

USEIT

Use,
Support,
and
Effect
of
Instructional
Technology
Study

report two

Students' Beliefs, Access, and Use of Computers in School and at Home

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Use, Support, and Effect of Instructional Technology Study

Use, Support, and Effect of Instructional Technology (USEIT)

Report 2

Students' Beliefs, Access, and Use of Computers in School and at Home

Introduction

The Use, Support, and Effect of Instructional Technology (USEIT) Study employed common data collection methods across the 22 Massachusetts school districts to document the effects different district-level technology support structures have on teaching and learning. Among the several specific questions addressed in phase one are:

- How and to what extent are teachers and students using technology in and out of the classroom?
- How much influence does district leadership, shared vision, provision of resources, and technical support have on the ways in which and extent to which teachers use technology for instructional purposes?
- How do different approaches to professional development impact instructional uses of technology?

During the 2001-2002 school year, information about district technology programs, teacher and student use of technology in and out of the classroom, and factors that influence these uses was collected through site visits and surveys. In total, survey responses were obtained from 120 district-level administrators, 122 principals, 4,400 teachers, and 14,200 students in Grades 5, 8, and 11. In addition, over 400 interviews with district leaders, principals, and technology specialists were conducted. And, during the 2002-2003 school year, four case studies and a study focusing on the relationships among student use of technology and academic performance are being conducted.

This report presents descriptive results of the surveys administered to students in Grades 5, 8, and 11. The purposes of this report are to familiarize readers with the data collected from students and to describe the current state of computer use in and out of participating schools. The findings presented in this report focus on the following issues related to student use of technology in and out of school:

- Demographics
- Access at home
- Access at school
- Use at home
- Use at school
- Specific uses of computers
- Computer-related skills
- Computer-related beliefs

Future reports will examine differences between gender, ethnicity, and grade levels. Additional reports will also examine the district-, school-, teacher-, and student-level factors that influence various uses of technology by students and teachers in and out the classroom.

Demographics

Table 1 displays the students' responses to the various demographic questions. In total, 5,192 fifth graders, 4,762 eighth graders, and 3,293 eleventh graders completed student surveys. Within each grade level, roughly half of the respondents were males and half were females. Across all grades, the majority of the respondents were White (between 83–86 percent). Between six and eight percent of the students were Asian, just over four percent were Black, and the remaining three to four percent were Latino. Over 65 percent of the respondents in each grade were from suburban neighborhoods. Around 20 percent of the respondents from each grade were from small urban neighborhoods. Between 11 and 14 percent of the respondents lived in rural areas.

Table 1: Demographics of USEIT Respondents

Grade (# of Respondents)	Gender		Race/Ethnicity				Home Location		
	Girl	Boy	White	Black	Latino	Asian	Sub-urban	Urban	Rural
Grade 5 (N=5192)	49.3%	50.7%	83.9%	4.2%	3.9%	8.0%	68.5%	19.7%	11.8%
Grade 8 (N=4762)	50.2%	49.8%	84.2%	4.5%	4.3%	7.1%	65.7%	20.4%	13.9%
Grade 11 (N=3293)	52.7%	47.3%	86.0%	4.5%	3.6%	6.0%	66.4%	20.8%	12.8%

As a proxy for social-economic status, students were asked how many books were in their homes. As Table 2 indicates, response patterns differ noticeably across grade levels. In Grade 5, 35.7 percent of students indicate that they have more than 100 books in their homes while only 2 percent indicate that they have five or fewer books. In contrast, 28.7 percent of eighth graders and 24.5 percent of eleventh graders report having more than 100 books in their homes while 7.8 percent of eighth graders and 12.8 percent of eleventh graders report having five or fewer books in their homes.

Table 2: About how many books of your own do you have at home, not counting your school books or comic books?

Grade (# of Respondents)	5 or fewer	6–25	26–50	51–100	More than 100
Grade 5 (N=5192)	2.0%	13.2%	20.6%	28.5%	35.7%
Grade 8 (N=4762)	7.8%	22.5%	21.2%	19.8%	28.7%
Grade 11 (N=3293)	12.8%	27.0%	20.2%	15.5%	24.5%

Access at Home

Figure 1 provides information about the number of computers that students have in their homes. Across all three grades, the vast majority of students have at least one computer at home. Between 35.5 and 38.2 percent of students have one computer in at home, between 30.9 and 32.6 percent have 2 computers at home, and between 27.0 and 30.7 percent have three or more computers at home. At each of the three grades, computers are present in over 97 percent of students' homes.

Figure 1 How many computers, if any, do you have at home?

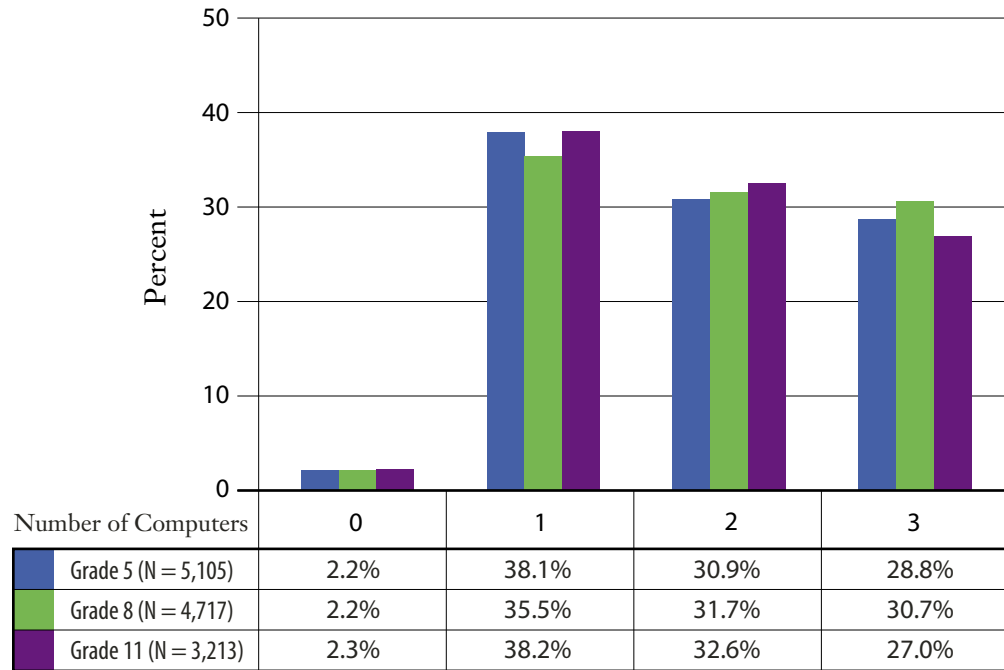


Figure 2 displays the type of Internet connection that students have at home. The vast majority of students have an Internet connection at home. Of those students who know which type of connection they have in their homes, more students have a modem. Yet, a substantial percentage of students in all three grades have DSL or high speed cable Internet connections; 92.5 percent of fifth graders, 94.8 percent of eighth graders, and 95.4 percent of eleventh graders have some type of Internet connection at home. Across all three grade levels, 94.2 percent of surveyed students have an Internet connection at home.

Figure 2 What type of Internet connection do you have at home?

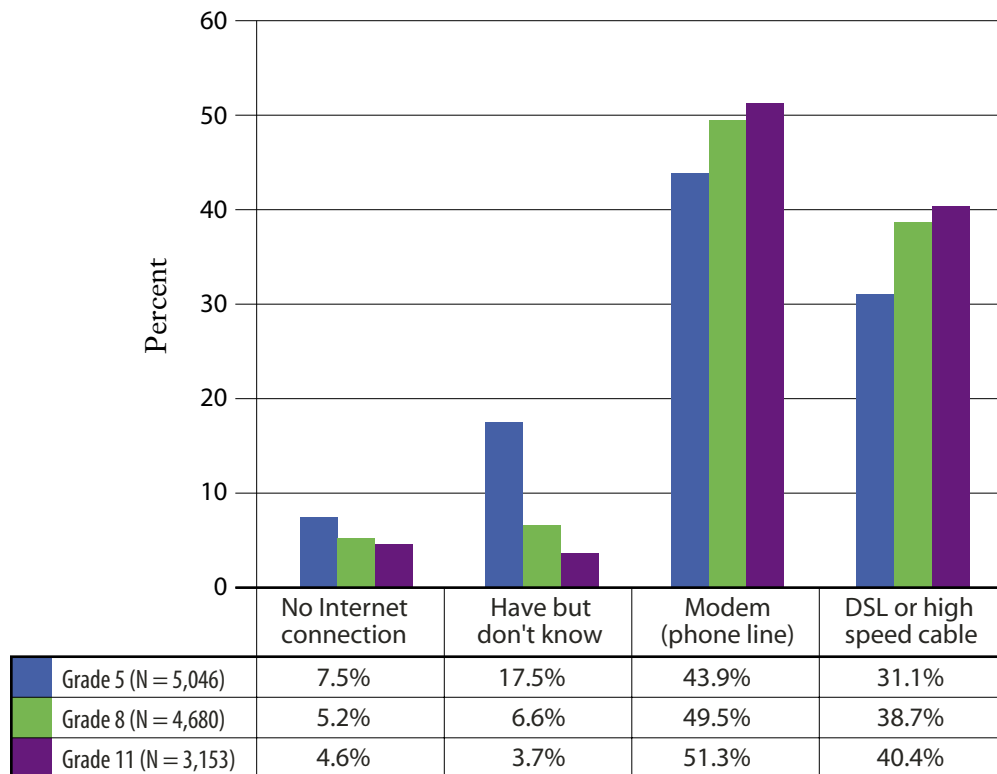


Figure 3 displays information about the number of people that share the computer at a student's home. Of those students responding to this item, the majority of students report that their home computers are shared by 2–5 people. Between 5.6 and 8.3 percent of students indicate that just one person uses the computer(s) at home while between 5.3 and 7.5 percent of students report that 6 or more people share the home computer(s). Across all three grade levels, it appears that, although the vast majority of students have a computer in their homes, the computer is shared with several people; 92.3 percent of fifth graders, 89.8 percent of eighth graders, and 89.1 percent of eleventh graders have to share a computer with at least one other person.

Figure 3 How many people share your home computer(s)?

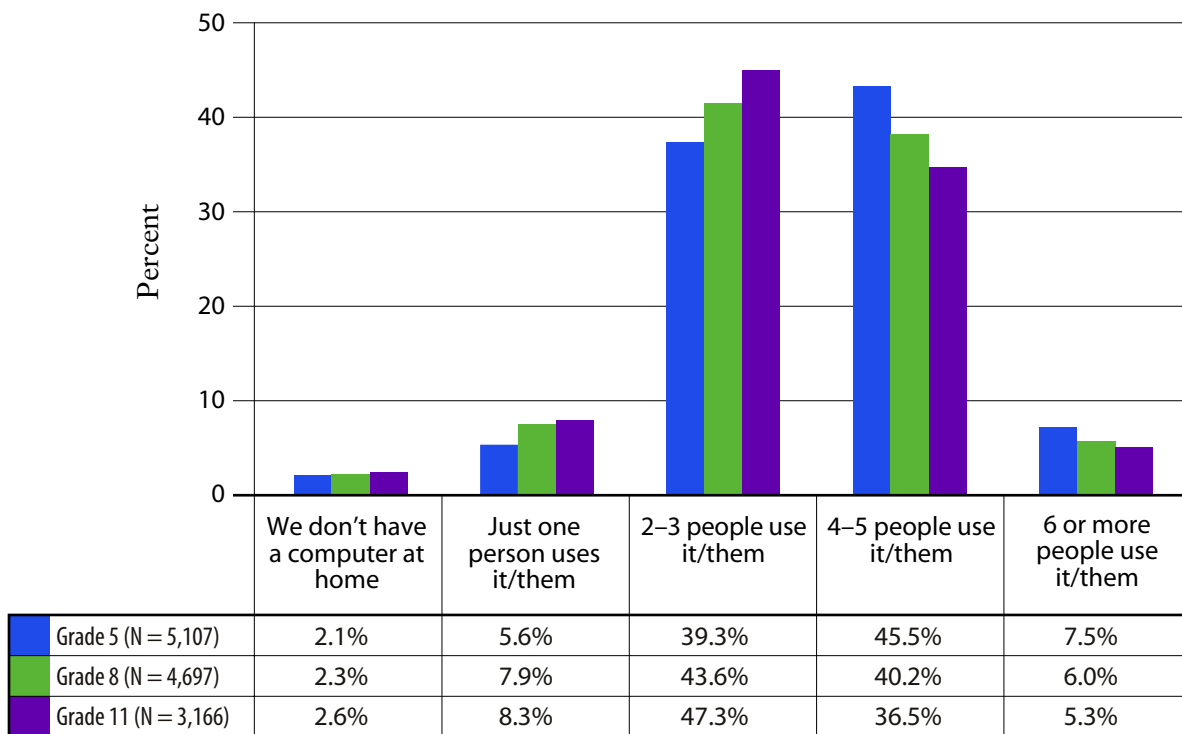


Figure 4 displays information about the difficulty students experience accessing their computers at home. Even though students have to compete with other computer users at their homes, between 44.7 and 53.4 percent of the students indicate that it is never difficult to get onto their computers at home. Between 38.4 and 45 percent of responding students find it sometimes difficult. Less than 10 percent in each grade report that it is often difficult. As Figure 4 indicates, response patterns differ noticeably across grade levels; 53.4 percent of eleventh graders report finding it never difficult to gain access to their home computers, while only 44.7 percent of fifth graders report finding it never difficult to gain access to their home computers. A higher percentage of fifth graders, as compared to eleventh graders, indicate that they sometimes or often find it difficult.

Figure 4 When you are at home, how difficult is it for you to get on your home computer when you want to?

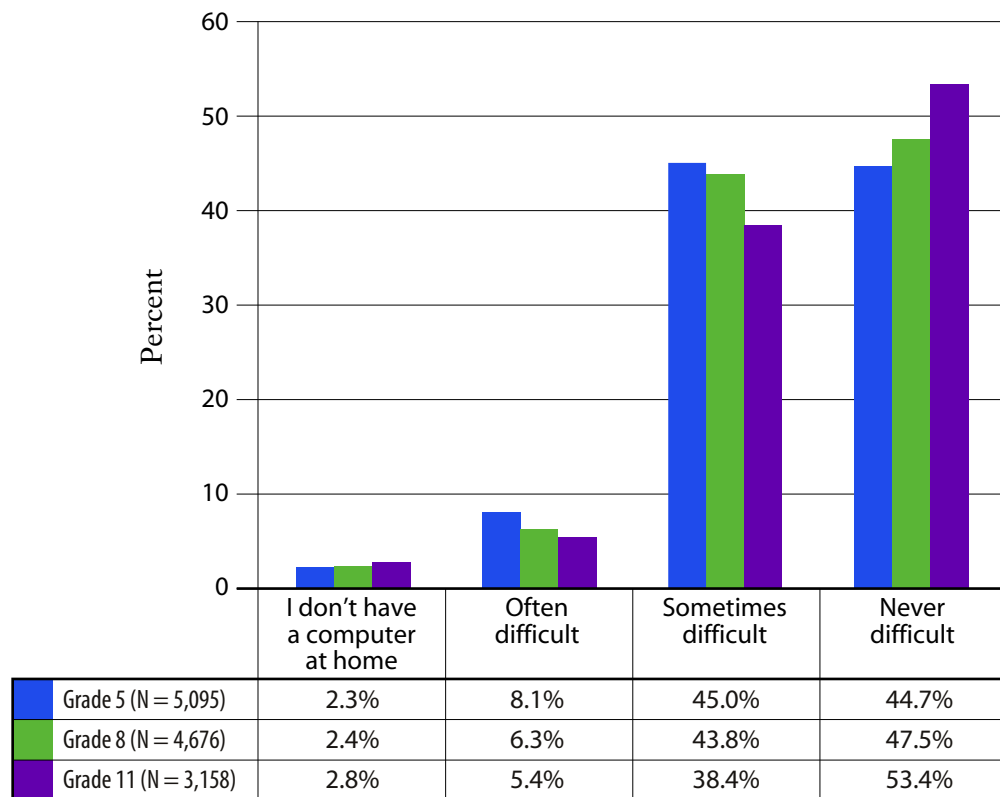
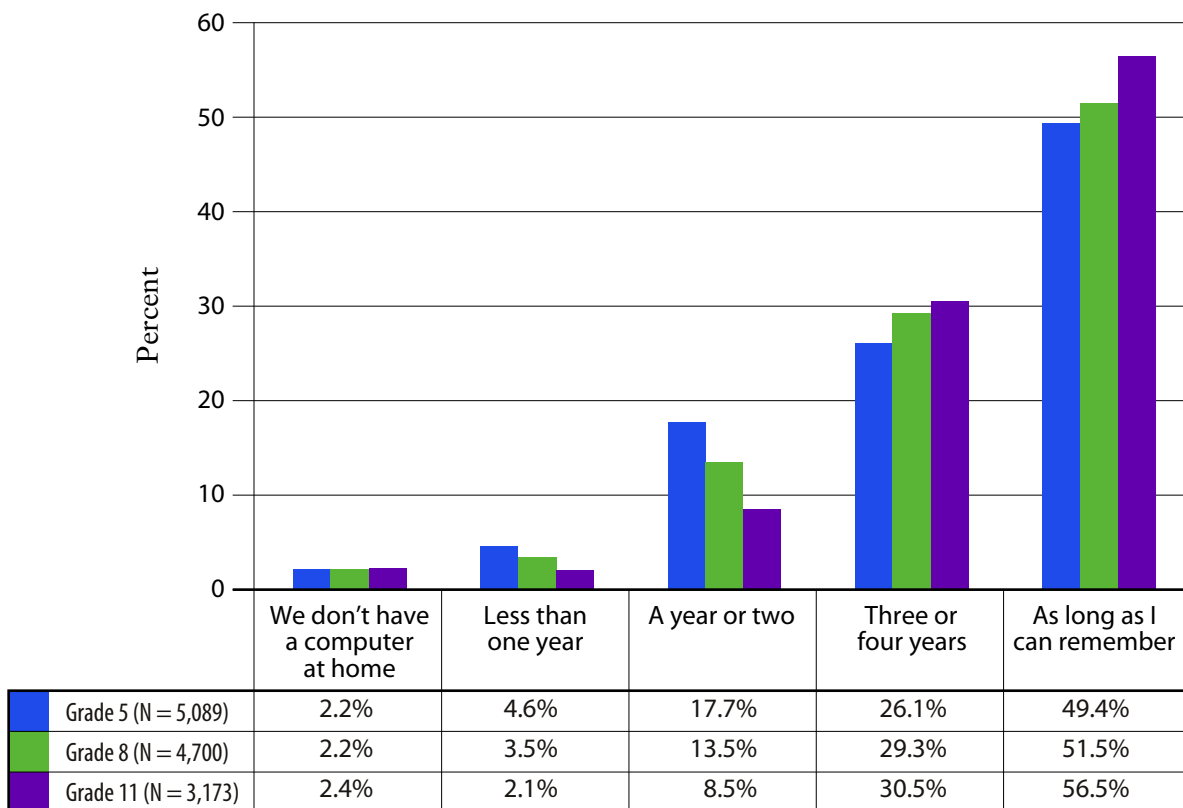


Figure 5 displays the length of time that students have had a computer at home. Across the three grades, the vast majority of students have had a computer for over a year; approximately half of the students in each grade respond that they have had a computer for as long as they can remember.

