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ABSTRACT

In fall 1995, the National Center for Education Statistics (NCES) conducted a survey of advanced telecommunications in private schools to provide baseline data on computer and Internet availability, and allow for comparisons with public schools. To revisit the issue of computer and Internet availability in private schools and measure changes since 1995, NCES, through its Fast Response Survey System, administered a second nationally representative survey of advanced telecommunications in private schools during the 1998-99 school year. Specifically, the 1998-99 survey focused on: computer and Internet availability, including the extent to which those resources were available for instruction; selected issues in the use of computers and the Internet, including instructional use of those resources, provision of teacher training, technical support for advanced telecommunications use, and barriers to the acquisition and use of advanced telecommunications; and the E-rate program and other external support for advanced telecommunications in schools. Findings show an increase in computer and Internet availability in private schools since the survey was first conducted in 1995. However, compared to public schools, private schools reported more students per instructional computer with Internet access, they were less likely to be connected to the Internet, and they reported proportionately fewer instructional rooms with Internet access. Data on the use of advanced telecommunications indicate that 45 percent of all private school teachers regularly used computers and/or advanced telecommunications for teaching in 1998-99, and almost two-thirds of all private schools offered or participated in some type of advanced telecommunications training for teachers. Relatively few private schools reported support for advanced telecommunications from the E-rate program. (Includes an index of tables.) (AEF)

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NATIONAL CENTER FOR EDUCATION STATISTICS

Statistical Analysis Report February 2001

Advanced Telecommunications in U.S. Private Schools: 1998-99

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Rebecca Skinner
Elizabeth Farris
Westat

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Executive Summary

Background

Throughout the past decade, there have been a number of federal, state, and private initiatives to expand computer and Internet use in schools. These initiatives have been rooted in the national technology goals to make computers accessible to every student, connect every classroom to the Internet, integrate educational software into the curriculum, and train teachers to integrate technology into the classroom (U.S. Department of Education 1998a). In 1994, the National Center for Education Statistics (NCES) launched a series of annual surveys to track changes in the availability of computers and Internet access in public schools.

In fall 1995, NCES also conducted a survey of advanced telecommunications in private schools to provide baseline data on computer and Internet availability, and allow for comparisons with public schools (U.S. Department of Education 1997a). To revisit the issue of computer and Internet availability in private schools and measure changes since 1995, NCES, through its Fast Response Survey System (FRSS), administered a second nationally representative survey of advanced telecommunications in private schools during the 1998-99 school year.

Specifically, the 1998-99 survey focused on (1) computer and Internet availability, including the extent to which those resources were available for instruction; (2) selected issues in the use of computers and the Internet, including instructional use of those resources, provision of teacher training, technical support for advanced telecommunications use, and barriers to the acquisition and use of advanced telecommunications; and (3) the E-rate program and other external support for advanced telecommunications in schools.

Key Findings

Computer and Internet Availability

Making available sufficient and adequate hardware is a critical first step toward ensuring student access to computers. In the 1998-99 school year, private schools reported six students per computer, a lower level of availability than recommended by some technology experts—four to five students per computer (President's Committee of Advisors on Science and Technology 1997). Considering computer and Internet availability for instructional purposes, there were 8 students per *instructional* computer and 15 students per *Internet-connected* instructional computer in private schools.

Private schools have made considerable strides in computer and Internet availability since 1995. For example:

- The number of students per computer (including computers used for administrative purposes) was six in the 1998-99 school year compared to nine students in fall 1995.

- The proportion of private schools connected to the Internet increased from 25 percent in 1995 to 67 percent in 1998-99. An additional 13 percent of private schools indicated they had plans for Internet connection by the end of 2000; if these plans are realized, then about 80 percent of all private schools are currently connected or will have Internet connections by the end of 2000. However, 19 percent of private schools reported not being connected to the Internet and having no plans to do so.

School-level access to the Internet does not reflect the extent to which that resource might be available for instruction. Therefore, private schools also reported on the number of instructional rooms with Internet connections, types of connection, and the extent to which the World Wide Web (WWW) and electronic mail (e-mail) were available to various members of the school community. Findings from the 1998-99 survey indicate the following:

- Twenty-five percent of all instructional rooms in private schools were connected to the Internet in the 1998-99 school year, compared with 5 percent in fall 1995.

- Although dial-up connections were the most common means of connecting to the Internet in 1998-99 (65 percent of private schools with Internet access reported using this connection), private schools have increased the availability of higher speed connections using dedicated lines.

- About two-thirds of private schools reported having e-mail or WWW availability. However, e-mail was more likely to be available to administrators than teachers and least likely to be available to students.

Comparisons on the availability and use of computers and the Internet were focused mainly on differences by religious affiliation and instructional level of the school. The results of the 1998-99 survey indicate the following:

- Nonsectarian schools had fewer students (six) per *instructional* computer than Catholic (eight) or other religious schools (nine). While Catholic schools were more likely than nonsectarian or other religious schools to be connected to the Internet and to report having e-mail and WWW availability, nonsectarian schools reported a higher proportion of instructional rooms with Internet access.

- Secondary schools were more likely than elementary or combined schools to be connected to the Internet and to report the availability of high-speed connections using dedicated lines. They were also more likely to report e-mail and WWW availability to students. Moreover, the ratio of students per instructional computer with Internet access was lower at secondary and combined schools than elementary schools.

Use of Advanced Telecommunications and School Support

Issues in advanced telecommunications that have become increasingly important within recent years relate to whether teachers and students are making use of available advanced telecommunications, and the extent to which schools have support mechanisms in place to encourage effective use of those resources. The results of the 1998-99 survey indicate the following:

- Forty-five percent of all private school teachers in the 1998-99 school year regularly used computers and/or advanced telecommunications for teaching.

- Among private schools with Internet access, virtually all reported some use of e-mail and the WWW by students, teachers, and administrative staff. However, relatively fewer schools reported that these Internet capabilities were used to a large extent; for example, 31 percent reported that students used the WWW to a large extent and 24 percent indicated that teachers used the resource to a large extent.

To explore the issue of school support for computer and Internet use, the survey asked whether schools (1) offered or participated in various advanced telecommunications training for teachers, (2) used various approaches to encourage teacher participation in technology training, and (3) provided technical support for advanced telecommunications use. The 1998-99 survey data indicate the following:

- Sixty-four percent of private schools offered or participated in some type of advanced telecommunications training for teachers, with the most common type of training being in the use of computers. About half of the schools offered or participated in training on the integration of technology in the classroom, and 43 percent provided training on the use of the Internet.

- Of the schools that offered or participated in some type of training, 55 percent left it up to teachers to initiate the training, while fewer schools either mandated (16 percent) or actively encouraged teachers through incentives (22 percent) to participate in technology training.

- Most private schools (80 percent) indicated that one or more individuals were primarily responsible for supporting advanced telecommunications in the school. Of these schools, 41 percent indicated that the technology coordinator or other technical staff helped teachers to integrate technology into the curriculum to a large or moderate extent, and 42 percent reported that network technical support was provided to a large or moderate extent.

E-rate and Other Support for Advanced Telecommunications in Schools

Expanding the use of advanced telecommunications comes with high costs, and private and public schools often have to rely on a range of support (including federal and private sources) to address their technology needs. Therefore, schools were asked about the support for advanced telecommunications from various sources during the 1998-99 school year.

- Private schools indicated that several sources supported advanced telecommunications in the school, including various federal programs (ranging from 2 to 15 percent) and business or industry (22 percent).

- The most frequently cited source of support was parents or other community members (57 percent), although the survey did not collect data on the extent of such support. Relatively few private schools (13 percent) reported support for advanced telecommunications from the E-rate (Education rate) program.

The Schools and Libraries Universal Service Fund, better known as the E-rate program, is designed to make telecommunications services more affordable to all eligible schools and libraries. The program provides discounts (ranging from 20 to 90 percent) that can be used for internal connections, telecommunications services, and Internet access (U.S. Department of Education 1999b). The 1998-99 survey findings indicate the following:

- About one-fourth (24 percent) of all private schools applied for the 1998 E-rate discount program. Catholic schools were more likely than other religious and nonsectarian schools to apply for the discount; elementary and secondary schools were more likely to apply than combined schools; and schools with Internet access were more likely than those without access to submit 1998 E-rate applications.

- When asked if they intended to apply or had already applied for the 1999-2000 E-rate discount program, 39 percent of all private schools indicated that they did, while 57 percent reported that they would not apply.

Selected Comparisons with Public Schools

Some of the gains made by private schools since 1995 have been comparable to those made by public schools. For example, the percentage point increase in private schools with Internet

access between fall 1995 and the 1998-99 school year (42 percentage points) is comparable to increases for public schools (39 percentage points) during this period. Nevertheless, in the 1998-99 school year, private schools continue to be outpaced by public schools on some important indicators of the availability of advanced telecommunications—ratio of students to instructional computer, the proportion of Internet-connected schools, the proportion of instructional rooms with Internet access, and types of Internet connection. For example:

- Compared with public schools, private schools reported more students per *instructional* computer (8 versus 6), and more students per instructional computer with Internet access (15 versus 12 students).
- Private schools (67 percent) were considerably less likely than public schools (89 percent) to be connected to the Internet, and they also reported proportionately fewer instructional rooms with Internet access (25 versus 51 percent).
- Private schools were less likely than public schools to report higher speed Internet connections; for example, 21 percent of private schools compared with 65 percent of public schools were connected to the Internet using dedicated lines.

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1. INTRODUCTION

Expanding the use of advanced telecommunications in schools has become a major focus of education policy in recent years.[1] In his 1996 State of the Union Address, President Clinton set forth four goals for using technology in education: making computers accessible to every student, connecting every classroom to the Internet, integrating educational software into the curriculum, and training teachers to integrate technology into the classroom (U.S. Department of Education 1998a). Throughout the past decade, there have been a number of federal initiatives to expand computer and Internet use in schools, which have been rooted in these national technology goals (e.g., the Technology Literacy Challenge Fund (TLCF) and the E-rate discount program). Although the efficacy of advanced telecommunications and technology in education has had its critics (see Kirkpatrick and Cuban 1998 for a list of studies), these technologies have been promoted as powerful instructional tools for encouraging the development of basic and higher order thinking skills (U.S. Department of Education 1996c).

Over the past decade, there have been many policy initiatives and research studies on advanced telecommunications. In 1994, the National Center for Education Statistics (NCES) launched a series of annual surveys to track the increase of computers and Internet access in public schools. The surveys indicated that the proportion of public schools with Internet access increased from 35 percent in 1994 to 95 percent in 1999 (U.S. Department of Education 2000c). In fall 1995, NCES also conducted a survey of advanced telecommunications in private schools through its Fast Response Survey System (FRSS), a system designed to collect small amounts of policy-relevant data from respondents with minimum burden. The 1995 FRSS survey provided information on computer and Internet availability, and allowed for comparisons with public schools (U.S. Department of Education 1997a, 1997b). The current survey, another FRSS survey conducted during the 1998-99 school year, revisited the issue of advanced telecommunications in private schools and measured changes since 1995. It addressed such key issues as computer and Internet availability, instructional use of advanced telecommunications and school support, and external support for advanced telecommunications (e.g., federal and private initiatives).

In 1997-98, there were about 27,000 private schools in the United States, which enrolled approximately 5 million students (table 1; U.S. Department of Education 1999a, 2000f). Private schools constituted 24 percent of the nation's elementary and secondary schools and 10 percent of its students.

Private schools share many characteristics that differentiate them from public schools and also vary considerably among themselves. For instance, compared with public schools, private schools are more likely to be combined schools; 30 percent of private schools and 4 percent of public schools were combined schools in fall 1997 (table 1; U.S. Department of Education 1999a, 2000f).[2] Moreover, private schools tend to have smaller enrollments. For example, 14 percent of private schools compared with 44 percent of public schools reported enrollments of 750 or more in fall 1997.

[1] Advanced telecommunications, while including the Internet, refers to all modes of communication used to transmit information from one place to another, including networked computers and broadcast and interactive television. In this report, the focus is on computers and the Internet.

[2] Combined schools are defined as having grades higher than the 8th and lower than the 7th. They include schools composed of students in any grade in schools that range below grade 7 and above grade 8, or of students that are all in ungraded classes.

Table 1.—Public and private elementary and secondary enrollment and schools, by selected characteristics: Fall 1997

School characteristic	Public schools		Private schools				
			Total	Percent distribution	Catholic	Other religious	Nonsectarian
	Kindergarten to 12th grade enrollment						
Total	46,012,123	100.0	5,076,119	100.0	100.0	100.0	100.0
Level of school							
Elementary	30,012,655	65.2	2,824,844	55.6	72.9	41.4	32.7
Secondary	14,753,581	32.1	798,339	15.7	24.1	6.4	10.0
Combined	1,166,221	2.5	1,452,937	28.6	3.0	52.2	57.3
Other	79,666	0.2					
School enrollment							
Less than 150	917,251	2.0	918,907	18.1	6.2	29.2	31.1
150 to 299	3,179,037	6.9	1,439,334	28.4	31.3	27.5	20.9
300-499	9,222,344	20.0	1,197,240	23.6	28.5	19.3	17.6
500 to 749	12,538,998	27.3	800,437	15.8	19.3	11.3	14.6
750 or more	20,154,493	43.8	720,201	14.2	14.7	12.8	15.8
Percent minority students							
None	HH	HH	316,873	6.2	2.4	13.2	3.0
1 to 9 percent	HH	HH	2,320,589	45.7	50.2	45.1	32.8
10 to 29 percent	HH	HH	1,272,008	25.1	22.2	22.2	40.4
30 to 49 percent	HH	HH	396,478	7.8	7.7	7.0	9.8
50 percent or more	HH	HH	770,170	15.2	17.5	12.4	13.9
	Schools						
Total	87,631	100.0	27,402	100.0	100.0	100.0	100.0
Level of school							
Elementary	62,739	71.6	16,623	60.7	83.1	51.8	49.7
Secondary	21,112	24.1	2,487	9.1	13.7	5.3	11.1
Combined	3,120	3.6	8,292	30.3	3.2	43.0	39.2
Other	660	0.8					
School enrollment							
Less than 150	12,787	14.6	15,573	56.8	19.4	71.5	75.5
150 to 299	13,893	15.9	6,657	24.3	43.3	17.6	13.2
300 to 499	23,080	26.3	3,124	11.4	22.8	6.8	6.1
500 to 749	20,602	23.5	1,339	4.9	10.0	2.5	3.2
750 or more	17,269	19.7	711	2.6	4.5	1.7	2.0
Percent minority students							
None	HH	HH	4,206	15.3	5.1	25.8	6.3
1 to 9 percent	HH	HH	9,752	35.6	48.0	33.3	23.8
10 to 29 percent	HH	HH	6,280	22.9	20.4	19.2	34.4
30 to 49 percent	HH	HH	2,279	8.3	7.3	6.8	13.0
50 percent or more	HH	HH	4,886	17.8	19.2	14.8	22.5

HHData not available.

NOTE: Private kindergarten to 12th grade enrollment includes only kindergarten pupils who attend schools that offer first or higher grade. Data for public schools include kindergarten and prekindergarten enrollment when part of regular public school systems. Data for public schools exclude those not reporting enrollment. Details may not sum to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Private School Survey, 1997-98"; and Common Core of Data, Public School Universe, 1997 survey. (This table was prepared in October 2000.)

Private schools differ among themselves by affiliation, instructional level, and enrollment size. In 1997-98, some 8,000 private schools (30 percent) were Catholic, another 13,000 (or 48 percent) were affiliated with some other religion, and 6,000 (or 22 percent) were nonsectarian (figure 1; U.S. Department of Education 1999a).[3] Catholic schools differ from other private schools in several ways. On average, they tend to have larger student populations than other religious or nonsectarian schools; for example, although Catholic schools represented 30 percent of private schools in 1997-98, they enrolled 50 percent of the private school student population (figure 2; U.S. Department of Education 1999a, 2000f). Catholic schools are also more likely than other religious or nonsectarian schools to be elementary. Moreover, Catholic schools are more likely than other religious or nonsectarian schools to enroll students of low socioeconomic status, have lower tuition rates on average, and have different institutional missions (U.S. Department of Education 1996a).

Private schools share the challenges faced by public schools that seek to expand their use of computers and the Internet. Schools that are committed to using computers and the Internet as important instructional tools must first address issues of the availability and accessibility of those resources to students and teachers. Moreover, some advocates for advanced telecommunications argue that simply putting sufficient computers in schools and classrooms and connecting them to the Internet will not realize the technologies' potentials unless certain systems, such as teacher training in the use of technology in education and a school environment that supports technology, are in place (Milken Exchange on Educational Technology 1999). Expanding advanced telecommunications, however, comes with high financial and human costs, and many schools may have to rely on external sources of support such as federal programs and private initiatives to meet their technology needs.

[3] Detailed information on the distribution of private schools is available in *Private School Universe Survey*, 1997-98, (1999). U.S. Department of Education, National Center for Education Statistics by S.P. Broughman and L.A. Colaciello.

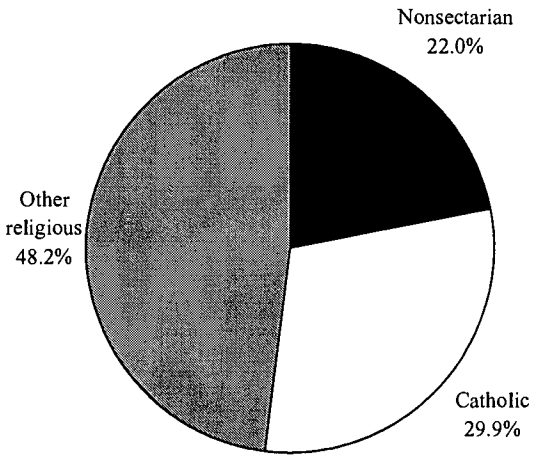
This second FRSS study on advanced telecommunications in private schools repeats some of the questions asked in the 1995 study (e.g., issues of computer and Internet availability), but also examines new issues, such as the extent to which schools provide support for the use of these technologies. Specifically, this survey focused on:

- Computer and Internet availability, including the extent to which those resources were available for instruction;
- Selected issues in the use of computers and the Internet, including instructional use of these resources, provision of teacher training, technical support for advanced telecommunications use, and barriers to the acquisition and use of advanced telecommunications; and
- The E-rate program and other external support for advanced telecommunications in schools.

The second national survey of private school telecommunications will allow for national trend analysis on the prevalence and use of computers and the Internet in private schools since 1995. Moreover, since many items parallel the items in public school surveys of advanced telecommunications and Internet access, comparisons with public schools are possible. In addition to national estimates, survey findings are presented by the following characteristics of private schools:

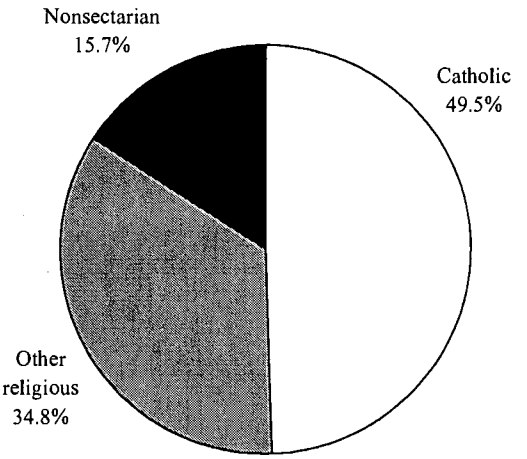
- Religious affiliation (Catholic, other religious, nonsectarian),
- Instructional level (elementary, secondary, combined),
- Enrollment size (less than 150, 150 to 299, 300 or more),
- Locale (city, urban fringe, town, rural),
- Geographic region (Northeast, Southeast, Central, West),

Figure 1.—Percentage distribution of private schools, by religious affiliation: 1997-98



SOURCE: U.S. Department of Education, National Center for Education Statistics, Private School Universe Survey, 1997-98.

Figure 2.—Percentage distribution of private school students, by religious affiliation: 1997-98



SOURCE: U.S. Department of Education, National Center for Education Statistics, Private School Universe Survey, 1997-98.

- Percent minority enrollment of the school (less than 6 percent, 6 to 20 percent, 21 to 49 percent, 50 percent or more), and
- Whether Internet access was available in schools.

All specific statements of comparisons made in this report have been tested for statistical significance through chi-square tests and *t*-tests adjusted for multiple comparisons using the Bonferroni adjustment, with significance at the 0.05 level. However, not all statistically significant comparisons have been presented in the text. Comparisons reported in the text were generally focused on differences by religious affiliation and instructional level. Where pertinent, differences by enrollment size and whether the school had Internet access were also reported.

Questionnaires were mailed to principals of 999 private schools in February 1999, who forwarded the survey to the person most knowledgeable about advanced telecommunications in their school. Responses were received from 87 percent of the schools. Detailed information about the survey methodology is provided in appendix A, while the questionnaire can be found in appendix C.

The remaining chapters of this report present findings from the 1998-99 private school survey of advanced telecommunications. Chapter 2 provides a discussion of computer and Internet availability in private schools, including Internet availability in instructional rooms. Chapter 3 examines the use of computers and the Internet, the provision of teacher training and technical support for advanced telecommunications use, and specific barriers to the acquisition and use of advanced telecommunications. Chapter 4 examines the extent to which schools participated in the E-rate program and other federal and private initiatives for the expansion of advanced telecommunications in schools. Chapter 5 provides selected comparisons in advanced telecommunications between private and public schools, while Chapter 6, the final chapter, discusses key findings from the study.

2. COMPUTER AND INTERNET AVAILABILITY

Highlights

- In the 1998-99 school year, the ratio of students per computer was 6 to 1, compared to 9 to 1 in fall 1995.
- Between 1995 and 1998-99, the proportion of private schools connected to the Internet increased from 25 percent to 67 percent, and the proportion of instructional rooms in private schools that were connected to the Internet increased from 5 percent to 25 percent.
- While about two-thirds of private schools reported having electronic mail (e-mail) or World Wide Web (WWW) availability, these Internet resources were less likely to be available to students than teachers or administrators.
- Catholic schools were more likely than nonsectarian or other religious schools to be connected to the Internet, and to report having e-mail and WWW availability. However, nonsectarian schools reported a higher proportion of instructional rooms with Internet access than Catholic and other religious schools.

This chapter reports on the extent to which computers and the Internet are available to schools and their students. Making available sufficient and adequate hardware is a critical first step toward ensuring student access to computers. Some technology experts suggest that four to five students per computer is a reasonable level to allow adequate access (President's Committee of Advisors on Science and Technology 1997). To assess the extent to which computers have been introduced in private schools, the survey asked about the total number of computers available in schools and for instruction.

Similar to past research, several measures of availability are used including measures based on averages, ratios, the purpose for which the resources are used, and location of the resources. Where relevant, comparisons between fall 1995 and the 1998-99 school year have been made to provide insights into changes in computer and Internet availability in private schools.

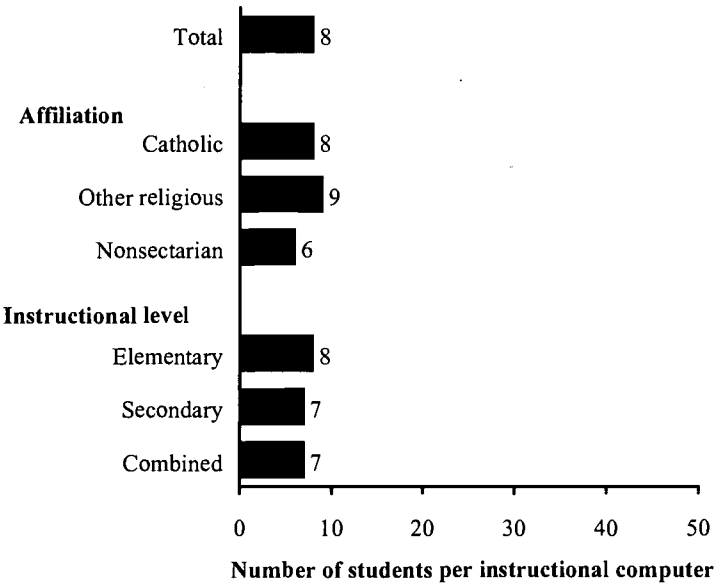
Availability of Computers

School-level estimates of computer availability are typically reported as averages, such as the mean number of computers and the mean number of computers with Internet access. However, unlike ratio measures, averages do not take the school's enrollment size into account. Because ratios (e.g., the number of students per computer) indicate the extent to which the available resources might be sufficient for the student population, ratios have been commonly used as approximations of student access to the resources. Moreover, some measures of computer and Internet access consider whether those resources are available for instructional purposes. For example, the ratio of students per *instructional* computer excludes computers that might be available only for administrative use.

Mean number of computers

In the 1998-99 school year, private schools reported an average of 37 computers, including those used for administrative and/or instructional

Figure 3.—Ratio of private school students to instructional computers, by selected school characteristics: School year 1998-99



SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

purposes (table B-1). This was a significant increase over the number of available computers in private schools in fall 1995—at that time, the mean number of computers available was 24 (U.S. Department of Education, 1997a). A measure that more closely approximates the potential use of computers in learning activities is the number of computers used for *instructional* purposes. During the 1998-99 school year, the mean number of *instructional* computers in private schools was 29 (table B-1).

Student-computer ratio

Ratio measures, such as the number of students per computer, provide closer approximations of computer availability than estimates based on averages. In the 1998-99 school year, private schools reported six students per computer, including computers used for administrative purposes (table B-2). This represented a lower level of computer availability than is recommended to allow for adequate access—four to five students per computer (President's Committee of Advisors on Science and Technology 1997), but a higher level of availability than fall 1995 when private schools reported nine students per computer (U.S. Department of Education 1997a).

To explore the extent to which computers might be available for teaching and learning (i.e., excluding computers used only for administrative purposes), the number of students per *instructional* computer was calculated for each school. In 1998-99, private schools reported eight students per *instructional* computer (figure 3 and table B-2). The student ratio to instructional computer differed by affiliation; nonsectarian schools had fewer students (six) per instructional computer than computer also differed somewhat by instructional level, with secondary and combined schools reporting fewer students per instructional computer than elementary schools (seven versus eight students).[4]

[4] It is likely that the differences by affiliation are affected by the differences among private schools by the level of students served. Catholic schools are less likely than other religious or nonsectarian schools to be combined schools; i.e., they are less likely to serve elementary and secondary grades (see table 1).

Types of Advanced Telecommunications

Advanced telecommunications cover a broad range of modes of communication, including the Internet, local area networks (LANs), two-way video, and broadcast and interactive television. In the 1998-99 school year, most private schools (85 percent) reported that they had stand-alone computers available, that is, computers that are not connected to any network (tables 2 and B-4). Of these schools, 83 percent had at least one classroom with stand-alone computers. In 1998-99, private schools were also asked whether they had computers with modems. Almost three-fourths of private schools (73 percent) reported having a computer with a modem, and 41 percent of these schools indicated that a computer with a modem was available in at least one classroom. This represents a substantial increase from 1995 when 48 percent of all private schools reported having a computer with a modem, and 24 percent of these schools had at least one classroom with the resource (U.S. Department of Education 1997a).

Local area networks allow students and teachers to share local resources including peripherals (e.g., printers) and software within one room, and across classrooms or school buildings. In the 1998-99 school year, about half of all private schools reported having computers connected to a LAN, and of these, 51 percent had the technology available in at least one classroom (tables 2 and B-3). This was higher than the proportion of private schools reporting they had computers with LAN connection in fall 1995; at that time, 43 percent of private schools had a computer connected to a LAN, and one-third of these had at least one classroom with a computer connected to a LAN (U.S. Department of Education 1997a). In 1998-99, relatively few private schools (12 percent) reported the availability of interactive televisions/computers with two-way audio/visual. Of these schools, over half (54 percent) reported that interactive televisions/computers with two-way audio/visual were available in at least one classroom.

Internet Availability

To assess the extent of Internet availability, the survey asked whether schools were connected to the Internet. As with measures of computer availability, school-level access to the Internet does not reflect the extent to which this resource might be available for teaching and learning. Therefore, schools were also asked to report the number of *instructional computers* and *instructional rooms* with Internet access. Moreover, because the usefulness of Internet resources for instructional purposes might be associated with the speed at which the Internet can be accessed during regularly scheduled classes, schools were asked about the various ways in which they connected to the Internet.

Table 2.—Percent of private schools in which selected types of advanced telecommunications equipment are available, and of these schools, percent in which equipment is also available in at least one classroom, by type of equipment: Fall 1995 and school year 1998-99

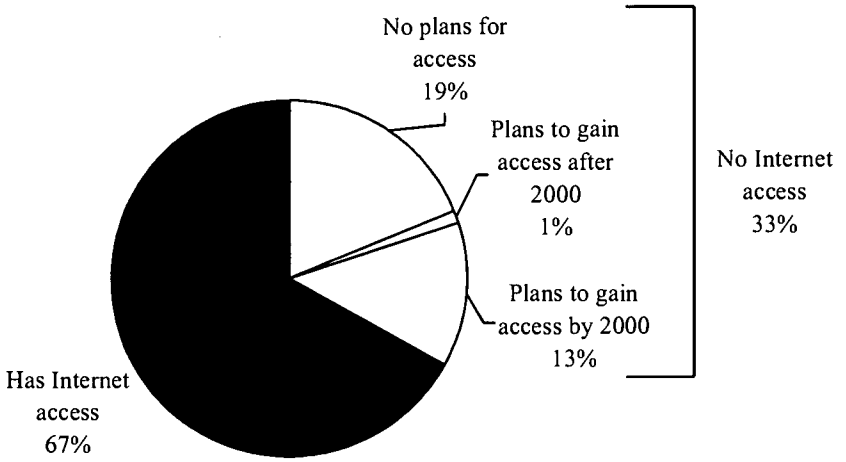
Type of equipment	Fall 1995		School year 1998-99	
	Available in school	Available in classroom[1]	Available in school	Available in classroom[1]
Stand-alone computer	(2)	(2)	85	83
Interactive television/computer with two-way audio/visual	(2)	(2)	12	54
Computer connected to a local area network (LAN)	43	33	49	51
Computer with modem	48	24	73	41

[1]Estimate is based on the percent of schools that had the equipment or service available in at least one classroom.

[2]Not available. Data were not collected for these items in 1995.

