

the condition of education 2004



INDICATOR 24

Out-of-Field Teaching by Poverty Concentration and Minority Enrollment

The indicator and corresponding tables are taken directly from *The Condition of Education 2004*. Therefore, the page numbers may not be sequential.

Additional information about the survey data and supplementary notes can be found in the full report. For a copy of *The Condition of Education 2004* visit the NCES web site (<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2004077>) or contact ED PUBs at 1-877-4ED-PUBS.

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Learning Opportunities

Out-of-Field Teaching in Middle and High School Grades

In 1999–2000, high school grade students in high-minority and high-poverty public schools were more often taught English, science, and mathematics by out-of-field teachers than their peers in low-minority and low-poverty public schools.

Some researchers hypothesize that teachers' subject matter knowledge is associated with learning in the classroom. These researchers have found that students learn more from mathematics teachers who majored in mathematics than from teachers who did not (Goldhaber and Brewer 1997) and more from science and mathematics teachers who studied teaching methods in the subject they teach than from those who did not (Monk 1994; Goldhaber and Brewer 2000). These findings have prompted further examinations of "out-of-field" teachers (i.e., teachers who have neither a major nor certification in the subject they teach). Previous research has found that students in the middle grades are more likely than students in high schools to have out-of-field teachers (see NCES 2003–067, *indicator 28*). This indicator shows the proportion of middle and high school grade students in high-poverty and high-minority public schools who were taught by out-of-field teachers in selected subjects in 1999–2000.¹

At the high school grade level, students in high-poverty schools were more likely to be taught English, science, and mathematics by an out-of-field teacher than students in low-poverty schools. The same held true for students in high-minority schools compared with students in low-minority schools. No measurable difference was detected in social studies (see supplemental tables 24-1, 24-2, 24-3, and 24-4).

By contrast, in the middle grades, the only difference detected was that students in low-minority schools were more likely to be taught social studies by an out-of-field teacher than students in high-minority schools (16 vs. 7 percent). There were no other measurable differences detected among students in high-minority and high-poverty public schools and their peers in low-minority and low-poverty public schools in English, science, social studies, and mathematics.

¹The data used for this analysis are from a nationally representative sample of full- and part-time teachers rather than of students. Thus, this indicator presents the percentage of the sampled set of middle and high school grade teachers' students who are in classes with a teacher teaching outside his or her field. For ease of presentation, this percentage will be referred to as the percentage of students who are taught by an out-of-field teacher.

NOTE: Major refers to a teacher's primary fields of study for a bachelor's, master's, doctorate, first-professional, or education specialist degree. Major field can be an academic or education major. "High-minority" refers to schools in which 75 percent or more of their enrollments are minority students; "low-minority" refers to schools with a minority enrollment of less than 10 percent. "High-poverty" refers to a school in which 75 percent or more of students are eligible to participate in the federal free or reduced-price lunch program, a common proxy measure of poverty; "low-poverty" refers to schools in which less than 10 percent of students are eligible to participate in this program. See *supplemental note 7* for more information on poverty.

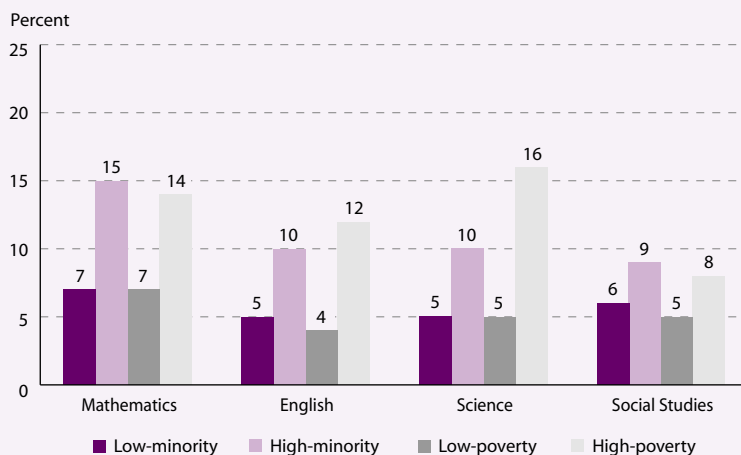
SOURCE: U.S. Department of Education, NCES, Schools and Staffing Survey (SASS), 1999–2000, "Public School Survey" and "Public Charter School Survey."



