2	0.0	0.0	12.1
General elementary	81.8	4.4	0.0	1.5	2.9	0.7	2.6	—	0.1	6.0
Math/science	64.6	0.2	10.4	12.4	4.0	3.4	0.7	—	—	4.0
English/language arts	67.3	0.5	16.1	1.9	1.6	4.2	1.5	—	0.0	6.8
Social studies	70.9	0.0	13.6	3.2	5.7	0.0	1.1	—	0.0	5.1
Special education	58.9	3.5	19.1	1.1	3.3	2.6	9.4	0.0	0.0	2.1
Bilingual/ESL	—	—	—	—	—	—	—	—	—	—
Vocational education	—	—	—	—	—	—	—	—	—	—
Other	77.4	0.5	9.0	2.1	3.7	2.7	0.7	0.4	—	3.5

—Too few cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

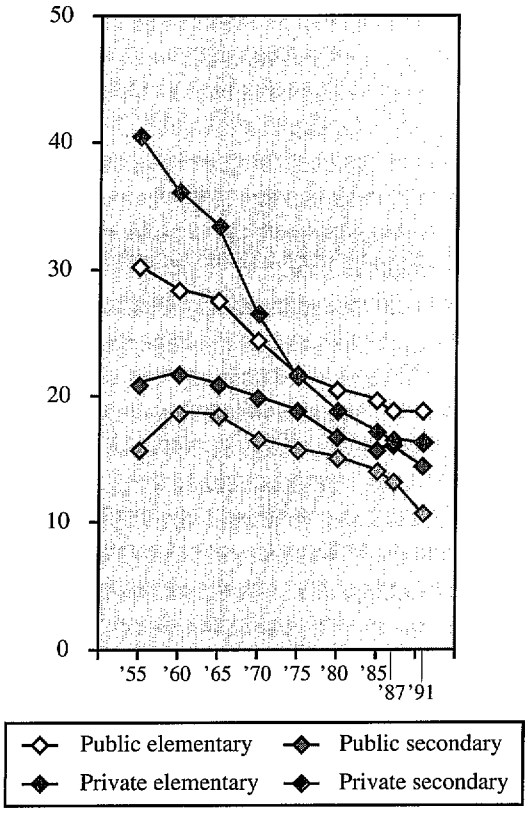
dents, and so forth are viewed as essential indicators of the quality of the learning experience for students. Without question, the amount of time teachers spend in the classroom also determines the amount of time available within the professional day for planning and thinking through instructional activities. If the day is completely filled with in-class responsibilities, little opportunity exists for lesson preparation and other activities that can improve teaching capabilities.[39]

One measure of teacher work load is the pupil/teacher ratio, which describes the relationship between the number of students enrolled in school and the number of full-time-equivalent instructional personnel available to teach these students. (This includes regular classroom teachers and those who do not have regular classroom assignments, but have teaching responsibilities for subjects such as music or special education.) Figure 6.2 and table 6.6 show that over a 35-year period (1955–91), pupil/teacher ratios declined considerably at elementary and secondary levels in both public and private schools.

The average public school class size was 25.0 in 1987–88; for private school, it was 21.7.

Class size is another measure of teacher work load, and the subject of considerable debate among practitioners and researchers. Many argue that students in smaller classes benefit from greater attention, which results in higher student achievement. There is, however, little empirical evidence to support this hypothesis. Literature reviews suggest that only very small classes (in which instruction is nearly one-to-one) produce significant differences in average student achievement. However, relatively modest changes in class size appear to improve teacher morale and, at least, provide teachers with opportunities for using instructional strategies associated with higher achievement.[40]

Figure 6.2—Pupil/teacher ratios, by sector and level: 1955–91, selected years



NOTE: Pupil/teacher ratios for 1991 are estimated.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics 1992* (Washington, D.C.: 1992), 73.

According to the 1987–88 SASS, average class size in the public and private sectors varied considerably (table 6.7). Overall, average class size for public school teachers was 25.0, while the average class

[39]For a discussion of this issue in Japan and Taiwan, in contrast to the United States, see Harold Stevenson et al., *Making the Grade in Mathematics* (Reston, VA: National Council of Teachers of Mathematics, 1990). This monograph, among others by the same authors, contrasts the nature of the teaching day in elementary schools in these three countries.

[40]For an overview, see U.S. Department of Education, *Programs for the Improvement of Practice, Class Size and Public Policy: Politics and Panaceas* (Washington, D.C.: March 1988). Other works defining class size issues include Allan Odden, "Class Size and Student Achievement: Research Based Policy Alternatives," *Education Evaluation and Policy Analysis* 12 (2) (Summer 1990): 213–27; G. Glass, L. Cahen, M.L. Smith, and N. Filby, *School Class Size* (Beverly Hills: Sage, 1982); and Robert E. Slavin, "Class Size and Student Achievement: Small Effects of Small Classes," *Educational Psychologist* 24 (1): 99–110.

Table 6.6—Pupil/teacher ratios, by sector and level: 1955–91, selected years

Year	Public and private schools			Public schools			Private schools		
	K–12	Elementary	Secondary	K–12	Elementary	Secondary	K–12	Elementary	Secondary
1955	27.4	31.4	20.3	26.9	30.2	20.9	[1]31.7	[1]40.4	[1]15.7
1960	26.4	29.4	21.4	25.8	28.4	21.7	[1]30.7	[1]36.1	18.6
1965	25.1	28.4	20.6	24.7	27.6	20.8	28.3	33.3	18.4
1970	22.4	24.6	19.6	22.3	24.4	19.9	23.0	26.5	16.4
1975	20.3	21.7	18.6	20.4	21.7	18.8	[1]19.6	[1]21.5	[1]15.7
1980	18.6	20.1	16.6	18.7	20.4	16.8	17.7	18.8	15.0
1985	17.6	19.2	15.5	17.9	19.6	15.7	16.2	17.1	14.0
1987	17.3	18.4	15.7	17.6	18.7	16.0	15.5	[1]16.4	[1]13.1
1991[1]	16.6	18.4	14.0	16.9	18.8	14.4	[1]14.6	[1]16.3	[1]10.7

[1]Estimated.

NOTE: Data for teachers are expressed in full-time equivalents; distribution of unclassified teachers by level is estimated; distribution of elementary and secondary school teachers by level is determined by reporting units. Kindergarten includes a relatively small number of nursery school teachers and students. Some data have been revised from previously published figures. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics 1992* (Washington, D.C: 1992), 73.

Table 6.7—Teachers' average class size, by sector and selected teacher characteristics: 1987–88

	Public	Private
TOTAL	25.0	21.7
Teaching level		
Elementary	25.3	21.7
Secondary	24.7	21.7
Teaching experience		
Beginning	23.8	20.6
Experienced	25.2	21.9
Main assignment		
Kindergarten	25.4	20.5
General elementary	24.7	21.7
Math/science	25.1	21.4
English/language arts	26.9	21.6
Social studies	26.9	22.4
Special education	16.6	11.0
Bilingual/ESL	26.0	—
Vocational education	21.8	—
Other	28.5	23.7

—Too few cases for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

size for private school teachers was 21.7. Similar differences between sectors were also found in elementary and secondary schools and in most class assignment fields. On average, beginning teachers in public schools were assigned to slightly smaller classes (23.8) than were experienced teachers (25.2). In both public and private schools, special education classes were small, averaging 16.6 in public schools, and 11.0 in private schools.

As with class size, differences between public and private schools were evident across a variety of time and student contact variables (table 6.8). On average, teachers in public schools taught more periods per day and taught more students, compared with their private school counterparts. New teachers (1 to 2 years of experience) in public schools taught more periods per day and more students than did new teachers in private schools. Among those with more than 20 years of teaching experience, teachers in public schools taught more periods per day than did private school teachers, but not significantly more students.

All teachers have school-related responsibilities in addition to classroom instruction. In the NELS:88 eighth-grade survey mentioned above, teachers were asked about the amount of time they spent preparing for teaching, correcting papers, doing other paperwork, communicating with parents, and performing other activities (table 6.9). By and large, eighth-grade mathematics, science, English, and social studies teachers in public and private schools spent about the same amount of time, on average, performing each type of task. Generally, they spent the most time preparing for class and correcting papers, somewhat less time on other paperwork and supervising students, and the least amount of time working with other teachers, coordinating curriculum, and communicating with parents. However, these activities, taken together, represent significant time commitments and cannot be viewed as simply peripheral to the teacher's role.

Comparisons of some teaching load and assignment issues across the 50 states are shown in table 6.10. When asked about class size, 36 percent of all teachers said that their classes were too large (varying from a low of 19 percent in one state to a high of 66 percent in another). Only 11 percent said that they spent less than 40 hours per week on their work, and 20 percent said that they were teaching subjects that they were not qualified to teach. State differences on each of these measures were substantial.

Table 6.8—Average number of subject areas taught, periods taught per day, and students taught per secondary school teacher teaching in a department, by sector and teacher experience: 1987–88

	Public			Private		
	Subject areas taught	Periods taught per day	Subject Students taught	Periods areas taught	taught per day	Students taught
TOTAL	3.8	5.1	111.3	3.8	4.5	98.1
Years of teaching experience						
1–2	3.7	4.9	107.8	3.8	4.3	93.2
3–4	3.8	5.1	107.1	3.6	4.6	93.2
5–10	3.8	5.0	109.8	4.0	4.5	99.8
11–15	3.8	5.1	111.3	3.8	4.6	95.0
16–20	3.9	5.1	114.5	3.8	4.8	96.0
more than 20	3.8	5.0	111.6	3.5	4.5	106.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Considerable research in recent years has focused on classroom and teaching responsibilities among samples of teachers from around the world. These comparisons offer a context within which to view the American teaching experience. One set of measures, which offers an opportunity to compare the ways in which different countries organize schools and the school day, is provided by the Second International Mathematics Study (SIMS), conducted in 1981–82 by the International Association for the Evaluation of Educational Achievement. As reported in that study (table 6.11), among the 15 countries and educational systems surveyed, only the Belgium system had fewer mean days of school than the United States, and 7 out of 15 entities had a higher mean class size than the United States. Teachers in only 4 of the 15 participating entities had a higher mean number of teaching hours per week.

EXPENDITURES FOR INSTRUCTION

Current expenditures per public elementary and secondary school student ranged from $2,690 to $8,737 in the 50 states and the District of Columbia.

Teachers are a basic element of the educational expenditure equation. Expenditures on elementary and secondary education, which includes spending on teachers, provide one way of describing the over-

Table 6.9—Average number of hours per week that teachers of eighth graders spent outside of school on various school-related activities, by subject and sector: 1988

	Plan and prepare for teaching	Correct papers	Other paper-work	Work with other teachers	Coor-dinate curriculum	Super-vise students	Coach or advise extra-curricular activities	Communi-cate with parents
				Mathematics				
TOTAL	2.5	2.6	1.5	0.8	0.4	1.3	1.2	0.8
Public	2.5	2.6	1.5	0.8	0.4	1.3	1.2	0.8
Private	3.1	3.2	1.5	0.7	0.4	1.3	1.1	1.1
				Science				
TOTAL	2.9	2.6	1.5	0.7	0.5	1.5	1.3	0.8
Public	2.8	2.5	1.5	0.8	0.5	1.5	1.3	0.8
Private	3.4	2.9	1.6	0.6	0.3	1.1	1.0	0.8
				English				
TOTAL	2.8	3.5	1.6	0.8	0.4	1.3	1.2	0.9
Public	2.7	3.5	1.6	0.8	0.4	1.3	1.1	0.9
Private	3.4	3.8	1.6	0.9	0.3	1.3	1.3	1.0
				Social studies				
TOTAL	2.9	2.8	1.5	0.8	0.5	1.5	1.5	0.8
Public	2.9	2.8	1.5	0.8	0.5	1.5	1.5	0.8
Private	3.3	3.0	1.5	0.8	0.6	1.3	1.0	0.9

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, "Eighth Grade Student and Teacher Questionnaires."

Table 6.10—Selected characteristics of public school teachers' current teaching assignments,[1] by state: 1987

		Percent of teachers									
	Average number of students per class	Number of students per typical class			Feelings about most typical class size			Average number of hours per week spent on job[2]			Teaching subjects unqualified to teach
		19 or less	20 to 29	30 or more	Too large	About right	Too small	Less than 40	40 to 59	60 or more	
TOTAL	23	20	64	16	36	62	1	11	78	11	20
Alabama	26	10	61	28	38	61	1	10	83	7	20
Alaska	21	33	60	7	25	74	2	6	80	15	29
Arizona	25	15	65	21	43	56	2	7	82	11	25
Arkansas	22	24	68	7	29	71	1	8	82	11	20
California	28	7	38	55	66	33	2	8	75	16	28
Colorado	23	21	69	11	31	67	2	9	78	13	23
Connecticut	20	40	60	0	26	74	0	21	72	7	15
Delaware	23	20	72	9	37	63	0	10	78	11	13
Florida	26	12	58	31	49	50	1	10	82	8	16
Georgia	25	11	74	16	37	63	1	6	80	14	24
Hawaii	26	12	61	28	55	44	1	14	72	14	29
Idaho	24	15	67	18	38	59	2	6	81	12	22
Illinois	23	24	59	16	31	67	2	10	76	14	18
Indiana	23	21	69	8	35	65	0	9	78	13	19
Iowa	21	36	58	7	20	79	1	7	78	15	18
Kansas	20	42	53	5	20	77	3	9	78	12	16
Kentucky	24	14	72	15	37	62	1	15	77	8	25
Louisiana	24	16	71	13	34	64	1	17	72	10	20
Maine	20	29	71	1	28	70	3	8	80	12	17
Maryland	25	11	66	23	41	59	1	7	79	15	20
Massachusetts	21	28	67	4	27	71	2	20	73	7	18
Michigan	25	11	66	22	47	52	1	14	79	7	22
Minnesota	25	13	69	18	44	55	1	8	81	11	25
Mississippi	24	12	71	17	32	66	2	10	81	9	17
Missouri	22	24	66	19	32	67	1	10	78	11	15
Montana	20	36	61	3	24	72	4	6	84	10	14
Nebraska	20	40	53	6	21	74	5	7	78	15	18
Nevada	26	13	61	27	48	50	2	13	76	11	20
New Hampshire	21	32	65	3	26	73	1	8	80	11	12
New Jersey	20	35	60	4	25	74	1	23	72	6	20
New Mexico	23	19	72	9	32	66	2	12	76	12	21
New York	22	23	69	8	31	67	2	19	72	9	14
North Carolina	25	7	83	10	47	53	1	5	82	13	20
North Dakota	19	45	51	4	19	74	7	9	78	13	18
Ohio	24	18	76	6	34	65	1	12	78	10	20
Oklahoma	21	34	59	6	25	72	3	10	77	13	21
Oregon	23	19	75	6	33	65	2	6	78	16	20
Pennsylvania	23	18	73	9	38	62	0	14	81	5	15
Rhode Island	22	20	78	2	33	66	0	28	70	2	16
South Carolina	23	20	73	6	29	70	2	11	80	9	17
South Dakota	19	42	55	3	20	77	3	8	77	15	21
Tennessee	25	12	65	23	53	45	1	9	80	11	19
Texas	22	28	61	11	24	74	1	6	79	16	19
Utah	28	6	49	45	58	41	1	10	79	11	30
Vermont	19	44	54	1	23	76	1	10	80	10	19

Table 6.10—Selected characteristics of public school teachers' current teaching assignments,[1] by state: 1987—Continued

	Average number of students per class	Percent of teachers: Number of students per typical class			Feelings about most typical class size			Average number of hours per week spent on job[2]			Teaching subjects unqualified to teach
		19 or less	20 to 29	30 or more	Too large	About right	Too small	Less than 40	40 to 59	60 or more	
Virginia	22	21	71	8	33	67	1	9	80	11	22
Washington	25	13	68	19	44	54	2	6	83	10	30
West Virginia	21	26	71	4	20	78	2	12	75	12	23
Wisconsin	22	21	74	5	29	69	2	9	82	9	17
Wyoming	20	41	56	2	20	76	4	6	81	12	16

[1]As reported by the teachers.

[2]Includes time spent inside and outside of school.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: Data drawn from the Carnegie Foundation for the Advancement of Teaching, *The Condition of Teaching: A State-by-State Analysis, 1988*, (Princeton, NJ: Author), 21-23.

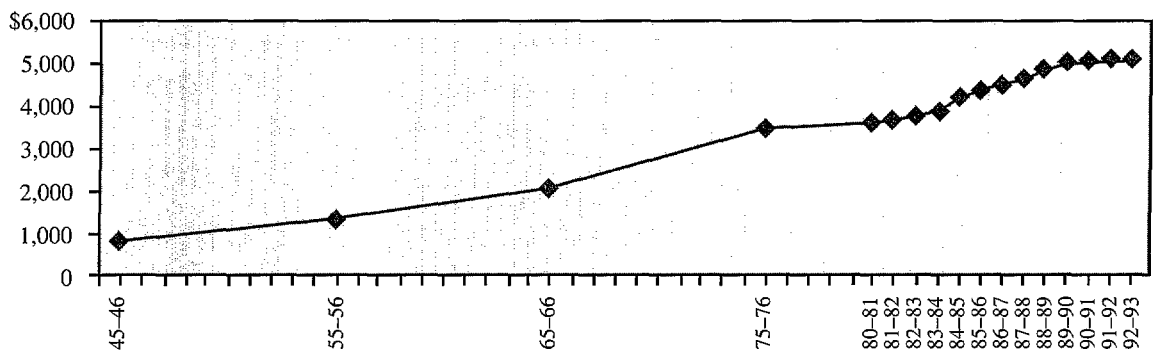
Table 6.11—Average number of days per school year, number of hours of mathematics class instruction per year, class size, and teaching hours per week for U.S. equivalent eighth-grade classes in 15 countries: 1980–82

Country	Days per school year	Hours of mathematics class instruction per year	Class size	Teaching hours per week
TOTAL	191	123	27	18.0
Belgium (Flemish)	160	140	21	16.7
Belgium (French)	175	150	20	13.1
Canada (British Columbia)	195	120	28	20.8
Canada (Ontario)	186	133	29	21.1
England/Wales	192	115	27	19.3
Finland	190	84	22	17.1
France	185	130	24	17.6
Hungary	192	96	26	16.4
Japan	243	101	41	16.8
Netherlands	200	112	24	22.4
New Zealand	190	130	29	19.4
Scotland	200	147	29	20.7
Sweden	180	96	20	15.6
Thailand	200	100	43	14.5
United States	180	145	26	20.6

SOURCE: Kenneth Travers, "Summary of the IEA Second International Mathematics Study," paper prepared for the National Center for Education Statistics.

all commitment of public funds to education. While there is a considerable literature on issues relating to education finance, per pupil expenditures are linked to classroom resources, and vary considerably from state to state. Figure 6.3 and tables 6.12 and 6.13 show public school expenditures on students along several dimensions. In constant 1991–92 dollars, table 6.12 shows that based on *per pupil in average daily attendance*, total expenditures almost doubled between 1965–66 and 1986–87, and that current expenditures more than doubled. Between 1987–88 and 1989–90, however, the amount and rate of increase was small. Total expenditures in 1989–90 averaged $6,015, and current expenditures averaged $5,399. Based on *per pupil in fall enrollment* between 1965–66 and 1986–87, total expenditures increased almost 90 percent, and current expenditures doubled. Between 1987–88 and 1989–90, the increases were modest. Total expenditure in 1989–90 averaged $5,605, and current expenditure averaged $5,031. Table 6.13 uses a different base (constant 1989–90 dollars) and shows state-by-state pupil expenditures in average daily attendance between 1969–70 and 1987–88. Current expenditures in the United States averaged $4,648 per public elementary and secondary school pupil in 1987–88, ranging from $2,690 to $8,737 in the 50 states and the District of Columbia.

Figure 6.3—Current expenditures per pupil in fall enrollment in public elementary and secondary schools in constant 1991–92 dollars: 1945–46 to 1992–93, selected years



NOTE: Data for 1990–91 to 1992–93 were estimated.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics 1992* (Washington, D.C.: 1992), 159.

Table 6.12—Total and current expenditures per pupil in public schools in constant 1991–92 dollars,[1] by level: 1945–46 to 1992–93, selected years

	Expenditure per pupil in average daily attendance		Expenditure per pupil in fall enrollment[2]	
	Total expenditure	Current expenditure	Total expenditure	Current expenditure
1945–46	$1,105	$1,033	$941	$880
1955–56	1,990	1,513	1,819	1,383
1965–66	2,832	2,329	2,629	2,162
1975–76	4,230	3,747	3,897	3,453
1980–81	[3]4,375	3,991	[3]4,036	3,681
1981–82	[3]4,367	4,003	[3]4,045	3,708
1982–83	[3]4,511	4,161	[3]4,177	3,853
1983–84	[3]4,714	4,309	[3]4,367	3,992
1984–85	[3]4,863	4,535	[3]4,516	4,211
1985–86	[3]5,106	4,770	[3]4,730	4,419
1986–87	[3]5,353	4,933	[3]4,964	4,575
1987–88	[3]5,553	5,059	[3]5,142	4,685
1988–89	5,827	5,297	5,403	4,912
1989–90	6,015	5,399	5,605	5,031
1990–91	[3]6,028	[3]5,411	[3]5,617	[3]5,042
1991–92	[3]6,094	[3]5,470	[3]5,678	[3]5,097
1992–93	[3]6,043	[3]5,424	[3]5,631	[3]5,054

[1]Based on the Consumer Price Index, prepared by the Bureau of Labor Statistics, U.S. Department of Labor, adjusted to a school-year basis.

[2]Data for 1945–46 are based on school-year enrollment.

[3]Estimated.

NOTE: Total expenditures per pupil includes all expenditures allocable to per pupil costs. These allocable expenditures include current expenditures for regular school programs, interest on school debt, and capital outlay. Current expenditures for operating local public schools during the regular school term, including such items as salaries for school personnel, fixed charges, student transportation, school books and materials, and energy costs. Current expenditures exclude capital outlay and interest on school debt. Beginning in 1980–81, two changes in definitions were made. State administration expenditures are excluded from both "total" and "current" expenditures, and "other programs," such as summer schools and community services, are included in both "total" and "current" expenditures. Some data have been revised from previously published figures.

SOURCE: U.S. Department of Education, National Center for Education, *Digest of Education Statistics 1992* (Washington, D.C: 1992), 159.

Table 6.13—Current expenditures per pupil in average daily attendance in public schools in constant 1989–90 dollars,[1] by state: 1969–70 to 1987–88, selected years

State or other area	1969–70	1979–80	1984–85	1985–86	1986–87	1987–88
United States	$2,743	$3,345	$4,166	$4,382	$4,532	$4,648
Alabama	1,828	2,281	2,791	2,993	2,937	2,979
Alaska	3,773	5,978	9,416	9,689	9,144	8,737
Arizona	2,421	2,980	3,612	3,893	4,046	4,104
Arkansas	1,908	2,190	2,980	3,101	3,120	3,276
California	2,915	3,351	3,909	4,134	4,255	4,209
Colorado	2,480	3,154	4,438	4,638	4,734	4,625
Connecticut	3,197	3,816	5,688	5,534	6,204	6,829
Delaware	3,025	3,711	5,023	5,379	5,508	5,500
District of Columbia	3,423	4,361	6,126	6,228	6,555	6,722
Florida	2,461	3,198	3,890	4,118	4,331	4,485
Georgia	1,976	2,586	3,190	3,461	3,631	3,764
Hawaii	2,825	3,378	4,159	4,442	4,323	4,295
Idaho	2,028	2,491	2,836	2,898	2,951	2,924
Illinois	3,057	3,717	4,248	4,412	4,687	4,789
Indiana	2,447	2,731	3,663	3,822	4,059	4,158
Iowa	2,837	3,086	4,162	4,223	4,304	4,520
Kansas	2,592	3,114	4,274	4,468	4,489	4,468
Kentucky	1,833	2,218	2,869	2,901	3,120	3,300
Louisiana	2,178	2,771	3,590	3,719	3,504	3,440
Maine	2,328	2,717	3,631	4,051	4,394	4,668
Maryland	3,087	3,838	4,925	5,189	5,453	5,701
Massachusetts	2,888	3,630	4,833	5,324	5,873	5,997
Michigan	3,038	3,737	4,620	4,873	4,969	5,142
Minnesota	3,037	3,785	4,411	4,598	4,772	4,807
Mississippi	1,684	2,149	2,821	2,756	2,683	2,793
Missouri	2,382	2,816	3,551	3,721	3,963	4,150
Montana	2,628	3,313	4,619	4,773	4,788	4,654
Nebraska	2,475	3,115	4,167	4,240	4,287	4,322
Nevada	2,586	2,913	3,397	4,014	3,927	3,971
New Hampshire	2,430	2,893	3,927	4,133	4,490	4,886
New Jersey	3,416	4,371	5,407	6,499	6,795	7,195
New Mexico	2,376	2,731	3,786	3,728	4,061	4,046
New York	4,460	5,659	6,593	7,014	7,417	7,839
North Carolina	2,058	2,677	3,152	3,440	3,571	3,691
North Dakota	2,318	2,724	4,008	4,064	3,924	3,858
Ohio	2,454	2,862	3,944	4,115	4,193	4,382
Oklahoma	2,032	2,517	3,421	3,671	3,583	3,390
Oregon	3,108	3,826	4,669	4,832	4,951	5,249
Pennsylvania	2,964	3,712	5,087	5,047	5,270	5,469
Rhode Island	2,996	3,933	5,147	5,446	5,691	5,841
South Carolina	$2,059	$2,531	$3,341	$3,568	$3,669	$3,735
South Dakota	2,319	2,626	3,472	3,560	3,536	3,561
Tennessee	1,903	2,429	2,863	3,048	3,227	3,363
Texas	2,098	2,607	3,750	3,848	3,892	3,955
Utah	2,105	2,510	2,665	2,789	2,756	2,690

Table 6.13—Current expenditures per pupil in average daily attendance in public schools in constant 1989–90 dollars,[1] by state: 1969–70 to 1987–88, selected years—Continued

State or other area	1969–70	1979–80	1984–85	1985–86	1986–87	1987–88
Vermont	2,713	3,348	4,383	4,704	5,022	5,708
Virginia	2,379	2,941	3,787	4,108	4,315	4,548
Washington	3,077	3,419	4,472	4,529	4,525	4,564
West Virginia	2,252	2,567	3,894	4,117	4,320	4,229
Wisconsin	2,967	3,454	4,580	4,863	5,163	5,204
Wyoming	2,877	3,496	5,761	5,967	5,937	5,537

[1]Based on the Consumer Price Index, prepared by the Bureau of Labor Statistics, U.S. Department of Labor, adjusted to a school-year basis. These data do not reflect differences in inflation rates from state to state.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics 1992* (Washington, D.C: 1992), 161.

CHAPTER 7 • INSTRUCTIONAL PRACTICES

In a recent review article examining curriculum and instruction in the middle grades, the author begins: "Opportunities for students at any level of schooling to become competent and knowledgeable are largely determined by two things: the content and skills they are taught and the way their instruction is provided."[41] Large-scale comparisons of instructional practices among different groups of teachers and students are difficult and complex. What is taught in classrooms and how it is taught may vary not only for students in different classes and attending different schools but also for students within the same classroom. Many other factors such as community type, school district resources, and the size of the school can have an impact on curricular practices. At the same time, in order to address issues and problems that may affect teachers' abilities to provide curricula that are comprehensive and equitable to all students, it is necessary to try to determine how some of the more common instructional practices may vary according to teaching environment.

This chapter does not provide a comprehensive review of instructional practices. Rather, it summarizes the limited information reported on this very broad topic by teachers in three surveys: the 1987–88 Schools and Staffing Survey (SASS), the 1988 National Assessment of Educational Progress (NAEP), and the National Education Longitudinal Study of 1988 (NELS:88). Teachers participating in SASS reported on the amount of time they devoted to various academic subjects in self-contained classes from kindergarten through high school. In the 1988 NAEP survey, the reading teachers of the fourth-grade students and the writing teachers of the eighth-grade students reported on different reading and writing teaching practices. The mathematics and science teachers of students who participated in the NELS:88 survey reported on various aspects of their curricula. While SASS is based on a representative sample of teachers and staff working in American schools, neither the NAEP nor the NELS survey is representative of teachers. Teachers included in the NAEP and NELS surveys were selected if they taught the students who were sampled for the student surveys. The surveys are, however, nationally representative of students (either fourth or eighth graders). Therefore, instructional practices reported by teachers in the NAEP and NELS:88 surveys are presented in relation to the students they represent.

SELF-CONTAINED CLASSES[42]

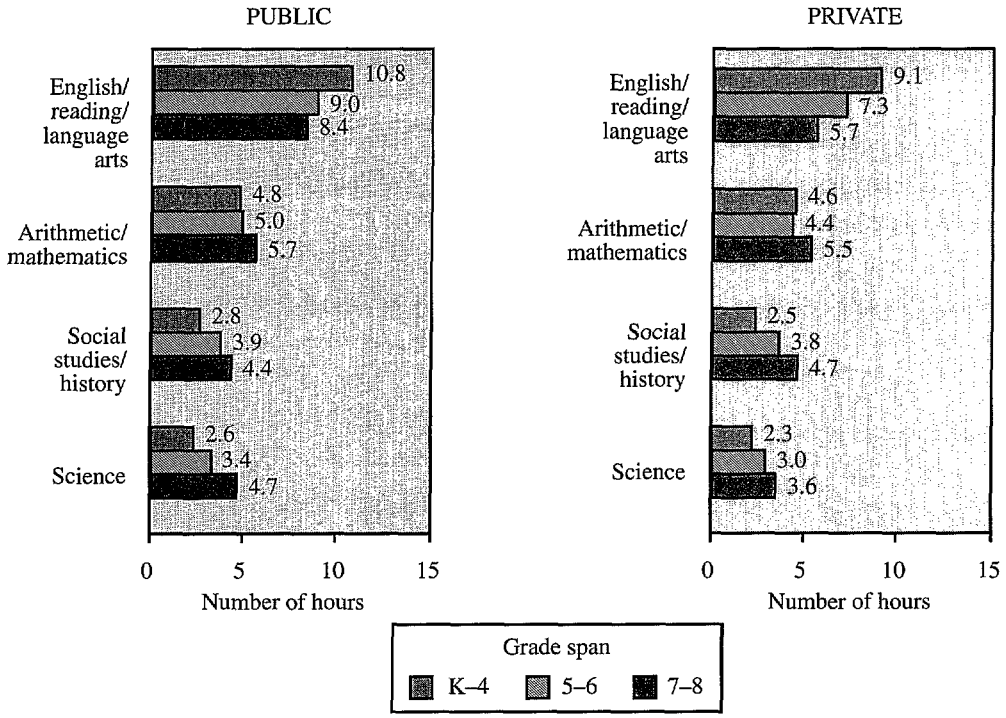
Teachers of self-contained classes at the K–4 level reported teaching English and language arts an average of 10.6 hours per week, arithmetic or mathematics 4.8 hours, and science and social studies/history about 2.5 hours per week each.

Given the immediate concern that educators have regarding the lack of science education offered in American schools, it is striking to note how little time teachers in self-contained classes reported devoting to science, compared with the amount of time spent on other subjects (figure 7.1 and table 7.1). For example, teachers who taught at the kindergarten to fourth-grade levels reported spending 2.5 hours per week teaching science and about the same amount of time teaching social studies/history. In contrast, about 4 times as much time was spent teaching English and language arts (10.6 hours), and 4.8 hours per week were spent teaching arithmetic or mathematics. At the fifth- and sixth-grade levels, the amount of time spent on science education increased about 1 hour per week, while the amount of time spent teaching English and language arts declined to about 9 hours per week.

[41]H.J. Becker, "Curriculum and Instruction in Middle Grade Schools," *Phi Delta Kappan* 71 (February 1990): 450–57.

[42]Self-contained classes are defined on the Schools and Staffing Teacher Questionnaires as classes in which teachers taught "multiple subjects to the same class of students all or most of the day."

