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This List of Indicators includes all the indicators in Section 4 that appear on The Condition of Education web site (http://nces.ed.gov/programs/coe), drawn from the 2000, 2001, 2002, and 2003 print volumes. The list is organized by subject area. The indicator numbers and the years in which the indicators were published are not necessarily sequential.
The indicators in this section explore why some schools may be more successful than others at helping students learn. Research indicates that what occurs in classrooms, the training and ability of the teaching force, and the overall culture and atmosphere of the school all affect student learning (NCES 2001–030). This section looks at each of these factors.

To gauge what goes on in the classroom, this section looks at the content of student learning as measured by the academic level of the courses students have taken. It also examines the instructional practices of teachers, the use of technology in schools, classroom size, and extra support for children with special needs, as aspects of the opportunity to learn in schools. Because learning in the classroom takes place within the context of a school, this section looks at various contexts of elementary and secondary schools. Some contextual dimensions considered are the control of the school (public or private); school size; community type (urban, suburban, or rural); and the composition of the student body, which includes such measures as the percentage of enrolled students who are minority students, who come from poor or single-parent families, or whose English proficiency is limited. Some analyses also look at student characteristics (e.g., race/ethnicity or sex) to provide additional perspective on questions of equality in learning opportunities.

To gauge the training and ability of the teaching force, this section examines teacher characteristics that evidence suggests matter for student learning. These characteristics include teachers’ academic and professional preparation, the extent to which this preparation matches the subjects they teach, the distribution of new and experienced teachers, and teacher participation in professional development. These indicators compare teachers according to these characteristics, and their perceptions of the teaching environment, in different school contexts. The demography of the teacher workforce and patterns of recruitment and retention are also discussed here.

To gauge aspects of the overall culture and atmosphere of the school, this section looks at rates of underenrollment and overcrowding in school buildings, school-related violence and student victimization, disciplinary practices, and leadership qualities of principals. These indicators provide additional perspectives on learning environments and their relationships to the different school and classroom-level contexts.

In addition to these three areas, this section looks at school choice programs and charter schools to provide perspective on how school contexts relate to different parental choices and differences in institutional control.

The indicators in this section describe student coursetaking, mathematics instruction, and selected teacher and school characteristics. Other indicators from previous volumes of The Condition of Education are available at http://nces.ed.gov/programs/coe/list/i4.asp. These indicators cover the other issues in this section, including computer use in the school, school choice, teacher professional development, and the school climate.
The actual content and instructional methods of high school courses with similar descriptions can vary across classes and schools, as well as over time. Research has shown, however, that student achievement is related to the academic level of coursework that students complete, controlling for various school and background factors (Chaney, Burgdorf, and Atash 1997; Berends, Lucas, and Briggs forthcoming). This indicator shows the trends between 1982 and 2000 in the highest level of English and foreign language coursework that high school graduates completed.

Since the 1980s, when states began to increase the number of required courses to receive a high school diploma (NCES 95–029, table 151), the percentage of high school graduates completing some advanced English courses (i.e., courses classified as “honors”) and advanced foreign language courses (year 3 and higher) has increased. In 1982, 13 percent of high school graduates had completed some advanced English coursework; by 2000, this percentage had risen to 34 percent. Moreover, during this period, the percentage who had completed 75–100 percent of their English courses at the honors level more than tripled (from 4 to 15 percent). The percentage of graduates who had completed low academic level courses in English (courses classified as “below grade level”) increased for a while and then steadily declined such that no significant differences were found between the rates of completion in 2000 and 1982 (10 and 11 percent, respectively) (see supplemental table 24-1).

The percentage of high school graduates who had completed advanced foreign language courses was greater in 2000 than in 1982. In 1982, 15 percent of graduates had completed some advanced foreign language study; by 2000, this percentage had doubled to 30 percent. In addition, over this period, the percentage of graduates who had completed no foreign language study decreased markedly (from 46 to 17 percent). Yet, in 2000, roughly half of all graduates had completed only low academic levels of foreign language study (year 2 or lower), while 5 percent had completed AP courses (see supplemental table 24-2).

NOTE: Not displayed are the percentage of graduates who completed no or low academic level English courses and the percentage who completed no foreign language coursework.


FOR MORE INFORMATION:
Supplemental Note 6
Supplemental Tables 24-1, 24-2
NCES 95–029, NCES 2003–343
Chaney, Burgdorf, and Atash 1997
Berends, Lucas, and Briggs forthcoming
Trends in coursetaking since 1982 indicate that the proportions of students completing advanced academic courses in English and foreign languages are increasing (indicator 24). Unlike measures of the total course credits completed by students, these trends suggest change in the average academic level of courses completed in high school. These trends, however, do not reveal which students are taking academically challenging courses. This indicator highlights differences among high school graduates in 2000 who completed advanced English courses (i.e., those classified as “honors”) and advanced foreign language courses (year 3 or higher) (see supplemental note 6).

