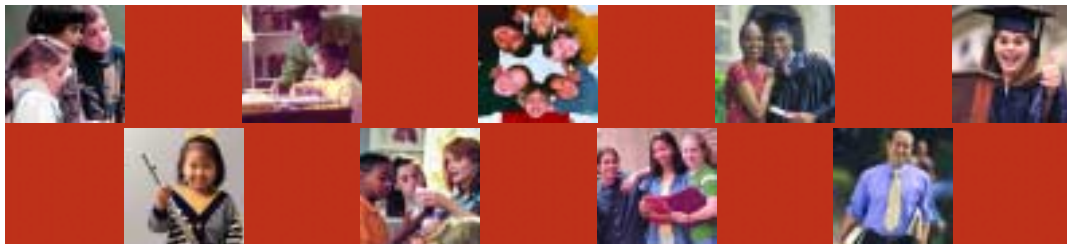


the condition of education 2003



INDICATOR 28

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

The indicator and corresponding tables are taken directly from *The Condition of Education 2003*. 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 2003*, visit the NCES web site (<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2003067>) or contact ED PUBs at 1-877-4ED-PUBS.

Suggested Citation:

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Teachers

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

Students in middle grades are more likely than students in high schools to have out-of-field teachers.

Researchers have explored the hypothesis that teachers' knowledge and ability are associated with student learning in the classroom. These studies 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 mathematics and science teachers who studied teaching methods in the subject they teach than from those who did not (Monk 1994; Goldhaber and Brewer 1997). These findings have prompted further examinations of "out-of-field" teachers (i.e., teachers who lack a major and certification in the subject they teach). This indicator reports the proportions of students in middle and high school classes who were taught by out-of-field teachers in 1999–2000.¹

In academic classes, out-of-field teachers generally taught a larger percentage of students in the middle grades (i.e., grades 5–9) than in high school in 1999–2000. Out-of-field teachers taught 19 percent of English students in the middle grades, compared with 7 percent in high school. The same was true for mathematics (23 vs. 10 percent), science (17 vs. 7 percent), and social science classes (15 vs. 7 percent). Foreign language was the only

academic class where no statistical differences were found in the proportions of students in the middle and high school grades who were taught by out-of-field teachers (19 vs. 15 percent).

This pattern was not evident for nonacademic classes like art, music, and physical education, however. In art and music classes, no differences were found between the proportions of students who were taught by out-of-field teachers in middle and high school grades. In physical education, out-of-field teachers taught a larger percentage of students in high school than in the middle grades (5 vs. 3 percent).

Students in the middle and high school grades were more likely to have out-of-field teachers in mathematics, foreign language, social science, and physical science classes than in their art, music, and physical education classes (see supplemental table 28-1).

Overall, out-of-field teachers were more common in physical science than in any other regular subject in both the middle and high school grades. They taught 42 percent of physical science students in the middle grades and 18 percent in high school.

¹The data from the Schools and Staffing Survey (SASS) used for this analysis are from a representative sample of full- and part-time teachers rather than a representative sample of all students. Thus, technically this indicator presents the percentage of these sampled teachers' students who are in classes with a teacher teaching outside their field. For ease of presentation, however, this percentage will be referred to as the percentage of students who are in classes with an out-of-field teacher.

NOTE: Major refers only to a teacher's primary field of study for a bachelor's degree.

SOURCE: Seastrom, M.M., Gruber, K.J., Henke, R.R., McGrath, D.J., and Cohen, B.A. (2002). *Qualifications of the Public School Teacher Workforce: Prevalence of Out-of-Field Teaching 1987–88 to 1999–2000* (NCES 2002–603), tables B-8 and B-9. Data from U.S. Department of Education, NCES, Schools and Staffing Survey (SASS), "Public Teacher Questionnaire," 1999–2000 and "Charter Teacher Questionnaire," 1999–2000.

FOR MORE INFORMATION:

Supplemental Note 3

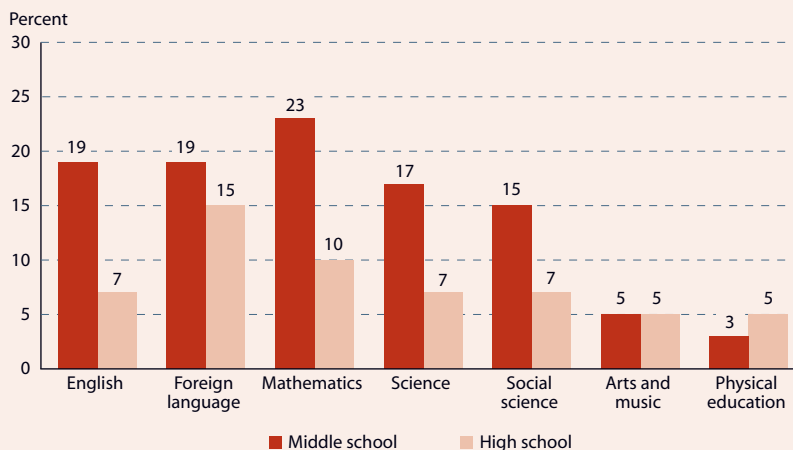
Supplemental Table 28-1

Goldhaber and Brewer 1997, 2000

Monk 1994



OUT-OF-FIELD TEACHERS: Percentage of public school students in middle and high school grades taught by teachers without a major or certification in the field they teach, by subject area: 1999–2000



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

Table 28-1. Percentage distribution of public school students according to their teachers' qualifications, by school level and course subject area: 1999–2000