Figure 7.1—Average number of hours per week spent teaching various subjects in self-contained classes, by sector and grade span: 1987–88



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 7.1—Average number of hours per week spent teaching various subjects in self-contained classes, by sector and grade span: 1987–88

	English/reading/ language arts	Arithmetic/ mathematics	Social studies/ history	Science	Average for all four areas
TOTAL					
Grades					
K–4	10.6	4.8	2.7	2.5	20.6
5–6	8.8	4.9	3.9	3.4	21.0
7–8	7.9	5.6	4.4	4.5	22.4
PUBLIC					
Grades					
K–4	10.8	4.8	2.8	2.6	21.0
5–6	9.0	5.0	3.9	3.4	21.4
7–8	8.4	5.7	4.4	4.7	23.2
PRIVATE					
Grades					
K–4	9.1	4.6	2.5	2.3	18.5
5–6	7.3	4.4	3.8	3.0	18.5
7–8	5.7	5.5	4.7	3.6	19.4

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

There were no appreciable differences between public and private school teachers in the amount of time they reported teaching individual subjects in self-contained classes.

The relatively small amount of time these teachers reported spending on science education may reflect elementary school teachers' lack of confidence in their ability to teach science. Elementary school teachers surveyed in the 1985–86 National Survey of Science and Mathematics Education indicated that they were much more confident in their ability to teach reading than in their ability to teach science. The overwhelming majority (86 percent) of elementary teachers participating in this survey indicated that they felt very well qualified to teach reading. On the other hand, only 27 percent and 15 percent, respectively, felt well qualified to teach life sciences or physical sciences.[43]

[43]For a review, see Horizon Research, Inc., *Science and Mathematics Education Briefing Book* (Chapel Hill: Author, 1989), 7.

READING

NAEP fourth graders had teachers who reported spending about 44 percent of class time working in small groups and about 39 percent of class time providing individual instruction.

A common teaching approach that educators and researchers believe enhances student performance is rearranging instructional groups to achieve different purposes—for example, changing from whole-class instruction to smaller groups that necessitate student interaction.[44] The NAEP survey indicated that fourth graders spent a considerable amount of time in small groups and receiving individual instruction in reading (table 7.2). In fact, these students' reading teachers

[44]See, for example, discussion in J. Goodlad, *A Place Called School: Prospects for the Future* (New York: McGraw Hill, 1984),

Table 7.2—Average percentage of reading instruction time that fourth graders spent in various reading group practices as reported by their teachers, by sector and selected public school and public school teacher characteristics: 1988

	4th-grade reading class grouping		
	Whole class	Small groups	Individuals
TOTAL	18.2	43.5	38.6
PUBLIC	18.0	43.0	39.3
School minority enrollment			
Less than 20%	19.2	43.6	37.2
20% or more	16.8	41.9	41.6
Class achievement level			
Lower	17.9	41.9	41.6
Average	18.2	43.6	38.4
Higher	20.2	30.6	48.9
Mixed	17.1	47.1	35.7
Highest degree earned			
BA/BS or less	18.2	42.2	39.6
MA/MS or more	17.7	43.9	39.0
Years of teaching experience			
3 or less	22.4	33.5	45.0
4–9	16.5	44.5	38.7
10–19	17.3	47.2	36.0
20 or more	18.0	38.7	43.2
PRIVATE	19.4	46.6	34.2

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1988.

reported that they spent less than 20 percent of reading class time in whole-class instruction. These grouping practices did not appear to vary markedly for different student or teacher characteristics.[45]

The NAEP fourth-grade teachers were also asked about the specific teaching methods they used in their reading classes. For instance, as shown in table 7.3, almost all of the NAEP fourth graders (97 percent) had teachers who reported giving workbook assignments at least once a week. A smaller proportion of fourth graders (59 percent) had reading teachers who reported having their students write about what they were reading at least once a week. Not surprisingly, a higher percentage of fourth graders in low-ability classes had teachers who reported helping students with reading aloud and with word-attack skills several times a week or daily, compared with students in high-ability classes (figure 7.2 and table 7.4).

The sources of reading material available in the fourth-grade reading classes also appeared to vary with the class ability level and, to a lesser extent, with the teachers' experience. For example, students in high-ability classes tended to have children's book collections and newspapers available to them more often than did students in low-ability classes. Furthermore, fourth graders in classes where their reading teacher had 20 or

[45]It should be noted, however, that the sample of NAEP fourth-grade teachers was relatively small and, therefore, all but obvious differences among various subgroups would not be statistically significant. For example, with respect to class achievement level, it appears that students in higher ability classes spend less time in small groups and more time getting individual instruction than do students in lower or average ability classes. However, the standard errors for these groups of students were too high to find differences that were statistically significant.

Table 7.3—Percentage of fourth graders whose teachers reported using various methods of reading instruction at least once a week, by sector and selected public school and public school teacher characteristics: 1988

	Write about reading	Work book assignments	Student chooses own reading	Student reads informational material	Class goes to library
TOTAL	59.2	96.5	80.7	60.5	79.0
PUBLIC	58.3	96.0	81.8	61.8	78.8
School minority enrollment					
Less than 20%	56.1	98.9	78.2	58.2	78.8
20% or more	64.0	90.8	86.0	69.5	76.0
Class achievement level					
Lower	54.7	94.2	72.6	60.6	73.7
Average	59.0	94.9	83.0	58.7	80.8
Higher	57.2	96.3	76.9	60.3	69.9
Mixed	58.8	97.8	87.0	67.7	83.7
Highest degree earned					
BA/BS or less	57.9	95.8	82.5	58.9	78.9
MA/MS or more	58.7	96.4	80.7	64.9	78.7
Years of teaching experience					
3 or less	56.3	95.6	95.1	64.5	88.1
4–9	60.0	94.0	84.2	50.8	68.5
10–19	58.3	96.6	83.9	66.9	84.8
20 or more	57.6	97.8	72.9	58.4	71.7
PRIVATE	66.0	100.0	72.7	51.2	80.4

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1988.

more years of experience were more likely to have reading kits available to them than were students with relatively inexperienced teachers (that is, 3 years or less of teaching experience).

WRITING

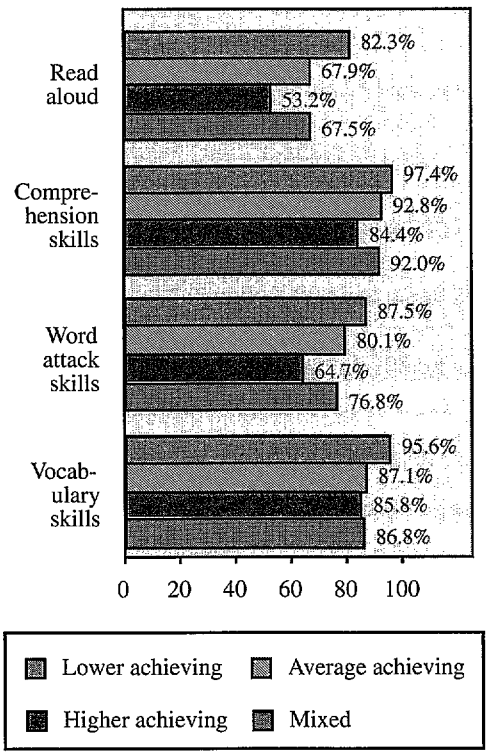
About one-fourth of NAEP eighth graders had writing teachers who reported using a writing-to-learn method of teaching very often, whereas nearly 60 percent had teachers who reported using a grammar skill-based approach to writing very often.

In the preface to the book *Writing to be Read*, three reasons were given for bad writing:

> 1. Teachers have been saying "Wrong! wrong! wrong!" when they should have been saying "Right, good! keep going!" even if they said it about only one word or one sentence in a paper.
>
> 2. In their study of English, teachers have spent their time reading, not writing...
>
> 3. English teachers have often allowed themselves to be the only readers students write for.[46]

The author of this book and other researchers have made significant contributions to integrated teaching methods such as process-based writing, writing across the curriculum, and writing as a way of learning. As a result, more and more teachers have altered their approaches to teaching writing, and phrases such as "process writing" and "writing to learn" are now commonly heard among educators. Concentration on the composing process by teachers at all levels of instruction has heightened interest in writing and has produced many books and articles on the subject. Consequently, writing workshop institutes and inservice training are available nationwide as teachers attempt to find out first what does and does not work.[47]

Figure 7.2—Percentage of fourth graders in public schools whose teachers focused on various reading skills several times a week or daily when working with target student, by class achievement level: 1988



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988 National Assessment of Educational Progress.

The writing teachers of NAEP eighth graders were asked a variety of questions regarding their teaching methods, including how often they used grammar or skill-based instruction, writing process instruction, the integration of reading and writing, and the writing-to-learn approach. Nearly 60 percent of the eighth graders had writing teachers who responded that they used a grammar or skill-based approach to teaching very often, while 52 percent had teachers

[46]K. Macrorie, *Writing to be Read* (New York: Hayden, 1968). This book was reviewed in E. Jenkinson, "Learning to Write/Writing to Learn," *Phi Delta Kappan* 69 (June 1988): 712–17.

[47]E. Jenkinson, 715.

Table 7.4—Percentage of fourth graders whose teachers focused on various reading skills several times a week or daily when working with target student, and percentage who used different types of reading material in the classroom, by sector and selected public school and public school teacher characteristics: 1988

	Reading skills				Source of reading material		
	Read aloud	Comprehension skills	Word attack skills	Vocabulary skills	Children's book collection	Children's newspaper	Reading kits
TOTAL	68.0	90.2	77.5	87.4	76.0	57.5	51.4
PUBLIC	67.7	91.4	77.9	88.0	75.5	56.9	49.8
School minority enrollment							
Less than 20%	67.4	90.0	74.1	86.5	76.2	56.0	55.5
20% or more	70.0	92.4	82.3	90.3	74.6	56.1	43.4
Class achievement level							
Lower	82.3	97.4	87.5	95.8	69.8	47.4	51.1
Average	67.9	92.8	80.1	87.1	77.6	56.4	49.8
Higher	53.2	84.4	64.7	85.8	89.8	68.4	52.8
Mixed	67.5	92.0	76.8	86.8	81.5	66.5	56.5
Highest degree earned							
BA/BS or less	66.5	90.5	76.8	87.8	76.3	61.7	49.2
MA/MS or more	68.5	92.2	78.7	88.0	79.0	54.9	53.4
Years of teaching experience							
3 or less	65.9	83.2	60.9	78.6	82.0	54.9	30.8
4–9	66.3	90.8	77.1	89.7	78.6	55.4	48.4
10–19	67.4	94.0	79.4	87.2	80.1	62.8	51.0
20 or more	68.8	89.9	80.6	91.0	70.5	54.3	58.9
PRIVATE	70.2	81.2	74.6	83.4	79.3	61.1	63.0

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1988.

who used writing process techniques very often (table 7.5). Slightly less than one-half of eighth graders (46 percent) had teachers who reported using an integrated reading and writing approach, and only about one-fourth (23 percent) had teachers who frequently used a writing-to-learn approach.

Teachers were also asked about how much they focused on specific aspects of writing such as the mechanics of writing, frequent long or short assignments, giving a variety of assignments, or having students prepare several drafts of an assignment. Variations among students in classes of different ability levels were found (table 7.6). For example, students in low-ability classes more often had teachers who responded that they focused on the mechanics of writing than did those in high-ability classes. At the same time, students in high-ability classes were more often given long writing assignments or were more likely to prepare several drafts of an assignment than were students in low-ability classes.

Mathematics and Science

Researchers have observed that lecturing and explaining by a teacher standing or sitting in front of the entire class is one of the most frequent teaching activities reported by both students and teachers. Furthermore, the frequency of these activities appears to increase from the primary to the senior high school years.[48] The experiences of NELS:88 eighth graders'

[48]J. Goodlad, 105.

Table 7.5—Percentage of eighth graders whose teachers reported using various methods of teaching writing very often, by sector and selected public school and public school teacher characteristics: 1988

	Grammar or skill-based approach	Writing process approach	Integrating reading & writing	Writing-to-learn approach
TOTAL	59.4	51.8	46.1	23.4
PUBLIC	56.6	53.1	47.6	22.7
School minority enrollment				
Less than 20%	55.6	50.8	49.9	19.2
20% or more	59.2	50.8	40.1	24.4
Class achievement level				
Lower	54.7	49.9	45.0	20.9
Average	56.3	53.3	50.6	21.6
Higher	51.0	66.2	59.3	28.9
Mixed	65.7	43.5	31.5	21.5
Highest degree earned				
BA/BS or less	57.9	56.9	44.9	20.0
MA/MS or more	55.5	49.8	50.3	25.6
Years of teaching experience				
3 or less	55.4	68.0	52.0	24.6
4–9	45.2	55.3	51.6	23.1
10–19	59.0	53.9	52.2	25.3
20 or more	59.9	47.0	37.3	18.0
PRIVATE	74.8	44.3	38.1	27.7

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1988.

mathematics and science teachers support this observation. Unlike the grouping practices reported by the NAEP fourth-grade reading teachers where most of the time was spent in small groups or working on individual assignments, in both mathematics and science classes, NELS:88 eighth graders had teachers who reported that, on average, about one-half of the class time was spent in whole-class instruction (table 7.7). Only about 17 percent of both mathematics and science class time was spent in small groups, while less than one-quarter of the time was spent providing individual instruction.[49]

Grouping practices in mathematics classes tended to vary according to the ability level of the class. For example, eighth graders in high-ability mathematics classes spent more time getting whole-class instruction and less time getting individual instruction than those in low-ability classes. It is possible that the frequency of individual instruction for students in low-ability mathematics classes reflects remedial instruction typically provided to students at this level. The same pattern, linking ability level with individual instruction, was not found for science classes. However, eighth graders in private schools were more likely to have whole-group instruction reported by their science teachers than were their counterparts in public schools.

In the Second International Mathematics Study (SIMS), conducted in 1981–82 under the auspices of the International Association for the Evaluation of Educational Achievement, researchers determined that compared with other countries the United States had a more diffuse and "arithmetic-driven" mathematics curriculum, in which relatively equal amounts

[49]The remainder of the class time in either mathematics or science classes was spent performing administrative tasks, taking tests, keeping order, and so on.

Table 7.6—Percentage of eighth graders whose writing teachers focused on various aspects of writing for at least half the class time, by sector and selected public school and public school teacher characteristics: 1988

	Mechanics of writing	Variety of assignments	Frequent short assignments	Frequent long assignments	Revise several drafts
TOTAL	78.5	66.8	87.3	32.2	58.9
PUBLIC	76.6	67.6	88.1	33.5	58.7
School minority enrollment					
Less than 20%	74.0	69.1	88.5	33.3	57.4
20% or more	79.7	66.0	86.7	33.3	59.4
Class achievement level					
Lower	82.4	66.1	88.9	23.4	47.4
Average	77.6	69.8	91.1	34.7	62.7
Higher	60.4	68.1	85.6	47.7	69.3
Mixed	83.2	64.3	82.7	31.7	55.5
Highest degree earned					
BA/BS or less	75.6	65.9	85.3	33.1	58.6
MA/MS or more	77.7	69.9	90.8	34.6	59.0
Years of teaching experience					
3 or less	59.9	64.4	82.0	37.7	55.7
4–9	64.4	65.9	93.6	38.8	61.8
10–19	80.1	66.1	88.6	34.6	58.2
20 or more	84.1	73.2	85.4	28.6	58.0
PRIVATE	88.8	62.4	82.5	24.6	59.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1988.

of time were allocated to a number of mathematics topics. Japan, on the other hand, had a more intensive curriculum focused on algebra in the middle school years and calculus in the secondary school years.[50]

These findings are supported by those from the NELS:88 survey in which eighth-grade mathematics teachers reported covering various subjects as major topics with relatively equal intensity. For example, as shown in figure 7.3 and table 7.8, similar proportions of eighth graders' mathematics teachers reported covering fractions as a major topic as reported covering algebra (64 percent and 62 percent, respectively). These two subjects represent the extremes in the eighth-grade mathematics curriculum—fractions being one of the most elementary topics and algebra one of the most advanced.

The percentage of NELS:88 eighth graders in public schools whose mathematics teachers reported covering algebra as a major topic was lower in schools with more than 20 percent minority enrollment than in schools with fewer minorities enrolled.

Not surprisingly, the exposure that NELS:88 students had to the coverage of these topics varied according to a number of factors including school sector, minority enrollment, and class ability level. Eighth graders attending private schools, public schools with less than 20 percent minority enroll-

[50]C. Mcknight et al., *The Underachieving Curriculum* (Champaign, IL: Stipes Publishing, 1987).

Table 7.7—Average percentage of class time that eighth graders spent in groups in mathematics and science classes as reported by their teachers, by sector, selected public school characteristics, and public school teacher highest degree earned: 1988

	Mathematics			Science		
	Whole class	Small groups	Individuals	Whole class	Small groups	Individuals
TOTAL	51.9	16.6	22.8	52.7	17.0	17.6
PUBLIC	51.3	16.6	23.0	51.0	17.0	17.9
School minority enrollment						
20% or less	51.8	15.3	21.9	49.4	16.0	16.8
More than 20%	50.5	18.6	24.8	53.5	18.5	19.6
Class achievement level						
Lower	46.2	18.6	26.0	52.8	17.3	19.2
Average	52.2	16.6	23.1	50.3	16.2	17.5
Higher	55.0	15.1	20.0	53.4	17.7	17.6
Mixed	48.7	15.8	24.0	48.4	17.2	17.9
Highest degree earned						
BA/BS or less	50.3	15.9	22.6	51.3	17.1	18.0
MA/MS or more	52.6	17.3	23.6	50.6	16.9	17.7
PRIVATE	56.5	16.8	20.7	65.4	16.6	15.3

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, "Eighth Grade Student and Teacher Questionnaires."

ment, or those in high-ability public school classes had teachers who reported covering algebra as a major topic more often and fractions less often than their counterparts; that is, those in public schools, public schools with greater than 20 percent minority enrollments, or low-ability public school classes.

The eighth-grade science curriculum is more difficult to characterize than that of mathematics. Topic coverage in mathematics typically defines the ability level of the class, whereas this is not necessarily true for science.[51] For example, table 7.9 shows the percentage of NELS:88 eighth graders whose science teachers reported covering various science subjects as major topics.[52] This table illustrates a relatively broad science curriculum taught at the eighth-grade level, with topics related to earth science, weather/astronomy, environmental science/oceanography, and chemistry covered with relatively equal intensity. Furthermore, it is widely reported that science teachers spend most of their instructional time helping students learn and memorize facts rather than teaching them to think scientifically. In the National Survey of Practices and Trends, for instance, most principals indicated that in the middle grades, their typical science teachers taught basic facts every day, but only about one-third reported that discussions of scientific methods were a regular part of their lessons.[53]

21 percent of NELS:88 eighth graders had science teachers who never conducted science experiments or conducted them less than once a month.

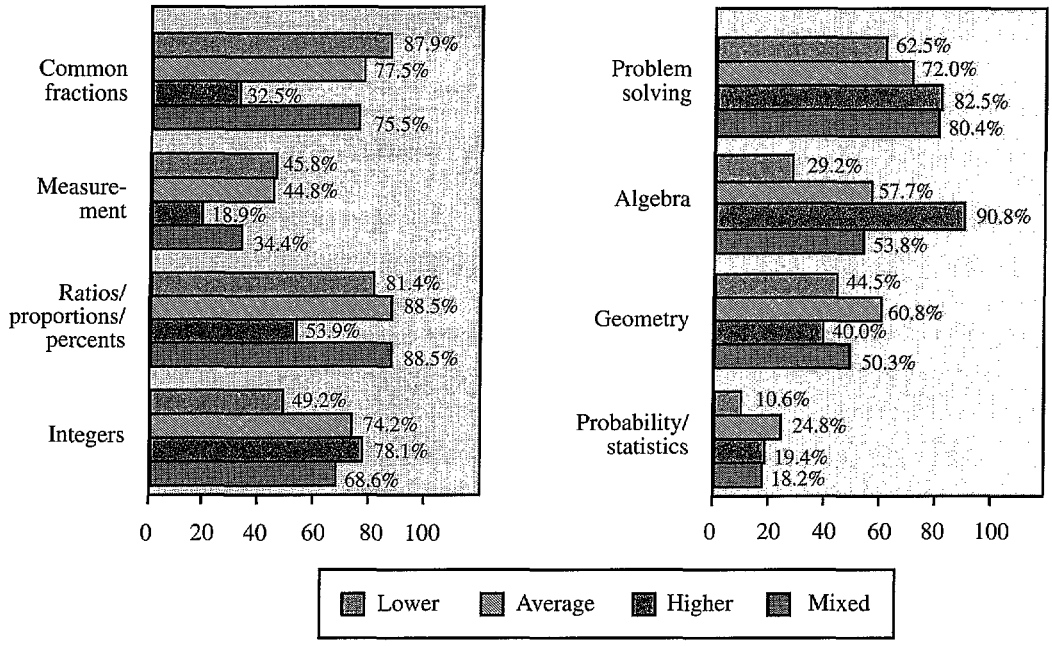
One way of discovering how much hands-on work science teachers provide for their students is to

[51]See U.S. Department of Education, National Center for Education Statistics, *A Profile of American Eighth-Grade Mathematics and Science Instruction* (1992) for a more detailed discussion of the findings of the NELS:88 survey.

[52]Ibid., 16.

[53]H.J. Becker, 453.

Figure 7.3—Percentage of eighth graders in public schools whose mathematics teachers reported teaching various topics as major subjects, by class achievement level: 1988



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Educational Longitudinal Study of 1988, "Student and Teacher Surveys."

determine how often they have their students conduct science experiments. In the NELS:88 survey, it appeared that a significant proportion of eighth graders had little exposure to conducting science experiments (table 7.10). About 21 percent had science teachers who reported that they either never conducted science experiments or conducted them less than once a month in their classes. About 47 percent of eighth graders, on the other hand, were in classes where weekly experiments were conducted, and about 11 percent were in classes where experiments were conducted almost daily. The frequency of conducting science experiments did not appear to vary markedly for different student or teacher characteristics.

International comparisons of the percentage of instructional time in science spent working in the laboratory is shown in table 7.11. Students in population 1 are primarily 10-year-olds and those in population 2 are primarily 14-year-olds. It is striking to note that only 19 percent of science instruction time was spent in the laboratory by 14-year-olds in the United States, while students in many of the other participating countries spent 50 percent or more of their science class time in the laboratory.

A majority of NELS:88 eighth graders had mathematics and science teachers who reported assigning from 1 to less than 3 hours of homework per week.

The mathematics and science teachers of the NELS:88 students reported the average number of hours of homework they assigned per week in their respective classes (table 7.12). According to their teachers, eighth graders tended to be assigned more

Table 7.8—Percentage of eighth graders whose mathematics teachers reported teaching various topics as major subjects, by sector and selected public school and public school teacher characteristics: 1988

	Common fractions	Measure-ment	Ratios/ propor-tions/per-cents	Integers	Problem solving	Algebra	Geometry	Proba-bility/ statis-tics
TOTAL	64.3	36.6	77.2	70.4	74.7	62.0	50.2	20.0
PUBLIC	67.7	36.9	78.1	69.3	74.1	59.8	50.7	19.8
School minority enrollment								
20% or less	64.1	32.8	77.1	68.5	73.5	62.3	48.9	17.9
More than 20%	73.4	43.3	79.6	70.3	74.5	55.9	53.2	22.7
Class achievement level								
Lower	87.9	45.8	81.4	49.2	62.5	29.2	44.5	10.6
Average	77.5	44.8	88.5	74.2	72.0	57.7	60.8	24.8
Higher	32.5	18.9	53.9	78.1	82.5	90.8	40.0	19.4
Mixed	75.5	34.4	88.5	68.6	80.4	53.8	50.3	18.2
Highest degree earned								
BA/BS or less	69.5	36.2	79.2	68.8	71.9	59.5	50.8	16.6
MA/MS or more	65.7	37.5	76.8	70.3	76.7	60.4	51.0	23.1
Community type								
Urban	65.5	39.2	79.4	72.6	75.7	60.6	49.2	22.6
Suburban	60.0	31.8	73.3	69.6	74.8	66.3	49.9	19.8
Rural–small city	69.2	41.1	80.8	69.9	73.9	57.2	51.4	18.2
PRIVATE	37.8	34.0	70.3	79.0	79.6	78.8	46.6	21.4

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, "Eighth Grade Student and Teacher Questionnaires."

Table 7.9—Percentage of public school eighth graders whose science teachers reported teaching various topics as major subjects: 1988

Total (for each mutually exclusive topic)	100.0
Earth science	57.2
Weather/astronomy	54.8
Environmental science/oceanography	47.9
Chemistry	46.1
Various physics subjects*	41.3
Atomic theory	41.6
Science in society	21.8
Human biology/genetics	18.6
Plants/animals	15.7
Personal health	9.2

*Electricity, mechanics, and heat or optics.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, "Eighth Grade Student and Teacher Questionnaires."

Table 7.10—Percentage of eighth graders whose science teachers reported conducting various numbers of experiments, by sector, selected public school characteristics, and public school teacher highest degree earned: 1988

	None or less than one per month	About one per month	About one per week	About one per day
TOTAL	21.1	20.9	46.5	11.4
PUBLIC	20.6	20.4	46.9	12.1
School minority enrollment				
20% or less	19.4	20.0	47.3	13.3
More than 20%	22.2	21.7	46.0	10.1
Class achievement level				
Lower	25.6	24.0	40.8	9.6
Average	20.7	21.8	45.1	12.4
Higher	15.5	19.2	50.3	14.9
Mixed	21.3	16.5	51.8	10.4
Highest degree earned				
BA/BS or less	22.2	20.8	47.1	9.9
MA/MS or more	18.7	20.0	46.7	14.7
PRIVATE	24.8	25.1	44.0	6.1

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, "Eighth Grade Student and Teacher Questionnaires."

mathematics than science homework. For example, 10 percent of eighth graders had mathematics teachers who assigned more than 4 hours of homework per week, compared with only 4 percent whose science teachers reported the same. At the other extreme, only 6 percent of eighth graders had mathematics teachers who reported assigning less than 1 hour of homework per week, compared with 11 percent whose science teachers reported assigning equally little homework.

In mathematics, the level of class that eighth graders attended was related to the amount of homework they were assigned. For example, students in remedial-level classes were about twice as likely to have mathematics teachers who assigned less than 1 hour of homework per week as were eighth graders in any of the higher level classes including general, enriched, or advanced classes.

A majority of NELS:88 eighth graders never used computers in their mathematics or science classes.

Finally, according to the NELS:88 teachers, it appeared that computers were used little by 1988 eighth graders in either their mathematics or science classes (table 7.13). Approximately 63 percent of eighth graders had mathematics teachers and 65 percent had science teachers who reported no use of computers in their classes. Similar results were seen in the National Survey of Practices and Trends in Middle Schools, where principals reported that few of their typical science teachers used computer or video technology in their science classes.[54]

[54]Ibid.

Table 7.11—Average percentage of instructional time in science spent working in a laboratory, by student population and country: 1983–85

	Population 1[1]	Population 2[2]
Australia	6	77
Canada (French speaking)	4	74
England	11	86
Finland	5	72
Ghana[3]	(*)	69
Hong Kong	3	57
Hungary	32	67
Israel	55	50
Italy (grade 8)	(*)	13
Italy (grade 9)	(*)	23
Italy	2	(*)
Japan	45	46
Korea	38	37
Netherlands[3]	(*)	67
Nigeria	45	55
Papua New Guinea[3]	(*)	78
Phillipines	31	46
Poland	35	45
Singapore	15	52
Thailand[3]	(*)	60
United States	26	19
Zimbabwe[3]	(*)	66

* Not available or not applicable.

[1]"Population 1" was defined as "all students aged 10:0 to 10:11 on the specified date of testing or all students in the grade where most 10 year olds were to be found on the specified date of testing" (T.N. Postlethwaite and D.E. Wiley, *The IEA Study of Science II: Science Achievement in Twenty-three Countries* [Oxford: Pergamon Press, 1992], 3). The figures reported here are averages of data from samples taken from this population.

[2]"Population 2" was defined as "all students aged 14:0 to 14:11 on the specified date of testing or all students in the grade where most 14 year olds were to be found on the specified date of testing" (T.N. Postlethwaite and D.E. Wiley, *The IEA Study of Science II: Science Achievement in Twenty-three Countries* [Oxford: Pergamon Press, 1992], 3). The figures reported here are averages of data from samples taken from this population.

[3]Did not participate in Population 1 data collection.

SOURCE: T.N. Postlethwaite and D.E. Wiley, *The IEA Study of Science II: Science Achievement in Twenty-three Countries* (Oxford: Pergamon Press, 1992), 19, 28–29.

Table 7.12—Percentage of public school eighth graders whose mathematics or science teachers reported assigning various amounts of homework (hours/week) to their classes, by class type and mathematics class level: 1988

	Less than 1 hour	1 to less than 3 hours	3 to 4 hours	More than 4 hours
Science	11.2	73.3	11.7	3.8
Mathematics	5.6	65.2	19.6	9.6
Mathematics class level				
Advanced	4.3	55.6	26.5	13.6
Enriched	5.4	67.1	17.3	10.2
General	5.5	70.0	17.3	7.1
Remedial	10.4	66.8	14.6	8.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, "Eighth Grade Student and Teacher Questionnaires."

Table 7.13—Percentage of eighth graders whose mathematics or science teachers reported that various proportions of the class had regular use of a computer, by sector and public school percent minority enrollment: 1988

	Mathematics				Science			
	No computer use	25% or less of class	26–50% of class	More than 50% of class	No computer use	25% or less of class	26–50% of class	More than 50% of class
TOTAL	62.7	26.4	2.8	8.2	64.5	29.0	2.2	4.2
PUBLIC	62.5	27.7	2.6	7.2	65.5	28.5	1.5	4.6
Minority enrollment								
20% or less	60.0	31.5	1.7	6.8	63.6	31.7	1.2	3.5
More than 20%	66.1	22.0	4.0	7.9	68.1	24.6	1.8	5.4
PRIVATE	63.6	16.1	4.4	15.8	57.1	33.0	8.1	1.8

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, "Eighth Grade Student and Teacher Questionnaires."

CHAPTER 8 • TEACHER COMPENSATION

Teacher compensation was a major issue in school reform discussions in the 1980s,[55] in particular, how much teachers are paid. The salaries and benefits offered to teachers affect the appeal of teaching relative to other occupations requiring similar background and training, and they affect the ability of schools and districts to retain and motivate those who have chosen teaching. However, average annual salaries for teachers have ranked near the bottom among most occupations requiring a college degree, and even below a number of occupations only requiring a high school education.[56]

Another important issue discussed at length in recent years is the structure of teacher compensation systems.[57] Teachers are typically paid according to objective measures of education and experience such as degrees earned and years taught, but many have proposed that teacher performance be taken into account as well through merit pay. Those in favor of merit pay believe that teachers should be rewarded for high performance and that they will perform better if their pay is dependent upon their performance. Opponents of merit pay do not necessarily refute this logic, but tend to argue that evaluating teacher performance is too subjective to form the basis for salary differentials. Although merit pay remains a controversial issue, many districts have implemented various types of rewards based on increased responsibilities or other types of merit. In addition to various forms of merit pay, teacher compensation systems sometimes include incentive pay to attract teachers to fields or locations with teacher shortages.

The 1987–88 Schools and Staffing Survey (SASS) collected data that can be useful in understanding various aspects of teacher compensation, including scheduled salaries, actual salaries and benefits, teacher satisfaction with their salaries, the prevalence of "moonlighting," how many teachers receive incentive income, teachers' attitudes toward different types of incentives, and what happens to teachers' incomes when they leave the profession.[58] Data from the Recent College Graduates Study (RCG) allow comparison of the salaries of recent bachelor's degree recipients who had majored in education with the salaries of those who had majored in other fields. To place these salary data in context, information from other sources is presented to show teacher salaries over time and across countries.

SCHEDULED SALARIES

The average scheduled salary for a beginning teacher with a bachelor's degree was $17,180 for public school teachers and $12,389 for private school teachers.