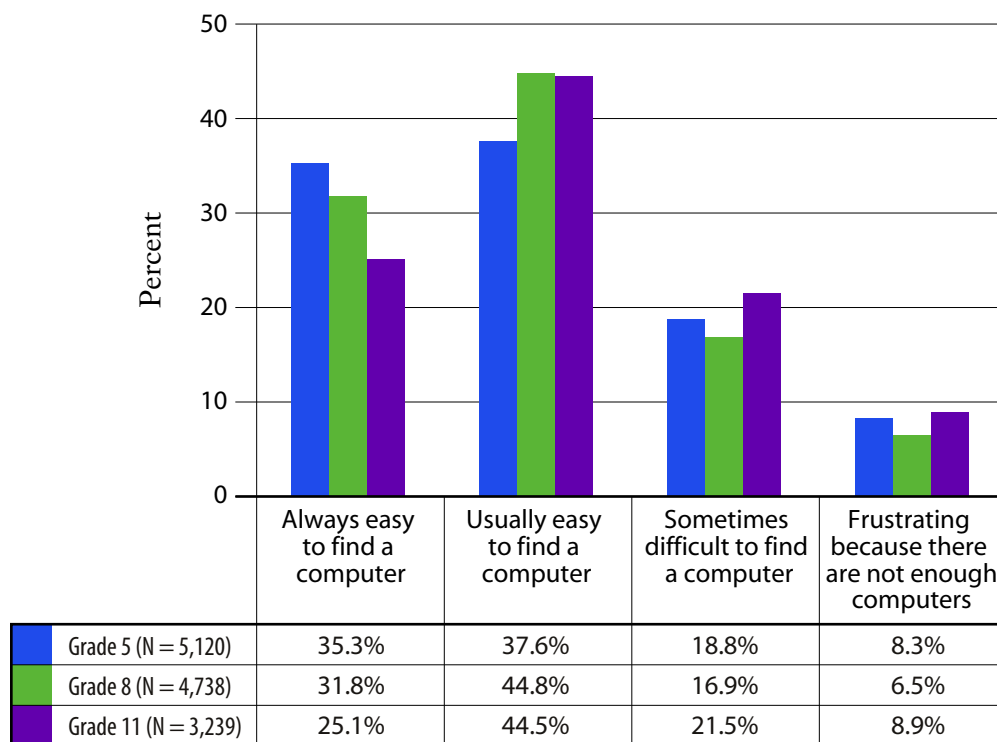
Figure 5 How long have you had a computer at home?



Access at School

Figure 6 displays the level of difficulty students have accessing a computer while at school. The majority of students report that it is always or usually easy to find a computer at school. About 20 percent of the students in each grade report that it is sometimes difficult, while less than 10 percent in each grade report that it is frustrating because there are not enough computers. From the perspective of students, it appears that the participating schools generally provide students with sufficient access to computers.

Figure 6 When you want to use a computer in school is it ...



Use at Home

Figure 7 displays the amount of time that students are spending on a computer when at home. More eighth graders are using a computer at home than fifth or eleventh graders; 63 percent of eighth graders report using a computer for an hour or more, while only 55.1 percent of eleventh graders and 43.1 percent of fifth graders report using the computer for an hour or more. Fifth graders report using a home computer less than eighth and eleventh grades; about 12 percent report using the home computer for 15 minutes or less and approximately 38 percent report using the computer for 15–60 minutes. This may be due to the “big-brother/big-sister” factor, in which younger siblings compete with their older siblings to access the home computer. Within each grade level, 93 percent of fifth graders, 96 percent of eighth graders, and 94.1 percent of eleventh graders report using a computer at home on a typical day.

Figure 7 On a typical day, how much time do you spend using a computer at home?

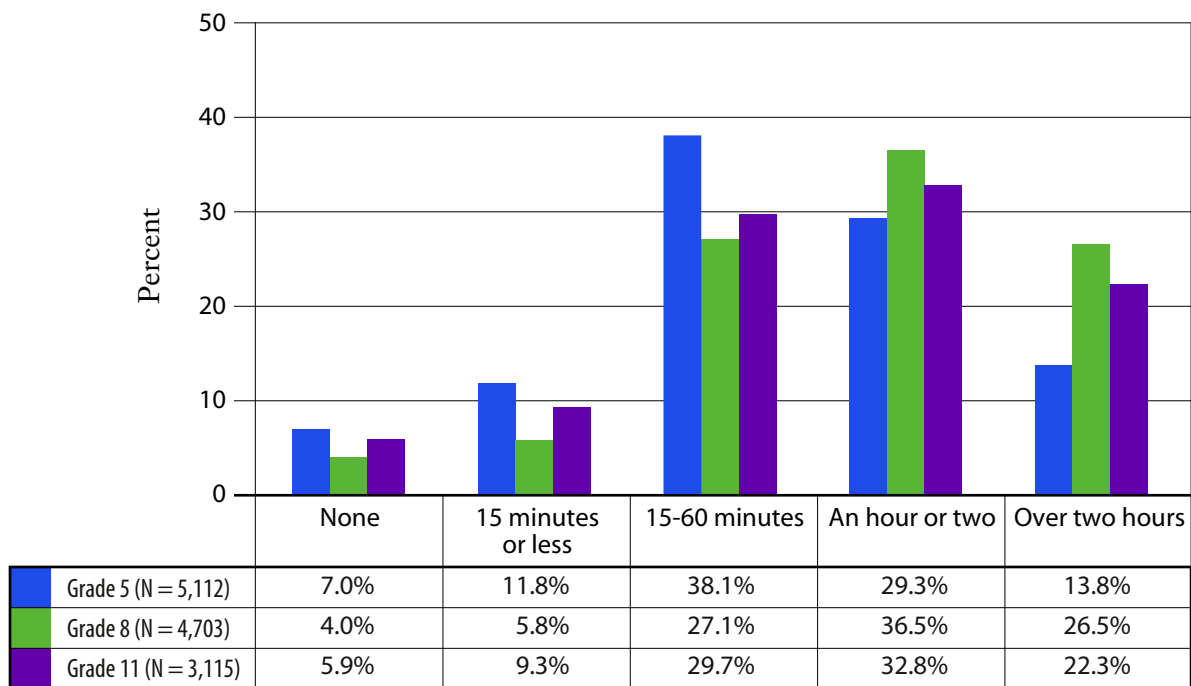


Figure 8 reports how often students use home computers to play computer games. Fifth graders play computer games more than eighth and eleventh graders; 33 percent of fifth graders report playing games everyday, while 31.2 percent of eighth graders and 21.7 percent of eleventh graders report playing games everyday. Eleventh graders are the least likely to be playing computer games; 19.1 percent report that they never play computer games, while only 8.2 percent of eighth graders and 3.9 percent of fifth graders report that they never play computer games. Within each grade level, 96.1 percent of fifth graders, 91.8 percent of eighth graders, and 80.9 percent of eleventh graders report that they play computer games.

Figure 8 How often do you use your home computer to:

Play games

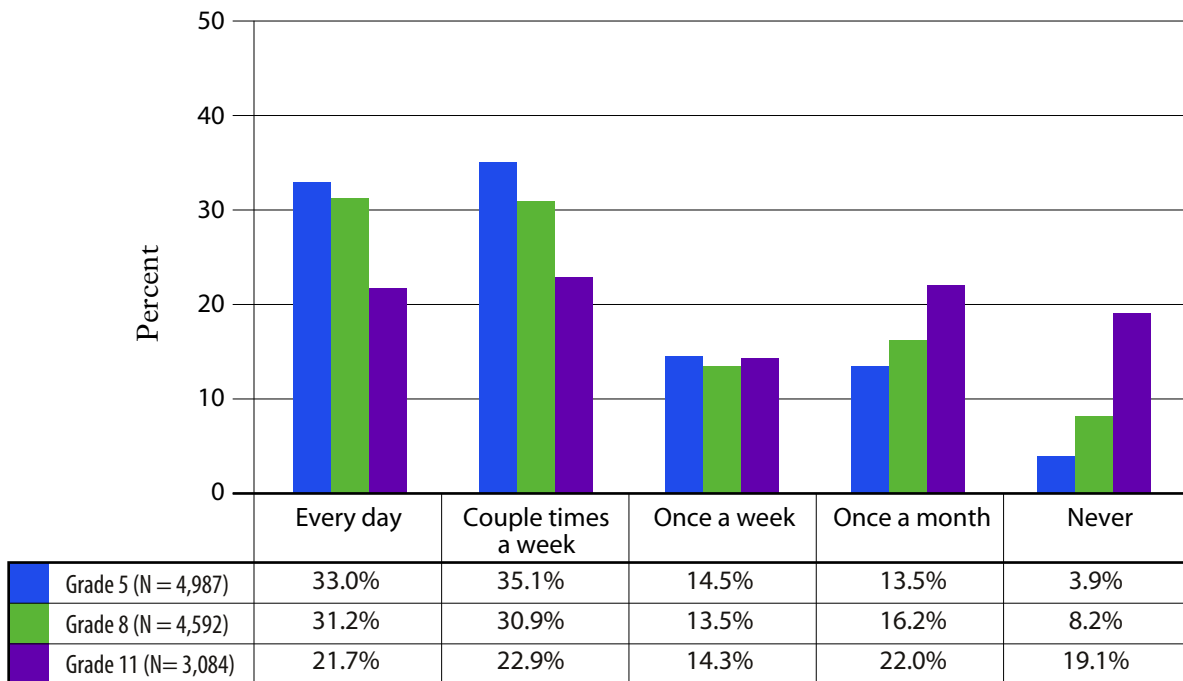


Figure 9 displays how often students use a home computer to chat or instant message. Compared to eighth and eleventh graders, a substantially higher percentage of fifth graders report that they never use a home computer to chat or instant message. At the fifth grade, 41.5 percent of the students respond that they never chat/instant message, while only 12.6 and 10.3 percent of eighth and eleventh graders, respectively, report that they never use the computer to chat/instant message. Conversely, 58.7 percent of eighth graders and 55 percent of eleventh graders indicate that they chat/instant message everyday, while only 25.3 percent of fifth graders chat/instant message everyday. Within each grade level, 58.5 percent of fifth graders, 87.4 percent of eighth graders, and 89.7 percent of eleventh graders report that they use a home computer to chat/instant message.

Figure 9 How often do you use your home computer to:
Chat/instant message

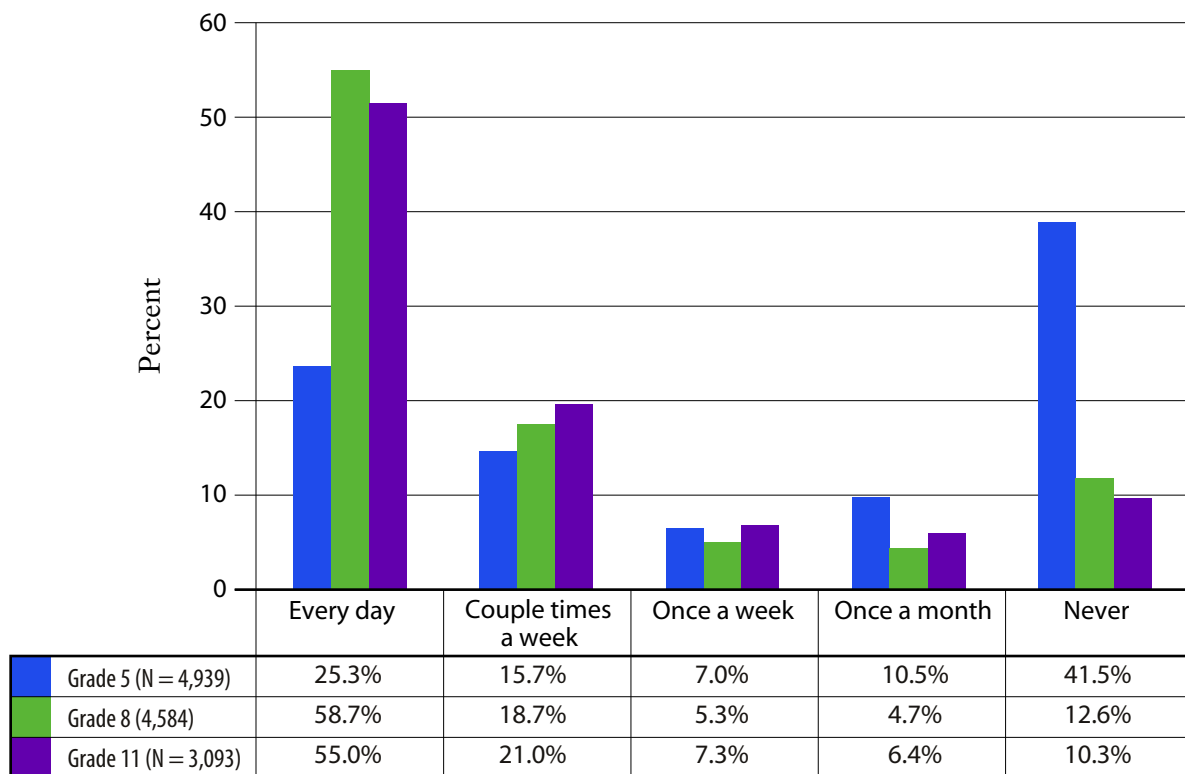


Figure 10 reports how often students use email on their home computers. As with instant messaging, more fifth graders do not use a home computer to email; 29.3 percent of fifth graders respond that they never use their home computers to email, while only 9.7 percent of eighth graders and 6.6 percent of eleventh graders respond that they never use a home computer to email. Eleventh graders appear to be using email the most; 48.7 percent of eleventh graders and 46.5 percent of eighth graders respond that they use their home computers to email everyday, while only 20.9 percent of fifth graders respond that they use their home computers to email everyday. Within each grade level, 70.7 percent of fifth graders, 90.3 percent of eighth graders, and 93.4 percent of eleventh graders report using a home computer to email.

Figure 10 How often do you use your home computer to:

Email

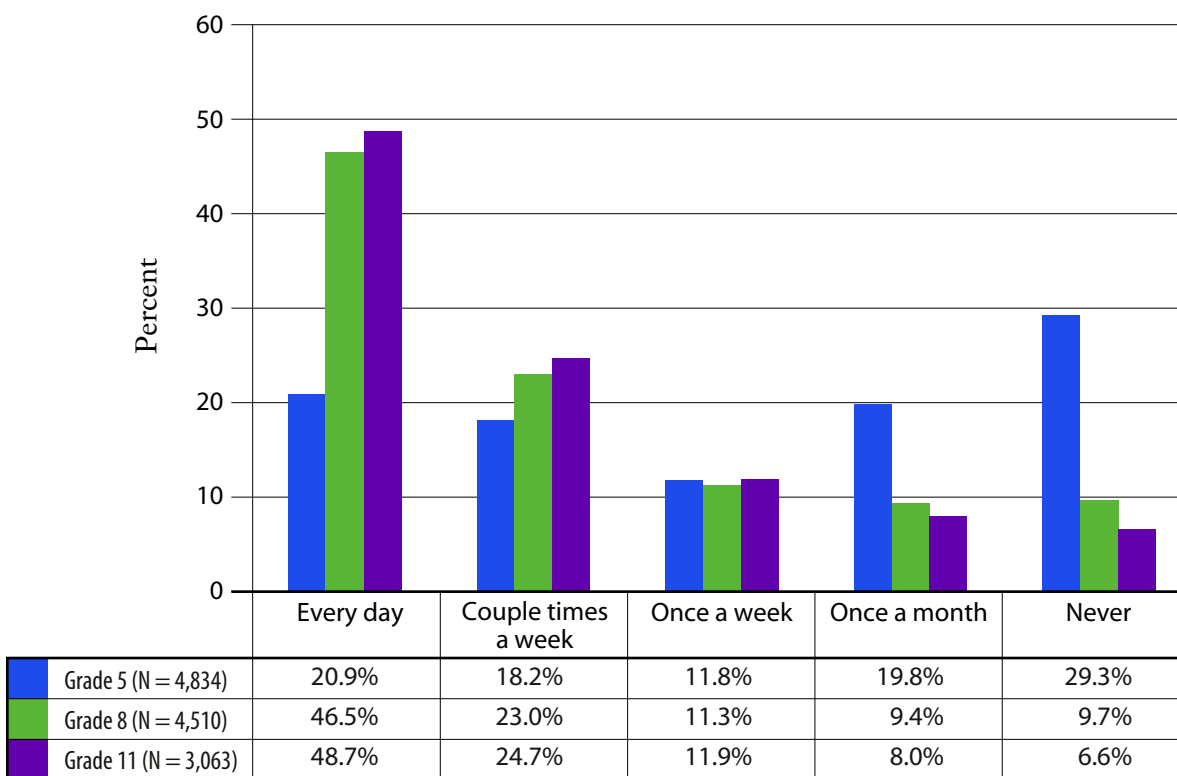


Figure 11 displays how often students use a home computer to search the Internet for school purposes. Across the three grades, 80.7 percent of fifth graders, 92.9 percent of eighth graders, and 94.1 percent of eleventh graders report that they use a home computer to search the Internet for school. This use, however, occurs relatively infrequently within each grade level, with the lowest use occurring with fifth graders. Whereas 13.7 percent of eighth graders and 15.8 percent of eleventh graders report using a home computer to search the Internet for school everyday, only 5.8 percent of fifth graders do so daily. In contrast, 36.1 percent of fifth graders report searching the Internet for school once a month as compared to 18.3 percent of eighth and eleventh graders.

