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## Rates of Computer and Internet Use by Children in Nursery School and Students in Kindergarten Through Twelfth Grade: 2003

The use of computers and the Internet by students has increased rapidly in recent years (U.S. Department of Education 1999; U.S. Department of Commerce 2002). In 2001, computer and Internet use was more widespread among school-age children and adolescents than among adults (DeBell and Chapman 2003). The now commonplace use of these technologies follows the installation of computers and Internet access in nearly all public schools and in a majority of households with children by 2000 (Kleiner and Lewis 2003; Newburger 2001).

The use of computers and the Internet may improve people's everyday lives and improve their labor market prospects. Because these technologies have the potential to improve access to information, help to get tasks done better or more quickly, and facilitate communication (see National Research Council 1999), computer and Internet use rates may be considered indicators of the standard of living. Also, the use of computers helps students gain experience with this technology, so use rates may indicate how well prepared the current generation of students is to enter a workforce where the ability to use a computer is expected (U.S. Department of Education 1999).

This Issue Brief describes the percentages of students in grades 12 or below who used computers or the Internet in 2003. Data for this Issue Brief come from the October 2003 Computer and Internet Use Supplement to the Current Population Survey (CPS). The CPS is a sample survey representative of the civilian noninstitutional population in the United States. The survey is conducted in approximately 56,000 households each month. In October 2003 it collected information regarding 29,075 children enrolled in nursery school through 12th grade.<sup>1</sup> A member of each household who is at least 15 years old provides information about household members. As a result of this data collection method, data regarding computer and Internet use by students were not collected directly from students in most cases, but from another member of the

household; this method is a potential source of error. Computer users are identified by questions that ask if the subject uses computers at home, at work, or at school. Internet users are identified by questions that ask if the subject uses the Internet at any location. (For further detail about CPS survey methods, see U.S. Census Bureau 2002).

As shown in table 1, the majority of students use computers and the Internet.<sup>2</sup> Overall, 91 percent used computers and 59 percent used the Internet. The use of these technologies begins at young ages; 67 percent of children in nursery school were computer users, as were 80 percent of those in kindergarten. About one-quarter (23 percent) of children in nursery school used the Internet, and about one-third (32 percent) of kindergarteners did so. By high school, nearly all students (97 percent) used computers, and a majority (80 percent) used the Internet.

Table 1 shows that the use of these technologies varied by several inter-related characteristics.<sup>3</sup> Computer and Internet use varied by race/ethnicity, disability status, parent educational attainment, household language, poverty status, and family income. Differences by these characteristics have been found in previous analyses (U.S. Department of Commerce 1995; U.S. Department of Commerce 1999; Rathbun and West 2003).

Current differences in computer use among students are smaller than those found among adults in previous analyses (e.g., U.S. Department of Commerce 1999), reflecting the fact that most students now use computers. For example, in 2001, adults with graduate education were four times more likely than adults with less than a high school credential to use computers, and adults living in families making over \$75,000 per year were three times as likely as those in families making less than \$20,000 per year to use computers, reflecting differences of 66 and 58 percentage points, respectively (DeBell and Chapman 2003). In contrast, students with a parent with some graduate education were about 1.2 times more likely to use computers than students whose parents have not completed high school, reflecting a difference of 13 percentage

<sup>1</sup> The weighted sample represents approximately 58.3 million noninstitutionalized children age 3 and older in nursery school through 12th grade in October 2003. These estimates exclude children in long-term medical care facilities and juvenile detention facilities, as well as those who have dropped out of school. The Current Population Survey defines nursery school as a group or class organized to provide education for children before kindergarten. It includes preschool and prekindergarten. For ease of presentation, the population enrolled in nursery school through the 12th grade is referred to as "students" in this Issue Brief.

<sup>2</sup> Reported usage may involve the cooperation or assistance of an adult or older child, but that information was not collected.

<sup>3</sup> All differences cited in this report are significant at the .05 level using the Student's *t* statistic. When analyzing data from large samples, many differences (no matter how substantively minor) can be statistically significant. The discussion is limited to differences of at least 5 percentage points.

**Table 1. Percentage of children enrolled in grade 12 or below who use computers and the Internet, by child and family/household characteristics: 2003**