One of the simplest ways to examine teacher compensation is to look at district salary schedules, in which the various steps are usually determined by a combination of educational attainment and years of teaching experience. Starting salaries and potential salaries over time are important considerations for prospective and current teachers making a decision to enter or stay in the profession. These are by no means the only considerations, however. Working conditions, various aspects of which are discussed in Chapters 2, 6, and 9, are also very important.

[55]K. Jordan, "Teacher Education Recommendations in the School Reform Reports," in *Attracting and Compensating America's Teachers*, eds., K. Alexander and D. Monk (Cambridge, MA: Ballinger, 1988).

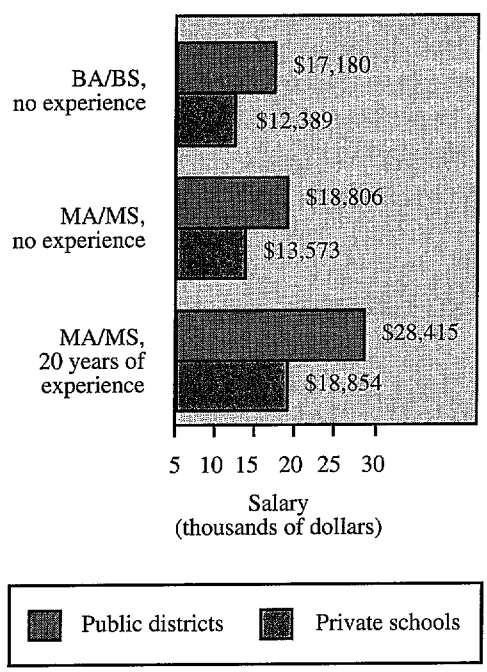
[56]Carnegie Forum on Education and the Economy, *A Nation Prepared: Teachers for the 21st Century*, 37.

[57]K. Alexander and D. Monk, eds., *Attracting and Compensating America's Teachers.*

[58]Further details on teacher "moonlighting" can be found in S.A. Bobbitt, "Moonlighting Among Public and Private School Teachers" (paper presented at the annual meeting of the American Educational Research Association, Boston, MA, 1990).

In 1987–88, the average salary across all public school districts for a beginning teacher with a bachelor's degree was $17,180 (figure 8.1 and table 8.1). If the teacher had a master's degree, it rose to $18,806. At the upper end of the scale, the average scheduled salary for a teacher with a master's degree and 20 years of experience was $28,415. Scheduled salaries for public and private school teachers differed significantly. At each level just described, the salary for private school teachers was much less than the corresponding salary for public school teachers. The difference was particularly striking at the top end of the scale. Private school teachers with a master's degree and 20 years of experience earned an average of $18,854, almost $10,000 less than public school teachers with the same education and experience and almost the same as public school teachers with a master's degree and no experience. Differences in averaged scheduled teacher salaries by state for public schools and by affiliation for private schools are shown in tables 8.2 and 8.3.

Figure 8.1—Average scheduled teacher salaries by degree and years of teaching experience, by sector: 1987–88



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Demand and Shortage Questionnaire."

In the public sector, scheduled salaries varied with school district size, and tended to be higher in districts with 5,000 or more students than in districts with less than 5,000 students (table 8.1). For example, the average scheduled salary for a teacher with a master's degree and 20 years of experience was $32,209 in a district with 10,000 or more students, compared with $26,276 for a teacher with the same qualifications in a district with less than 1,000 students.

Among private schools, scheduled salaries varied by school size and type. They were higher in schools with 750 or more students than in schools with fewer than 150 students. In addition, the scheduled salaries of private school teachers in nonsectarian schools were, on average, higher than those of private school teachers in religious schools (table 8.3).

Regional differences may reflect cost of living differences. In the public sector, scheduled salaries were higher in the Northeast and West than in the Midwest or South. In the private sector, salary schedules in the West were generally higher than those in any other region. These regional differences in scheduled salaries in the private sector may be due partly to the mix of private school types in each region.

Base Salaries

The average annual base salary was $24,345 for full-time elementary school teachers and $26,080 for their secondary school counterparts.

Base salaries provide another way to examine teacher compensation. In contrast with scheduled salaries, they reflect the actual distribution of the teaching work force by education and experience. In 1987–88, the average base salary for a full-time elementary school teacher was $24,345; for a secondary school teacher, it was $26,080 (table 8.4). As with scheduled salaries, the average public

Table 8.1—Average scheduled teacher salaries by degree and years of teaching experience, by sector and selected public district and private school characteristics: 1987–88

	Bachelor's and no experience	Master's and no experience	Master's and 20 years of experience
PUBLIC	$17,180	$18,806	$28,415
District size			
Less than 1,000	16,443	18,033	26,276
1,000 to 4,999	17,806	19,430	30,393
5,000 to 9,999	18,445	20,395	31,861
10,000 or more	18,875	20,517	32,209
Region			
Northeast	18,169	19,693	32,066
Midwest	16,470	18,138	27,303
South	16,678	17,815	25,489
West	18,217	20,478	30,382
PRIVATE	12,389	13,573	18,854
School size			
Less than 150	11,762	12,903	16,916
150 to 499	12,722	13,926	19,887
500 to 749	13,525	14,770	22,626
750 or more	14,811	16,231	25,824
Region			
Northeast	11,756	12,811	18,495
Midwest	12,172	13,290	19,035
South	12,174	13,315	17,563
West	13,980	15,525	20,965

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Demand and Shortage Questionnaire."

school teacher earned significantly more base salary than did the average private school teacher ($25,578 compared with $14,957 at the elementary level, and $26,879 compared with $18,540 at the secondary level).

As follows from typical salary schedules, teachers' base salaries increased as they gained experience, but private school teachers' salaries always lagged behind those of public school teachers. New public school teachers (those with 3 years of experience or less) received about $19,000, on average, while new private school teachers averaged $12,417 at the elementary level and $14,182 at the secondary level (figure 8.2). The gap widened with experience. Public and private elementary school teachers with 20 or more years of experience received, on average, $30,891 and $17,030, respectively. With 20 or more years of experience, the average annual salary was $32,225 for a public secondary school teacher, compared with $21,209 for a private school teacher.

The above discussion of teacher pay in the 1987–88 school year provides no indication of whether or not economic conditions are improving for teachers. Trend data show that the average annual base salary for all public school teachers (in constant 1991 dollars) improved between 1960 and 1972 (table 8.5). After 1972, it declined for a decade, but then increased again in the 1980s. Since 1972, beginning salaries for public school teachers have followed a similar pattern. In 1991 constant dollars, there was little difference between a beginning teacher's salary in 1972 and in 1991 (figure 8.3).

Table 8.2—Average scheduled teacher salaries by degree and years of teaching experience, by state: 1987–88

	Bachelor's and no experience	Master's and no experience	Master's and 20 years of experience
TOTAL	$17,180	$18,806	$28,416
Alabama	18,061	20,630	23,955
Alaska	28,448	32,132	46,585
Arizona	18,368	20,644	26,244
Arkansas	15,954	16,830	20,729
California	20,704	22,849	34,165
Colorado	17,001	18,919	27,169
Connecticut	20,757	22,195	34,209
Delaware	18,226	20,737	31,989
District of Columbia	19,116	21,029	37,288
Florida	18,679	20,111	28,539
Georgia	18,219	21,021	28,065
Hawaii	17,607	18,707	35,740
Idaho	14,856	16,537	24,461
Illinois	16,364	17,963	28,097
Indiana	17,154	18,286	29,867
Iowa	16,259	18,262	25,010
Kansas	17,777	19,137	25,990
Kentucky	16,494	18,755	25,675
Louisiana	14,941	15,278	20,762
Maine	15,692	16,918	26,558
Maryland	19,443	20,896	31,966
Massachusetts	17,764	19,133	29,327
Michigan	18,085	19,588	32,494
Minnesota	18,545	20,560	30,011
Mississippi	16,384	17,274	22,135
Missouri	15,897	17,061	22,033
Montana	14,944	17,584	26,835
Nebraska	13,987	16,627	22,324
Nevada	18,552	21,261	32,852
New Hampshire	16,342	17,864	27,258
New Jersey	19,915	21,406	35,368
New Mexico	17,366	19,254	26,361
New York	18,747	20,766	35,154
North Carolina	17,612	19,307	29,614
North Dakota	14,487	16,420	22,576
Ohio	16,533	18,255	$0,716
Oklahoma	15,825	16,930	22,622
Oregon	16,386	18,025	26,829
Pennsylvania	17,859	18,889	31,074
Rhode Island	17,623	18,894	34,077
South Carolina	$17,799	$20,253	$29,589
South Dakota	13,931	15,063	21,661
Tennessee	16,354	18,013	23,511
Texas	16,632	16,923	27,754
Utah	15,677	17,573	27,754

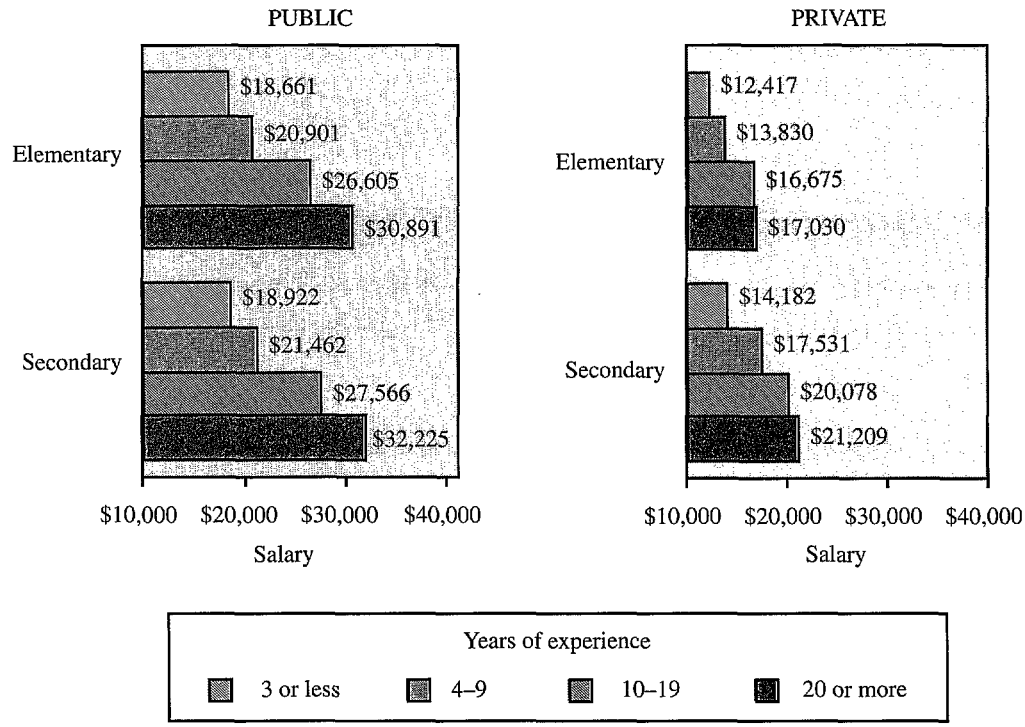
Table 8.2—Average scheduled teacher salaries by degree and years of teaching experience, by state: 1987–88—Continued

State	Bachelor's and no experience	Master's and no experience	Master's and 20 years of experience
Vermont	15,031	16,891	26,969
Virginia	18,464	19,835	28,912
Washington	16,978	20,052	31,692
West Virginia	15,251	17,018	24,460
Wisconsin	17,528	19,701	30,123
Wyoming	18,959	21,488	30,973

NOTE: Salary schedules for Delaware, the District of Columbia, Hawaii, Nevada, and West Virginia are universe figures because all school districts in these jurisdictions were included in the sample. Estimates for all other states except Maryland are based on samples of at least 30 cases. The number of cases for Maryland is 24.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Demand and Shortage Questionnaire."

Figure 8.2—Full-time teachers' average academic base salary, by sector, level, and years of teaching experience: 1987–88



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 8.3—Average scheduled teacher salaries by degree and years of teaching experience, by private school type: 1987–88

	Bachelor's and no experience	Master's and no experience	Master's and 20 years of experience
TOTAL	$12,395	$13,580	$18,879
Private school type			
Religious	12,065	13,229	18,515
Non-sectarian	13,969	15,256	20,614
Private school category			
Assembly of God	9,083	10,198	12,912
Baptist	9,714	10,311	12,775
Calvinist	15,212	16,296	25,438
Christian	10,673	11,949	15,437
Episcopal	14,011	15,242	20,603
Friends	13,679	15,235	22,957
Jewish	13,587	15,000	22,514
Lutheran	13,715	15,114	21,295
7th Day Adventist	16,512	18,741	23,259
Roman Catholic	12,427	13,607	20,013
Other: Religious	9,499	10,092	13,211
Exceptional children	16,312	17,828	24,920
Montessori	14,397	15,923	20,095
Nat. Ass. of Independent Schools	14,741	16,361	24,903
Other: Nonsectarian	13,584	14,746	19,492
9-Category typology			
Catholic			
-Parochial	12,239	13,415	19,426
-Diocesan	12,144	13,166	20,265
-Private order	14,161	15,668	23,307
Other Religious			
-Conservative Christian	10,098	11,131	14,307
-Affiliated	14,096	15,570	21,209
-Unaffiliated	10,068	10,852	14,066
Nonsectarian			
-Regular	12,895	14,082	19,110
-Special emphasis	14,546	15,972	21,080
-Special education	16,323	17,591	24,904
NAIS membership status			
Not Nat. Ass. of Independent Schools	12,278	13,445	18,611
Nat. Ass. of Independent Schools	14,803	16,351	24,389

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Demand and Shortage Questionnaire."

Table 8.4—Full-time teachers' average academic base salary, by sector, level, and selected teacher characteristics: 1987–88

	Total		Public		Private	
	Elementary	Secondary	Elementary	Secondary	Elementary	Secondary
TOTAL	$24,345	$26,080	$25,578	$26,879	$14,957	$18,540
Highest degree earned						
BA/BS or less	21,829	22,964	23,215	23,705	14,050	16,779
MA/MS or more	28,101	29,061	28,778	29,844	18,168	20,655
Years of teaching experience						
3 or less	17,487	18,118	18,661	18,922	12,417	14,182
4–9	19,701	20,960	20,901	21,462	13,830	17,531
10–19	25,722	26,964	26,605	27,566	16,675	20,078
20 or more	29,836	31,475	30,891	32,225	17,030	21,209

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 8.5—Average annual public school teacher salary (in constant 1991 dollars), by level, average beginning teacher salary, and percent change in average salary since 1960: 1960–1991, selected years

School year ending	All teachers	Elementary teachers	Secondary teachers	Beginning teacher salary
1960	$23,034	$22,204	$24,330	(*)
1964	26,397	25,561	27,591	(*)
1968	29,116	28,273	30,171	(*)
1972	31,692	30,775	32,757	$22,761
1976	30,227	29,459	31,035	21,794
1980	26,455	25,791	27,265	19,342
1984	28,817	28,229	29,631	20,340
1988	32,334	31,720	33,240	22,582
1991	33,015	32,448	33,701	22,830

*Not available.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *The Condition of Education 1992* (Washington, D.C.: 1992), 144.

Teachers' Satisfaction with Their Salaries

Only 8 percent of public school teachers and 12 percent of private school teachers strongly agreed with the statement "I am satisfied with my teaching salary."

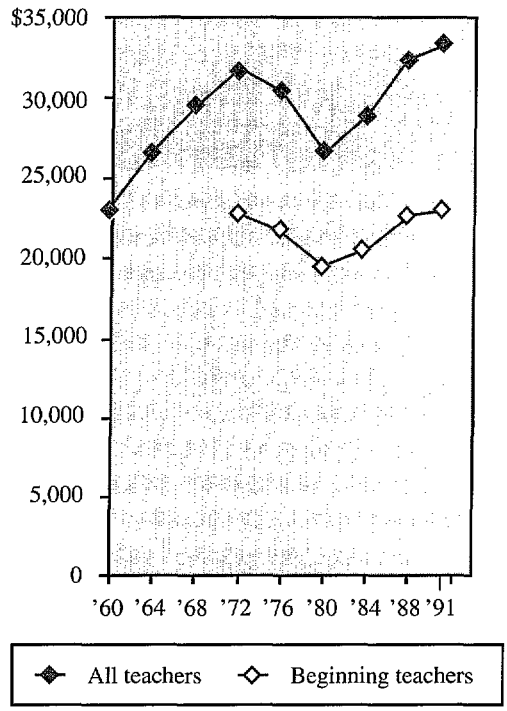
Are teachers satisfied with their salaries? In the 1987–88 SASS, teachers were asked whether they strongly agreed, somewhat agreed, somewhat disagreed, or strongly disagreed with the statement "I am satisfied with my teaching salary." The responses of public and private school teachers are interesting to compare (table 8.6). On one hand, private school teachers were more likely than public school teachers to agree strongly with the statement (12 percent compared with 8 percent), but on the other, they were also more likely to disagree strongly (38 percent compared with 33 percent).

New public school teachers appeared to be more satisfied with their salaries than were more experienced ones. Public school teachers with 3 years of experience or less strongly agreed with the statement more frequently, and strongly disagreed with the statement less frequently than did public school teachers with more experience.[59]

Interestingly, gender differences in satisfaction with salary varied by sector. Among public school teachers, males tended to be less satisfied with their salary than females. However, among private school teachers, males tended to be more satisfied with their salary. More males than females strongly agreed with the statement "I am satisfied with my teaching salary," and fewer strongly disagreed with it in the private sector.

Satisfaction also varied by race–ethnicity in the public sector, with black, non-Hispanic teachers being less satisfied with their salaries than white, non-Hispanic teachers. Fewer black, non-Hispanic teachers agreed with the statement "I am satisfied with my teaching salary" and more of them strongly disagreed with it than did white, non-Hispanic teachers.

Figure 8.3—Average annual salary (in constant 1991 dollars) of all teachers and beginning teachers in public schools: 1960–91, selected years



NOTE: Data on salaries of beginning teachers before 1972 are not available.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *The Condition of Education 1992* (Washington, D.C.: 1992), 144.

Benefits

Teachers were more likely to be offered medical, dental, and life insurance benefits in public schools than in private schools.

Benefits are another important aspect of teacher compensation. In 1987–88, 96 percent of all public

[59]These differences support Stephen Jacobson's contention that beginning teachers do not care as much about monetary rewards because they entered teaching expecting nonmonetary rewards such as internal satisfaction. See S. Jacobson, "Merit Pay and Teaching as a Career," in *Attracting and Compensating America's Teachers*, eds., K. Alexander and D. Monk.

Table 8.6—Percentage distribution of teachers by their level of agreement with the statement *I am satisfied with my teaching salary*, by sector and selected teacher characteristics: 1987–88

	Public				Private			
	Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree
TOTAL	7.6	33.1	25.9	33.4	11.5	26.4	24.0	38.2
Teaching level								
Elementary	8.0	33.7	25.8	32.5	10.1	26.3	24.5	39.1
Secondary	7.2	32.6	25.9	34.3	13.0	26.4	23.4	37.2
Sex								
Male	6.7	30.7	26.4	36.2	14.9	29.3	22.9	33.0
Female	8.0	34.2	25.7	32.1	10.6	25.5	24.3	39.6
Race–ethnicity								
Black, non-Hispanic	4.5	22.8	24.4	48.4	7.5	21.6	21.5	49.4
White, non-Hispanic	7.9	34.2	26.1	31.8	11.5	26.5	24.0	38.0
Other	7.4	33.2	25.4	34.0	10.6	27.0	28.7	33.7
Highest degree earned								
BA/BS or less	7.2	33.3	26.2	33.3	10.7	25.6	24.4	39.3
MA/MS or more	8.1	33.0	25.6	33.4	13.1	27.8	23.1	36.0
Years of teaching experience								
3 or less	10.6	35.9	25.8	27.8	11.1	25.6	23.2	40.0
4–9	6.4	32.8	27.3	33.6	9.5	23.5	25.6	41.3
10–19	7.2	31.7	25.9	35.2	9.2	26.3	25.8	38.7
20 or more	8.2	34.6	24.9	32.3	19.5	32.0	18.5	29.9

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

school teachers and 85 percent of all private school teachers were offered medical insurance for which the school district or school paid at least part (table 8.7). Other benefits that a majority of teachers were offered (and that the district or school paid all or part of) were dental insurance (64 percent), life insurance (72 percent), and pension contributions (68 percent). Teachers in public schools tended to fare better than those in private schools, and were more likely to be offered medical, dental, and life insurance benefits. However, in both sectors, about two-thirds of the teachers were offered pension contributions.

OTHER INCOME

43 percent of teachers received income from a source other than a school in addition to their base salary.

For many teachers, base salaries are only a part of their total income. Many supplement their income through additional work at school, work outside of school, or both. This additional work may take place during the school year, the summer, or both times. At

Table 8.7—Percentage of teachers offered various employee benefits and who paid for them, by sector: 1987–88

	General Medical Insurance		Dental Insurance		Group Life Insurance		
	District/ school pays part/all	Teacher pays all	District/ school pays part/all	Teacher pays all	District/ school pays part/all	Teacher pays all	Pension contri-butions
TOTAL	94.7	3.4	64.0	12.9	71.7	11.5	68.3
Sector							
Public	95.8	3.1	66.5	12.8	73.6	11.8	68.4
Private	85.4	6.3	42.4	13.6	55.8	9.4	68.0

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Demand and Shortage Questionnaire."

school, teachers are often paid for assisting with extracurricular or additional activities such as coaching, student activity sponsorship, or evening classes. In 1987–88, 43 percent of all teachers received supplemental income from their school (table 8.8); the average amount they received was $2,308 per year. With respect to nonschool outside income, 19 percent of all teachers received income from nonschool employment in the summer only, 17 percent during the academic year only, and 11 percent both in the summer and during the school year (table 8.9). The average amounts from nonschool sources ranged from $2,118 for those who worked only during the summer to $6,341 for those who worked both in the summer and during the school year.

Because private school teachers generally receive lower base salaries than do public school teachers, one might expect them to seek supplemental income more often. In fact, in 1987–88, private school teachers did have supplemental nonschool income more often than public school teachers (table 8.9). Public school teachers, however, were more likely than private school teachers to have additional school income, possibly due to more opportunities for this type of employment (table 8.8). On average, public school teachers earned higher amounts from nonschool sources than did private school teachers (table 8.9).

Secondary school teachers were more likely than elementary school teachers to receive supplemental income from school sources and also from nonschool sources (tables 8.8 and 8.9). In particular, elementary and secondary school teachers differed greatly in the amount of "additional school compensation" that they received. Whereas only 20 percent of public elementary school teachers received additional school compensation, 50 percent of public secondary school teachers did so. This difference may be due to the fact that secondary school teachers often have more opportunity than do elementary school teachers to earn such income from optional responsibilities such as coaching athletic teams, sponsoring student activities, or teaching evening classes.

Secondary school teachers were more likely than elementary school teachers to receive any supplemental school income and, in the public sector, the amount they received was generally higher. The average amount of school supplemental income that public secondary school teachers received was $2,568, compared with $1,814 for public elementary school teachers.

Some, but not all, years of experience comparisons were consistent with the expectation that teachers with less experience (and therefore lower base salaries) would seek supplemental income more often. Perhaps because less experienced teachers are often younger and have fewer family commitments, both public and private school teachers with 3 or fewer years of experience were more likely than

Table 8.8—Percentage of teachers who earned various types of supplemental school income and average amount earned, by sector and selected teacher characteristics: 1987–88

	Any supplemental income		Summer school salary		Other summer compensation		Additional school compensation	
	Percent teachers receiving	Average amount received	Percent teachers receiving	Average amount received	Percent teachers receiving	Average amount received	Percent teachers receiving	Average amount received
TOTAL	43.2	$2,308	12.0	$2,180	6.8	$998	33.5	$2,007
PUBLIC	44.5	2,305	11.9	2,191	7.2	954	35.1	2,009
Teaching level								
Elementary	31.1	1,814	10.4	2,029	5.8	699	20.4	1,553
Secondary	57.8	2,568	13.3	2,317	8.5	1,127	49.6	2,195
Highest degree earned								
BA/BS or less	43.3	2,244	11.1	2,198	6.3	930	34.5	1,963
MA/MS or more	45.8	2,370	12.7	2,184	8.1	975	35.8	2,058
Years of teaching experience								
3 or less	46.2	1,966	13.4	2,107	5.8	871	36.0	1,613
4–9	47.8	2,322	13.4	2,310	6.7	1,032	37.4	1,967
10–19	44.4	2,312	11.0	2,132	7.8	980	35.1	2,053
20 or more	41.6	2,422	11.4	2,211	7.1	878	32.9	2,135
Marital status								
Married	43.7	2,316	11.0	2,198	6.9	963	35.0	2,026
Not married	46.8	2,281	14.0	2,191	7.9	933	35.4	1,961
Dependents (other than spouse)								
None	44.2	2,145	11.5	2,118	6.8	935	34.5	1,870
One or more	44.8	2,416	12.1	2,240	7.4	966	35.5	2,103
PRIVATE	32.1	2,344	13.6	2,105	3.9	1,692	20.6	1,975
Teaching level								
Elementary	20.3	2,045	10.6	2,139	2.4	1,293	10.0	1,599
Secondary	46.6	2,505	17.3	2,079	5.6	1,906	33.7	2,114
Highest degree earned								
BA/BS or less	29.6	2,073	12.7	2,107	2.9	1,487	19.2	1,596
MA/MS or more	37.4	2,791	15.4	2,101	5.8	1,910	23.5	2,620
Years of teaching experience								
3 or less	34.5	1,884	16.5	2,038	4.1	1,196	21.0	1,284
4–9	33.0	2,020	14.1	2,075	4.4	1,455	20.6	1,547
10–19	31.7	2,460	13.4	1,979	3.9	2,154	21.2	2,058
20 or more	28.8	3,349	10.0	2,617	2.6	—	19.2	3,431
Marital status								
Married	29.8	2,521	11.0	2,073	3.4	1,645	20.1	2,353
Not married	35.9	2,093	17.5	2,169	4.7	1,754	21.8	1,369
Dependents (other than spouse)								
None	33.0	2,335	14.9	2,194	3.8	1,584	20.7	1,880
One or more	31.2	2,354	12.2	1,991	4.0	1,800	20.5	2,077

—Too few cases for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 8.9—Percentage of teachers who worked outside school at various times and average amount earned, by sector and selected teacher characteristics: 1987–88

	Summer only		Academic year only		Both	
	Percent employed	Average amount earned	Percent employed	Average amount earned	Percent employed	Average amount earned
TOTAL	19.2	$2,118	16.9	$4,069	10.8	$6,341
PUBLIC	18.4	2,174	16.5	4,220	10.6	6,578
Teaching level						
Elementary	13.4	1,662	11.2	3,825	7.0	5,426
Secondary	23.4	2,466	21.8	4,422	14.2	7,143
Highest degree earned						
BA/BS or less	19.8	2,035	15.3	3,860	10.2	6,152
MA/MS or more	16.9	2,358	17.8	4,566	11.0	7,022
Years of teaching experience						
3 or less	32.1	1,742	17.0	2,861	11.1	4,751
4–9	20.8	1,781	16.4	3,534	10.9	5,286
10–19	16.0	2,307	16.1	4,295	10.4	6,878
20 or more	15.3	2,713	16.9	5,142	10.4	7,898
Marital status						
Married	16.7	2,356	15.5	4,405	10.0	7,005
Not married	23.0	1,826	19.2	3,843	12.0	5,665
Dependents (other than spouse)						
None	19.7	1,811	16.5	4,082	10.3	5,582
One or more	17.5	2,461	16.5	4,317	10.8	7,247
PRIVATE	25.2	1,775	20.5	3,051	13.0	4,721
Teaching level						
Elementary	21.8	1,537	15.7	2,457	9.7	3,571
Secondary	29.3	1,996	26.3	3,490	17.2	5,527
Highest degree earned						
BA/BS or less	27.3	1,806	19.3	2,803	13.3	4,664
MA/MS or more	20.7	1,692	22.8	3,491	12.5	4,848
Years of teaching experience						
3 or less	44.6	1,829	27.2	2,615	21.3	4,798
4–9	27.5	1,563	19.6	2,556	12.4	3,937
10–19	18.6	1,850	18.8	3,145	11.8	4,684
20 or more	12.8	2,173	18.0	4,519	7.7	6,775
Marital status						
Married	19.4	1,959	17.4	3,156	10.5	5,184
Not married	35.2	1,596	25.9	2,928	17.5	4,241
Dependents (other than spouse)						
None	30.8	1,661	23.0	2,845	15.5	4,222
One or more	19.3	1,968	17.8	3,331	10.5	5,492

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

teachers with more experience to have nonschool summer income. This pattern did not exist with respect to supplemental school income, except that public school teachers with 3 or fewer years of experience were somewhat more likely than public school teachers with 20 or more years of experience to have supplemental school income.

Married teachers often have additional income from their spouse and may wish to spend time with their family. Therefore, it is not surprising that married public school teachers were less likely to receive supplemental school or nonschool income than were nonmarried public school teachers. However, other research has shown that in large families, the need for additional income increases, with the rate of moonlighting being greatest for single teachers with no dependents and teachers with six or more family members.[60]

Finally, significant differences were found between public and private school teachers with respect to the in-kind income they earned. Larger proportions of private school teachers than public school teachers received housing benefits, meals, tuition for their children, college tuition for themselves, and assistance with child care (table 8.10).

[60]Sharon A. Bobbitt, "Moonlighting Among Public and Private School Teachers" (paper presented to the American Educational Research Association, Boston, MA, April 1990).

Incentive Income

Relatively few teachers actually received any kind of incentive pay; many more strongly favored each type of pay incentive than received it.

In the SASS survey, teachers were asked questions about various types of incentive pay: master or mentor teacher pay for assuming additional responsibilities as a master or mentor teacher; additional pay for teaching in a field with an identified shortage, such as mathematics or science; additional pay for teaching in a less desirable location; career ladder incentives in which teachers progress through various levels based on their performance; merit pay bonus for performance in a given year; and schoolwide bonuses for exceptional school performance or improvement in a given year. For each incentive, teachers were asked whether or not they received it (table 8.11) and whether they strongly favored, mildly favored, mildly opposed, or strongly opposed the incentive (table 8.12).