Figure 11 How often do you use your home computer to:
Search the Internet for school

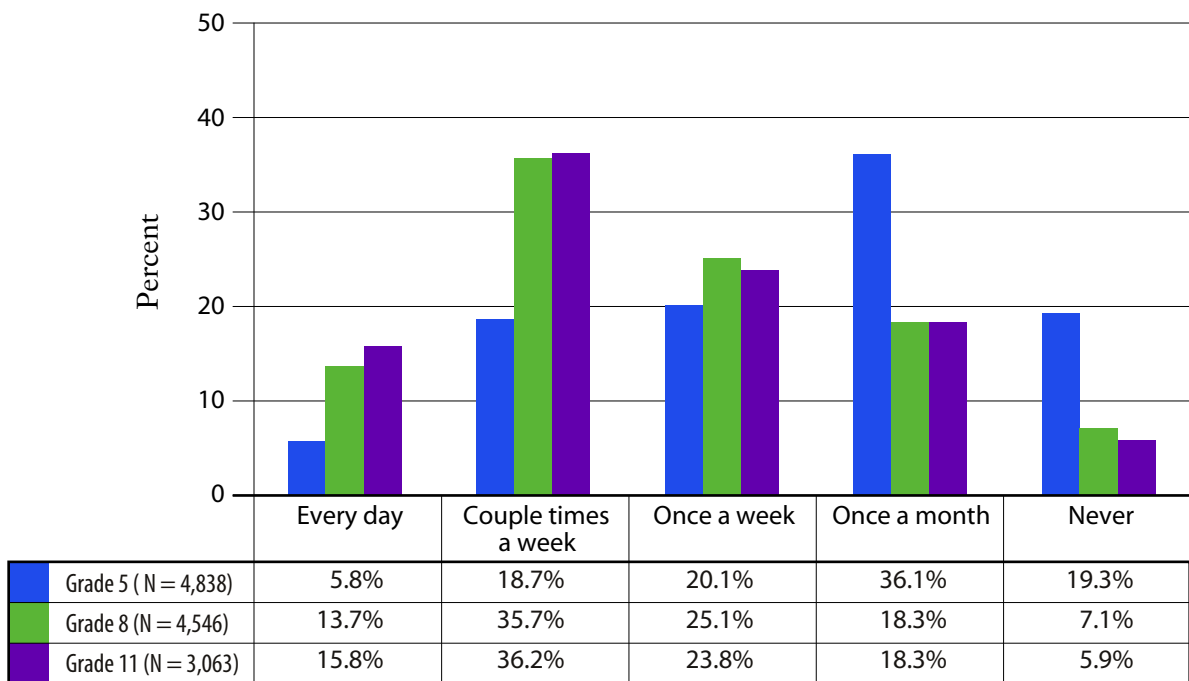


Figure 12 displays how often students use a home computer to search the Internet for their own purposes, or for fun. More students are using the Internet at home to search for fun than to search for school-related activities. Eighth graders are searching the most, with 38.6 percent searching everyday. Only about six percent of fifth graders report that they search the Internet at home for school everyday, but 26.4 percent report that they search the Internet at home for fun everyday. Similar findings were found with the eighth and eleventh graders. About 39 percent of eighth graders search at home everyday for fun while only 14 percent search at home everyday for school purposes, and 34 percent of eleventh graders search the Internet at home everyday for fun while only about 16 percent search at home everyday for school purposes. Within each grade level, 85 percent of fifth graders, 91.6 percent of eighth graders, and 90.4 percent of eleventh graders use their home computers to search the Internet for fun.

Figure 12 How often do you use your home computer to:
Search the Internet for fun

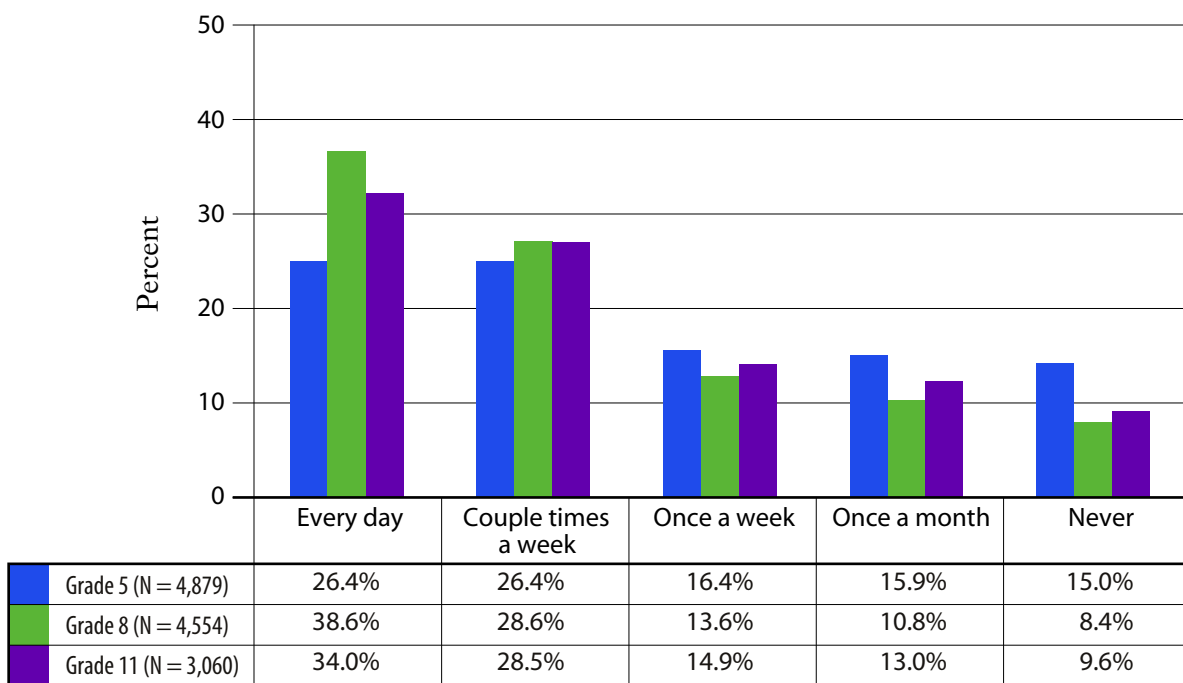


Figure 13 displays how often students use a home computer to work with mp3 files and music. Eighth and eleventh graders use a home computer to work with mp3 files or music more often than fifth graders; 38.6 percent of eleventh graders and 42.3 percent of eighth graders report working with mp3/music everyday, while only 19.1 percent of fifth graders report working with mp3/music everyday. Conversely, 42.6 percent of fifth graders never use home computers to work with mp3/music as compared to 20.6 percent of eighth and eleventh graders.

Figure 13 How often do you use your home computer to:
mp3/music

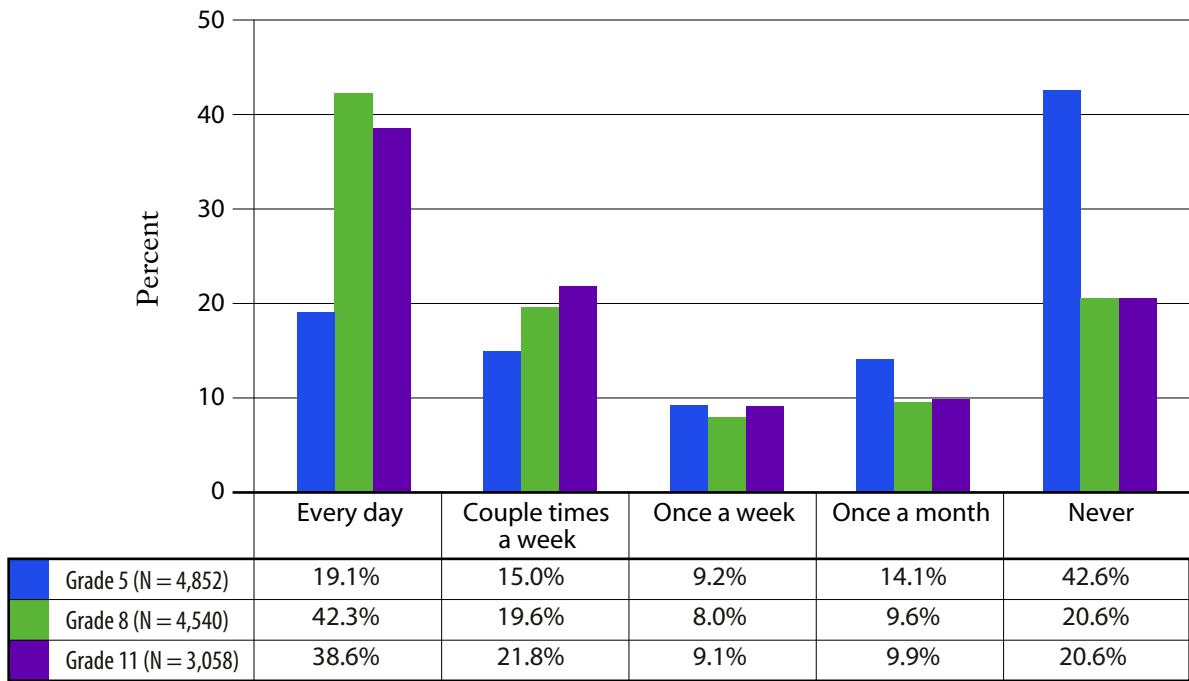


Figure 14 displays how often students use a home computer to write papers for school. A higher percentage of fifth graders never use a home computer to write papers for school, while eighth graders use home computers to write papers the most. Of the fifth graders responding to this item, 44 percent report using a home computer to write papers for school once a month as compared to 19.1 percent of eighth graders and 23 percent of eleventh graders. In contrast, 36.2 percent of eighth graders and 29.7 percent of eleventh graders use a home computer a couple of times a week to write papers, as compared to 19.1 percent of fifth graders. This difference may be due in part to the frequency with which each grade level is asked to write papers in schools. Regardless, 87.6 percent of fifth graders, 96.5 percent of eighth graders, and 96.7 percent of eleventh graders use their home computers to write papers for school once a month or more.

Figure 14 How often do you use your home computer to:
Write papers for school

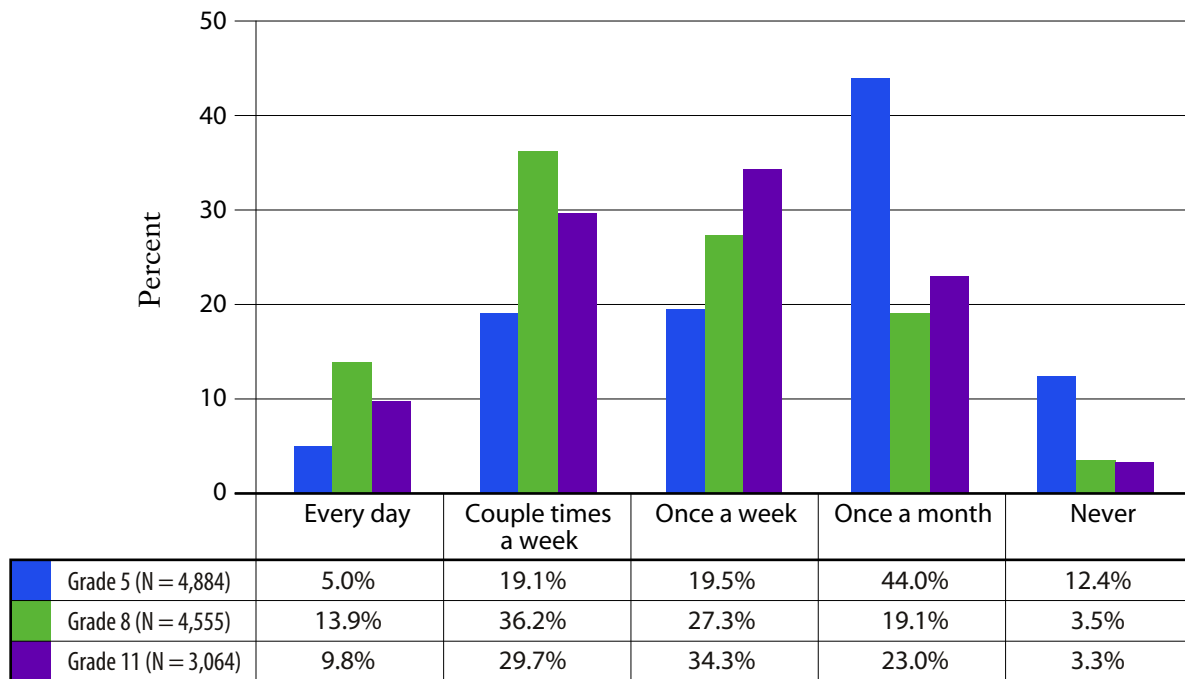


Figure 15 displays how often students use a home computer to do computer programming. Within each grade level, over half of the students never use their home computers to do programming. Surprisingly, a higher percentage of fifth and eighth graders report using a home computer to program as compared to eleventh graders.

Figure 15 How often do you use your home computer to:
Computer programming

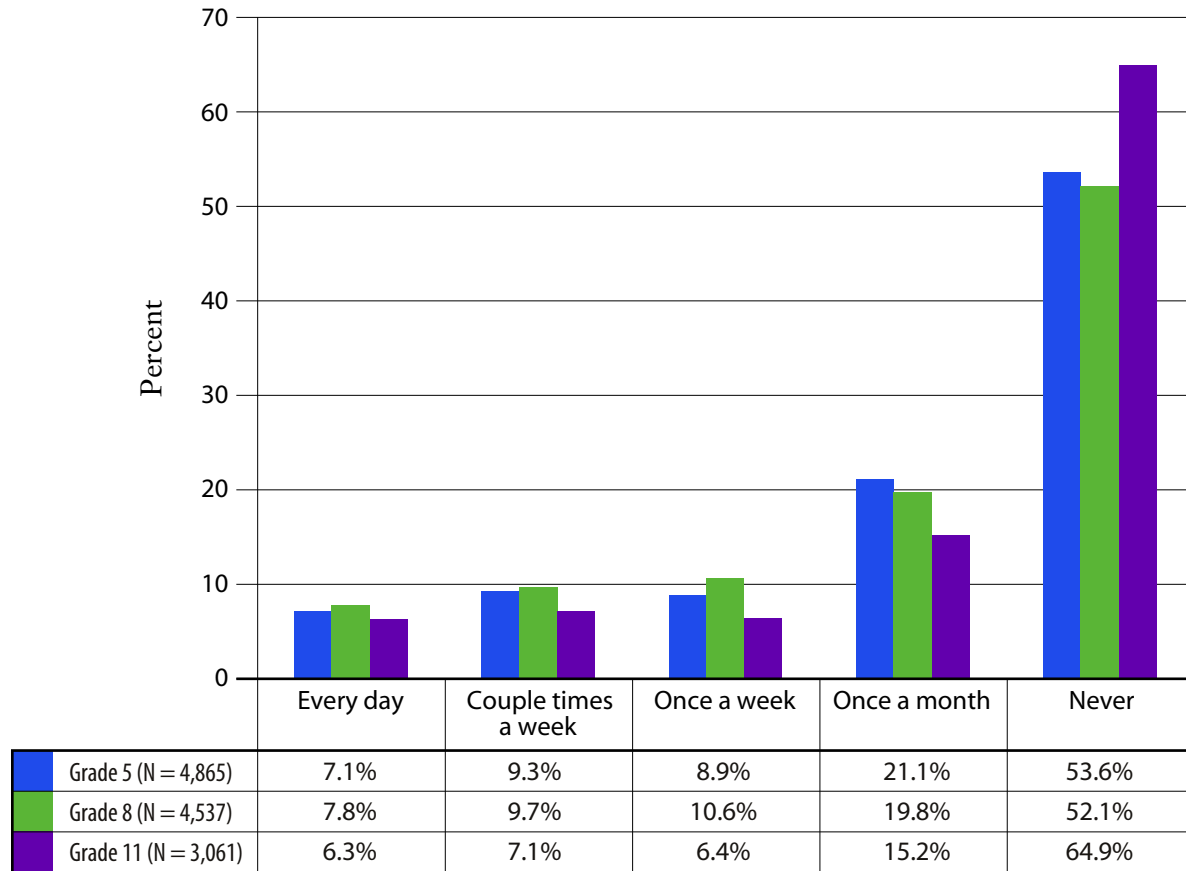


Figure 16 displays how often students use a home computer to create or maintain web sites. Across the three grade levels, a large portion, 73.1 percent of fifth graders, 65.6 percent of eighth graders, and 74.3 percent of eleventh graders, do not use a home computer to create/maintain web sites. Nonetheless, 9.7 percent of fifth graders, 15.2 percent of eighth graders, and 10.9 percent of eleventh graders report doing so a couple of times a week or more.