Characteristic	Number of students (in thousands)	Percent using computers		Percent using the Internet	
		Percent	Standard error	Percent	Standard error
Total	58,273	91	0.3	59	0.4
<b>Child characteristics</b>					
Enrollment level					
Nursery school <sup>1</sup>	4,928	67	1.5	23	1.3
Kindergarten	3,719	80	1.4	32	1.7
Grade 1–5	20,043	91	0.4	50	0.8
Grade 6–8	12,522	95	0.4	70	0.9
Grade 9–12	17,062	97	0.3	80	0.7
Sex					
Female	28,269	91	0.4	61	0.6
Male	30,005	91	0.4	58	0.6
Race/ethnicity <sup>2</sup>					
White, non-Hispanic	35,145	93	0.3	67	0.5
Hispanic	10,215	85	1.2	44	1.7
Black, non-Hispanic	8,875	86	0.9	47	1.4
Asian or Pacific Islander, non-Hispanic	2,116	91	1.6	58	2.8
American Indian, Aleut, or Eskimo, non-Hispanic	522	88	3.7	50	5.7
More than one race, non-Hispanic	1,400	92	1.9	65	3.3
Disability status					
Disabled	646	82	3.3	49	4.3
Not disabled	47,949	91	0.3	61	0.5
<b>Family and household characteristics</b>					
Parent educational attainment <sup>3</sup>					
Less than high school credential	5,691	82	1.1	37	1.4
High school credential	13,804	89	0.6	54	0.9
Some college	16,548	93	0.4	63	0.8
Bachelor's degree	8,590	92	0.6	67	1.1
Some graduate education	10,713	95	0.5	73	0.9
Household language					
Spanish-only	2,840	80	1.6	28	1.8
Not Spanish-only	55,434	91	0.3	61	0.4
Poverty status <sup>4</sup>					
In poverty	10,173	84	1.1	40	1.5
Not in poverty	39,016	93	0.4	66	0.7
Family income					
Under \$20,000	8,815	85	0.8	41	1.1
\$20,000–\$34,999	9,273	87	0.7	50	1.1
\$35,000–\$49,999	7,499	93	0.7	62	1.2
\$50,000–\$74,999	9,834	93	0.5	66	1.0
\$75,000 or more	13,769	95	0.4	74	0.8

<sup>1</sup> Data on "nursery school" enrollment may not reflect enrollment in all kinds of early childhood programs.

<sup>2</sup> American Indian includes Alaska Native, Black includes African American, Asian or Pacific Islander includes Native Hawaiian, and Hispanic includes Latino.

<sup>3</sup> Parent educational attainment measures the highest level of education of either of the child's parents.

<sup>4</sup> Poverty status is derived from household size and income. Households with incomes below the poverty threshold for their household size (as currently defined by the U.S. Census Bureau for 2003) were classified as poor. Some households reported incomes in a range that straddles the poverty threshold; these households were classified as poor. The 2003 poverty threshold for a four-person household was \$18,810.

NOTE: Detail may not sum to totals because of rounding or missing data. Population estimates in this table apply to children age 3 and older who are enrolled in nursery school or in grades K–12.

SOURCE: U.S. Census Bureau, Current Population Survey, October 2003.

points (table 1). Students living in families making over \$75,000 per year in 2003 were 1.1 times as likely to use computers as those in families making less than \$20,000 per year, reflecting a difference of 9 percentage points. Thus, these group differences in student computer use are smaller than differences observed among adults in recent years.

Differences in Internet use among students are also smaller than some of the differences recently reported for adults. Adults with graduate education in 2001 were five times more likely

than adults with less than a high school credential to use the Internet, and adults with family incomes of \$75,000 or more were 3.4 times more likely than adults with incomes below \$20,000 to use the Internet, reflecting differences of 68 and 58 percentage points, respectively (DeBell and Chapman 2003). In contrast, students with a parent with some graduate education were twice as likely as students whose parents have not completed high school to use the Internet, and students from families with incomes of \$75,000 or more were 1.8 times more likely than students from families with incomes below \$20,000

to use the Internet. These reflect differences of 36 and 33 percentage points, respectively.

Although differences among students in both computer and Internet use are smaller than differences among adults, rates of Internet use are more varied than rates of computer use. The differences in Internet use are at least twice as large as those in computer use when making comparisons based on poverty status, household language, race/ethnicity for Blacks and Whites, and the highest and lowest categories of income and parent educational attainment. For family income and parent education, differences in computer use are 9 and 13 percentage points, respectively, while differences in Internet use are 33 and 36 points, respectively. Another way of looking at the data is to consider that although most students now use computers, a majority of students with selected characteristics still do not use the Internet. These include students whose family income is under \$20,000, students in poverty, students whose parents have less than a high school credential, Black (non-Hispanic) and Hispanic students, and students in households where Spanish is the only language spoken.

## Conclusion

The use of computers and the Internet by students is commonplace and begins early. In upper grade levels, nearly all students use computers and a substantial majority use the Internet. Even before kindergarten, a majority of nursery school children use computers, and 23 percent use the Internet. Differences exist in computer use among students, but differences by characteristics such as income and education are smaller—about 9 percentage points between the highest and lowest income categories and about 13 percentage points between the highest and lowest categories of parental education—than differences that have been observed among adults. The differences among students are broader for Internet use than computer use. Differences between groups by family income and parental education are as large as 33 and 36 percent, respec-

tively, making students from the most advantaged backgrounds about twice as likely to use the Internet as those from the least advantaged backgrounds.

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The Issue Brief series presents information on education topics of current interest. All estimates shown are based on samples and are subject to sampling variability. All differences are statistically significant at the .05 level. In the design, conduct, and data processing of National Center for Education Statistics (NCES) surveys, efforts are made to minimize the effects of nonsampling error, such as item nonresponse, measurement error, data processing error, or other systematic error. For more information on the Current Population Survey, visit <http://nces.ed.gov/surveys/cps>.

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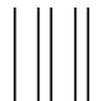
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