Table 8.10—Percentage of teachers who received various types of in-kind income in addition to or in lieu of their teaching salaries, by sector and level: 1987–88

	Housing or housing expenses	Meals	Tuition for children	Child care	College tuition for self	Transportation expenses	None
TOTAL	1.2	1.6	1.6	0.5	3.3	3.8	90.5
PUBLIC	0.4	0.5	0.2	0.4	2.8	3.8	92.9
Teaching level							
Elementary	0.4	0.4	0.3	0.4	2.9	3.7	93.0
Secondary	0.4	0.5	0.2	0.4	2.7	3.9	92.9
PRIVATE	7.3	10.5	11.6	1.2	6.9	4.3	71.8
Teaching level							
Elementary	5.0	5.9	11.7	1.5	5.6	3.6	75.1
Secondary	9.8	15.5	11.5	0.8	8.3	5.1	68.3

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 8.11—Percentage of teachers who received various pay incentives, by sector and selected teacher characteristics: 1987–88

	Additional pay for mentor or master duties	Additional pay for fields of shortage	Additional pay for locations of shortage	Career ladders	Merit pay bonus for individuals	Merit pay bonus on schoolwide basis
TOTAL	9.0	1.3	1.2	16.2	2.7	2.9
PUBLIC	9.2	1.3	1.3	16.3	2.5	2.7
Teaching level						
Elementary	8.9	0.9	1.3	16.0	2.4	2.7
Secondary	9.6	1.6	1.2	16.6	2.5	2.8
Sex						
Male	9.8	1.8	1.3	16.5	2.4	2.4
Female	9.0	1.1	1.3	16.2	2.5	2.8
Race–ethnicity						
Black, non-Hispanic	9.2	2.4	3.1	17.0	3.3	3.7
White, non-Hispanic	9.1	1.0	1.0	16.0	2.3	2.5
Other	11.7	3.4	2.6	20.7	2.9	3.9
Highest degree earned						
BA/BS or less	8.4	1.5	1.4	16.2	2.6	2.7
MA/MS or more	10.2	1.1	1.1	16.4	2.4	2.7
Years of teaching experience						
3 or less	6.0	1.8	1.8	12.6	2.2	3.0
4–9	8.2	1.5	1.3	16.2	2.6	2.7
10–19	9.5	1.2	1.2	16.4	2.4	2.7
20 or more	10.7	1.2	1.1	17.7	2.5	2.5
PRIVATE	7.6	1.6	1.1	15.0	4.6	4.2
Teaching level						
Elementary	6.4	0.7	1.4	13.6	3.4	4.4
Secondary	8.8	2.6	0.7	16.6	5.8	3.8
Sex						
Male	10.9	3.1	0.5	18.9	6.2	3.5
Female	6.6	1.3	1.2	13.9	4.1	4.3
Race–ethnicity						
Black, non-Hispanic	5.5	2.2	2.8	17.9	5.4	8.8
White, non-Hispanic	7.3	1.5	1.0	14.7	4.5	3.9
Other	9.5	5.1	1.7	20.1	3.2	6.9
Highest degree earned						
BA/BS or less	6.5	1.6	1.4	13.9	4.0	4.6
MA/MS or more	9.6	1.7	0.4	17.2	5.8	3.3
Years of teaching experience						
3 or less	6.3	2.0	1.1	14.7	3.9	3.9
4–9	6.0	2.2	0.7	14.2	3.9	4.9
10–19	8.4	0.9	0.6	13.6	5.5	3.2
20 or more	10.0	1.7	2.5	19.5	4.7	4.9

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 8.12—Percentage of teachers who strongly favored various pay incentives, by sector and selected teacher characteristics: 1987–88

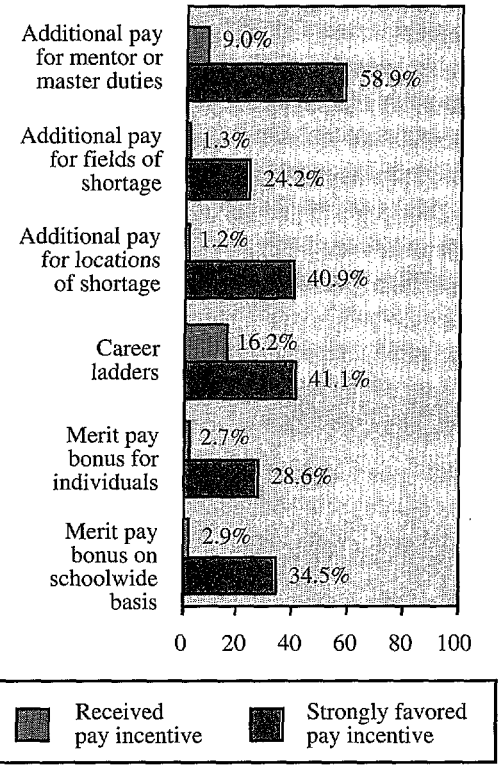
	Additional pay for mentor or master duties	Additional pay for fields of shortage	Additional pay for locations of shortage	Career ladders	Merit pay bonus for individuals	Merit pay bonus on schoolwide basis
TOTAL	58.9	24.2	40.9	41.1	28.6	34.5
PUBLIC	58.7	23.7	40.5	39.1	27.0	33.5
Teaching level						
Elementary	58.8	21.1	40.0	37.3	24.9	32.2
Secondary	58.5	26.4	41.0	41.0	29.1	34.7
Sex						
Male	55.9	27.8	41.1	40.6	27.9	32.6
Female	59.8	22.0	40.2	38.4	26.5	33.8
Race–ethnicity						
Black, non-Hispanic	64.5	40.5	53.1	47.8	38.2	52.6
White, non-Hispanic	57.8	21.3	38.6	37.7	25.2	30.9
Other	63.9	36.4	50.0	48.6	38.8	44.9
Highest degree earned						
BA/BS or less	57.5	24.5	40.5	39.8	28.4	35.6
MA/MS or more	60.0	22.9	40.4	38.4	25.3	31.0
Years of teaching experience						
3 or less	62.9	31.3	46.2	51.0	42.1	44.2
4–9	60.7	25.0	40.2	41.7	32.4	38.3
10–19	58.3	22.2	39.4	37.2	24.8	31.3
20 or more	56.2	22.3	40.2	35.9	20.6	29.2
Received master or mentor pay						
Yes	80.4	27.1	42.1	45.6	31.6	36.4
No	56.5	23.4	40.2	38.4	26.5	33.1
Received field of shortage pay						
Yes	69.9	63.1	58.1	49.9	41.6	47.7
No	58.4	23.2	40.1	38.8	26.7	33.1
Received location of shortage pay						
Yes	67.1	36.8	70.6	51.0	42.8	48.6
No	58.4	23.5	40.0	38.7	26.6	33.1
Received career ladder						
Yes	63.2	26.3	42.6	62.5	31.0	37.0
No	57.8	23.2	40.0	34.5	26.2	32.7
Received merit pay						
Yes	69.0	29.1	45.5	52.9	54.1	52.1
No	58.4	23.6	40.3	38.7	26.3	32.9
Received schoolwide bonus						
Yes	66.8	32.1	46.2	51.5	42.2	72.0
No	58.4	23.5	40.3	38.8	26.6	32.4
PRIVATE	60.6	27.6	44.2	56.5	41.6	42.6
Teaching level						
Elementary	60.3	26.6	43.6	54.3	40.2	43.5
Secondary	60.9	28.7	44.9	59.0	43.2	41.5

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Relatively few teachers actually received any kind of incentive pay; many more strongly favored each type of pay incentive than received it (figure 8.4). A majority (59 percent) of teachers strongly favored additional pay for mentoring or master teacher's duties (table 8.12), but only 9 percent received such pay (table 8.11). Forty-one percent favored additional pay for teaching in a location with a shortage, but only 1 percent received it. Because these types of incentives are designed only for some teachers, it is not surprising that more teachers favored than received them.

Other types of incentives, such as career ladders and individual merit pay, however, are designed to be available to any teacher in a district or school that provides it. While more than one-quarter of the teachers favored individual merit pay, only 3 percent received it. More teachers received career ladder pay than any other type of incentive pay, but still not close to number of teachers who favored it. Interestingly, more teachers favored schoolwide pay rather than individual merit pay. Teachers who received each type of pay were more likely to favor it than were teachers who did not receive it.

Figure 8.4—Percentage of public and private school teachers who received and percentage who strongly favored various pay incentives: 1987–88



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

More private school teachers than public school teachers favored each type of incentive pay. When there were differences between elementary and secondary school teachers' perspectives, secondary school teachers were more likely to favor incentive pay. Similarly, when differences in attitude existed between teachers with varying levels of experience, public school teachers with 3 or fewer years of experience favored each type of incentive more than did public school teachers with more years of experience. For each type of incentive, white, non-Hispanic public school teachers favored incentive pay less often than did public school teachers who were black, non-Hispanic or those who belonged to "other" racial–ethnic groups.

Some incentives are intended to motivate teachers either to work in a field or location of shortage. Many have argued that in order to maintain economic competitiveness, the United States needs to improve mathematics and science education and the education of immigrant children. Although incentive pay can be used to recruit more teachers into these fields, the SASS data show that this strategy is rarely used. Only 1 percent of teachers received incentive pay to teach in a shortage field (figure 8.4). Similarly, incentive pay can be used to attract teachers to work in less desirable locations, such as inner cities or rural areas. But again, only 1 percent of teachers received this type of incentive.

Comparison with Other Professions and Other Countries

Recent college graduates who majored in education received lower salaries, on average, than did other recent college graduates.

The SASS data show that teachers who left the profession in 1988–89 did not increase their

incomes, on average, at least immediately (table 8.13).[62] These data, however, are for individuals whose hiring qualifications (degrees and work experience) reflect their original decision to teach.

One indicator of whether or not entering education is an economically wise decision is to compare the salaries of college graduates with various majors. The data from the Recent College Graduate Study (RCG) allow comparison of the salaries of those who had majored in education with the salaries of

[62]It should be noted that the sample of SASS former teachers was relatively small, and therefore all but obvious differences would not be statistically significant. See, for example, average total incomes for private school teachers. It appears that their 1988–89 income was higher than their 1987–88 income. However, the standard errors were too high to find statistical significance.

Table 8.13—Average annual income of former teachers,* by sector, year, and selected teacher characteristics: 1987–88 and 1988–89

	Public		Private	
	1987–88	1988–89	1987–88	1988–89
TOTAL	$26,710	$25,999	$14,619	$15,927
Highest degree earned				
BA/BS or less	23,314	20,766	13,352	14,314
MA/MS or more	30,413	29,848	17,645	19,307
Years of teaching experience				
3 or less	19,575	17,397	12,166	17,284
4–9	22,388	23,440	13,616	17,518
10–19	27,793	30,176	18,187	13,908
20 or more	33,138	29,362	13,193	—
1987–88 teaching field				
Kindergarten	23,049	—	10,952	—
General elementary	25,377	26,796	13,266	15,755
Math/science	28,245	27,574	18,326	19,789
English/language arts	24,989	26,697	14,946	—
Social studies	36,425	—	—	—
Special education	27,146	22,695	—	—
Bilingual/ESL	—	—	—	—
Vocational education	28,668	—	—	—
Other	26,287	23,302	13,998	14,388
1988–89 Occupation				
Managerial	26,864	25,440	18,987	19,508
Professional	27,307	23,492	16,480	20,522
Postsecondary education	25,630	—	—	—
Nonteaching occupation in elementary/secondary school	28,261	30,301	13,794	17,816
Other	25,558	19,536	16,195	12,482

—Too few cases for a reliable estimate.

*1987–88 income includes income from both school and nonschool sources.

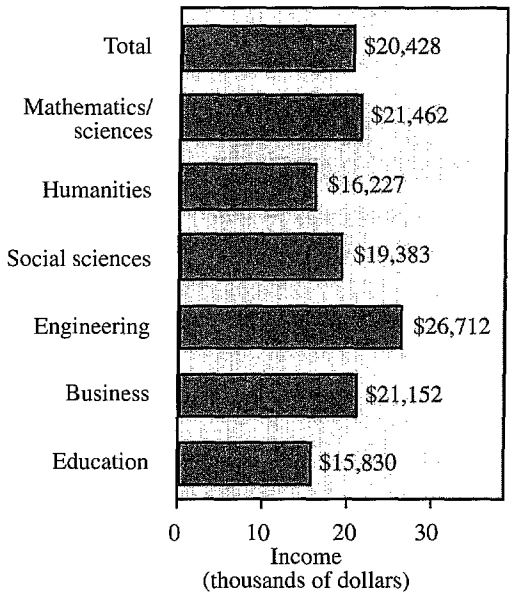
SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

other graduates. Average salaries of recent college graduates in education were lower than the average salaries of all recent college graduates (figure 8.5 and table 8.14). The highest paid major was engineering, for which the average salary was $26,712. The lowest paid majors were education and humanities, for which the average salaries were $15,830 and $16,227, respectively.

Table 8.15 shows teaching salaries from other countries in their own currency, in a U.S. dollar equivalent form,[62] and as a proportion of the U.S. average salary in the same year. In 1984, average salaries in U.S. dollar equivalents ranged from $13,836 (South Korean Middle schools) to $31,956 (Canadian secondary schools), with the United States at $22,667.

[62]"PPP rates" are conversion factors between foreign currencies and the U.S. dollar that reflect the domestic purchasing power of each national currency. By using PPP rates, rather than market exchange rates, teachers' pay in other countries will not be distorted by market fluctuations in currency exchange rates.

Figure 8.5—Average salaries of 1985–86 bachelor's degree recipients who were employed full time, by college major: 1987



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987 Survey of 1985–86 College Graduates.

Table 8.14—Average salaries of full-time employed 1985–86 bachelor's degree recipients, by college major and selected demographic characteristics: 1987

	Total	Mathematics/ sciences	Humanities	Social sciences	Engineering	Business	Education
TOTAL	$20,428	$21,462	$16,227	$19,383	$26,712	$21,152	$15,830
Age							
Under 25 years	19,260	20,465	15,692	18,384	26,526	19,343	14,870
25 years or over	22,009	22,819	17,093	20,944	26,854	23,662	17,049
Sex							
Male	22,261	22,390	17,335	20,807	26,658	22,494	18,003
Female	18,584	20,082	15,225	17,924	26,891	19,630	15,199
Race–ethnicity							
Black, non-Hispanic	19,237	17,264	—	18,307	—	21,382	16,384
White, non-Hispanic	20,403	21,612	16,161	19,304	26,869	21,111	15,666
Other	21,157	21,818	16,077	20,910	25,752	21,475	17,362
Teaching status							
Teaching	15,806	16,483	16,636	15,022	—	—	15,621
Not teaching	17,032	19,984	14,458	—	—	—	14,727

—Too few cases for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987 Survey of 1985–86 College Graduates.

Table 8.15—Average salaries of teachers in selected countries and comparison with average salaries of teachers in the United States, by level: 1982–86

Country and currency unit	Level of education	Year	Average salary U.S. dollar equivalent (PPP rate)[1]	Average salary/ U.S. average salary in same year
Canada	Elementary	1982	$23,515	1.25 e
		1983	26,220	1.30 e
		1984	28,364	1.32 e
	Secondary	1982	27,688	1.39 s
		1983	29,816	1.39 s
		1984	31,956	1.41 s
Denmark	Primary + lower secondary	1982	17,709	0.94 e
	Upper secondary	1982	25,498	1.28 s
Federal Republic of Germany	Primary	1982	19,026	1.01 e
	Secondary	1982	21,681	1.09 s
Japan	Elementary + lower secondary	1982	18,621	0.99 e
		1983	19,570	0.97 e
		1984	20,359	0.95 e
	Upper secondary	1982	20,148	1.01 s
		1983	21,419	1.00 s
		1984	22,406	0.99 s
Netherlands	Primary	1982	16,858	0.90 e
	Secondary	1982	25,495	1.28 s
New Zealand	Primary	1986	[2]16,212	[3]0.65
	Secondary	1986	[2]20,382	[3]0.78
South Korea	Primary	1984	14,947	0.70 e
	Middle	1984	13,836	0.64 e
	Senior high school	1984	14,947	0.66 s
Sweden	Junior	1984	15,759	0.73 e
	Intermediate	1984	16,106	0.75 e
	Upper + Gymnasium	1984	18,803	0.83 s
United Kingdom	Primary	1982	15,648	0.83 e
		1984	16,959	0.79 e
	Secondary	1982	16,377	0.83 s
		1984	17,731	0.78 s

Table 8.15—Average salaries of teachers in selected countries and comparison with average salaries of teachers in the United States, by level: 1982–86—Continued

Country and currency unit	Level of education	Year	Average salary U.S. dollar equivalent (PPP rate)[1]	Average salary/ U.S. average salary in same year
United States	Elementary	1982	$18,801	1.00
		1983	20,205	1.00
		1984	21,452	1.00
	Secondary	1982	19,851	1.00
		1983	21,380	1.00
		1984	22,667	1.00

NOTE: The letters "e" and "s" in the last column indicate that the base of the salary comparison is the U.S. salary (for the same year) paid to elementary teachers or secondary teachers, respectively.

[1]"PPP rates" are conversion factors between foreign currencies and the U.S. dollar that reflect the domestic purchasing power of each national currency. By using PPP rates, rather than market exchange rates, teachers' pay in other countries will not be distorted by market fluctuations in currency exchange rates.

[2]PPP rates are not available for New Zealand. Conversion is at a market rate of 1.7 New Zealand dollars per U.S. dollar.

[3]New Zealand salaries for primary and secondary teachers in 1986 are compared with the estimated average U.S. salaries of $24,762 and $26,080 for elementary and secondary teachers, respectively, as reported in the 1985–86 edition of the National Education Assocation's *Estimates of School Statistics*.

SOURCE: S.M. Barro, and L. Suter, *International Comparisons of Teachers' Salaries: An Exploratory Study* (Washington, D.C.: U.S. Department of Education, Office of Educational Research and Improvement, 1988), 15–17.

CHAPTER 9 • TEACHERS' OPINIONS ABOUT THEIR SCHOOLS AND PROFESSION

The data presented in this chapter address teachers' beliefs and attitudes about their students, colleagues, working conditions, schools, and profession. These data may inform further analyses of many of the issues discussed elsewhere in this report. For example, teachers' morale and satisfaction with various aspects of their work life may well impinge upon their performance, and therefore, upon student achievement. In addition, teachers' career plans no doubt will affect the supply and demand of teachers in future years. Furthermore, independent of their effect upon teachers' effort or length of stay in teaching, teachers' beliefs and opinions serve as important sources of data concerning exactly what is happening in our schools, including the problems that students, parents, teachers, and administrators face in achieving learning goals, and what they need to meet those goals.

This chapter opens with data relevant to the question "Why do people become teachers?" This is a question that teacher educators and other scholars of education have often addressed during the past three decades. Next, the chapter reports on teachers' assessments of schools as places to work. Specifically, it looks at teachers' views on the amount of control they had in their classrooms, on the influence they had over school policies, and on the support they received from other school personnel in solving problems. Third, teachers' perceptions of the seriousness of various problems in their schools and the relationship between teachers' perceptions of problems and their willingness to reenter the profession are examined. Fourth, teachers' satisfaction with specific aspects of their working conditions and with teaching generally are discussed, and comparisons are made between the job satisfaction of those who remained in teaching and that of those who left teaching for other employment. Finally, the chapter closes with data on the plans of teachers and former teachers for their future careers.

REASONS FOR BECOMING A TEACHER

About 32 percent of newly qualified teachers who were teaching in 1987 reported that they became teachers because they enjoyed working with children, 30 percent because they found teaching satisfying, and 28 percent because they had always wanted to be a teacher.

For more than 30 years, researchers have studied teachers' reasons for entering the profession with a number of objectives in mind. For example, a recent review of the literature concerning prospective teachers' demographic characteristics, motives, and beliefs about teaching focused on teacher educators, arguing that better knowledge of who prepares to teach and what prospective teachers believe when they begin that preparation would improve teacher education.[63] Others have suggested that teachers' motives for entering the profession influence their later practice as teachers, and therefore are of interest to researchers and policymakers as they seek to improve teaching practice.[64]

In the 1987 Recent College Graduates Study (RCG), respondents who taught in elementary or secondary schools after receiving their degrees in 1985–86 were given six reasons for becoming a teacher and were asked which of these reasons best described why they decided upon teaching as a career. As in much of the previous research on current or prospective

[63]S.M. Brookhart and D.J. Freeman, "Characteristics of Entering Teacher Candidates," *Review of Educational Research* 62 (1992): 37–60.

[64]Lortie, for example, suggested that teachers who enter the profession because they enjoyed school might be more committed to traditional teaching practice and less receptive to innovation than other teachers (Lortie, *Schoolteacher*, 1975).

teachers' reasons for entering the profession, the majority of new teachers reported that the intrinsic satisfaction derived from teaching motivated them to become teachers. Among newly qualified teachers who were teaching, 32 percent reported that they had decided on teaching because they enjoyed working with children, 30 percent because they received satisfaction from teaching, and 28 percent because they had always wanted to be a teacher (table 9.1). Extrinsic reasons such as job security, teaching salaries, and the inability to find another job did not attract many new teachers to the profession.

VIEWS OF THE SCHOOL AS A WORKPLACE

Private school teachers were more likely than public school teachers to find their superiors or peers at their schools extremely helpful in solving instructional or classroom management problems.

Although research on schools and schooling has been going on for many years, schools have most often

Table 9.1—Percentage distribution of newly qualified teachers who were teaching by main reason for becoming a teacher, by sector, school level, and selected teacher characteristics: 1987

	Always wanted to be a teacher	Likes to work with children	Job security	Receives satisfaction from teaching	Teacher salary is good	Found no other job	Other
TOTAL	28.4	31.8	2.1	30.2	—	1.3	6.0
PUBLIC	28.8	31.6	2.5	29.5	—	1.5	5.9
School level							
Elementary	31.1	35.0	0.8	27.6	—	0.7	4.4
Secondary	25.0	26.6	5.1	34.4	—	2.9	6.0
Combined	28.7	30.0	2.8	21.5	—	—	15.8
Age							
Under 25 years	31.2	32.0	1.7	28.1	—	1.6	5.1
25 years or over	25.2	31.1	3.8	31.5	—	1.3	7.2
Sex							
Male	16.7	32.9	4.7	32.8	—	2.1	10.8
Female	32.2	31.4	1.9	28.3	—	1.3	4.6
PRIVATE	28.7	33.8	—	29.8	—	—	6.1
School level							
Elementary	30.4	38.7	—	27.3	—	—	2.4
Secondary	26.4	23.6	—	29.6	—	—	16.4
Combined	—	—	—	—	—	—	—
Age							
Less than 25 years	32.8	34.5	—	25.9	—	—	6.1
25 years or more	20.2	31.3	—	38.5	—	—	6.1
Sex							
Male	—	—	—	—	—	—	—
Female	29.9	36.2	—	28.2	—	—	4.7

—Too few cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987 Survey of 1985–86 College Graduates.

been studied in terms of their success or failure as institutions in which children are, or are supposed to be, educated. In recent years, however, researchers in the United States, Great Britain, and Australia have studied schools as institutions in which adults work, that is, from the perspective of the adults, mostly the teachers, who staff them.[65] Moreover, particular issues concerning the work life and environment of teachers have received increasing attention among policymakers. Those who have called for school reform have claimed that the quality of instruction suffers when teachers have inadequate control over their work or insufficient support in terms of physical and human resources. Therefore, reformers have suggested that improving the conditions under which teachers work, including the amount of control and responsibility that teachers have over their work, will, in turn, improve the quality of instruction.[66]

The Schools and Staffing Survey (SASS) data provide several avenues to explore teachers' attitudes about their schools as workplaces, three of which are included in this section: the amount of control teachers felt they had over teaching and planning in their classrooms, the amount of influence they felt they had over school policies in various areas, and the degree to which they felt that other school personnel helped them solve problems related to instruction or classroom management.

The majority of teachers reported that they had complete control over teaching and planning in four areas of classroom life: selecting textbooks and other instructional materials; selecting content, topics, and skills to be taught; selecting teaching techniques; and determining the amount of homework to be assigned (figure 9.1 and table 9.2). Teachers were most likely to report that they had complete control over the amount of homework they assigned and selecting teaching techniques, content, and materials. In each area of classroom life, private school teachers were more likely than public school teachers to report that they had complete control (although the difference for the amount of homework assigned was slight). The same was true for secondary school teachers in both public and private schools compared with elementary school teachers.

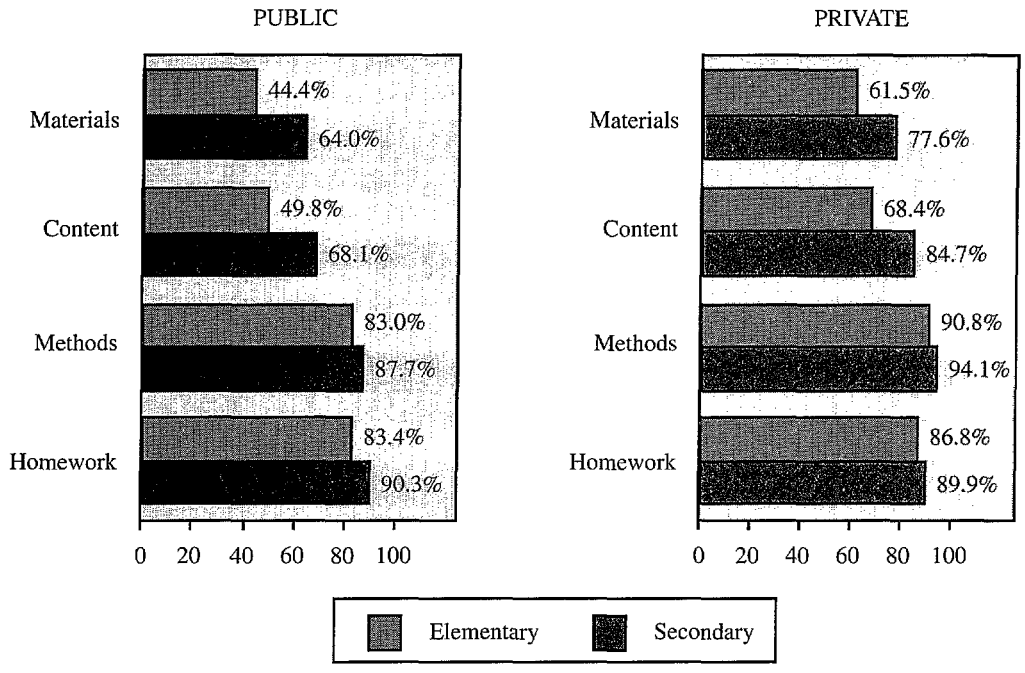
In the public sector, school district and size were associated with the extent to which teachers reported having complete control in their classrooms: generally, teachers in smaller districts and smaller schools were more likely than teachers in larger districts and schools to report that they had complete control in each area of classroom teaching.[67] Community type, which is often associated with school size because urban schools tend to be larger than schools in rural areas, small cities, or suburbs of large cities, was also associated with public school teachers' reports of control in the classroom. When asked about the amount of control they had over teaching materials and the content of their instruction, teachers in urban schools were less likely than teachers in suburban or rural–small city schools to report that they had complete control, as were teachers in suburban schools compared with their rural–small city counterparts. Although this pattern generally held true with respect to teachers' reports of control over teaching methods and assigning homework, not all differences among community types in these areas were significant. Neither school size nor community type was associated with consistent differences among private school teachers' reports of the amount of control they had over classroom teaching materials, content, or activities.

[65]See, for example, R.W. Connell, *Teachers' Work* (Sydney: George, Allen & Unwin, 1985); A. Hargreaves and P. Woods, eds., *Classrooms and Staffrooms* (Milton Keynes, England: Open University Press, 1984); Richard Ingersoll, "Conflict and Control in American Schools: Teachers' Work and the Structure of Educational Organization" (unpublished dissertation, University of Pennsylvania, 1992); Richard Ingersoll, "Organizational Control in Secondary Schools" (paper presented at the annual meeting of the American Educational Research Association, San Francisco, 1992); S.M. Johnson, *Teachers at Work: Achieving Success in Our Schools* (New York: Basic Books, 1990); L.M. McNeil, *Contradictions of Control: School Structure and School Knowledge* (New York: Routledge & Kegan Paul, 1986); and S.J. Rosenholtz, *Teachers' Workplace* (New York: Longman, 1989).

[66]Holmes Group, *Tomorrow's Teachers* (East Lansing, MI: Author, 1986); Carnegie Forum on Education and the Economy, Task Force on Teaching as a Profession, *A Nation Prepared: Teachers for the 21st Century* (New York: Author, 1986).

[67]Susan Moore Johnson has also found that school size is related to teachers' perceptions of the control they have over their work (Johnson, *Teachers at Work*, 1990). Recent school reform and restructuring efforts have been oriented toward decreasing school size to improve communication, climate, and instructional effectiveness in both elementary and secondary schools. See, for example, D. Meier, "Central Park East: An Alternative Story," *Phi Delta Kappan* 68 (1987): 753–57.

Figure 9.1—Percentage of teachers who reported that they felt they had a lot of control* in their classrooms over selected areas of planning and teaching, by sector and level: 1987–88



*Teachers were defined as having felt they had a lot of control if they responded with a 5 or 6 on a 6-point scale of control, with 6 representing *complete control.*

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Beyond the confines of the classroom, 30 percent to 40 percent of teachers reported that they had a great deal of influence over school policies in the areas of discipline, inservice programs, ability grouping, and establishing curriculum (table 9.3). Teachers in both public and private schools were more likely to report that they had a great deal of influence over discipline policy and establishing curriculum than over inservice programs and ability grouping in their schools. In all four policy areas, private school teachers were more likely than public school teachers to report that they had a great deal of influence (figure 9.2). In the public sector, elementary school and female teachers were more likely than secondary school and male teachers to report that they had a great deal of influence over discipline policy, inservice programs, and ability grouping in their schools. In the area of establishing curriculum, however, public secondary school teachers were more likely than public elementary school teachers to report that they had a great deal of influence.

The isolation of classroom work has been commented upon by a number of researchers who study teachers and their work. Teachers have less contact with their peers than do many other professionals. In fact, some classroom teachers rarely communicate with other adults during the workday, and even fewer teachers frequently consult with peers or superiors concerning professional challenges.[68]

[68]See, for example, A. Hargreaves and R. Dawe, "Paths of Professional Development: Contrived Collegiality, Collaborative Culture, and the Case of Peer Coaching," *Teaching and Teacher Education* 6 (1990): 227–41. J.W. Little, "Norms of Collegiality and Experimentation: Workplace Conditions of School Success," *American Educational Research Journal* 19 (1982): 325–40.

Table 9.2—Percentage of teachers who reported that they felt they had a lot of control* in their classrooms over selected areas of planning and teaching, by sector and selected teacher, school, and district characteristics: 1987–88

	Selecting materials	Content, topics, skills	Teaching techniques	Amount of homework
TOTAL	55.8	60.8	86.1	87.0
PUBLIC	54.1	58.8	85.3	86.8
Teaching level				
Elementary	44.4	49.8	83.0	83.4
Secondary	64.0	68.1	87.7	90.3
District size				
Less than 1,000	76.8	77.0	90.6	91.0
1,000 to 4,999	63.7	65.7	87.7	89.1
5,000 to 9,999	50.6	57.1	85.7	86.3
10,000 or more	40.0	48.0	81.5	83.9
School size				
Less than 150	70.1	73.2	90.4	88.9
150 to 499	56.8	60.9	86.6	87.1
500 to 749	51.3	55.5	84.7	85.7
750 or more	52.0	57.6	84.3	87.7
Community type				
Urban	41.1	49.1	81.4	84.7
Suburban	52.9	58.0	86.3	85.7
Rural-small city	61.5	64.2	87.2	88.7
PRIVATE	69.2	76.2	92.4	88.3
Teaching level				
Elementary	61.5	68.4	90.8	86.8
Secondary	77.6	84.7	94.1	89.9
School size				
Less than 150	62.5	73.2	89.7	90.3
150 to 499	68.6	75.1	92.9	87.3
500 to 749	73.2	78.4	93.6	88.4
750 or more	76.7	80.5	94.5	93.3
Community type				
Urban	69.1	77.1	92.1	89.4
Suburban	71.6	77.4	93.3	85.5
Rural–small city	67.0	73.9	92.6	89.6

*Teachers were defined as having felt they had a lot of control if they responded with a 5 or 6 on a 6-point scale of control, with 6 representing *complete control.*

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

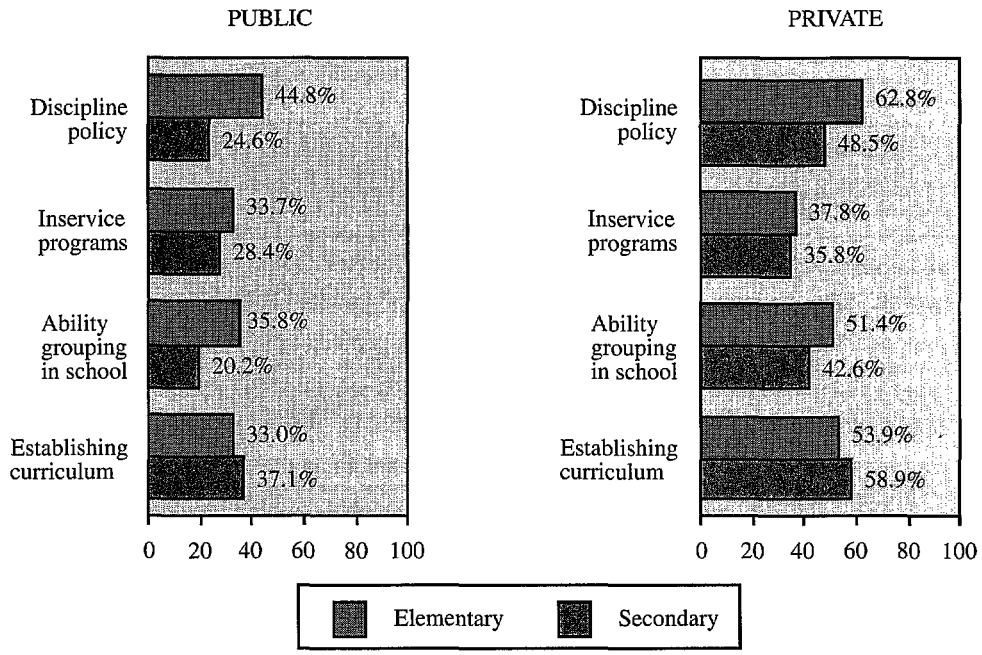
Table 9.3—Percentage of teachers who thought that they had a lot of influence* over school policy in certain areas, by sector and selected teacher characteristics: 1987–88

	Disciplinary policy	Inservice programs	Ability grouping in school	Establishing curriculum
TOTAL	37.3	31.8	30.3	37.5
PUBLIC	34.8	31.1	28.1	35.0
Teaching level				
Elementary	44.8	33.7	35.8	33.0
Secondary	24.6	28.4	20.2	37.1
Sex				
Male	26.4	27.1	22.2	35.5
Female	38.3	32.8	30.6	34.8
Age				
Under 30 years	36.9	30.4	29.1	38.4
30–39 years	34.3	30.0	27.2	35.8
40–49 years	34.0	31.5	28.0	34.0
50 years or over	36.0	33.1	29.3	32.7
Highest degree earned				
BA/BS or less	37.1	31.8	29.5	36.8
MA/MS or more	32.3	30.4	26.6	33.0
PRIVATE	55.9	36.8	47.2	56.3
Teaching level				
Elementary	62.8	37.8	51.4	53.9
Secondary	48.5	35.8	42.6	58.9
Sex				
Male	47.9	36.2	40.9	57.3
Female	58.1	37.0	49.0	56.0
Age				
Under 30 years	53.1	33.4	44.8	52.8
30–39 years	55.3	36.8	47.3	58.0
40–49 years	57.1	39.5	47.6	56.3
50 years or over	59.2	36.7	49.5	56.8
Highest degree earned				
BA/BS or less	57.5	35.6	46.9	54.9
MA/MS or more	52.8	39.3	47.7	58.9

*Teachers were defined as having thought they had a lot of influence if they responded with a 5 or 6 on a 6-point scale of influence with 6 representing *a great deal of influence.*

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Figure 9.2—Percentage of teachers who thought that they had a lot of influence* over school policy in certain areas, by sector and level: 1987–88



*Teachers were defined as having thought they had a lot of influence if they responded with a 5 or 6 on a 6-point scale of influence, with 6 representing *a great deal of influence.*

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Despite these findings, 54 percent of respondents to the 1987–88 SASS survey reported that other teachers had been extremely helpful in solving an instructional or classroom management problem (table 9.4). Public school teachers were most likely to report that other teachers had been extremely helpful, followed by their principal or school head, department chair, and other school administrators. In public schools, elementary school teachers were more likely than secondary school teachers to report that principals or other teachers had been extremely helpful, whereas secondary school teachers were more likely to report that department chairs or other administrators had been extremely helpful. In general, private school teachers were more likely than public school teachers to report that other school personnel had been helpful in solving problems.