Figure 16 How often do you use your home computer to:
Create/maintain web sites

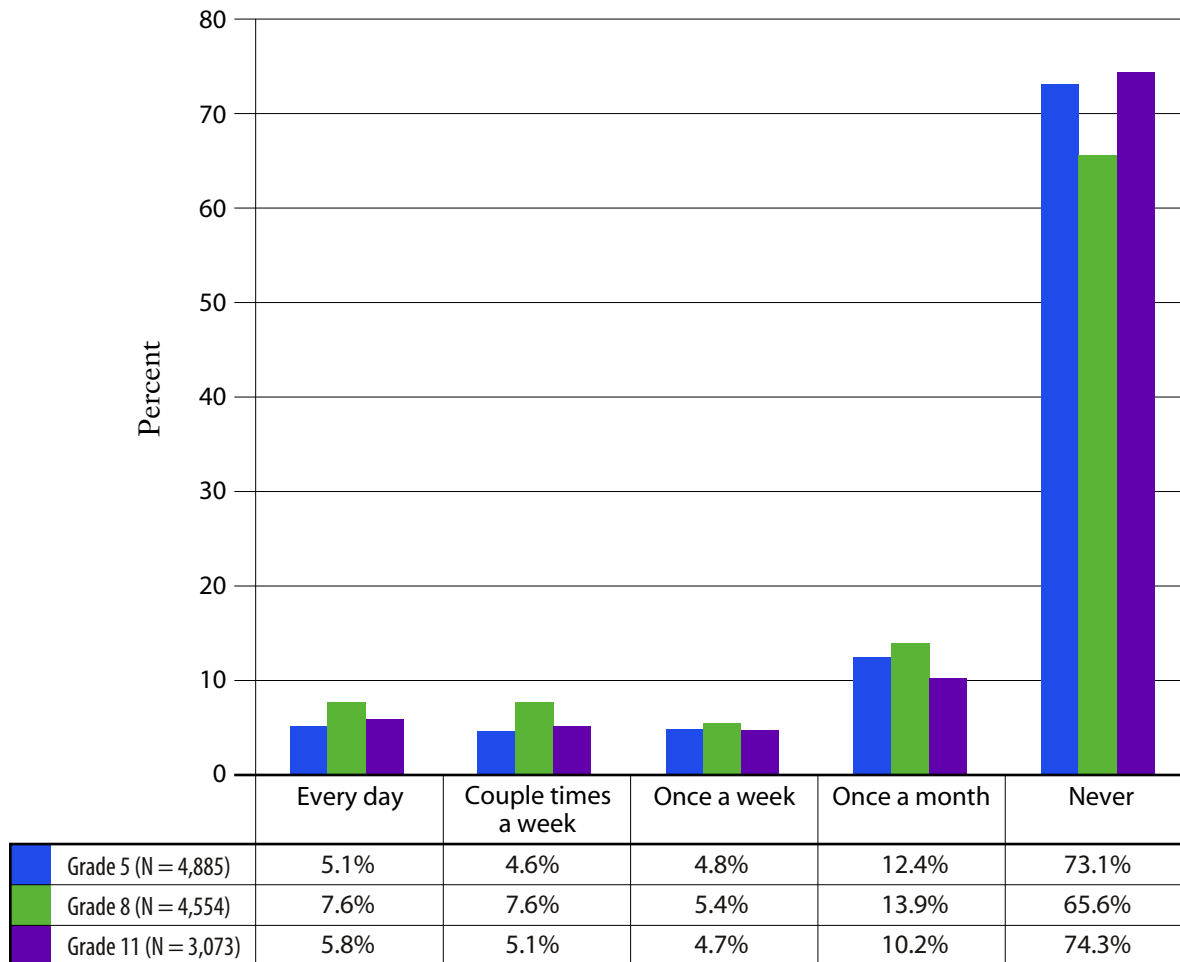
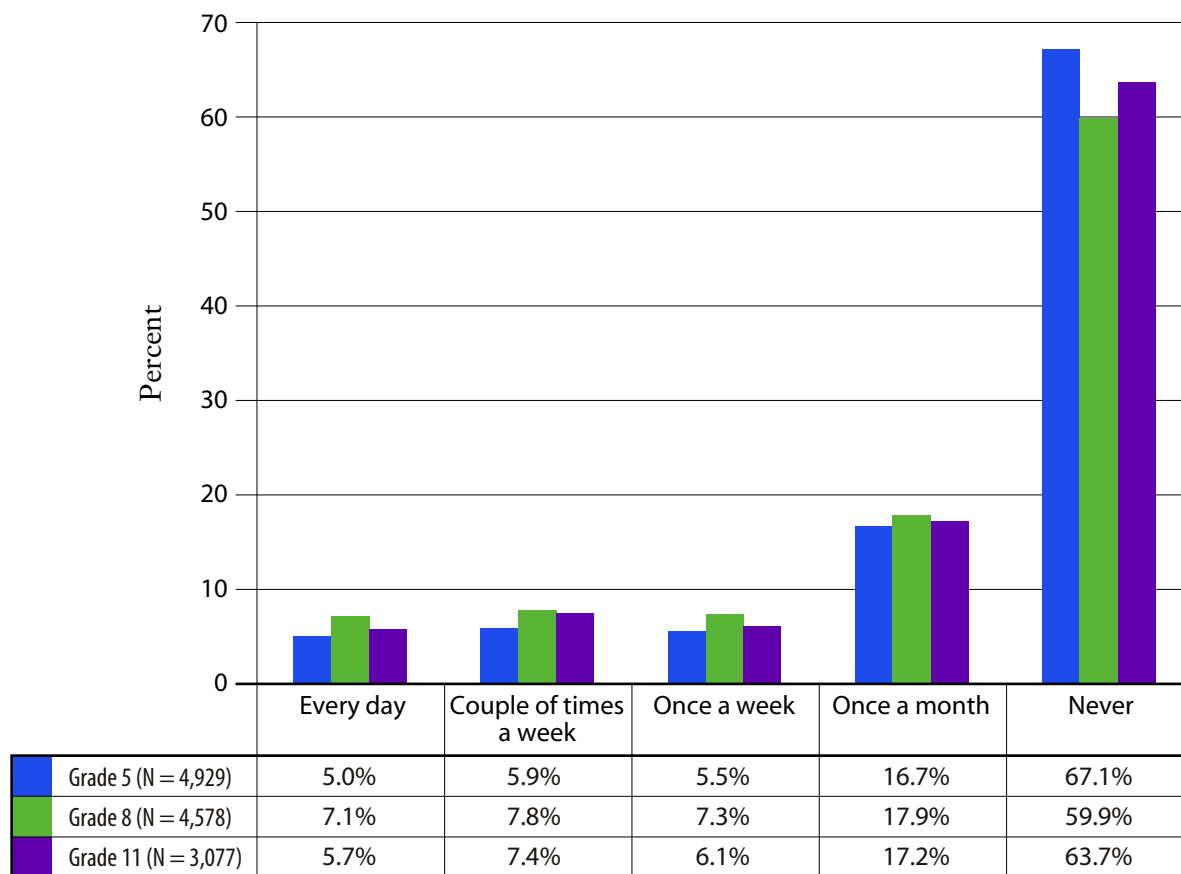


Figure 17 displays how often students use a home computer to create or edit digital photos or movies. Over half of the students in each grade, 67.1 percent of fifth graders, 59.9 percent of eighth graders, and 63.7 percent of eleventh graders, report that they never use a home computer to create/edit digital photos or movies. Of those students who do use a home computer to create/edit digital photos or movies, most report doing so once a month. Nonetheless, 10.9 percent of fifth graders, 14.9 percent of eighth graders, and 13.1 percent of eleventh graders report working with digital photos and movies at home a couple of times a week or more.

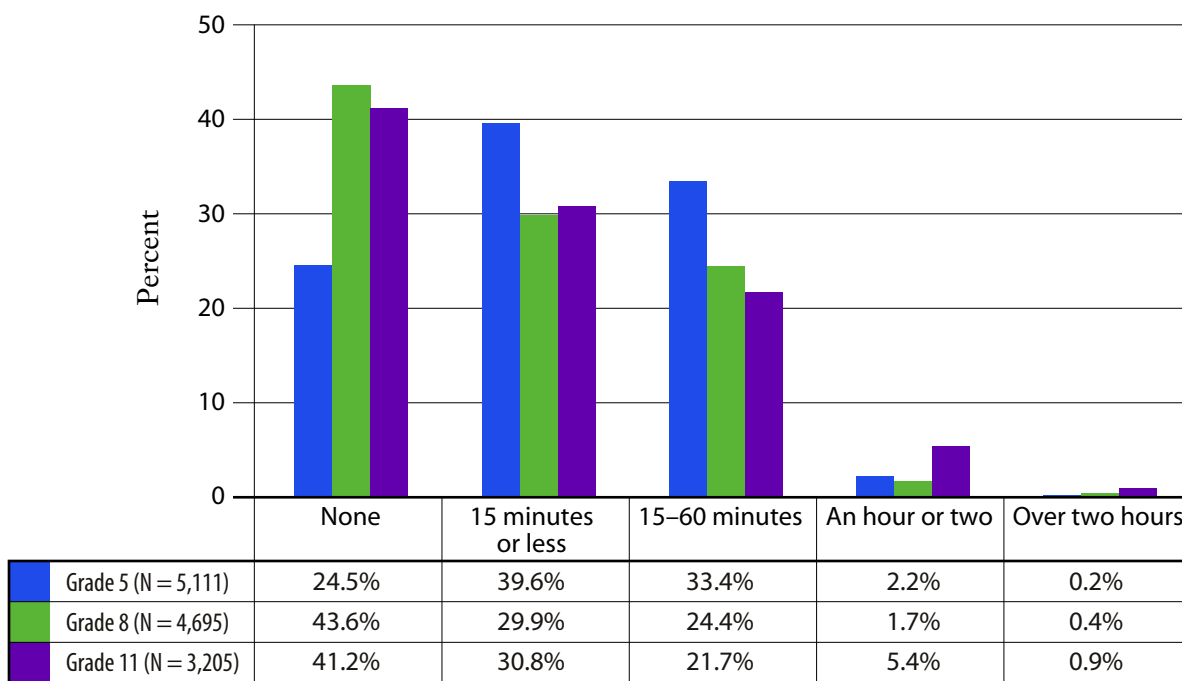
Figure 17 How often do you use computer to:
Create/edit digital photos or movies



Use at School

Figure 18 displays how much time a student spends using a computer at school on a typical day. At the eighth and eleventh grades, 43.6 percent and 41.2 percent, respectively, report that they do not use a computer in school. In sharp contrast, only 24.5 percent of fifth graders report not using a computer in school. Students who use computers in school generally do so for an hour or less on a typical day. Among fifth graders, 39.6 percent report using computers in school for 15 minutes or less and 33.4 percent use them for 15–60 minutes. In eighth and eleventh grades, approximately 30 percent use computers for 15 minutes or less while about 24 percent of eighth graders and 22 percent of eleventh graders use computers in school for 15–60 minutes. This data indicate that fifth graders use computers in school more frequently than do eighth and eleventh graders. As seen in Figure 24, this pattern may be due in part to direct access to computers in fifth-grade classrooms.

Figure 18 On a typical day, how much time do you spend using a computer in school?



Figures 19 through 23 provide information about how often students ask different people in school for help when they are having problems with computers.

As seen in Figure 19, eleventh graders rely less on teachers for help with computers than do fifth and eighth graders; whereas 43.8 percent of eleventh graders rarely, if ever, ask teachers for help, 27 percent of fifth graders and 30.4 percent of eighth graders rarely ask teachers for help. In contrast, 28.6 percent of fifth graders and 23.7 percent of eighth graders usually ask teachers for help with computers as compared to 14.6 percent of eleventh graders.

Figure 19 When you need help with a computer in school, how often do you ask for help from each of these people?

A teacher

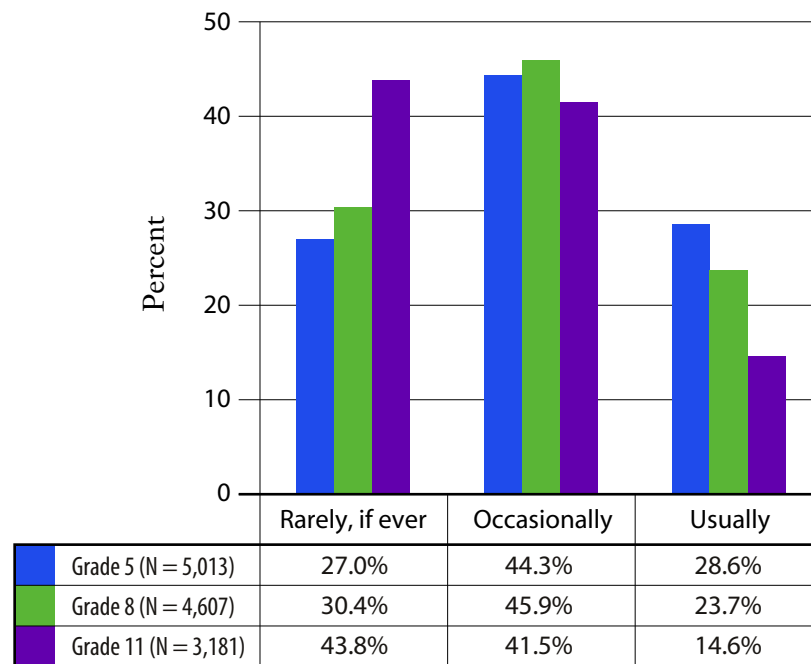


Figure 20 displays how often students ask a friend or another student for help when using a computer in school. Just over 50 percent of eighth and eleventh graders report that they usually ask a friend or another student for help with computers as compared to 25.3 percent of fifth graders. In contrast, 31 percent of fifth graders rarely, if ever, ask a friend for help with computers as compared to roughly 14 percent of eighth and eleventh graders.

Figure 20 When you need help with a computer in school, how often do you ask for help from each of these people?

A friend or another student

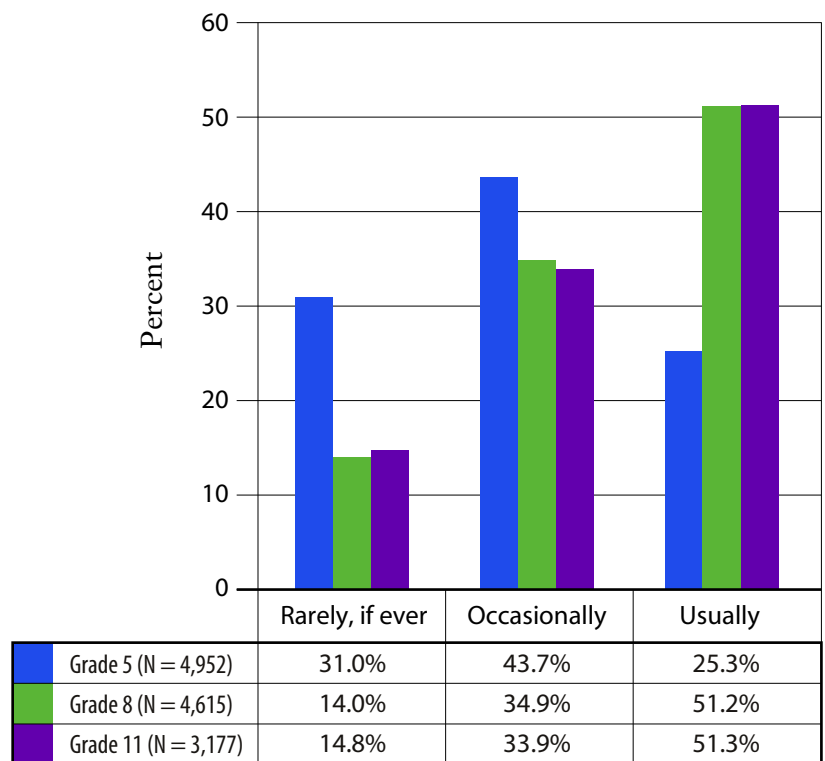


Figure 21 displays how often students ask a librarian for help when using a computer at school. The majority of students at each grade level rarely, if ever, ask a librarian for help when having problems with a computer. Of those students who do ask librarians for help, eleventh graders do so the most followed by eighth graders.

Figure 21 When you need help with a computer in school, how often do you ask for help from each of these people?

Librarian

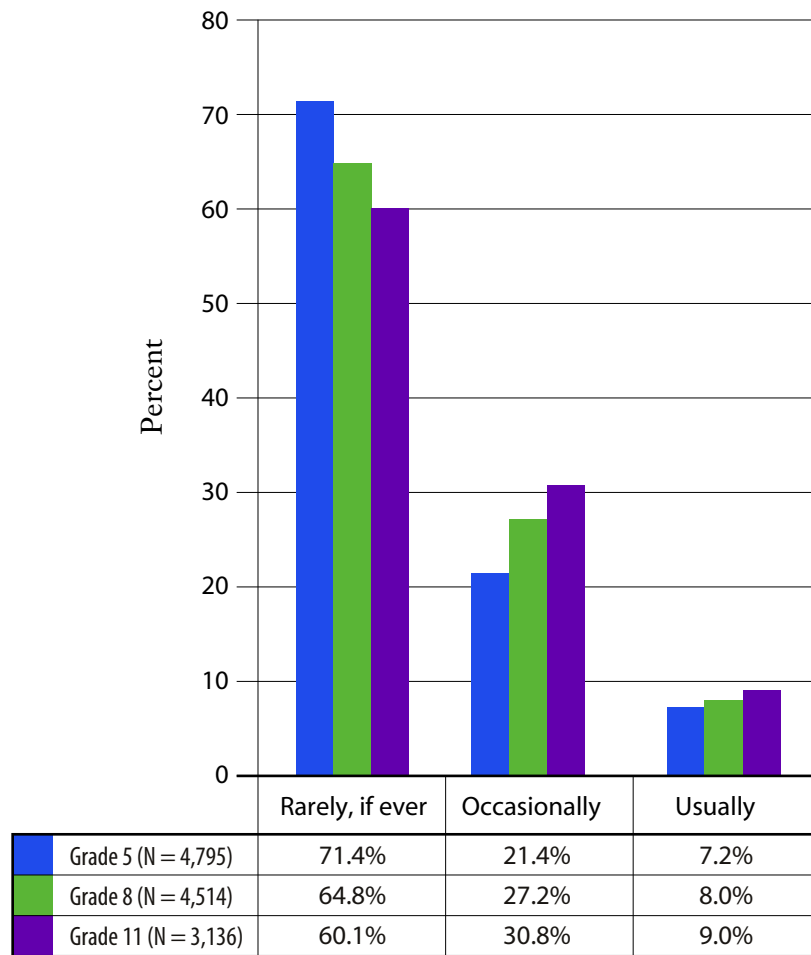


Figure 22 displays how often a student asks a technology specialist or aide for computer help when in school. Over half of the students in each grade rarely, if ever, ask the technology specialist for help with a computer problem. Of those students who do ask a technology specialist for help, eleventh graders do so least often.

Figure 22 When you need help with a computer in school, how often do you ask for help from each of these people?

Technology Specialist or Technology Aide?