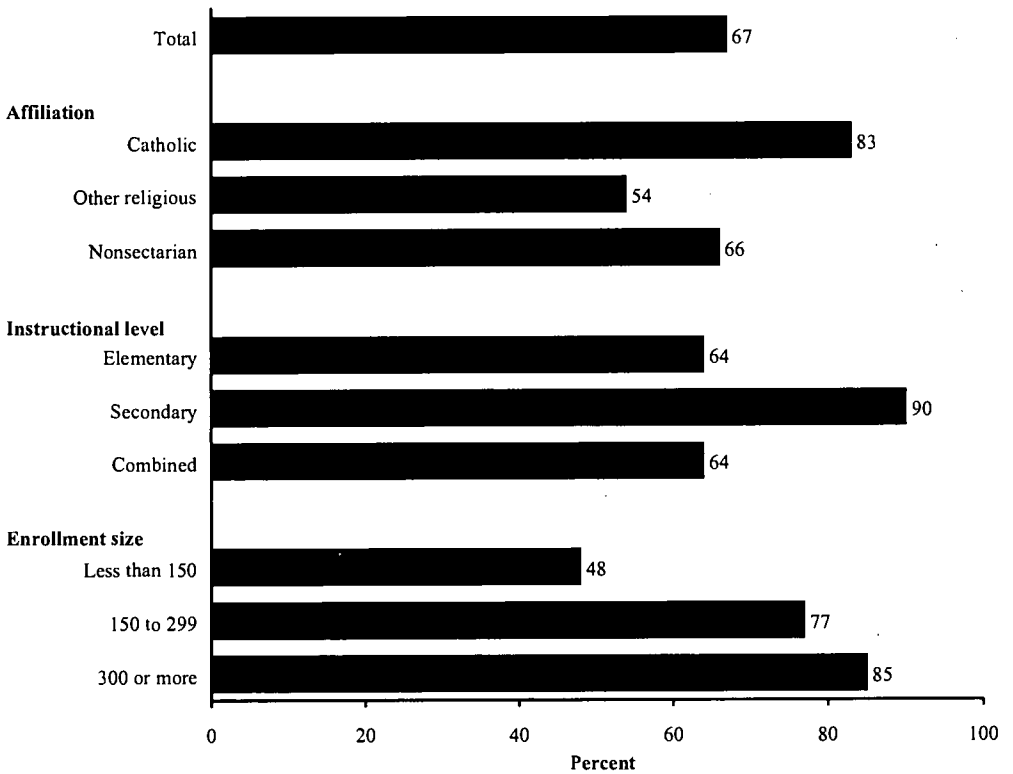
SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999; and "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Figure 4.—Percentage distribution of private schools with Internet access and future plans for access: School year 1998-99



NOTE: Percentages for future plans for Internet access are based on *all* private schools, not on private schools without Internet access.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Figure 5.—Percent of private schools with Internet access, by selected school characteristics: School year 1998-99



SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Schools with Internet access

Private schools have made considerable strides in connecting to the Internet. In the 1998-99 school year, 67 percent of all private schools had Internet access (figure 4 and table B-5), representing a substantial increase from fall 1995 when 25 percent of private schools were connected to the Internet (U.S. Department of Education 1997a). In 1998-99, 13 percent of all private schools reported that they planned to gain Internet access by 2000 (figure 4). *If* these expectations are realized, then about 80 percent of all private schools will be connected by the end of 2000. Nineteen percent of all private schools neither had Internet access nor reported plans to obtain it.

The proportion of private schools with Internet access differed by affiliation, instructional level, and enrollment size (figure 5 and table B-5). A greater percentage of Catholic schools had Internet access compared with other religious schools or nonsectarian schools (83 percent versus 54 and 66 percent, respectively). Secondary schools were more likely than either elementary or combined schools to have Internet access (90 versus 64 percent). Moreover, large schools (with 300 or more students) and medium-sized schools (with 150 to 299 students) were more likely than small schools (with less than 150 students) to be connected to the Internet. [5]

Internet availability for instruction

To explore the extent to which Internet resources might be available for instruction, the survey asked about *instructional computers* with Internet access and *instructional rooms* with this technology. Instructional rooms include classrooms, computer labs, library/media centers, and any other rooms used for instructional purposes (e.g., gymnasium).

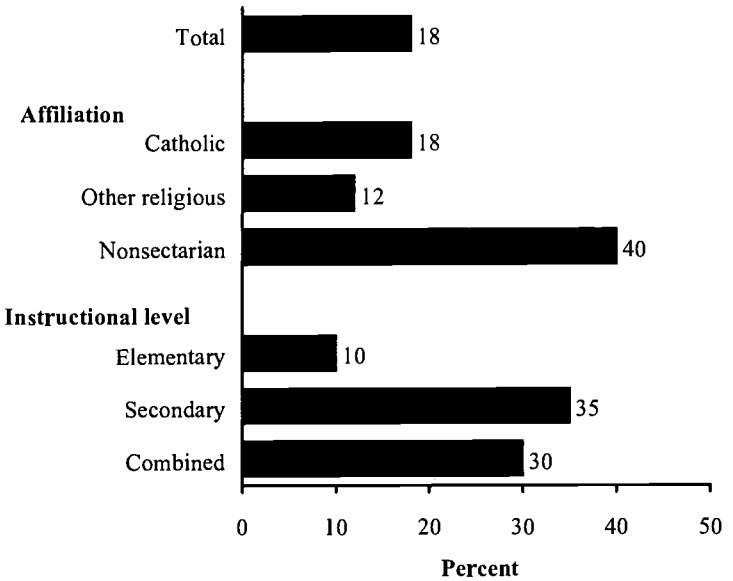
Mean number of instructional computers with Internet access. Among private schools with Internet access in the 1998-99 school year, the mean number of *instructional* computers with Internet access was 18 (figure 6 and table B-7). Although Catholic schools were more likely than other religious or nonsectarian schools to be connected to the Internet (see figure 5), nonsectarian schools had more instructional computers with Internet access on average (40) than did Catholic schools (18). Other religious schools had the least number of instructional computers with Internet access (12) on average. Secondary and combined private schools had more Internet-connected instructional computers than did elementary schools (35 and 30 computers compared with 10 computers, respectively).

Ratio of students to instructional computers with Internet access. Among private schools with Internet access, the ratio of students per instructional computer with Internet access was 15 to 1 (figure 7 and table B-8), compared with the number of private school students per instructional computer (8 to 1, see figure 3). On average, nonsectarian schools had fewer students per instructional computer with Internet access (7 to 1) compared with Catholic schools (19 to 1) and other religious schools (18 to 1). In addition, the ratios of students to instructional computer with Internet access were significantly lower at secondary and combined schools (10 to 1) than elementary schools (24 to 1).

Instructional rooms with Internet access. In the 1998-99 school year, 25 percent of all instructional rooms in private schools were connected to the Internet (figure 8 and table B-10), representing a sharp increase from fall 1995 when 5 percent of instructional rooms in private schools were connected (U.S. Department of Education 1997a). The percentage of instructional rooms with Internet access differed somewhat by affiliation, instructional level, and enrollment size of the schools. Nonsectarian schools reported a higher proportion of

[5] For the remainder of this report, small schools will be considered as having enrollments of less than 150 students, medium-sized schools with 150 to 299 students, and large schools with 300 or more students.

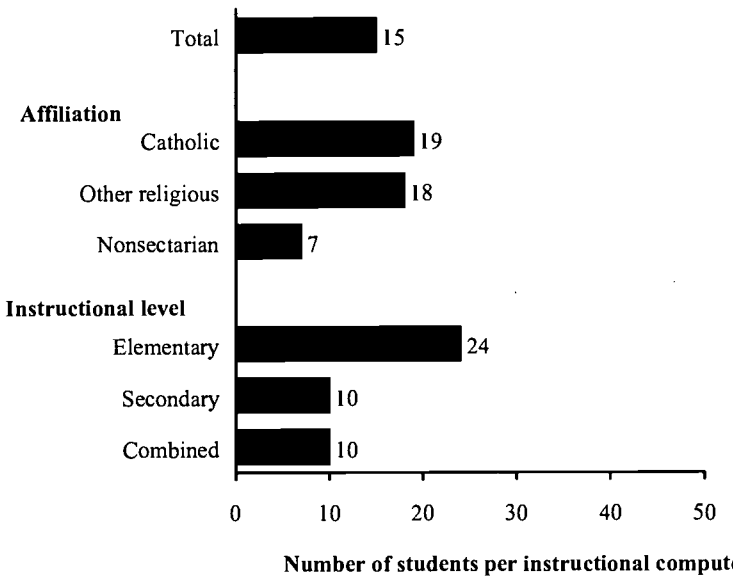
Figure 6.—Among private schools with Internet access, the mean number of instructional computers with Internet access, by selected school characteristics: School year 1998-99



NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

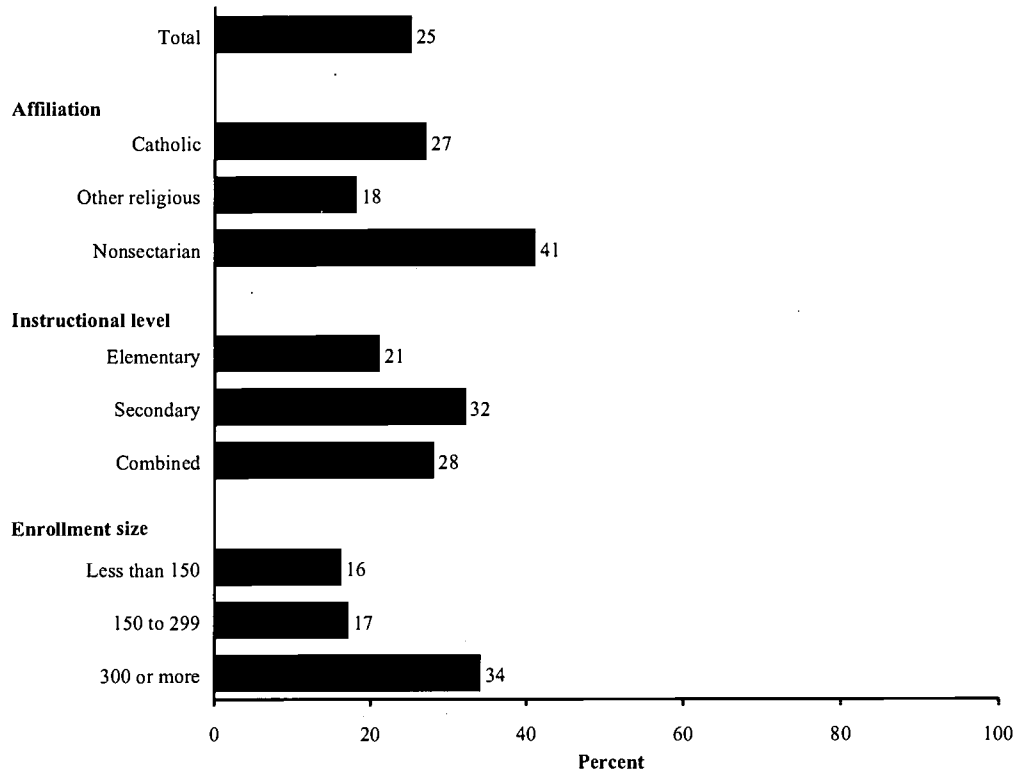
Figure 7.—Ratio of private school students to instructional computers with Internet access in private schools, by selected school characteristics: School year 1998-99



NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Figure 8.—Percent of private school instructional rooms with Internet access, by selected school characteristics: School year 1998-99



SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

instructional rooms with Internet access compared with Catholic and other religious schools (41 percent versus 27 and 18 percent, respectively). Secondary schools reported proportionately more Internet-connected instructional rooms than elementary schools (32 versus 21 percent). Large schools reported proportionately more instructional rooms with Internet access (34 percent) than medium-sized or small schools (17 and 16 percent, respectively).

Of private schools with Internet access in 1998-99, most (83 percent) had *at least one instructional room with Internet access* (tables 3 and B-11). Thirty-eight percent reported Internet access in one instructional room, 19 percent had access in two to four rooms, and 26 percent had five or more instructional rooms with this technology. The proportion of private schools with five or more instructional rooms with Internet access differed by affiliation; Catholic and nonsectarian schools were more likely than other religious schools to report having five or more Internet-connected instructional rooms (31 and 36 percent versus 18 percent, respectively).[6]

Among private schools with Internet access, the proportion of schools with no Internet-connected

[6] Catholic and nonsectarian schools tend to have larger enrollments than other religious schools; thus, the likelihood of having five or more instructional rooms with Internet access may reflect this size differential.

Table 3.—Among private schools with Internet access, percentage distribution of schools indicating the number of instructional rooms with Internet access, by selected school characteristics: School year 1998-99

School characteristic	No instructional rooms	1 instructional room	2-4 instructional rooms	5 or more instructional rooms
All private schools	17	38	19	26
Affiliation				
Catholic	12	41	16	31
Other religious	21	37	23	18
Nonsectarian	15	32	17	36
Instructional level				
Elementary	20	42	16	21
Secondary	4	27	42	27
Combined	18	33	25	24

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools. Percentages are computed across each row but may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

to 17 percent in the 1998-99 school year (tables 3 and B-11). Moreover, the proportion of private schools with five or more instructional rooms with Internet access increased sharply from 9 to 26 percent during this period.

Internet connections

Types of connections differ mainly with respect to the speed and amount of information that can be transmitted, with faster types of connections being more desirable. When asked whether they used various ways of connecting to the Internet,[7] about two-thirds of private schools with Internet access reported having dial-up connections in 1998-99 (tables 4 and B-13). This includes modems and Serial Line Internet Protocol (SLIP) or Point to Point Protocol (PPP) connections. Schools also reported having higher speed connections using dedicated lines. In the 1998-99 school year, 21 percent of private schools with Internet access connected using a dedicated line. Considering the various types of dedicated lines, 17 percent of schools connected to the Internet using a 56Kb connection, 11 percent relied on a T1/DS1 line, and 6 percent on a fractionalized T1 connection. In fall 1995, 2 percent of schools reported connecting to the Internet using a 56Kb connection and 2 percent indicated that they used a T1 line (U.S. Department of Education 1997a).

Schools were also asked whether they had cable modems and wireless connections.[8] In 1998-99, 12 percent of private schools connected to the Internet through cable modems compared with only 1 percent that used wireless connections (tables 4 and B-13). Moreover, 14 percent of private schools with Internet access reported having Integrated Services Digital Network (ISDN) lines in 1998-99, compared with 3 percent in 1995 (U.S. Department of Education 1997a).

The proportion of schools reporting they used dedicated lines differed by affiliation, instructional level, and enrollment size (tables 5

[7] Schools could report having more than one type of Internet connection.

[8] Cable modems provide faster data transfer than modems used to establish dial-up connections, and wireless connections do not require wires or cables to connect to the Internet.

Table 4.—Among private schools with Internet access, percent of schools reporting various types of Internet connection: Fall 1995 and school year 1998-99

Type of Internet connection	Fall 1995	School year 1998-99
Dial-up connection	(1)	65
Modem	94	(1)
SLIP/PPP	16	(1)
Dedicated line	4	21
56Kb	2	17
T1/DS1	2	11
Fractionalized T1	(2)	6
ISDN	3	14
Wireless connection	(2)	1
Cable modem	(2)	12

[1]Dial-up connections include modem connections and SLIP/PPP connection. In 1995, schools were asked to report separately for each type. In school year 1998-99, private schools with Internet access were not asked about the specific type(s) of dial-up connections that they used.

[2]Not available. These data were not collected on the 1995 survey.

NOTE: In both fall 1995 and school year 1998-99, percents for types of Internet connection do not sum to 100 because schools could report more than one type of connection. The 1995 data presented in this table are based on the number of schools having Internet access—25 percent of schools. The school year 1998-99 data presented in this table are based on the number of schools having Internet access—67 percent of schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999; and "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 5.—Among private schools with Internet access, percent of schools reporting various types of Internet connection, by selected school characteristics: School year 1998-99

School characteristic	Type of Internet connection			
	Dial-up connection	Dedicated line	ISDN	Cable modem
All private schools	65	21	14	12
Affiliation				
Catholic	65	27	17	13
Other religious	67	14	12	13
Nonsectarian	51	28	14	12
Instructional level				
Elementary	68	18	16	12
Secondary	52	43	11	10
Combined	61	21	11	16
Enrollment size				
Less than 150	77	10	5	17
150 to 299	66	23	16	11
300 or more	49	37	22	10

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools. Percents for types of Internet connection do not sum to 100 because schools could report more than one type of connection.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

and B-14). Catholic and nonsectarian schools were more likely than other religious schools to connect to the Internet using dedicated lines (27 and 28 percent versus 14 percent, respectively).

Moreover, secondary schools were considerably more likely than combined or elementary schools to report having dedicated lines (43 percent versus 21 and 18 percent, respectively). Finally, the likelihood of having dedicated lines varied by enrollment size, with larger schools more likely to have this type of Internet connection.

Availability of electronic mail and the World Wide Web

To explore the availability of e-mail and the WWW in private schools, the survey asked whether those resources were available in schools and to students, administrators, and teachers.

Electronic mail. E-mail was available in 62 percent of all private schools (tables 6 and B-15). A higher proportion of Catholic than other religious or nonsectarian schools had e-mail capabilities (79 percent versus 50 and 62 percent, respectively). Secondary schools were more likely than elementary schools or combined schools to report having e-mail (83 versus 60 percent). Moreover, large and medium-sized schools were more likely than small schools to have e-mail capabilities (81 and 73 percent versus 44 percent, respectively).

Schools also indicated whether e-mail was available to students, teachers, and administrators. Overall, e-mail was more likely to be available to administrators than teachers, and it was least likely to be available to students (tables 6 and B-15). While 61 percent of private schools indicated that e-mail was available to their administrators, 51 percent reported that it was available to teachers, and 28 percent indicated that this resource was available to students.

A higher proportion of nonsectarian than other religious schools reported e-mail availability to students (39 versus 22 percent; tables 6 and B-15). Secondary schools were more likely than elementary or combined schools to make e-mail available to students (47 percent versus 25 and 29 percent, respectively). Moreover, large schools were more likely than small schools to report e-mail availability to students (35 versus 23 percent).

World Wide Web. In the 1998-99 school year, 64 percent of private schools reported the availability of the WWW (tables 7 and B-16). The proportion of schools reporting WWW availability differed by affiliation, instructional level, and enrollment size. Catholic schools were more likely to have WWW access than nonsectarian schools (81 versus 65 percent), and other religious schools were least likely to report the availability of this technology (51 percent). More secondary schools (89 percent) had WWW access compared with elementary (62 percent) and combined schools (59 percent). Moreover, the likelihood of private schools reporting WWW availability varied by enrollment size, with large schools being more likely to report this Internet capability.

The WWW was more likely to be available to administrative staff and teachers (61 and 56 percent) than to students (47 percent; tables 7 and B-16). Catholic and nonsectarian schools were more likely than other religious schools to report WWW availability to students (63 and 54 percent versus 34 percent, respectively). A greater proportion of secondary schools (82 percent) reported WWW availability to students compared with elementary and combined schools (43 percent). Moreover, the likelihood of reporting WWW availability to students increased with enrollment size, with larger schools more likely to report that the resource was available to students.

Table 6.—Percent of schools indicating that e-mail was available in the school and to members of the school community, by selected school characteristics: School year 1998-99

School characteristic	Available in school	Available to members of school community		
		Students	Teachers	Administrative staff
All private schools	62	28	51	61
Affiliation				
Catholic	79	31	66	78
Other religious	50	22	41	48
Nonsectarian	62	39	53	60
Instructional level				
Elementary	60	25	48	58
Secondary	83	47	73	81
Combined	60	29	51	59
Enrollment size				
Less than 150	44	23	39	43
150 to 299	73	29	56	70
300 or more	81	35	68	79

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table 7.—Percent of schools indicating that the World Wide Web was available in the school and to members of the school community, by selected school characteristics: School year 1998-99

School characteristic	Available in school	Available to members of school community		
		Students	Teachers	Administrative staff
All private schools	64	47	56	61
Affiliation				
Catholic	81	63	73	77
Other religious	51	34	44	48
Nonsectarian	65	54	58	62
Instructional level				
Elementary	62	43	53	59
Secondary	89	82	86	86
Combined	59	43	52	56
Enrollment size				
Less than 150	46	33	41	44
150 to 299	73	51	64	69
300 or more	83	68	74	81

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

3. USE OF ADVANCED TELECOMMUNICATIONS, SCHOOL SUPPORT, AND BARRIERS

Highlights

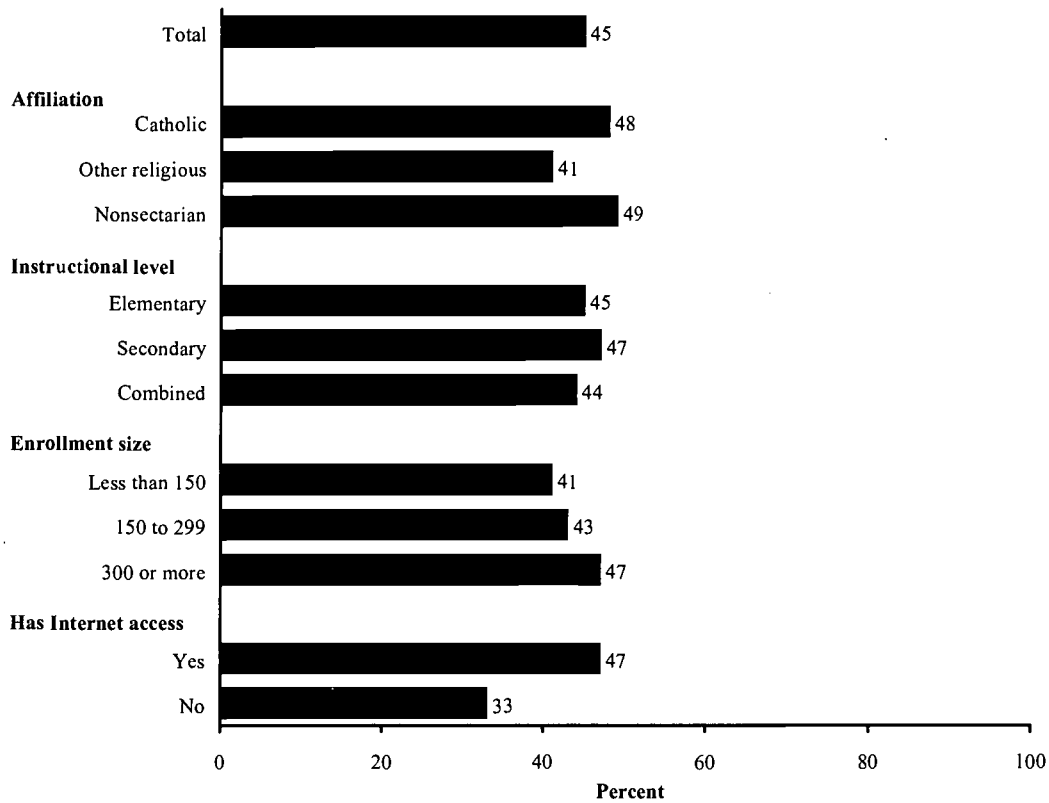
- Forty-five percent of all private school teachers regularly used computers and/or advanced telecommunications for teaching.
- Almost two-thirds of all private schools offered or participated in some type of advanced telecommunications training for teachers. The most common type of technology training was on the use of computers.
- While teacher training on the use of computers/advanced telecommunications was mandatory in 16 percent of private schools, over half of all private schools (55 percent) left it up to teachers to initiate the training.
- Most private schools indicated that at least one individual was primarily responsible for supporting advanced telecommunications in the school, while a large majority of those schools relied solely on one individual for technical assistance.
- The most commonly cited barrier to acquiring or using advanced telecommunications was an insufficient budget for hardware or software purchase.

To examine the extent to which available computer and Internet resources are being used in private schools, the survey asked about the proportion of teachers who regularly use computers and/or advanced telecommunications for teaching, and the extent to which various members of the school community (students, teachers, and administrative staff) used electronic mail (e-mail) and the World Wide Web (WWW). Moreover, to explore the extent support for computer and Internet use, schools were asked whether they provided different types of advanced telecommunications training for teachers, used various approaches to encourage participation in technology-related training, and provided technical support for advanced telecommunications use. The survey also asked about the extent to which schools might face various barriers to the acquisition and use of computers or advanced telecommunications capabilities.

Instructional Use of Advanced Telecommunications

Schools were asked to estimate the proportion of teachers who regularly use computers or advanced telecommunications for teaching. Overall, 45 percent of all private school teachers were reported to regularly use advanced telecommunications for instruction (figure 9 and table B-18). There were no significant differences in the proportion of teachers using advanced telecommunications for teaching by school affiliation, instructional level, enrollment size, or whether the school had Internet access.

Figure 9.—Percent of private school teachers who regularly use computers/advanced telecommunications for teaching as reported by private schools, by selected school characteristics: School year 1998-99



SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Extent of Use of Internet Resources and Capabilities

The survey also asked schools about the extent to which various members of the school community—students, teachers, and administrators—used electronic mail and the World Wide Web.[9]

Electronic mail. In 1998-99, virtually all Internet-connected schools with e-mail access reported that students, teachers, and administrative staff used e-mail at least to a small extent (tables 8 and B-20). Nineteen percent of the schools indicated that *students* used e-mail to a large extent and one-fourth indicated that *teachers* made use of this resource to a large extent. Moreover, 39 percent of the schools indicated that their *administrative staff* used this resource to a large extent, which was significantly higher than the proportion of schools reporting that teachers and students used e-mail to a large extent. Nonsectarian schools were more likely than other religious schools to report that teachers used e-mail to a large extent (37 versus 20 percent). The proportion of

[9] Information on the extent of e-mail and the World Wide Web use by various members of the school community was not self-reported; it was provided by the school's survey respondent. The respondent could have been an administrator, technology coordinator, or other staff member who was considered most knowledgeable about advanced telecommunications at the school.

schools reporting this level of students' e-mail use did not differ significantly by religious affiliation. However, secondary schools were more likely than elementary schools to report that students used e-mail to a large extent (40 versus 13 percent).

Table 8.—Among private schools with Internet access and e-mail availability, percentage distribution of schools indicating the extent of e-mail use for various members of the school community, by selected school characteristics: School year 1998-99

School characteristic	Students				Teachers				Administrative staff			
	Large extent	Moderate extent	Small extent	Not at all	Large extent	Moderate extent	Small extent	Not at all	Large extent	Moderate extent	Small extent	Not at all
All private schools	19	26	47	8	25	32	38	5	39	30	28	3
Affiliation												
Catholic	18	22	54	6	24	28	43	5	41	29	28	3
Other religious	13	31	44	11	20	38	38	5	34	33	29	4
Nonsectarian	29	26	38	7	37	35	28	1	45	28	25	2
Instructional level												
Elementary	13	23	54	10	24	31	40	6	40	28	28	4
Secondary	40	22	34	3	33	30	35	2	44	31	24	1
Combined	19	34	39	8	24	37	37	2	35	34	31	1

NOTE: Data presented in this table are based on the number of schools having Internet access—67 percent of private schools—and e-mail access—62 percent of private schools with Internet access. Percentages are computed across each row under the major columns—students, teacher, administrative staff— but may not sum to 100 because of rounding. Because of the large standard errors surrounding some estimates, differences that appear large may not be statistically significant.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

World Wide Web. In the 1998-99 school year, almost all Internet-connected schools with WWW access reported that students, teachers, and administrative staff used the WWW at least to a small extent (tables 9 and B-21). Thirty-one percent of the schools reported that *students* used this resource to a large extent, 24 percent of schools indicated that *teachers* used this resource to a large extent, and 28 percent reported that their *administrative staff* used it to a large extent. Secondary schools were more likely than elementary schools to report that *students* used the WWW to a large extent (48 versus 25 percent), and Catholic and nonsectarian schools were more likely than other religious schools to indicate that students used this resource to a large extent (35 and 42 percent versus 21 percent). The proportion of schools reporting that *teachers* used the WWW to a large extent did not differ by religious affiliation or instructional level.

Technology-Related Teacher Training

Private schools were asked whether they offered or participated in four types of technology-related training for teachers—use of computers, use of the Internet, use of other advanced telecommunications, and integration of technology into the curriculum. The survey also asked about various ways in which the schools encouraged computer or advanced telecommunications training for teachers.

Table 9.—Among private schools with Internet access and World Wide Web availability, percentage distribution of schools indicating the extent of World Wide Web use for various members of the school community, by selected school characteristics: School year 1998-99

School characteristic	Students				Teachers				Administrative staff			
	Large extent	Moderate extent	Small extent	Not at all	Large extent	Moderate extent	Small extent	Not at all	Large extent	Moderate extent	Small extent	Not at all
All private schools	31	38	27	3	24	41	33	2	28	31	38	4
Affiliation												
Catholic	35	35	29	1	25	41	33	1	28	32	35	5
Other religious	21	44	30	5	19	39	40	2	25	32	42	2
Nonsectarian	42	32	21	4	31	45	19	4	28	24	44	3
Instructional level												
Elementary	25	41	30	4	23	41	34	3	27	30	39	5
Secondary	48	36	15	1	34	45	20	1	33	37	27	3
Combined	36	34	29	1	22	38	40	0	26	29	44	1

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools—and World Wide Web access—64 percent of private schools with Internet access. Percentages are computed across each row under the major columns—students, teacher, administrative staff— but may not sum to 100 because of rounding. Because of the large standard errors surrounding some estimates, differences that appear large may not be statistically significant.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Provision of training for teachers

Overall, 64 percent of private schools offered or participated in some type of advanced telecommunications training for teachers in the 1998-99 school year (tables 10 and B-22). The most common type of training was in the use of computers, with 60 percent of schools offering or participating in this activity. Moreover, about half of all private schools offered or participated in training in the integration of technology into the classroom, and 43 percent provided training on the use of the Internet. Nineteen percent offered or participated in training on the use of other types of advanced telecommunications.

The proportion of private schools that offered or participated in advanced telecommunications training differed by affiliation (tables 10 and B-22). Overall, Catholic schools were more likely than other religious or nonsectarian schools to offer or participate in any training for teachers (88 percent compared with 49 and 58 percent, respectively). Similarly, for three of the four types of advanced telecommunications training for teachers—use of computers, use of the Internet, and integration of technology into the curriculum—Catholic schools were more likely than other religious or nonsectarian schools to offer or participate in the activity. Other religious schools were least likely to offer or participate in teacher training on the use of the Internet.

There were also some differences among schools offering or participating in advanced telecommunications training by instructional level (tables 10 and B-22). Overall, secondary schools were more likely than combined schools to offer or participate in any technology training for teachers (74 versus 55 percent). Secondary schools were more likely than elementary schools to report that they offered or participated in training on the use of the Internet (62 versus 44 percent), and combined schools were least likely to report this activity (33 percent). Moreover, secondary and elementary schools were more likely than combined schools to offer or participate in the other three types of advanced telecommunications training for teachers—use of computers, integration of technology into the curriculum, and use of other advanced telecommunications.

Table 10.—Percent of private schools offering or participating in advanced telecommunications training for teachers, by type of training and selected school characteristics: School year 1998-99

School characteristic	Schools offering or participating in any type of advanced tele-communications training for teachers	Type of advanced telecommunications training			
		Use of computers	Integration of technology into the curriculum	Use of Internet	Use of other advanced tele-communications
All private schools	64	60	49	43	19
Affiliation					
Catholic	88	85	74	66	30
Other religious	49	45	34	28	12
Nonsectarian	58	55	44	42	22
Instructional level					
Elementary	66	63	54	44	21
Secondary	74	69	54	62	24
Combined	55	49	35	33	13
Internet access					
Has access	77	73	60	60	25
No access	39	35	26	9	8
Enrollment size					
Less than 150	45	40	33	26	11
150-299	76	74	54	50	23
300 or more	84	83	73	66	32

NOTE: Schools could report more than one type of advanced telecommunications training for teachers.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

There were some consistent differences in the proportion of schools that offered or participated in technology-related training for teachers depending on whether or not the school had Internet access (tables 10 and B-22). For instance, schools with Internet access were consistently more likely than those without access to offer or participate in any type of advanced telecommunications training for teachers (77 versus 39 percent). Internet-connected schools were also more likely to offer or participate in each type of technology-related training examined in this survey—use of computers, integration of technology into the curriculum, use of the Internet, and use of other advanced telecommunications.

The likelihood of private schools offering or participating in any technology training for teachers also differed by enrollment size (tables 10 and B-22). Large and medium-sized schools were more likely than small schools to provide any technology training for teachers (84 and 76 percent versus 45 percent, respectively). Moreover, the likelihood of offering or participating in each type of training increased with enrollment size. For example, large schools were more likely than medium-sized schools to report technology-related training in the use of computers, and small schools were least likely to report this activity.

Encouraging teacher participation in advanced telecommunications training

To explore the ways in which private schools encouraged their teachers to participate in

technology-related training, the survey asked whether:

- It was left up to teachers to initiate participation in training;
- Training was not mandated, but incentives were provided to encourage participation;
- Training was mandated by the school, central administration, or diocese; or
- Teachers were encouraged in some other way to participate in training.