Teachers' Perceptions of Student Achievement Levels

At the secondary level, the most experienced public school teachers were less likely to be teaching lower achieving students.

In SASS, teachers were asked to assess the achievement levels of their students compared with the achievement levels of other students at their school. Eleven percent of all elementary school teachers said that they mainly taught higher achieving students, 37 percent said that they mainly taught average achieving students, 20 percent said that they mainly taught lower achieving students,

Table 9.4—Percentage of teachers who had found various school personnel *very or extremely helpful in helping the teacher improve teaching or solve an instructional or management problem, by sector and selected teacher characteristics: 1987–88**

	Principal or school head	Department chair	Other administrators	Other teachers
TOTAL	44.1	40.1	31.1	54.1
PUBLIC	42.8	38.9	29.9	53.0
Teaching level				
Elementary	47.4	34.0	28.8	59.2
Secondary	37.9	41.7	30.8	46.4
Sex				
Male	38.6	39.2	27.5	42.6
Female	44.6	38.8	31.1	57.2
Age				
Under 30 years	47.4	44.6	32.7	63.9
30–39 years	42.5	38.7	29.4	54.2
40–49 years	41.2	37.5	28.8	50.4
50 years or over	42.7	37.1	30.7	46.5
Highest degree earned				
BA/BS or less	46.1	40.3	31.2	56.8
MA/MS or more	39.1	37.5	28.5	48.6
PRIVATE	53.9	52.2	43.9	62.7
Teaching level				
Elementary	58.8	52.3	44.3	66.6
Secondary	48.5	52.1	43.7	58.4
Sex				
Male	47.8	49.1	38.2	52.8
Female	55.5	53.3	46.3	65.4
Age				
Under 30 years	53.7	48.3	40.9	64.0
30–39 years	52.5	53.7	43.9	63.6
40–49 years	53.7	50.7	45.1	62.2
50 years or over	57.3	56.7	46.8	58.5
Highest degree earned				
BA/BS or less	56.9	55.9	44.9	64.8
MA/MS or more	48.0	46.9	42.3	58.5

*Teachers were defined as finding school personnel *very or extremely helpful* if they responded with a 5 or 6 on a 6-point scale, with 6 representing *extremely helpful.*

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

and 32 percent said that they taught students of differing levels of achievement (table 9.5). Among secondary school teachers, 8 percent said that they mainly taught higher achieving students, 35 percent average achieving, 29 percent lower achieving, and 28 percent said that they mainly taught students achieving at different levels.

Private school teachers were more likely than public school teachers to report that they were teaching students who were higher achieving relative to other students in the school. Whereas 9 percent of public school elementary teachers said that they mainly taught higher achieving students, this was true for 25 percent of private school elementary teachers. In contrast, 22 percent of public school elementary teachers said that they mainly taught lower achieving students, compared with 5 percent of private school elementary teachers. Among secondary school teachers, 7 percent of public versus 15 percent of private school teachers said that they mainly taught higher achieving students, and 31 percent of public versus 17 percent of private school teachers said that they mainly taught lower achieving students.

Table 9.5—Percentage distribution of teachers by their descriptions of their students' achievement levels relative to other students in their school, by level, sector, and selected public school teacher characteristics: 1987–88

	Elementary				Secondary			
	Primarily higher achieving	Primarily average achieving	Primarily lower achieving	Widely differing achievement	Primarily higher achieving	Primarily average achieving	Primarily lower achieving	Widely differing achievement
TOTAL	10.8	37.3	19.9	32.0	7.9	34.7	29.2	28.2
PUBLIC	8.9	36.3	21.9	32.9	7.0	33.6	30.8	28.6
Highest degree earned								
BA/BS or less	8.5	39.0	19.7	32.8	6.0	32.2	31.2	30.6
MA/MS or more	9.3	32.9	24.8	33.1	7.9	34.9	30.5	26.7
Years of teaching experience								
3 or less	7.5	40.1	21.1	31.3	5.5	28.9	39.0	26.6
4–9	8.1	33.9	26.4	31.6	5.9	29.7	34.0	30.4
10–19	9.0	35.2	22.0	33.8	7.2	34.3	30.1	28.4
20 or more	9.9	38.8	18.0	33.4	8.0	37.0	26.8	28.2
Teaching in best qualified field								
Yes	8.9	37.5	20.1	33.5	7.0	35.0	29.4	28.7
No	8.7	31.1	29.5	30.6	7.1	26.0	39.4	27.6
Would become teacher again								
Certainly would	10.1	37.7	20.4	31.9	7.8	33.3	29.2	29.6
Probably would	7.3	37.5	22.0	33.3	6.7	35.6	29.8	27.9
PRIVATE	25.0	44.6	5.0	25.4	15.3	43.0	16.7	25.0

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

At the secondary level, the most experienced public school teachers (those with 20 or more years of experience) were less likely to be teaching lower achieving students. Twenty-seven percent said that they mainly taught lower achieving students, compared with 39 percent of their counterparts with 3 or fewer years of experience.

Perceptions of School Problems

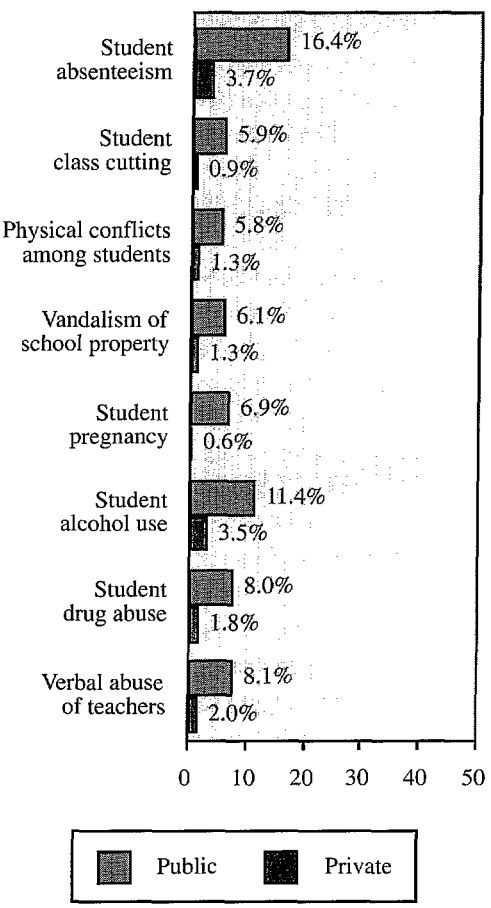
Public school teachers who did not rate school problems as serious were more likely than those who did to report that they certainly or probably would become teachers again.

Schools are unique settings for adult work for a number of reasons: as institutions, they serve children exclusively, rather than adults or a combination of children and adults; their clients receive services involuntarily, rather than seeking the services of schools and teachers; and neither schools nor teachers select those whom they serve in their schools or classrooms.[69] Therefore, in addition to generic working conditions such as the issues of autonomy and support discussed above, schools and students have unique problems that affect the quality of the working environment for teachers.

In the 1987–88 SASS Teacher Questionnaire, teachers were asked whether various issues were serious, moderate, minor, or not problems in their schools. Fifteen percent rated student absenteeism and 11 percent rated student alcohol use as serious problems in their schools. Seven percent or fewer rated each of the other identified problems as serious (table 9.6). Public school teachers were more likely than private school teachers to rate each of the problems as serious (figure 9.3), and with the exception of physical conflict among students, public secondary school teachers were more likely than public elementary school teachers to rank each of the problems as serious. Tables 9.7 and 9.8 show differences for public school teachers by state and for private school teachers by affiliation.

An area of great interest is the extent to which teachers' plans to remain in teaching are related to their perceptions of school problems. Among public school teachers, those who rated student absenteeism, student use of alcohol, student tardiness, student drug abuse, and verbal abuse of teachers as

Figure 9.3—Percentage of teachers who thought that certain matters were serious problems in their schools, by sector: 1987–88



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

[69]The involuntariness and lack of selection is clearly more relevant in public schools than in private schools; although even in private schools, it may be the parents' choice to send the student.

Table 9.6—Percentage of teachers who thought that certain matters were serious problems in their schools, by sector and selected teacher characteristics: 1987–88

	Student absenteeism	Students cutting classes	Physical conflicts among students	Vandalism of school property	Student pregnancy	Student alcohol use	Student drug abuse	Verbal abuse of teachers
TOTAL	14.9	5.3	5.3	5.6	6.2	10.5	7.3	7.4
PUBLIC	16.4	5.9	5.8	6.1	6.9	11.4	8.0	8.1
Teaching level								
Elementary	6.7	1.0	5.8	4.1	1.0	1.5	1.2	4.9
Secondary	26.4	11.1	5.9	8.2	13.0	21.6	15.0	11.4
Sex								
Male	22.4	9.4	5.3	7.8	8.8	16.7	11.5	9.8
Female	13.9	4.5	6.1	5.4	6.1	9.2	6.5	7.4
Age								
Under 30 years	18.3	6.1	7.5	6.6	7.3	14.2	10.7	10.5
30–39 years	16.2	5.7	5.7	6.1	7.5	12.3	8.3	8.4
40–49 years	15.7	5.7	5.6	5.7	6.5	11.0	7.4	7.6
50 years or over	16.5	6.4	5.1	6.3	6.2	8.6	6.2	6.3
Highest degree earned								
BA/BS or less	15.6	5.3	5.8	6.0	6.5	11.3	7.8	7.7
MA/MS or more	17.3	6.6	5.9	6.3	7.4	11.6	8.3	8.5
PRIVATE	3.7	0.9	1.3	1.3	0.6	3.5	1.8	2.0
Teaching level								
Elementary	1.1	0.6	1.4	1.3	0.4	0.7	0.6	1.3
Secondary	6.4	1.2	1.2	1.3	0.9	6.7	3.1	2.7
Sex								
Male	7.0	1.4	1.8	1.2	0.4	6.3	3.1	2.0
Female	2.8	0.8	1.2	1.3	0.7	2.8	1.4	2.0
Age								
Under 30 years	4.7	1.6	2.6	2.6	1.4	4.5	3.7	4.2
30–39 years	4.5	0.7	1.1	1.3	0.5	3.7	1.5	1.8
40–49 years	2.5	0.5	1.0	0.9	0.5	3.3	1.2	0.9
50 years or over	2.7	0.9	0.6	0.2	0.2	1.9	0.6	1.1
Highest degree earned								
BA/BS or less	3.5	0.9	1.6	1.4	0.6	2.9	1.8	2.2
MA/MS or more	4.1	0.9	0.8	1.1	0.7	4.8	1.8	1.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 9.7—Percentage of public school teachers who thought that certain matters were serious problems in their schools, by state: 1987–88

	Student absenteeism	Student alcohol use	Student tardiness	Student drug abuse	Student verbal abuse of teachers
TOTAL	16.4	11.4	10.5	8.0	8.1
Alabama	16.7	9.2	9.5	5.0	8.7
Alaska	26.3	22.7	15.1	18.8	8.0
Arizona	18.2	9.5	7.9	11.0	6.7
Arkansas	11.0	11.8	6.7	7.2	5.0
California	24.4	10.2	15.0	9.5	7.5
Colorado	19.8	14.6	11.0	8.3	6.1
Connecticut	15.2	10.9	12.9	9.6	8.4
Delaware	19.5	9.3	11.5	6.9	11.7
Dist. of Columbia	30.0	—	17.9	4.5	10.5
Florida	22.3	9.4	13.7	8.4	14.5
Georgia	16.4	9.8	10.1	7.1	9.4
Hawaii	14.9	7.2	8.7	6.3	6.3
Idaho	7.8	12.6	6.3	6.3	4.6
Illinois	15.5	10.2	10.1	6.4	7.5
Indiana	14.5	10.9	8.7	7.4	6.3
Iowa	10.5	18.5	3.8	6.6	4.2
Kansas	12.7	15.2	6.6	6.4	4.0
Kentucky	16.7	11.5	7.5	7.6	7.4
Louisiana	13.6	10.9	8.3	9.0	10.1
Maine	11.7	10.4	5.8	4.8	3.4
Maryland	21.6	6.3	12.5	5.1	12.2
Massachusetts	16.6	9.3	10.1	6.5	6.9
Michigan	17.5	11.5	10.9	8.5	6.5
Minnesota	12.9	16.2	5.3	7.7	3.7
Mississippi	14.8	8.8	7.0	7.4	6.3
Missouri	12.8	14.5	6.4	7.0	7.5
Montana	14.5	17.8	9.6	8.7	6.1
Nebraska	6.4	14.0	4.8	5.2	2.9
Nevada	23.8	18.6	13.1	13.8	11.0
New Hampshire	12.5	12.7	6.2	8.5	4.3
New Jersey	16.5	9.8	12.3	8.4	11.1
New Mexico	20.7	16.9	11.3	14.4	6.9
New York	18.0	9.9	16.0	8.0	13.3
North Carolina	13.6	9.6	8.7	7.1	7.3
North Dakota	6.9	17.6	3.7	7.2	2.4
Ohio	15.1	16.3	9.6	10.1	9.8
Oklahoma	13.2	14.6	8.4	8.2	4.7
Oregon	15.6	13.2	7.6	8.7	5.1
Pennsylvania	16.6	10.4	12.0	5.9	8.7
Rhode Island	14.6	6.7	7.2	4.0	9.9
South Carolina	10.1	8.1	6.4	5.3	7.8
South Dakota	9.4	16.6	7.8	4.5	3.3
Tennessee	15.6	9.8	8.4	7.0	5.4
Texas	16.3	12.6	12.2	11.2	7.8
Utah	13.5	6.1	10.1	4.7	5.5

Table 9.7—Percentage of public school teachers who thought that certain matters were serious problems in their schools, by state: 1987–88—Continued

	Student absenteeism	Student alcohol use	Student tardiness	Student drug abuse	Student verbal abuse of teachers
Vermont	6.8	10.5	3.4	5.9	4.6
Virginia	14.5	8.5	10.4	6.2	8.0
Washington	17.0	12.6	8.8	10.6	5.4
West Virginia	14.2	8.6	3.7	3.7	7.5
Wisconsin	13.0	13.8	9.0	6.9	7.1
Wyoming	15.6	18.4	10.8	10.5	3.5

—Too few cases for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

less than serious were more likely than those who reported them as serious to respond that they certainly or probably would teach again (table 9.9). Among private school teachers, those who rated student absenteeism and verbal abuse of teachers as serious problems in their schools were less likely than those who did not report such information to respond that they certainly or probably would become a teacher again.

JOB SATISFACTION

One-third of all teachers reported that they certainly would become teachers if they had the opportunity to return to college and make their career choices over again, and about one-quarter said that they probably would.

Over the last decade, public commissions, researchers, and educators have claimed that poor working conditions have demoralized the teaching profession. They have argued that because teachers perceive a lack of support for their work, they find little motivation to do their best in the classroom, and that when teachers are not satisfied with their working conditions, they are more likely to change schools or to leave the profession altogether. A number of calls for school reform have included proposals to improve the quality of work life for teachers by providing them with greater control over various aspects of their work, creating new teaching positions that allow teachers with more experience and talent to assume more responsibility, and redesigning the workday or workweek to give teachers more time to collaborate with their colleagues.

Although plausible, theories linking teacher satisfaction with their job performance and attrition rates must be tested through the empirical examination of questions such as: How satisfied are teachers? With what aspects of their work or working conditions are they most satisfied or dissatisfied? In what kinds of schools are teachers more or less likely to be satisfied with their work and working conditions? What are the consequences, in terms of teacher performance and teacher retention, of teacher satisfaction and dissatisfaction?

The 1987–88 SASS and the Teacher Followup Survey contain several indicators of teacher job satisfaction. One set of indicators reflects teachers' satisfaction with various aspects of working conditions in their school, including the extent to which they receive support from school administrators and share common goals; the degree to which teachers are buffered from nonteaching activities and the extent to which rules are enforced; the amount of collaboration among

Table 9.8—Percentage of private school teachers who thought that certain matters were serious problems in their schools, by private school type: 1987–88

	Student absen-teeism	Student alcohol use	Student tardi-ness	Student drug abuse	Student verbal abuse of teachers
TOTAL	3.7	3.5	3.6	1.8	2.0
Private school type					
Religious	3.1	3.3	3.3	1.3	1.2
Nonsectarian	5.8	4.0	4.7	3.3	5.1
Private school category					
Assembly of God	7.4	0.0	4.2	0.0	—
Baptist	4.2	0.6	4.8	—	0.9
Calvinist	0.0	3.3	—	0.0	0.0
Christian	0.9	1.6	3.6	—	—
Episcopal	1.9	4.0	3.2	2.2	0.9
Friends	—	6.0	—	5.7	0.0
Jewish	3.6	0.0	2.6	0.0	—
Lutheran	1.5	0.6	2.8	0.6	0.9
7th Day Adventist	8.1	—	9.3	—	2.0
Roman Catholic	3.3	4.7	3.3	1.7	1.5
Other: Religious	1.5	1.0	1.3	0.9	1.1
Exceptional children	8.1	4.7	3.1	5.6	15.2
Montessori	—	0.0	2.0	0.0	—
Nat. Ass. of Indep. Schools	5.1	5.1	4.7	4.5	2.2
Other: Nonsectarian	6.7	3.5	5.2	2.5	7.4
9-Category typology					
Catholic					
-Parochial	1.8	2.2	2.3	1.0	1.7
-Diocesan	4.3	7.2	2.9	3.0	1.3
-Private order	7.4	10.2	7.3	2.4	1.2
Other Religious					
-Conservative Christian	3.5	—	4.3	—	0.7
-Affiliated	2.0	1.6	2.8	1.0	0.9
-Unaffiliated	3.2	2.1	2.9	0.9	1.0
Nonsectarian					
-Regular	5.6	4.4	4.8	3.6	2.6
-Special emphasis	2.7	3.4	3.7	2.1	1.8
-Special education	14.7	3.8	7.0	5.3	26.3
NAIS membership status					
Not Nat. Ass. of Indep. Sch.	3.5	3.2	3.6	1.4	2.1
Nat. Ass. of Indep. Schools	4.3	4.9	3.9	3.5	1.6

—Too few cases for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 9.9—Percentage distribution of teachers by willingness to become a teacher again, by sector and perceptions of the seriousness of various problems: 1987–88

	Public			Private		
	Certainly/ probably would be a teacher again	Chances of being a teacher again about even	Certainly/ probably would not be a teacher again	Certainly/ probably would be a teacher again	Chances of being a teacher again about even	Certainly/ probably would not be a teacher again
TOTAL	58.1	18.1	23.8	73.3	14.4	12.2
Student absenteeism						
Serious	50.8	18.2	31.1	62.1	16.3	21.7
Less than serious	59.5	18.1	22.4	73.8	14.4	11.9
Student use of alcohol						
Serious	50.7	18.9	30.4	69.5	19.3	11.2
Less than serious	59.1	18.0	23.0	73.4	14.3	12.3
Student tardiness						
Serious	48.1	19.2	32.7	68.1	15.1	16.8
Less than serious	59.3	17.9	22.7	73.5	14.4	12.1
Student drug abuse						
Serious	49.7	18.4	31.9	68.1	18.8	13.2
Less than serious	58.8	18.0	23.1	73.5	14.3	12.1
Verbal abuse of teacher						
Serious	39.9	19.0	41.1	55.5	18.4	26.1
Less than serious	59.7	18.0	22.3	73.7	14.3	12.0

*Problems included as row variables were the five problems that the greatest percentage of teachers defined as *serious*.
NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

faculty members and teacher participation in decisionmaking; and the adequacy of resources available for teaching.[70]

Teachers' satisfaction varied significantly among different areas of their work life. Whereas 34 percent of teachers reported being highly satisfied with buffering and rule enforcement in their schools, only 2 percent reported being highly satisfied with the adequacy of resources for teaching (table 9.10). About one-quarter reported being highly satisfied with the extent of administrative support and common goals, and about one-tenth with the collaboration among staff members and participation in school decisionmaking.

Not all teachers were equally likely to be satisfied with these aspects of their work, however. With the exception of resources, private school teachers were more likely than public school teachers to be satisfied. Both overall and in the two areas of administrative support/common goals and buffering/rule

[70]Teachers were asked whether they "strongly agreed," "somewhat agreed," "somewhat disagreed," or "strongly disagreed" with 23 statements about various aspects of their work environment. Statements that tapped similar sets of issues were grouped together, forming indices of teachers' satisfaction with aspects of their work environment. Indices were created to describe teachers' satisfaction with the level and quality of administrative support and sharing of common goals; buffering and the enforcement of rules; the collaboration among faculty members and teachers' role in decisionmaking; and the adequacy of resources available for teaching. An index score was obtained by averaging teachers' scores on individual items making up that index. Those with scores averaging between 1 and 1.5 on a scale of 1 to 4 on a particular index were described as "highly satisfied." A summary index ("overall satisfaction") was derived by averaging each teacher's responses to all 23 items.

Table 9.10—Percentage of teachers who were highly satisfied with various aspects of their working conditions, by sector and selected teacher characteristics: 1987–88

	Overall view of working conditions	Administrative support/ establishment of common goals	Buffering and enforcing of rules	Collaboration/ teacher participation in decision-making	Adequacy of resources
TOTAL	31.9	23.5	34.1	9.2	2.1
PUBLIC	30.1	20.5	31.8	7.4	2.1
Teaching level					
Elementary	36.0	27.6	42.6	7.6	2.0
Secondary	24.0	13.1	20.7	7.2	2.2
Sex					
Male	25.0	13.3	21.5	7.5	2.2
Female	32.2	23.5	36.1	7.4	2.1
Age					
Under 30 years	31.7	18.8	28.8	8.7	2.1
30–39 years	29.2	19.4	28.8	6.8	2.1
40–49 years	29.6	21.5	33.3	6.8	2.1
50 years or over	31.3	22.1	37.3	8.8	2.1
Highest degree					
BA/BS or less	32.1	21.6	34.0	7.7	2.1
MA/MS or more	27.8	19.2	29.3	7.1	2.1
PRIVATE	45.3	46.5	51.0	22.5	1.8
Teaching level					
Elementary	49.3	51.6	60.7	21.5	1.7
Secondary	40.9	40.9	40.6	23.6	1.9
Sex					
Male	38.5	35.4	37.2	23.0	1.9
Female	47.1	49.6	54.9	22.4	1.8
Age					
Under 30 years	41.5	39.5	44.5	16.9	1.9
30–39 years	42.1	46.5	49.0	21.5	1.8
40–49 years	47.0	49.8	54.2	22.5	1.8
50 years or over	53.3	50.4	58.6	32.7	1.7
Highest degree					
BA/BS or less	47.2	46.3	54.4	21.2	1.8
MA/MS or more	41.6	46.9	44.5	25.0	1.8

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

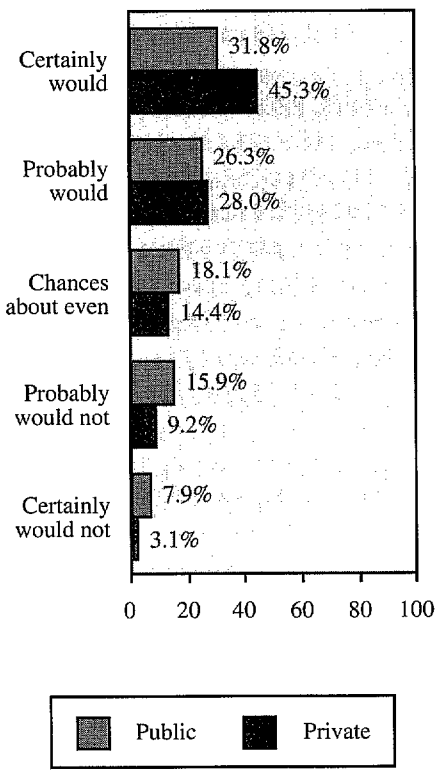
enforcement, elementary school teachers were more likely than secondary school teachers and females more likely than males to report that they were highly satisfied. In both sectors, teachers without advanced degrees were more likely than teachers with such degrees to be highly satisfied overall.

A second indicator of teacher satisfaction reflects teachers' satisfaction with teaching as a profession as opposed to their satisfaction with the working conditions in their particular schools. The majority of teachers appeared to be satisfied with their career choice. In response to the question "If you could go back to your college days and start over again, would you become a teacher or not?", about one-third reported that they certainly would become a teacher again, and about one-quarter reported that they probably would become a teacher again (table 9.11).

Again, various groups of teachers responded differently to this question. Private school teachers were more likely than public school teachers to report that they would become a teacher again (figure 9.4). In both sectors, elementary school teachers were more likely than secondary school teachers to report that they certainly would become a teacher again. Whereas in the public sector females were more likely than males to report that they would become a teacher again, in the private sector females and males were about equally likely to report that they would become a teacher again. Public school teachers' willingness to become teachers again varied with their age. Generally, younger teachers were more likely than older teachers to report that they would teach again. Among both public and private school teachers, those with advanced degrees were less likely than those without such degrees to report that they certainly would become a teacher again.

The third indicator of teacher satisfaction compares the job satisfaction of teachers who remained in the profession with those who left teaching for other paid employment. Such comparisons indicate whether the work and working conditions of teaching are less satisfying than other work available to individuals with similar education, experience, and inclinations. Within 1 year of leaving, those who left teaching (especially those who left public schools) were more satisfied in many areas of their work life than were those who remained in teaching. Among public school teachers, for example, leavers were more satisfied than stayers with their salaries, their opportunities for advancement, the support they received from their supervisors, the influence they had over policy decisions, the control they had over their work, the esteem of society for their profession, the procedures used to evaluate their work, the resources available to them to carry out their work, and their working conditions in general (table 9.12a and b).

Figure 9.4—Percentage distribution of teachers by willingness to become a teacher again, by sector: 1987–88



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 9.11—Percentage distribution of teachers by willingness to become a teacher again, by sector and selected teacher characteristics: 1987–88 and 1988–89

	Certainly would become a teacher again	Probably would become a teacher again	Chances about even for or against	Probably would not become a teacher again	Certainly would not become a teacher again
TOTAL	33.4	26.5	17.7	15.1	7.4
PUBLIC	31.8	26.3	18.1	15.9	7.9
Teaching level					
Elementary	35.8	27.1	16.6	14.1	6.3
Secondary	27.7	25.5	19.6	17.7	9.6
Sex					
Male	26.2	24.3	19.8	19.0	10.6
Female	34.1	27.2	17.4	14.6	6.8
Race–ethnicity					
Black, non-Hispanic	34.2	20.8	17.5	15.8	11.6
White, non-Hispanic	31.3	27.0	18.3	16.0	7.5
Other	36.6	24.5	15.9	15.5	7.6
Age					
Under 30 years	40.3	28.9	17.4	9.9	3.6
30–39 years	30.8	27.0	18.8	15.7	7.7
40–49 years	28.3	25.0	18.7	18.4	9.5
50 years or over	33.4	25.6	16.1	16.3	8.6
Highest degree earned					
BA/BS or less	34.6	26.8	17.7	14.2	6.7
MA/MS or more	28.7	25.7	18.5	17.7	9.3
1988–89 teaching status					
Still teaching	34.5	26.5	17.8	13.8	7.3
Leaver	26.6	26.8	16.3	20.7	9.7
PRIVATE	45.3	28.0	14.4	9.2	3.1
Teaching level					
Elementary	49.6	27.2	12.6	8.3	2.3
Secondary	40.7	28.9	16.4	10.1	3.9
Sex					
Male	42.1	26.1	16.6	11.4	3.8
Female	46.2	28.6	13.8	8.6	2.9
Race–ethnicity					
Black, non-Hispanic	48.7	18.0	16.2	7.6	9.6
White, non-Hispanic	44.9	28.5	14.4	9.2	2.9
Other	45.9	28.0	15.0	9.3	1.8
Age					
Under 30 years	46.9	30.9	14.6	5.4	2.1
30–39 years	43.3	29.3	14.6	9.1	3.8
40–49 years	42.4	26.2	15.8	12.2	3.4
50 years or over	52.1	24.6	11.3	9.6	2.5
Highest degree earned					
BA/BS or less	47.0	28.6	13.8	8.2	2.4
MA/MS or more	42.2	26.8	15.6	11.1	4.3
1988–89 teaching status					
Still teaching	46.2	29.2	13.2	9.3	2.1
Leaver	29.9	35.1	21.3	9.3	4.4

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire," and 1988–89 Followup Survey.