Among these graduates, females were more likely than males to have completed advanced English as well as foreign language courses. Asians/Pacific Islanders were more likely to have completed advanced English than Hispanics and Blacks, and Whites more than Hispanics, but no other differences were detected. Asians/Pacific Islanders, Hispanics, and Whites were more likely to have completed advanced foreign language courses than Blacks and American Indians.

Private school graduates in 2000 were more likely than public school graduates to have completed advanced foreign language courses. No significant differences were found in the rates at which private and public school graduates completed advanced English courses.

High school graduates who completed the Core curriculum or higher were more likely than those who did not to have completed advanced English and foreign language courses. However, among those completing the Core curriculum or higher, 48 percent completed only regular English courses and 7 percent completed only low academic level English courses. In foreign languages, 52 percent of those completing the Core curriculum or higher completed only low academic level foreign language courses and 9 percent completed no foreign language course (see supplemental tables 25-1 and 25-2).

Graduates from moderate-sized schools (i.e., enrollment of 300–999) and large schools (1,000 or more) were more likely than those from small schools (less than 300) to have completed advanced English and foreign language courses. Differences in the rates at which graduates from moderate-sized and large schools completed these courses were not found to be significant.

**DIFFERENCES IN COURSETAKING: Percentage of 2000 high school graduates who had completed advanced academic courses in English and in a foreign language, by selected characteristics: 1999–2000**

![Graph showing differences in coursetaking by sex, control of school, and race/ethnicity.](image)
Learning Opportunities

Instructional Activities for 8th-Grade Mathematics

In 8th-grade mathematics lessons in the United States, students spend 53 percent of the time reviewing previously studied content and 48 percent of the time studying new content.

The 1999 Third International Mathematics and Science Study (TIMSS) included a Videotape Classroom Study of 8th-grade mathematics classes in Australia, the Czech Republic, Japan, the Netherlands, the Special Administrative Region (SAR) of Hong Kong, Switzerland, and the United States. The study used nationally representative class samples from these countries to examine the differences and similarities in mathematics lessons.

The study looked at the percentage of lesson time 8th-grade mathematics teachers devoted on average to reviewing previously studied content compared with studying (both introducing and practicing) new content. In the United States, no difference was found between the average percentage of lesson time devoted to studying new content and the percentage devoted to reviewing. By contrast, classes in Australia, Hong Kong, Japan, the Netherlands, and Switzerland spent more time, on average, studying new content than reviewing. The opposite was true in the Czech Republic, where more time was spent reviewing studied content than in all other countries except the United States (see supplemental table 26-1).

This study also examined how mathematics problems were solved in each lesson. The in-class explanation and discussion of each problem’s solution was classified into one of four types, ranging from “making connections” (or explaining the mathematical relationships and/or reasoning involved in solving the problem) to “giving results only” (without an explanation of any mathematical processes) (see supplemental note 5).

On average, in the United States, 1 percent of problems per lesson were solved by making connections; 8 percent were solved with a discussion of mathematical concepts (but not mathematical relationships or reasoning); 55 percent involved an explanation of the steps and rules or the algorithmic procedures for solving the problem (but no explanation of the underlying mathematical concepts); and 36 percent were solved by giving results only. The Czech Republic, Hong Kong, Japan, and the Netherlands had a higher percentage of problems per lesson that were solved by making connections (10, 12, 37, and 22 percent, respectively). Compared with the United States, every other country had a higher percentage of problems per lesson that were solved with a discussion of concepts (from 19 to 33 percent) (see supplemental table 26-2).

MATHEMATICS LESSON ACTIVITY: Average percentage of 8th-grade mathematics lessons spent studying new content and reviewing previously studied content, by country: 1999

Switzerland was not included in this particular analysis because English transcripts were not available for all lessons.

NOTE: Hong Kong is a Special Administrative Region (SAR) of the People’s Republic of China and not a distinct country. However, this indicator refers to it as one of the study’s “countries” for ease of reading and because this region was treated analytically the same as the countries in the study. Japanese mathematics data were collected in 1995. Detail may not sum to 100 percent because of rounding and the possibility of coding portions of lessons as “not able to make a judgment about the purpose.”