Of the 64 percent of private schools that offered or participated in some type of advanced telecommunications training for teachers in the 1998-99 school year, 55 percent reported that the decision to initiate participation in technology training was left to the teachers (tables 11 and B-23). An additional 22 percent said that teacher training in computers/advanced telecommunications was not mandated, but that the school provided incentives to encourage teacher participation. However, 16 percent of private schools that offered or participated in advanced telecommunications training said that teacher training was mandated by the school, central administration, or diocese. The remaining 6 percent of schools that offered or participated in training provided some other response as to how such training was encouraged by the school.

Table 11.—Among private schools that offered or participated in advanced telecommunications training for teachers, percent of schools using various methods of encouragement for teacher training, by selected school characteristics: School year 1998-99

School characteristic	Left up to teachers to initiate participation in training	Training not mandated, but encouraged by incentives	Training mandated by school, central administration, or diocese	Other approach
All private schools	55	22	16	6
Affiliation				
Catholic	37	31	26	6
Other religious	67	15	12	6
Nonsectarian	56	27	11	6
Instructional level				
Elementary	50	25	19	6
Secondary	55	22	16	7
Combined	68	16	10	5
Enrollment size				
Less than 150	68	14	9	9
150 to 299	49	27	19	4
300 or more	39	32	27	3
Internet access				
Has access	47	29	22	5
No access	72	13	6	9

NOTE: Data presented in this table are based on the number of private schools offering or participating in any type of advanced telecommunications training for teachers—64 percent of private schools. Percents are computed across each row but may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

The likelihood of schools reporting that it was left to teachers to initiate participation in technology-related training differed somewhat by affiliation, enrollment size, and whether the school had Internet access (tables 11 and B-23). Other religious and nonsectarian schools were more likely than Catholic schools to leave the decision to participate to teachers (67 and 56 percent versus 37 percent, respectively). Combined schools were more likely than elementary schools to leave this decision to their teachers (68 versus 50 percent). Small schools were more likely than medium-sized or large schools to report that it was left up to teachers to initiate participation in technology-related training (68 percent versus 49 and 39 percent, respectively). Schools without Internet access were more likely than those with access to leave this decision to their teachers (72 versus 47 percent).

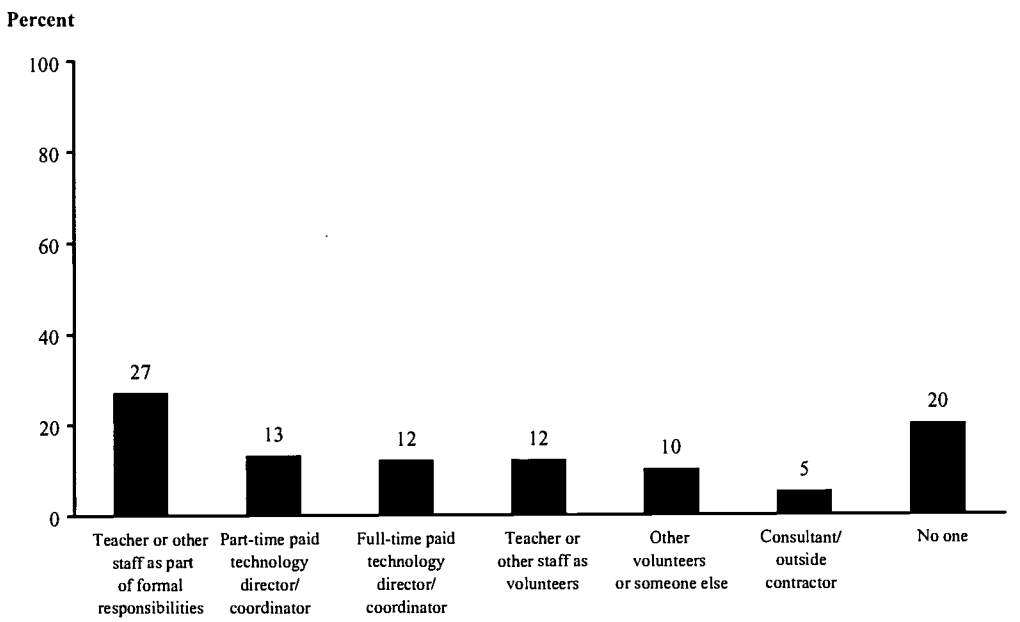
Technical Support

To provide some insights on the extent to which schools provided technical support for the use of advanced telecommunications, the survey asked about persons primarily responsible for providing this support, and the various types of technical support made available.

Individuals responsible for providing support

Most private schools (80 percent) indicated having someone primarily responsible for supporting advanced telecommunications in the 1998-99 school year (figure 10 and table B-24). Twenty-seven percent indicated that a teacher or other staff member was primarily responsible for providing support for advanced telecommunications as part of his/her formal responsibilities,

Figure 10.—Percentage distribution of private schools indicating the various individuals primarily responsible for supporting advanced telecommunications in the school: School year 1998-99



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

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

and 13 percent reported that a part-time paid technology director/coordinator had primary responsibility. Moreover, 12 percent of the schools indicated that primary responsibility for advanced telecommunications was held by a full-time paid technology director/coordinator, and another 12 percent said that primary responsibility was with a teacher or other staff acting as volunteers. Primary responsibility was held by other volunteers or someone else in 10 percent of the schools, and 5 percent of the schools reported a consultant/outside contractor in this capacity.

Number of individuals providing support

Schools were also asked about the number of individuals providing technical support for advanced telecommunications during the 1998-99 school year. Of the 80 percent of private schools with at least one individual providing support for advanced telecommunications, a large majority (70 percent) relied solely on one individual (tables 12 and B-25). The other 30 percent had two or more individuals providing assistance for advanced telecommunications. Among private schools with at least one individual providing advanced telecommunications support, 37 percent received full-time support from one or more persons. One-fourth of these schools relied on one individual and 12 percent had two or more individuals. Schools also reported part-time advanced telecommunications support: three-fourths of schools with at least one individual providing support had part-time assistance, with 48 percent receiving assistance from one individual and 28 percent from two or more persons.

Table 12.—Among private schools with at least one individual providing support for advanced telecommunications, percent of schools indicating various numbers of individuals providing support, by level of support and selected school characteristics: School year 1998-99

School characteristic	Total number of individuals		Number of full-time individuals			Number of part-time individuals		
	1	2+	None	1	2+	None	1	2+
All private schools	70	30	63	25	12	25	48	28
Affiliation								
Catholic	66	34	61	30	10	27	43	30
Other religious	74	26	72	17	11	21	55	24
Nonsectarian	63	37	52	28	20	30	36	34
Instructional level								
Elementary	68	32	63	27	10	25	45	30
Secondary	64	36	56	32	12	29	40	31
Combined	76	24	67	16	17	23	57	20
Enrollment size								
Less than 150	79	21	77	14	9	18	61	21
150 to 299	64	36	65	26	9	25	44	31
300 or more	62	38	47	3	18	33	35	32
Internet access								
Has access	64	36	61	26	13	26	43	31
No access	86	14	71	21	9	21	63	16

NOTE: Data presented in this table are based on the number of schools with at least one individual providing support for advanced telecommunications—80 percent of private schools. Percents are computed across each row but may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

The proportion of schools with two or more individuals responsible for providing advanced telecommunications support differed by whether the school had Internet access (tables 12 and B-25). Internet-connected schools were more likely than schools without Internet access to report having two or more individuals with this responsibility (36 versus 14 percent). Also, large schools were more likely than small schools to indicate they had two or more persons responsible for providing advanced telecommunications support (38 versus 21 percent). There were no significant differences by instructional level or affiliation.

Types of support provided

Private schools with at least one individual responsible for advanced telecommunications support were also asked to indicate the extent to which the technology coordinator or other technical support staff:

- Helped teachers integrate technology into the curriculum;
- Provided network technical support; and
- Involved students in the maintenance of telecommunications systems.

Most private schools that provided advanced telecommunications support reported that the technology coordinator or other technology staff helped teachers *integrate technology into the curriculum at least to a small extent* (81 percent; tables 13 and B-26). Forty-one percent indicated that technical assistance in integrating technology into the curriculum helped teachers to a large or moderate extent, and 40 percent felt that it helped to a small extent. Nineteen percent of the schools indicated that this type of technical support did not help at all.

Catholic and nonsectarian schools were more likely than other religious schools to indicate that the technology coordinator or other technology staff helped teachers to integrate technology into the curriculum to a large or moderate extent (56 and 44 percent versus 25 percent, respectively; tables 13 and B-26).

Table 13.—Among private schools with at least one individual supporting advanced telecommunications that may help teachers integrate technology into the curriculum, percentage distribution of schools indicating the extent of support, by school characteristics: School year 1998-99

School characteristic	Large or moderate extent	Small extent	Not at all
All private schools	41	40	19
Affiliation			
Catholic	56	33	11
Other religious	25	50	25
Nonsectarian	44	30	25
Instructional level			
Elementary	47	36	17
Secondary	49	38	13
Combined	23	50	27
Internet access			
Has access	46	38	16
No access	24	46	30

NOTE: Data presented in this table are based on the number of schools with at least one individual providing support for advanced telecommunications—80 percent of private schools. Percentages are computed across each row but may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Schools with Internet access were more likely than those without this resource to report that the assistance provided by technology coordinators or other technical staff helped teachers to integrate technology into the curriculum to a moderate or large extent (46 versus 24 percent). Moreover, elementary and secondary schools were more likely than combined schools to report this extent of support to teachers (47 and 49 percent versus 23 percent, respectively).

Private schools with one or more individuals providing advanced telecommunications support also reported the extent to which *network technical assistance* was provided by the technology coordinator or other technical staff. About two-thirds (63 percent) indicated that network technical support was provided *at least to a small extent* (tables 14 and B-27). Forty-two percent indicated that this assistance was provided to a large or moderate extent, and 21 percent felt it was provided to a small extent. However, 37 percent of the schools indicated that network technical support was not provided at all.

Nonsectarian schools were more likely than Catholic or other religious schools to report that technical support was provided to a large or moderate extent (57 percent versus 44 and 37 percent, respectively; tables 14 and B-27). Internet-connected schools were more likely than schools without Internet access to indicate this extent of technical support (49 versus 20 percent). Secondary schools were more likely than elementary or combined schools to report that the technology coordinator or other staff provided technical support to a large or moderate extent (57 versus 40 percent).

Table 14.—Among private schools with at least one individual supporting advanced telecommunications that may provide network support, percentage distribution of schools indicating the extent of support, by school characteristics: School year 1998-99

School characteristic	Large or moderate extent	Small extent	Not at all
All private schools	42	21	37
Affiliation			
Catholic	44	21	35
Other religious	37	23	41
Nonsectarian	57	13	29
Instructional level			
Elementary	40	21	38
Secondary	57	23	19
Combined	40	18	42
Internet access			
Has access	49	23	28
No access	20	13	68

NOTE: Data presented in this table are based on the number of schools with at least one individual providing support for advanced telecommunications—80 percent of private schools. Percentages are computed across each row but may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Schools with one or more individuals providing advanced telecommunications support also reported the extent to which the technology coordinator or other technical staff *involved students in the maintenance of the telecommunications systems*. Nineteen percent of the schools indicated that students were involved in this activity to a large or moderate extent, and 28 percent reported that it occurred to a small extent (tables 15 and B-28). However, 54 percent of the schools indicated that the involvement of students in the maintenance of the telecommunications systems did not take place at all. Secondary schools were more likely than elementary schools to report that the technology coordinator or other technical staff involved students in the maintenance of the telecommunications systems to a large or moderate extent (28 versus 17 percent), and nonsectarian schools were more likely than other religious schools to report this extent of student involvement in the maintenance of telecommunications systems in the school (29 versus 13 percent). There were no significant differences in the proportion of schools reporting this activity by whether or not the school had Internet access.

Table 15.—Among private schools with at least one individual supporting advanced telecommunications that may involve students in the maintenance of telecommunications systems, percentage distribution of schools indicating the extent of involvement, by selected school characteristics: School year 1998-99

School characteristic	Large or moderate extent	Small extent	Not at all
All private schools	19	28	54
Affiliation			
Catholic	21	30	49
Other religious	13	25	62
Nonsectarian	29	25	46
Instructional level			
Elementary	17	26	58
Secondary	28	35	37
Combined	20	29	52
Internet access			
Has access	21	31	49
No access	13	17	70

NOTE: Data presented in this table are based on the number of schools with at least one individual providing support for advanced telecommunications—80 percent of private schools. Percentages are computed across each row but may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Barriers to Acquisition/Usage of Advanced Telecommunications

Private schools indicated that various factors were barriers to either to the acquisition or use of computers/advanced telecommunications capabilities. In the 1998-99 school year, the most commonly cited barrier was insufficient budget for hardware/software purchases; 45 percent of private schools indicated that this was a major barrier to acquiring or using advanced telecommunications, 23 percent said it was a moderate barrier, and 13 percent indicated it was a minor barrier (tables 16 and B-29). For 19 percent of private schools, insufficient budget for hardware/software purchases was not a barrier at all. Other barriers reported as major by private schools included the lack of or poor equipment (23 percent), concern about student access to inappropriate materials (18 percent), and the lack of quality software for instructional purposes (15 percent).

Table 16.—Percentage distribution of private schools reporting the extent to which various factors were barriers to either the acquisition or use of computers/advanced telecommunications: School year 1998-99

Barrier	Major barrier	Moderate barrier	Minor barrier	Not a barrier
Insufficient budget for hardware/software purchases	45	23	13	19
Lack of or poor equipment	23	24	19	34
Concern about student access to inappropriate materials	18	18	25	39
Lack of quality software for instructional purposes	15	23	25	38
Outdated physical plant or inadequate facilities	14	16	21	50
Insufficient level of E-rate discount	14	8	13	51
Lack of technical support or advice	14	19	26	41
Lack of teacher training	13	29	28	30
Administrative/teacher resistance or lack of interest	8	12	26	54
Problems with telecommunication providers	6	6	14	74

NOTE: Percentages are computed across each row but may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

4. E-RATE AND OTHER SUPPORT FOR ADVANCED TELECOMMUNICATIONS IN SCHOOLS

Highlights

- The most commonly cited source of support for advanced telecommunications in the school was parents or other community members. Support from various sources took the form of funds, hardware, technical assistance, training, and network access.
- About one-fourth of all private schools applied for the 1998 E-rate discount program, and 39 percent of private schools indicated that they intended to apply or had already applied for the 1999-2000 E-rate discount program.
- Catholic schools were more likely than other religious or nonsectarian schools to report that they had applied or intended to apply for the 1999-2000 E-rate discounts, and schools with Internet access were more likely than those without access to report that decision.

This chapter reports on sources of support for the acquisition and use of advanced telecommunications in private schools. Specifically, the survey asked about various sources that support advanced telecommunications during the 1998-99 school year and the type of support provided. A major focus of this chapter is the extent to which schools participated in the E-rate (Education-rate) program, designed to provide the nation's public and private schools and libraries access to affordable telecommunications and advanced digital technologies (U.S. Department of Education 2000e). It is important to note that E-rate participation is difficult to measure. For instance, some schools may not be aware that they "applied" for E-rate discounts because the application had been completed by some organization or agency on behalf of the school (e.g., the diocese for Catholic schools). Thus, some private schools may not know that they were approved for E-rate funding. At the time of the survey, many of the schools indicated that they were not yet informed about such funding (some of these schools were late in submitting their E-rate applications).

Sources and Types of Support

Schools were asked whether various programs, organizations, or individuals (apart from sources covered under the school budget) supported advanced telecommunications in the school. The extent of such support, however, was not investigated. Support could include funds, hardware, software, technical assistance, training, or network access, and it could come from:

- Federal or state programs (i.e., the Technology Literacy Challenge Fund, Technology Innovation Challenge Grant, E-rate under the Telecommunications Act, Title VI of ESEA, and other state/federal government programs);[10]
- Business or industry;
- Other organizations/institutions (i.e., college or university, other community nonprofit organizations, and central administration or diocese);
- Individuals (i.e., parents or other community members, teachers, and students); and
- Other sources.

The proportion of private schools indicating that federal programs supported advanced telecommunications during the 1998-99 school year ranged from 15 percent for Title VI of ESEA to 2 percent from the Technology Innovation Challenge Grant program (tables 17 and B-32). Thirteen percent of private schools indicated support for advanced telecommunications from the E-rate program under the Telecommunications Act, 3 percent from the Technology Literacy Challenge Fund, and 10 percent from other state or federal government programs. Advanced telecommunications in private schools was also supported by business or industry (22 percent), the central school administration or diocese (14 percent), colleges or universities (3 percent), and other community or nonprofit organizations (9 percent). The most frequently cited source of support for advanced telecommunications in private schools was parents or other community members (57 percent). Schools also reported support for advanced telecommunications from teachers (21 percent) and students (9 percent).

Support for advanced telecommunications in private schools took the form of funds (55 percent), hardware (49 percent), software (44 percent), technical assistance (37 percent), training (28 percent), and network access (19 percent; tables 18 and B-33). Catholic schools were more likely than other religious or nonsectarian schools to report support for advanced telecommunications in the form of funds, hardware, training, and technical assistance. For example, 73 percent of Catholic schools compared with 46 percent of other religious schools and 47 percent of nonsectarian schools indicated support for advanced telecommunications from programs, organizations, or individuals. Internet-connected schools were more likely than schools without access to report support for advanced telecommunications with hardware, software, technical assistance, training, and network access. Moreover, large and medium-sized schools were more likely than small schools to indicate that various sources supported advanced telecommunications with funds, hardware, and technical assistance.

E-rate Participation

The Schools and Libraries Universal Service Fund, better known as the E-rate (Education rate) program, is designed to make telecommunications services more affordable to all eligible schools and libraries. The program, legislated as part of the Telecommunications Act of 1996, provides discounts based on the percentage of students eligible for free or reduced-price lunch and whether the school is located in an urban or rural area. These discounts can range from 20 percent to 90 percent and can be used for internal connections,

[10] The **Technology Literacy Challenge Fund** provides funding to states to effectively increase the capacity of their schools to integrate educational technology into classrooms. The **Technology Innovation Challenge Grant** provides funding for teacher preparation and professional development activities that support the integration of educational technology into the curriculum. **E-rate/Universal Service Schools and Libraries Telecommunication Discount Program** was created as part of the Telecommunications Act of 1996 to ensure that all eligible schools (public and private) and libraries in the United States have affordable access to modern telecommunications and information services. **Title VI of the Elementary and Secondary Education Act (ESEA)** provides funding for the development of effective curriculum and instruction activities to meet the needs of public schools and participating private schools.

Table 17.—Percent of private schools indicating the various programs, organizations, or individuals that support advanced telecommunications in the school: School year 1998-99

Source of support	Percent of schools
Federal/state technology-related programs:	
Technology Literacy Challenge Fund	3
Technology Innovation Challenge Grant	2
E-rate under Telecommunications Act	13
Title VI of ESEA	15
Other state/federal government programs	10
Business or industry	22
Other organizations/institutions:	
College or university	3
Other community nonprofit	9
Central administrative/diocese	14
Individuals:	
Parents or other community members	57
Teachers	21
Students	9
Other	7

NOTE: Schools could report more than one source of support for advanced telecommunications.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table 18.—Percent of private schools indicating the various types of support for advanced telecommunications in the school, by selected school characteristics: School year 1998-99

School characteristic	Type of support					
	Funds	Hardware	Software	Technical assistance	Training	Network access
All private schools	55	49	44	37	28	19
Affiliation						
Catholic	73	62	51	46	41	25
Other religious	46	43	41	31	22	15
Nonsectarian	47	45	38	32	20	20
Instructional level						
Elementary	57	50	43	39	30	19
Secondary	62	47	38	40	34	30
Combined	47	46	48	32	23	16
Enrollment size						
Less than 150	41	40	40	32	19	15
150 to 299	66	55	48	38	34	18
300 or more	69	61	47	44	38	28
Internet access						
Has access	65	57	52	46	37	25
No access	56	32	29	20	11	8

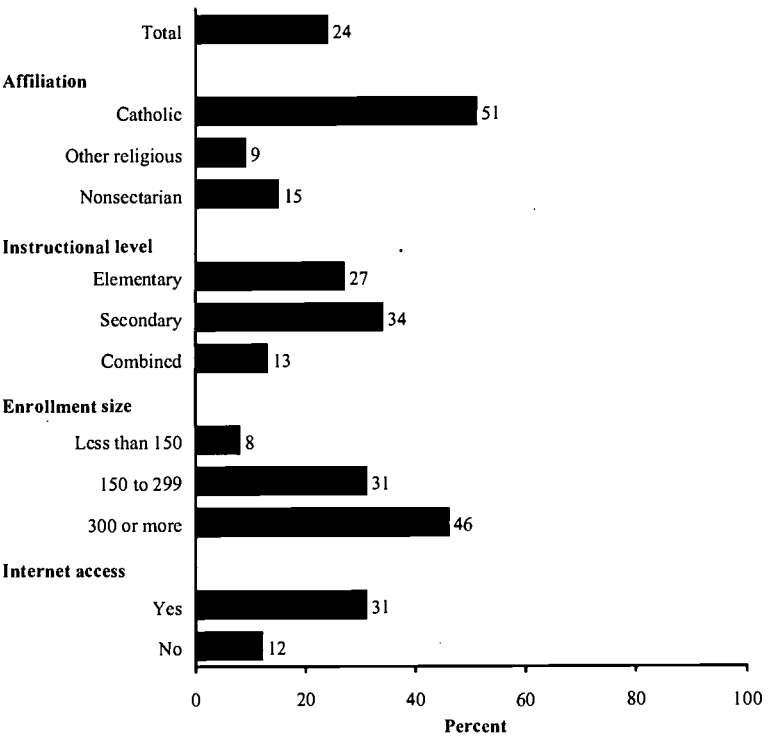
NOTE: The various types of support reported in this table were provided by programs, organizations, or individuals identified in table 17.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

telecommunications services, and Internet access (U.S. Department of Education 1999b).

Much of the recent progress made in Internet access in public schools has been attributed to E-rate funds made available in 1998 (U.S. Department of Education 1999b). In the case of private schools, 13 percent reported that they received discounts from the E-rate program during the 1998-99 school year (see table 17). To explore the extent to which private schools participated in this program, the survey asked whether schools had applied for the 1998 E-rate program. Schools that applied were asked about the discount levels for which they qualified, and schools that did not apply were asked about their reasons for not applying. All private schools were also asked whether they had applied or intended to apply for the 1999-2000 E-rate program.

Figure 11.—Percent of private schools that applied for the 1998 E-rate discount program, by selected school characteristics: School year 1998-99



SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

E-rate applications for the 1998 program

About one-fourth of all private schools (24 percent) applied for the 1998 E-rate program (figure 11 and table B-34).[11] Catholic schools were considerably more likely than other religious or nonsectarian schools to apply for the E-rate discount (51 percent versus 9 and 15 percent, respectively). Elementary and secondary schools were more likely to submit E-rate applications than combined schools (27 and

[11] A recent evaluation report of the E-rate program indicated that 15 percent of private schools applied for E-rate discounts during the first year of the program—from January 1998 to June 1999. Sixteen percent of private schools applied for the program during the second year, which lasted from July 1999 to June 2000 (U.S. Department of Education 2000e).

Table 19.—Percent of private schools that did not apply for the 1998 E-rate discount program, and percent giving various reasons for not applying, by selected school characteristics: School year 1998-99

School characteristic	Percent of private schools that did not apply for discount	Reason for not applying				
		Never heard of program	Application process too complicated	Other reasons	Discount too low	Opposed to program in principle
All private schools	76	50	24	23	10	8
Affiliation						
Catholic	49	15	48	35	20	1
Other religious	91	59	17	20	8	11
Nonsectarian	85	60	17	21	6	3
Instructional level						
Elementary	73	42	28	27	13	7
Secondary	66	45	32	21	8	5
Combined	87	68	12	15	5	10
Enrollment size						
Less than 150	92	66	14	18	4	9
150 to 299	69	34	32	30	19	6
300 or more	54	22	40	33	18	7
Internet access						
Has access	69	41	33	21	14	6
No access	88	64	8	26	4	11

NOTE: Percents for reasons for not applying for the 1998 E-rate discount program are based on the number of schools that did not apply for the 1998 E-rate discount program—76 percent of private schools. Percents do not sum to 100 because schools could report more than one reason for not applying for the 1998 E-rate discount.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

34 percent versus 13 percent, respectively), and the likelihood of private schools applying for the discount increased with enrollment size. Moreover, a considerably higher proportion (31 percent) of schools with Internet access submitted E-rate applications compared with schools without access (12 percent).

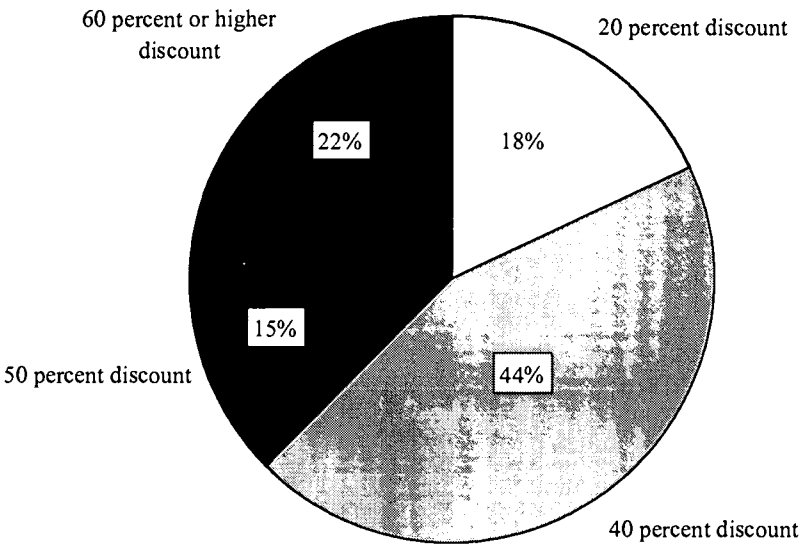
Of the 76 percent of schools that did not apply for the E-rate discount, half said that they did not apply because they had not heard of the program (tables 19 and B-35).[12] Twenty-four percent of schools reported they did not apply because the application process was too complicated, 10 percent did not apply because the discount was too low, and 8 percent did not submit an application because they were opposed to the program in principle. Twenty-three percent of schools did not apply for other reasons, including not being interested in the program, not qualifying for the program because of a large endowment or being a for-profit private school, not having technology or a technology plan in place, and time constraints.

The proportion of schools reporting that they had never heard of the E-rate program differed somewhat by affiliation and instructional level (tables 19 and B-35). Other religious and nonsectarian schools were more likely than Catholic schools to report that they had never heard of the program (59 and 60 percent versus 15 percent, respectively). Combined schools were more likely than elementary or secondary schools to indicate that they had not heard of the program (68 percent compared with 42 and 45 percent, respectively). Moreover, the proportion

[12] However, the Office of Nonpublic Education sent out E-rate information to all private schools. It is important to note that it is the *survey respondent* indicating that he/she had not heard about E-rate. Some other individual at the school or formerly at the school may have been aware of the program.

of schools not knowing about the E-rate program varied by enrollment size, with smaller schools more likely to report that they had not heard about the program. Finally, a higher proportion of schools without Internet access than those with access had not heard about the program.

Figure 12.—Among private schools that applied for the 1998 E-rate discount program, percent reporting various discounts for which they were eligible: School year 1998-99



NOTE: Data presented in this figure are based on the number of schools that applied for the 1998 E-rate discount program—24 percent of private schools. Percents may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

E-rate discount levels

The E-rate program gives priority to schools with relatively high proportions of students who are eligible for free or reduced-price lunch and those that are located in rural areas, with discounts ranging from 20 to 90 percent.[13] Of the private schools reporting that they applied for the 1998 E-rate discount program, 18 percent indicated that they qualified for a 20 percent discount, 44 percent qualified for a 40 percent discount, an additional 15 percent were eligible for a 50 percent discount, and 22 percent qualified for a discount of 60 to 90 percent (figure 12 and table B-36).

Applications for the 1999-2000 E-rate program

Private schools were asked if they had applied or planned to apply for the 1999-2000 E-rate discount program. Thirty-nine percent of private schools said that they had applied or planned to apply. A majority (57 percent) said they were not going to apply for the discount, and the remaining 4 percent were undecided (tables 20 and B-37).

The proportion of schools that applied or planned to apply for the 1999-2000 E-rate discount differed by affiliation and instructional

[13] For example, the discount for a rural school with less than 1 percent of its students eligible for free or reduced-price lunch is 25 percent. A rural school with 1 percent to 19 percent of its students eligible for free or reduced-price lunch is 50 percent. The discount for a rural school with 20 percent to 34 percent of its students eligible for free or reduced-price lunch, however, is 60 percent.

level (tables 20 and B-37). Catholic schools were more likely than nonsectarian schools to apply or plan to apply for the 1999-2000 E-rate discount (69 versus 35 percent), and other religious schools (18 percent) were least likely to. Similarly, secondary schools were more likely than elementary schools to submit or plan to submit E-rate applications (56 versus 43 percent), and combined schools (23 percent) were the least likely to. Moreover, a higher proportion of large and medium-sized schools (57 and 55 percent, respectively) than small schools (18 percent) applied or planned to apply for the E-rate discounts. Finally, schools with Internet access were more likely than those without this technology to apply or plan to apply for E-rate discounts (50 versus 18 percent).

Table 20.—Percentage distribution of private schools indicating their decision to apply or not apply for the 1999-2000 E-rate discount program, by selected school characteristics: School year 1998-99

School characteristic	Applied or planning to apply	Not going to apply	Undecided
All private schools	39	57	4
Affiliation			
Catholic	69	29	2
Other religious	18	76	6
Nonsectarian	35	62	3
Instructional level			
Elementary	43	54	3
Secondary	56	43	1
Combined	23	71	6
Enrollment size			
Less than 150	18	77	5
150 to 299	55	41	4
300 or more	57	41	1
Internet access			
Has access	50	46	4
No access	18	78	3

NOTE: Percentages are computed across each row but may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

5. SELECTED COMPARISONS WITH PUBLIC SCHOOLS

Highlights

- In 1998-99, private schools continued to be outpaced by public schools on some indicators of the availability of advanced telecommunications. Compared with public schools, private schools reported more students per instructional computer with Internet access; private schools were less likely to be connected to the Internet, and they reported proportionately fewer instructional rooms with Internet access.
- Nevertheless, private schools have made some substantial gains since 1995, some comparable to public schools. Between fall 1995 and 1998-99, the percentage point increase in private schools with Internet access was comparable to the gains made by public schools.

NCES has conducted annual surveys of advanced telecommunications in public schools since 1994. Although the public and private school surveys were designed to permit some comparisons across school sector and over time, the public school questionnaire was substantially shorter than the private school survey, and some of the items have changed over time to better reflect recent developments in advanced telecommunications. Therefore, only a limited number of comparisons can be made. The focus of this chapter is on private-public comparisons of selected issues: availability of computers, Internet access in schools and instructional rooms, types of Internet connection, and the availability and use of Internet capabilities (e-mail and the World Wide Web).