Table 9.12a—Percentage of 1987–88 teachers who were very or somewhat satisfied with various aspects of their current jobs, by sector and current activity: 1988–89

	Salary	Benefits	Opportunities for advancement	Support from manager	Safety of environment	Influence over policy	Autonomy/control	Caliber of colleagues
TOTAL	54.1	64.3	57.8	60.4	78.7	51.2	88.4	84.3
PUBLIC	55.2	65.3	57.2	58.1	77.0	48.5	87.4	83.9
Still teaching	54.9	65.2	56.8	57.4	76.7	47.7	87.2	83.8
Stayers	55.6	65.4	56.7	56.9	77.0	47.5	87.4	83.6
Movers	46.4	63.4	57.9	62.7	73.7	49.4	86.2	86.7
Employed leavers	73.1	69.4	79.3	90.9	88.9	88.5	95.5	90.2
Working in education	74.3	75.2	77.4	92.4	83.8	90.2	95.1	92.6
Working outside education	71.5	63.6	82.9	90.4	91.9	87.4	95.9	88.1
PRIVATE	44.5	55.6	62.3	79.0	92.5	72.8	96.0	87.2
Still teaching	43.4	54.8	61.2	78.7	92.2	72.2	96.2	87.6
Stayers	41.5	53.5	60.1	79.7	93.2	72.1	96.7	87.8
Movers	57.8	66.7	69.1	72.6	86.6	71.5	91.8	85.7
Employed leavers	62.6	68.9	79.7	83.4	96.6	82.7	93.2	80.3
Working in education	66.2	60.2	83.2	73.2	99.2	79.5	96.5	92.4
Working outside education	62.8	71.3	79.0	85.5	95.7	83.9	92.9	78.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988–89 Teacher Followup Survey.

Table 9.12b—Percentage of 1987–88 teachers who were very or somewhat satisfied with various aspects of their current jobs, by sector and current activity: 1988–89

	Social esteem for profession	Evaluation procedures	Work load	Resources available for job	General working conditions	Job security	Intellectual challenges
TOTAL	25.6	63.9	63.4	62.5	76.0	88.6	80.9
PUBLIC	23.8	62.6	61.8	61.6	74.0	89.1	80.2
Still teaching	22.8	62.2	61.5	61.0	73.6	89.3	80.2
Stayers	22.9	62.3	61.8	61.6	73.6	90.1	80.3
Movers	21.4	60.7	57.5	54.1	73.7	80.1	80.2
Employed leavers	70.4	80.0	77.2	90.2	95.0	82.9	81.3
Working in education	59.0	75.1	72.6	89.0	95.0	83.6	80.0
Working outside education	80.6	85.0	88.8	90.4	94.2	82.9	80.1
PRIVATE	40.1	74.5	76.0	69.6	91.4	83.8	86.7
Still teaching	37.9	74.0	75.4	68.6	91.0	83.7	87.2
Stayers	38.8	74.1	75.8	69.4	91.6	84.6	87.4
Movers	29.1	75.0	71.6	63.7	85.4	75.3	85.1
Employed leavers	74.3	82.6	84.0	85.9	96.9	85.4	79.2
Working in education	64.8	69.4	63.9	62.2	94.5	81.2	90.3
Working outside education	78.3	86.2	88.5	91.8	97.7	86.2	75.9

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988–89 Teacher Followup Survey.

PLANS FOR THE FUTURE

Among those who left teaching between 1987–88 and 1988–89, nearly 18 percent of former public school teachers and about 12 percent of former private school teachers expected to return to teaching in 1989–90.

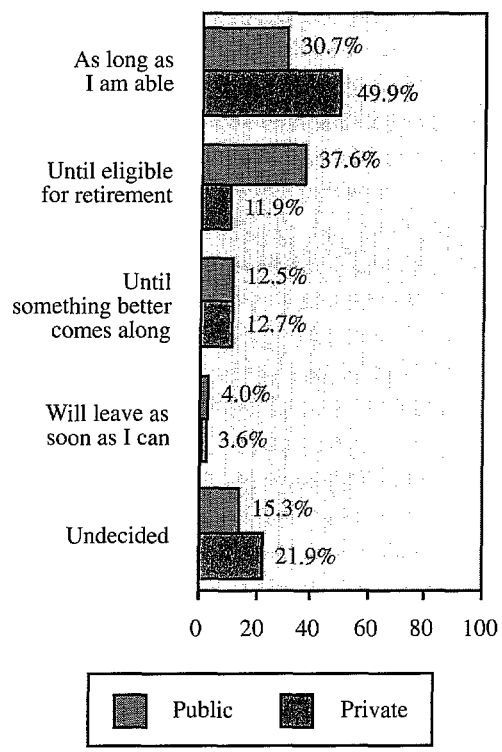
This section addresses teachers' plans for the future: their plans to remain in teaching, their expectations for their activities in 1988–89, and comparisons between the career plans of current and former teachers for 1989–90. Thus, these data relate both to teachers' satisfaction with their occupation, the topic of the last section, and to the issues of teacher supply, turnover, and attrition, which were discussed in Chapter 3 and will also be addressed in Chapter 10. Presumably, teachers who plan to remain in the profession as long as they are able are more satisfied with some aspects of teaching than those who plan to leave as soon as possible. To the extent that relationships such as these hold true, teachers' plans to remain in teaching indicate their satisfaction or attitudes about the profession. Similarly, to the extent that teachers' plans match their actions with respect to career changes, their plans offer some indication of teacher turnover and attrition in the coming years, which, in turn, may affect the future supply of teachers.

Generally, teachers were more likely to report that they would continue teaching for an extended period of time (either as long as they were able to teach or until they were eligible to retire) than they were to report that they would teach until something better came along, that they would leave as soon as possible, or that they were undecided as to how long they would teach (table 9.13). Public school teachers were most likely to respond that they would remain teachers until they were eligible to retire, and next most likely to report that they would teach as long as they were able (figure 9.5). Being undecided about teaching was the third most popular response, teaching until something better came along was fourth, and leaving as soon as possible was fifth.[71]

[71]Teachers were offered these five options as possible responses to the question "How long do you plan to remain in teaching?"

The pattern of responses among private school teachers, however, was quite different. Private school teachers were most likely to report that they planned to teach as long as they were able. Fifty percent of private school teachers reported that they planned to teach as long as they were able, compared with 31 percent of public school teachers. The second most common response among private school teachers was "undecided," and private school teachers were more likely than public school teachers to report that they were undecided. The proportions of private school teachers who responded that they would teach until they were eligible for retirement or until something better came along tied for the third most common response. Although public school teachers were more likely than private school teachers to report that they would teach until they could retire, public and private school teachers did

Figure 9.5—Percentage distribution of teachers by plans to remain in teaching, by sector: 1987–88



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 9.13—Percentage distribution of teachers by plans to remain in teaching, by sector and selected teacher characteristics: 1987–88

	As long as I am able	Until eligible for retirement	Until something better comes along	Will leave as soon as I can	Undecided
TOTAL	32.9	34.6	12.5	3.9	16.1
PUBLIC	30.7	37.6	12.5	4.0	15.3
Teaching level					
Elementary	33.6	36.9	10.7	3.3	15.6
Secondary	27.7	38.3	14.3	4.7	15.0
Sex					
Male	26.0	42.1	14.6	4.9	12.4
Female	32.7	35.7	11.5	3.5	16.5
Age					
Under 30 years	37.1	14.3	19.3	4.6	24.8
30–39 years	31.6	31.0	17.2	3.9	16.2
40–49 years	28.3	46.9	10.0	3.2	11.6
50 years or over	28.6	51.3	2.3	4.5	13.3
Highest degree earned					
BA/BS or less	32.8	32.7	13.2	4.0	17.3
MA/MS or more	28.3	43.0	11.6	3.9	13.2
PRIVATE	49.9	11.9	12.7	3.6	21.9
Teaching level					
Elementary	54.0	11.5	10.8	2.9	20.7
Secondary	45.3	12.4	14.8	4.3	23.2
Sex					
Male	48.3	13.8	14.0	5.0	18.9
Female	50.3	11.4	12.3	3.2	22.8
Age					
Under 30 years	44.9	5.1	16.2	4.0	29.8
30–39 years	50.3	9.6	14.7	3.3	22.1
40–49 years	49.2	15.8	12.7	3.4	18.9
50 years or over	55.9	20.3	3.8	3.9	16.0
Highest degree earned					
BA/BS or less	51.0	10.1	12.0	3.5	23.4
MA/MS or more	47.7	15.5	14.1	3.7	19.1

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

not differ in the proportions who planned to teach until something better came along or to leave as soon as possible.

Teachers' plans in 1987–88 for 1988–89 were consistent with their general expectations about their teaching careers in that most teachers expected they would continue teaching in elementary and secondary schools the next year (table 9.14). Eighty-seven percent of public school teachers expected to remain in their current school in 1988–89, compared with 79 percent of private school teachers. Private school teachers were somewhat more likely than public school teachers to expect to change schools between 1987–88 and 1988–89: 9 percent of private school teachers expected to move, compared with 7 percent of public school teachers. Although public and private school teachers were about equally as likely to expect to retire, private school teachers were more likely than their public school counterparts to expect that they would teach at the postsecondary level, take a nonteaching job in elementary or secondary education, attend a college or university, take a job outside of education, homemake or rear children, or engage in some other activity in 1988–89. The youngest teachers in both public and private schools were less likely than other teachers to expect that they would stay in the same school and were more likely to expect to change schools in the coming year.[72]

Finally, in the Teacher Followup Survey, current and former teachers were asked what they expected to be doing in the following year, 1989–90. Nearly 18 percent of former public school teachers and about 12 percent of former private school teachers expected to return to teaching in 1989–90 (table 9.15). These data are consistent with other research findings: in their studies of teachers in Michigan and North Carolina, Murnane and his colleagues found that about 25 percent of former teachers reentered the profession within 5 years of leaving, and most who reentered did so within 1 to 2 years of leaving.[73]

Among current teachers, those in public schools were more likely than their private school counterparts to report that they expected to teach in an elementary or secondary school during the next school year (1989–90).

Although these data do not address the question of whether teachers' opinions of their workplace or satisfaction with their work are related to their performance in the classroom, they do raise interesting and important questions concerning teachers' opinions and their tendencies to remain in the classroom. Improving the extrinsic rewards of teaching, such as salary and opportunities to advance in a career path, have been suggested as ways of attracting more and more qualified people into teaching. However, national data sets as well as smaller studies have indicated that the intrinsic rewards of teaching were the most powerful attractors, and that most teachers who either left or changed schools did not cite salary or benefits as the most important reasons for their decisions (tables 9.1, 3.17, and 3.18). At the same time, less than one-half of all teachers reported that they were satisfied with their teaching salaries (table 8.6).

Comparisons between public and private school teachers may illustrate this finding most clearly. Private school teachers earned significantly lower salaries, and were more likely to change schools or leave teaching in order to improve their salaries than were public school teachers. At the same time, private school teachers were more likely than public school teachers to report that they were highly satisfied with their working conditions overall (table 9.10), and that they intended to remain in teaching as long as they were able (table 9.13). Other variables may mediate these relationships: for example, private school teachers were more likely to report that they had a great deal of influence over school policies (table 9.13), and that other school personnel had been very helpful in solving instructional or management problems (table 9.4). Thus, in addition to serving as an important source of information about teachers and their experiences in the nation's schools, these data demonstrate the need for further research in order to discover the interactive relationships and mediating variables that might explain what seem to be inconsistencies.

[72]The reader is invited to compare teachers' expectations for 1988–89 with the results from the Teacher Followup Survey completed in 1988–89, which is displayed in table 3.14. Although the various leaver categories are not strictly comparable across these two tables, note the similarity in the proportions of stayers, movers, and leavers generally.

[73]Murnane et al., 1991, 79–81.

Table 9.14—Percentage distribution of teachers by expected 1988–89 activities, by sector and selected teacher characteristics: 1987–88

	Teaching					Job outside education			
	Same school	Other school	Post-secondary level	Nonteaching job in education	Attending college or university	Occupation outside education	Homemaking or child-rearing	Retirement	Other
TOTAL	86.4	6.9	0.1	0.7	0.5	1.0	1.2	0.9	2.3
PUBLIC	87.4	6.7	0.1	0.6	0.4	0.8	1.0	0.9	2.1
Teaching level									
Elementary	86.6	7.7	0.1	0.5	0.3	0.5	1.2	1.0	2.2
Secondary	88.2	5.7	0.2	0.8	0.5	1.1	0.8	0.8	2.0
Sex									
Male	87.9	6.3	0.2	0.8	0.5	1.4	0.0	1.0	1.9
Female	87.2	6.9	0.1	0.5	0.4	0.6	1.4	0.8	2.2
Age									
Under 30 years	79.1	13.3	0.1	0.4	0.9	1.4	2.2	0.0	2.5
30–39 years	86.5	7.4	0.1	0.8	0.5	0.9	1.5	—	2.3
40–49 years	90.9	5.3	0.2	0.6	0.3	0.5	0.3	0.0	1.9
50 years or over	88.9	3.0	0.1	0.4	0.2	0.6	0.2	4.8	1.9
Highest degree earned									
BA/BS or less	86.8	7.6	0.0	0.3	0.5	0.8	1.2	0.7	2.0
MA/MS or more	87.9	5.7	0.2	1.0	0.3	0.8	0.7	1.1	2.2
PRIVATE	79.1	8.7	0.3	1.0	1.2	2.3	3.3	0.6	3.6
Teaching level									
Elementary	78.7	10.1	0.1	0.6	1.3	1.7	3.8	0.6	3.0
Secondary	79.5	7.2	0.4	1.5	1.1	2.8	2.7	0.5	4.2
Sex									
Male	79.9	8.3	0.8	1.7	1.0	4.9	—	0.4	3.0
Female	78.9	8.8	0.1	0.8	1.3	1.5	4.2	0.6	3.7
Age									
Under 30 years	64.2	17.2	0.3	1.0	3.0	3.2	6.0	0.0	5.1
30–39 years	81.0	7.3	0.2	0.6	0.7	2.1	4.4	0.0	3.7
40–49 years	84.3	6.5	0.3	1.6	0.9	2.1	1.4	0.0	2.8
50 years or over	85.6	4.2	0.3	1.0	0.3	1.8	0.5	3.6	2.7
Highest degree earned									
BA/BS or less	77.8	9.7	0.0	0.5	1.6	2.4	3.7	0.6	3.5
MA/MS or more	81.6	6.8	0.7	1.9	0.4	1.9	2.4	0.6	3.7

—Too few cases for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Questionnaire."

Table 9.15—Percentage distributions of current and former teachers by expected main activity during the next school year (1989–90), by sector: 1988–89

Activity	Current teachers		Former teachers	
	Number	Percent	Number	Percent
PUBLIC in 1987–88	2,238,343	100.0	131,851	100.0
Teaching any of grades K–12	2,099,421	93.8	23,388	17.7
Teaching at pre-K or postsecondary level	—	0.1	3,362	2.5
Attending a college or university	—	0.3	5,582	4.2
Working in nonteaching occupation in education	19,694	0.9	23,373	17.7
Working outside the field of education	19,017	0.8	17,394	13.2
Homemaking and/or child rearing	11,441	0.5	20,131	15.3
Unemployed and seeking work	—	0.2	—	1.0
Retired	29,882	1.3	27,011	20.5
Other	33,833	1.5	9,674	7.3
Not reported	—	0.5	—	0.5
PRIVATE in 1987–88	269,244	100.0	39,317	100.0
Teaching any of grades K–12	239,338	88.9	4,841	12.3
Teaching at pre-K or postsecondary level	—	0.4	—	1.6
Attending a college or university	—	1.0	3,686	9.4
Working in nonteaching occupation in education	—	1.4	3,221	8.2
Working outside the field of education	—	1.6	8,307	21.1
Homemaking and/or child rearing	6,991	2.6	10,234	26.0
Unemployed and seeking work	—	0.1	—	1.7
Retired	—	0.6	1,965	5.0
Other	7,566	2.8	5,424	14.1
Not reported	—	0.7	—	0.6

—Too few cases for reliable estimate. Caution should be used in interpreting corresponding percentage.

NOTE: Details may not add to totals due to rounding.

SOURCE: S.A. Bobbitt, E. Faupel, and S. Burns, *Characteristics of Stayers, Movers, and Leavers: Results from the Teacher Followup Survey, 1988–89* (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics), 13.

CHAPTER 10 • TRENDS IN EDUCATION AFFECTING THE TEACHER WORKFORCE: TEACHING IN THE YEAR 2000

What will be the status of teachers and teaching in the 21st century? Major reform and redesign efforts in elementary and secondary education and in the postsecondary preparation of new teachers have the potential to make teaching in the year 2000 quite a different profession from the one described in this report. During the 1980s, the authors of a number of reports suggested ways in which teacher education and the teaching profession could be improved, and described their visions for the future.[74] Among other things, they called for revamping teacher education and certification, decentralizing decision-making authority, and empowering teachers. This chapter examines not only demographic trends that will affect the demand for teachers but also trends in teaching prompted by current major reform efforts, and discusses the information needed to monitor them.

PROJECTIONS TO THE YEAR 2000

How many teachers will there be in the year 2000? How many teachers will schools and school districts need to hire to fill vacancies during the next decade? What are the implications of these projections for teacher educators, prospective teachers, current teachers, and school administrators? According to NCES projections, the number of classroom teachers in public and private elementary and secondary schools will increase from 2.8 million in 1991 to 3.3 million in 2002 (table 10.1).[75] Approximately 272,000 of these new teachers will be working at the elementary level, and 157,000 at the secondary level. At the same time, student enrollment is expected to increase from 46.8 million in 1991 to 53.0 million in 2002 (table 10.2).

This projected increase in the number of teachers, however, could have different implications depending on the sources of newly hired teachers and the reasons for new hiring.[76] If, for example, no former teachers could be induced to return to the profession, newly prepared teachers would have to supply all of the expected increase in the number of classroom teachers. If, on the other hand, the "reserve pool" of teachers filled the entire demand for new hires, there would be no need to prepare new teachers.

Similarly, the factors that drive demand for new teacher hires have important policy implications. If most of the new teacher demand were fueled by teacher turnover due to factors other than retirement, policies supporting the retention of qualified teachers would have the most impact. On the other hand, if turnover were minimal but increases in student enrollment were driving the demand for more teachers, policies encouraging former teachers to return to the profession or motivating more college students to consider teaching might be more fruitful.

While projections are useful for looking toward the future, it is important to remember that many factors will influence the future direction of these trends. Changes in the health of the economy, resources allocated for education, or educational policies such as class size could affect both the numbers of teachers and the demand for new hires. As NCES continues to collect data on teachers through the year 2000, these projections may be validated or altered.

[74]The best known of these are the reports prepared by the Carnegie Forum on Education and the Economy, *A Nation Prepared: Teachers for the 21st Century*, and the Holmes Group, *Tomorrow's Teachers*.

[75]For more information on these projections, see U.S. Department of Education, National Center for Education Statistics, *Projections of Education Statistics to 2001: An Update* (Washington, D.C.: 1991).

[76]Newly hired teachers can include newly minted teachers (inexperienced teachers who have just graduated), delayed entrants (other inexperienced teachers), transfers or migrants, and re-entrants (experienced teachers who have not been teaching). See Mary R. Rollefson, "Sources of Newly Hired Teachers in the U.S." (paper presented to the American Educational Research Association, San Francisco, April 1992).

Table 10.1—Projected number of classroom teachers, by sector and level: Fall 1991 to Fall 2002

	Total			Public			Private		
	K–12	Elementary	Secondary	K–12	Elementary	Secondary	K–12	Elementary	Secondary
				(in thousands)					
1991	2,826	1,631	1,194	2,465	1,378	1,087	360	253	107
1992	2,791	1,645	1,146	2,433	1,389	1,043	358	255	103
1993	2,847	1,674	1,173	2,482	1,414	1,067	365	260	105
1994	2,902	1,704	1,198	2,530	1,439	1,090	372	264	108
1995	2,958	1,736	1,222	2,579	1,467	1,112	379	269	110
1996	3,015	1,770	1,245	2,628	1,495	1,133	387	275	112
1997	3,066	1,799	1,267	2,673	1,520	1,153	393	279	114
1998	3,107	1,824	1,283	2,709	1,541	1,167	398	283	115
1999	3,145	1,846	1,299	2,742	1,559	1,182	403	286	117
2000	3,181	1,866	1,316	2,774	1,576	1,198	408	289	118
2001	3,217	1,884	1,333	2,805	1,592	1,213	412	292	120
2002	3,254	1,903	1,351	2,838	1,608	1,230	417	295	122

NOTE: Projections are based on data through 1989. Because of rounding, details may not add to totals. The projections presented in this table are the middle alternative projections presented in the source publication.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Projections of Education Statistics to 2002* (Washington, D.C.: 1991), 75.

Table 10.2—Projected enrollment in grades K–8[1] and 9–12 of elementary and secondary schools, by control of institution, with projections: 50 states and Washington, D.C.: Fall 1977 to Fall 2002

	Total			Public			Private		
	K–12[1]	K–8[1]	9–12	K–12[1]	K–8[1]	9–12	K–12[1]	K–8[1]	9–12
				(in thousands)					
1991	46,841	34,313	12,529	41,575	30,186	11,389	5,266	4,127	1,140
1992	47,601	34,855	12,746	42,250	30,663	11,587	5,351	4,192	1,159
1993	48,410	35,341	13,069	42,971	31,091	11,880	5,439	4,250	1,189
1994	49,279	35,751	13,528	43,749	31,451	12,298	5,530	4,300	1,230
1995	50,054	36,127	13,927	44,442	31,782	12,660	5,612	4,345	1,267
1996	50,759	36,452	14,307	45,074	32,068	13,006	5,685	4,384	1,301
1997	51,331	36,765	14,567	45,585	32,343	13,242	5,746	4,422	1,325
1998	51,750	37,126	14,624	45,955	32,661	13,294	5,795	4,465	1,330
1999	52,110	37,333	14,777	46,276	32,843	13,433	5,834	4,490	1,344
2000	52,406	37,548	14,858	46,539	33,032	13,507	5,867	4,516	1,351
2001	52,679	37,707	14,972	46,782	33,172	13,610	5,897	4,535	1,362
2002	52,996	37,790	15,206	47,068	33,245	13,823	5,928	4,545	1,383

[1]Includes most kindergarten and some nursery school enrollment.

NOTE: Projections are based on data through 1989. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Projections of Education Statistics to 2002* (Washington, D.C.: 1991), 9.

In the meantime, they provide one way to anticipate the future of the teaching work force.

Teacher Preparation, Certification, and Assessment

Teachers who were prepared in the 1990s will form the continuing teacher pool for the 21st century. Moreover, reforms in teacher education and certification that were suggested in the late 1980s and in the 1990s could affect the qualifications of the teacher work force in the year 2000. Therefore, it will be particularly important for NCES to design its data collection programs so that it can monitor changes expected in these areas and can maintain the flexibility to collect data on unanticipated developments. Some of the potential changes that can be anticipated and monitored are shifts in teacher education, growth in the numbers of teachers seeking and receiving certification through alternate routes, and changes in how teachers' qualifications are assessed.

Teacher Education

Both the Carnegie Forum on Education and the Economy and the Holmes Group have proposed that all teachers receive a comprehensive liberal arts education at the undergraduate level to gain subject-matter expertise, and that most teacher education courses be shifted to the graduate level. As the data presented in Chapter 4 show, this is not how the majority of current teachers have been educated. Thus, such a reform would greatly change teacher education.

Another proposal calls for separating teachers into different professional tiers, depending on their qualifications and experience. The Holmes Group, for example, has suggested that these levels include Practitioners (novice teachers), Professional Teachers (competent experienced teachers), and Career Professionals (advanced instructional leaders).[77] These types of proposals would require restructuring certification requirements and teacher responsibilities to reflect the different levels of the teaching profession, enabling good teachers to be promoted to higher levels of responsibility and compensation without having to leave teaching.

Both the Holmes Group and the Carnegie Forum on Education and the Economy recommended teacher training that includes internships and residencies analogous to teaching hospitals in the medical profession.[78] This model would represent a new approach for teacher education and induction into the profession, using expert teachers as mentors for newly prepared teachers.

Another recent development in teacher education has been subject-specific guidelines for teacher preparation. In the 1980s, the National Council of Teachers of Mathematics released its Guidelines for the Preparation of Teachers of Mathematics, which described competencies that every teacher of mathematics should be able to demonstrate after completing a teacher preparation program. The guidelines addressed the preparation of elementary school teachers as well as that of departmentalized secondary teachers of mathematics. This first comprehensive model of mathematics teacher preparation has been emulated by the National Science Teachers Association and other subject-oriented groups. The move toward standards in the subject-matter preparation of teachers is one development that will undoubtedly continue into the next century.

Taken together, these proposals form a vision of teacher education that is different from the experiences reported by teachers in the 1987–88 Schools and Staffing Survey (SASS). In order to monitor whether and how these proposals develop and are implemented, NCES must collect data on teacher education and the professional roles of teachers in schools. As was evident in this report, NCES currently collects minimal amounts of data on teacher education. Although data are collected on the educational attainment and major fields of study of teachers and on the characteristics of teacher educators, data are not currently collected on the types of preservice and inservice educational programs in which

[77]The Holmes Group, *Tomorrow's Teachers*, 36–41.

[78]The Holmes Group, *Tomorrow's Teachers*, 56; Carnegie Forum on Education and the Economy, *A Nation Prepared: Teachers for the 21st Century*, 70.

teachers participate. In addition, and perhaps more importantly, data are not collected on the effect that preservice and inservice education have on classroom teaching and children's learning. This data gap is one that NCES must attempt to fill as it monitors changes in teacher education into the next century.

Certification

Many education reformers have suggested revising current teacher licensing procedures to reflect more adequately the skills and knowledge essential to good teaching practice. For example, the National Board for Professional Teaching Standards is developing innovative teacher assessments for advanced teachers (described below under Teacher Assessment), as is the Educational Testing Service for entry into the profession.

At the same time, many are asking if individuals who do not go through traditional (or even reformed) teacher preparation programs can, in fact, become teachers. Alternative certification has recently begun to provide a route into the profession for "the growing market of adults who already have at least a bachelor's degree—many of whom have considerable life experience and success in other careers—who wanted to become licensed to teach."[79] According to data from the National Center for Education Information, about 20,000 individuals were certified as teachers through an alternate route between 1985 and 1990. This phenomenon is clearly growing. For example, since 1990, an estimated 40,000 teachers have received alternative certification.

Feistritzer and Chester defined eight classes of alternative certification programs.[80] These programs, designed to attract talented bachelor's degree holders into the profession, generally enable the candidate to begin teaching almost immediately. Some of them provide instruction in teaching theory and classroom management during the summer before the school year in which the candidate begins teaching, while all of them provide additional assistance, coursework, and mentoring from an experienced teacher during the first year of teaching. At the end of this "apprenticeship" year, teachers receive their teaching certificates.

To date, NCES has not collected data on teachers who have entered the profession through alternate routes to teacher certification. Beginning in 1994, SASS will collect data from teachers in order to determine whether their teaching certificate was obtained through an alternate route. This data collection will provide researchers with an opportunity to monitor the prevalence of alternative certification and how it changes over time, and to analyze the characteristics and qualifications of teachers who receive such certification. As this phenomenon grows in size, it will become increasingly important to monitor.

Assessment

At the present time, measures of teacher quality represent one of the most important data gaps in understanding how teachers affect the educational process. Although degrees earned, certification, years of experience, and academic ability have all been presumed to be indicative of teacher quality, the results of studies examining their relevance to student learning have been equivocal.[81]

To assess teacher quality, it is important to define what teachers should know and be able to do. In recent years, several efforts have been undertaken to define standards for excellence in teaching. One focus has been to develop innovative assessments that measure teacher quality more accurately. Toward this end, the Educational Testing Service is currently creating new performance-based assessments to replace the National Teachers Examination. The largest effort, however, has been made by the National Board for Professional Teaching Standards (NBPTS); they are currently developing assessments with which to identify superior teachers in various subjects across school levels.[82]

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[79]C. Emily Feistritzer, *Who Wants to Teach?*, National Center for Education Information (1992), 6.

[80]C. Emily Feistritzer and David Chester, *Alternative Teaching Certification: A State by State Analysis* (Washington, D.C.: National Center for Education Information, 1991).

[81]U.S. Department of Education, National Center for Education Statistics, *Filling the Gaps: An Overview of Data on Education*

[82]See John W. Porter, "A Call for National Certification of Teachers," *NASSP Bulletin* (October 1990), 64–70.

The purpose of the NBPTS is to develop a voluntary national system of teacher certification. Under this system, national certification would be the hallmark of excellent teachers after they successfully complete a rigorous series of assessments. The NBPTS believes that board-certified teachers will be rewarded with additional authority and responsibility for instructional leadership in schools, and perhaps, as districts compete to recruit these teachers, with additional compensation.

National certificates will be awarded based upon both the developmental level of students and the subject level. These two dimensions (plus one more for teachers of limited English proficient, special education, and exceptional needs children) will constitute the 34 certification fields. Standards committees, in which teachers are the majority, will set the requirements of what teachers should know and be able to do in these fields.[83] The assessment for one field, early adolescence/language arts, has been developed by the University of Pittsburgh and the Connecticut Department of Education.[84] Based upon the work of the standards committee, the assessment was piloted during the summer of 1992. One proposed component of the assessment is a portfolio of the teacher's work completed over a 2-year period, which would contain required sections that demonstrate the teacher's planning, evaluation, and classroom discussion skills. Other components of the assessment would include a written test of subject-matter knowledge and a series of exercises at an assessment center. Comparable assessments are being developed for other areas of certification.

The National Board for Professional Teaching Standards has taken an important step toward improving our understanding of teachers as professionals and our knowledge of how to identify excellent teachers. The work that the Board has performed, and will continue to do, has the potential to change the teaching profession in ways that are only imaginable at this time. As superior teachers become board certified, NCES will assume a role in collecting data on the number and types of such teachers. Thus, the work of the NBPTS will enhance the ability of NCES to understand, and perhaps measure, teacher quality.

SCHOOL RESTRUCTURING

A central theme of the reform reports of the late 1980s was that the structure of schooling was a "chief culprit" in the failure of the educational system. While early reform efforts focused on changing specific programs and policies within the structure of the existing school system, later reformers argued that problems in America's schools stem fundamentally from the nature and structure of the educational system. Proponents of systemic school "restructuring" argue that the ways in which schools operate and are organized hinders innovation and dampens incentives to reform. Some confusion exists among educators, researchers, and policymakers, however, about what "restructuring" means. One interpretation is that of Boe and Boruch who state: "In practice, the term 'restructuring' has been applied to a wide array of actions intended to improve public education, and is often used interchangeably with educational reform."[85] They further argue that "the concept of restructuring implies a fundamental change in the organization of something," as opposed to reform that addresses specific problems with the existing system.[86] Such fundamental change clearly can affect the way teachers teach and the context in which they work.

Boe and Boruch have attached the label of "entrepreneurial restructuring" to fundamental change in which schools adopt some of the characteristics and policies of private businesses. The three components of entrepreneurial restructuring are 1) a focus on school outcomes, or accountability; 2) the use of incentives linked to school performance; and 3) the devolution of authority, including site-based management.

[83]Barbara B. Laws, "Why Teachers Must Play a Role in Setting National Standards," *Educational Leadership* (November 1991), 37.

[84]Ann Bradley, "Pilot Test Offers a Glimpse of Board's Teacher Assessment," *Education Week* (September 16, 1992).

[85]Erling E. Boe and Robert F. Boruch, "Unpacking the Concept of Educational Restructuring with a Focus on the Entrepreneurial Approach," *Research Report*, No. 1992-ER1, Center for Research and Evaluation in Social Policy (December, 1992).

[86]See also A. Lieberman and L. Miller, "Restructuring Schools: What Matters and What Works," *Phi Delta Kappan* (June 1990), 759–64.

The focus of restructuring on school outcomes and incentives based upon those outcomes reflects a fundamental shift in the rhetoric of reform, because previous reform efforts emphasized school inputs and processes rather than outcomes. For example, efforts to introduce teacher competency testing and new graduation requirements were pervasive in the 1980s. A move toward school accountability implies a shift in how one views and evaluates our schools, and, more importantly, means an increased emphasis on assessment and testing. Anrig notes that "to assess without defined standards is to put the cart before the horse. To assess without the opportunity to be taught is to blame students for educational inequality."[87] Thus, the definition of standards, or what students should know and be able to do, has become an important part of the restructuring movement.