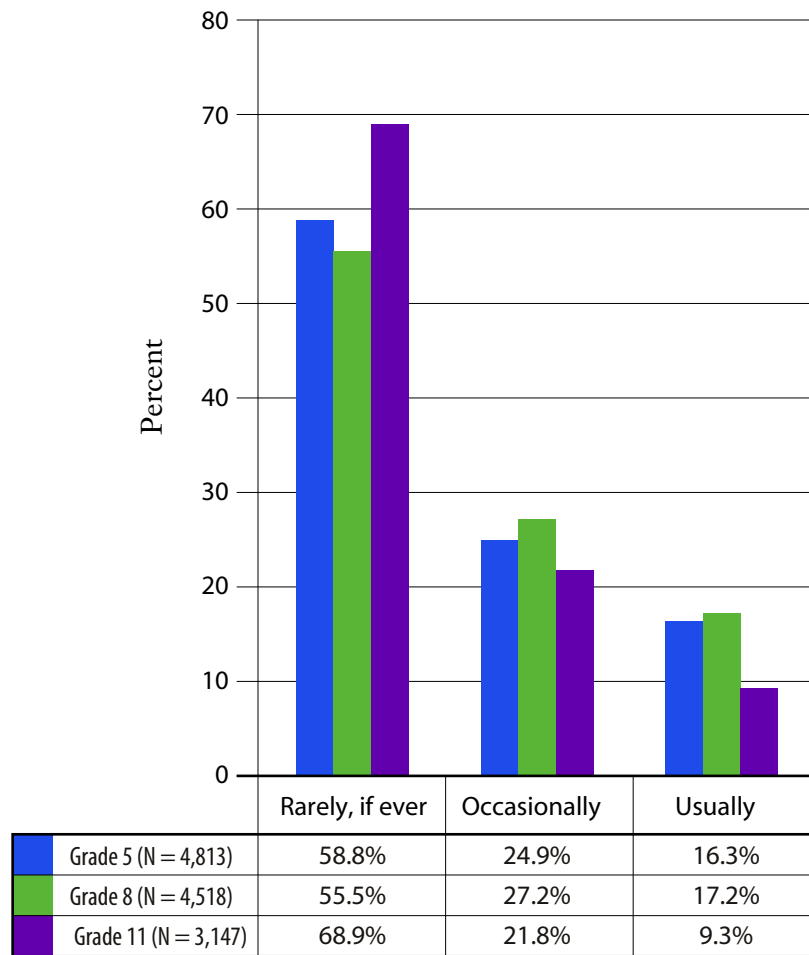
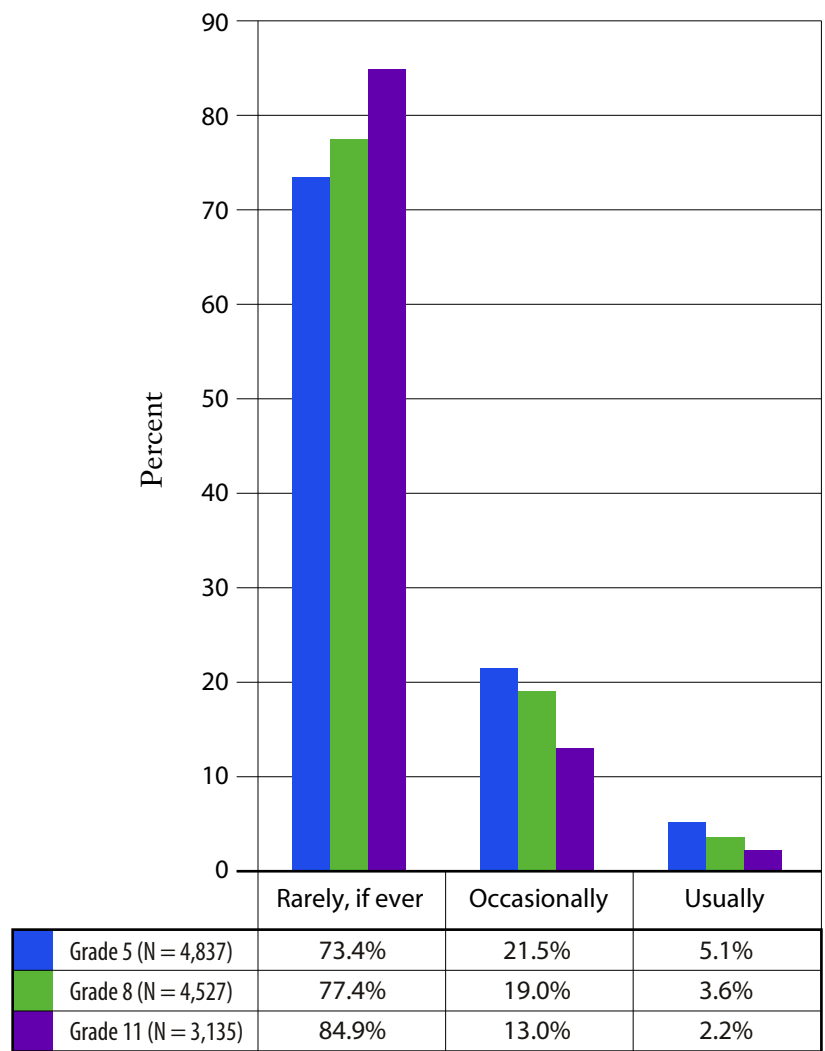


Figure 23 displays how often students ask an adult in the school, other than teachers or librarians, to help them with a computer problem. Between 73 and 85 percent of students at each grade level rarely, if ever, ask another adult in the school for help when having problems with a computer.

Figure 23 When you need help with a computer in school, how often do you ask for help from each of these people?

Other adults in the school (other than teachers/librarians)



Based on Figures 19 through 23, it appears that the people students rely on for help with computer problems differs across grade levels. Students in fifth grade are dependent most on their teachers for help and, to a slightly lesser extent, their friends. In contrast, eighth graders are largely dependant upon their friends or other students for help and, to a slightly lesser extent, their teachers. Across the three grade levels, eighth graders are most likely to ask the technology specialists for help, but this occurs less often than asking either their friends or teachers. In contrast, eleventh graders are largely dependent upon other students and, to a lesser extent, their teachers and librarians for help with computer problems. Eleventh graders are more likely than fifth or eighth graders to ask a librarian for help with computer-related problems. As seen in Figure 26, the differences between fifth graders and eleventh graders may be

due in part to where students use computers most often; fifth graders use computers in their classrooms more than do eleventh graders, while eleventh graders use computers more in the library than they do in classrooms. In addition, the differences across grade levels also may be due in part to differences between the expertise of students and their teachers in each of the grade levels; eighth and eleventh graders may be as knowledgeable or more knowledgeable about computers compared to their teachers, while fifth graders may be less knowledgeable about how to solve computer problems compared to their teachers. As a result, eighth and eleventh graders may view their fellow students as more helpful than their teachers with computer-related problems. In contrast, fifth graders may view their teachers as more knowledgeable about and helpful with computer-related problems as compared to their fellow students.

Figure 24 displays where students are using computers the most in school. More fifth graders use computers in a classroom setting than eighth and eleventh graders. In contrast, 76 percent of eighth graders and about 62 percent of eleventh graders use computers the most in computer labs as compared to 49.8 percent of fifth graders. Eleventh graders report using computers in the library more than any other grade. Higher use of computers in the library by eleventh graders may be due to differences in the types of assignments students in each grade level are asked to perform; eleventh graders may be asked to perform more research-related papers for which a library setting would be necessary to complete these papers.

Figure 24 Where do you use technology (computers, AlphaSmarts, etc.) most in school?

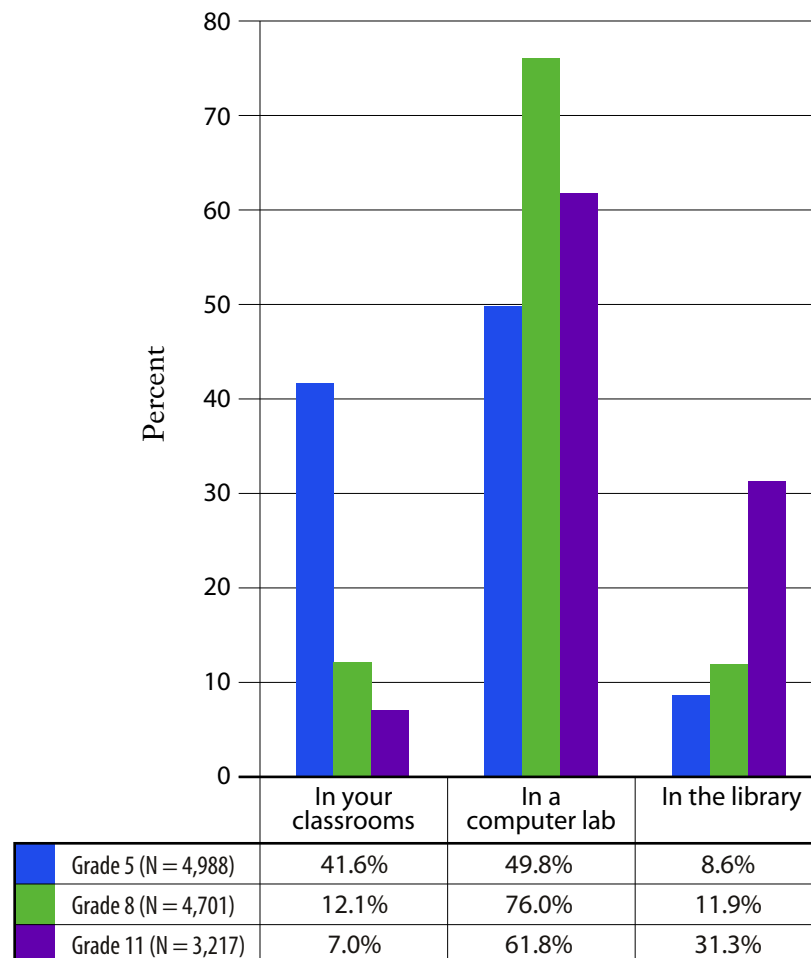


Figure 25 displays how often fifth-grade teachers and students use computers in the classroom. Students report that they use the computers more in the classrooms than do their teachers. About 30 percent of fifth graders report using a computer in class every week while only 18 percent report that their teachers use computers to teach every week. About 28 percent of students report that their teachers never use computers to teach while only 11 percent of students report that they never use a computer in the classroom. Overall, 71.7 percent of fifth graders indicate that their teacher uses a computer while teaching and 88.8 percent of fifth graders respond that they use a computer in class at least a couple of times during the year.

Figure 25 Grade 5 Computer Use During Class

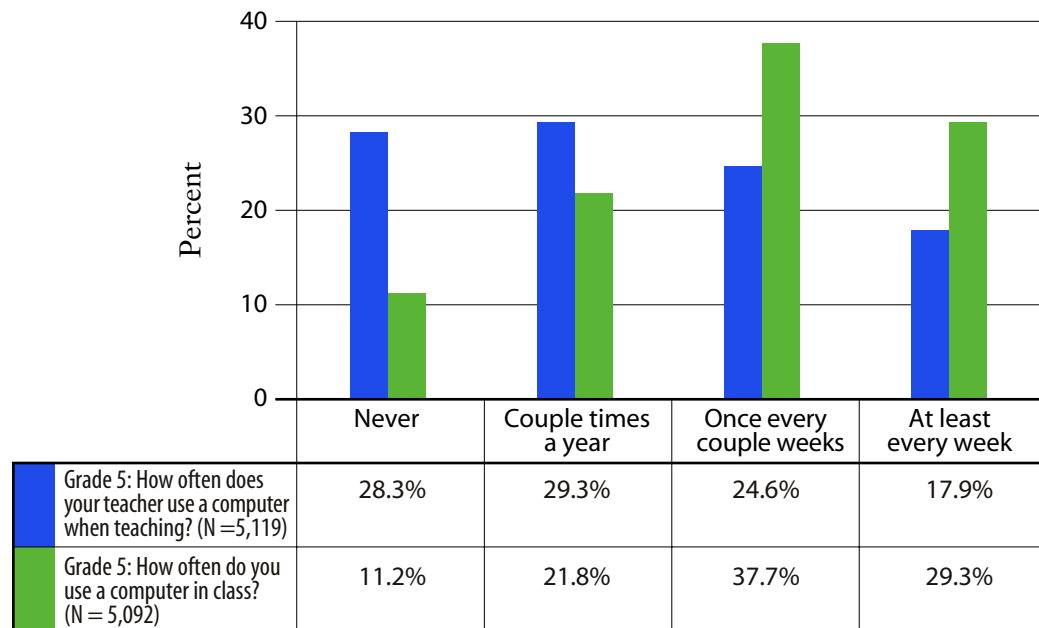
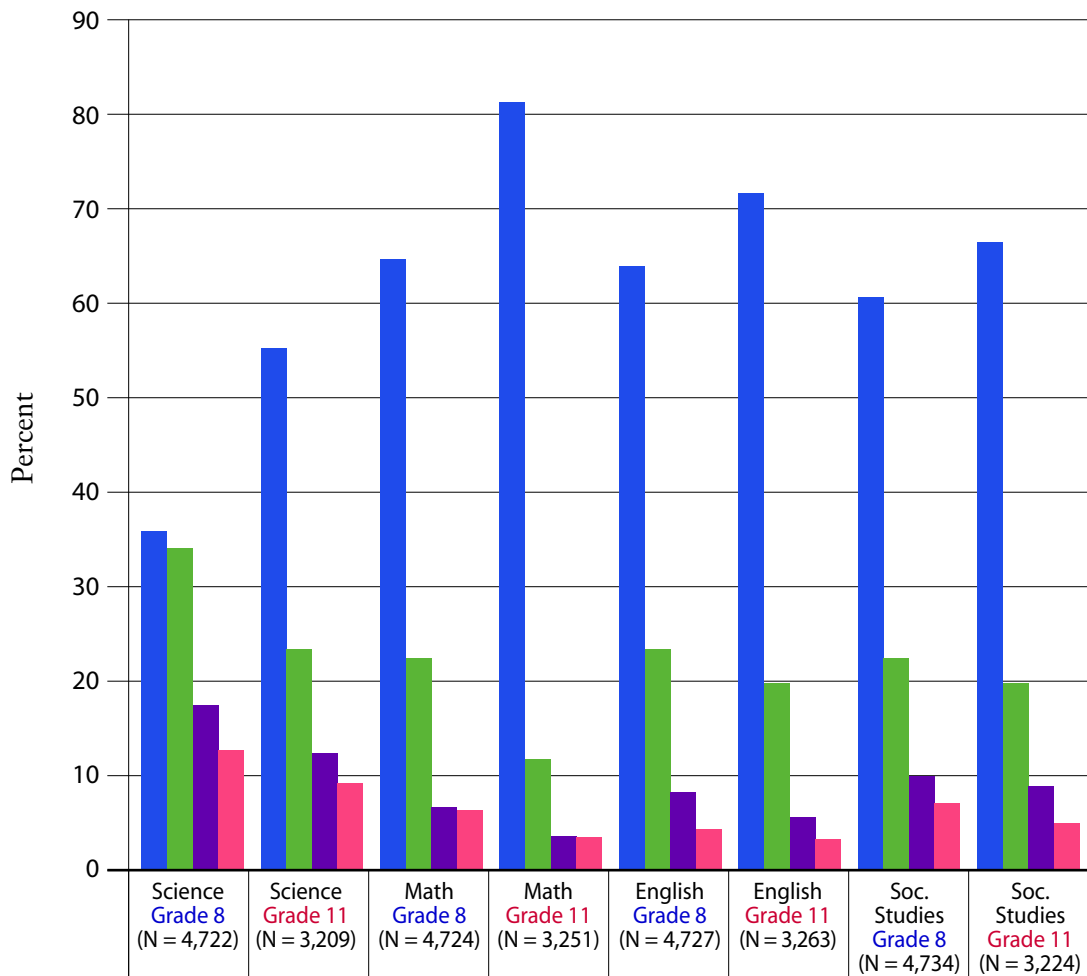


Figure 26 displays how often eighth- and eleventh-grade teachers use computers to teach in Science, Math, English, and Social Studies (as reported by students). With the exception of science, a large majority of students report that their teachers never use a computer when teaching. In science, 64.2 percent of eighth-grade students and 44.8 percent of eleventh-grade students report that their science teacher uses a computer a couple of times or more during the year. Again, with the exception of science teachers, a small percentage of students report that their teachers use computers once every couple of weeks when teaching. Thus, in mathematics, social studies, and English classes, it appears that computers are generally not used by teachers when teaching and that when computers are used the use is infrequent. In science classes, however, roughly a quarter of eighth- and eleventh-grade students indicate that their teachers use computers once every couple of weeks or more when teaching.

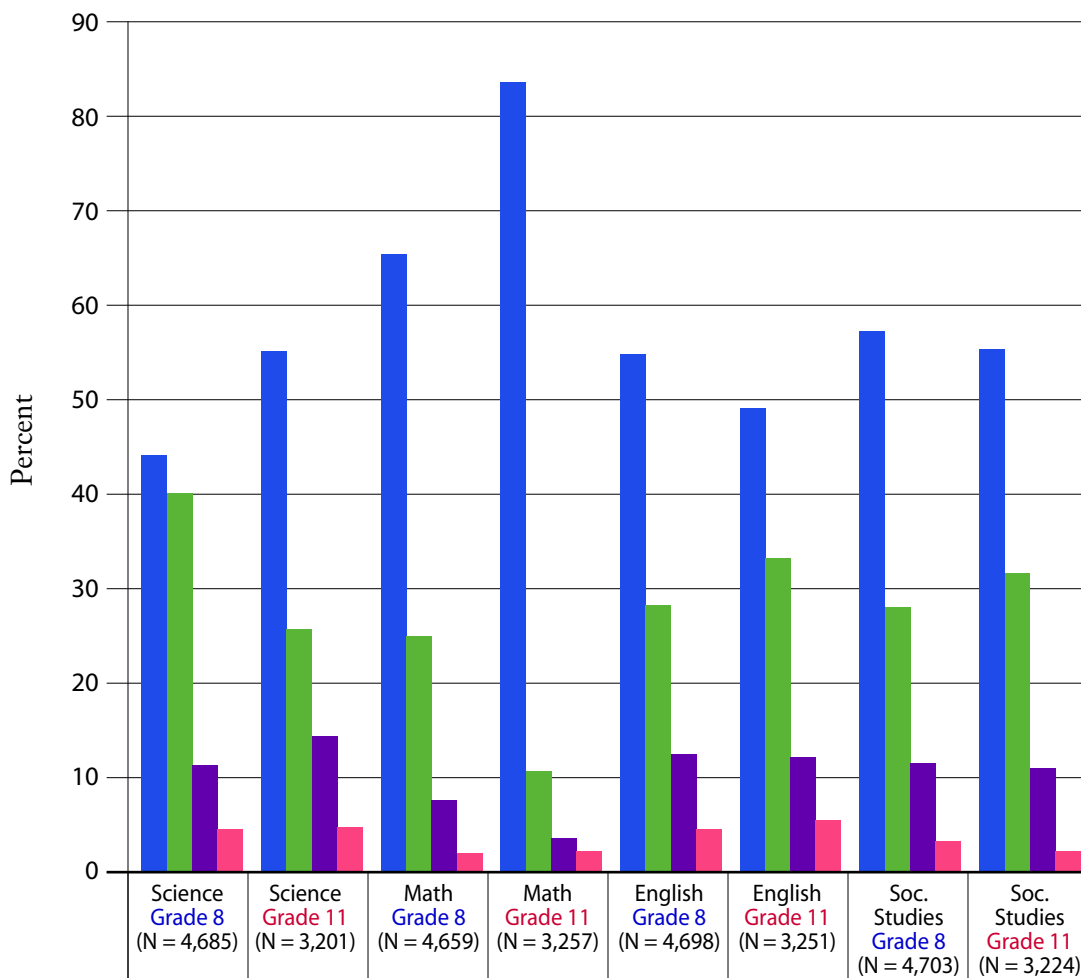
Figure 26 How often does your [Science, Math, English, Social Studies] teacher use a computer when teaching?