Prevalence of Computers

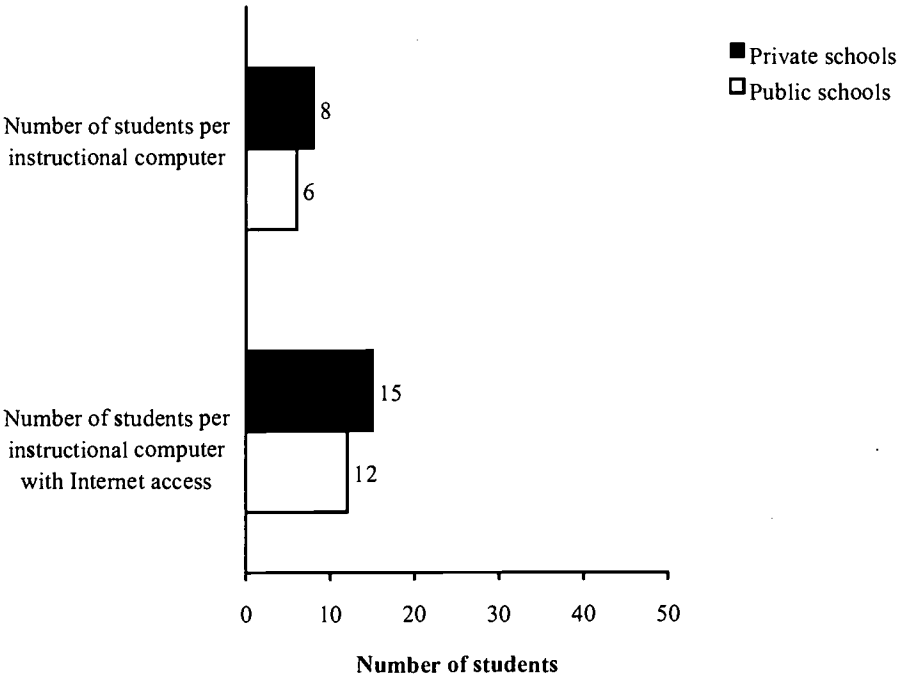
In the 1998-99 school year, the ratio of private school students per *instructional* computer was 8 to 1 compared with the public school ratio of 6 to 1 in fall 1998 (figure 13). Differences between private and public schools also exist in the availability of instructional computers *with Internet access*. Whereas private schools had 15 students per instructional computer with Internet access for the 1998-99 school year, public schools reported a ratio of 12 to 1 in fall 1998.

Among public schools, elementary and secondary schools report similar ratios of students per instructional computer (six students; table B-38). This pattern is not consistent across private schools; that is, it holds for Catholic schools but not for other religious and nonsectarian schools. For example, among other religious schools, secondary schools report fewer students per instructional computer (six) than elementary schools (nine).

Internet Access in Schools

Overall, private schools were less likely than public schools to be connected to the Internet during the 1998-99 school year (figure 14). Sixty-seven percent of private schools compared with 89 percent of public schools were connected to the Internet. Private schools were also less likely than public schools to report Internet access in fall 1995; 25 percent of private schools compared with 50 percent of public schools had Internet access at that time.

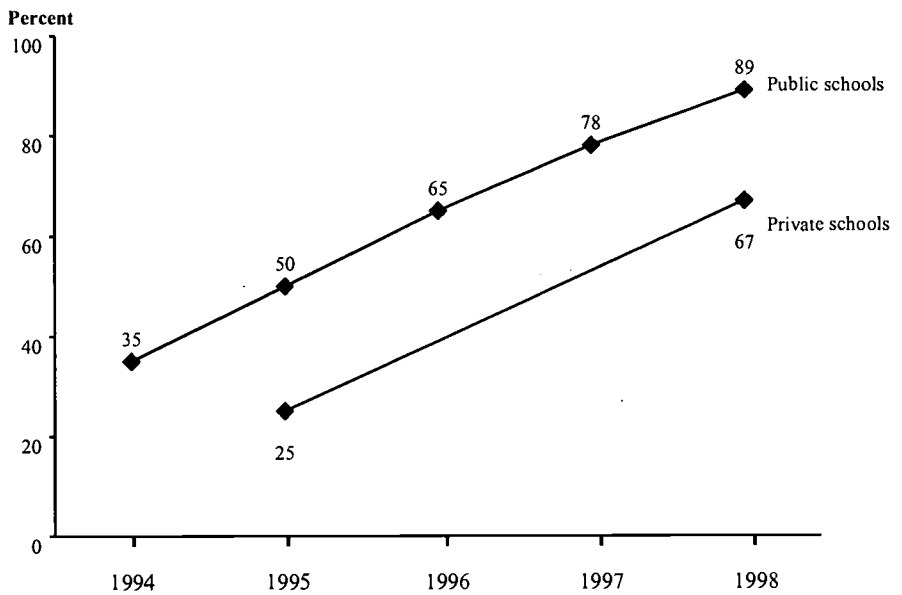
Figure 13.—Ratio of students to instructional computer and ratio of students to instructional computer with Internet access, by school sector: Fall 1998 and school year 1998-99



NOTE: Private schools were surveyed during the school year 1998-99. Public schools were surveyed in fall 1998.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999; and "Survey on Internet Access in U.S. Public Schools, Fall 1998," FRSS 69, 1998.

Figure 14.—Percent of schools with Internet access, by school sector: Fall 1994 to school year 1998-99



NOTE: Private schools were surveyed in 1995 and during the school year 1998-99. Public schools were surveyed in fall 1994 through fall 1998.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1994, Fall 1995, Fall 1996, and Fall 1997"; "Survey on Internet Access in U.S. Public Schools, Fall 1998." "Survey on Advanced Telecommunications in U.S. Private Schools, Fall 1995, School year 1998-99."

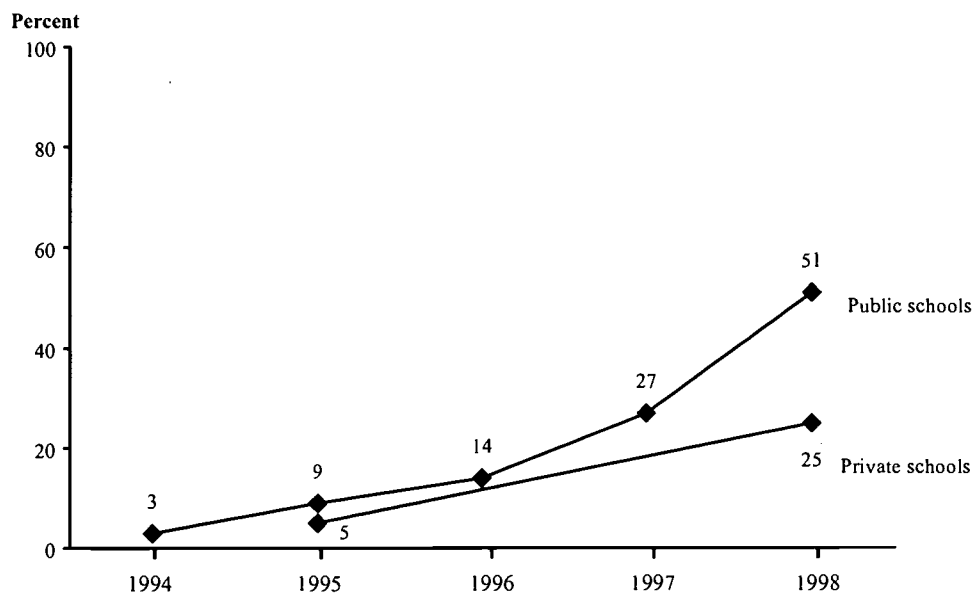
Increases in the proportion of schools with Internet access since 1995 were similar for private and public schools (figure 14). The proportion of private schools with Internet access increased from 25 percent in fall 1995 to 67 percent in the 1998-99 school year. Among public schools, the proportion of schools with Internet access increased from 50 percent in fall 1995 to 89 percent in fall 1998. These data suggest that private schools have made similar progress to public schools in gaining access to the Internet within the past 4 years, although private schools continue to be less likely than their public school counterparts to be connected to the Internet.

Internet Access in Instructional Rooms

School-level measures of Internet access do not provide a clear indication of the extent to which those telecommunications capabilities are available in instructional rooms or classrooms. In the 1998-99 school year, private schools had fewer of their instructional rooms connected to the Internet compared with the percentage of instructional rooms with Internet access in public schools in fall 1998 (figure 15). Twenty-five percent of private school instructional rooms were connected to the Internet compared with 51 percent for public schools.

Compared to public schools, private schools had lower rates of increase in the proportion of instructional rooms with Internet access since 1995 (figure 15). Whereas the proportion of instructional rooms with Internet access in private schools increased from 5 percent in fall 1995 to 25 percent in the 1998-99 school year, the proportion of public school instructional rooms with Internet access increased from 9 percent in fall 1995 to 51 percent in fall 1998. Between fall 1995 and 1998, the proportion of public school instructional rooms with Internet access increased sharply from 27 to 51 percent.

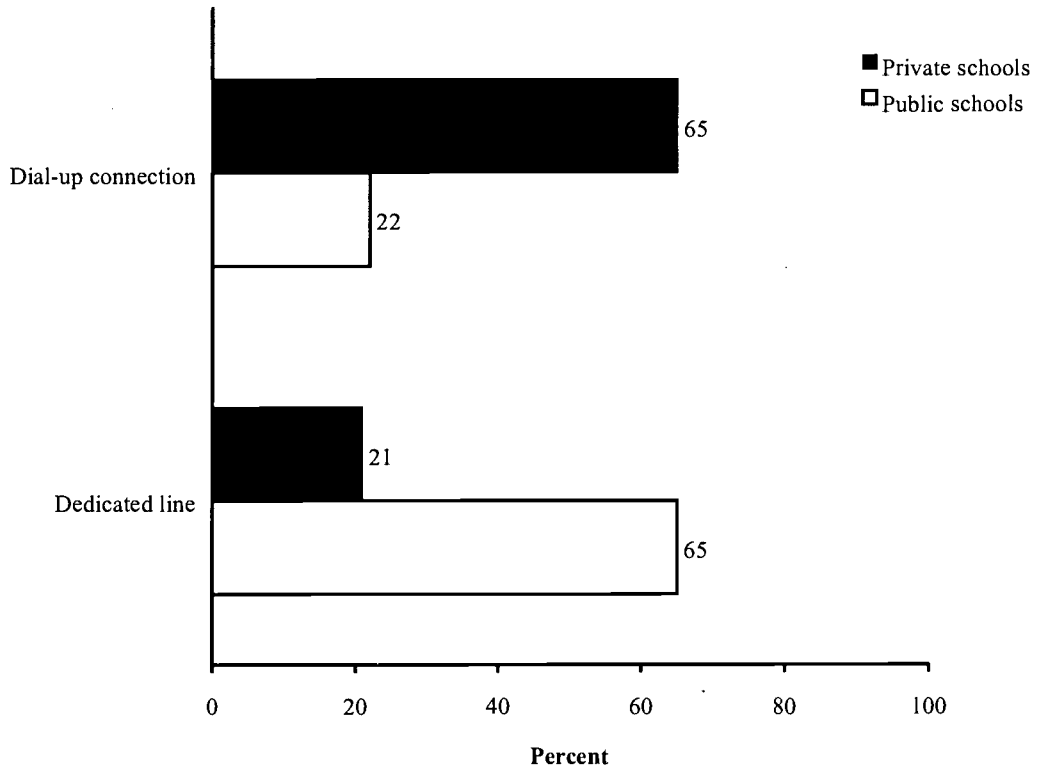
Figure 15.—Percent of instructional rooms with Internet access, by school sector: Fall 1994 to school year 1998-99



NOTE: Private schools were surveyed in 1995 and during the school year 1998-99. Public schools were surveyed in Fall 1994 through Fall 1998.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1994, Fall 1995, Fall 1996, and Fall 1997"; and "Survey on Internet Access in U.S. Public Schools, Fall 1998."

Figure 16.—Percent of schools with Internet access, by type of Internet connection and school sector: Fall 1998 and school year 1998-99



NOTE: Private schools were surveyed during the school year 1998-99. Public schools were surveyed in fall 1998.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999; and "Survey on Internet Access in U.S. Public Schools, Fall 1998," FRSS 69, 1998.

Connections to the Internet

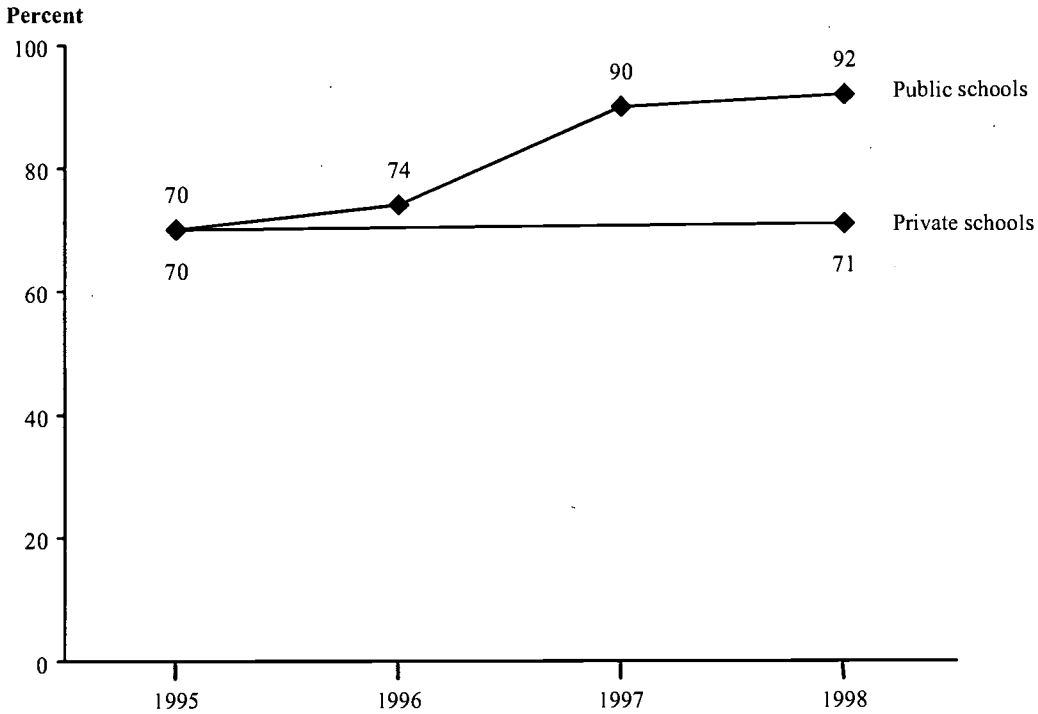
The two main types of connections examined in the private and public school surveys were dial-up connections and relatively faster connections using dedicated lines. Overall, private schools were considerably less likely than public schools to connect to the Internet using dedicated lines (figure 16). In 1998, 21 percent of private schools compared with 65 percent of public schools connected to the Internet used dedicated lines. In contrast, private schools were considerably more likely than public schools to use dial-up connections (65 versus 22 percent).[14]

Availability of the World Wide Web

Differences in the availability of advanced telecommunications between private and public schools can also be examined in terms of the extent to which the World Wide Web (WWW) was available to students and teachers. In 1998, private schools were less likely than public schools to report that the WWW was available to students (71 versus 92 percent, figure 17). They were also less likely to report the availability of the WWW to teachers (84 versus 97 percent, figure 18).

[14] There are no trend data for private schools between fall 1995 and the 1998-99 school year for types of Internet connection. The questions asked were not comparable across surveys.

Figure 17.—Among schools with Internet access, percent reporting that the World Wide Web was available to students, by school sector: Fall 1995 to school year 1998-99



NOTE: Data on the availability of the World Wide Web in public schools were not collected in 1994.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1994, Fall 1995, Fall 1996, and Fall 1997"; and "Survey on Internet Access in U.S. Public Schools, Fall 1998."

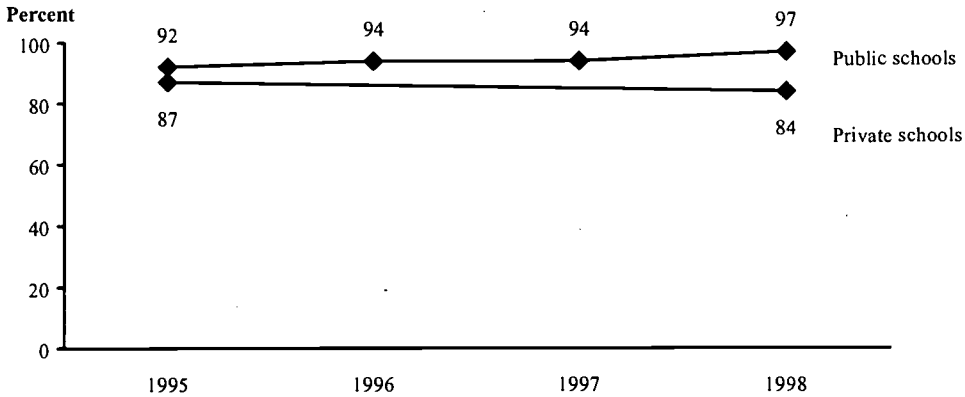
The proportion of private schools making the WWW available to students did not change significantly since 1995 (figure 17). In contrast, there was a significant increase in the proportion of public schools reporting the availability of the WWW to students, from 70 percent in fall 1995 to 92 percent in fall 1998. This increase holds when the availability of the WWW to teachers in public schools was examined (figure 18).

Extent of Use of the World Wide Web and E-mail

A final comparison between private and public schools is in the extent to which teachers and students use the World Wide Web (figure 19). In 1998, there were no significant differences in the proportion of private and public schools reporting that *teachers* use the WWW to "a large extent." For example, 24 percent of private schools and 26 percent of public schools reported that teachers used the WWW to a large extent. Similarly, private and public schools did not differ in the extent to which *students* use these Internet capabilities to a large extent (31 and 26 percent, respectively).

The proportion of private schools reporting that teachers or students used e-mail to a large extent did not differ significantly from public schools (figure 19). However, there was a difference in the student-teacher comparison of e-mail use in public schools, with teachers more likely than students to use e-mail to a large extent (32 versus 10 percent). This student-teacher difference was not statistically significant for private schools.

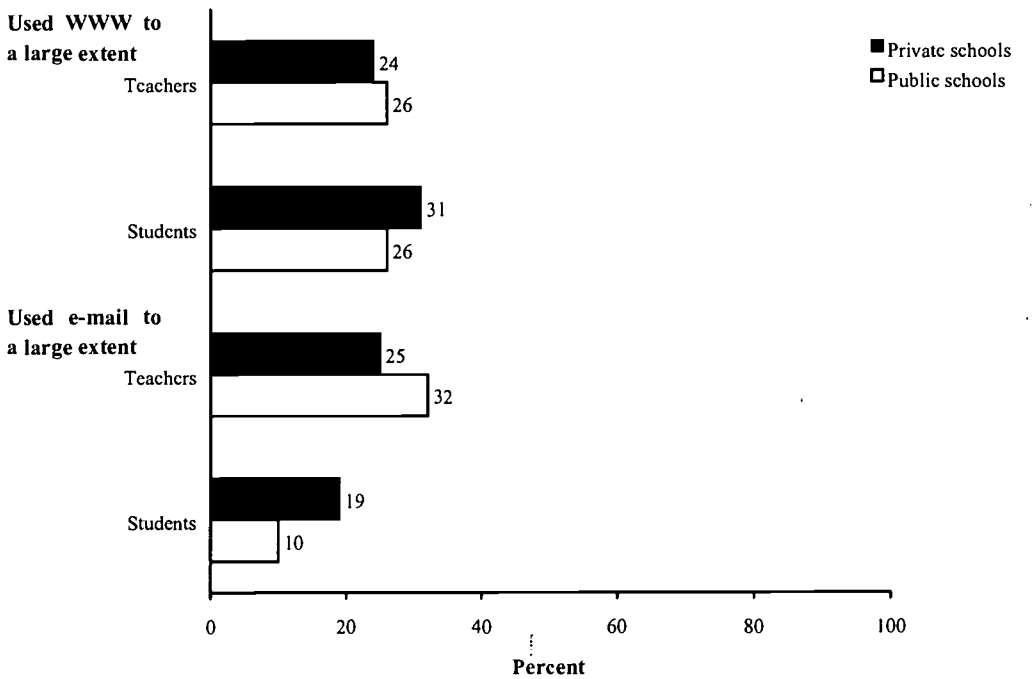
Figure 18.—Among schools with Internet access, percent reporting that the World Wide Web was available to teachers, by school sector: Fall 1995 to school year 1998-99



NOTE: Data on the availability of the World Wide Web in public schools were not collected in 1994.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1994, Fall 1995, Fall 1996, and Fall 1997"; and "Survey on Internet Access in U.S. Public Schools, Fall 1998."

Figure 19.—Percent of schools with Internet access reporting that teachers and students used the World Wide Web (WWW) and e-mail to a large extent, by school sector: Fall 1998 and school year 1998-99



NOTE: Data on the availability of the World Wide Web in public schools were not collected in 1994.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools Fall 1994, Fall 1995, Fall 1996, and Fall 1997"; and "Survey on Internet Access in U.S. Public Schools, Fall 1998."

6. SUMMARY AND CONCLUSIONS

This report examines the extent to which computers and the Internet have been introduced in U.S. private schools. While the term "advanced telecommunications" refers to all modes of communication used to transmit information from one place to another, the focus of this report is on computers and the Internet. Specifically, this report explores the progress private schools have made since 1995 in making computers and the Internet available for teaching and learning. To address some key issues in advanced telecommunications, the report also examines the extent to which those resources are actually used (including school support to encourage the effective use of computers and the Internet), and types of federal and other support for the expansion of advanced telecommunications in schools.

In the 1998-99 school year, private schools reported six students per computer, including computers used for administrative purposes. This represented a lower level of computer availability than is recommended by some to allow for adequate access—four to five students per computer (President's Committee of Advisors on Science and Technology 1997)—but a higher level of availability than in fall 1995 when private schools reported nine students per computer. Considering computer and Internet availability for *instructional* purposes in the 1998-99 school year, there were 8 students per instructional computer and 15 students per Internet-connected instructional computer. The proportion of private schools connected to the Internet has also increased within recent years—from 25 percent in fall 1995 to 67 percent in the 1998-99 school year. Moreover, if the future plans for Internet access are realized, most private schools (80 percent) would be connected to the Internet by the end of this year. However, 19 percent of private schools are not connected to the Internet and do not have plans to connect in the future.

Having two-thirds of private schools connected to the Internet does not reflect the extent to which advanced telecommunications might be available for instruction. Therefore, private schools were asked to report on the number of instructional rooms with Internet connections, types of connection, and the extent to which the World Wide Web (WWW) and electronic mail (e-mail) were available to various members of the school community. In the 1998-99 school year, 25 percent of all instructional rooms in private schools were connected to the Internet, compared with 5 percent in 1995. Although dial-up connections were the most common means of connecting to the Internet in 1998-99, private schools have increased the availability of higher speed connections using dedicated lines. Almost two-thirds of private schools reported having e-mail and WWW availability. However, e-mail was more likely to be available to administrators than teachers and least likely to be available to students. Moreover, the WWW was more likely to be available to administrators and teachers than students.

Issues in advanced telecommunications that have become increasingly important within recent years relate to whether teachers and students are making use of advanced telecommunications already available, and the extent to which schools have support mechanisms in place to encourage effective use of these technologies. Overall, 45 percent of all private school teachers in the 1998-99 school year regularly used computers and/or advanced telecommunications for teaching. Moreover, virtually all private schools with Internet access reported at least some use of e-mail and the World Wide Web by students, teachers, and administrative staff, although relatively fewer reported that these Internet capabilities were used to a large extent. For example, 24 percent of the schools reported that the WWW was used by teachers to a large extent, and 31 percent

indicated that it was used by students to a large extent.

The 1998-99 data suggest that private schools are recognizing the need for school support for advanced telecommunications use, including the need for technology training and technical support. A majority (64 percent) of the schools provided or participated in some type of advanced telecommunications training for teachers. While the most common type of training was on the use of computers (60 percent), about half the schools offered or participated in training on the integration of technology in the classroom, and 43 percent provided or participated in training on the use of the Internet. Among those schools that offered or participated in some type of training, 55 percent left it up to teachers to initiate the training, while fewer schools either mandated (16 percent) or actively encouraged teachers through incentives (22 percent) to participate in technology training.

Most private schools (80 percent) indicated that one or more individuals were primarily responsible for supporting advanced telecommunications in the school, while a large majority of those schools (70 percent) relied solely on one individual for technical assistance. Among schools with at least one individual responsible for providing advanced telecommunications support, 41 percent indicated that the technology coordinator or other technical staff helped teachers to integrate technology into the curriculum to a large or moderate extent. Moreover, 42 percent of the schools reported that network technical support was provided to a large or moderate extent.

Given the high costs associated with advanced telecommunications expansion, private and public schools often have to rely on a range of support (including federal and private sources) to expand technology programs. In the 1998-99 school year, private schools indicated that advanced telecommunications in the school was supported by many sources, including several federal programs (ranging from 2 to 15 percent) and business or industry (22 percent). The most frequently cited source of support was parents or other community members (57 percent), although the survey did not collect data on the extent of such support. Relatively few private schools (13 percent) reported support for advanced telecommunications from the federal E-rate program, which is designed to make advanced telecommunications more affordable to all eligible private and public schools. Moreover, the data suggest that relatively few private schools participated or intended to participate in the E-rate program: 24 percent applied for the 1998 E-rate discounts, and a slight majority of the schools (57 percent) reported that they were not going to apply for 1999-2000 discounts.

The proportion of private schools reporting computer and Internet availability varied somewhat by instructional level. For example, secondary schools (90 percent) were more likely than elementary or combined schools (64 percent) to be connected to the Internet. Secondary schools were also more likely to report e-mail and WWW availability to students and the availability of high-speed connections using dedicated lines. Moreover, the ratio of students per instructional computer with Internet access was lower at secondary and combined schools (10 to 1) than elementary schools (24 to 1).

Catholic schools differ in some important ways from other religious and nonsectarian schools in the availability and use of advanced telecommunications. For example, Catholic schools (83 percent) were more likely than other religious (54 percent) or nonsectarian (66 percent) schools to be connected to the Internet, and they were also more likely to plan to gain access by the end of this year. Moreover, a higher proportion of Catholic than other religious or nonsectarian schools reported having e-mail and WWW capabilities; they were also more likely to indicate that students used the WWW to a large extent.

In addition, Catholic schools were more likely than other religious or nonsectarian schools to report that they offered or participated in any advanced telecommunications training for teachers, and specifically in three types of

training— use of computers, use of the Internet, and integration of technology into the curriculum. They were also more likely to mandate training for teachers. Moreover, compared with other religious and nonsectarian schools, Catholic schools were more likely to report that they applied for the 1998 E-rate program. They were also more likely to indicate that they had applied or plan to apply for the 1999 discounts. Finally, a higher proportion of Catholic than other religious or nonsectarian schools indicated that support for advanced telecommunications in the school came in the form of funds, hardware, training, and technical assistance.

Private schools continue to be outpaced by public schools in making computers and the Internet available to students. For example, private schools reported more students per instructional computer with Internet access than the ratio for public schools (15 versus 12). In addition, private schools (67 percent) were considerably less likely than public schools (89 percent) to be connected to the Internet, and private schools reported proportionately fewer instructional rooms with Internet access (25 versus 51 percent). Moreover, private schools were less likely than public schools to report higher speed Internet connections; for example, 21 percent of private schools with Internet access compared with 65 percent of public schools were connected to the Internet using dedicated lines. However, private schools have made considerable gains since fall 1995, some comparable with the gains made by public schools. For instance, the percentage increase in the proportion of Internet-connected private schools between fall 1995 and the 1998-99 school year is comparable to the increase for public schools during this period (an increase of 42 percentage points for private schools and 39 percentage points for public schools).

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APPENDIX A

Survey Methodology and Data Reliability

Survey Methodology and Data Reliability

Sample Selection

The sampling frame for the FRSS *Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99* was constructed from the 1997-98 NCES Private School Survey (PSS) Universe File, the most recent file available at the time the sample was selected. The PSS Universe File has two components: list frame and area sample. The complete file represents 27,402 schools, including 8,182 Catholic schools, 13,195 schools with religious affiliations other than Catholic, and 6,025 nonsectarian schools. By level, the file represents 16,623 elementary schools, 2,487 secondary schools, and 8,292 combined elementary/secondary grades schools.

A private school was defined as a school not in the public system that provides instruction for any of grades 1 - 12 (or comparable ungraded levels) where the instruction was not provided in a private home. All regular private elementary, secondary, and combined schools in the 50 states and the District of Columbia were included in the sampling frame. Special education, vocational, early childhood/day care, and alternative schools, and schools having a high grade of prekindergarten, transitional kindergarten, kindergarten, or ungraded were excluded from the frame prior to sampling. Thus, the final sampling frame included 24,128 eligible private schools enrolling over 5.2 million students (table A-1).

The private school sampling frame was sorted by type of locale (city, urban fringe, town, and rural). Within the primary strata, schools were also sorted by level (elementary, secondary, combined), affiliation (Catholic, other religious, nonsectarian), and school size (under 100, 100-299, 300-499, 500-999, 1,000 or more). Schools were then selected from each primary stratum with probabilities proportional to w_i, where w_i is the weight reflecting the school's probability of inclusion in the area sample (for schools in the PSS list frame, w_i = 1). The within-stratum sampling rates were designed to yield self-weighted samples of schools in each primary stratum. Although the samples were self-weighted within primary strata, the overall probabilities varied by school size, with larger schools having higher probabilities of selection than smaller ones. Such a design is reasonably efficient for estimating the proportion or number of schools with specified characteristics (e.g., the proportion of private schools with access to the Internet), as well as statistics that are correlated with enrollment (e.g., the percent of private school students or teachers who have access to the Internet).

Respondents and Response Rates

In February 1999, survey instruments (see Appendix C) were mailed the heads of 999 private schools, who were asked to forward the questionnaire to the person most knowledgeable about the availability and use of advanced telecommunications at the school. The accompanying instructions requested that the school complete the self-administered questionnaire and return it by mail using the postage-paid envelope or by fax using a toll-free number. Telephone followup was conducted with schools that did not complete the survey. Of the 999 schools in the sample, 16 were found to be out of the scope of the survey, for a total of 983 eligible schools. The unweighted response rate was 86 percent. The weighted response rate was 84 percent.

Table A-1.—Number and percentage distribution of private schools in the study and the estimated number and percentage distribution of schools and students in the nation, by selected school characteristics: School year 1998-99

School characteristic	Respondent sample of schools		National estimates of schools		National estimates of students	
	Number	Percent	Number	Percent	Number	Percent
					[In millions]	
All private schools	844	100	22,941	100	5.3	100
Affiliation						
Catholic	361	43	8,024	35	2.7	50
Other religious	316	37	11,397	50	1.8	35
Nonsectarian	164	19	3,371	15	0.7	14
Instructional level						
Elementary	437	52	15,015	65	3.1	81
Secondary	224	27	2,045	9	0.7	14
Combined	183	22	5,881	26	1.4	27
Internet access						
Has access	656	78	15,623	67	4.2	81
No access	18	22	7,831	33	1.0	19
Enrollment size						
Less than 150	223	26	10,402	45	0.7	14
150 to 299	233	28	6,832	30	1.5	29
300 or more	388	46	5,707	25	3.0	58
Type of locale						
City	395	47	9,213	39	2.6	49
Urban fringe	305	36	8,254	35	2.0	38
Town	92	11	3,370	14	0.5	9
Rural	58	7	2,617	11	0.2	5
Geographic region						
Northeast	225	27	5,453	23	1.4	27
Southeast	179	21	4,893	21	1.2	23
Central	243	29	7,292	31	1.5	28
West	203	24	5,816	25	1.2	23
Percent minority enrollment						
Less than 6 percent	188	23	5,969	27	1.1	21
6 to 20 percent	296	36	7,086	32	2.0	38
21 to 49 percent	187	23	4,546	20	1.2	24
50 percent or more	157	19	4,746	21	0.9	17

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Sampling and Nonsampling Errors

Survey responses were weighted to produce national estimates. For estimation purposes, sampling weights were attached to each school data record. The sampling weights reflect each school's overall probability of selection and include upward adjustments to compensate for differential nonresponse. The findings in this report are estimates based on the sample selected and, consequently, are subject to sampling variability.

