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ABSTRACT

In 1994, the National Center for Education Statistics (NCES) began surveying approximately 1,000 public schools each year about their access to the Internet, access in classrooms, and since 1996, their type of Internet connections. Based on these findings, this "Issue Brief" discusses the progress public schools have made toward meeting the goal of connecting every school to the Internet by the year 2000, the proportion of classrooms that are connected, and how schools are connecting. Results indicate that differences among public schools with Internet access have decreased in 1998; however, schools with the highest proportion of minority enrollments and schools with the highest proportion of students eligible for free or reduced-price school lunch continue to have fewer instructional rooms with Internet access. While the ratio of students per instructional computer is approaching the ratio recommended by the President's Committee of Advisors on Science and Technology, the ratio of students to computer with Internet access is nearly double the recommended student to computer ratio. Public schools have shown a commitment toward securing more efficient means of connecting to the Internet; more schools are connecting to the Internet using dedicated lines than in previous years. Three figures chart the statistics. (AEF)

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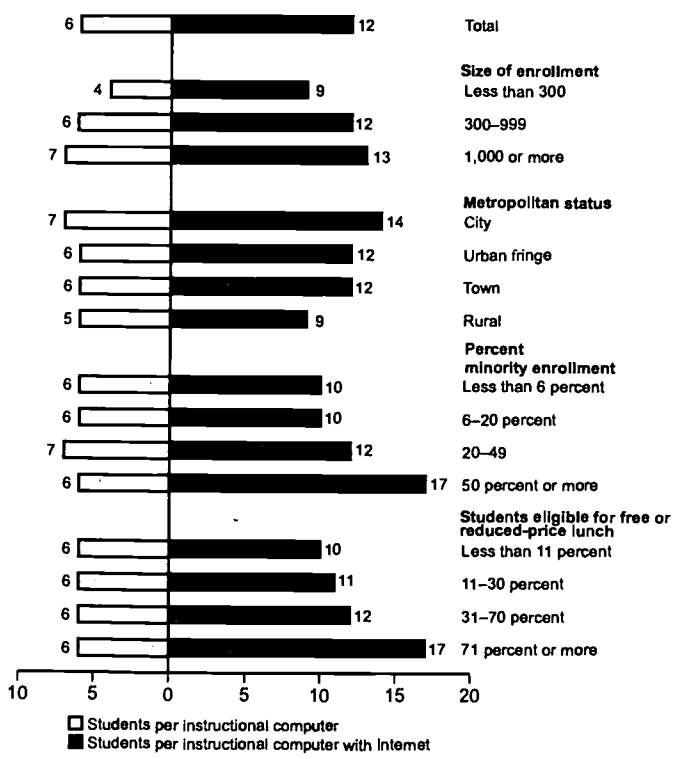
National Center for Education Statistics

computers within schools. Data from 1998 show approximately 6 students per instructional computer in public schools (figure 1). Medium-sized schools, i.e., those with 300–999 students, and large schools, those with 1,000 or more students, had less access to instructional computers than small schools, those with less than 300 students (6 and 7 students per instructional computer compared to 4). Schools located in cities had more students per instructional computer (7) than schools in the urban fringe and towns (6 students per instructional computer for both), and rural areas (5 students per instructional computer).

The ratios of students per instructional computer *with Internet access* also varied in similar ways (figure 1). Medium-sized and large schools had more students per computer with Internet access than small schools, that is, 12 and 13 students per Internet-connected computer compared to 9. Schools located in cities and urban fringe areas had more students per computer with Internet access (14 and 12, respectively), than schools in rural areas (9). Public schools with 71 percent or more students eligible for free or reduced-price school lunch had less access to computers with Internet access on a per-student basis than schools with less than 11 percent, and those with 11 to 30 percent of students eligible for free or reduced-price school lunch. Schools with 50 percent or more minority enrollment also had less access than schools with less than 6 percent, 6 to 20 percent, and 21 to 49 percent minority enrollments.