Never	35.8%	55.2%	64.6%	81.2%	63.9%	71.6%	60.6%	66.4%
Couple times a year	34.0%	23.4%	22.4%	11.7%	23.4%	19.7%	22.4%	19.7%
Once every couple weeks	17.5%	12.3%	6.6%	3.6%	8.3%	5.5%	9.9%	8.8%
At least every week	12.7%	9.1%	6.3%	3.5%	4.3%	3.2%	7.1%	5.0%

Figure 27 displays how often eighth- and eleventh-grade students use computers during Science, Math, English, and Social Studies class. The pattern of student use across subject areas is similar to that for teacher use. The vast majority of eighth and eleventh graders report that they never use computers in class during mathematics and social studies. Similarly, the majority of eighth-grade students report that they never use computers during English while the majority of eleventh-grade students report that they never use computers during science class. Clearly, the most use of computers occurs in eighth-grade science classes, but this use generally occurs only a couple of times a year. Across eighth and eleventh grades, the frequency of computer use during social studies and English classes is similar, with roughly 30 percent of students reporting that they use computers during class a couple of times a year. The least amount of use at both grade levels occurs during mathematics class.

Figure 27 How often do you use a computer in [Science, Math, English, Social Studies] class?



Never	44.1%	55.1%	65.4%	83.6%	54.8%	49.1%	57.2%	55.3%
Couple times a year	40.1%	25.7%	25.0%	10.6%	28.2%	33.2%	28.0%	31.6%
Once every couple weeks	11.3%	14.4%	7.6%	3.6%	12.5%	12.2%	11.5%	10.9%
At least every week	4.5%	4.8%	2.0%	2.2%	4.5%	5.5%	3.2%	2.2%

Specific Uses of Computers

Figure 28 reports students' difficulty in completing homework that requires a computer. The vast majority of the students report that it is easy to complete homework because they have easy access to computers at home. Across all three grade levels, between 3.4 and 4.3 percent of students report that they have difficulty completing homework because they have difficulty accessing their home computers while about 2 percent of students report that they have trouble because they do not have a home computer. Across the three grade levels, a substantially higher percentage of fifth graders (24 percent) report that they are not assigned homework that must be completed on computer as compared to eighth and eleventh graders.

Figure 28 How hard is it to complete homework that must be done using a computer? Select the one response that fits best.

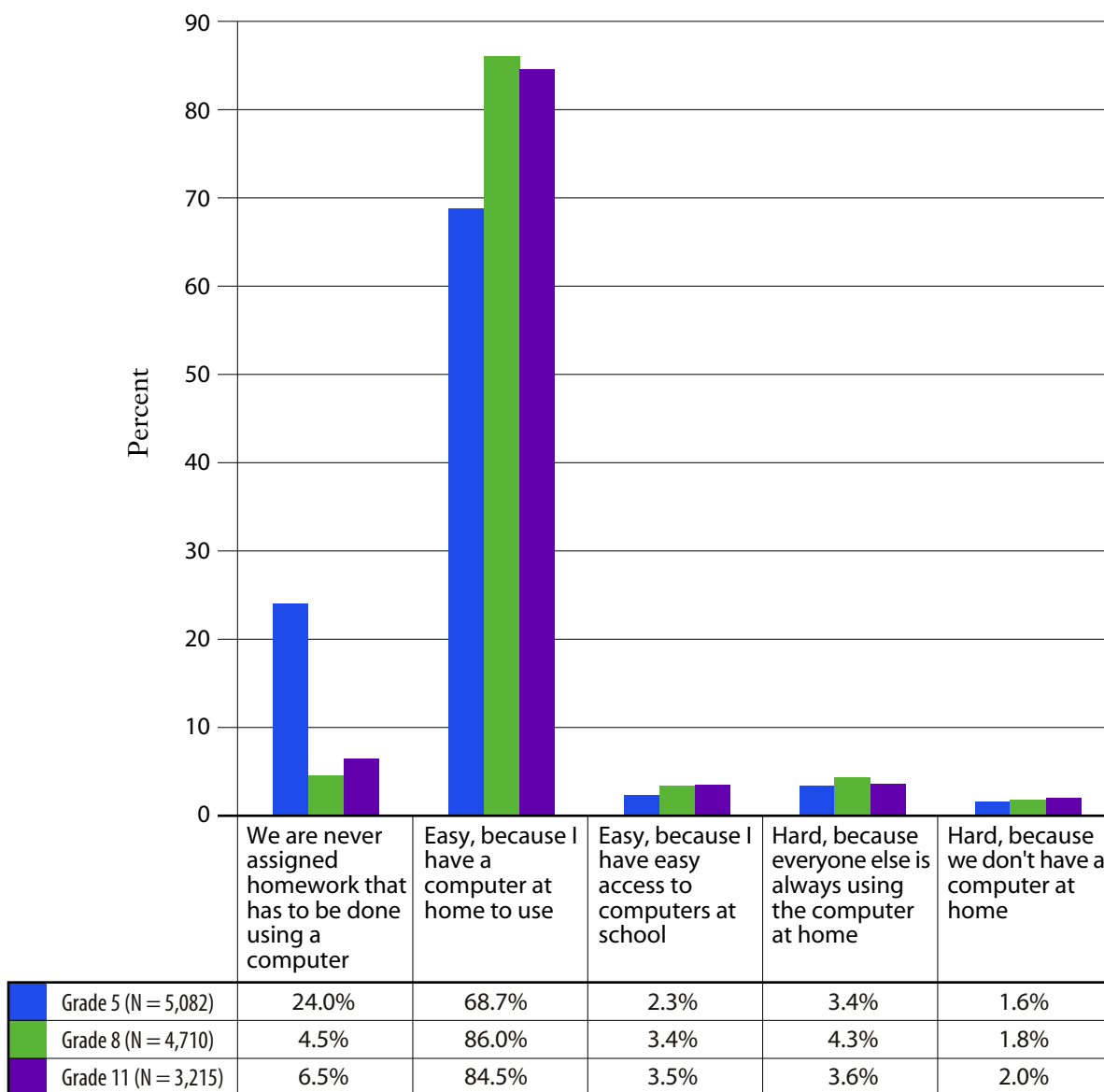


Figure 29 displays where students are learning new things with computers. The majority of students in all three grades report that they learn to do new things with computers at home. More fifth graders than eighth or eleventh graders report that they learn to do new things with computers at school. A very low percentage of students, less than 2 percent of fifth and eighth graders, and less than 4 percent of eleventh graders, report that they never learn to do new things with computers. Given that students generally spend more time on computers at home as compared to school, it makes sense that they learn more new things with computers at home than in school.

Figure 29 Where do you usually learn how to do new things with computers?

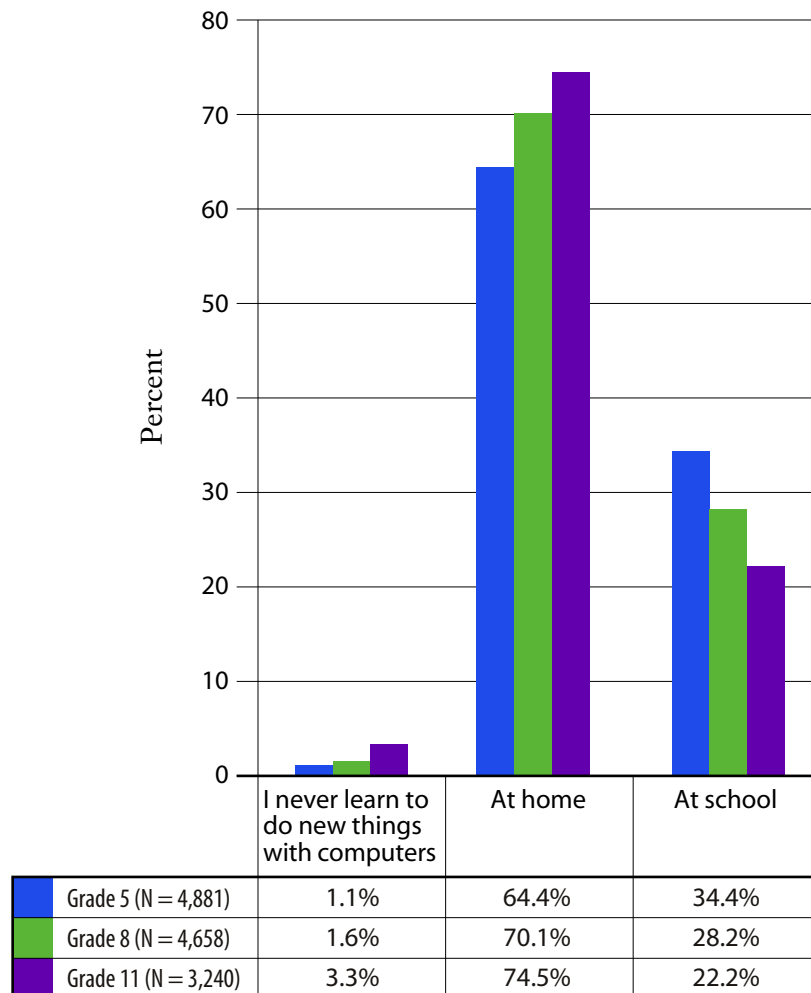


Figure 30 displays how often students use a computer to send and receive email. Fifth graders are less likely to send and receive emails than eighth and eleventh graders. Over 50 percent of the eighth-grade students and 60 percent of the eleventh-grade students use email everyday, while only 27.4 percent of the fifth-grade students use email everyday. Of the fifth graders, 21.7 percent never and 18.7 percent almost never use a computer to send and receive email. This is substantially higher than the eighth and eleventh grade responses in those categories.

Figure 30 How often do you use a computer to:

Send and receive email

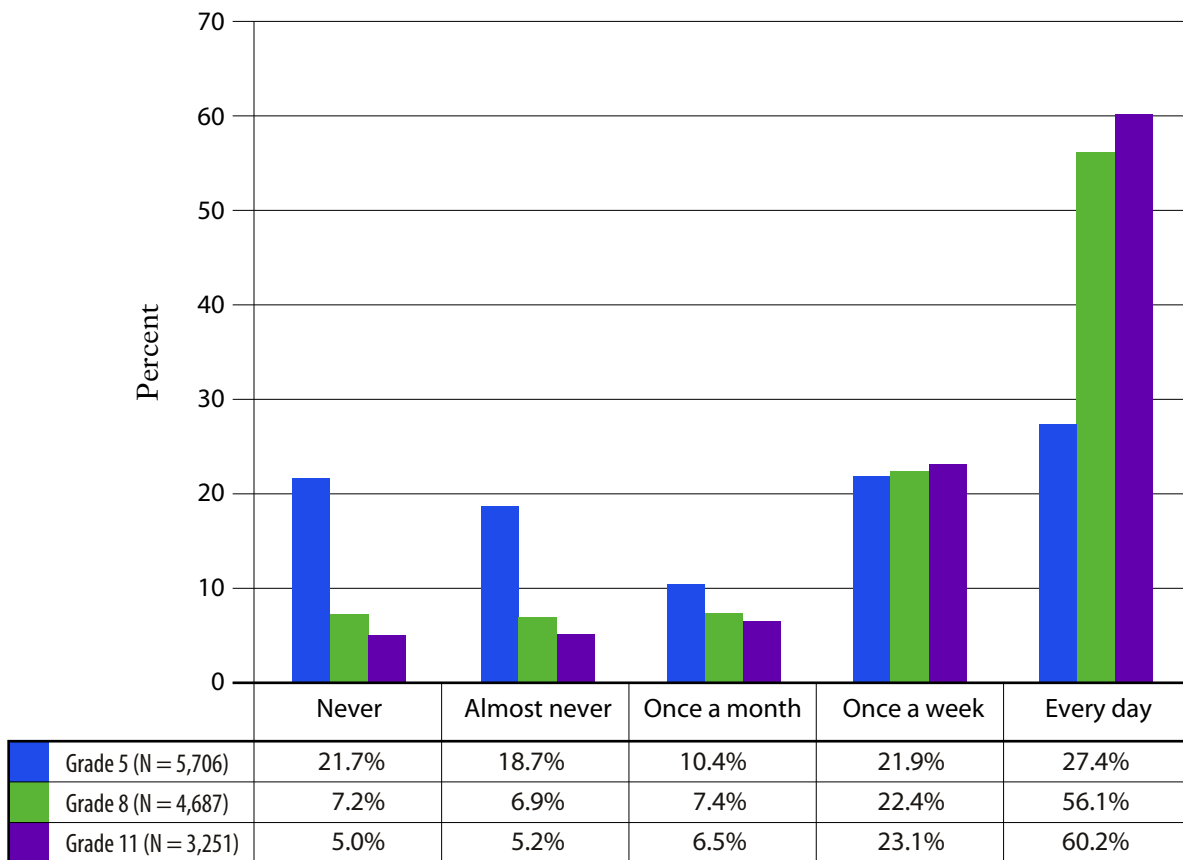


Figure 31 displays how often students use a computer to write first drafts. Almost 50 percent of fifth graders report that they never or almost never use a computer to write first drafts, while over 50 percent of eighth and eleventh graders use a computer to write first drafts everyday or once a week. Between 24 and 31 percent of students across grade levels report using a computer to write first drafts once a month. Within each grade level, 80.4 percent of fifth graders, 95.8 percent of eighth graders, and 95 percent of eleventh graders are using computers to write first drafts.

Figure 31 How often do you use a computer to:
Write first drafts on a computer

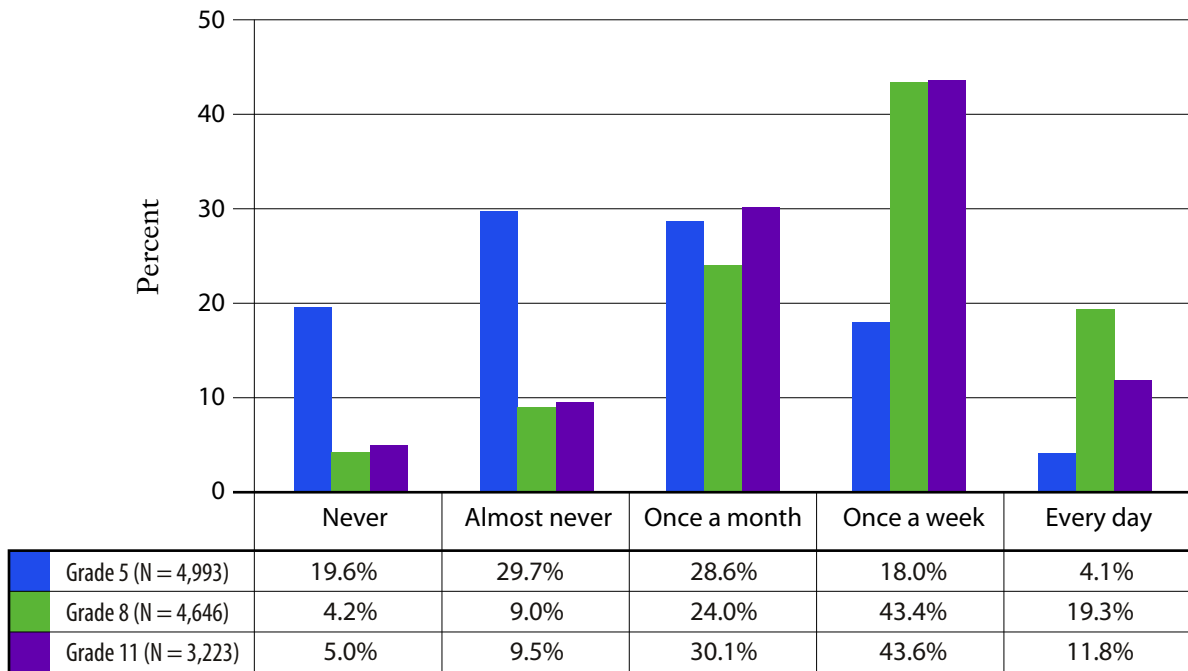


Figure 32 displays how often students use a computer to edit papers. The pattern for editing is similar to that for drafting (Figure 31), with the exception of fifth graders. Whereas a smaller percentage of fifth graders use computers to write first drafts, a slightly higher percentage use computers to edit their work. A low percentage of eighth and eleventh graders report that they never or almost never use a computer to edit their work. Overall, 85.6 percent of fifth graders, 95.8 percent of eighth graders, and 96.5 percent of eleventh graders use a computer to edit their papers.

Figure 32 How often do you use a computer to:
Edit my papers using a computer

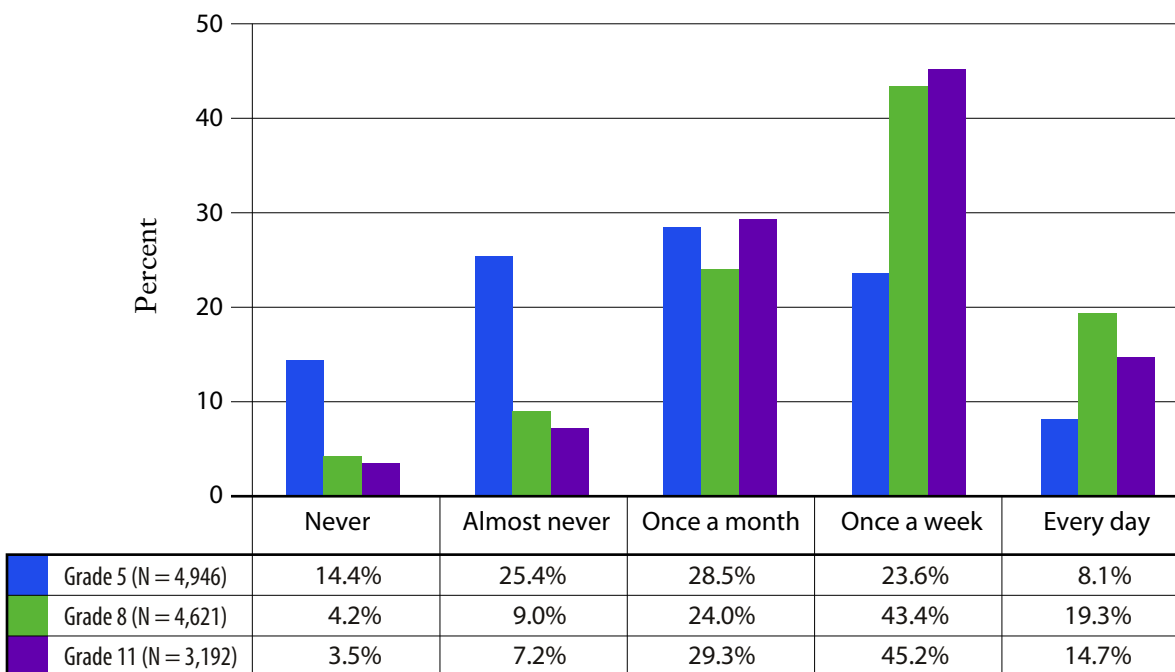


Figure 33 displays how often students use a computer to open files on a server or network. While eighth and eleventh graders use computers to access files on a server or network about the same, a substantially higher percentage of fifth graders never or almost never access files on a server or network. Conversely, a substantially lower percentage of fifth graders access files on a server or network everyday. Overall, 79 percent of fifth graders, 90.3 percent of eighth graders, and 91.6 percent of eleventh graders use a computer to open files on a server or network.