FOR MORE INFORMATION:
Supplemental Note 5
Supplemental tables 26-1, 26-2
Public Alternative Schools for At-Risk Students

Public alternative schools and programs are most common in school districts with large enrollments, those in urban areas, and those in the Southeast.

Alternative schools and programs serve students who are at risk of dropping out of school for any of a number of reasons, including poor grades, truancy, suspension, and pregnancy (Paglin and Fager 1997). Concerns with maintaining order and discipline in regular schools, combined with a desire to provide such at-risk students with alternatives to dropping out, have increased interest in such schools and programs. This indicator profiles the nation’s public alternateschools and programs for at-risk students.

In 2000–01, 39 percent of public school districts had alternative schools and programs (see supplemental table 27-1), serving approximately 613,000 at-risk students (or about 1.3 percent of all students enrolled in public elementary and secondary schools) (see supplemental table 27-2) in about 10,900 alternative schools and programs nationwide (see supplemental table 27-3). Taken together, alternative schools and programs were more common in large districts (those with 10,000 or more students) than smaller districts (those with less than 9,999 students), in urban districts than suburban or rural districts, and in southeastern districts than districts in other regions.

Enrollment in alternative schools and programs varied by district characteristics. Eight percent of districts in the Northeast and 5 percent in the Southeast enrolled more than 3 percent of their students in alternative schools and programs; however, 20 percent of districts in the Central region and 23 percent of districts in the West did so in 2000–01. Districts with the largest percentages of children in poverty also were more likely than districts with the smallest percentages of such children to enroll 3 percent or more of their students in these schools and programs (see supplemental table 27-2).

In addition to classes, many districts with alternative schools and programs provide their students with various services, such as academic counseling or preparation for their GED exam. The great majority of such districts (91 percent) offered coursework for a regular high school diploma, while roughly half (48 percent) offered vocational or skills training in 2000–01 (see supplemental table 27-1).

Alternative Schools and Programs: Percentage of school districts with public alternative schools and/or programs for at-risk students, by selected district characteristics: 2000–01


For more information:
Supplemental Notes 1, 3
Supplemental Tables 27-1, 27-2, 27-3
Paglin and Fager 1997
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.

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.

The 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.


FOR MORE INFORMATION:
Supplemental Note 3
Supplemental Table 28-1
Goldhaber and Brewer 1997, 2000
Monk 1994
This indicator examines the distribution of beginning teachers (i.e., those with 3 or fewer years of experience) by various teacher characteristics and across different types of schools. Looking at the characteristics of beginning teachers provides some indication of the demographic profile of the nation’s future teacher population. Examining their distribution across schools provides a measure of inequalities in student learning opportunities because, as indicated by research, teachers in the early years of their teaching careers are typically less effective than more experienced teachers (Murnane and Phillips 1981). This research suggests that there is discernible improvement in teacher effectiveness (as measured by student achievement scores) each year for a teacher’s first few years of teaching; however, there is little evidence of significant improvement after about 5 years of teaching.

Among full-time teachers, approximately 16 percent of public school teachers were beginning teachers in 1999–2000, compared with 23 percent of private school teachers. Beginning teachers were evenly distributed by sex. There was no detectable difference in the proportions of male and female teachers who were beginning teachers in public and private schools. Beginning teachers were not, however, evenly distributed by race/ethnicity. Compared with White teachers, a greater proportion of Black and Hispanic teachers in public and private schools were beginning teachers, as were a greater proportion of Asian/Pacific Islander teachers in public schools (see supplemental table 29-1).

Beginning teachers were also not evenly distributed across all schools. Public and private schools with the highest percentages of minority students and those with the highest percentages of limited-English proficient (LEP) students were more likely to employ beginning teachers than schools with the lowest percentages of minority students and those with the lowest percentages of LEP students. Furthermore, public schools with the highest percentages of low-income students (those eligible for free or reduced-price lunch) were more likely to employ beginning teachers than were schools with the lowest percentages of such students (see supplemental tables 29-2 and 29-3).
School Characteristics and Climate

Size of High Schools

High school sizes vary by location. In urban areas almost half of all high schools are large (900 or more students), whereas in rural areas half of all high schools are very small (fewer than 300 students).

Large high schools have traditionally been considered more economical and able to support a broader curriculum than smaller ones (Lee et al. 2000). In recent years, however, research has suggested that small and moderate size high schools foster more positive social and academic environments than large high schools, especially for economically disadvantaged students (Lee and Bryk 1988, 1989; Bickel et al. 2001). This research also suggests that students in very small high schools learn less than students in “moderate” size (600–899 students) high schools (Lee and Smith 1997). This indicator profiles the distribution of high schools by size and selected characteristics.