Figure 1.—Ratio of students per instructional computer and students per instructional computer with Internet access, by school characteristics: Fall 1998

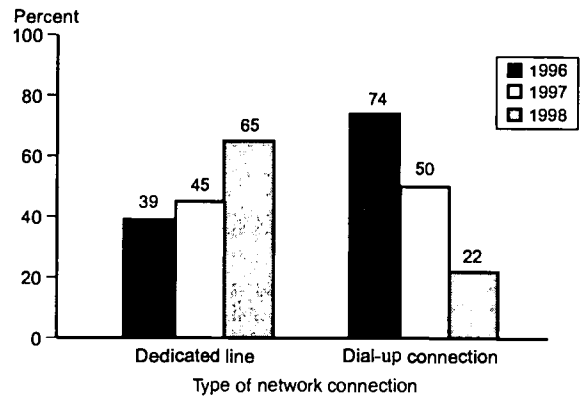


SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Internet Access in Public Schools," NCES 98-031; and "Survey on Internet Access in U.S. Public Schools, Fall 1998," FRSS 69, 1998.

How are schools connecting to the Internet?

One of the major determinants of the extent to which schools are able to make use of the Internet is the speed at which they are able to connect. Changes have occurred over the past two years regarding the type of network connections used by public schools and, therefore, the speed at which they are able to connect. In 1996, 74 percent of public schools with Internet access were connecting using dial-up connections; in 1997, 50 percent of schools were using this type of connection; and in 1998, 22 percent (figure 2). In 1998, higher speed connections using a dedicated line were used by 65 percent of public schools. This is a continued increase from 1996, when 39 percent of schools were connecting using a dedicated line, and 1997, when 45 percent were so connected. Large schools with Internet access were more likely to connect using a dedicated line than small and medium-sized schools (79 percent compared to 63 and 64 percent, respectively; data not shown). On the other hand, schools in the Northeast were more likely to connect using a dial-up connection than schools in the Central and West regions (34 percent compared to 20 and 17 percent, respectively; data not shown).

Figure 2.—Percent of public schools with Internet access, by type of network connection: Fall 1996–98



NOTE: Data were also collected for ISDN, cable modem, and wireless connections.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Advanced Telecommunications in Public Elementary and Secondary Schools, 1996," NCES 97-944; "Internet Access in Public Schools," NCES 98-031; and data from the "Survey on Internet Access in U.S. Public Schools, Fall 1998," FRSS 69, 1998.

Conclusion

Differences among public schools with Internet access have decreased in 1998, however, schools with the highest proportion of minority enrollments and schools with the highest proportion of students eligible for free or reduced-price school lunch continue to have fewer instructional rooms with Internet access. And, while the ratio of students per instructional computer is approaching the ratio recommended by the President's Committee of Advisors on Science and Technology, the ratio of students to computer with Internet access is nearly double the recommended student to computer ratio. Public schools have shown a commitment toward securing more efficient means of connecting to the Internet; more schools are connecting to the Internet using dedicated lines than in previous years.

Reference

President's Committee of Advisors on Science and Technology, Panel on Educational Technology. (1997). Report to the President on the Use of Technology to Strengthen K–12 Education in the United States. Available online: http://www.whitehouse.gov/WH/EOP/OSTP/NSTC/PCAST/K-12ed.html#exec.

More information about the E-rate program is available online: http://www.sicfund.org

Issue Briefs present information on education topics of current interest. All estimates shown are based on samples and are subject to sampling variability. All differences are statistically significant at the 0.05 percent level. In the design, conduct, and data processing of NCES surveys, efforts are made to minimize the effects of nonsampling errors, such as item nonresponse, measurement error, data processing error, or other systematic error. The data reported in this **Issue Brief** have been combined from 3 separate independent surveys—1994, 1995, and 1996. There is a potential for a small amount of bias associated with the absence of schools built between the administration of each of the three surveys and 1998.

This **Issue Brief** was prepared by Cassandra Rowand. To obtain standard errors or definitions of terms for this **Issue Brief**, or to obtain additional information about the Fast Response Survey System or the FRSS telecommunications surveys, contact Edie McArthur at NCES 202-219-1442. To order additional copies of this **Issue Brief** or other NCES publications, call 1-877-4ED-PUBS. NCES publications are available on the Internet at http://www.ed.gov/NCES/pubs.

ISSUE BRIEF

Internet Access in Public Schools and Classrooms: 1994–98

February 1999

What sort of progress is being made in connecting every public school and classroom to the Information Superhighway? Since 1994, the federal government has been committed to assisting every school and classroom to connect to the Internet by the year 2000, and the National Center for Education Statistics (NCES) has been tracking the rate at which public schools and classrooms are meeting that goal. In 1994, NCES began surveying approximately 1,000 public schools each year about their access to the Internet, access in classrooms, and, since 1996, their type of Internet connections. NCES measured Internet access in private schools in 1995 and is currently gathering data for 1998–99 (publication forthcoming).

How much progress have schools made?