The survey estimates are also subject to nonsampling errors that can arise because of nonobservation (nonresponse or noncoverage) errors, errors of reporting, and errors made in collection of the data. These errors can sometimes bias the data. Nonsampling errors may include such problems as the differences in the respondents' interpretation of the meaning of the questions; memory effects; misrecording of responses; incorrect editing, coding, and data entry; differences related to the particular time and place the survey was conducted; or errors in data preparation. While general sampling theory can be used in part to determine how to estimate the sampling variability of a statistic, nonsampling errors are difficult to measure and, for measurement purposes, usually require that an experiment be conducted as part of the data collection procedures or that data external to the study be used.

To minimize the potential for nonsampling errors, the survey was pretested with private school technology directors and coordinators and other individuals knowledgeable about the availability and use of advanced telecommunications. During the survey design process and the survey pretest, an effort was made to check for consistency of interpretation of questions and to eliminate ambiguous terms as a result. The questionnaire and instructions were extensively reviewed NCES. Manual and machine editing of the questionnaire responses were conducted to check the data for accuracy and consistency. Cases with missing or inconsistent items were recontacted by telephone to resolve problems. Data were keyed with 100 percent verification.

Variability

The standard error is a measure of the variability of estimates due to sampling. It indicates the variability of a sample estimate that would be obtained from all possible samples of a given design and size. Standard errors are used as a measure of the precision expected from a particular sample. If all possible samples were surveyed under similar conditions, intervals of 1.96 standard errors below to 1.96 standard errors above a particular statistic would include the true population parameter being estimated in about 95 percent of the samples. This is known as a 95 percent confidence interval. For example, the estimated percentage of private schools with Internet access is 67 percent, and the standard error is 2.1 percent. The 95 confidence interval for the statistic extends from 67 - (2.1 x 1.96) to 67 + (2.1 x 1.96), or from 63 percent to 71 percent.

To properly reflect the complex features of the sample design, standard errors of the survey-based estimates were calculated using jackknife replication. As with any replication method, jackknife replication involves constructing a number of subsamples (replicates) from the full sample and computing the statistic of interest for each replicate. The mean square error of the replicate estimates around the full sample estimate provides an estimate of the variances of the statistics. To construct the replications, 50 stratified subsamples of the full sample were created and then dropped one at a time to define 50 jackknife replicates. A computer program, WesVarPC, was used to calculate the estimates of standard errors. WesVarPC is a stand-alone Windows application that computes sampling error for a wide variety of statistics (totals, percents, ratios, log-end ratios, general functions of estimates in tables, linear regression parameters, and logistic regression parameters).

Bonferroni adjustments were made to control for multiple comparisons where appropriate. For

example, for an "experimentwise" comparison involving g pairwise comparisons, each difference was tested at the 0.05/g significance level to control for the fact that g differences were simultaneously tested.

Terms Defined on the Survey Instrument

Advanced telecommunications - refers to modes of communication used to transmit information from one place to another including broadcast and interactive television, networked computers, etc.

Cable modem - provides greater bandwidth from Internet Service Providers that enables faster data transfer than is possible using a 33.6 kbps modem, 56 kbps modem, or 128 kbps ISDN connection. Cable networks are supplied by cable companies and generally use fiber-optic cabling to form connections, although some cable companies may rely on co-axial cabling.

DS1 - refers to a service with digital transmission speed of 1.544 Mega (million) bits per second.

DS3 - refers to a service with digital transmission speed of 45 Mega (million) bits per second.

Dedicated line - type of account available from an Internet Service Provider where the customer is connected to the Internet 24 hours a day on his/her own individual phone line. This connection is made without a modem.

Dial-up connection - customer is only connected to the Internet when his/her modem dials the Internet Service Provider's telephone number to establish the connection.

Distance learning - refers to the transmission of information from one geographic location to another via various modes of telecommunications technology. For example, an advanced high school math class in Richmond, Virginia, could receive a college-level math seminar from the University of Virginia via two-way video.

E-mail (Electronic mail) - refers to text messages transmitted across networks and usually accessible only by the addressee.

E-rate/Universal Service Schools and Libraries Telecommunication Discount Program - fund created as part of the Telecommunications Act of 1996 to ensure that all eligible schools (public and private) and libraries in the United States have affordable access to modern telecommunications and information services.

Schools and Libraries Discount Matrix

Percent of students eligible for national school lunch program	Discount level	
	Urban discount percentage	Rural discount percentage
<1	20	25
1-19	40	50
20-34	50	60
35-49	60	70
50-74	80	80
75-100	90	90

56Kb - a digital transmission speed of 56 Kilo (thousand) bits per second.

Fractionalized T1 - T1 line that is split to allow for data communication and voice communication (as opposed to a T1 line used for data communication only).

Fractionalized T3 - T3 line that is split to allow for data communication and voice communication (as opposed to a T3 line used for data communication only).

Instructional rooms - refers to rooms in the school building used for any instructional purposes (includes classrooms, labs, library/media centers, art rooms, rooms used for vocational or special education, etc.).

Interactive television/computer with two-way audio/visual - television or computer having two-way audio and/or visual capabilities that

can be used for distance learning or video conferencing.

Internet - refers to a collection of computer networks interconnected by TCP/IP protocols, sharing the same underlying network address space as well as the same domain name space, and interconnected into a network of information.

Intranet - internal network within a school or business that is based on the same technology as the Internet rather than traditional local area network (LAN) software.

ISDN (Integrated Services Digital Network) - phone line that moves data digitally and integrates voice and data.

Local area network (LAN) - refers to the linkage of computers and/or peripherals (e.g., printer) confined to a limited area that may consist of a room, building, or campus that allows users to communicate and share information.

Modem - refers to a device that connects between a computer and a phone line to translate between the digital signal of the computer and the analog signal required for telephone transmission.

Multimedia - refers to a computer using any combination of text, full color images and graphics, video, animation, and sound.

T1 - refers to a line with digital transmission speed of 1.544 Mega (million) bits per second.

T3 - refers to a line with digital transmission speed of 45 Mega (million) bits per second.

Technology Innovation Challenge Grant - program provides funding for teacher preparation and professional development activities that support the integration of educational technology into the curriculum.

Technology Literacy Challenge Fund - program provides funding to states to effectively increase the capacity of their schools to integrate educational technology into classrooms.

Title VI - program provides funding for the development of effective curriculum and instruction activities to meet the needs of public schools and participating private schools.

Video conferencing - conference between two or more participants at different locations over the Internet or a private network. Each user has a video camera, microphone, and speakers mounted on his/her computer. As the participants speak to one another, they hear each other's voices and see a video image of the other participant(s).

Wide area network - refers to a data communications linkage designed to connect computers over distances greater than the distance transmitted by local area networks (e.g., building to building, city to city, across the country, or internationally), that allows users to communicate and share information, such as the Internet, America Online, CompuServe, etc.

Wireless connection - refers to the connections to the Internet that do not use wire or cable.

World Wide Web (WWW) - refers to a system that allows access to information sites all over the world using a standard, common interface to organize and search for information. The WWW simplifies the location and retrieval of various forms of information including text, audio, and video files. It is the "multimedia" portion of the Internet.

Definitions of Analysis Variables

School affiliation - Schools were classified according to their affiliation as identified on the Private School Survey (PSS) Universe File.

Catholic - schools affiliated with the Catholic Church.

Other religious - schools affiliated with religions or with a religious orientation other than Catholic.

Nonsectarian - schools that are not affiliated with a church or a religious orientation.

School instructional level - Schools were classified according to their grade span in the PSS Universe File.

Elementary - a school that had grade 6 or lower, or "ungraded" and no grade higher than 8th. It would include schools comprised of students in grades 1 through 6, students in grades 7 and 8 when the remainder of the students in the school are in the lower grades or are ungraded, and students in ungraded classes in schools with no grade higher than the 8th grade.

Secondary - a school that had no grade lower than the 7th, or "ungraded" and had grade 7 or higher. This category includes schools composed of students in grades 9 through 12, students in grades 7 and 8 when the remainder of the students in the school are in grades above 8th or are ungraded, and students in ungraded classes in schools with no grade lower than 7th.

Combined - a school that has grades higher than the 8th and lower than the 7th. It includes schools composed of students in any grade in schools that range below grade 7 and above grade 8, or of students that are all in ungraded classes.

School enrollment size - total number of students enrolled as defined by the PSS Universe File.

Less than 150 - considered schools with relatively small enrollments for analytical purposes.

150-299 - considered medium-sized schools for analytical purposes.

300 or more - considered large schools for analytical purposes.

Metropolitan status - as defined in the PSS Universe File.

City - a central city of a Standard Metropolitan Statistical Area (SMSA).

Urban fringe - a place within an SMSA of a large or mid-size central city and defined as urban by the U.S. Bureau of the Census.

Town - a place not within an SMSA, but with a population greater than or equal to 2,500, and defined as urban by the U.S. Bureau of the Census.

Rural - a place with a population less than 2,500 and defined as rural by the U.S. Bureau of the Census.

Geographic region -

Northeast - Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

Southeast - Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia.

Central - Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

West - Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oklahoma,

Oregon, Texas, Utah, Washington, and Wyoming.

Percent minority enrollment -

Less than 5 percent - less than 5 percent of the students enrolled in the school were American Indian or Alaskan Native; Asian or Pacific Islander; Hispanic, regardless of race (Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin); or black (not of Hispanic origin).

5 to 19 percent - between 5 and 19 percent of the students enrolled in the school were members of a racial/ethnic minority.

20 to 49 percent - between 20 and 49 percent of the students enrolled in the school were members of a racial/ethnic minority.

50 percent or more - between 50 and 100 percent of the students enrolled in the school were members of a racial/ethnic minority.

Background Information

The survey was performed under contract with Westat, using the NCES Fast Response Survey System (FRSS). Westat's Project Officer was Elizabeth Farris, the survey manager was Rebecca Skinner, and the main author was Basmat Parsad. Westat's operations manager was Debbie Alexander and the research assistant for the project was Anne Cattagni. Shelley Burns was the NCES Project Officer. The data were requested by Jack Klenk of the Office of Non-Public Education, U.S. Department of Education.

This report was reviewed by the following individuals:

Outside NCES

- Jefferson G. Burnett, National Association of Independent Schools
- Michelle Doyle, Office of Non-Public Education, U.S. Department of Education
- Jack Klenk, Office of Non-Public Education, U.S. Department of Education
- Sister Dale McDonald, National Catholic Education Association
- Joseph McTighe, Council on American Private Education
- Becky Smerdon, American Institutes for Research
- David Miller, American Institutes for Research
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Inside NCES

- Stephen P. Broughman, Elementary, Secondary, and Library Studies Division
- Ellen Bradburn, Early Childhood, International, and Crosscutting Studies Division
- Edith McArthur, Early Childhood, International, and Crosscutting Studies Division
- Bruce Taylor, Office of Deputy Commissioner
- Lawrence Ogle, Assessment Division

For a copy of the questionnaire, *Advanced Telecommunications in U.S. Private Schools, 1998-99*, or for more information about the Fast Response Survey System, contact Shelley Burns, Early Childhood, International and Crosscutting Studies Division, National Center for Education Statistics, Office of Educational Resarch and Improvement, U.S. Department of Education, 1990 K Street, NW, Washington, DC 20006, e-mail: Shelley_Burns@ed.gov, telephone (202) 502-7348. This report and other NCES reports are available on the NCES Web site at http://nces.ed.gov.

APPENDIX B

Detailed Tables of Estimates and Tables of Standard Errors for the 1998-99 FRSS Survey

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Table B-1.—Mean number of computers and instructional computers in private schools, by school characteristics: School year 1998-99

School characteristic	Mean number of computers	Mean number of instructional computers
All private schools	37	29
Affiliation		
Catholic	49	41
Other religious	24	19
Nonsectarian	53	39
Instructional level		
Elementary	28	24
Secondary	72	50
Combined	44	35
Internet access		
Has access	48	38
No access	14	11
Size of enrollment		
Less than 150	14	11
150 to 299	34	28
300 or more	85	67
Type of locale		
City	46	38
Urban fringe	38	30
Town	21	17
Rural	18	14
Geographic region		
Northeast	44	35
Southeast	37	30
Central	33	27
West	34	26
Percent minority enrollment		
Less than 6 percent	27	23
6 to 20 percent	49	39
21 to 49 percent	46	37
50 percent or more	23	19

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-1a.—Standard errors of the mean number of computers and instructional computers in private schools, by school characteristics: School year 1998-99

School characteristic	Mean number of computers	Mean number of instructional computers
All private schools	1.1	0.9
Affiliation		
Catholic	1.3	1.2
Other religious	1.0	0.9
Nonsectarian	5.4	3.7
Instructional level		
Elementary	0.9	0.9
Secondary	7.8	5.2
Combined	3.0	2.5
Internet access		
Has access	1.8	1.5
No access	1.1	0.9
Size of enrollment		
Less than 150	1.1	0.9
150 to 299	1.1	1.0
300 or more	2.9	2.4
Type of locale		
City	2.4	2.2
Urban fringe	2.2	1.6
Town	2.0	1.5
Rural	1.9	1.4
Geographic region		
Northeast	3.3	2.6
Southeast	3.5	2.9
Central	2.3	2.0
West	2.2	2.0
Percent minority enrollment		
Less than 6 percent	2.1	1.8
6 to 20 percent	2.8	2.2
21 to 49 percent	3.2	2.7
50 percent or more	1.8	1.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-2.—Ratio of private school students to computer and instructional computer, by school characteristics: School year 1998-99

School characteristic	Number of students per computer	Number of students per instructional computer
All private schools	6	8
Affiliation		
Catholic	7	8
Other religious	7	9
Nonsectarian	4	6
Instructional level		
Elementary	7	8
Secondary	5	7
Combined	5	7
Internet access		
Has access	6	7
No access	9	12
Size of enrollment		
Less than 150	5	6
150 to 299	7	8
300 or more	6	8
Type of locale		
City	6	7
Urban fringe	6	8
Town	7	8
Rural	5	7
Geographic region		
Northeast	6	7
Southeast	6	8
Central	6	8
West	6	8
Percent minority enrollment		
Less than 6 percent	7	8
6 to 20 percent	6	7
21 to 49 percent	6	7
50 percent or more	8	10

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-2a.—Standard errors of the ratio of private school students to computer and instructional computer, by school characteristics: School year 1998-99

School characteristic	Number of students per computer	Number of students per instructional computer
All private schools	0.2	0.2
Affiliation		
Catholic	0.2	0.2
Other religious	0.3	0.4
Nonsectarian	0.3	0.4
Instructional level		
Elementary	0.2	0.3
Secondary	0.2	0.3
Combined	0.3	0.5
Internet access		
Has access	0.2	0.2
No access	0.7	0.9
Size of enrollment		
Less than 150	0.4	0.6
150 to 299	0.2	0.3
300 or more	0.2	0.3
Type of locale		
City	0.2	0.3
Urban fringe	0.3	0.3
Town	0.5	0.5
Rural	0.6	0.7
Geographic region		
Northeast	0.3	0.4
Southeast	0.4	0.6
Central	0.3	0.4
West	0.3	0.4
Percent minority enrollment		
Less than 6 percent	0.3	0.4
6 to 20 percent	0.2	0.3
21 to 49 percent	0.3	0.4
50 percent or more	0.5	0.7

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-3.—Percent of private schools in which selected types of advanced telecommunications equipment are available and the specific location of the equipment within the school: School year 1998-99

Type of equipment	Percent of schools having access	Location of equipment				
		Administrative offices	Classrooms	Computer labs	Library/media centers	Other instructional rooms
Computer connected to a local area network	49	79	51	68	45	31
Computer with modem	73	81	41	50	31	18
Computer with connection or access to the Internet	67	79	44	56	41	21
Computer with connection or access to an Intranet	19	86	61	75	54	30
Stand-alone computer (i.e., not connected to any network)	85	68	83	52	42	39
Computer with multimedia capabilities (e.g., CD-ROM, speakers	81	83	69	70	48	35
Interactive television/computer with two-way audio/visual	12	12	54	65	38	28

NOTE: Schools could report more than one location for each type of equipment.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-3a.—Standard errors of the percent of private schools in which selected types of advanced telecommunications equipment are available and the specific location of the equipment within the school: School year 1998-99

Type of equipment	Percent of schools having access	Location of equipment				
		Administrative offices	Classrooms	Computer labs	Library/media centers	Other instructional rooms
Computer connected to a local area network	1.7	2.5	2.5	2.7	2.0	2.5
Computer with modem	2.0	2.1	2.2	2.2	1.6	1.9
Computer with connection or access to the Internet	2.1	1.7	2.5	2.3	1.7	1.9
Computer with connection or access to an Intranet	1.4	3.2	4.3	3.5	3.8	3.5
Stand-alone computer (i.e., not connected to any network)	1.6	2.4	1.6	2.2	1.9	2.1
Computer with multimedia capabilities (e.g., CD-ROM, speakers	1.8	1.8	1.9	2.2	1.7	2.1
Interactive television/computer with two-way audio/visual	1.0	3.1	5.6	4.5	5.4	4.4

NOTE: Schools could report more than one location for each type of equipment.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-4.—Percent of private schools in which selected telecommunications equipment are available, and of these schools, percentage in which the equipment is also available in at least one classroom, by type of equipment and school characteristics: School year 1998-99

School characteristic	Computer with modem		Computer with connection/access to Internet		Computer with connection/access to Intranet		Stand-alone computer	
	Available in school	Available in classroom[1]	Available in school	Available in classroom[1]	Available in school	Available in classroom[1]	Available in school	Available in classroom[1]
All private schools	73	41	67	44	19	61	85	83
Affiliation								
Catholic	88	32	85	40	24	60	93	84
Other religious	63	44	54	44	13	55	81	83
Nonsectarian	74	51	67	51	28	70	84	78
Instructional level								
Elementary	74	41	65	40	19	59	85	84
Secondary	83	39	91	58	27	68	85	80
Combined	67	42	63	44	16	64	87	83
Internet access								
Has access	91	42	99	45	27	61	91	86
No access	37	35	5	0	3	55	75	76
Size of enrollment								
Less than 150	60	52	49	42	7	66	79	82
150 to 299	85	34	78	37	24	48	93	84
300 or more	81	31	86	51	36	68	88	82
Type of locale								
City	78	38	74	42	24	65	89	85
Urban fringe	75	34	64	42	21	51	85	79
Town	63	57	64	51	9	72	81	85
Rural	64	54	58	45	9	80	80	86
Geographic region								
Northeast	75	28	65	38	18	66	84	76
Southeast	69	38	67	40	16	53	88	85
Central	76	54	72	46	19	49	83	88
West	72	38	64	48	22	75	88	82
Percent minority enrollment								
Less than 6 percent	59	48	59	53	15	59	77	81
6 to 20 percent	77	34	75	40	20	64	93	84
21 to 49 percent	81	40	77	50	26	65	89	86
50 percent or more	77	41	55	27	14	39	84	80

[1] This estimate is based on the percentage of schools that had the equipment or service available in at least one classroom.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-4a.—Standard errors of the percent of private schools in which selected telecommunications equipment are available, and of these schools, standard errors of the percentage in which the equipment is also available in at least one classroom, by type of equipment and school characteristics: School year 1998-99

School characteristic	Computer with modem		Computer with connection/access to Internet		Computer with connection/access to Intranet		Stand-alone computer	
	Available in school	Available in classroom	Available in school	Available in classroom	Available in school	Available in classroom	Available in school	Available in classroom
All private schools	2.0	2.2	2.1	2.5	1.4	4.3	1.6	1.6
Affiliation								
Catholic	2.0	2.9	2.1	3.3	3.0	6.6	1.4	2.6
Other religious	3.6	4.0	3.3	4.2	1.7	7.2	3.0	2.6
Nonsectarian	3.7	4.7	4.3	5.3	3.5	6.6	3.3	4.1
Instructional level								
Elementary	2.0	2.9	2.1	3.1	2.0	5.7	2.0	2.3
Secondary	3.0	6.3	2.9	4.5	4.1	6.5	3.6	3.1
Combined	4.9	5.4	4.6	5.5	2.0	7.1	3.1	3.0
Internet access								
Has access	1.1	2.9	0.6	2.6	2.1	4.6	1.5	1.5
No access	3.8	5.6	1.6	0.0	1.0	24.9	4.1	4.0
Size of enrollment								
Less than 150	3.7	4.3	3.6	5.4	1.7	13.4	3.3	2.9
150 to 299	2.8	3.6	2.9	4.0	3.4	7.9	1.8	2.8
300 or more	2.1	2.8	2.2	2.9	2.4	4.4	1.7	2.1
Type of locale								
City	2.4	2.9	2.9	3.4	2.5	5.7	2.1	1.6
Urban fringe	3.3	3.8	3.1	4.4	2.1	6.7	2.8	3.1
Town	6.3	7.5	5.9	6.9	3.1	13.0	5.1	5.7
Rural	9.1	9.2	9.3	9.4	3.4	15.7	7.1	5.2
Geographic region								
Northeast	3.6	3.8	4.1	4.3	2.5	8.0	4.0	3.6
Southeast	5.4	5.0	5.4	5.1	2.3	7.5	3.2	3.2
Central	3.8	4.0	4.6	4.3	2.9	7.1	3.1	2.7
West	4.1	3.6	4.6	5.3	3.3	7.2	2.8	3.7
Percent minority enrollment								
Less than 6 percent	4.6	6.1	4.4	4.7	2.5	8.9	4.0	4.1
6 to 20 percent	3.8	3.4	3.5	3.5	2.7	8.2	1.6	2.8
21 to 49 percent	3.6	5.1	3.8	4.4	4.3	5.6	2.3	3.0
50 percent or more	3.8	4.3	3.8	5.0	2.9	10.4	3.7	3.6

[1] This estimate is based on the percent of schools that had the equipment or service available in at least one classroom.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-5.—Percent of private schools with Internet access and percentage of students enrolled in private schools with Internet access, by school characteristics: School year 1998-99

School characteristic	Percent of schools with Internet access	Percent of students
All private schools	67	81
Affiliation		
Catholic	83	86
Other religious	54	72
Nonsectarian	66	84
Instructional level		
Elementary	64	77
Secondary	90	97
Combined	64	80
Size of enrollment		
Less than 150	48	60
150 to 299	77	77
300 or more	85	87
Type of locale		
City	72	83
Urban fringe	63	77
Town	65	86
Rural	58	78
Geographic region		
Northeast	64	79
Southeast	66	85
Central	72	84
West	64	74
Percent minority enrollment		
Less than 6 percent	59	83
6 to 20 percent	75	86
21 to 49 percent	76	85
50 percent or more	52	59

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-5a.—Standard errors of the percent of private schools with Internet access and percentage of students enrolled in private schools with Internet access, by school characteristics: School year 1998-99

School characteristic	Percent of schools with Internet access	Percent of students
All private schools	1.9	1.4
Affiliation		
Catholic	2.3	1.8
Other religious	3.1	2.8
Nonsectarian	4.2	2.8
Instructional level		
Elementary	2.0	1.9
Secondary	2.9	0.9
Combined	4.3	2.8
Size of enrollment		
Less than 150	3.6	3.2
150 to 299	3.0	3.0
300 or more	2.1	2.0
Type of locale		
City	2.9	2.1
Urban fringe	2.9	2.6
Town	5.9	3.6
Rural	9.3	6.5
Geographic region		
Northeast	4.7	3.3
Southeast	5.2	2.8
Central	4.1	2.5
West	4.6	3.6
Percent minority enrollment		
Less than 6 percent	4.3	2.6
6 to 20 percent	3.5	2.1
21 to 49 percent	3.7	2.8
50 percent or more	4.2	4.3

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-6.—Percent of private schools without Internet access, and percentage that plan to gain Internet access in the future, by year that Internet access is planned and school characteristics: School year 1998-99

School characteristic	No current Internet access	Plan to gain access	Year in which school plans to gain Internet access		
			1999	2000	2001 or later
All private schools	33	46	45	45	10
Affiliation					
Catholic	17	74	39	49	12
Other religious	46	41	44	44	12
Nonsectarian	34	38	59	41	0
Instructional level					
Elementary	36	46	43	47	10
Secondary	10	31	86	14	0
Combined	36	46	46	42	12
Size of enrollment					
Less than 150	52	38	49	40	11
150 to 299	23	60	39	53	8
300 or more	15	77	40	49	11
Type of locale					
City	28	64	49	43	8
Urban fringe	37	46	51	43	6
Town	35	38	22	78	0
Rural	42	12	0	0	100
Geographic region					
Northeast	36	41	54	39	7
Southeast	34	47	22	70	8
Central	28	37	61	39	0
West	36	59	43	39	18
Percent minority enrollment					
Less than 6 percent	41	13	15	85	0
6 to 20 percent	25	71	50	34	16
21 to 49 percent	24	59	53	41	6
50 percent or more	48	59	45	45	11

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-6a.—Standard errors of the percent of private schools without Internet access, and percentage that plan to gain Internet access in the future, by year that Internet access is planned and school characteristics: School year 1998-99

School characteristic	No current Internet access	Plan to gain access	Year in which school plans to gain Internet access		
			1999	2000	2001 or later
All private schools	1.9	3.4	6.2	6.5	4.1
Affiliation					
Catholic	2.3	7.1	7.6	9.4	5.6
Other religious	3.1	4.8	8.6	8.8	6.6
Nonsectarian	4.2	9.8	14.2	14.2	0.0
Instructional level					
Elementary	2.0	4.1	6.8	7.6	3.9
Secondary	2.9	16.6	16.6	16.6	0.0
Combined	4.3	9.4	14.7	14.5	12.7
Size of enrollment					
Less than 150	3.6	4.5	9.2	8.8	6.9
150 to 299	3.0	7.0	8.7	10.2	5.6
300 or more	2.1	7.9	7.8	10.3	5.6
Type of locale					
City	2.9	5.9	9.1	8.8	5.1
Urban fringe	2.9	6.2	8.4	8.7	3.7
Town	5.9	12.2	24.0	24.0	0.0
Rural	9.3	10.2	0.0	0.0	0.0
Geographic region					
Northeast	4.8	5.6	21.1	12.1	5.2
Southeast	5.2	8.2	13.8	14.4	6.4
Central	4.1	7.9	10.8	10.8	0.0
West	4.6	8.2	11.6	12.2	9.6
Percent minority enrollment					
Less than 6 percent	4.3	5.0	11.5	11.5	0.0
6 to 20 percent	3.5	7.3	12.3	10.6	10.3
21 to 49 percent	3.7	10.6	13.1	13.8	5.8
50 percent or more	4.2	6.5	9.9	10.4	5.8

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-7.—Among private schools with Internet access, mean number of computers with Internet access, mean number of instructional computers with Internet access, and mean number of computers capable of having Internet access that do not currently have Internet access, by school characteristics: School year 1998-99

School characteristic	Mean number of computers with Internet access	Mean number of instructional computers with Internet access	Mean number of computers capable of having Internet access that do not currently have access
All private schools	23	18	13
Affiliation			
Catholic	22	18	15
Other religious	15	12	10
Nonsectarian	55	40	12
Instructional level			
Elementary	12	10	11
Secondary	50	35	14
Combined	37	30	16
Size of enrollment			
Less than 150	6	5	7
150 to 299	12	9	12
300 or more	54	43	20
Type of locale			
City	27	22	15
Urban fringe	27	21	13
Town	10	8	10
Rural	12	8	5
Geographic region			
Northeast	34	26	13
Southeast	22	18	15
Central	18	14	10
West	21	16	13
Percent minority enrollment			
Less than 6 percent	19	16	9
6 to 20 percent	29	23	15
21 to 49 percent	31	24	11
50 percent or more	8	6	14

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-7a.—Among private schools with Internet access, standard errors of the mean number of computers with Internet access, mean number of instructional computers with Internet access, and mean number of computers capable of having Internet access that do not currently have Internet access, by school characteristics: School year 1998-99

School characteristic	Mean number of computers with Internet access	Mean number of instructional computers with Internet access	Mean number of computers capable of having Internet access that do not currently have access
All private schools	1.4	1.1	0.9
Affiliation			
Catholic	1.9	1.6	0.9
Other religious	1.6	1.3	1.0
Nonsectarian	6.8	4.5	1.9
Instructional level			
Elementary	1.0	0.9	0.8
Secondary	6.6	4.5	1.7
Combined	4.0	3.3	2.9
Size of enrollment			
Less than 150	1.1	1.0	1.5
150 to 299	1.4	1.1	0.8
300 or more	3.4	2.6	1.6
Type of locale			
City	2.2	1.8	2.0
Urban fringe	2.9	1.9	1.1
Town	2.1	1.7	1.7
Rural	2.9	1.9	1.5
Geographic region			
Northeast	4.1	3.2	1.6
Southeast	3.3	2.6	2.5
Central	2.3	1.9	1.2
West	3.1	2.7	1.5
Percent minority enrollment			
Less than 6 percent	2.6	2.3	1.0
6 to 20 percent	3.1	2.5	1.4
21 to 49 percent	4.0	3.1	1.3
50 percent or more	1.5	1.5	2.1

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-8.—Among private schools with Internet access, ratio of students to instructional computers with Internet access, by school characteristics: School year 1998-99

School characteristic	Number of students per instructional computer with Internet access
All private schools	15
Affiliation	
Catholic	19
Other religious	18
Nonsectarian	7
Instructional level	
Elementary	24
Secondary	10
Combined	10
Size of enrollment	
Less than 150	17
150 to 299	23
300 or more	13
Type of locale	
City	15
Urban fringe	14
Town	23
Rural	15
Geographic region	
Northeast	12
Southeast	17
Central	17
West	14
Percent minority enrollment	
Less than 6 percent	16
6 to 20 percent	14
21 to 49 percent	12
50 percent or more	33

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-8a.—Among private schools with Internet access, standard errors of the ratio of students to instructional computers with Internet access, by school characteristics: School year 1998-99

School characteristic	Number of students per instructional computer with Internet access
All private schools	0.8
Affiliation	
Catholic	1.6
Other religious	1.9
Nonsectarian	0.7
Instructional level	
Elementary	2.0
Secondary	0.6
Combined	1.1
Size of enrollment	
Less than 150	3.5
150 to 299	2.9
300 or more	0.8
Type of locale	
City	1.1
Urban fringe	1.2
Town	4.2
Rural	3.9
Geographic region	
Northeast	1.2
Southeast	1.9
Central	2.0
West	2.1
Percent minority enrollment	
Less than 6 percent	2.0
6 to 20 percent	1.2
21 to 49 percent	1.4
50 percent or more	8.6

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-9.—Mean number of private school instructional rooms, mean number of instructional rooms having a computer used for instructional purposes, and mean number of instructional rooms having a computer with access to the Internet, by school characteristics: School year 1998-99

School characteristic	Mean number of instructional rooms	Mean number of instructional rooms having a computer used for instructional purposes	Mean number of instructional rooms having a computer with access to the Internet
All private schools	16	8	4
Affiliation			
Catholic	19	11	5
Other religious	13	6	2
Nonsectarian	20	12	8
Instructional level			
Elementary	12	7	3
Secondary	24	10	8
Combined	21	11	6
Internet access			
Has access	19	11	6
No access	9	3	0
Size of enrollment			
Less than 150	8	4	1
150 to 299	15	8	3
300 or more	32	19	11
Type of locale			
City	18	10	5
Urban fringe	17	9	4
Town	11	5	2
Rural	9	4	2
Geographic region			
Northeast	18	10	5
Southeast	17	9	4
Central	14	8	4
West	14	7	3
Percent minority enrollment			
Less than 6 percent	13	7	4
6 to 20 percent	20	11	5
21 to 49 percent	18	11	6
50 percent or more	11	5	1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-9a.—Standard errors of the mean number of private school instructional rooms, mean number of instructional rooms having a computer used for instructional purposes, and mean number of instructional rooms having a computer with access to the Internet, by school characteristics: School year 1998-99