FOR MORE INFORMATION:
Supplemental Notes 1, 3
Supplemental Tables 24-1,
24-2, 24-3, 24-4

NCES 2002–603, 2003–067
Goldhaber and Brewer 1997, 2000
Monk 1994

OUT-OF-FIELD TEACHERS: Percentage of public high school students taught selected subjects by teachers without certification or a major in the field they teach, by minority concentration and school poverty: 1999–2000



Out-of-Field Teaching in Middle and High School Grades

Table 24-1. Percentage of public school students in mathematics classes taught by teachers without a teaching certificate or a major in the field they teach, by school level, minority, and poverty characteristics: 1999–2000

School characteristic	Middle school grades			High school grades		
	Certification without major in field	Major in field without certification	Neither major nor certification in field	Certification without major in field	Major in field without certification	Neither major nor certification in field
Total	43.2	2.3	23.0	14.5	6.8	10.1
Percent minority						
Less than 10	42.3	1.8	23.6	14.4	6.7	6.8
10–24	52.5	0.1	19.4	13.2	3.1	7.1
25–49	40.5	1.7	16.8	15.4	10.7	10.8
50–74	38.9	5.7!	20.5	18.3	5.8	17.5
75 or more	41.4	3.4	38.3	12.7	11.0	15.2
Percent of students eligible for free or reduced-price lunch						
Less than 10	55.2	1.7	13.0!	14.7	5.7	6.6
10–24	39.1	1.9	19.5	13.8	6.1	7.3
25–49	40.4	1.9	28.2	14.9	6.5	12.7
50–74	36.1	1.4	31.6	16.1	12.6	16.5
75 or more	60.0	2.5	20.5	14.3	7.2	13.7

!Interpret data with caution (estimates are unstable).

NOTE: Major refers to a teacher's primary fields of study for a bachelor's, master's, doctorate, first-professional, or education specialist degree. Middle school grade teachers include teachers who taught students in grades 5–9 and did not teach any students in grades 10–12. High school grade teachers include all teachers who taught any of grades 10–12, as well as teachers who taught grade 9 and no other grades. See *supplemental note 1* for more information on the National School Lunch Program.

SOURCE: U.S. Department of Education, NCES, Schools and Staffing Survey (SASS), 1999–2000, "Public School Survey" and "Public Charter School Survey."

Out-of-Field Teaching in Middle and High School Grades

Table 24-2. Percentage of public school students in English classes taught by teachers without a teaching certificate or a major in the field they teach, by school level, minority, and poverty characteristics: 1999–2000

School characteristic	Middle school grades			High school grades		
	Certification without major in field	Major in field without certification	Neither major nor certification in field	Certification without major in field	Major in field without certification	Neither major nor certification in field
Total	34.7	4.5	18.6	15.4	7.4	6.8
Percent minority						
Less than 10	31.9	3.9	17.7	16.5	6.7	5.4
10–24	35.3	6.2	17.5	14.0	3.1	6.0
25–49	33.2	2.0	19.9	14.0	10.7	7.6
50–74	27.9	4.5	28.6	17.4	5.8	6.4
75 or more	47.4	7.5	12.3	14.6	11.0	10.3
Percent of students eligible for free or reduced-price lunch						
Less than 10	25.0	4.8!	13.5	13.9	5.9	4.0
10–24	34.7	7.3	13.7	16.0	6.8	6.0
25–49	34.3	1.8	18.6	15.6	4.9	9.0
50–74	42.1	3.4	27.6	13.1	12.9	7.6
75 or more	39.3	6.9	21.0	20.3	12.0!	11.7

!Interpret data with caution (estimates are unstable).

NOTE: Major refers to a teacher's primary fields of study for a bachelor's, master's, doctorate, first-professional, or education specialist degree. Middle school grade teachers include teachers who taught students in grades 5–9 and did not teach any students in grades 10–12. High school grade teachers include all teachers who taught any of grades 10–12, as well as teachers who taught grade 9 and no other grades. See *supplemental note 1* for more information on the National School Lunch Program.

SOURCE: U.S. Department of Education, NCES, Schools and Staffing Survey (SASS), 1999–2000, "Public School Survey" and "Public Charter School Survey."

Out-of-Field Teaching in Middle and High School Grades

Table 24-3. Percentage of public school students in science classes taught by teachers without a teaching certificate or a major in the field they teach, by school level, minority, and poverty characteristics: 1999–2000

School characteristic	Middle school grades			High school grades		
	Certification without major in field	Major in field without certification	Neither major nor certification in field	Certification without major in field	Major in field without certification	Neither major nor certification in field
Total	33.6	6.5	17.2	12.1	8.6	6.6
Percent minority						
Less than 10	26.7	3.8	18.0	10.9	6.7	4.5
10–24	31.5	11.1!	17.7	12.5	8.3	6.5
25–49	39.9	1.0	19.7	14.7	8.1	6.4
50–74	50.5	5.1	16.3!	11.6	11.7	10.0
75 or more	32.0	12.4!	12.7	11.4	12.3	9.7
Percent of students eligible for free or reduced-price lunch						
Less than 10	13.6	15.5!	12.6	12.9	4.7	5.5
10–24	34.8	4.9!	15.7	12.6	9.6	4.1
25–49	46.2	2.9	18.5	11.5	10.1	6.9
50–74	43.3	3.1	19.8	13.6	9.8	8.7
75 or more	30.7	12.5!	13.8	10.7	15.1!	15.6

!Interpret data with caution (estimates are unstable).