Public schools in the United States have continued to make progress toward meeting the goal of connecting every school to the Internet by the year 2000. Indeed, schools have shown increases every year since 1994, when 35 percent of public schools were connected to the Internet (table 1). In the fall of 1998, 89 percent of public schools were connected to the Internet. This is an increase of 11 percentage points from the 78 percent reported in 1997.

In 1997, schools with different characteristics had different rates of Internet access; for example, high poverty schools, schools with high minority enrollment, and smaller schools were less likely to have Internet access than other schools. By 1998, most of these differences no longer existed. High poverty and small schools were as likely to have access to the Internet as low poverty and larger schools. However, schools with 11 to 30 percent and 31 to 70 percent of students in poverty were slightly more likely to have Internet access than the high poverty schools.

What proportion of classrooms are connected?

While having Internet access in 89 percent of public schools is an achievement, this number does not tell us about the degree to which students have access to the Internet. Thus, in addition to having every school connected to the Internet by the year 2000, a second goal is to have every instructional room (e.g., every classroom, computer lab, and library/media center) connected to the Internet. Schools have made strides toward this goal, with 51 percent of instructional rooms in public schools connected to the Internet in 1998. This number has nearly doubled since 1997, when 27 percent of instructional rooms were connected (table 1). The rate at which classrooms are connected may continue to grow because of the funds available starting in 1998 through the E-rate (Education rate) program. This program was established by the Telecommunications Act of 1996 to help make telecommunications services and technologies available to schools and libraries at discounted rates.

There continue to be differences in instructional room access to the Internet related to school characteristics. In 1998, public schools with 50 percent or more minority enrollment had Internet access in 37 percent of instructional rooms, compared to 52, 59, and 57 percent in schools with 21 to 49 percent, 6 to 20 percent, and less than 6 percent minority enrollment, respectively. Similarly, public schools with 71 percent or more students eligible for free or reduced-price school lunch had 39 percent of their instructional rooms connected to the Internet compared to 53 percent of rooms in schools with 11 to 30 percent of students eligible, and 62 percent of rooms in schools with less than 11 percent of students eligible. Additionally, schools in the Northeast had a lower proportion of rooms connected to the Internet than schools in the Southeast, Central, and West regions (39 percent compared to 51, 61, and 51 percent, respectively).

Another measure of the pervasiveness of computers in public schools is the ratio of students to computers. According to the President's Committee of Advisors on Science and Technology (1997), a ratio of 4 to 5 students per computer represents a reasonable level for the effective use of

Table 1.—Percent of public schools having access to the Internet, and percent of instructional rooms having access to the Internet, by school characteristics: 1994, 1997, and 1998

School characteristic	Schools			Instructional rooms		
	1994	1997	1998	1994	1997	1998
All public schools	**35**	**78**	**89**	**3**	**27**	**51**
Instructional level*						
Elementary	30	75	88	3	24	51
Secondary	49	89	94	4	32	52
Size of enrollment						
Less than 300	30	75	87	3	27	54
300 to 999	35	78	89	3	28	53
1,000 or more	58	89	95	3	25	45
Metropolitan status						
City	40	74	92	4	20	47
Urban fringe	38	78	85	4	29	50
Town	29	84	90	3	34	55
Rural	35	79	92	3	30	57
Geographic region						
Northeast	34	78	90	3	22	39
Southeast	29	84	92	2	26	51
Central	34	79	90	3	33	61
West	42	73	86	5	27	51
Percent minority enrollment						
Less than 6 percent	38	84	91	6	37	57
6 to 20 percent	38	87	93	4	35	59
21 to 49 percent	38	73	91	4	22	52
50 percent or more	27	63	82	3	13	37
Percent of students eligible for free or reduced-price school lunch						
Less than 11 percent	40	88	87	4	36	62
11 to 30 percent	39	83	94	4	32	53
31 to 70 percent	33	78	91	3	27	52
71 percent or more	19	63	80	2	14	39

*Data for combined schools are included in the totals and in analyses by other school characteristics but are not shown separately.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Advanced Telecommunications in Public Schools, K-12," NCES 95-731; "Advanced Telecommunications in U.S. Public Elementary and Secondary Schools, 1995," NCES 96-854; "Advanced Telecommunications in U.S. Elementary and Secondary Public Schools, Fall 1996," NCES 97-944; "Internet Access in Public Schools," NCES 98-031; and data from the "Survey on Internet Access in U.S. Public Schools, Fall 1998," FRSS 69, 1998.

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