Figure 33 How often do you use a computer to:
Open files on a server or a network

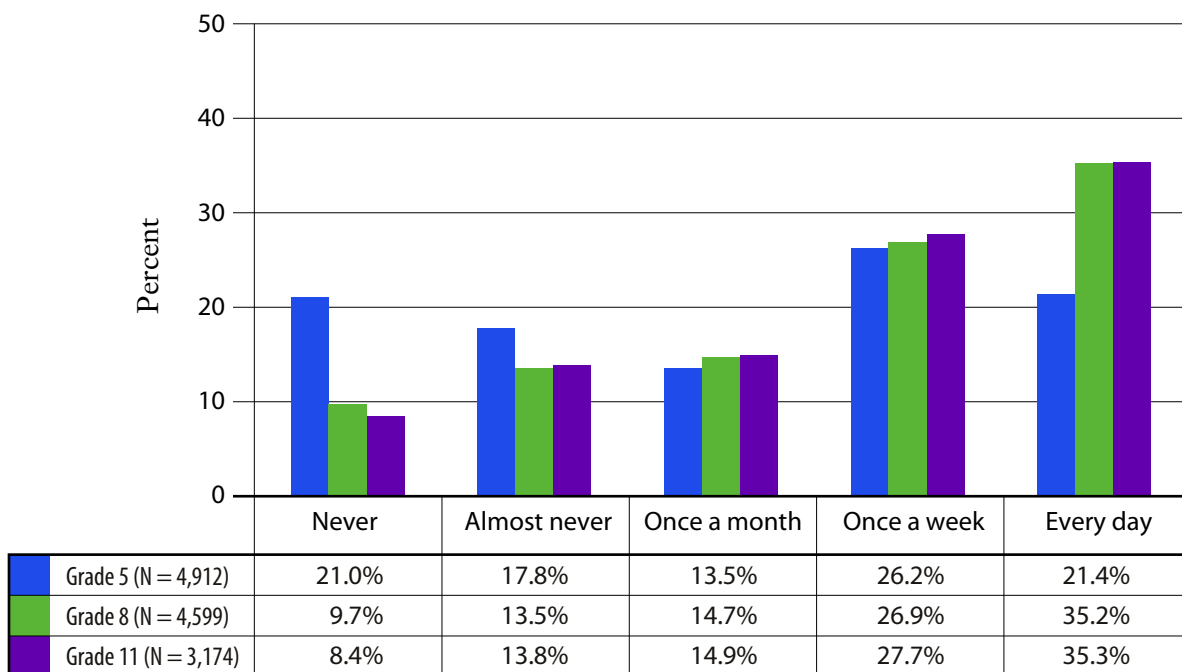


Figure 34 displays how often students use a computer to find information on the Internet. Overall, 96.5 percent of fifth graders, 99 percent of eighth graders, and 98.8 percent of eleventh graders use a computer to find information on the Internet. However, a substantially higher percentage of eighth and eleventh graders use the Internet on a daily basis as compared to fifth graders. Remarkably, 53.8 percent of eighth graders and 58.5 percent of eleventh graders use the Internet everyday, while an additional 33.6 percent of eighth graders and 29.6 percent of eleventh graders use the Internet about once a week.

Figure 34 How often do you use a computer to:
Find information on the Internet

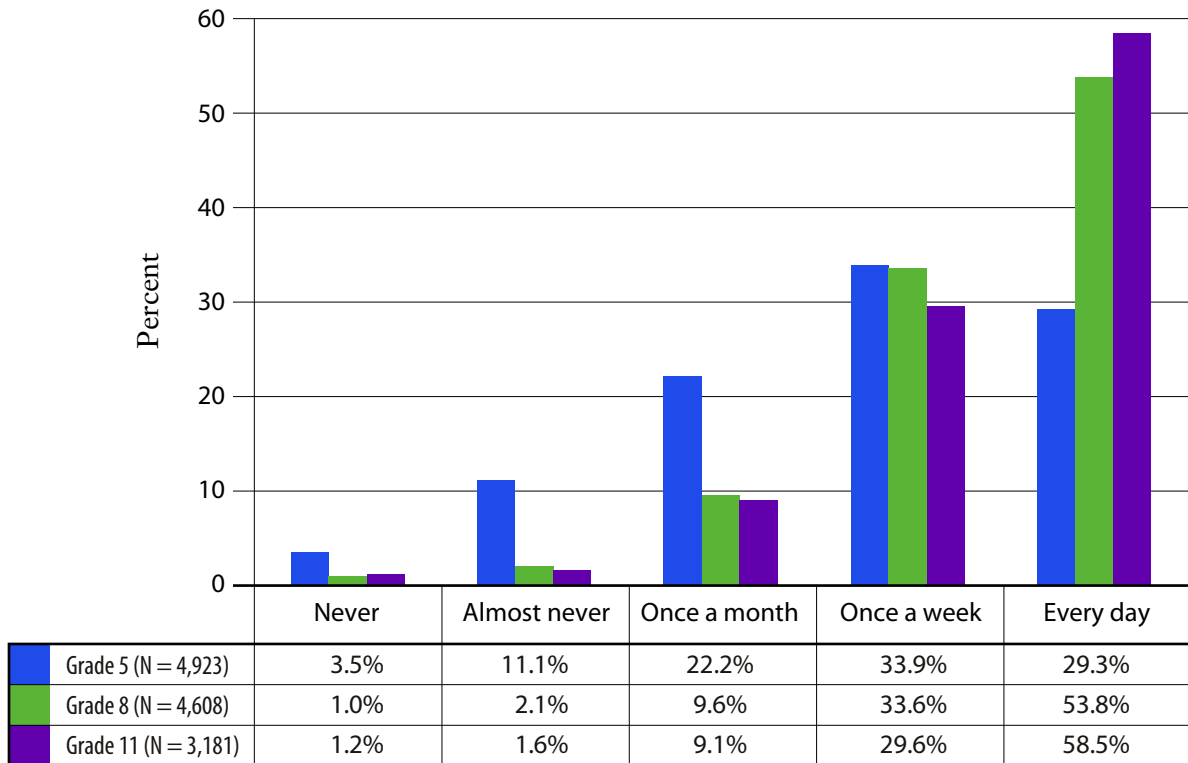


Figure 35 displays how often students use a computer to create a Hyperstudio or PowerPoint presentation. Over 50 percent of fifth graders report that they never use a computer to create a Hyperstudio or PowerPoint presentation, while about 26 percent of eighth graders and 34 percent of eleventh graders report that they never use a computer to create a Hyperstudio or PowerPoint presentation. A little over 40 percent of eighth and eleventh graders report that they almost never use a computer to create a Hyperstudio or PowerPoint presentation, while about 30 percent of fifth graders indicate that they almost never use a computer to create a Hyperstudio or PowerPoint presentation. The majority of students in all three grades never or almost never use computers to create Hyperstudio or PowerPoint presentations.

**Figure 35 How often do you use a computer to:
Create a Hyperstudio or PowerPoint presentation**

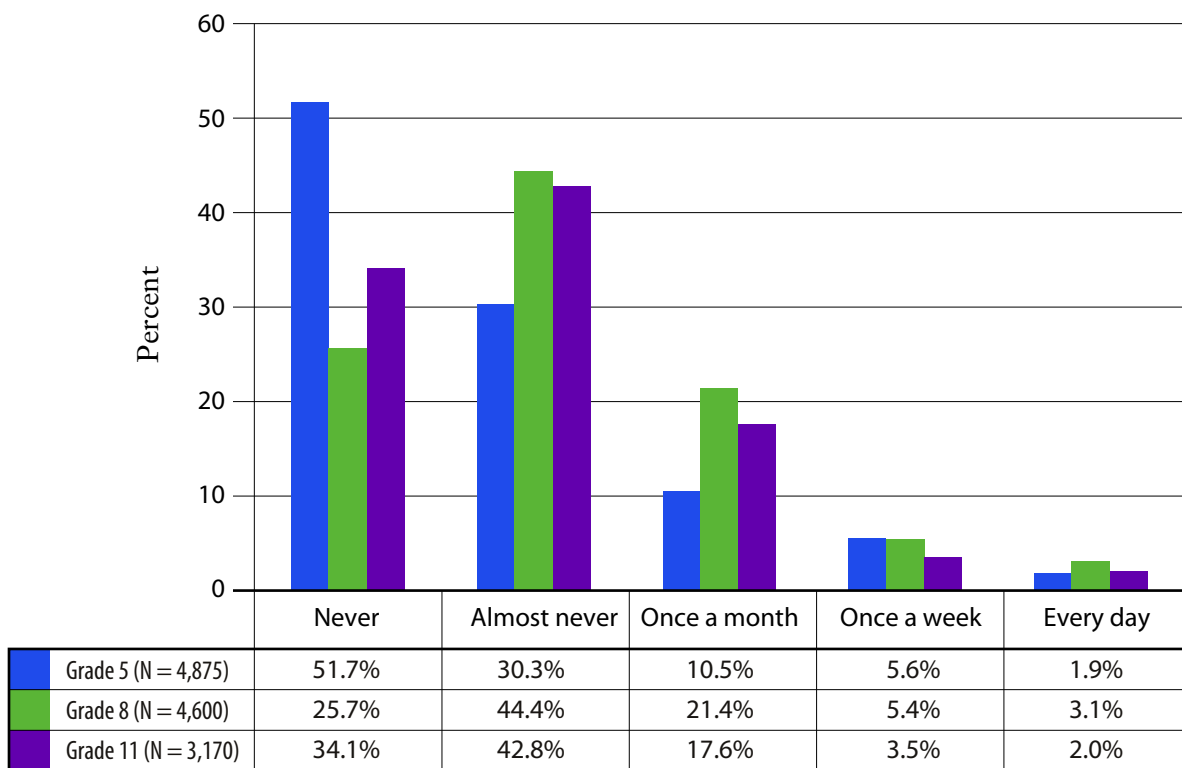


Figure 36 displays how often students use a computer to play computer games. About 45 percent of fifth graders, 39 percent of eighth graders, and 26 percent of eleventh graders report playing computer games everyday; 34 percent of fifth graders, 32 percent of eighth graders, and about 27 percent of eleventh graders report playing computer games once a week. Within each grade level, 89.9 percent of fifth graders, 84.1 percent of eighth graders, and 69.1 percent of eleventh graders report that they play computer games at least once a month.

Figure 36 How often do you use a computer to:
Play computer games

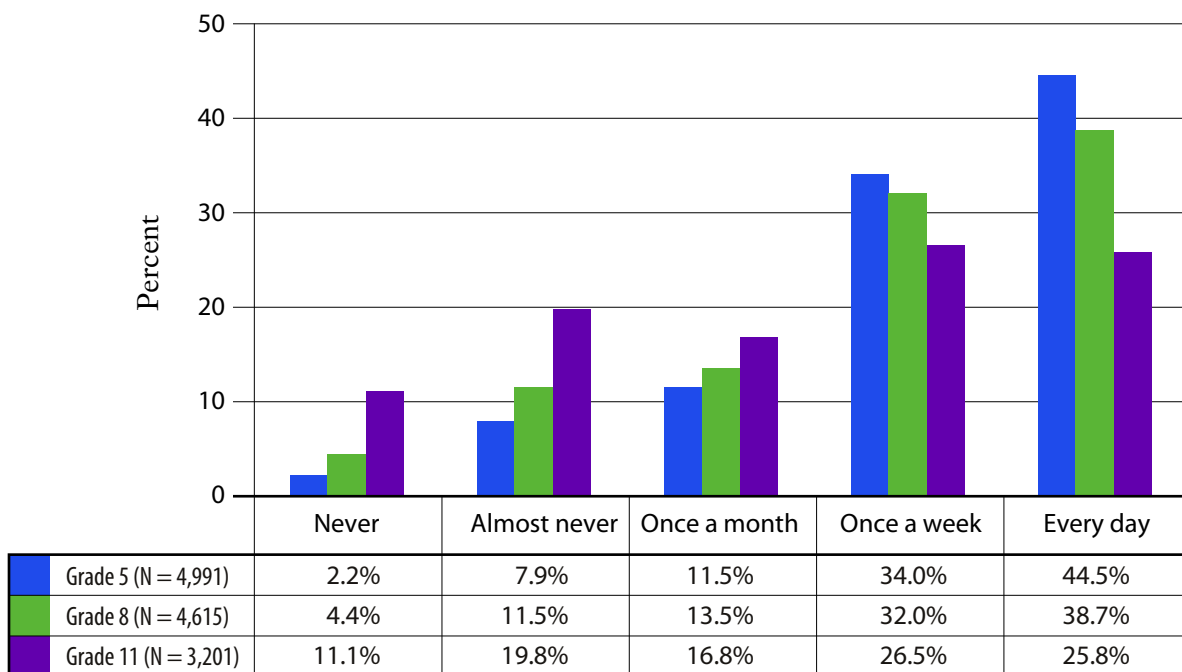
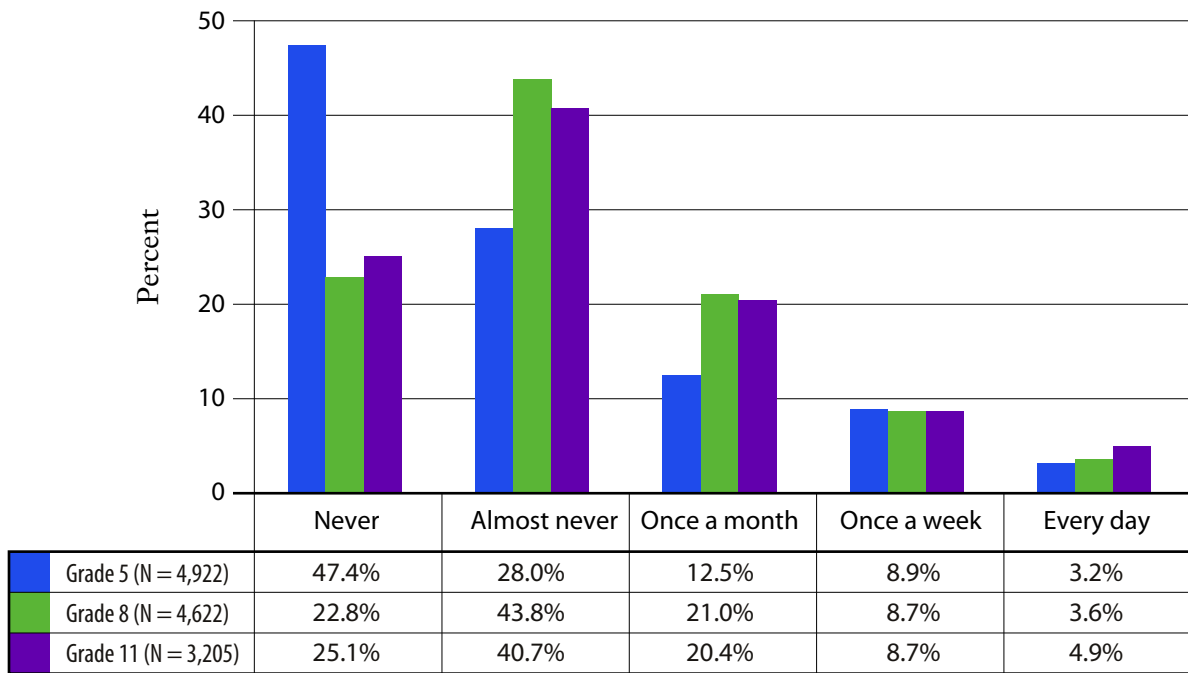


Figure 37 displays how often students use a computer to work with spreadsheets and databases. Overall, 75.4 percent of fifth graders, 66.6 percent of eighth graders, and 65.8 percent of eleventh graders report that they never or almost never use a spreadsheet or database. Those students who do use these tools were more likely to report doing so about once a month.

Figure 37 How often do you use a computer to:
Work with spreadsheets/databases



Computer-Related Skills

Figure 38 displays students self-assessment of their ability to use computers. Over half of the students at each grade level report that they use a computer with confidence and can figure out how to do just about anything that they need to do. About 38 percent of fifth graders, 28 percent of eighth graders, and 29 percent of eleventh graders report that they can use a computer on their own, but they sometimes have difficulty figuring out how to complete an unfamiliar task. A very small percentage of students, about two percent of fifth graders, one percent of eighth graders, and two percent of eleventh graders, report that they are afraid if they use a computer that it will not work properly or that they might break it. An even smaller percentage of students, less than two percent in each grade, report that they never use a computer. Older students report feeling more confident in their use of computers, while fifth graders were more likely than the older students to report having trouble when doing something unfamiliar.

Figure 38 Which of the statements below best describes your personal use of computers?