School characteristic	Mean number of instructional rooms	Mean number of instructional rooms having a computer used for instructional purposes	Mean number of instructional rooms having a computer with access to the Internet
All private schools	0.4	0.3	0.3
Affiliation			
Catholic	0.4	0.4	0.3
Other religious	0.5	0.3	0.3
Nonsectarian	1.4	1.2	1.2
Instructional level			
Elementary	0.3	0.3	0.2
Secondary	1.8	1.1	1.0
Combined	1.2	0.8	0.7
Internet access			
Has access	0.6	0.5	0.4
No access	0.5	0.3	0.0
Size of enrollment			
Less than 150	0.5	0.3	0.2
150 to 299	0.3	0.3	0.3
300 or more	0.8	0.8	0.8
Type of locale			
City	0.9	0.6	0.5
Urban fringe	0.7	0.7	0.5
Town	0.8	0.5	0.4
Rural	0.9	0.7	0.6
Geographic region			
Northeast	1.1	0.9	0.7
Southeast	1.5	1.0	0.6
Central	0.8	0.6	0.6
West	0.8	0.5	0.4
Percent minority enrollment			
Less than 6 percent	0.8	0.7	0.5
6 to 20 percent	0.9	0.7	0.7
21 to 49 percent	0.9	0.7	0.7
50 percent or more	0.7	0.4	0.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-10.—Percent of private school instructional rooms with a computer with Internet access, by school characteristics: School year 1998-99

School characteristic	Percent of instructional rooms
All private schools	25
Affiliation	
Catholic	27
Other religious	18
Nonsectarian	41
Instructional level	
Elementary	21
Secondary	32
Combined	28
Size of enrollment	
Less than 150	16
150 to 299	17
300 or more	34
Type of locale	
City	27
Urban fringe	25
Town	21
Rural	21
Geographic region	
Northeast	28
Southeast	24
Central	28
West	22
Percent minority enrollment	
Less than 6 percent	28
6 to 20 percent	27
21 to 49 percent	32
50 percent or more	10

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-10a.—Standard errors of the percent of private school instructional rooms with a computer with Internet access, by school characteristics: School year 1998-99

School characteristic	Percent of instructional rooms
All private schools	1.5
Affiliation	
Catholic	1.8
Other religious	2.2
Nonsectarian	4.1
Instructional level	
Elementary	1.7
Secondary	2.7
Combined	3.0
Size of enrollment	
Less than 150	2.8
150 to 299	2.1
300 or more	2.2
Type of locale	
City	2.3
Urban fringe	2.3
Town	3.4
Rural	5.9
Geographic region	
Northeast	3.0
Southeast	2.7
Central	3.1
West	2.7
Percent minority enrollment	
Less than 6 percent	3.2
6 to 20 percent	2.6
21 to 49 percent	3.3
50 percent or more	2.3

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-11.—Among private schools with Internet access, percentage distribution of schools indicating the number of instructional rooms with Internet access, by school characteristics: School year 1998-99

School characteristic	No instructional rooms	1 instructional room	2-4 instructional rooms	5 or more instructional rooms
All private schools	17	38	19	26
Affiliation				
Catholic	12	41	16	31
Other religious	21	37	23	18
Nonsectarian	15	32	17	36
Instructional level				
Elementary	20	42	13	25
Secondary	4	27	38	31
Combined	18	33	25	24
Size of enrollment				
Less than 150	19	45	20	16
150 to 299	19	45	16	20
300 or more	11	23	23	44
Type of locale				
City	18	33	18	30
Urban fringe	18	39	17	26
Town	14	40	27	19
Rural	11	52	20	16
Geographic region				
Northeast	18	43	13	26
Southeast	20	32	21	27
Central	14	42	19	25
West	18	33	25	25
Percent minority enrollment				
Less than 6 percent	12	40	21	28
6 to 20 percent	10	39	24	27
21 to 49 percent	18	32	17	32
50 percent or more	30	45	11	15

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools. Percentages are computed across each row but may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-11a.—Among private schools with Internet access, standard errors of the percentage distribution of schools indicating the number of instructional rooms with Internet access, by school characteristics: School year 1998-99

School characteristic	No instructional rooms	1 instructional room	2-4 instructional rooms	5 or more instructional rooms
All private schools	1.8	2.4	2.0	1.7
Affiliation				
Catholic	2.1	3.0	2.4	2.8
Other religious	3.8	4.1	3.6	2.4
Nonsectarian	3.8	5.9	4.4	3.5
Instructional level				
Elementary	2.7	3.4	2.1	2.5
Secondary	2.0	5.3	4.7	3.8
Combined	4.6	4.9	4.5	3.6
Size of enrollment				
Less than 150	5.0	5.0	4.8	3.4
150 to 299	3.0	4.1	2.8	3.3
300 or more	2.0	3.0	2.5	3.1
Type of locale				
City	2.9	3.1	2.8	2.9
Urban fringe	3.9	4.0	3.0	3.1
Town	5.0	7.7	6.1	5.0
Rural	7.4	12.5	7.9	6.0
Geographic region				
Northeast	3.9	5.9	2.5	3.5
Southeast	4.2	4.6	3.2	3.7
Central	4.3	4.5	3.9	3.5
West	4.1	4.6	4.0	3.6
Percent minority enrollment				
Less than 6 percent	3.7	5.6	4.0	4.0
6 to 20 percent	2.3	4.4	3.8	3.0
21 to 49 percent	4.6	4.2	4.2	3.8
50 percent or more	6.0	6.5	3.5	4.8

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-12.—Among private schools with Internet access, percentage distribution of schools indicating the number of classrooms with Internet access, by school characteristics: School year 1998-99

School characteristic	No classrooms	1 classroom	2-4 classrooms	5 or more classrooms
All private schools	47	16	11	26
Affiliation				
Catholic	53	9	8	30
Other religious	44	22	16	18
Nonsectarian	39	13	11	37
Instructional level				
Elementary	49	14	10	27
Secondary	36	25	15	24
Combined	48	17	10	24
Size of enrollment				
Less than 150	46	24	14	15
150 to 299	55	11	12	21
300 or more	42	9	8	42
Type of locale				
City	47	14	9	30
Urban fringe	46	14	12	29
Town	40	26	17	16
Rural	58	21	8	12
Geographic region				
Northeast	51	11	11	27
Southeast	48	16	9	27
Central	44	19	10	27
West	45	18	14	23
Percent minority enrollment				
Less than 6 percent	41	22	8	29
6 to 20 percent	55	10	13	22
21 to 49 percent	40	15	11	34
50 percent or more	53	14	13	20

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools. Percentages are computed across each row but may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-12a.—Among private schools with Internet access, standard errors of the percentage distribution of schools indicating the number of classrooms with Internet access, by school characteristics: School year 1998-99

School characteristic	No classrooms	1 classroom	2-4 classrooms	5 or more classrooms
All private schools	2.7	2.1	1.6	1.9
Affiliation				
Catholic	3.5	1.9	1.5	3.1
Other religious	4.6	4.0	3.5	2.6
Nonsectarian	5.5	4.6	3.7	5.3
Instructional level				
Elementary	3.5	2.5	1.9	2.9
Secondary	4.9	6.9	2.9	3.7
Combined	5.5	4.3	4.1	3.7
Size of enrollment				
Less than 150	5.6	5.0	3.7	3.8
150 to 299	4.8	3.3	2.9	3.6
300 or more	3.0	1.7	1.6	3.1
Type of locale				
City	3.6	3.1	1.8	3.5
Urban fringe	4.5	3.6	2.5	3.6
Town	6.8	7.1	6.6	4.8
Rural	11.4	10.0	4.6	6.2
Geographic region				
Northeast	5.2	3.2	2.8	4.3
Southeast	5.9	4.9	3.3	4.0
Central	4.6	4.4	2.6	3.9
West	6.4	5.0	4.7	4.4
Percent minority enrollment				
Less than 6 percent	4.9	5.1	3.1	4.5
6 to 20 percent	4.1	2.3	2.7	3.2
21 to 49 percent	3.7	4.3	3.5	4.3
50 percent or more	7.8	5.4	5.1	6.8

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-13.—Among private schools with Internet access, percent of schools reporting various types of Internet connection, by school characteristics: School year 1998-99

School characteristic	Type of Internet connection					
	Dial-up connection	Dedicated line	ISDN	Wireless connection	Cable modem	Other type of connection
All private schools	65	21	14	1	12	3
Affiliation						
Catholic	65	27	17	1	13	3
Other religious	67	14	12	1	13	3
Nonsectarian	51	28	14	1	12	4
Instructional level						
Elementary	68	18	16	0	12	2
Secondary	52	43	11	3	10	3
Combined	61	21	11	0	16	5
Size of enrollment						
Less than 150	77	10	5	0	17	4
150 to 299	66	23	16	1	11	3
300 or more	49	37	22	1	10	3
Type of locale						
City	61	25	18	1	17	3
Urban fringe	59	20	16	0	9	2
Town	75	23	4	0	13	4
Rural	82	10	3	0	2	9
Geographic region						
Northeast	65	20	8	1	13	6
Southeast	59	17	15	1	21	2
Central	71	27	11	0	10	2
West	60	18	23	0	7	2
Percent minority enrollment						
Less than 6 percent	65	20	13	1	12	7
6 to 20 percent	63	24	15	0	11	1
21 to 49 percent	61	22	18	1	13	1
50 percent or more	71	15	10	1	19	5

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools. Percentages for types of Internet connection do not sum to 100 because schools could report more than one type of connection.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-13a.—Among private schools with Internet access, standard errors of the percent of schools reporting various types of Internet connection, by school characteristics: School year 1998-99

School characteristic	Type of Internet connection					
	Dial-up connection	Dedicated line	ISDN	Wireless connection	Cable modem	Other type of connection
All private schools	2.2	1.3	1.3	0.3	1.5	0.8
Affiliation						
Catholic	3.6	2.6	2.5	0.6	2.1	1.0
Other religious	4.0	2.0	1.9	0.3	3.0	1.9
Nonsectarian	5.2	3.5	3.3	0.6	3.7	1.9
Instructional level						
Elementary	2.9	1.7	2.1	0.4	1.9	0.8
Secondary	6.2	5.6	2.6	1.2	2.6	1.8
Combined	4.7	2.7	2.2	0.3	4.0	3.0
Size of enrollment						
Less than 150	4.8	2.0	1.8	0.2	3.5	2.3
150 to 299	3.7	2.7	2.4	0.7	2.4	1.3
300 or more	3.5	2.3	2.8	0.5	1.9	1.0
Type of locale						
City	3.8	2.1	2.3	0.7	3.0	1.0
Urban fringe	3.7	2.3	2.8	0.2	2.2	0.9
Town	5.3	5.0	2.3	0.0	5.7	1.8
Rural	8.1	3.3	2.1	0.0	1.9	7.4
Geographic region						
Northeast	4.6	3.1	2.4	1.1	3.0	3.2
Southeast	4.2	2.9	3.1	0.5	4.2	1.4
Central	4.0	3.4	2.5	0.3	2.7	1.0
West	4.8	2.8	3.3	0.2	2.2	1.2
Percent minority enrollment						
Less than 6 percent	5.1	3.7	3.2	0.6	3.8	3.2
6 to 20 percent	4.0	2.6	2.4	0.1	1.9	0.9
21 to 49 percent	5.1	2.5	3.7	0.4	3.4	0.9
50 percent or more	5.4	2.9	3.0	1.5	5.8	2.2

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-14.—Percent of private schools with Internet access connecting to the Internet with dedicated lines, by specific type of dedicated line and school characteristics: School year 1998-99

School characteristic	Percent of schools with dedicated lines	Specific type of dedicated line		
		56 Kb	T1/DS1	Fractionalized T1
All private schools	21	17	11	6
Affiliation				
Catholic	27	17	11	5
Other religious	14	17	6	5
Nonsectarian	28	16	21	9
Instructional level				
Elementary	18	17	10	3
Secondary	43	24	19	9
Combined	21	15	9	10
Size of enrollment				
Less than 150	10	16	3	1
150 to 299	23	18	10	5
300 or more	37	17	17	11
Type of locale				
City	25	20	12	6
Urban fringe	20	14	12	7
Town	23	24	9	2
Rural	10	9	7	2
Geographic region				
Northeast	20	14	11	8
Southeast	17	10	9	7
Central	27	24	13	5
West	18	17	10	3
Percent minority enrollment				
Less than 6 percent	20	20	11	4
6 to 20 percent	24	15	11	8
21 to 49 percent	22	12	10	7
50 percent or more	15	22	7	2

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools. Schools could report more than one type of dedicated line.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-14a.—Standard errors of the percent of private schools with Internet access connecting to the Internet with dedicated lines, by specific type of dedicated line and school characteristics: School year 1998-99

School characteristic	Percent of schools with dedicated lines	Specific type of dedicated line[1]		
		56 Kb	T1/DS1	Fractionalized T1
All private schools	1.3	1.9	1.2	0.9
Affiliation				
Catholic	2.6	2.4	1.8	1.4
Other religious	2.1	3.7	1.3	1.3
Nonsectarian	3.5	4.5	3.4	2.5
Instructional level				
Elementary	1.7	2.3	1.9	0.9
Secondary	5.6	5.5	4.4	1.9
Combined	2.7	3.8	1.6	2.6
Size of enrollment				
Less than 150	2.0	4.1	1.6	0.8
150 to 299	2.7	3.0	2.6	1.8
300 or more	2.3	2.3	1.8	1.9
Type of locale				
City	2.1	2.9	1.9	1.3
Urban fringe	2.3	2.9	2.3	1.6
Town	5.0	7.6	3.2	1.7
Rural	3.3	4.3	4.3	1.6
Geographic region				
Northeast	3.1	2.8	2.6	2.2
Southeast	2.9	3.2	2.7	1.9
Central	3.4	4.6	2.4	1.5
West	2.8	3.3	3.3	1.1
Percent minority enrollment				
Less than 6 percent	3.7	4.9	2.7	1.7
6 to 20 percent	2.6	3.0	1.7	1.8
21 to 49 percent	2.5	3.0	2.1	1.9
50 percent or more	2.9	4.9	2.7	1.2

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-15.—Percent of private schools indicating that e-mail was available in the school and to members of the school community, by school characteristics: School year 1998-99

School characteristic	Available in school	Available to members of school community		
		Students	Teachers	Administrative staff
All private schools	62	28	51	61
Affiliation				
Catholic	79	31	66	78
Other religious	50	22	41	48
Nonsectarian	62	39	53	60
Instructional level				
Elementary	60	25	48	58
Secondary	83	47	73	81
Combined	60	29	51	59
Size of enrollment				
Less than 150	44	23	39	43
150 to 299	73	29	56	70
300 or more	81	35	68	79
Type of locale				
City	67	28	54	66
Urban fringe	60	24	47	58
Town	63	33	56	60
Rural	52	37	49	51
Geographic region				
Northeast	58	24	45	57
Southeast	63	24	50	61
Central	68	33	60	66
West	58	29	46	56
Percent minority enrollment				
Less than 6 percent	56	27	47	55
6 to 20 percent	70	28	61	69
21 to 49 percent	72	38	60	68
50 percent or more	47	22	35	46

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-15a.—Standard errors of the percent of private schools indicating that e-mail was available in the school and to members of the school community, by school characteristics: School year 1998-99

School characteristic	Available in school	Available to members of school community		
		Students	Teachers	Administrative staff
All private schools	2.1	1.8	2.1	2.2
Affiliation				
Catholic	2.4	2.9	3.0	2.5
Other religious	3.3	2.8	3.3	3.3
Nonsectarian	4.3	4.6	4.3	4.3
Instructional level				
Elementary	2.3	1.9	2.3	2.3
Secondary	4.3	4.9	4.5	4.4
Combined	4.5	4.2	4.4	4.5
Size of enrollment				
Less than 150	3.8	3.1	3.8	4.0
150 to 299	2.9	3.3	3.8	2.7
300 or more	2.4	3.0	3.2	2.4
Type of locale				
City	3.1	3.0	3.4	2.9
Urban fringe	3.2	2.9	3.7	3.3
Town	5.8	6.1	5.7	6.3
Rural	9.2	7.6	9.1	9.3
Geographic region				
Northeast	4.5	3.2	4.5	4.5
Southeast	5.2	4.0	4.1	5.5
Central	4.1	3.9	4.1	4.2
West	4.6	3.4	4.4	4.7
Percent minority enrollment				
Less than 6 percent	4.4	4.0	4.7	4.5
6 to 20 percent	3.5	3.3	3.2	3.6
21 to 49 percent	4.0	3.6	4.3	3.9
50 percent or more	4.4	3.6	4.7	4.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-16.—Percent of private schools indicating that the World Wide Web was available in the school and to members of the school community, by school characteristics: School year 1998-99

School characteristic	Available in school	Available to members of school community		
		Students	Teachers	Administrative staff
All private schools	64	47	56	61
Affiliation				
Catholic	81	63	73	77
Other religious	51	34	44	48
Nonsectarian	65	54	58	62
Instructional level				
Elementary	62	43	53	59
Secondary	89	82	86	86
Combined	59	43	52	56
Size of enrollment				
Less than 150	46	33	41	44
150 to 299	73	51	64	69
300 or more	83	68	74	81
Type of locale				
City	71	52	61	67
Urban fringe	60	48	53	58
Town	61	47	53	57
Rural	55	42	54	52
Geographic region				
Northeast	62	44	53	58
Southeast	64	46	52	60
Central	67	53	65	65
West	61	44	52	58
Percent minority enrollment				
Less than 6 percent	58	45	52	54
6 to 20 percent	71	52	65	67
21 to 49 percent	75	61	70	71
50 percent or more	47	29	36	46

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-16a.—Standard errors of the percent of private schools indicating that the World Wide Web was available in the school and to members of the school community, by school characteristics: School year 1998-99

School characteristic	Available in school	Available to members of school community		
		Students	Teachers	Administrative staff
All private schools	1.9	2.2	1.8	1.9
Affiliation				
Catholic	2.3	2.8	2.8	3.2
Other religious	3.2	3.4	3.2	2.8
Nonsectarian	4.2	4.1	4.2	4.1
Instructional level				
Elementary	2.0	2.4	2.2	2.4
Secondary	3.2	4.3	3.6	3.6
Combined	4.2	4.7	4.4	4.4
Size of enrollment				
Less than 150	3.7	4.0	3.7	3.3
150 to 299	3.0	3.2	3.5	3.5
300 or more	2.1	2.4	2.5	2.9
Type of locale				
City	2.9	3.2	3.2	3.0
Urban fringe	3.0	3.1	3.4	3.5
Town	5.8	6.4	5.6	5.9
Rural	9.4	9.3	9.3	7.9
Geographic region				
Northeast	4.6	4.5	4.8	4.1
Southeast	5.4	5.6	4.5	4.5
Central	4.0	4.2	4.1	4.4
West	4.9	5.1	4.6	4.0
Percent minority enrollment				
Less than 6 percent	4.4	4.4	4.5	4.3
6 to 20 percent	3.5	3.6	3.6	3.7
21 to 49 percent	3.6	4.1	4.3	4.5
50 percent or more	4.3	3.9	4.3	3.3

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-17.—Among private schools with Internet access, percent of schools with a Web page on the World Wide Web and percentage of schools with a computer system that can be accessed by students from home, by school characteristics: School year 1998-99

School characteristic	Percentage with a Web page on World Wide Web	Percentage with a computer system that can be accessed by students from home
All private schools	52	10
Affiliation		
Catholic	52	8
Other religious	45	10
Nonsectarian	68	11
Instructional level		
Elementary	46	9
Secondary	72	13
Combined	55	10
Size of enrollment		
Less than 150	38	8
150 to 299	51	9
300 or more	65	10
Type of locale		
City	52	9
Urban fringe	63	11
Town	35	6
Rural	35	16
Geographic region		
Northeast	60	11
Southeast	51	2
Central	44	11
West	56	14
Percent minority enrollment		
Less than 6 percent	45	3
6 to 20 percent	58	13
21 to 49 percent	61	12
50 percent or more	34	6

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-17a.—Among private schools with Internet access, standard errors of the percent of schools with a Web page on the World Wide Web and percentage of schools with a computer system that can be accessed by students from home, by school characteristics: School year 1998-99

School characteristic	Percentage with a Web page on World Wide Web	Percentage with a computer system that can be accessed by students from home
All private schools	2.3	1.7
Affiliation		
Catholic	3.7	1.8
Other religious	4.0	3.2
Nonsectarian	5.4	2.5
Instructional level		
Elementary	3.0	2.3
Secondary	6.7	4.2
Combined	5.4	3.4
Size of enrollment		
Less than 150	4.7	3.6
150 to 299	3.7	2.5
300 or more	3.3	1.8
Type of locale		
City	3.2	1.9
Urban fringe	3.9	2.7
Town	6.4	2.7
Rural	10.5	9.2
Geographic region		
Northeast	4.9	2.9
Southeast	4.2	1.1
Central	3.7	3.5
West	5.5	3.9
Percent minority enrollment		
Less than 6 percent	5.7	1.3
6 to 20 percent	4.0	3.3
21 to 49 percent	5.0	4.1
50 percent or more	5.3	2.8

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-18.—Percent of private school teachers who regularly use computers/advanced telecommunications for teaching as reported by private schools, by school characteristics: School year 1998-99

School characteristic	Percent of teachers
All private schools	45
Affiliation	
Catholic	48
Other religious	41
Nonsectarian	49
Instructional level	
Elementary	45
Secondary	47
Combined	44
Internet access	
Has access	47
No access	33
Size of enrollment	
Less than 150	41
150 to 299	43
300 or more	47
Type of locale	
City	50
Urban fringe	41
Town	38
Rural	40
Geographic region	
Northeast	50
Southeast	38
Central	52
West	37
Percent minority enrollment	
Less than 6 percent	41
6 to 20 percent	46
21 to 49 percent	45
50 percent or more	47

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-18a.—Standard errors of the percent of private school teachers who regularly use computers/advanced telecommunications for teaching as reported by private schools, by school characteristics: School year 1998-99

School characteristic	Percent of teachers
All private schools	3.1
Affiliation	
Catholic	5.9
Other religious	3.8
Nonsectarian	3.1
Instructional level	
Elementary	4.5
Secondary	5.9
Combined	3.4
Internet access	
Has access	3.1
No access	6.1
Size of enrollment	
Less than 150	5.6
150 to 299	7.1
300 or more	3.5
Type of locale	
City	6.1
Urban fringe	2.3
Town	3.8
Rural	5.6
Geographic region	
Northeast	7.2
Southeast	4.8
Central	6.2
West	2.4
Percent minority enrollment	
Less than 6 percent	4.1
6 to 20 percent	4.1
21 to 49 percent	4.4
50 percent or more	12.8

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-19.—Percent of private schools using computers/advanced telecommunications for distance learning, by school characteristics: School year 1998-99

School characteristic	Percent of schools
All private schools	6
Affiliation	
Catholic	8
Other religious	4
Nonsectarian	11
Instructional level	
Elementary	7
Secondary	4
Combined	6
Internet access	
Has access	9
No access	1
Size of enrollment	
Less than 150	5
150 to 299	7
300 or more	9
Type of locale	
City	5
Urban fringe	8
Town	8
Rural	4
Geographic region	
Northeast	5
Southeast	5
Central	7
West	8
Percent minority enrollment	
Less than 6 percent	6
6 to 20 percent	9
21 to 49 percent	5
50 percent or more	5

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-19a.—Standard errors of the percent of private schools using computers/advanced telecommunications for distance learning, by school characteristics: School year 1998-99

School characteristic	Percent of schools
All private schools	0.9
Affiliation	
Catholic	1.9
Other religious	1.2
Nonsectarian	2.7
Instructional level	
Elementary	1.2
Secondary	1.3
Combined	1.5
Internet access	
Has access	1.3
No access	0.5
Size of enrollment	
Less than 150	1.4
150 to 299	1.7
300 or more	1.8
Type of locale	
City	1.1
Urban fringe	1.8
Town	3.0
Rural	2.6
Geographic region	
Northeast	1.5
Southeast	1.4
Central	1.8
West	2.4
Percent minority enrollment	
Less than 6 percent	1.8
6 to 20 percent	1.9
21 to 49 percent	1.5
50 percent or more	2.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-20.—Among private schools with Internet access and e-mail availability, percentage distribution of schools indicating the extent of e-mail use for various members of the school community, by selected school characteristics: School year 1998-99

School characteristic	Administrative staff			Teachers			Students		
	Not at all/small extent	Moderate extent	Large extent	Not at all/small extent	Moderate extent	Large extent	Not at all/small extent	Moderate extent	Large extent
All private schools	31	30	39	43	32	25	55	26	19
Affiliation									
Catholic	30	29	41	48	28	24	60	22	18
Other religious	33	33	34	43	38	20	56	31	13
Nonsectarian	27	28	45	29	34	37	45	26	29
Instructional level									
Elementary	32	28	40	46	31	24	64	23	13
Secondary	25	31	44	37	30	33	37	22	40
Combined	32	34	35	39	37	24	47	34	19
Size of enrollment									
Less than 150	31	33	36	42	38	21	53	31	16
150 to 299	35	32	33	46	34	20	62	24	14
300 or more	27	26	47	42	27	31	51	24	26
Type of locale									
City	32	25	43	44	25	30	54	26	20
Urban fringe	26	35	39	43	37	20	58	27	15
Town	40	32	28	47	35	18	57	32	11
Rural	25	31	45	28	42	30	51	13	36
Geographic region									
Northeast	30	28	41	41	35	24	55	25	20
Southeast	31	24	45	44	32	24	44	31	14
Central	37	26	36	44	32	24	62	21	16
West	21	42	37	40	30	30	44	29	27
Percent minority enrollment									
Less than 6 percent	32	30	38	41	35	24	60	24	16
6 to 20 percent	31	35	34	44	36	20	55	25	21
21 to 49 percent	26	33	41	39	36	25	50	28	22
50 percent or more	37	18	45	54	18	28	56	32	12

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools—and e-mail access—62 percent of private schools with Internet access. Percentages are computed across each row but may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-20a.—Among private schools with Internet access and e-mail availability, standard errors of the percentage distribution of schools indicating the extent of e-mail use for various members of the school community, by school characteristics: School year 1998-99

School characteristic	Administrative staff			Teachers			Students		
	Not at all/small extent	Moderate extent	Large extent	Not at all/small extent	Moderate extent	Large extent	Not at all/small extent	Moderate extent	Large extent
All private schools	2.4	2.3	2.2	3.1	2.6	2.3	3.5	3.1	3.2
Affiliation									
Catholic	3.2	3.0	2.9	4.1	3.6	3.2	4.7	4.1	4.5
Other religious	3.6	4.0	4.3	5.0	5.1	3.8	7.4	6.5	5.3
Nonsectarian	5.6	5.4	5.6	5.2	5.2	5.2	5.5	6.5	4.5
Instructional level									
Elementary	3.3	3.1	2.7	3.6	3.0	2.8	4.9	4.3	3.5
Secondary	5.5	3.7	4.2	6.6	5.0	6.1	8.1	5.0	8.3
Combined	4.5	4.6	4.8	5.1	5.5	4.8	8.8	8.4	6.3
Size of enrollment									
Less than 150	4.7	5.2	4.6	5.9	5.4	4.4	8.2	7.4	6.3
150 to 299	3.6	3.5	3.4	4.4	3.9	3.2	6.0	5.4	4.2
300 or more	3.0	3.0	3.5	3.6	3.6	3.1	5.0	4.7	4.2
Type of locale									
City	3.2	2.8	3.4	4.1	3.2	3.6	5.6	4.9	3.3
Urban fringe	3.3	3.8	3.6	4.2	4.4	2.9	6.1	6.5	3.8
Town	7.6	7.3	7.2	7.9	7.9	6.0	9.4	10.2	5.5
Rural	9.3	8.7	9.4	9.5	8.2	10.0	15.3	5.9	15.4
Geographic region									
Northeast	4.4	4.2	5.7	5.4	5.0	4.0	4.9	5.3	4.5
Southeast	4.5	4.6	5.8	6.4	4.9	6.1	8.2	8.2	8.6
Central	4.1	3.9	4.3	5.3	4.6	4.1	7.5	5.7	6.2
West	4.0	6.4	5.9	5.9	5.8	5.7	7.7	7.5	5.7
Percent minority enrollment									
Less than 6 percent	4.7	5.4	5.1	6.1	5.8	5.3	9.2	8.1	5.8
6 to 20 percent	3.7	4.6	4.4	4.0	4.6	2.8	6.0	5.3	5.9
21 to 49 percent	4.8	5.0	5.6	5.2	4.6	4.4	6.8	6.4	3.9
50 percent or more	5.8	4.3	5.5	7.7	5.2	4.7	9.4	9.5	6.4

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools—and e-mail access—62 percent of private schools with Internet access.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-21.—Among private schools with Internet access and World Wide Web access, percentage distribution of schools indicating the extent of World Wide Web use for various members of the school community, by school characteristics: School year 1998-99

School characteristic	Administrative staff			Teachers			Students		
	Not at all/small extent	Moderate extent	Large extent	Not at all/small extent	Moderate extent	Large extent	Not at all/small extent	Moderate extent	Large extent
All private schools	42	31	28	35	41	24	30	38	31
Affiliation									
Catholic	40	32	28	35	41	25	30	35	35
Other religious	44	32	25	42	39	19	35	44	21
Nonsectarian	47	24	28	23	45	31	26	32	42
Instructional level									
Elementary	43	30	27	37	41	23	34	41	25
Secondary	30	37	33	21	45	34	16	36	48
Combined	44	29	26	40	38	22	30	34	36
Size of enrollment									
Less than 150	48	29	23	42	37	20	35	42	23
150 to 299	42	32	26	36	44	20	32	41	27
300 or more	37	33	30	29	41	30	26	32	42
Type of locale									
City	46	26	28	35	38	27	35	34	31
Urban fringe	39	33	27	40	40	20	27	41	31
Town	35	43	22	25	55	20	32	47	21
Rural	39	29	32	34	33	33	17	34	50
Geographic region									
Northeast	42	31	27	42	35	23	32	30	38
Southeast	43	25	32	36	39	25	34	35	31
Central	36	36	27	28	48	24	28	42	29
West	48	27	25	38	37	25	28	43	29
Percent minority enrollment									
Less than 6 percent	42	30	28	36	37	27	31	36	33
6 to 20 percent	40	37	22	38	43	19	31	40	29
21 to 49 percent	42	32	26	35	41	24	33	34	33
50 percent or more	48	20	32	33	44	23	31	42	27

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent—and World Wide Web access—64 percent of private schools with Internet access. Percentages are computed across each row but may not sum to 100 because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-21a.—Among private schools with Internet access and World Wide Web access, standard errors of the percentage distribution of schools indicating the extent of World Wide Web use for various members of the school community, by school characteristics: School year 1998-99

School characteristic	Administrative staff			Teachers			Students		
	Not at all/small extent	Moderate extent	Large extent	Not at all/small extent	Moderate extent	Large extent	Not at all/small extent	Moderate extent	Large extent
All private schools	2.3	2.3	2.3	2.2	2.6	2.2	2.9	3.0	2.5
Affiliation									
Catholic	3.6	3.6	3.0	2.7	3.7	2.4	3.5	4.1	3.4
Other religious	4.2	3.8	3.4	4.8	4.6	3.3	5.7	5.4	4.3
Nonsectarian	5.3	3.9	5.2	4.6	4.8	4.0	5.1	4.9	4.9
Instructional level									
Elementary	3.5	3.1	2.9	2.8	3.1	2.3	3.8	3.9	3.0
Secondary	4.1	4.8	5.1	4.0	6.0	5.3	3.4	6.3	2.6
Combined	5.1	4.6	4.2	6.1	5.7	4.1	7.4	5.9	5.4
Size of enrollment									
Less than 150	5.3	4.9	4.7	5.5	4.9	3.9	6.5	7.2	5.6
150 to 299	3.7	3.4	3.1	3.3	4.0	3.3	5.3	4.9	4.1
300 or more	2.9	2.5	3.1	2.5	3.0	3.0	2.6	3.3	3.3
Type of locale									
City	2.7	2.8	3.2	2.9	3.0	3.4	4.1	3.3	2.9
Urban fringe	3.8	3.6	3.3	3.8	4.2	3.2	3.9	4.7	3.7
Town	6.6	7.9	6.3	6.2	9.2	5.6	8.4	8.5	5.4
Rural	9.4	9.3	9.8	9.4	9.8	11.0	6.8	10.4	10.4
Geographic region									
Northeast	4.7	4.8	4.1	5.6	5.0	3.7	4.7	5.5	4.7
Southeast	5.3	4.5	6.1	6.6	5.3	5.8	6.4	6.7	6.4
Central	3.5	4.2	3.9	3.1	4.6	4.3	5.5	5.9	5.2
West	6.5	5.2	5.0	7.0	5.9	5.1	4.4	4.9	4.9
Percent minority enrollment									
Less than 6 percent	5.5	5.8	4.3	5.4	5.3	4.6	7.1	6.1	5.8
6 to 20 percent	4.5	4.8	3.1	4.7	4.3	2.5	3.5	4.4	3.9
21 to 49 percent	4.1	4.7	4.5	5.2	4.4	4.2	5.9	4.8	4.6
50 percent or more	6.0	5.4	6.6	6.3	7.6	6.6	7.4	9.5	8.6