NOTE: Major refers to a teacher's primary fields of study for a bachelor's, master's, doctorate, first-professional, or education specialist degree. Middle school grade teachers include teachers who taught students in grades 5–9 and did not teach any students in grades 10–12. High school grade teachers include all teachers who taught any of grades 10–12, as well as teachers who taught grade 9 and no other grades. See *supplemental note 1* for more information on the National School Lunch Program.

SOURCE: U.S. Department of Education, NCES, Schools and Staffing Survey (SASS), 1999–2000, "Public School Survey" and "Public Charter School Survey."

Out-of-Field Teaching in Middle and High School Grades

Table 24-4. Percentage of public school students in social studies classes taught by teachers without a teaching certificate or a major in the field they teach, by school level, minority, and poverty characteristics: 1999–2000

School characteristic	Middle school grades			High school grades		
	Certification without major in field	Major in field without certification	Neither major nor certification in field	Certification without major in field	Major in field without certification	Neither major nor certification in field
Total	27.3	8.5	15.3	12.4	8.5	7.0
Percent minority						
Less than 10	28.6	3.2	15.8	11.3	7.1	6.3
10–24	27.9	5.0	19.6	14.8	7.3	7.4
25–49	32.1	8.6!	14.1	13.1	8.6	6.1
50–74	18.9	11.3!	19.3	13.5	8.7	7.1
75 or more	25.3	23.7!	6.8	10.1	13.4	9.2
Percent of students eligible for free or reduced-price lunch						
Less than 10	10.5	6.5!	11.7!	10.5	6.1	4.8
10–24	14.5	3.1	16.4	14.5	8.0	7.2
25–49	13.6	4.9	18.6	13.6	7.8	9.5
50–74	12.3	15.0	16.5!	12.3	14.8	8.3
75 or more	13.9	17.0!	12.6!	13.9	12.2	8.1

!Interpret data with caution (estimates are unstable).

NOTE: Major refers to a teacher’s primary fields of study for a bachelor’s, master’s, doctorate, first-professional, or education specialist degree. Middle school grade teachers include teachers who taught students in grades 5–9 and did not teach any students in grades 10–12. High school grade teachers include all teachers who taught any of grades 10–12, as well as teachers who taught grade 9 and no other grades. See *supplemental note 1* for more information on the National School Lunch Program.

SOURCE: U.S. Department of Education, NCES, Schools and Staffing Survey (SASS), 1999–2000, “Public School Survey” and “Public Charter School Survey.”

Out-of-Field Teaching in Middle and High School Grades

Table S24. Standard errors for the percentage of public high school students taught selected subjects by teachers without certification or a major in the field they teach, by minority concentration and school poverty: 1999–2000

Minority or poverty characteristic	Mathematics	English	Science	Social studies
Low-minority	0.8	0.5	0.6	0.8
High-minority	1.9	1.6	1.9	1.3
Low-poverty	0.9	0.6	1.1	0.7
High-poverty	2.7	2.0	3.1	1.9

SOURCE: U.S. Department of Education, NCES, Schools and Staffing Survey (SASS), 1999–2000, “Public School Survey” and “Public Charter School Survey.”

Out-of-Field Teaching in Middle and High School Grades

Table S24-1. Standard errors for the percentage of public school students in mathematics classes taught by teachers without a teaching certificate or a major in the field they teach, by school level, minority, and poverty characteristics: 1999–2000

School characteristic	Middle school grades			High school grades		
	Certification without major in field	Major in field without certification	Neither major nor certification in field	Certification without major in field	Major in field without certification	Neither major nor certification in field
Total	2.75	0.79	2.34	0.76	0.57	0.56
Percent minority						
Less than 10	3.72	0.74	4.34	1.36	0.94	0.76
10–24	6.42	0.03	4.22	1.50	0.57	0.99
25–49	5.86	0.97	3.10	1.74	1.86	1.34
50–74	10.96	4.43	5.47	2.31	1.26	2.64
75 or more	7.48	1.66	6.90	1.97	2.26	1.95
Percent of students eligible for free or reduced-price lunch						
Less than 10	7.53	0.67	4.48	1.61	1.17	0.91
10–24	5.86	1.21	5.88	1.53	1.17	1.10
25–49	4.65	0.72	4.10	1.49	1.58	1.37
50–74	9.33	0.78	6.29	2.44	2.99	2.70
75 or more	7.65	1.43	5.68	1.98	2.18	2.68

SOURCE: U.S. Department of Education, NCES, Schools and Staffing Survey (SASS), 1999–2000, "Public School Survey" and "Public Charter School Survey."