Course subject area	Teacher qualifications			
	Certification and major in field	Major in field without certification	Certification without major in field	Neither major in field nor certification
Middle grades				
English	41.7	4.5	35.1	18.6
Foreign language	39.3	9.5	32.4	18.8
Mathematics	31.5	2.3	43.2	23.0
Science	42.8	6.5	33.6	17.2
Biology/life science	35.8	7.8	26.3	30.1
Physical science	6.8	1.1	50.2	42.0
Social science	48.9	8.5	27.3	15.3
History	29.0	2.3	54.0	14.7
ESL/bilingual education	27.1	10.7	26.1	36.1
Arts and music	85.0	4.5	5.7	4.9
Physical education	81.3	5.3	10.3	3.0
High school grades				
English	70.2	7.4	15.5	6.8
Foreign language	52.4	6.4	26.7	14.5
Mathematics	68.6	6.8	14.5	10.1
Science	72.7	8.6	12.1	6.6
Biology/life science	55.3	7.1	26.6	11.0
Physical science	36.9	4.5	40.5	18.1
Chemistry	38.9	5.2	42.8	13.1
Geology	21.4	2.6	38.0	37.9
Physics	33.5	8.1	40.2	18.2
Social science	72.1	8.5	12.4	7.0
History	37.5	3.5	49.2	9.8
ESL/bilingual education	29.2	9.0	30.6	31.1
Arts and music	80.4	8.9	5.2	5.4
Physical education	76.1	9.8	8.9	5.2

NOTE: Major refers only to a teacher's primary field of study for a bachelor's degree. Middle-level teachers include teachers who taught students in grades 5–9 and did not teach any students in grades 10–12; teachers who taught in grades 5–9 who identified themselves as elementary or special education teachers are classified as elementary-level teachers. High school teachers include all teachers who taught any of grades 10–12, as well as teachers who taught grade 9 and no other grades. Not all assignment areas were measured in each Schools and Staffing Survey administration. Detail may not sum to totals because of rounding.

SOURCE: Seastrom, M.M., Gruber, K.J., Henke, R.R., McGrath, D.J., and Cohen, B.A. (2002). *Qualifications of the Public School Teacher Workforce: Prevalence of Out-of-Field Teaching 1987–88 to 1999–2000* (NCES 2002–603), tables B-8 and B-9. Data from U.S. Department of Education, NCES, Schools and Staffing Survey (SASS), "Public Teacher Questionnaire," 1999–2000 and "Charter Teacher Questionnaire," 1999–2000.

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

Table S28. Standard errors for the percentage of public school students in middle and high school grades taught by teachers without a major or certification in the field they teach, by subject area: 1999–2000

Course subject area	Middle school	High school
English	1.4	0.4
Foreign language	3.5	1.2
Mathematics	2.3	0.6
Science	1.9	0.5
Social science	1.8	0.5
Arts and music	1.4	0.6
Physical education	0.6	0.6

SOURCE: Seastrom, M.M., Gruber, K.J., Henke, R.R., McGrath, D.J., and Cohen, B.A. (2002). *Qualifications of the Public School Teacher Workforce: Prevalence of Out-of-Field Teaching 1987–88 to 1999–2000* (NCES 2002–603), tables C-9 and C-10. Data from U.S. Department of Education, NCES, Schools and Staffing Survey (SASS), "Public Teacher Questionnaire," 1999–2000 and "Charter Teacher Questionnaire," 1999–2000.

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

Table S28-1. Standard errors for the percentage distribution of public school students according to their teachers' qualifications, by school level and course subject area: 1999–2000

Course subject area	Teacher qualifications			
	Certification and major in field	Major in field without certification	Certification without major in field	Neither major in field nor certification
Middle grades				
English	1.96	0.61	2.00	1.43
Foreign language	4.69	2.96	5.57	3.53
Mathematics	2.43	0.79	2.75	2.34
Science	2.56	1.30	2.37	1.87
Biology/life science	5.21	2.28	4.06	4.78
Physical science	1.40	0.41	3.81	3.57
Social science	3.03	1.73	2.81	1.78
History	4.06	0.82	4.85	3.52
ESL/bilingual education	5.78	5.49	4.78	7.44
Arts and music	1.61	0.83	1.19	1.35
Physical education	3.01	1.58	2.66	0.56
High school grades				
English	0.94	0.70	0.79	0.43
Foreign language	1.79	0.83	1.43	1.21
Mathematics	0.91	0.57	0.76	0.56
Science	1.33	0.73	1.07	0.50
Biology/life science	1.73	0.97	1.57	1.06
Physical science	1.68	0.59	1.38	1.09
Chemistry	2.20	0.76	2.13	1.58
Geology	3.42	0.78	3.70	3.29
Physics	3.29	1.85	2.98	1.90
Social science	1.05	0.65	0.82	0.50
History	1.35	0.43	1.40	0.87
ESL/bilingual education	5.28	3.17	4.26	3.59
Arts and music	1.43	0.96	0.80	0.60
Physical education	1.73	1.43	0.93	0.64

SOURCE: Seastrom, M.M., Gruber, K.J., Henke, R.R., McGrath, D.J., and Cohen, B.A. (2002). *Qualifications of the Public School Teacher Workforce: Prevalence of Out-of-Field Teaching 1987–88 to 1999–2000* (NCES 2002–603), tables C-9 and C-10. Data from U.S. Department of Education, NCES, Schools and Staffing Survey (SASS), "Public Teacher Questionnaire," 1999–2000 and "Charter Teacher Questionnaire," 1999–2000.