During the 1999–2000 school year, high schools were not evenly distributed by size. Those in central cities or in urban fringe/large towns were more likely than those in rural areas/small towns to be large (i.e., to have 900 or more students), while those in rural areas/ small towns were more likely than those elsewhere to be very small (to have fewer than 300 students). High schools with the highest percentages of limited English proficiency (LEP) enrollments were more likely than those with the lower percentages to be large, while those with the lowest percentages of LEP enrollments were more likely than all others to be very small. Among public high schools, those with the highest percentages of students receiving free or reduced-price lunches were more likely than those with lower percentages to be very small (see supplemental table 30-1).

Among regular high schools, a positive relationship exists between school size and the percentage of teachers who reported that apathy, tardiness, absenteeism, dropping out, and drug use are “serious” problems among students in their school. Teachers in larger schools were generally more likely to report that these problems are serious than were their peers in relatively smaller schools. When examined across locations, this pattern generally held true in central cities and rural areas/small towns, but not in urban fringe/large towns (see supplemental table 30-2).

NOTE: See supplemental note 1 for more information on location. Data on general high school characteristics by size include data on all secondary schools— i.e., special education, vocational education, and alternative high schools as well as regular high schools. Secondary schools include all schools with no grade below grade 7 and with one grade at grade 9 or higher. A secondary school may include an ungraded class.


FOR MORE INFORMATION:
Supplemental Notes 1, 3
Supplemental tables 30-1, 30-2
Bickel et al. 2001; Lee et al. 2000; Lee and Bryk 1988, 1989; Lee and Smith 1997
Student Victimization

Victimization affects all types of students. However, students who report gangs or guns at their schools are more likely to report victimization than students who do not report these conditions.

The quality of the educational environment and students’ ability to learn both suffer when students are subject to assault, theft, or other forms of victimization at school (Stephens 1997). In 1999, 12 percent of 12- through 18-year-old students reported experiencing “any” form of victimization at school. Four percent reported “violent victimization” (i.e., rape, sexual assault, robbery, or assault, including attempts and threats), and 8 percent reported theft of property or “property victimization” at school (see supplemental table 31-1).

Victimization affects all types of students, but not all students are equally likely to report being victimized. In 1999, public school students were more likely than private school students to report any form of victimization (13 vs. 9 percent) as well as violent victimization (4 vs. 0.4 percent) and property theft (8 vs. 6 percent). Male students were more likely than female students to report violent victimization at school (5 vs. 4 percent); however, no differences were detected between male and female students in their reported levels of property theft or any victimization. Overall, Black students were more likely to report having experienced any form of victimization than were White and Hispanic students. No differences were detected between Black and Hispanic students in their reported levels of violent victimization.

Two factors that generally raise rates of victimization are the presence of gangs and guns at school. Students who reported gangs at school were more likely than other students to say they experienced any victimization (18 vs. 11 percent) as well as violent victimization (8 vs. 3 percent) and property theft (11 vs. 7 percent). Students who said that they knew a student who brought a gun to school were also more likely than other students to report any victimization (20 vs. 12 percent). Likewise, students who said they had seen a student with a gun at school were more likely than other students to report any victimization (24 vs. 12 percent) (see supplemental table 31-2).

STUDENT VICTIMIZATION: Percentage of students ages 12-18 who reported criminal victimization at school according to type of victimization, by their perception of conditions at school: 1999

<table>
<thead>
<tr>
<th>Type of victimization</th>
<th>Percent</th>
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</thead>
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<tr>
<td>Any¹</td>
<td>18</td>
</tr>
<tr>
<td>Violent²</td>
<td>11</td>
</tr>
<tr>
<td>Property³</td>
<td>7</td>
</tr>
</tbody>
</table>

¹“Any victimization” is a combination of “violent victimization” and “property victimization.” If the student reported an incident of either he or she is counted as having experienced any victimization. If the respondent reported having experienced both, he or she is counted once under the any victimization category. Also, any victimization includes those students who reported being victimized but did not provide enough information about the victimization for it to be classified as violent or property.

²Violent victimization includes any physical attack (i.e., rape, sexual assault, robbery, or assault, including attempts and threats) or taking of property directly from a student using force, weapons, or threats at school.

³Property victimization includes theft of a student’s property at school.

NOTE: Response rate in parentheses. Percentage of students reporting “do not know” or “not ascertained” not reported in figure. Includes only 12- through 18-year-olds who were in primary or secondary education programs leading to a high school diploma.


FOR MORE INFORMATION: Supplemental Note 1
Supplemental Tables 31-1, 31-2
Stephens 1997

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