The National Council for Teachers of Mathematics and the National Science Teachers Association have taken the lead in academic subject area reform by defining standards for the education of American children. Other efforts are currently under way in history, geography, English, and foreign languages. A recent report by the National Council on Educational Standards and Testing, Raising Standards for American Education, emphasized that assessments linked to well-defined standards for student learning could be used for school accountability. It also noted that "standards and assessments linked to the standards can become the cornerstone of the fundamental, systemic reform necessary to improve schools."

Accountability implies responsibility. Implementing standards and improving education outcomes ultimately comes down to what a given teacher does in a specific classroom context. The third element of entrepreneurial restructuring, therefore, is decentralized decisionmaking and site-based management.[88] The idea of site-based management was implicit in calls by the Holmes Group, the Carnegie Forum on Education and the Economy, and others for increased professionalization of the teacher work force. By providing teachers with more authority (and more responsibility) for running their classrooms and their schools, reformers hope that teachers will feel that they have a greater investment in the educational enterprise. As Lieberman and Miller noted:

> What distinguished the restructuring movement from other school reform efforts is the understanding that it is necessary to create the conditions that will enable teachers to accomplish the desired outcomes. . . . The strong connection between students' learning and teachers' working conditions is often ignored, since schools tend to emphasize one factor at the expense of the other.[89]

However, decentralized decisionmaking and site-based management go beyond simply providing more authority for teachers. Lieberman and Miller state that "school conditions must be altered to enable schoolpeople to play active roles in making decisions about their work and their workplace." By including all key school participants, such as principals, teachers, parents, and even students in decisionmaking, schools will become infused with a core of committed participants who will strive to improve the learning environment.

If new models such as those implied by the restructuring movement are widely adopted, teachers may soon find themselves working in revitalized settings under new rules. Both preservice and inservice education must play a large role in helping teachers adapt to these potential sweeping changes in the school environment. In moving toward the 21st century, NCES will play an important role in collecting data needed to monitor changes in school inputs, processes, and outcomes and on their impact on principals, teachers, and students.

CONCLUSION

The trends in education described above are only a few of the changes that we can anticipate in the 21st century. Some of these reform efforts may fail, while others may be enormously successful. In the current

[87]Gregory Anrig, "Testing and Accountability," *The American School Board Journal* (September 1992), 34–36.

[88]For a discussion of this aspect of restructuring, see also Kenneth A. Tye, "Restructuring Our Schools: Beyond the Rhetoric," *Phi Delta Kappan* (September 1992), 8–14.

[89]A. Lieberman and L. Miller, "Restructuring Schools: What Matters and What Works," *Phi Delta Kappan* (June 1990), 759–64.

climate of reform, however, the teaching profession may have a very different character in the next century. As teachers and schools adapt to changing student demographics and respond to our greater understanding of how to help all children learn, the role of teachers in schools will undoubtedly change. NCES will try to be at the forefront of measurement issues as they pertain to examining topics discussed in this chapter, and will work to respond to the data needs of a changing educational system.

At the same time, NCES will continue to collect and report data on the demographic and economic characteristics of teachers; on their education, qualifications, and experience; and on their working conditions, perceptions, and attitudes. Finally, NCES will also continue to monitor teacher supply and demand using longitudinal data, and will try to develop better information on how teachers in the United States compare with their counterparts in other countries.

APPENDIX A • TECHNICAL NOTES

GENERAL INFORMATION

The information presented in this report was obtained from National Center for Education Statistics (NCES) databases and private research organizations in the United States and abroad. Whereas some of the data presented in this report were collected from census-like surveys, most of the data were gathered by surveying samples drawn from populations. In addition, a few of the tables provide projections of education statistics into the future, for example, estimates of the number of students who will be enrolled in elementary schools in the year 2000. Due to the variation in data collection methodology among studies, users of this report should take particular care when comparing data from different sources. Differences in procedures, timing, phrasing of questions, interviewer training, and so forth mean that the results from different NCES sources are not strictly comparable. Following the general discussion of data accuracy below, descriptions of the information sources and research methods are presented.

Accuracy of Estimates

The accuracy of any statistic is determined by the joint effects of sampling and nonsampling errors. Both types of error affect the estimates presented in this report.

Nonsampling error. Both universe and sample surveys are subject to nonsampling errors, which are extremely difficult to estimate. Nonsampling errors are of two kinds—nonobservation error and measurement error.

Nonobservation error may be due to noncoverage, which occurs when members of the population of interest are excluded from the sampling frame, and therefore are not included in the survey sample. Nonobservation error also occurs when sampled units (for example, schools, teachers, or students) refuse to answer some or all of the survey questions. These types of errors are referred to as questionnaire nonresponse (where the entire questionnaire is missing) and item nonresponse (where only some items are missing), respectively. Through the adjustment of sample weights and imputation procedures, survey researchers sometimes attempt to correct for nonresponse. Information concerning whether and how such adjustments were made in individual studies can be found in the technical report that describes in detail the methodology used in each study.

Measurement error occurs when mistakes are made when data are edited, coded, or entered into computers (processing errors), when the responses that subjects provide differ from the "true" responses (response errors), and when measurement instruments such as tests or questionnaires fail to measure the characteristics they are intended to measure. Sources of response errors include differences in the ways that respondents interpret questions, faulty respondent memory, and mistakes that respondents make when recording their answers. Because estimating the magnitude of these various types of nonsampling errors would require special experiments or access to independent data, information on these magnitudes is seldom available.

Sampling error. Sampling error occurs when members of a population are selected (sampled), and only sample members respond to survey questions; surveys of universes, such as the Common Core of Data, are not subject to sampling error. Estimates that are based on a sample will differ somewhat from the data that would have been obtained if a complete census of the relevant population had been taken using the same survey instruments, instructions, and procedures. The estimated standard error of a statistic is a measure of the variation due to sampling and can be used to examine the precision obtained in a particular sample.

The standard errors of statistics that are discussed in the text of this report and selected other standard errors are provided in Appendix B. Some of the estimates shown in the tables in this report may have

large standard errors. For example, cells with small sample sizes would tend to have large standard errors. Therefore, numbers that are in the tables but not presented in the text should be interpreted with caution. Standard errors of all estimates that have been reported in the tables and figures are available from NCES.

Statistical Procedures

The comparisons in the text have been tested for statistical significance to ensure that the differences are larger than might be expected due to sampling variation. These statistical tests were based on the Student's *t* statistic. Generally, whether a difference is considered significant is determined by calculating a *t* value for the difference between a pair of means, or proportions, and comparing this value to published tables of values at certain critical levels, called alpha levels. The alpha level is an a priori statement of the probability of inferring that a difference exists when, in fact, it does not.

In order to make proper inferences and interpretations from the statistics several points must be kept in mind. First, comparisons resulting in large *t* statistics may appear to merit special note. This is not always the case, because the size of the *t* statistic depends not only on the observed differences in means or the percentages being compared, but also on the standard error of the difference. Thus, a small difference between two groups with a much smaller standard error could result in a large *t* statistic, but this small difference is not necessarily noteworthy. Second, when multiple statistical comparisons are made on the same data, it becomes increasingly likely that an indication of a population difference is erroneous. Even when there is no difference in the population, at an alpha level of .05, there is still a 5 percent chance of concluding that an observed *t* value representing one comparison in the sample is large enough to be statistically significant. As the number of comparisons increases, the risk of making such an error in inference also increases.

To guard against errors of inference based upon multiple comparisons, the Bonferroni procedure to correct significance tests for multiple contrasts was used. This method corrects the significance (or alpha) level for the total number of contrasts made with a particular classification variable. For each classification variable, there are (K*(K-1)/2) possible contrasts (or nonredundant pairwise comparisons), where K is the number of categories. For example, because race–ethnicity has three categories (black, non-Hispanic; white, non-Hispanic; and other), K = 3 and there are (3*2)/2 = 3 possible comparisons among the categories. The Bonferroni procedure divides the alpha level for a single *t* test (for example, .05) by the number of possible pairwise comparisons in order to give a new alpha that is corrected for the fact that multiple contrasts are being made.

The formula used to compute the *t* statistic was as follows:

$$t = \frac{P_1 - P_2}{\sqrt{se_1^2 + se_2^2}}$$

where P1 and P2 are the estimates to be compared and se1 and se2 are their corresponding standard errors. This formula is valid only for independent estimates. When the estimates were not independent (for example, when comparing the percentages of students in different age groups), a covariance term was added to the denominator of the *t*-test formula. Because the actual covariance terms were not known, it was assumed that the estimates were perfectly negatively correlated. Consequently, 2(se1*se2) was added to the denominator of the *t*-test formula.

SOURCES OF DATA

Common Core of Data (CCD)

NCES uses the Common Core of Data (CCD) survey to acquire and maintain statistical data on the 50 states, the District of Columbia, and the outlying areas from the universe of state-level education agencies. Information about staff and students in public schools is collected annually at the school, LEA (local education agency or school district), and state levels. Information about revenues and expenditures is also collected at the state level.

Since the CCD is a universe study, the CCD information presented in this report is not subject to sampling error. However, nonsampling error could come from two sources: nonreturn and inaccurate reporting. Typically, misreporting occurs from varying interpretations of NCES definitions and differing record-keeping systems. NCES subjects data from the education agencies to a comprehensive edit. Where data are determined to be inconsistent, missing, or out of range, NCES contacts the education agencies for verification.

Questions concerning the Common Core of Data can be directed to:

General Surveys and Analysis Branch
Elementary and Secondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208-5651

1988 National Assessment of Educational Progress (NAEP)

The National Assessment of Educational Progress (NAEP) is an ongoing congressionally mandated, national survey of the knowledge, skills, understanding, and attitudes of young Americans in major subjects usually taught in school. Its primary goals are to detect and report the current status of and long-term changes in the educational attainments of young Americans. NAEP has been conducted since 1969.

Students were selected for participation in the 1988 NAEP using a multi-stage sample design in which geographical areas, schools, and then students were sampled. Within primary sampling units, schools were sampled with probability proportional to size, and schools with high-minority populations were oversampled to enhance the reliability of estimates for minority groups. Within schools, students were sampled by both age and grade to enhance comparability of NAEP assessments over time. In 1988, the student sample for grade 4/age 9 included 23,012 children, and for grade 8/age 13, it included 31,601 children.

The teacher questionnaire was administered to the reading teachers of fourth-grade students and to the writing teachers of eighth-grade students. The purpose of drawing these samples was not to estimate the attributes of the teacher population, but to estimate the number (proportion) of students whose teachers had various attributes and to correlate student characteristics and performance with the characteristics of their teachers. Therefore, the findings in this report are discussed in terms of the percentage of fourth- or eighth-grade students whose teachers reported that they used various teaching practices, rather than in terms of the percentage of teachers who reported using them.

Up to seven of the reading teachers and up to seven of the writing teachers within each school were selected to complete the teacher questionnaire. In schools with more than seven reading teachers, a sample of five of these teachers was selected. NAEP collected information from 3,808 teachers of the 4,534 fourth graders who participated in the 1988 reading assessment, and from 756 teachers who were linked with 3,437 of the 6,525 eighth graders who participated in the 1988 writing assessment. Teachers were asked questions about the individual students who participated in the assessment, their own teaching practices, and about themselves.[90]

For further information concerning the methodology used in NAEP, contact:

Educational Assessment Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208-5656

National Education Longitudinal Study of 1988 (NELS:88)

The National Education Longitudinal Study of 1988 (NELS:88) is the third in a series of longitudinal studies sponsored by NCES. NELS:88 began with eighth graders in 1988 and is broader in scope than its predecessors, the National Longitudinal Study of

[90]The NAEP sample design is described in detail in E. Johnson, R. Zwick, and N. Allen, *Focusing the New Design: The NAEP 1988 Technical Report* (Princeton, NJ: Educational Testing Service, 1990).

the High School Class of 1972 (NLS–72) and High School and Beyond (HS&B). The base-year survey described the eighth-grade experiences of approximately 25,000 participants and included additional surveys of teachers, parents, and school administrators. Followups have been conducted in 1990 and 1992, and will be conducted in 2-year intervals thereafter.

The NELS:88 base-year study employed a two-stage, stratified random sample design. In the first stage of the sampling process, "regular" public and private schools with eighth graders in the United States were stratified by region, urbanicity, and minority percentage. From this population, 1,734 schools were selected. The final sample size was 1,052 schools, about 70 percent of which were originally sampled and about 30 percent of which were replacement schools (schools drawn from the sampling stratum to replace an initial selection that refused to participate). The second stage of the sampling process included the selection of students within schools. Students who were judged by a representative of the school to be unable to complete the survey instruments, because of mental or physical handicaps or language barriers (about 5.4 percent of the potential sample), were ineligible for sampling. Students of Hispanic, Asian, or Pacific Islander origin were oversampled to ensure sufficient sample sizes for analyses of language minority students. On average, 26 students were sampled per school, resulting in more than 24,999 eighth graders in the sample (weighted questionnaire completion rate of 93.4 percent).

Teachers of eighth graders were selected for participation in NELS:88 on a pre-assigned basis in two of four subject areas—mathematics, science, English, and social studies. Each school was randomly assigned to one of the following combinations of curriculum areas: mathematics and English, mathematics and social studies, science and English, and science and social studies. At any school, each sampled student's current teacher(s) in each of the two assigned subject areas was selected to receive a teacher questionnaire. This selection procedure was designed to ensure representation of mathematics or science and English or social studies curriculum in all schools. An average of five teachers per school participated. About 92 percent of teachers who were selected to complete teacher questionnaires responded.[91]

Given this sample design, the teacher component of the NELS:88 survey does not constitute a nationally representative sample of eighth-grade teachers. NELS:88 teachers were not independently selected, and their inclusion in the sample depended upon their linkage to a student who was selected for the survey. Therefore, in this study the student is the basic unit of analysis: the characteristics of teachers and their instruction have been analyzed in relation to student–teacher pairs.

Further information concerning NELS:88 can be obtained from:

Longitudinal and Household Studies Branch
Elementary/Secondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208-5734

1988 National Survey of Postsecondary Faculty (NSOPF–88)

The National Survey of Postsecondary Faculty (NSOPF–88) was designed by NCES to gather data concerning the background characteristics, work load, compensation, retirement plans, and job satisfaction of faculty in 2- and 4-year postsecondary institutions. The data used in this report were gathered in the first cycle of the study, which was conducted between December 1987 and October 1988.

The sample of faculty members for the survey was obtained in a two-stage sampling process. First, nonproprietary postsecondary institutions were stratified into 12 primary strata based on level of degree offered, emphasis placed on research, and control (public versus private). Random samples of faculty were drawn within each of the 12 strata, for a total of 480 institutions. Second, 449 participat-

[91]For a detailed description of the NELS:88 sample design, see B. Spencer, M. Frankel, S. Ingels, K. Rasinski, and R. Tourangeau, *National Education Longitudinal Study of 1988: Base Year Sample Design Report*, NCES 90-463 (Washington, DC: U.S. Department of Education, National Center for Education Statistics, 1990).

ing institutions provided lists of their fall 1987 instructional faculty, who were stratified by program area and employment status (full- and part-time). Random samples of faculty members were drawn from each faculty stratum. A total of 12,569 faculty members were sampled, of whom 11,071 were estimated to be eligible sample members, i.e., sample members who had at least some instructional duties that were related to for-credit courses given at the sampled institution during the 1987 fall term. Questionnaire responses were obtained from 88 percent of sampled institutions and 76 percent of the eligible sampled faculty members. Missing responses to particular items were imputed by assigning the response to the omitted item that was provided by a randomly selected other respondent who matched the target respondent on employment status, tenure status, academic rank, gender, minority/nonminority status, program area, and institutional stratum.[92]

Further information on the NSOPF–88 may be obtained from:

Cross-Sectional Studies Branch
Postsecondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208-5652
Projections of Education Statistics

Since 1964, NCES has published Projections of Education Statistics, projecting key statistics, including enrollments, instructional staff, graduates, and earned degrees for elementary and secondary schools and institutions of higher education. Projections includes several alternative projection series and a methodology section describing the techniques and assumptions used to prepare them. Data in this report reflect the intermediate Projections series only.

Differences between reported and projected values are almost inevitable. An evaluation of past projections at the elementary and secondary levels reveals that projections of enrollment have been quite accurate: mean absolute percentage differences for enrollment were less than 1 percent for projections from 1 to 5 years into the future, while those for teachers were less than 4 percent.

Since projections of time series are subject to errors both by the nature of statistics and the properties of projection methodologies, users are cautioned not to place too much confidence in the numerical values of the projections. Important, but unforeseeable, economic and social changes may lead to differences. These projections are to be considered indicators of broad trends.

For further information about projection methodology and accuracy, contact:

Statistical Standards and Methodology Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208–5650

Recent College Graduates Study

NCES has conducted periodic surveys to collect information on college outcomes. The Recent College Graduates Study (RCG), a collection of six surveys conducted since 1976, has concentrated on those college graduates who have entered the teaching profession. The survey involved a two-stage sampling procedure. First, a sample of institutions awarding bachelor's and master's degrees was selected and stratified by percent of education graduates, control, and geographic region. Approximately 95 percent of the sampled institutions responded to the survey. Then for each selected institution, a sample of degree recipients was chosen within each of seven strata based on degree level (bachelor's or master's) and program area. To obtain accurate results on graduates who were newly qualified to teach, education majors were oversampled. For the 1987 survey, questionnaires were mailed to 18,825 eligible members of the bachelor's degree sample, and responses were received from 15,088 by mail and follow-up telephone interview, for a final response rate of 80.1 percent.

[92]The sampling design and other technical information on NSOPF:88 can be found in the Technical Appendix to S. Russell, R. Cox, C. Williamson, J. Boismier, H. Javitz, J. Fairweather, and L. Zimbler, *Faculty in Higher Education Institutions, 1988*, NCES 90-365 (Washington, DC: U.S. Department of Education, National Center for Education Statistics, March 1990), 93–101.

Two kinds of adjustment were made for nonresponse. First, to account for nonparticipating institutions and nonresponding graduates, a poststratification ratio adjustment procedure was used. The initial weight for each graduate was adjusted so that the sum of the graduate weights in each poststrata equaled the corresponding number of graduates tabulated from the U.S. Department of Education, National Center for Education Statistics, the Higher Education General Information (HEGIS) XXI Survey, 1985–86 Survey of Earned Degrees. Second, imputation for item nonresponse was conducted using logical imputation, regression imputation, or random imputation within class.[93]

For this report, respondents were categorized as teachers if they reported that their principal job during the week of April 27, 1987 was that of a school teacher (prekindergarten through grade 12).

Further information on this survey may be obtained from:

Postsecondary Education Statistics Division
Cross-Sectional Studies Branch
Postsecondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208-5652

1987-88 Schools and Staffing Survey (SASS) and ***1988–89 Teacher Followup Survey (TFS)***

The 1987–88 Schools and Staffing Survey (SASS) was a mail survey that 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. Public and private schools were sampled from the Quality Education Data (QED) files stratified by the 50 states and the District of Columbia, and then by three grade levels (elementary, secondary, and combined). The survey includes seven questionnaires that were sent to public school districts and private schools, administrators, and teachers. Details concerning sampling strategies, response rates, and imputation procedures for individual questionnaires follow.[94]

The Teacher Demand and Shortage Questionnaires for Public School Districts and Private Schools. All local education agencies (LEAs) that had at least one school selected for the school sample were included in the LEA sample for the "Teacher Demand and Shortage (TDS) Questionnaire." In addition, a sample of 70 LEAs that did not contain eligible schools was selected directly. Only 8 of these 70 were actually in scope (that is, they reported hiring teachers). The total LEA sample was 5,592, and the total private school sample was 3,513.

Weighted response rates were 90.8 percent for the public school TDS questionnaire and 66.0 percent for the private school TDS questionnaire. The data were weighted to reflect the universe of public school districts and the universe of private schools. The weights were subsequently adjusted for survey nonresponse. Data items on both questionnaires were imputed for item nonresponse using a hot-deck procedure.

The Public and Private School Administrator Questionnaires. School Administrator Questionnaires were mailed to the administrators of all 9,317 public and 3,513 private schools in the school samples. Weighted response rates for the School Administrator Questionnaire were 94.4 percent for public school administrators and 79.3 percent for private school administrators. There was no explicit imputation for item nonresponse. Caution must be exercised in the use or interpretation of the estimates from an unimputed data file, especially estimates with low-item response rates.

The Public and Private School Schools Questionnaires. School questionnaires were mailed to the administrators of all 9,317 public and 3,513

[93]Details concerning the sample design of the 1987 Survey of 1985–86 College Graduates may be found in J.A. Riccobono, G.J. Burkheimer, and V.G. Iannacchione, "Final Methodology Report: 1987 Survey of 1985–86 College Graduates" (Washington, DC: U.S. Department of Education, National Center for Education Statistics, 1989).

[94]For a detailed description of the sample design, see Steven Kaufman, *1988 Schools and Staffing Survey Sample Design and Estimation, Technical Report*, NCES 91–127 (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, May 1991), 23–43.

private schools in the school samples. Weighted response rates were calculated using the sampling weights. The weighted response rate for the Public School Questionnaire was 91.9 percent; for the Private School Questionnaire, it was 78.6 percent. The average unweighted item response rate for the entire Public School Questionnaire was 89.6 percent; for the Private School Questionnaire, it was 89.1 percent. Data items on the School Questionnaires were imputed for item nonresponse using a hot-deck procedure.

In this report, schools have been categorized into three levels, three types of communities, and two categories based on the number of enrolled students who are of minority backgrounds. The school levels—elementary, secondary, and combined schools—were defined as follows: elementary schools had grade 6 or lower, or "ungraded," and no grade higher than the 8th grade; secondary schools had grade 9 or higher and no grade lower than the 7th, or "ungraded"; and combined schools had grades higher than the 8th and lower than the 7th. The school community types—urban, suburban, and rural—were defined as follows: urban schools were located in medium-sized cities (50,000 to 100,000 people), large cities (100,000 to 500,000 people), or very large cities (more than 500,000 people); suburban schools were located in suburbs of medium-sized, large, or very large cities, or in a military base or station; and rural schools were located in rural or farming communities, small cities or towns of fewer than 50,000 people that were not suburbs of larger cities, or Indian reservations.[95] The percent minority enrollment of each school was defined as the proportion of each school's enrolled students who were American Indian or Alaskan Native; Asian or Pacific Islander; Hispanic, regardless of race (Mexican, Puerto Rican, Cuban, Central or South American, or other culture or origin); or Black (not of Hispanic origin). Schools were classified into two categories based upon this proportion: schools with less than 20 percent minority enrollment, and schools with 20 or more percent minority enrollment.

The Public and Private School Teachers Questionnaires. For the purposes of SASS, a teacher was any full- or part-time teacher whose primary assignment was to teach in any of grades K–12. Itinerant teachers and long-term substitutes who were filling the role of a regular teacher on an indefinite basis were also included. An itinerant teacher was defined as a teacher who taught at more than one school.

Teachers were sampled from each sampled school. Teacher samples were stratified by experience (new and all other teachers), level (elementary and secondary teachers), and subject area. Teachers were classified as elementary or secondary on the basis of the grades they taught rather than on the schools in which they taught. An elementary school teacher was one who, when asked for the grades taught, checked the following:

- Only "ungraded" and was designated as an elementary teacher on the list of teachers provided by the school; or
- 6th grade or lower, or "ungraded," and no grade higher than 6th; or
- 6th grade or lower and 7th grade or higher, and reported a primary assignment of prekindergarten, kindergarten, or general elementary; or
- 7th and 8th grades only, and a reported primary assignment of prekindergarten, kindergarten, or general elementary; or
- 6th grade or lower and 7th grade or higher, and reported a primary assignment of special education and was designated as an elementary teacher on the list of teachers provided by the school; or
- 7th and 8th grades only, and reported a primary assignment of special education and was designated as an elementary teacher on the list of teachers provided by the school.

[95]In tables that report NELS:88 data, community type was defined in slightly different terms. Whereas in SASS the data used to classify schools into these categories were supplied by the people who filled out the school questionnaires, in NELS:88 the community type rows were derived from the variable G8URBAN, which categorizes schools as urban, suburban, or rural based on their classification in QED, as drawn from U.S. Census data and definitions. Urban means central city; suburban is the area surrounding a central city but within a county constituting the MSA (or Metropolitan Statistical Area); and rural is outside the MSA.

A secondary school teacher was one who, when asked for the grades taught, checked:

- "Ungraded" and was designated as a secondary teacher on the list of teachers provided by the school; or
- 6th grade or lower and 7th grade or higher, and reported a primary assignment other than prekindergarten, kindergarten, or general elementary; or
- 9th grade or higher, or 9th grade or higher and "ungraded"; or
- 7th and 8th grades only, and reported a primary assignment other than prekindergarten, kindergarten, or general elementary; or
- 7th and 8th grades only, and reported a primary assignment of special education and was designated as a secondary teacher on the list of teachers provided by the school; or
- 6th grade or lower and 7th grade or higher, or 7th and 8th grades only, and was not categorized above as either elementary or secondary.

The public and private school teacher samples were also designed to include a basic sample and a Bilingual/ESL supplement. The sample sizes were as follows: public basic sample, 54,340; private basic sample, 11,412; public bilingual/ESL supplement sample, 2,258; and private bilingual/ESL supplement sample, 183.

Weighted response rates were 86.4 percent for the Public School Teachers Questionnaire and 79.1 percent for the Private School Teachers Questionnaire. The data were weighted to reflect the universe of public school teachers and the universe of private school teachers, and the weights were adjusted for nonresponse. There was no explicit imputation for item nonresponse. Caution must be exercised in the use or interpretation of the estimates from an unimputed data file, especially estimates with low-item response rates.

Teacher Followup Survey. Another component of SASS is the Teacher Followup Survey (TFS), which provides data used to study teacher attrition and retention in public and private schools and to project teacher demand during the 1990s. It consists of a subsample of SASS teachers, and was implemented 1 year after the base-year survey. The TFS identifies and collects data from various groups of teachers who were surveyed the previous year. Teachers who remain in the teaching profession, including those who remain in the same school (stayers) and those who have changed schools (movers), as well as those who have left teaching (leavers), are included in the followup sample.

The 1988–89 occupational status of teachers responding to the 1987–88 SASS was determined by contacting their schools to learn whether they were still at the school, had moved, or had left teaching. All leavers were included in the sample. Stayers and movers in public schools were stratified by level, experience, sector, and teaching status (stayer or mover). They were sorted by census region, urbanicity, teacher subject, and school enrollment; in private schools, they were sorted by affiliation, urbanicity, teacher subject, and school enrollment. The total sample size was 7,172 teachers, of whom 2,987 were leavers and 4,185 were stayers or movers. Response rates for the TFS were 84.1 among public school teachers and 75.9 percent among private school teachers.[96] The TFS was not imputed for item nonresponse.

The two tables that follow present unweighted response rates for the variables used in the tables of this report, by table. The first table presents item response rates for variables from the Teacher Questionnaire, and the second presents response rates for variables used from the Teacher Followup Survey. Unweighted response rates do not reflect additional response loss due to complete questionnaire refusal. Variables are listed under the table in which they first occurred, and are not repeated under the listing for subsequent tables in which they occurred. Within tables, column variables are presented first, followed by row variables. Item response rates for variables from the Teacher Questionnaire were as follows:

[96]These response rates are the products of the respective response rates to the Teacher Questionnaires (86.4 percent among public teachers and 79.1 percent among private teachers) and the Followup Survey (97.3 percent among public teachers and 96.0 percent among private teachers).

Item response rates for variables from the Teacher Questionnaire

Table number	Variable name	Response rate for public sector (percent)	Response rate for private sector (percent)
Table 2.3	Teacher sex	99.6	99.9
	Teacher level	100.0	100.0
	Teacher age	98.9	98.2
	Teacher years of experience	100.0	100.0
Table 2.5	Teacher race	98.3	98.3
	Teacher ethnicity	97.9	97.8
Table 2.10	Teacher main assignment field	100.0	100.0
Table 2.17	Academic achievement level of students in self-contained classes	98.4	98.4
	Class academic achievement level for teachers in departments	91.2	91.1
	Teacher highest degree	100.0	100.0
	Best qualified field	98.2	97.9
	Would become a teacher again	99.6	99.0
Table 3.1	Consecutive years teaching	99.0	98.5
	Main activity in 1986–87	99.3	99.5
Table 3.7	Has state certification in main assignment field	99.0	99.4
	Type of certification in main assignment field	82.1	87.1
	Has other teaching assignment	79.2	83.6
	Type of certification in other assignment field	77.8	84.0
Table 3.8	Difficulty finding qualified applicants	99.1	99.1
Table 3.11	Methods for compensating for vacancies	70.3	72.3
Table 4.1	Major field of study	100.00	99.9
Table 4.4	Whether teacher had taken inservice or college courses	99.1	98.2
	Field of inservice or college courses	84.5	85.6
Table 5.5	Second best qualified field	96.3	95.9
Table 6.1	Description of main assignment at school	100.0	100.0
	Marital status	99.2	98.2
	Number of dependents	99.1	97.5
Table 6.2	Other school assignment	83.9	90.2
Table 6.5	Whether main assignment field had changed	99.2	98.4
	Previous assignment field	96.8	95.7

Item response rates for variables from the Teacher Questionnaire—Continued

Table number	Variable name	Response rate for public sector (percent)	Response rate for private sector (percent)
Table 6.7	Class size (self-contained classes only)	94.8	96.5
	Class size (teachers in departments)	90.0	90.5
Table 6.8	Subject areas taught	90.5	91.2
	Number of periods taught per week	91.0	91.1
Table 7.1	Hours spent teaching various subjects in self-contained classes	95.1	95.9
Table 8.4	Teacher base salary	91.5	90.3
Table 8.6	Teacher satisfaction with salary	99.4	98.4
Table 8.8	Receipt of summer school salary	100.0	100.0
	Receipt of other summer comp.	100.0	100.0
	Receipt of other school income	100.0	100.0
Table 8.9	Receipt of nonschool income during summer	90.5	86.9
	Receipt of nonschool income during academic year	100.0	100.0
Table 8.10	Receipt of in-kind income	96.5	95.8
Table 8.11	Receipt of master/mentor teacher pay	97.2	95.9
	Receipt of field shortage pay	96.3	94.8
	Receipt of location shortage pay	95.6	94.1
	Receipt of career ladder pay	96.0	94.5
	Receipt of merit pay for individuals	96.0	94.6
	Receipt of merit pay for schools	95.7	94.3
Table 8.12	Favor master/mentor teacher pay	97.2	96.6
	Favor field shortage pay	98.6	96.2
	Favor location shortage pay	98.3	95.7
	Favor career ladder pay	98.5	96.6
	Favor merit pay for individuals	98.6	96.6
	Favor merit pay for schools	98.6	96.4
Table 9.2	Teacher rating of control		
	Selecting materials	99.5	99.1
	Content, topics, skills	99.6	99.2
	Teaching techniques	99.6	99.3
	Amount of homework	99.1	98.2

Item response rates for variables from the Teacher Questionnaire—Continued

Table number	Variable name	Response rate for public sector (percent)	Response rate for private sector (percent)
Table 9.3	Teacher rating of teacher influence		
	Determining discipline policy	99.5	98.9
	Determining content of inservice	99.4	97.7
	Setting policy on ability grouping	98.9	96.8
	Establishing curriculum	99.3	98.7
Table 9.4	Teacher rating of help from others		
	Principal or school head	99.5	99.1
	Department chair	98.7	97.9
	Other administrators	99.2	98.0
	Other teachers	99.4	98.9
Table 9.5	Teacher rating of problems		
	Student absenteeism	99.4	99.2
	Students cutting classes	99.4	99.2
	Physical conflicts among students	99.5	99.2
	Vandalism of school property	99.5	99.3
	Student pregnancy	99.3	99.0
	Student alcohol use	99.2	99.0
	Student drug abuse	99.1	98.9
	Verbal abuse of teachers	99.5	99.2
Table 9.6	Teacher rating of student tardiness as school problem	98.6	98.8
Table 9.9	Teacher satisfaction with working conditions—23 items	Response rates ranged from 98.8 to 99.6	98.3 to 99.2
Table 9.12	Plans to remain in teaching	99.4	99.3
Table 9.13	Expected 1988–89 activities	99.4	99.4

Item response rates for the TFS survey were as follows:

Table number	Variable name	Response rate for Stayers and Movers (percent)	Response rate for Leavers (percent)
Table 3.16	Teaching in same school	99.9	N.A.
	Leavers' occupational status	N.A.	100.0
Table 3.17	Main reason for moving	94.1	N.A.
Table 3.18	Main reason for leaving	N.A.	99.4
Table 3.19	Leavers' 1988–89 nonteaching occupations	N.A.	99.2
Table 3.20	Leavers' 1988–89 occupations outside elementary or secondary schools	N.A.	100.0
Table 8.13	1988–89 total income for leavers	N.A.	80.5
Tables 9.11a and 9.11b	Satisfaction with . . .		
	Salary	99.4	89.2
	Benefits	99.0	89.0
	Opportunity for advancement	99.1	86.0
	Support/recognition of administrators	99.0	86.3
	Safety of work environment	99.1	90.3
	Influence over policies and practices	99.3	87.0
	Autonomy over work	99.3	90.2
	Professional caliber of colleagues	99.4	86.0
	Esteem of society for profession	99.4	90.0
	Procedures for evaluation	99.4	86.0
	Work load	99.3	90.1
	Availability of resources	99.4	86.9
	General working conditions	99.4	90.3
	Job security	99.3	90.0
	Intellectual challenge	99.1	90.0
Table 9.14	Expected main activity in 1989–90	93.6	99.5

For further information on the 1987–88 SASS or general information on SASS and its products, contact:

Special Surveys and Analysis Branch
Elementary and Secondary Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208-5651

APPENDIX B • SELECTED STANDARD ERRORS

I. STANDARD ERRORS FOR ESTIMATES DISCUSSED IN THE TEXT AND SELECTED ADDITIONAL STANDARD ERRORS

CHAPTER 2

Table 2.3

Percentage of teachers who were female	
Total	.24
Public	
Level	
Elementary	.26

Table 2.5

Average teacher age	.05
Percentage of teachers under 30 years old	
Total	.17
Public	.19
Race–ethnicity	
Black	.72
White	.21
Other	.81
Private	.77
Percentage of teachers over 50 years old	.21

Table 2.7

Number of teachers in the following race-ethnicity and sex categories	
Black male, Total	1720.7
White male, Total	7491.1
Other male, Total	1219.8
Black female, Total	3769.1
White female, Total	11575.9
Other female, Total	2913.2

Table 2.8

Percentage of male teachers who were black	
Public	.25
Private	.61
Percentage of male teachers who were white	
Total	.26
Percentage of male teachers who were members of other racial-ethnic groups	
Public	.17
Private	.98
Percentage of female teachers who were black	
Public	.22
Private	.27
Percentage of female teachers who were white	
Total	.28
Percentage of female teachers who were members of other racial-ethnic groups	
Public	.16
Private	.43

Table 2.9

Percentage of public school teachers in schools with 50+ percentage minority students	
Race-ethnicity	
Asian	3.17
Black	1.37
Hispanic	2.19
White	.42

Table 2.10

Percentage of teachers who were Asian/Pacific Islander	
Public	.05
Main assignment field	
Bilingual ed./ESL	.87
Percentage of teachers who were black	
Public	.20
Percentage of teachers who were Hispanic	
Public	.10
Main assignment field	
Bilingual ed./ESL	2.70
Percentage of teachers who were white	
Public	
Main assignment field	
K–General elementary	.45
Special education	.66
Bilingual ed./ESL	2.48
Vocational education	1.18

Table 2.11

Percentage of public school teachers in the following race-ethnicity categories	
Native American, Total	.06
Asian/Pacific Islander, Total	.05
Black, Total	.20
Hispanic, Total	.10
White, Total	.24

Table 2.12

Percentage of private school teachers in the following race-ethnicity categories	
Native American, Total	.12
Asian/Pacific Islander, Total	.25
Black, Total	.25
Hispanic, Total	.34
White, Total	.49

Table 2.13

Percentage who were female of:	
Newly qualified teachers	1.61
Other bachelor's recipients	.91

Table 2.14

Percentage of schools that were elementary	
Public	.24
Private 1	.38
Percentage of schools that were secondary	
Public	.20
Private .	59
Percentage of schools that were combined	
Public	.21
Private	1.27
Percentage of schools with less than 5 percent minority enrollment	
Public	.30
Private	1.50
Percentage of schools with 50+ percent minority enrollment	
Public	.50
Private 1.10	

Table 2.15

Percentage of students who were Native American	
Public	.06
Private	.11
Percentage of students who were Asian/Pacific Islander	
Public	.09
Private	.29
Percentageage of students who were black	
Public	.23
Level	
Elementary	.27
Secondary	.44
Community type	
Urban	.64
Suburban	.48
Private	.50
Level	
Elementary	.67
Secondary	.68
Community type	
Urban	1.04
Suburban	.63
Percentage of students who were Hispanic	
Public	.20
Private	.67
Percentage of students who were white	
Public	.27
Level	
Elementary	.36
Secondary	.46
Community type	
Urban	.71
Suburban	.83
Private	.77
Level	
Elementary	.86
Secondary	1.96
Community type	
Urban	1.26
Suburban	1.10

Table 2.16

Percentage of students eligible for free or reduced-price lunches in public elementary schools	
Total	.19
Community type	
Urban	.59
Suburban	.44
Rural–small city	.28
Minority enrollment	
Less than 20 percentage	.26
20 percentage or more	.41
Percentage of students eligible for free or reduced-price lunches in public secondary schools	
Total	.13
Community type	
Urban	.35
Suburban	.36
Rural–small city	.19
Minority enrollment	
Less than 20 percentage	.11
20 percentage or more	.29

CHAPTER 3

Table 3.1

Percentage of teachers who were continuing in 1987–88
Total .28

Percentage of teachers who were new in 1987–88
Total .21

Percentage of teachers who were returning in 1987–88
Total .21

Percentage of returning teachers who were in college in 1986–87
Total 1.25

Percentage of returning teachers who worked outside of education in 1986–87
Total 1.30

Percentage of returning teachers who were homemaking in 1986–87
Total 2.27

Percentage of returning teachers who were retired in 1986–87
Total 1.67

Percentage of returning teachers who were engaged in other activities in 1986–87
Total 1.59

Table 3.3

Percentage of bachelor's degree recipients who were employed as teachers
Total .45
Newly qualified teachers 1.41
Other bachelor's degree recipients .22

Percentage of bachelor's degree recipients who were employed as non-teachers
Total .58

Percentage of bachelor's degree recipients who were not employed
Total .44

Table 3.4

Percentage of employed 1985-86 bachelor's degree recipients who described their principal job as

Possible career potential, Total .57

Definite career potential, Total .55

Temporary job/other, Total .56

Table 3.5

Percentage of newly qualified teachers who did not apply for teaching jobs
Total 1.70

Percentage of newly qualified teachers who did not apply for teaching jobs:

Because they were not interested in teaching
Total 2.34

Because they wanted more education
Total 2.21

Because they were not ready for a job
Total .98

Because teaching jobs were too hard to get
Total .86

Because student teaching discouraged them
Total 1.05

Because they were offered jobs with higher salaries or more prestige
Total 1.27

Because they didn't like teaching conditions or teachers' salaries
Total 1.21

For other reasons
Total 2.75

Table 3.6

Number of approved teaching positions
Public 10153.0
Private 8865.1

Percentage of approved positions that were vacant
Public .07
Private .10

Percentage of approved positions that were withdrawn
Public .05
Private .18

Table 3.7

Percentage of teachers with regular or standard certification in their main assignment fields
Public .26

Percentage of teachers with probationary or temporary certification in their main assignment fields
Public .25

Percentage of teachers with no certification in their main assignment fields
Public .11

Percentage of teachers with other assignments
Public .27

Percentage of teachers with regular or standard certification in their other assignment fields
Public .63

Percentage of teachers with no certification in their other assignment fields
Public .61

Table 3.8

Percentage of public school administrators who did not find it difficult to fill teaching vacancies
Total .58

Percentage of public school administrators who found it generally difficult to fill teaching vacancies
Total .41

Percentage of public school administrators who found it difficult to fill teaching vacancies in some areas
Total .54

Percentage of public school administrators who reported no teaching vacancies
Total .47

Table 3.9

Percentage of public school administrators who reported the following difficulty in finding qualified applicants

Not at all difficult	.58
Generally difficult	.41
Difficult in some fields	.54
No vacancies	.47

Table 3.10

Percentage of private school administrators who reported the following difficulty in finding qualified applicants

Not at all difficult	1.36
Generally difficult	1.15
Difficult in some fields	1.23
No vacancies	1.51

Table 3.11

Percentage of school administrators who reported using one of the following methods to cover unfilled vacancies

Cancelled courses, Total	.23
Increased class size, Total	.33
Increased number of classes per teacher, Total	.35
Re-assigned teachers, Total	.45
Hired substitutes, Total	.44
Hired part-time or itinerant teachers, Total	.42
Other, Total	.44

Table 3.12

Percentage of public school districts that offered teachers the following incentives for teaching in less desirable locations:

Cash bonuses, Total	.17
An increase on the salary schedule, Total	.32
Other pay increases, Total	.23

Table 3.13

Percentage of public school districts and private schools that used pay incentives to attract teachers to fields of shortage

Public districts, any field	.39
Private schools, any field	.89

Table 3.14

Percentage of public school districts and private schools that offered free retraining to teach in fields of shortage

Public districts, any field	.59
Private schools, any field	1.12

Table 3.15

Average percentage separations in public schools between October 1986 and October 1987
Total .17

Average percentage additions in public schools between October 1986 and October 1987
Total .59

Average percentage separations in private schools between October 1986 and October 1987
Total .59

Average percentage additions in private schools between October 1986 and October 1987
Total 1.04

Table 3.16

Percentage stayers in 1988–89, Total .43

Percentage movers in 1988–89, Total .38

Percentage leavers in 1988–89, Total .28

Percentage 1987–88 teachers in non-teaching jobs in education in 1988–89, Total .13

Percentage 1987–88 teachers working outside of education in 1988–89, Total .09

Percentage of 1987–88 teachers in college in 1988–89, Total .04

Percentage of 1987–88 teachers homemaking or childrearing in 1988–89, Total .18

Percentage of 1987–88 teachers who were other leavers in 1988–89, Total .16

Table 3.17

Percentage of teachers who left their previous schools for the following main reasons

Family/personal move, Total	1.90
Better salary or benefits, Total	.79
Better assignments, Total	1.62
School staffing action, Total	1.88
Dissatisfaction with previous school, Total	1.20

Table 3.18

Percentage of leavers who left for the following reasons

Family or personal move,Total	2.54
Retire-ment or sabbatical, Total	2.04
Other career outside of education, Total	1.94
To improve salaries or other benefits, Total	.71
Another career in education, Total	.64
School staffing action, Total	.64
Dissatisfaction with teaching, Total	1.00

Table 3.19

Percentage of leavers who left for non-teaching job in elementary or secondary education

Total	1.90

Table 3.20

Percentage of leavers who were employed outside of elementary or secondary education:

As engineers or scientists, Total	.84
As postsecondary instructors, Total	1.51
As technicians, Total	.69
As salespeople, Total	2.24
As administrative support or supervisors, Total	3.06
As clerical staff, Total	3.40
In service occupations, Total	1.23
In other occupations, Total	1.52

CHAPTER 4

Table 4.1

Percentage of teachers who majored in general education for their highest degree

Total	.28

Table 4.2

Percentage of teachers who did not earn degrees beyond a BA/BS

Total	.29

Percentage of teachers who earned MA/MS in education

Total	.29
Public	.29
Private	.63

Percentage of teachers who earned MA/MS not in education

Public	.14
Private	.64

Table 4.3

Percentage of teachers who majored in their main assignment field, Total .29

Percentage of teachers who minored in their main assignment field, Total .17

Percentage of teachers who neither majored nor minored in their main assignment field, Total .26

Table 4.4

Percentage of teachers who have taken inservice or college courses in past two years

Total	.29

Table 4.7

Percentage of postsecondary faculty who were female

Discipline	
Teacher educators	3.91
Other education faculty	3.27
Non-education faculty	.98

Table 4.8

Percentage of full-time regular postsecondary faculty by age group, percentage who hold a doctorate or first professional degree, and percentage with tenure

Under 30, Total	.34
30-44, Total	1.00
45-54, Total	.79
55-64, Total	.93
65 or over, Total	.30
Holding doctorate or first professional degree	
Total	.76
Tenured, Total	1.51

Table 4.9

Average total earned income for full-time postsecondary faculty

Discipline	
Teacher educators	947.0
Other education faculty	866.0
Non-education faculty	1193.5

Average base salary for full-time postsecondary faculty

Discipline	
Teacher educators	871.5
Other education faculty	540.1
Non-education faculty	786.3

Average income from consulting

Discipline	
Teacher educators	102.3
Other education faculty	470.9

Table 4.10

Percentage of postsecondary faculty who were somewhat or very satisfied with their jobs overall
- Discipline
  - Teacher educators 2.86
  - Other education faculty 1.72
  - Non-education faculty .81

CHAPTER 5

Table 5.1

Percentage of public school teachers with less than a bachelor's degree, Total .04

Percentage of public school teachers with master's degrees, Total .30

Percentage of public school teachers with education specialist's degrees, Total .14

Percentage of private school teachers with less than a bachelor's degree, Total .42

Percentage of private school teachers with master's degrees, Total .75

Percentage of private school teachers with education specialist's degrees, Total .29

Table 5.2

Percentage of public school teachers with the following as their highest degree
- Less than BA/BS .04
- BA/BS .29
- Higher than BA/BS .28

Table 5.3

Percentage of private school teachers with the following as their highest degree
- Less than BA/BS .42
- BA/BS .75
- Higher than BA/BS .69

Table 5.4

Percentage of recent college graduates with GPA of 3.25 to 4.00
- Newly qualified teachers 1.41
- Other bachelor's degree recipients .72

Table 5.5

Percentage of teachers who reported that they were teaching in their best-qualified fields
- Total .22
- Public .25
- Private .59

Percentage of teachers who were certified in their main assignment field
- Total .17
- Public .09
  - Main assignment field
    - General elementary .16
    - Math/science .38
    - English/language arts .36
- Private .84
  - Main assignment field
    - General elementary 1.22
    - Math/science 2.39
    - English/language arts 2.50

Percentage of teachers who have always taught full time
- Total .26
- Public
  - Level
    - Elementary .31
    - Secondary .34
- Private
  - Level
    - Elementary 1.13
    - Secondary 1.42

Average number of years taught
- Public .05
  - Sex
    - Male .08
    - Female .05
- Private .16

Percentage of teachers who had taught 3 years or fewer
- Public .15
  - Sex
    - Male .29
    - Female .18
- Private .51

Percentage of teachers who had taught 4–9 years
- Public .23
- Private .83

Percentage of teachers who had taught 10–19 years
- Total .23
- Public .24
- Private .80

Percentage of teachers who had taught 20 years or more
- Total .22
- Public .24
  - Level
    - Elementary .42
    - Secondary .28
  - Sex
    - Male .38
    - Female .32
- Private .68
  - Level
    - Elementary .79
    - Secondary 1.16

Table 5.6

Percentage of public school teachers who had the following types of certification in their main assignment field
- Regular .26
- Probationary .10
- Temporary .20
- None .11

Table 5.7

Percentage of teachers who have taught full time and/or part time, average number of years taught, and percentage of teachers in the following categories of teaching experience
- Always full time, Total .26
- Always part time, Total .06
- Both full and part time, Total .24
- Average years taught, Total .04
  - 3 or fewer years of experience, Total .13
  - 4-9 years, Total .22
  - 10-19 years, Total .23
  - 20 years or more, Total .22

Table 5.8

Percentage of public school teachers certified in their main assignment fields
- Years teaching experience
  - 1–2 years .56
  - 3–4 years .43
  - 5–10 years .21

Percentage of public school teachers with 30 hours or more of inservice training in past two years
- Total .33
- Years teaching experience
  - 1–2 years 1.14

Percentage of private school teachers certified in their main assignment fields
- Years teaching experience
  - 1–2 years 2.00
  - 3–4 years 2.30
  - 5–10 years 1.51

Percentage of private school teachers with 30 hours or more of inservice training in past two years
- Total .66
- Years teaching experience
  - 1–2 years 1.91

CHAPTER 6

Table 6.1

Percentage of teachers with regular, full-time teaching positions, Total .18

Percentage of teachers with regular, 50% or more but less than full-time positions, Total .12

Percentage of teachers with regular, less than 50% time teaching positions, Total .07

Table 6.2

Percentage of part-time teachers who were also administrators, Total 1.93

Percentage of part-time teachers who were also nonteaching specialists, Total 1.07

Percentage of part-time teachers who were resource people, Total 2.43

Table 6.3

Percentage of teachers who taught K– General elementary grades, Total .26

Percentage of teachers who taught math or science
- Total .17

Percentage of teachers who taught English or language arts, Total .15

Percentage of teachers who taught social sciences
- Total .11

Percentage of teachers who taught special education
- Total .15

Table 6.4

Percentage of NELS:88 students whose teachers for the following subjects provided instruction for the gifted:
- Math
  - Total 1.29
- Science
  - Total 1.25
- English
  - Total 1.26
- Social studies
  - Total 1.21

Table 6.5

Percentage of teachers who had not had a change in their assignments
- Total .27
- Public
  - Main assignment field
    - Kindergarten 1.59
    - General elementary .49
    - Bilingual ed./ESL 2.52
    - Vocational education 1.57
- Private
  - Main assignment field
    - Kindergarten 3.75
    - General elementary .99

Table 6.7

Public school teachers' average class size	.08
Private school teachers' average class size	.25

Table 6.8

Average number of subjects, periods per day, grade levels, and students taught per public and private secondary school teacher

Public:	
subjects	.02
periods per day	.02
grade levels	.01
students	.50
Private:	
subjects	.06
periods per day	.07
grade levels	.03
students	1.73

Table 6.9

Average hours per week that teachers of NELS:88 eighth graders spent outside school on the following school-related activities

Math teachers	
Math Plan preparation, Total	.07
Correcting papers, Total	.06
Science teachers	
Science Plan preparation, Total	.08
Correcting papers, Total	.07
English teachers	
English Plan preparation, Total	.06
Correcting papers, Total	.07
Social Studies teachers	
Social Studies Plan preparation, Total	.08
Correcting papers, Total	.07

CHAPTER 7

Table 7.1

Average number of hours per week spent on the following subjects in self-contained classes:

English/reading/language arts	
Total, grade span	
K–4	.06
5–6	.13
Arithmetic	
Total, grade span	
K–4	.03
Science	
Total, grade span	
K–4	.03
5–6	.06

Table 7.2

Average percentage of reading instruction time that 1988 NAEP 4th graders' teachers reported devoting to the following forms of instruction

Whole class instruction, Total	.65
Small group instruction, Total	1.92
Individualized instruction, Total	1.86

Table 7.3

Percentage of 1988 NAEP 4th graders whose teachers reported using work book assignments at least once per week

Total	.87

Percentage of 1988 NAEP 4th graders whose teachers reported having students read informational material

Total	2.90

Table 7.4

Percentage of 1988 NAEP 4th graders whose teachers focused on various rreading skills at least several times per week, and percentageage of teachers who used different types of reading material in the classroom

Reading aloud, Total	2.19
Comprehension, Total	1.18
Word attack, Total	1.55
Vocabulary	1.35
Children's book collection, Total	2.35
Children's newspaper, Total	2.44
Reading kits, Total	2.48

Table 7.5

Percentage of 1988 NAEP 8th graders whose teachers reported using the following approaches to teaching writing very often

Grammar/skills	
Total	3.13
Writing process	
Total	2.97
Integrating reading and writing instruction	
Total	3.51
Write-to-learn approaches	
Total	2.01

Table 7.6

Percentage of 1988 NAEP 8th graders whose writing teachers focused on various aspects of writing for at least half the class time

Mechanics of writing, Total	2.12
Variety in assignments, Total	2.88
Frequent short assignments, Total	1.54
Frequent long assignments, Total	2.36
Several revisions, Total	2.64

Table 7.7

Average percentage of class time that NELS:88 8th graders spent in the following forms of instruction as reported by their mathematics teachers

Whole class	
Total	.75
Small group	
Total	.68
Individual	
Total	.71

Table 7.8

Percentageage of NELS:88 8th graders whose mathematics teachers reported teaching common fractions and decimals as major topics

Total	1.48

Percentageage of NELS:88 8th graders whose mathematics teachers reported teaching algebra as a major topic

Total	1.49

Table 7.9

Percentage of NELS:88 8th graders whose science teachers reported teaching various topics as major subjects

Earth science, Total	2.3
Weather/astronomy, Total	2.2
Environmental science/oceanography, Total	2.0
Chemistry, Total	2.2

Table 7.10

Percentage of NELS:88 8th graders whose science teachers reported conducting about one science experiment per week

Total	2.24

Percentage of NELS:88 8th graders whose science teachers reported conducting about one science experiment per day

Total	1.42

Table 7.11

Percentage of NELS:88 8th graders whose mathematics teachers reported that none of the class had regular use of a computer

Total	1.83

Percentage of NELS:88 8th graders whose science teachers reported that none of the class had regular use of a computer

Total	2.06

Table 7.12

Percentage of NELS:88 8th graders whose math or science teachers reported assigning various amounts of homework

Science	
less than 1 hour per week	1.3
more than 4 hours per week	.69
Math	
less than 1 hour per week	.65
more than 4 hours per week	1.2
Advanced math, less than 1 hour per week	.77
Remedial math, less than 1 hour per week	1.7

CHAPTER 8

Table 8.1

Average scheduled salary for teachers with the following education and experience:

Bachelor's degree and no experience	
Public districts	48.8
Master's degree and no experience	
Public districts	48.3
Master's degree and 20 years experience	
Public districts	113.1
Less than 1000	195.9
10,000 or more	68.0
Private schools	253.0

Table 8.2

Average scheduled salary for public school teachers with the following degrees and experience

Bachelor's degree and no experience	22.0
Master's degree and no experience	25.8
Master's degree and 20 years experience	51.6

Table 8.3

Average scheduled salary for private school teachers with the following degrees and experience

Bachelor's degree and no experience	118.2
Master's degree and no experience	138.6
Master's degree and 20 years experience	214.1

Table 8.4

Average base salary for elementary school teacher	
Total	85.1
Average base salary for secondary school teacher	
Total	74.7
Average base salary for public, elementary school teacher	
Total	90.1
Years teaching experience	
3 or fewer	118.8
20 or more	188.1
Average base salary for public, secondary school teacher	
Total	78.5
Years teaching experience	
3 or fewer	81.0
20 or more	170.8
Average base salary for private, elementary school teacher	
Total	156.2
Years teaching experience	
3 or fewer	220.8
20 or more	521.0
Average base salary for private, secondary school teacher	
Total	227.9
Years teaching experience	
3 or fewer	246.7
20 or more	719.2

Table 8.6

Percentage of public school teachers who had the following reaction to the statement "I am satisfied with my teaching salary":	
Strongly agreed	
Total	0.19
Strongly disagreed	
Total	0.28
Percentage of private school teachers who:	
Strongly agreed	
Total	0.65
Strongly disagreed	
Total	1.17

Table 8.7

Percentage of teachers whose district or school paid all or part of the cost of the following benefits:	
Medical insurance premium	
Total	0.20
Dental insurance premium	
Total	0.42
Life insurance premium	
Total	0.53
Pension contributions	
Total	0.52

Table 8.8

Percentage of teachers who earned supplemental school income	
Total	0.33
Years teaching experience	
3 or fewer	0.93
4-9	0.77
10-19	0.43
20 or more	0.60
Average amount of supplemental school income earned	
Total	29.8
Level	
Elementary	70.1
Secondary	34.2
Percentage of teachers who earned other school compensation	
Level	
Elementary	0.44
Secondary	0.58

Table 8.9

Percentage of teachers with summer nonschool employment	
Total	0.24
Average amount earned from summer nonschool employment	
Total	33.7
Percentage teachers with academic year nonschool employment	
Total	0.25
Percentage teachers with year-round nonschool employment	
Total	0.21
Average amount earned in year-round nonschool employment	
Total	100.3

Table 8.10

Percentage of teachers who received various types of in-kind income	
Housing, Total	.07
Meals, Total	.11
Child's tuition, Total	.09
Child care, Total	.04
College tuition, Total	.09
Transportation, Total	.10
No in-kind income, Total	.19

Table 8.11

Percentage of teachers who received additional pay for mentor/master teacher duties	
Total	0.18

Percentage of teachers who received additional pay for teaching in a field of shortage
Total 0.07

Percentage of teachers who received additional pay for teaching in a location of shortage
Total 0.08

Percentage of teachers who received individual merit pay
Total 0.13

Table 8.12

Percentage of teachers who favored the following teacher compensation policies:
Additional pay for mentor/master teacher duties
Total 0.34

Additional pay for teaching in locations of shortage
Total 0.28

Individual merit pay
Total 0.27

School-wide merit pay
Total 0.24

Table 8.13

Average annual income of former teachers
Public schools, 1987-88, Total 443.1
Public schools, 1988-89, Total 949.9
Private schools, 1987-88, Total 453.5
Private schools, 1988-89, Total 1239.3

Table 8.14

Average salary of full-time employed recent college graduates with degrees in the following areas:
Humanities
Total 320.1

Engineering
Total 253.1

Education
Total 176.6

CHAPTER 9

Table 9.1

Percentage of newly qualified teachers who were teaching who reported the following reasons for becoming teachers:
They always wanted to be teachers
Total 1.12

They liked working with children
Total 1.21

They found satisfaction from teaching
Total 1.26

Table 9.2

Percentage of teachers who reported having a lot of control over selected areas of planning and teaching
Materials, Total .33
Content, Total .33
Methods, Total .18
Homework, Total .20

Table 9.3

Percentage of teachers who thought they had a great deal of influence over the following school policies:
Discipline policy
Total 0.36

Inservice programs in their schools
Total 0.32

Ability grouping in their schools
Total 0.33

Establishing curriculum in their schools
Total 0.34

Table 9.4

Percentage of teachers who felt that other teachers had been extremely helpful to them in solving an instructional or classroom management problem
Total 0.32

Table 9.5

Percentage of elementary school teachers who reported teaching primarily students of the following achievement levels, relative to other students in their schools:
Higher achieving students
Total .33
Public .27
Private 1.29

Average achieving students
Total .51

Lower achieving students
Total .39
Public .45
Private .42

Students of widely differing achievement levels
Total .48

Percentage of secondary school teachers who reported teaching primarily students of the following achievement levels, relative to other students in their schools:

Higher achieving students	
Total	.24
Public	.24
Years of teaching experience	
20 or more years	.45
Fewer than 3 years	.57
Private	.97
Average achieving students	
Total	.39
Lower achieving students	
Total	.33
Public	.36
Years of teaching experience	
20 or more years	.67
Fewer than 3 years	1.36
Private	1.04
Students of widely differing achievement levels	
Total	.36

Table 9.6

Percentage of teachers who thought that the following issues were serious problems in their school:

Student absenteeism	
Total	0.22
Student class cutting	
Total	0.15
Physical conflict among students	
Total	0.16
Vandalism of school property	
Total	0.13
Student pregnancy	
Total	0.16
Student alcohol use	
Total	0.17
Student drug abuse	
Total	0.13
Verbal abuse of teachers	
Total	0.20

Table 9.7

Percentage of public school teachers who thought the following matters were serious problems in their schools

Student absenteeism	.23
Student alcohol use	.18
Stuent tardiness	.19
Student drug abuse	.14
Students' abuse of teachers	.21

Table 9.8

Percentage of private school teachers who thought the following matters were serious problems in their schools

Student absenteeism	.39
Student alcohol use	.27
Student tardiness	.36
Student drug abuse	.22
Students' abuse of teachers	.24

Table 9.9

Percentageage distribution of teachers by willingness to become a teacher again

Public school teachers	
would teach again	.30
chances about even	.22
would not teach again	.22
Private school teachers	
would teach again	.75
chances about even	.56
would not teach again	.50

Table 9.10

Percentage of teachers who were highly satisfied with the following conditions in their schools:

Administrative support they received	
Total	0.28
School climate and enforcement of rules	
Total	0.31
Collaboration and participation of teachers in decision-making	
Total	0.20
Resources	
Total	0.00

Table 9.11

Percentage of teachers who reported they certainly would become a teacher again

Total	0.28

Percentage of teachers who reported they probably would become a teacher again

Total	0.25

Table 9.12

Percentage of 1987-88 teachers who were satisfied with the following aspects of their current jobs

Salary	1.16
Benefits	1.09
Opportunity for advancement	1.17
Support	1.21
Safety	1.08
Influence over policy	.80
Autonomy	.80
Caliber of colleagues	.94
Esteem of profession	1.02
Evaluation procedures	.84

Table 9.13

Percentage of teachers who reported they would teach as long as they were able

Public	0.29
Private	0.89

Table 9.14

Percentage of teachers who reported they would be teaching in the same school in 1988-89

Public	0.23
Private	0.68

Percentage of teachers who reported they would be teaching in another elementary or secondary school in 1988-89

Public	0.18
Private	0.42

Table 9.15

Percentage of 1988-89 teachers who expected to be teaching in elementary or secondary schools in 1989-90

Public	0.71
Private	1.39

II. Standard Errors for Table 8.2

Table 8.2—Standard errors for average scheduled teacher salaries by degree and years of teaching experience, by state: 1987–88

	Bachelor's and no experience	Master's and no experience	Master's and 20 years of experience
TOTAL	$48.8	$48.3	$113.1
Alabama	111.2	119.4	82.8
Alaska	328.0	276.5	655.3
Arizona	303.6	257.0	841.3
Arkansas	144.2	139.6	234.4
California	198.4	288.2	736.0
Colorado	196.7	229.7	461.5
Connecticut	153.3	264.4	621.2
Delaware	0.0	0.0	0.0
District of Columbia	0.0	0.0	0.0
Florida	377.4	329.2	540.2
Georgia	84.6	124.6	194.8
Hawaii	0.0	0.0	0.0
Idaho	112.5	261.5	423.2
Illinois	213.6	228.5	539.6
Indiana	74.7	172.9	301.0

Table 8.2—Standard errors for average scheduled teacher salaries by degree and years of teaching experience, by state: 1987–88—Continued

State	Bachelor's and no experience	Master's and no experience	Master's and 20 years of experience
Iowa	160.0	115.5	193.1
Kansas	110.2	126.8	321.9
Kentucky	84.7	84.8	279.3
Louisiana	137.0	139.2	319.0
Maine	58.3	83.7	482.1
Maryland	30.1	79.1	99.2
Massachusetts	330.9	432.3	954.4
Michigan	109.6	129.5	346.4
Minnesota	207.8	182.8	311.9
Mississippi	64.1	67.0	155.7
Missouri	194.2	225.5	430.7
Montana	306.1	328.3	540.5
Nebraska	184.1	321.8	508.8
Nevada	0.0	0.0	0.0
New Hampshire	268.5	499.1	572.4
New Jersey	137.4	180.6	442.2
New Mexico	228.0	296.4	1039.7
New York	125.4	218.1	321.6
North Carolina	41.4	41.6	240.3
North Dakota	154.5	266.3	394.7
Ohio	123.6	140.1	414.5
Oklahoma	118.1	121.4	269.7
Oregon	176.7	243.3	771.7
Pennsylvania	201.0	213.1	301.1
Rhode Island	88.0	112.8	225.7
South Carolina	176.5	141.9	353.9
South Dakota	80.2	133.2	318.6
Tennessee	150.5	220.5	499.2
Texas	91.1	92.5	132.5
Utah	182.5	252.9	371.1
Vermont	143.8	173.6	455.7
Virginia	163.5	186.2	389.5
Washington	65.6	135.4	420.4
West Virginia	0.0	0.0	0.0
Wisconsin	110.3	191.0	257.9
Wyoming	110.7	124.2	305.1

NOTE: Standard errors for Delaware, the District of Columbia, Hawaii, Nevada, and West Virginia are "0.0" because all school districts in these jurisdictions were included in the sample.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987–88 Schools and Staffing Survey, "Teacher Demand and Shortage Questionnaire."

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