Out-of-Field Teaching in Middle and High School Grades

Table S24-2. Standard errors for the percentage of public school students in English classes taught by teachers without a teaching certificate or a major in the field they teach, by school level, minority, and poverty characteristics: 1999–2000

School characteristic	Middle school grades			High school grades		
	Certification without major in field	Major in field without certification	Neither major nor certification in field	Certification without major in field	Major in field without certification	Neither major nor certification in field
Total	1.94	0.61	1.43	0.79	0.70	0.43
Percent minority						
Less than 10	2.66	1.01	2.03	1.63	0.94	0.54
10–24	4.21	2.56	3.49	1.53	0.57	0.92
25–49	4.40	0.55	3.59	1.78	1.86	0.98
50–74	5.39	1.71	5.07	2.52	1.26	1.12
75 or more	6.38	2.49	2.28	1.96	2.26	1.62
Percent of students eligible for free or reduced-price lunch						
Less than 10	4.45	2.74	2.13	1.53	1.10	0.64
10–24	2.87	2.11	2.59	1.88	1.06	0.70
25–49	4.31	0.64	2.67	1.70	1.09	1.23
50–74	4.29	1.21	3.96	2.07	2.37	1.45
75 or more	7.19	2.89	5.23	3.70	4.56	2.00

SOURCE: U.S. Department of Education, NCES, Schools and Staffing Survey (SASS), 1999–2000, "Public School Survey" and "Public Charter School Survey."

Out-of-Field Teaching in Middle and High School Grades

Table S24-3. Standard errors for the percentage of public school students in science classes taught by teachers without a teaching certificate or a major in the field they teach, by school level, minority, and poverty characteristics: 1999–2000

School characteristic	Middle school grades			High school grades		
	Certification without major in field	Major in field without certification	Neither major nor certification in field	Certification without major in field	Major in field without certification	Neither major nor certification in field
Total	2.37	1.30	1.87	1.07	0.73	0.50
Percent minority						
Less than 10	3.28	1.03	3.11	1.19	0.78	0.56
10–24	6.13	4.79	5.01	1.61	1.21	1.22
25–49	7.35	0.43	4.61	3.30	1.49	1.29
50–74	8.26	2.17	6.12	2.63	2.78	1.76
75 or more	8.08	4.70	4.01	1.77	3.12	1.89
Percent of students eligible for free or reduced-price lunch						
Less than 10	3.95	5.75	3.50	2.78	0.70	1.06
10–24	5.53	2.79	3.76	1.55	1.33	0.63
25–49	5.15	0.84	4.21	1.58	1.78	1.22
50–74	7.40	1.47	5.86	2.65	1.81	1.84
75 or more	8.63	5.18	4.52	3.05	6.70	3.06

SOURCE: U.S. Department of Education, NCES, Schools and Staffing Survey (SASS), 1999–2000, "Public School Survey" and "Public Charter School Survey."

Out-of-Field Teaching in Middle and High School Grades

Table S24-4. Standard errors for the percentage of public school students in social studies classes taught by teachers without a teaching certificate or a major in the field they teach, by school level, minority, and poverty characteristics: 1999–2000

School characteristic	Middle school grades			High school grades		
	Certification without major in field	Major in field without certification	Neither major nor certification in field	Certification without major in field	Major in field without certification	Neither major nor certification in field
Total	2.81	1.73	1.78	0.82	0.65	0.50
Percent minority						
Less than 10	4.92	0.89	2.79	1.30	1.01	0.77
10–24	5.59	2.69	4.30	1.73	1.17	1.14
25–49	6.66	4.50	4.56	1.60	1.51	1.50
50–74	5.48	5.05	5.41	3.71	1.91	1.19
75 or more	7.36	8.21	2.19	1.92	2.25	1.34
Percent of students eligible for free or reduced-price lunch						
Less than 10	1.76	4.72	4.18	1.76	1.11	0.72
10–24	1.99	0.96	3.60	1.99	1.46	1.29
25–49	1.45	1.78	3.96	1.45	1.32	1.00
50–74	1.96	4.78	5.29	1.96	2.71	1.69
75 or more	3.11	7.26	4.75	3.11	2.68	1.89

SOURCE: U.S. Department of Education, NCES, Schools and Staffing Survey (SASS), 1999–2000, “Public School Survey” and “Public Charter School Survey.”