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent—and World Wide Web access—64 percent of private schools with Internet access.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-22.—Percent of private schools offering or participating in advanced telecommunications training for teachers, by type of training and school characteristics: School year 1998-99

School characteristic	Percent of schools offering or participating in any type of advanced tele-communications training for teachers	Type of advanced telecommunications training			
		Use of computers	Integration of technology into the curriculum	Use of Internet	Use of other advanced tele-communications
All private schools	64	60	49	43	19
Affiliation					
Catholic	88	85	74	66	30
Other religious	49	45	34	28	12
Nonsectarian	58	55	44	42	22
Instructional level					
Elementary	66	63	54	44	21
Secondary	74	69	54	62	24
Combined	55	49	35	33	13
Internet access					
Has access	77	73	60	60	25
No access	39	35	26	9	8
Size of enrollment					
Less than 150	45	40	33	26	11
150 to 299	76	74	54	50	23
300 or more	84	83	73	66	32
Type of locale					
City	72	67	57	46	22
Urban fringe	67	64	49	44	22
Town	49	47	42	39	12
Rural	47	41	31	33	12
Geographic region					
Northeast	66	65	52	46	20
Southeast	53	53	37	39	16
Central	71	67	55	49	24
West	63	54	49	35	16
Percent minority enrollment					
Less than 6 percent	53	53	42	38	15
6 to 20 percent	72	66	54	49	23
21 to 49 percent	73	67	60	54	26
50 percent or more	60	59	45	31	16

NOTE: Schools could report more than one type of advanced telecommunications training for teachers.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-22a.—Standard errors of the percent of private schools offering or participating in advanced telecommunications training for teachers, by type of training and school characteristics: School year 1998-99

School characteristic	Percent of schools offering or participating in any type of advanced tele-communications training for teachers	Type of advanced telecommunications training			
		Use of computers	Integration of technology into the curriculum	Use of Internet	Use of other advanced tele-communications
All private schools	2.0	2.0	1.8	1.8	1.3
Affiliation					
Catholic	2.2	2.3	2.4	2.7	2.7
Other religious	3.1	3.2	2.6	2.9	2.0
Nonsectarian	4.8	4.7	4.9	4.6	3.6
Instructional level					
Elementary	2.5	2.4	2.5	2.2	1.7
Secondary	4.7	4.4	5.0	4.5	3.5
Combined	4.5	4.5	4.0	3.3	2.5
Internet access					
Has access	2.0	2.3	2.1	2.2	1.9
No access	3.9	3.8	3.3	2.8	2.1
Size of enrollment					
Less than 150	3.4	3.5	2.9	3.3	2.7
150 to 299	2.9	3.0	3.4	3.4	2.6
300 or more	2.2	2.1	2.5	2.8	2.6
Type of locale					
City	2.9	2.8	2.9	3.0	2.3
Urban fringe	3.5	3.4	3.3	3.3	2.2
Town	6.1	6.3	6.2	6.2	3.8
Rural	8.1	7.8	6.6	6.9	3.9
Geographic region					
Northeast	4.4	4.3	3.9	4.0	3.0
Southeast	4.0	4.0	3.8	4.3	2.9
Central	3.5	3.4	3.5	3.7	2.8
West	4.5	4.6	4.1	3.9	3.1
Percent minority enrollment					
Less than 6 percent	4.2	4.2	4.0	4.1	2.7
6 to 20 percent	3.9	4.1	3.7	4.2	3.1
21 to 49 percent	4.4	4.7	4.5	4.8	3.5
50 percent or more	4.2	4.2	4.1	4.4	3.6

NOTE: Schools could report more than one type of advanced telecommunications training for teachers.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-23.—Among private schools that offered or participated in advanced telecommunications training for teachers, percentage distribution of schools using various methods of encouragement for teacher training, by school characteristics: School year 1998-99

School characteristic	Left up to teachers to initiate participation in training	Training not mandated, but encouraged by incentives	Training mandated by school, central administration, or diocese	Other approach
All private schools	55	22	16	6
Affiliation				
Catholic	37	31	26	6
Other religious	67	15	12	6
Nonsectarian	56	27	11	6
Instructional level				
Elementary	50	25	19	6
Secondary	55	22	16	7
Combined	68	16	10	5
Internet access				
Has access	47	29	22	5
No access	72	13	6	9
Size of enrollment				
Less than 150	68	14	9	9
150 to 299	49	27	19	4
300 or more	39	32	27	3
Type of locale				
City	52	24	19	5
Urban fringe	53	23	17	6
Town	51	25	14	9
Rural	78	9	7	6
Geographic region				
Northeast	51	31	14	4
Southeast	59	17	19	5
Central	56	20	18	6
West	55	22	15	9
Percent minority enrollment				
Less than 6 percent	58	17	15	10
6 to 20 percent	55	23	15	7
21 to 49 percent	52	27	19	3
50 percent or more	56	23	18	3

NOTE: Data presented in this table are based on the percentage of schools offering or participating in any type of advanced telecommunications training for teachers—64 percent of private schools. Percentages are computed across each row but may not sum to 100 because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-23a.—Among private schools that offered or participated in advanced telecommunications training for teachers, standard errors of the percentage distribution of schools using various methods of encouragement for teacher training, by school characteristics: School year 1998-99

School characteristic	Left up to teachers to initiate participation in training	Training not mandated, but encouraged by incentives	Training mandated by school, central administration, or diocese	Other approach
All private schools	1.8	1.9	1.4	1.0
Affiliation				
Catholic	2.7	3.0	2.7	1.5
Other religious	2.5	2.4	1.8	1.6
Nonsectarian	4.9	4.4	2.5	2.6
Instructional level				
Elementary	2.5	2.4	2.0	1.3
Secondary	4.3	2.9	2.5	2.8
Combined	3.6	3.1	2.1	2.0
Internet access				
Has access	2.3	2.7	2.1	1.0
No access	3.4	2.0	1.8	2.2
Size of enrollment				
Less than 150	3.1	2.8	1.9	1.9
150 to 299	2.8	3.0	3.1	1.4
300 or more	2.7	2.4	2.5	0.9
Type of locale				
City	3.2	2.8	2.4	1.3
Urban fringe	3.5	2.7	2.4	1.9
Town	6.8	5.1	4.1	3.9
Rural	4.9	3.3	3.3	3.4
Geographic region				
Northeast	4.0	3.8	2.4	1.7
Southeast	4.2	2.7	3.0	2.3
Central	3.7	3.2	3.0	1.7
West	4.1	3.5	2.7	2.6
Percent minority enrollment				
Less than 6 percent	4.1	3.4	2.6	2.4
6 to 20 percent	4.0	3.1	2.3	2.2
21 to 49 percent	4.0	3.9	3.1	1.2
50 percent or more	4.5	3.6	3.8	1.5

NOTE: Data presented in this table are based on the percentage of schools offering or participating in any type of advanced telecommunications training for teachers—64 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-24.—Percentage distribution of private schools reporting the various individuals primarily responsible for supporting advanced telecommunications in the school, by school characteristics: School year 1998-99

School characteristic	Full-time paid technology director/ coordinator	Part-time paid technology director/ coordinator	Consultant/ outside contractor	Teacher or other staff as part of formal respon-sibilities	Teacher or other staff as volunteers	Other volunteers or someone else	No one
All private schools	12	13	5	27	12	10	20
Affiliation							
Catholic	19	21	7	29	9	7	8
Other religious	5	8	5	26	16	13	28
Nonsectarian	21	12	5	24	9	7	21
Instructional level							
Elementary	11	15	6	24	11	10	23
Secondary	22	14	4	31	18	3	7
Combined	12	7	4	32	15	13	17
Internet access							
Has access	16	17	6	31	13	9	8
No access	4	5	4	20	11	12	44
Size of enrollment							
Less than 150	3	6	4	23	17	14	33
150 to 299	12	20	7	32	10	9	10
300 or more	31	17	6	27	7	6	6
Type of locale							
City	17	17	7	26	10	9	14
Urban fringe	13	14	5	25	9	14	21
Town	7	5	4	30	21	4	29
Rural	2	7	0	33	20	9	29
Geographic region							
Northeast	19	14	8	20	8	7	23
Southeast	11	8	7	23	13	14	23
Central	9	14	3	30	17	10	17
West	10	15	4	33	10	9	19
Percent minority enrollment							
Less than 6 percent	8	11	5	19	18	7	31
6 to 20 percent	15	14	5	37	11	9	9
21 to 49 percent	17	14	5	23	14	13	15
50 percent or more	8	14	7	27	6	14	23

NOTE: Percentages are computed across each row but may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-24a.—Standard errors of the percentage distribution of private schools reporting the various individuals primarily responsible for supporting advanced telecommunications in the school, by school characteristics: School year 1998-99

School characteristic	Full-time paid technology director/ coordinator	Part-time paid technology director/ coordinator	Consultant/ outside contractor	Teacher or other staff as part of formal respon-sibilities	Teacher or other staff as volunteers	Other volunteers or someone else	No one
All private schools	0.9	1.0	0.9	1.7	1.7	1.3	1.8
Affiliation							
Catholic	1.9	1.9	1.5	2.8	1.7	1.5	1.9
Other religious	0.9	1.4	1.3	2.8	2.9	2.2	3.1
Nonsectarian	3.1	2.6	2.3	3.5	2.4	2.9	4.0
Instructional level							
Elementary	1.1	1.4	1.2	2.1	2.0	1.5	2.3
Secondary	2.7	2.5	1.2	4.7	4.9	1.5	3.1
Combined	1.7	2.0	1.7	4.8	3.6	3.3	3.7
Internet access							
Has access	1.2	1.2	1.1	2.4	1.8	1.5	1.7
No access	1.1	1.4	1.5	3.1	2.8	3.0	4.2
Size of enrollment							
Less than 150	0.9	1.5	1.5	2.9	3.2	2.7	3.2
150 to 299	2.1	2.3	1.5	2.9	1.9	1.9	2.4
300 or more	2.1	2.3	1.2	2.9	1.6	1.7	1.5
Type of locale							
City	1.9	1.8	1.6	2.7	1.8	1.8	2.3
Urban fringe	1.7	2.3	1.5	2.4	2.4	2.6	3.4
Town	2.1	1.9	2.1	5.7	5.4	2.7	5.7
Rural	1.2	2.8	0.5	8.1	7.4	4.8	8.7
Geographic region							
Northeast	2.6	2.5	2.4	2.3	2.6	2.9	4.4
Southeast	2.1	2.7	2.3	4.1	2.9	3.3	4.4
Central	1.6	2.0	1.1	3.3	3.5	2.1	3.4
West	1.8	2.8	1.9	4.3	2.4	2.2	3.5
Percent minority enrollment							
Less than 6 percent	1.5	2.1	1.8	3.4	3.9	2.6	4.6
6 to 20 percent	1.9	2.5	1.1	4.0	2.8	2.4	2.2
21 to 49 percent	2.6	2.4	2.2	3.2	3.5	3.4	3.6
50 percent or more	2.3	2.9	2.7	3.8	1.7	3.5	4.3

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-25.—Among private schools with at least one individual providing support for advanced telecommunications, percentage distribution of schools indicating the number of individuals providing support, by level of support and school characteristics: School year 1998-99

School characteristic	Total number of individuals		Number of full-time individuals			Number of part-time individuals		
	1	2+	None	1	2+	None	1	2+
All private schools	70	30	63	25	12	25	48	28
Affiliation								
Catholic	66	34	61	30	10	27	43	30
Other religious	74	26	72	17	11	21	55	24
Nonsectarian	63	37	52	28	20	30	36	34
Instructional level								
Elementary	68	32	63	27	10	25	45	30
Secondary	64	36	56	32	12	29	40	31
Combined	76	24	67	16	17	23	57	20
Internet access								
Has access	64	36	61	26	13	26	43	31
No access	86	14	71	21	9	21	63	16
Size of enrollment								
Less than 150	79	21	77	14	9	18	61	21
150 to 299	64	36	65	26	9	25	44	31
300 or more	62	38	47	35	18	33	35	32
Type of locale								
City	66	34	61	27	12	25	44	31
Urban fringe	73	27	62	25	12	24	49	27
Town	67	33	68	20	12	26	52	22
Rural	78	22	70	20	10	24	53	23
Geographic region								
Northeast	70	30	57	28	15	29	45	27
Southeast	69	31	58	31	11	32	45	23
Central	69	31	65	26	9	23	50	28
West	70	30	70	16	14	18	50	33
Percent minority enrollment								
Less than 6 percent	63	37	69	17	14	22	46	32
6 to 20 percent	74	26	68	22	10	21	52	26
21 to 49 percent	63	37	57	28	14	29	40	31
50 percent or more	75	24	63	29	9	28	52	21

NOTE: Data presented in this table are based on the number of schools with at least one individual providing support for advanced telecommunications—80 percent of private schools. Percentages are computed across each row but may not sum to 100 because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-25a.—Among private schools with at least one individual providing support for advanced telecommunications, standard errors of the percentage distribution of schools indicating the number of individuals providing support, by level of support and school characteristics: School year 1998-99

School characteristic	Total number of individuals		Number of full-time individuals			Number of part-time individuals		
	1	2+	None	1	2+	None	1	2+
All private schools	2.5	2.5	1.9	1.8	1.3	1.9	2.9	2.2
Affiliation								
Catholic	4.0	4.0	2.9	2.9	1.9	2.7	3.6	3.4
Other religious	3.0	3.0	4.0	2.9	2.1	3.7	4.5	3.0
Nonsectarian	4.7	4.7	4.8	4.1	3.3	4.6	4.5	4.1
Instructional level								
Elementary	3.3	3.3	2.5	2.4	1.8	2.4	3.2	3.1
Secondary	6.9	6.9	5.3	5.9	1.9	5.4	5.7	4.6
Combined	4.0	4.2	4.8	3.4	2.5	4.5	4.7	3.4
Internet access								
Has access	2.8	2.8	2.2	2.0	1.5	1.9	3.0	2.4
No access	2.7	2.7	4.4	3.8	3.1	4.0	5.4	3.5
Size of enrollment								
Less than 150	4.4	4.4	3.6	3.3	2.4	3.6	4.6	3.6
150 to 299	4.4	4.4	3.3	3.4	2.3	2.7	3.7	3.6
300 or more	3.0	3.0	3.0	2.8	2.1	2.9	2.7	2.9
Type of locale								
City	3.8	3.8	2.5	2.5	2.1	2.6	3.6	3.3
Urban fringe	2.8	2.8	3.6	3.4	1.9	3.3	3.5	3.6
Town	6.7	6.7	6.2	5.0	4.6	5.7	6.5	5.8
Rural	7.8	7.8	9.6	8.3	5.9	8.6	9.4	6.9
Geographic region								
Northeast	4.5	4.5	4.4	4.0	2.6	3.8	4.1	3.6
Southeast	4.7	4.7	4.6	4.6	2.4	4.7	4.8	3.7
Central	5.4	5.4	4.3	3.6	2.6	3.8	5.1	3.9
West	4.9	4.9	3.8	2.6	2.8	3.0	5.6	5.3
Percent minority enrollment								
Less than 6 percent	6.9	6.9	4.2	2.7	3.4	3.7	6.1	4.8
6 to 20 percent	3.7	3.7	3.3	2.9	1.7	2.6	4.7	3.7
21 to 49 percent	5.0	5.0	4.1	3.5	2.7	3.8	4.3	4.2
50 percent or more	4.2	4.2	4.4	4.3	2.7	4.7	5.3	3.9

NOTE: Data presented in this table are based on the number of schools with at least one individual providing support for advanced telecommunications—80 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-26.—Among private schools with at least one individual supporting advanced telecommunications that may help teachers integrate technology into the curriculum, percentage distribution of schools indicating the extent of help, by school characteristics: School year 1998-99

School characteristic	Large extent	Moderate extent	Small extent	Not at all
All private schools	12	29	40	19
Affiliation				
Catholic	18	38	33	11
Other religious	3	22	50	25
Nonsectarian	16	28	30	25
Instructional level				
Elementary	14	33	36	17
Secondary	17	32	38	13
Combined	4	19	50	27
Internet access				
Has access	14	32	38	16
No access	4	20	46	30
Size of enrollment				
Less than 150	5	21	49	25
150 to 299	9	32	39	20
300 or more	20	38	31	11
Type of locale				
City	13	32	38	17
Urban fringe	12	31	37	20
Town	8	24	39	30
Rural	11	17	59	12
Geographic region				
Northeast	13	38	34	15
Southeast	10	27	40	23
Central	11	30	39	20
West	13	24	45	18
Percent minority enrollment				
Less than 6 percent	13	22	46	20
6 to 20 percent	9	31	44	16
21 to 49 percent	14	33	35	18
50 percent or more	8	31	35	26

NOTE: Data presented in this table are based on the number of schools with at least one individual providing support for advanced telecommunications—80 percent of private schools. Percentages are computed across each row but may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-26a.—Among private schools with at least one individual supporting advanced telecommunications that may help teachers integrate technology into the curriculum, standard errors of the percentage distribution of schools indicating the extent of help, by school characteristics: School year 1998-99

School characteristic	Large extent	Moderate extent	Small extent	Not at all
All private schools	1.2	2.0	2.4	1.7
Affiliation				
Catholic	2.2	3.0	3.0	2.2
Other religious	0.9	2.8	4.1	3.2
Nonsectarian	3.3	4.6	4.7	4.8
Instructional level				
Elementary	1.7	2.9	3.1	2.4
Secondary	4.3	4.6	4.6	2.8
Combined	1.0	3.4	4.9	4.2
Internet access				
Has access	1.5	2.1	2.5	1.6
No access	1.6	4.3	5.3	4.4
Size of enrollment				
Less than 150	1.7	3.1	4.4	3.8
150 to 299	1.9	3.3	4.0	3.0
300 or more	2.3	2.8	2.8	1.6
Type of locale				
City	2.0	3.1	3.3	2.1
Urban fringe	2.1	2.8	4.2	3.3
Town	2.9	6.2	7.1	6.4
Rural	6.9	6.2	8.3	7.3
Geographic region				
Northeast	2.4	3.3	4.0	3.6
Southeast	3.1	3.5	4.7	4.4
Central	1.9	4.1	4.0	3.0
West	2.7	3.6	4.2	3.4
Percent minority enrollment				
Less than 6 percent	3.1	3.6	5.8	3.7
6 to 20 percent	1.6	3.4	4.3	2.8
21 to 49 percent	2.8	4.3	4.3	3.3
50 percent or more	2.6	5.6	5.5	4.7

NOTE: Data presented in this table are based on the number of schools with at least one individual providing support for advanced telecommunications—80 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-27.—Among private schools with at least one individual supporting advanced telecommunications that may provide network technical support, percentage distribution of schools indicating the extent of support, by school characteristics: School year 1998-99

School characteristic	Large extent	Moderate extent	Small extent	Not at all
All private schools	20	22	21	37
Affiliation				
Catholic	19	25	21	35
Other religious	15	22	23	41
Nonsectarian	40	17	13	29
Instructional level				
Elementary	18	22	21	38
Secondary	32	25	23	19
Combined	20	20	18	42
Internet access				
Has access	25	24	23	28
No access	5	15	13	68
Size of enrollment				
Less than 150	13	21	20	47
150 to 299	15	20	26	39
300 or more	36	27	15	21
Type of locale				
City	24	21	20	35
Urban fringe	23	24	19	35
Town	8	17	28	46
Rural	11	26	22	41
Geographic region				
Northeast	26	18	17	39
Southeast	14	25	20	41
Central	16	23	26	35
West	26	22	18	34
Percent minority enrollment				
Less than 6 percent	21	17	25	36
6 to 20 percent	20	24	22	34
21 to 49 percent	24	22	19	34
50 percent or more	14	25	16	45

NOTE: Data presented in this table are based on the number of schools with at least one individual providing support for advanced telecommunications—80 percent of private schools. Percentages are computed across each row but may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-27a.—Among private schools with at least one individual supporting advanced telecommunications that may provide network technical support, standard errors of the percentage distribution of schools indicating the extent of support, by school characteristics: School year 1998-99

School characteristic	Large extent	Moderate extent	Small extent	Not at all
All private schools	1.7	1.7	1.7	2.3
Affiliation				
Catholic	2.3	2.2	2.5	3.1
Other religious	2.2	2.7	2.7	3.5
Nonsectarian	4.7	3.8	3.4	4.2
Instructional level				
Elementary	2.5	2.2	2.3	3.1
Secondary	4.2	3.1	4.3	5.5
Combined	2.6	4.0	3.1	4.9
Internet access				
Has access	2.1	1.9	2.0	2.2
No access	1.8	3.1	3.5	5.0
Size of enrollment				
Less than 150	3.1	2.9	3.3	4.2
150 to 299	2.1	2.6	3.4	4.3
300 or more	2.6	2.9	2.3	2.4
Type of locale				
City	2.6	2.3	2.6	3.7
Urban fringe	3.1	3.4	3.0	3.8
Town	2.8	4.3	6.0	7.7
Rural	6.4	6.5	7.2	8.4
Geographic region				
Northeast	3.9	3.4	3.8	4.2
Southeast	2.6	3.4	3.1	5.0
Central	2.6	2.9	3.8	4.2
West	4.1	3.8	2.9	5.2
Percent minority enrollment				
Less than 6 percent	4.2	3.1	5.1	5.6
6 to 20 percent	2.3	3.3	2.8	4.0
21 to 49 percent	3.5	3.4	3.9	4.4
50 percent or more	3.4	4.3	3.8	5.4

NOTE: Data presented in this table are based on the number of schools with at least one individual providing support for advanced telecommunications—80 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-28.—Among private schools with at least one individual supporting advanced telecommunications that may involve students in the maintenance of telecommunications systems, percentage distribution of schools indicating the extent of involvement, by school characteristics: School year 1998-99

School characteristic	Large extent	Moderate extent	Small extent	Not at all
All private schools	6	13	28	54
Affiliation				
Catholic	7	14	30	49
Other religious	2	11	25	62
Nonsectarian	10	19	25	46
Instructional level				
Elementary	5	12	26	58
Secondary	11	17	35	37
Combined	5	15	29	52
Internet access				
Has access	7	14	31	49
No access	2	11	17	70
Size of enrollment				
Less than 150	6	13	22	60
150 to 299	4	14	28	55
300 or more	6	14	34	46
Type of locale				
City	4	12	29	55
Urban fringe	7	12	30	51
Town	5	10	22	63
Rural	9	24	21	46
Geographic region				
Northeast	5	13	29	53
Southeast	6	10	23	60
Central	5	11	28	55
West	6	17	28	49
Percent minority enrollment				
Less than 6 percent	8	10	29	53
6 to 20 percent	5	16	28	51
21 to 49 percent	5	13	20	62
50 percent or more	3	12	30	55

NOTE: Data presented in this table are based on the number of schools with at least one individual providing support for advanced telecommunications—80 percent of private schools. Percentages are computed across each row but may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-28a.—Among private schools with at least one individual supporting advanced telecommunications that may involve students in the maintenance of telecommunications systems, standard errors of the percentage distribution of schools indicating the extent of involvement, by school characteristics: School year 1998-99

School characteristic	Large extent	Moderate extent	Small extent	Not at all
All private schools	1.0	1.3	1.5	1.6
Affiliation				
Catholic	1.6	1.8	2.6	2.8
Other religious	1.2	2.3	2.5	2.5
Nonsectarian	3.6	3.7	4.8	5.1
Instructional level				
Elementary	1.3	1.4	1.9	2.3
Secondary	4.5	2.6	4.5	4.3
Combined	1.9	3.6	4.3	5.0
Internet access				
Has access	1.2	1.5	2.0	2.2
No access	1.1	3.6	3.4	4.0
Size of enrollment				
Less than 150	2.0	3.0	3.0	3.5
150 to 299	1.5	2.4	2.5	3.4
300 or more	1.3	1.8	2.7	2.7
Type of locale				
City	1.1	2.0	2.7	3.0
Urban fringe	2.3	2.2	3.5	3.7
Town	2.2	3.2	6.0	6.0
Rural	6.7	8.2	5.3	10.2
Geographic region				
Northeast	1.8	2.9	3.6	3.8
Southeast	2.9	2.8	3.6	4.0
Central	1.8	2.8	3.1	3.9
West	2.2	3.4	4.1	4.3
Percent minority enrollment				
Less than 6 percent	2.8	2.5	3.8	4.3
6 to 20 percent	1.7	2.9	2.9	3.5
21 to 49 percent	1.6	2.8	3.3	3.6
50 percent or more	1.6	3.5	4.2	4.6

NOTE: Data presented in this table are based on the number of schools with at least one individual providing support for advanced telecommunications—80 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-29.—Percentage distribution of private schools reporting the extent to which various factors were barriers to either the acquisition or use of computers/advanced telecommunications: School year 1998-99

Barrier	Major barrier	Moderate barrier	Minor barrier	Not a barrier
Lack of or poor equipment	23	24	19	34
Outdated physical plant or inadequate facilities	14	16	21	50
Insufficient budget for hardware/software purchases	45	23	13	19
Lack of quality software for instructional purposes	15	23	25	38
Insufficient level of E-rate discount	14	8	13	51
Problems with telecommunication providers	6	6	16	74
Administrative/teacher resistance or lack of interest	8	12	26	54
Lack of technical support or advice	14	19	26	41
Lack of teacher training	13	29	28	30
Concern about student access to inappropriate materials	18	18	25	39

NOTE: Percentages are computed across each row but may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-29a.—Standard errors of the percentage distribution of private schools reporting the extent to which various factors were barriers to either the acquisition or use of computers/advanced telecommunications: School year 1998-99

Barrier	Major barrier	Moderate barrier	Minor barrier	Not a barrier
Lack of or poor equipment	2.4	1.6	1.3	2.2
Outdated physical plant or inadequate facilities	1.9	1.5	1.7	2.4
Insufficient budget for hardware/software purchases	2.0	1.4	1.2	1.8
Lack of quality software for instructional purposes	1.6	1.8	1.6	2.1
Insufficient level of E-rate discount	1.4	0.9	1.2	2.3
Problems with telecommunication providers	1.0	0.9	1.3	1.5
Administrative/teacher resistance or lack of interest	1.1	1.3	1.7	1.8
Lack of technical support or advice	1.3	1.6	2.1	2.2
Lack of teacher training	1.5	1.8	1.7	2.1
Concern about student access to inappropriate materials	1.5	1.4	1.8	2.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-30.—Percentage distribution of private schools with Internet access reporting the extent to which various factors were barriers to either the acquisition or use of computers/advanced telecommunications: School year 1998-99

Barrier	Major barrier	Moderate barrier	Minor barrier	Not a barrier
Lack of or poor equipment	20	28	23	29
Outdated physical plant or inadequate facilities	12	17	23	47
Insufficient budget for hardware/software purchases	44	29	15	12
Lack of quality software for instructional purposes	12	27	28	33
Insufficient level of E-rate discount	15	9	16	46
Problems with telecommunication providers	4	7	18	71
Administrative/teacher resistance or lack of interest	6	14	31	49
Lack of technical support or advice	12	22	31	35
Lack of teacher training	12	32	35	22
Concern about student access to inappropriate materials	12	19	31	38

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools. Percentages are computed across each row but may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-30a.—Standard errors of the percentage distribution of private schools with Internet access reporting the extent to which various factors were barriers to either the acquisition or use of computers/advanced telecommunications: School year 1998-99

Barrier	Major barrier	Moderate barrier	Minor barrier	Not a barrier
Lack of or poor equipment	2.3	2.0	1.5	2.2
Outdated physical plant or inadequate facilities	1.9	2.0	2.0	2.3
Insufficient budget for hardware/software purchases	2.1	2.0	1.7	1.6
Lack of quality software for instructional purposes	1.8	2.1	2.3	2.0
Insufficient level of E-rate discount	1.8	1.1	1.6	2.7
Problems with telecommunication providers	1.0	1.1	1.8	2.1
Administrative/teacher resistance or lack of interest	0.9	1.7	2.3	2.2
Lack of technical support or advice	1.4	2.0	2.4	2.4
Lack of teacher training	1.5	2.0	2.1	2.2
Concern about student access to inappropriate materials	1.6	1.6	1.9	2.4

NOTE: Data presented in this table are based on the number of schools with Internet access—67 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-31.—Percentage distribution of private schools without Internet access reporting the extent to which various factors were barriers to either the acquisition or use of computers/advanced telecommunications: School year 1998-99

Barrier	Major barrier	Moderate barrier	Minor barrier	Not a barrier
Lack of or poor equipment	30	16	10	45
Outdated physical plant or inadequate facilities	16	13	16	55
Insufficient budget for hardware/software purchases	46	13	9	32
Lack of quality software for instructional purposes	19	15	18	48
Insufficient level of E-rate discount	13	6	6	61
Problems with telecommunication providers	11	4	6	78
Administrative/teacher resistance or lack of interest	10	9	16	64
Lack of technical support or advice	18	14	16	53
Lack of teacher training	16	23	15	47
Concern about student access to inappropriate materials	30	15	15	41

NOTE: Data presented in this table are based on the number of schools without Internet access—33 percent of private schools. Percentages are computed across each row but may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-31a.—Standard errors of the percentage distribution of private schools without Internet access reporting the extent to which various factors were barriers to either the acquisition or use of computers/advanced telecommunications: School year 1998-99

Barrier	Major barrier	Moderate barrier	Minor barrier	Not a barrier
Lack of or poor equipment	4.7	2.8	2.2	4.3
Outdated physical plant or inadequate facilities	3.2	2.6	2.7	4.4
Insufficient budget for hardware/software purchases	4.6	2.5	1.9	4.3
Lack of quality software for instructional purposes	2.9	2.8	3.0	3.9
Insufficient level of E-rate discount	2.3	2.0	1.6	3.1
Problems with telecommunication providers	2.6	1.5	1.9	2.9
Administrative/teacher resistance or lack of interest	2.9	2.1	2.8	3.7
Lack of technical support or advice	3.1	2.8	3.0	4.2
Lack of teacher training	2.9	3.3	2.7	4.1
Concern about student access to inappropriate materials	3.9	2.7	2.8	3.9

NOTE: Data presented in this table are based on the number of schools not with Internet access—33 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-32.—Percent of private schools indicating the various programs, organizations, or individuals that support advanced telecommunications in the school: School year 1998-99

Source of support	Percent of shcools
Technology Literacy Challenge Fund	3
Technology Innovation Challenge Grant	2
E-rate under Telecommunications Act	13
Title IV of ESEA	15
Other state/federal government programs	10
College or university	3
Business or industry	22
Other community nonprofit	9
Central administrative/diocese	14
Teachers	21
Students	9
Parents or other community members	57
Other	7

NOTE: Schools could report more than one source of support for advanced telecommunications.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-32a.—Standard errors of the percent of private schools indicating the various programs, organizations, or individuals that support advanced telecommunications in the school: School year 1998-99

Source of support	Percent of schools
Technology Literacy Challenge Fund	0.6
Technology Innovation Challenge Grant	0.4
E-rate under Telecommunications Act	1.1
Title IV of ESEA	1.4
Other state/federal government programs	1.0
College or university	0.5
Business or industry	1.6
Other community nonprofit	1.4
Central administrative/diocese	1.6
Teachers	1.8
Students	1.2
Parents or other community members	2.1
Other	1.0

NOTE: Schools could report more than one source of support for advanced telecommunications.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-33.—Percent of private schools indicating the various types of support for advanced telecommunications the school, by school characteristics: School year 1998-99

School characteristic	Funds	Hardware	Software	Training	Technical assistance	Network access
All private schools	55	49	44	28	37	19
Affiliation						
Catholic	73	62	51	41	46	25
Other religious	46	43	41	22	31	15
Nonsectarian	47	45	38	20	32	20
Instructional level						
Elementary	57	50	43	30	39	19
Secondary	62	47	38	34	40	30
Combined	47	46	48	23	32	16
Internet access						
Has access	65	57	52	37	46	25
No access	36	32	29	11	20	8
Size of enrollment						
Less than 150	41	40	40	19	32	15
150 to 299	66	55	48	34	38	18
300 or more	69	61	47	38	44	28
Type of locale						
City	61	52	46	34	38	21
Urban fringe	56	50	47	29	42	20
Town	45	44	34	16	26	16
Rural	48	38	43	23	35	16
Geographic region						
Northeast	57	45	42	29	30	18
Southeast	53	49	43	23	33	16
Central	57	47	41	31	37	21
West	54	55	50	29	48	21
Percent minority enrollment						
Less than 6 percent	52	44	44	30	35	19
6 to 20 percent	62	58	54	32	41	17
21 to 49 percent	58	56	46	36	46	25
50 percent or more	51	40	30	15	23	17

NOTE: The various types of support reported in this table were provided by programs, organizations, or individuals identified in table B-32.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-33a.—Standard errors of the percent of private schools indicating the various types of support for advanced telecommunications in the school, by school characteristics: School year 1998-99

School characteristic	Funds	Hardware	Software	Training	Technical assistance	Network access
All private schools	2.1	2.1	2.1	2.0	2.0	1.7
Affiliation						
Catholic	2.8	3.0	3.1	3.0	2.8	3.2
Other religious	3.2	3.2	3.2	2.8	2.9	2.4
Nonsectarian	4.4	4.7	4.0	2.9	4.6	3.6
Instructional level						
Elementary	2.5	2.7	2.7	2.3	2.3	2.0
Secondary	5.3	5.2	4.5	5.0	5.2	5.3
Combined	4.2	4.3	4.4	3.3	4.2	2.9
Internet access						
Has access	2.4	2.5	2.2	2.5	2.6	2.3
No access	4.4	4.1	4.0	2.3	3.1	1.8
Size of enrollment						
Less than 150	3.7	3.8	4.0	3.4	3.7	2.6
150 to 299	3.3	2.8	3.3	3.4	2.9	2.9
300 or more	2.3	2.2	2.6	2.7	2.9	2.9
Type of locale						
City	3.2	3.1	3.3	2.8	2.9	2.9
Urban fringe	3.0	3.4	3.7	3.3	3.4	2.4
Town	6.0	6.1	5.7	4.3	5.3	4.2
Rural	8.6	8.5	8.7	8.1	7.8	6.1
Geographic region						
Northeast	4.6	4.6	4.6	3.6	3.0	2.9
Southeast	5.1	3.7	4.2	3.1	3.7	3.0
Central	4.1	4.0	3.4	3.6	3.7	3.0
West	4.5	4.0	4.3	3.7	4.5	3.5
Percent minority enrollment						
Less than 6 percent	4.5	4.6	3.7	3.6	3.4	3.5
6 to 20 percent	3.7	3.4	3.7	3.2	4.0	2.1
21 to 49 percent	4.4	3.7	4.8	4.6	4.5	4.0
50 percent or more	4.9	4.0	4.0	2.9	3.8	3.3

NOTE: The various types of support reported in this table were provided by programs, organizations, or individuals identified in table B-32.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-34.—Percent of private schools that applied for the 1998 E-rate discount program, by school characteristics: School year 1998-99

School characteristic	Applied for E-rate discount
All private schools	24
Affiliation	
Catholic	51
Other religious	9
Nonsectarian	15
Instructional level	
Elementary	27
Secondary	34
Combined	13
Internet access	
Has access	31
No access	12
Size of enrollment	
Less than 150	8
150 to 299	31
300 or more	46
Type of locale	
City	27
Urban fringe	27
Town	19
Rural	13
Geographic region	
Northeast	37
Southeast	19
Central	26
West	15
Percent minority enrollment	
Less than 6 percent	24
6 to 20 percent	30
21 to 49 percent	23
50 percent or more	18

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-34a.—Standard errors of the percent of private schools that applied for the 1998 E-rate discount program, by school characteristics: School year 1998-99

School characteristic	Applied for E-rate discount
All private schools	1.3
Affiliation	
Catholic	3.2
Other religious	1.7
Nonsectarian	2.7
Instructional level	
Elementary	1.7
Secondary	4.0
Combined	2.4
Internet access	
Has access	1.7
No access	2.2
Size of enrollment	
Less than 150	1.7
150 to 299	3.2
300 or more	3.0
Type of locale	
City	2.3
Urban fringe	2.5
Town	3.9
Rural	4.4
Geographic region	
Northeast	3.5
Southeast	2.7
Central	3.4
West	2.7
Percent minority enrollment	
Less than 6 percent	3.7
6 to 20 percent	2.7
21 to 49 percent	3.1
50 percent or more	3.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-35.—Percent of private schools that did not apply for the 1998 E-rate discount program, and percent giving various reasons for not applying, by school characteristics: School year 1998-99

School characteristic	Percent of private schools that did not apply for discount	Discount too low	Application process too complicated	Never heard of program	Opposed to program in principle	Other reasons
All private schools	76	10	24	50	8	23
Affiliation						
Catholic	49	20	48	15	1	35
Other religious	91	8	17	59	11	20
Nonsectarian	85	6	17	60	3	21
Instructional level						
Elementary	73	13	28	42	7	27
Secondary	66	8	32	45	5	21
Combined	87	5	12	68	10	15
Internet access						
Has access	69	14	33	41	6	21
No access	88	4	8	64	11	26
Size of enrollment						
Less than 150	92	4	14	66	9	18
150 to 299	69	19	32	34	6	30
300 or more	54	18	40	22	7	33
Type of locale						
City	73	15	29	44	4	25
Urban fringe	81	11	22	52	8	21
Town	87	3	18	49	15	24
Rural	76	2	17	64	9	22
Geographic region						
Northeast	63	11	20	45	5	31
Southeast	81	9	15	61	10	20
Central	74	12	32	42	6	24
West	85	8	23	52	10	20
Percent minority enrollment						
Less than 6 percent	76	7	20	53	11	26
6 to 20 percent	70	12	28	44	7	22
21 to 49 percent	77	16	29	41	9	26
50 percent or more	82	7	17	61	3	22

NOTE: Data presented in this table are based on the number of schools that did not apply for the 1998 E-rate discount program—76 percent of private schools. Percents do not sum to 100 because schools could give more than one reason for not applying for the 1998 discount program.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-35a.—Standard errors of the percent of private schools that did not apply for the 1998 E-rate discount program, and percent giving various reasons for not applying, by school characteristics: School year 1998-99

School characteristic	Percent of private schools that did not apply for discount	Discount too low	Application process too complicated	Never heard of program	Opposed to program in principle	Other reasons
All private schools	1.3	1.3	2.2	2.2	1.4	1.6
Affiliation						
Catholic	3.2	3.7	5.5	4.1	1.0	4.0
Other religious	1.7	1.4	2.4	2.6	2.1	2.4
Nonsectarian	2.7	2.1	3.5	5.0	1.6	3.9
Instructional level						
Elementary	1.7	1.8	3.3	2.9	1.8	2.4
Secondary	4.0	2.6	7.4	8.0	2.6	3.5
Combined	2.4	1.4	2.8	4.1	2.9	3.0
Internet access						
Has access	6.9	2.2	3.4	3.5	1.5	2.0
No access	8.8	1.4	1.9	3.4	2.9	3.5
Size of enrollment						
Less than 150	1.7	1.2	2.7	2.8	2.3	2.3
150 to 299	3.2	3.0	4.0	3.8	1.8	3.8
300 or more	3.0	3.2	3.5	3.1	2.1	3.2
Type of locale						
City	2.3	2.9	3.4	4.0	1.2	3.2
Urban fringe	2.5	2.4	3.3	3.6	2.5	3.2
Town	3.9	1.7	6.3	7.8	5.3	6.3
Rural	4.4	1.6	5.9	8.6	6.3	7.5
Geographic region						
Northeast	3.5	3.1	5.2	6.0	2.5	5.3
Southeast	2.7	2.3	3.6	5.0	3.2	4.1
Central	3.4	2.4	4.2	5.0	2.6	3.3
West	2.7	2.8	3.7	4.4	2.8	3.1
Percent minority enrollment						
Less than 6 percent	3.7	2.1	4.0	5.4	4.1	5.2
6 to 20 percent	2.7	2.9	3.9	4.4	2.5	3.6
21 to 49 percent	3.1	3.0	4.4	5.4	2.4	3.9
50 percent or more	3.2	2.5	3.3	3.8	1.4	3.8

NOTE: Data presented in this table are based on the number of schools that did not apply for the 1998 E-rate discount program—76 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-36.—Of private schools that applied for the 1998 E-rate program, percentage distribution of the percent discount for which they were eligible, by school characteristics: School year 1998-99

School characteristic	20 percent discount	40 percent discount	50 percent discount	60 percent discount or higher
All private schools	18	44	15	22
Affiliation				
Catholic	18	45	14	23
Other religious	25	39	19	16
Nonsectarian	14	54	22	9
Instructional level				
Elementary	20	41	15	24
Secondary	17	51	14	18
Combined	13	55	18	13
Internet access				
Has access	19	47	17	17
No access	16	30	5	50
Size of enrollment				
Less than 150	24	26	28	22
150 to 299	11	42	16	30
300 or more	23	52	12	13
Type of locale				
City	20	41	9	30
Urban fringe	21	62	8	9
Town	12	9	54	26
Rural	3	11	44	42
Geographic region				
Northeast	15	47	12	26
Southeast	37	38	14	12
Central	16	45	21	19
West	15	43	12	30
Percent minority enrollment				
Less than 6 percent	25	46	12	17
6 to 20 percent	18	55	17	9
21 to 49 percent	19	48	21	12
50 percent or more	6	22	10	62

NOTE: Data presented in this table are based on the number of schools that applied for the 1998 E-rate discount program—24 percent of private schools. Percentages are computed across each row but may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-36a.—Of private schools that applied for the 1998 E-rate program, standard errors of the percentage distribution of the percent discount for which they were eligible, by school characteristics: School year 1998-99

School characteristic	20 percent discount	40 percent discount	50 percent discount	60 percent discount or higher
All private schools	2.9	4.0	2.8	3.3
Affiliation				
Catholic	3.3	4.7	3.1	4.2
Other religious	8.8	9.6	7.6	7.3
Nonsectarian	6.2	10.0	8.9	6.4
Instructional level				
Elementary	3.7	5.0	3.6	4.6
Secondary	3.9	5.3	3.6	4.3
Combined	4.6	8.2	7.5	6.1
Internet access				
Has access	3.1	4.4	3.3	3.2
No access	7.6	9.8	4.7	9.8
Size of enrollment				
Less than 150	13.0	12.1	13.1	11.3
150 to 299	4.1	7.2	4.4	5.9
300 or more	3.8	4.0	2.7	2.7
Type of locale				
City	4.8	5.6	3.3	5.3
Urban fringe	5.0	5.8	3.2	3.9
Town	8.0	7.0	12.0	11.3
Rural	3.6	11.8	3.9	22.4
Geographic region				
Northeast	4.6	7.2	3.5	5.0
Southeast	9.5	9.5	6.8	6.6
Central	5.4	6.2	5.8	6.1
West	6.9	8.6	6.2	10.6
Percent minority enrollment				
Less than 6 percent	7.4	8.3	4.5	6.3
6 to 20 percent	4.5	6.4	5.4	3.5
21 to 49 percent	6.3	8.2	8.0	6.1
50 percent or more	4.6	7.0	5.5	9.9

NOTE: Data presented in this table are based on the number of schools that applied for the 1998 E-rate discount program—24 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table 37.—Percentage distribution of private schools indicating their decision to apply or not apply for the 1999-2000 E-rate discount program, by school characteristics: School year 1998-99

School characteristic	Have applied or plan to apply	Not going to apply	Undecided
All private schools	39	57	4
Affiliation			
Catholic	69	29	2
Other religious	18	76	6
Nonsectarian	35	62	3
Instructional level			
Elementary	43	54	3
Secondary	56	43	1
Combined	23	71	6
Internet access			
Has access	50	46	4
No access	18	78	3
Size of enrollment			
Less than 150	18	77	5
150 to 299	55	41	4
300 or more	57	41	1
Type of locale			
City	47	49	4
Urban fringe	39	56	5
Town	31	67	2
Rural	23	75	2
Geographic region			
Northeast	53	45	3
Southeast	36	61	3
Central	37	61	2
West	31	60	8
Percent minority enrollment			
Less than 6 percent	36	61	3
6 to 20 percent	39	56	5
21 to 49 percent	40	54	6
50 percent or more	40	58	2

NOTE: Percentages are computed across each row but may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table 37a.—Standard errors of the percentage distribution of private schools indicating their decision to apply or not apply for the 1999-2000 E-rate discount program, by school characteristics: School year 1998-99

School characteristic	Have applied or plan to apply	Not going to apply	Undecided
All private schools	1.5	1.5	0.9
Affiliation			
Catholic	3.1	3.0	0.9
Other religious	2.5	2.5	1.6
Nonsectarian	3.8	4.0	1.6
Instructional level			
Elementary	2.0	2.2	1.1
Secondary	4.4	4.3	0.6
Combined	2.8	2.7	2.3
Internet access			
Has access	1.9	2.0	1.1
No access	2.2	2.4	1.6
Size of enrollment			
Less than 150	3.0	3.0	1.6
150 to 299	3.0	3.2	1.3
300 or more	2.6	2.6	0.7
Type of locale			
City	2.6	2.9	1.5
Urban fringe	3.1	3.3	1.7
Town	4.7	5.1	1.5
Rural	5.6	5.6	1.6
Geographic region			
Northeast	3.8	4.1	1.1
Southeast	5.4	5.0	1.4
Central	3.2	3.4	1.0
West	4.0	4.4	2.7
Percent minority enrollment			
Less than 6 percent	4.0	3.9	1.7
6 to 20 percent	3.0	3.4	1.7
21 to 49 percent	4.5	4.8	2.3
50 percent or more	3.8	4.2	1.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

Table B-38.—Ratio of students to instructional computer and ratio of students to instructional computer with Internet access, by school sector, affiliation, and level: School year 1998-99

School characteristic	Number of students per instructional computer	Number of students per instructional computer with Internet access
All public schools	**6**	**12**
Level		
Elementary	6	14
Secondary	6	10
Combined	*	*
All private schools	**8**	**15**
Affiliation and level		
Catholic	8	19
Elementary	8	26
Secondary	8	12
Combined	5	8
Other religious	9	18
Elementary	9	23
Secondary	6	9
Combined	9	19
Nonsectarian	6	7
Elementary	9	15
Secondary	3	4
Combined	5	6

* Too few cases to report the data.

NOTE: Private schools were surveyed during the school year 1998-99. Public schools were surveyed in Fall 1998.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

APPENDIX C

Survey Questionnaire
for the 1998-99 FRSS Survey

U.S. DEPARTMENT OF EDUCATION NATIONAL CENTER FOR EDUCATION STATISTICS WASHINGTON, D.C. 20208-5651 ADVANCED TELECOMMUNICATIONS IN U.S. PRIVATE SCHOOLS: 1998-1999 FAST RESPONSE SURVEY SYSTEM	FORM APPROVED O.M.B. NO.: 1850-0733 EXPIRATION DATE: 7/99

This survey is authorized by law (20 U.S.C. 1221e-1). While you are not required to respond, your cooperation is needed to make the results of this survey comprehensive, accurate, and timely.

LABEL

IF ABOVE INFORMATION IS INCORRECT, PLEASE MAKE CORRECTIONS DIRECTLY ON LABEL.

Name of person completing form: _____ Telephone: _____

Title/position: _____ Number of years at this school: _____

Best days and times to reach you (in case of questions): _____

E-mail: _____

PLEASE RETURN COMPLETED FORM TO:	IF YOU HAVE ANY QUESTIONS, CONTACT:
WESTAT 1650 Research Boulevard Rockville, Maryland 20850 Attention: 716604-Skinner	Becky Skinner 800-937-8281, ext. 2279 Fax: 1-800-254-0984 E:mail: RAKB1@westat.com

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information is 1850-0733. The time required to complete this information collection is estimated to average 30 minutes per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collected. If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this form, please write to: U.S. Department of Education, Washington, D.C. 20202-4651. If you have comments or concerns regarding the status of your individual submission of this form, write directly to: National Center for Education Statistics, 555 New Jersey Avenue, N.W., Washington, D.C. 20208.

FRSS Form No. 68, 2/99

DEFINITIONS OF TERMS USED IN QUESTIONNAIRE

Advanced telecommunications - refers to modes of communication used to transmit information from one place to another including broadcast and interactive television, networked computers, etc.

Cable modem - provides greater bandwidth from Internet Service Providers that enables faster data transfer than is possible using a 33.6 kbps modem, 56 kbps modem, or 128 kbps ISDN connection. Cable networks are supplied by cable companies and generally use fiber-optic cabling to form connections, although some cable companies may rely on co-axial cabling.

DS1 - refers to a service with digital transmission speed of 1.544 Mega (million) bits per second.

DS3 - refers to a service with digital transmission speed of 45 Mega (million) bits per second.

Dedicated line - type of account available from an Internet Service Provider where the customer is connected to the Internet 24 hours a day on his/her own individual phone line. This connection is made without a modem.

Dial-up connection - customer is only connected to the Internet when his/her modem dials the Internet Service Provider's telephone number to establish the connection.

Distance learning - refers to the transmission of information from one geographic location to another via various modes of telecommunications technology. For example, an advanced high school math class in Richmond, Virginia, could receive a college-level math seminar from the University of Virginia via two-way video.

E-mail (Electronic mail) - refers to text messages transmitted across networks and usually accessible only by the addressee.

E-rate/Universal Service Schools and Libraries Telecommunication Discount Program - fund created as part of the Telecommunications Act of 1996 to ensure that all eligible schools (public and private) and libraries in the United States have affordable access to modern telecommunications and information services.

Schools and Libraries Discount Matrix		
Percent of students eligible for national school lunch program	Discount level	
	Urban discount percentage	Rural discount percentage
<1	20	25
1-19	40	50
20-34	50	60
35-49	60	70
50-74	80	80
75-100	90	90

56Kb - a digital transmission speed of 56 Kilo (thousand) bits per second.

Fractionalized T1 - T1 line that is split to allow for data communication and voice communication (as opposed to a T1 line used for data communication only).

Fractionalized T3 - T3 line that is split to allow for data communication and voice communication (as opposed to a T3 line used for data communication only).

Instructional rooms - refers to rooms in the school building used for any instructional purposes (includes classrooms, labs, library/media centers, art rooms, rooms used for vocational or special education, etc.).

Interactive television/computer with two-way audio/visual - television or computer having two-way audio and/or visual capabilities that can be used for distance learning or video conferencing.

Internet - refers to a collection of computer networks interconnected by TCP/IP protocols, sharing the same underlying network address space as well as the same domain name space, and interconnected into a network of information.

Intranet - internal network within a school or business that is based on the same technology as the Internet rather than traditional local area network (LAN) software.

ISDN (Integrated Services Digital Network) - phone line that moves data digitally and integrates voice and data.

Local area network - refers to the linkage of computers and/or peripherals (e.g., printer) confined to a limited area that may consist of a room, building, or campus that allows users to communicate and share information.

Modem - refers to a device that connects between a computer and a phone line to translate between the digital signal of the computer and the analog signal required for telephone transmission.

Multimedia - refers to a computer using any combination of text, full color images and graphics, video, animation, and sound.

T1 - refers to a line with digital transmission speed of 1.544 Mega (million) bits per second.

T3 - refers to a line with digital transmission speed of 45 Mega (million) bits per second.

Technology Innovation Challenge Grant - program provides funding for teacher preparation and professional development activities that support the integration of educational technology into the curriculum.

Technology Literacy Challenge Fund - program provides funding to states to effectively increase the capacity of their schools to integrate educational technology into classrooms.

Title VI - program provides funding for the development of effective curriculum and instruction activities to meet the needs of public schools and participating private schools.

Video conferencing - conference between two or more participants at different locations over the Internet or a private network. Each user has a video camera, microphone, and speakers mounted on his/her computer. As the participants speak to one another, they hear each other's voices and see a video image of the other participant(s).

Wide area network - refers to a data communications linkage designed to connect computers over distances greater than the distance transmitted by local area networks (e.g., building to building, city to city, across the country, or internationally), that allows users to communicate and share information, such as the Internet, America Online, CompuServe, etc.

Wireless connection - refers to the connections to the Internet that do not use wire or cable.

World Wide Web (WWW) - refers to a system that allows access to information sites all over the world using a standard, common interface to organize and search for information. The WWW simplifies the location and retrieval of various forms of information including text, audio, and video files. It is the "multimedia" portion of the Internet.

I. Advanced Telecommunications

1. For what grade levels does this school offer academic instruction? From _____ (lowest grade) to _____ (highest grade)

2a. What is the total number of computers in this school? _____ Total computers

2b. How many of these computers are used for instructional purposes? _____ Computers for instructional use

---

3a. Does your school have access to the Internet? Yes ..... 1 No ..... 2 *(If no, skip to question 3c.)*

3b. In what year did your school obtain access to the Internet? Year _____ *(Skip to question 4a.)*

3c. Does your school have plans to obtain access to the Internet? Yes ..... 1 No..... 2 *(If no, skip to question 5a.)*

3d. By what year does your school expect to obtain access to the Internet? Year _____ *(Skip to question 5a.)*

4a. Of the total number of computers in your school (i.e., those in question 2a), how many currently have access to the Internet?
_____ Computers with Internet access

4b. How many of the computers with Internet access (i.e., those in question 4a) are used for instructional purposes?
_____ Instructional computers with Internet access

4c. How many computers in your school that do not currently have access to the Internet are capable of having access to the Internet? _____ Computers capable of having Internet access

---

5a. What is the total number of instructional rooms in your school? Include all rooms used for any instructional purposes (i.e., classrooms, computer and other labs, library/media centers, etc.). _____ Total instructional rooms

5b. How many of these instructional rooms have a computer that is used for instructional purposes?
_____ Instructional rooms with computers for instructional use

5c. How many of these instructional rooms have a computer with access to the Internet?
_____ Instructional rooms with a computer having Internet access *(If none, skip to question 6.)*

5d. How many of the instructional rooms with Internet access (i.e., those in question 5c) are:
_____ Classrooms _____ Computer labs _____ Library/media centers _____ Other instructional rooms

---

6. Please indicate whether or not each type of equipment or service is available at your school, and where in the school it is located. *(Circle yes or no in each column for each item.)*

Equipment or service	1 Available at school?		2 Available in administrative offices?		3 Available in classrooms?		4 Available in computer labs?		5 Available in library/media centers?		6 Available in other instructional rooms?	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
a. Computer connected to a local area network	1	2	1	2	1	2	1	2	1	2	1	2
b. Computer with modem	1	2	1	2	1	2	1	2	1	2	1	2
c. Computer with connection or access to the Internet	1	2	1	2	1	2	1	2	1	2	1	2
d. Computer with connection or access to an Intranet	1	2	1	2	1	2	1	2	1	2	1	2
e. Stand-alone computer (i.e., not connected to any network)	1	2	1	2	1	2	1	2	1	2	1	2
f. Computer with multimedia capabilities (e.g., CD-ROM, speakers)	1	2	1	2	1	2	1	2	1	2	1	2
g. Interactive television/computer with two-way audio/visual	1	2	1	2	1	2	1	2	1	2	1	2

7. How many teachers are there in your school? Include all full- and part-time teachers. _____ Teachers

8. Approximately what percent of the teachers in your school regularly use computers/advanced telecommunications for teaching? _____%

9. Does your school use computers/advanced telecommunications for distance learning? Yes..... 1 No..... 2

10. How does your school connect to the Internet? *(Circle the corresponding numbers of all that apply.)*
☐ *Mark this box if your school does not have Internet and skip to question 14.*

a. Dial-up connection 1
b. Dedicated line *(Indicate the specific connection(s) used.)*
56kb 2
T1/DS1 3
Fractionalized T1 4
T3/DS3 5
Fractionalized T3 6
c. ISDN 7
d. Wireless connection 8
e. Cable modem 9
f. Other *(specify)* _____ 10

11. Please indicate who in your school has access to the following Internet resources or capabilities, and the extent to which they use these resources or capabilities while in the school. *(Circle one response for each item.)*

Resource/capability	Resource available		If resource available, extent of use			
	Yes	No	Not at all	Small extent	Moderate extent	Large extent
a. E-mail						
1. Administrative staff	1	2	1	2	3	4
2. Teachers	1	2	1	2	3	4
3. Students	1	2	1	2	3	4
b. World Wide Web access						
1. Administrative staff	1	2	1	2	3	4
2. Teachers	1	2	1	2	3	4
3. Students	1	2	1	2	3	4

12. Does your school have its own web page on the World Wide Web? Yes ..... 1 No 2

13. Can students access the school's computer system from home? Yes ..... 1 No 2

II. Support for Telecommunications

14. Does your school offer or participate in the following types of training for teachers?

	Yes	No
a. Use of computers	1	2
b. Use of the Internet	1	2
c. Use of other advanced telecommunications	1	2
d. Integration of technology into the curriculum	1	2

15. How does your school encourage computer/advanced telecommunications training for teachers? *(Circle one.)*

a. Mandated by the school, central administration, or diocese 1
b. Not mandated, but incentives provided to encourage participation 2
c. Left up to teachers to initiate participation 3
d. Other *(specify)* _____ 4

16. Who is primarily responsible for supporting advanced telecommunications in your school? *(Circle one.)*

Full-time, paid technology director/coordinator 1
Part-time, paid technology director/coordinator 2
Consultant/outside contractor 3
Teacher or other staff as part of formal responsibilities 4
Teacher or other staff as volunteers 5
Other volunteers 6
No one ..... 7 *(Skip to question 19.)*
Other *(specify)* _____ 8

17. How many individuals are responsible for supporting advanced telecommunications in your school on a:
Full-time basis? _____ Part-time basis? _____

18. To what extent does the technology coordinator and/or other person(s) supporting advanced telecommunications in your school... *(Circle one response for each item.)*

	Not at all	Small extent	Moderate extent	Large extent
a. Help teachers integrate technology into the curriculum?	1	2	3	4
b. Provide network technical support?	1	2	3	4
c. Involve students in the maintenance of telecommunication systems?	1	2	3	4

19. Did your school apply for the Universal Service Schools and Libraries Telecommunications Discount Program (E-rate) during the 1998 program year? Yes..... 1 *(If yes, skip to question 21.)* No..... 2

20. For which of the following reasons did your school not apply for the E-rate discount? *(Circle all that apply and skip to question 24.)*

Discount too low..... 1
Application process too complicated..... 2
Never heard of program..... 3
Opposed to program in principle..... 4
Other *(specify)* _____ 5

21. What E-rate percentage discount was your school eligible to receive for the 1998 program year? *(See discount matrix on p. 2.)* _____%

22. Has your school received a funding commitment letter for the 1998 E-rate discount program?

Yes..... 1 No..... 2 Have not received notification..... 3

23. Please indicate which telecommunications services, if any, your school applied for under the 1998 E-rate discount program, and whether the E-rate discount program helped or will help your school acquire the service(s) for the first time.

Telecommunications service	Was service requested?		Was service received?		Was or will be able to receive service for first time because of E-rate?	
	Yes	No	Yes	No	Yes	No
a. Basic telephone service	1	2	1	2	1	2
b. Internal connections	1	2	1	2	1	2
c. Internet access	1	2	1	2	1	2
d. Other telecommunications services *(specify)* _____	1	2	1	2	1	2

24. Has your school applied or does it plan to apply for the E-rate discount during the 1999-2000 program year?

Yes..... 1 No..... 2

25. What programs, organizations, or individuals, aside from the school budget, are supporting advanced telecommunications in your school with funds, hardware, or software, or by providing or sponsoring training, technical assistance, or network access? *(Circle all that apply.)*

Program/organization/individual	Funds	Hardware	Software	Training	Technical assistance	Network access
a. Technology Literacy Challenge Fund	1	2	3	4	5	6
b. Technology Innovation Challenge Grant	1	2	3	4	5	6
c. E-rate under Telecommunications Act	1	2	3	4	5	6
d. Title VI	1	2	3	4	5	6
e. Other state or federal government programs	1	2	3	4	5	6
f. College or university	1	2	3	4	5	6
g. Business or industry	1	2	3	4	5	6
h. Other community nonprofit organizations (e.g., libraries, museums)	1	2	3	4	5	6
i. Central administration/diocese	1	2	3	4	5	6
j. Teachers	1	2	3	4	5	6
k. Students	1	2	3	4	5	6
l. Parents or other community members	1	2	3	4	5	6
m. Other *(specify)* _____	1	2	3	4	5	6

III. Barriers

26. Please indicate to what extent, if any, each of the following are barriers to your school's acquisition or usage of computers/advanced telecommunications capabilities. If your school is currently using computers/advanced telecommunications, please indicate to what extent each of the following are barriers to upgrading or maximizing your school's telecommunications usage. *(Circle one response for each item.)*

	Not a barrier	Minor barrier	Moderate barrier	Major barrier
a. Lack of or poor equipment	1	2	3	4
b. Outdated physical plant or inadequate facilities	1	2	3	4
c. Insufficient budget for hardware/software purchases	1	2	3	4
d. Lack of quality software for instructional purposes	1	2	3	4
e. Insufficient level of E-rate discount	1	2	3	4
f. Problems with telecommunications providers	1	2	3	4
g. Administrative/teacher resistance or lack of interest	1	2	3	4
h. Lack of technical support or advice	1	2	3	4
i. Lack of teacher training	1	2	3	4
j. Concern about student access to inappropriate materials	1	2	3	4

27. In what year was your school's main instructional building constructed? _____

THANK YOU!

Table B-38a.—Standard errors of the ratio of students to instructional computer and ratio of students to instructional computer with Internet access, by school sector, affiliation, and level: School year 1998-99

School characteristic	Number of students per instructional computer	Number of students per instructional computer with Internet access
All public schools	**0.1**	**0.6**
Level		
Elementary	0.2	0.9
Secondary	0.1	0.4
Combined	*	*
All private schools		
Affiliation and level		
Catholic	0.2	1.6
Elementary	0.3	2.9
Secondary	0.3	0.9
Combined	2.5	10.3
Other religious	0.3	1.9
Elementary	0.5	4.1
Secondary	0.9	2.1
Combined	0.7	3.6
Nonsectarian	0.4	0.7
Elementary	1.2	4.3
Secondary	0.6	0.8
Combined	0.4	0.6

* Standard error could not be derived because there are too few cases to report the data.

NOTE: Private schools were surveyed during the school year 1998-99. Public schools were surveyed in Fall 1998.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools: 1998-99," FRSS 68, 1999.

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