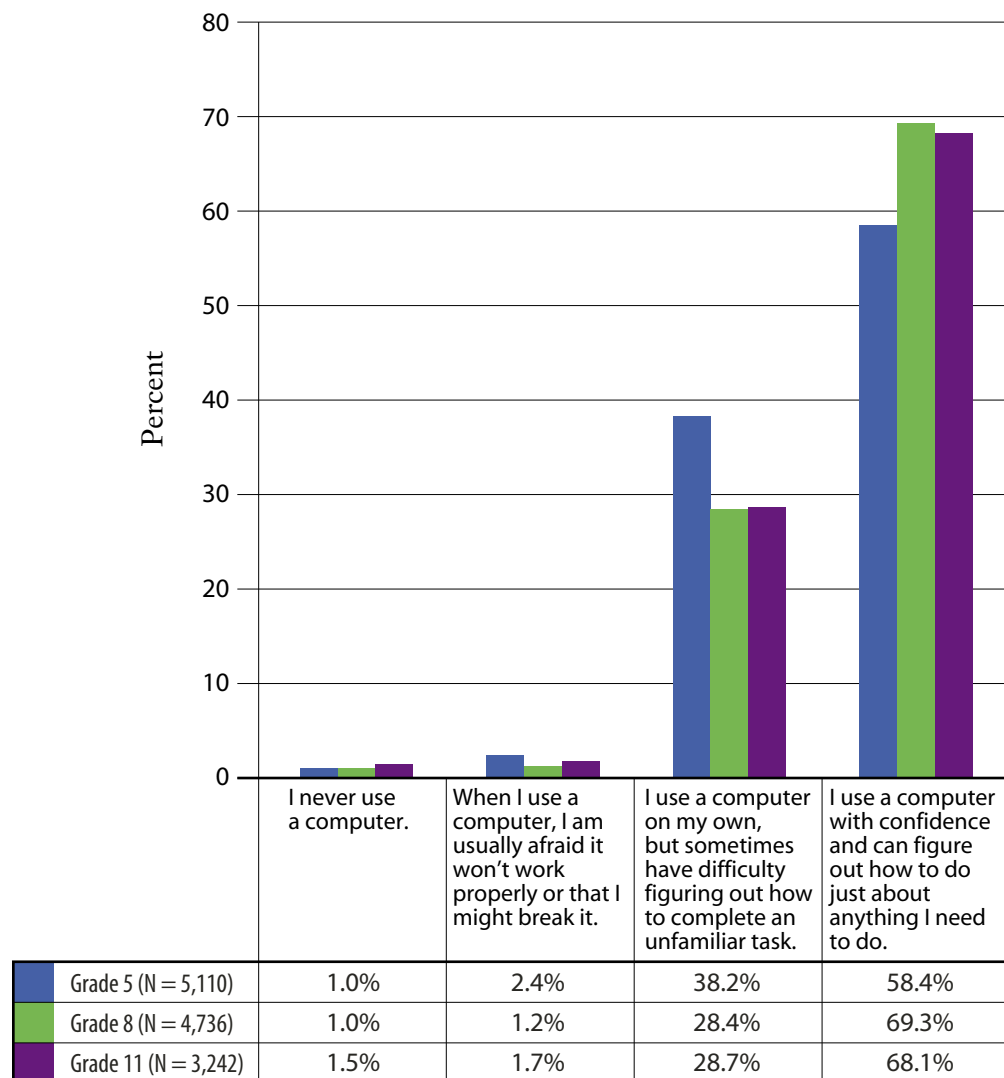


Figure 39 displays how students feel about their ability to send and receive emails. The vast majority of eighth and eleventh graders and over fifty percent of fifth graders report that their emailing skills are pretty good. Conversely, 19.7 percent of fifth graders report that their skills in this area are not very good as compared to 5.1 percent of eighth graders and 3.5 percent of eleventh graders. This pattern is likely related to the frequency with which students email and instant message. As shown in Figure 30, use of computers for emailing and instant messaging occurs less frequently with fifth graders as compared to the eighth and eleventh graders.

Figure 39 How well are you able to:
Send and receive email

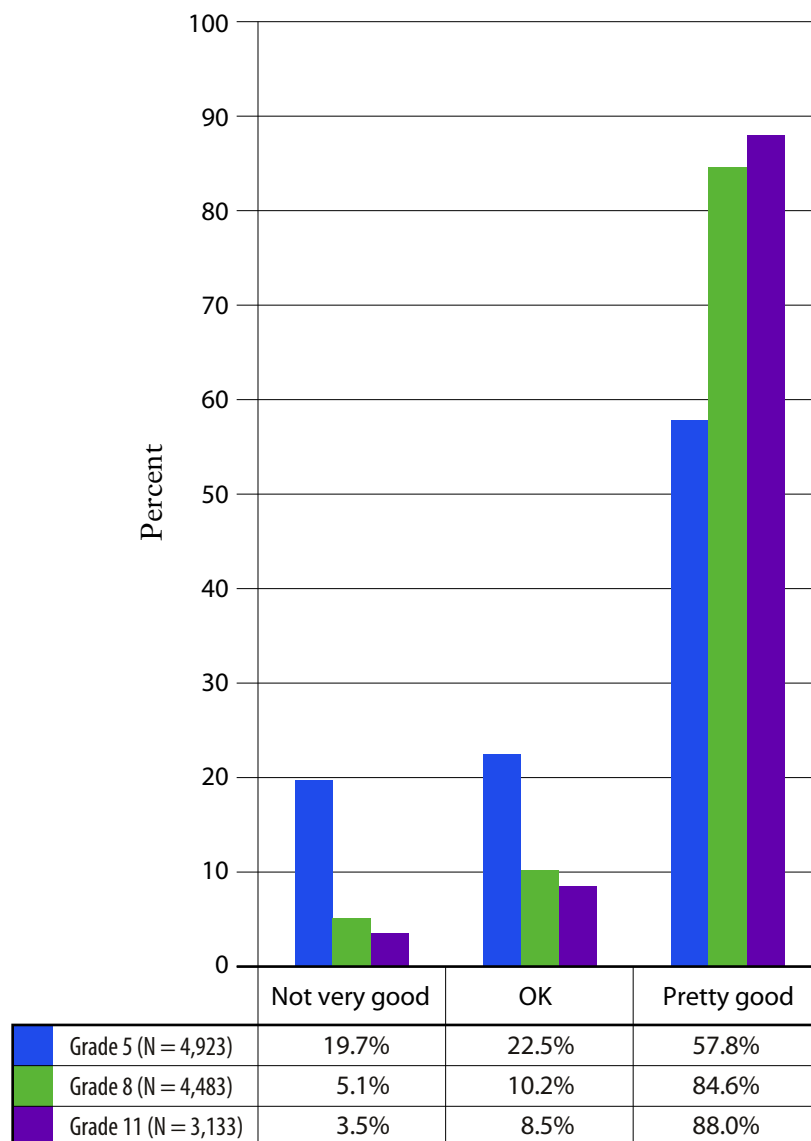


Figure 40 displays how students feel about their ability to write first drafts on a computer. The majority of students report that they feel pretty good about writing first drafts on a computer. However, compared to the eighth and eleventh graders, a higher percentage of fifth graders did not feel as confident. Again, this may be related to how often fifth graders use a computer to write first drafts. According to Figure 31, almost 50 percent of fifth graders report that they never or almost never use a computer to write first drafts.

Figure 40 How well are you able to:
Write first drafts on a computer

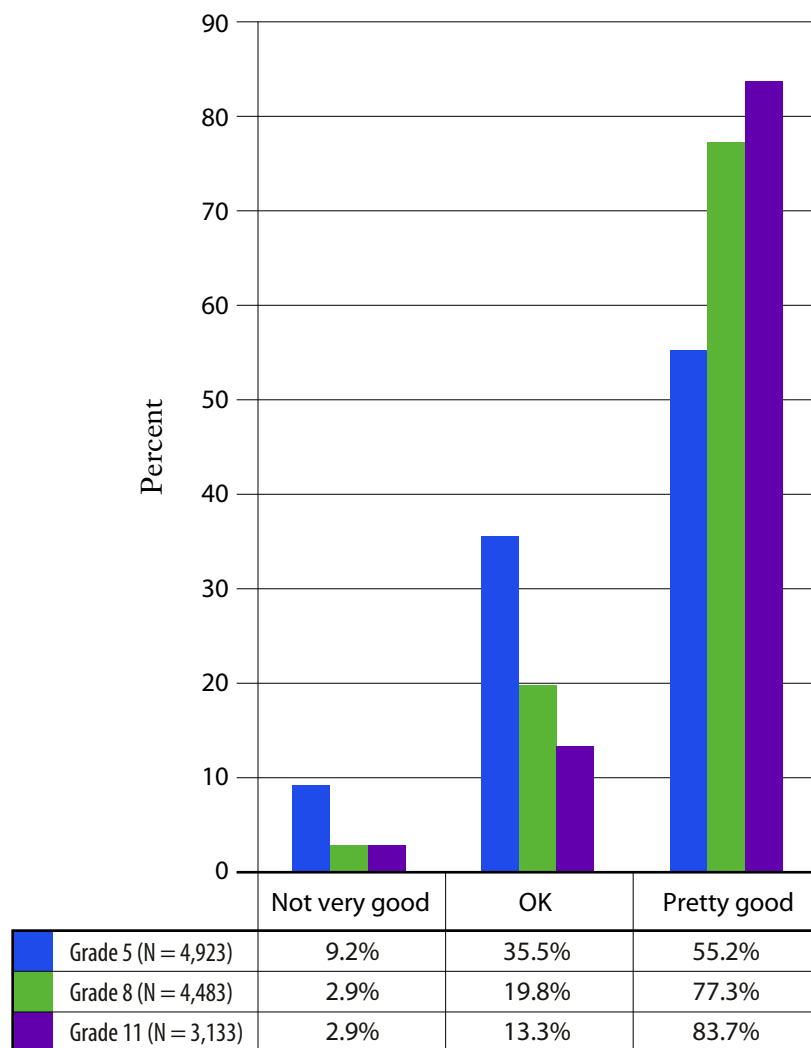


Figure 41 displays how students feel about their ability to edit papers on a computer. The majority of students report that they feel pretty good about editing papers on a computer. However, compared to the eighth and eleventh graders, a higher percentage of fifth graders do not feel as confident. Again, this may be related to how often fifth graders use a computer to edit papers. According to Figure 32, a higher percentage of fifth graders use computers to edit papers than to write first drafts. Nonetheless, a lower percentage of fifth graders report editing papers on the computer as compared to eighth and eleventh graders.

Figure 41 **How well are you able to:**
Edit my papers using a computer

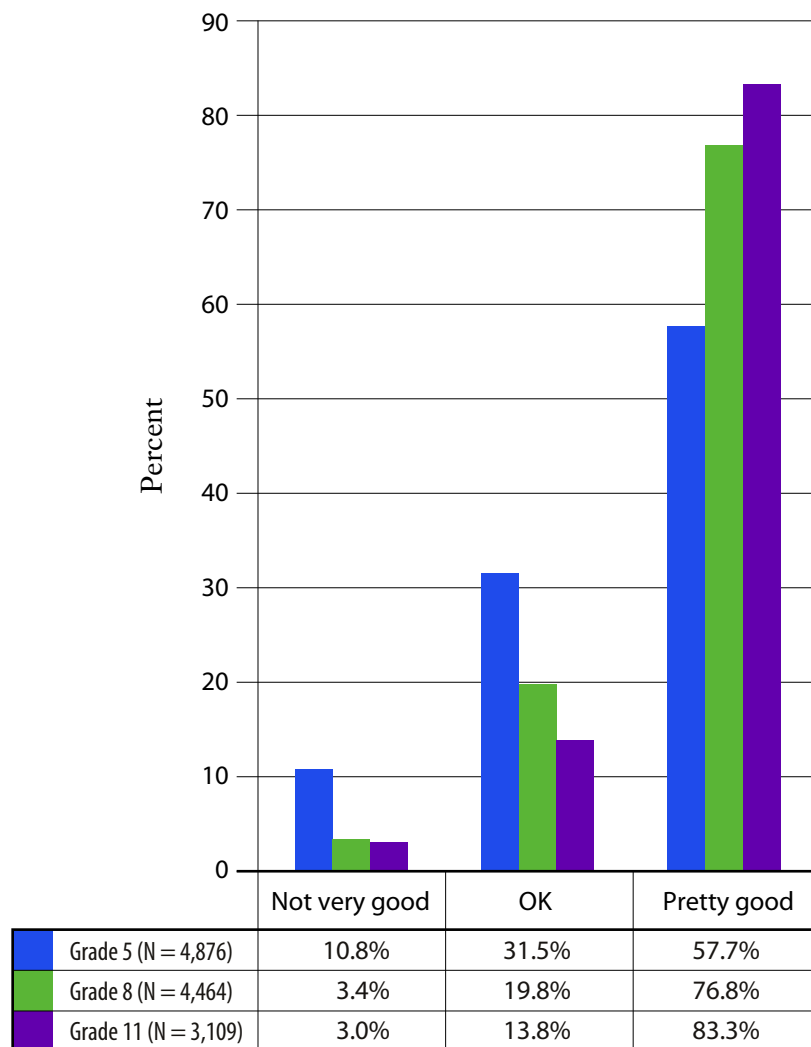


Figure 42 displays how students feel about their ability to open files on a server or network. The majority of students feel pretty good about being able to open files on a server or network. However, compared to the eighth and eleventh graders, a higher percentage of fifth graders do not feel as confident. According to Figure 33, more fifth graders, as compared to eighth and eleventh graders, report never using a computer to open files on a server or network. This may be related to the lower percentage of fifth graders reporting that they feel pretty good about their ability to open files on a server or network.

Figure 42 How well are you able to:
Open files on a server or a network

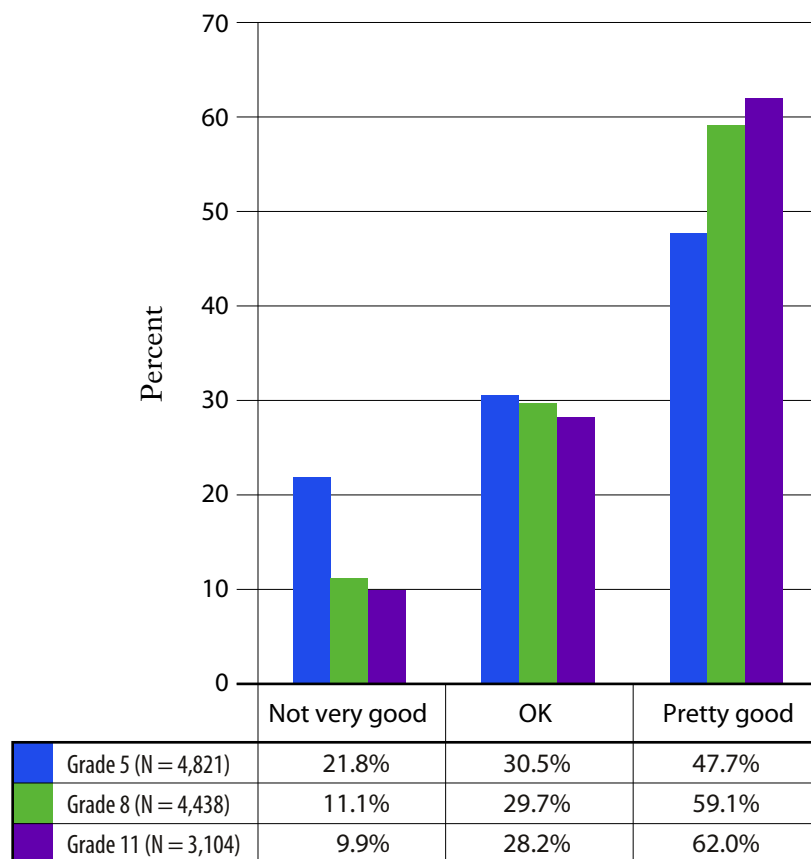


Figure 43 displays how students feel about their ability to find information on the Internet. Over 70 percent of the students at each grade report that they are pretty good at finding information on the Internet.

Figure 43 How well are you able to:
Finding information on the Internet

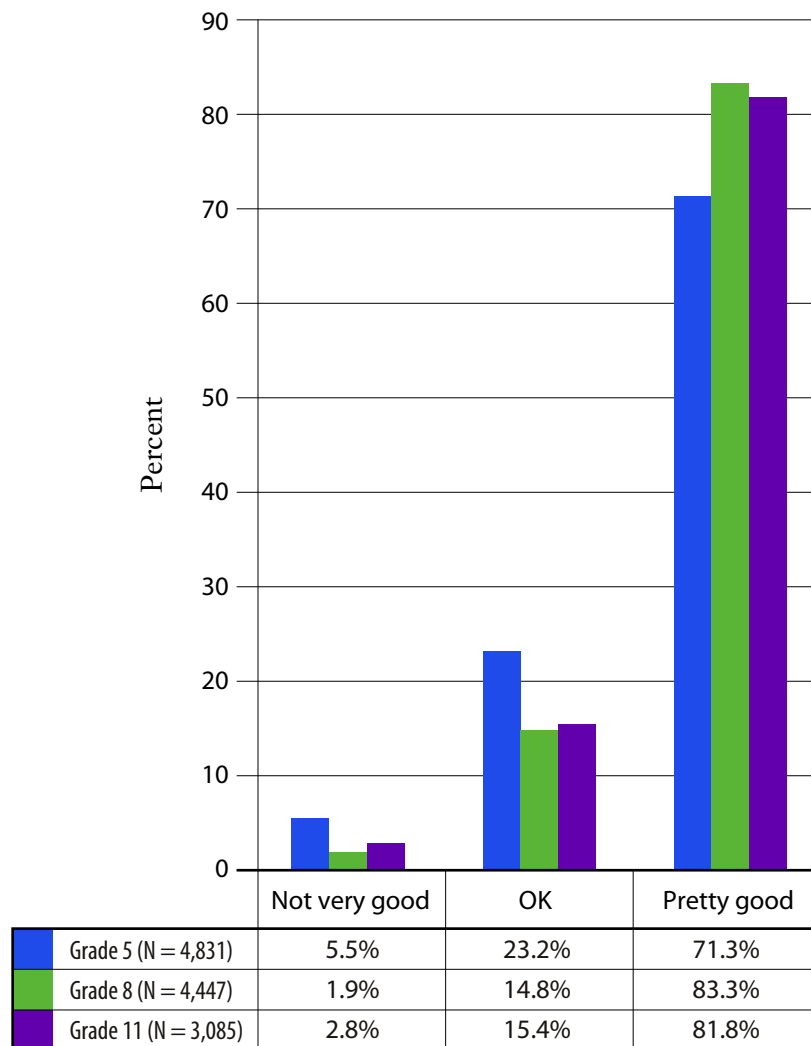


Figure 44 displays how students feel about their ability to create a Hyperstudio or PowerPoint presentation. Over 50 percent of fifth graders, 27 percent of eighth graders, and 37 percent of eleventh graders report that they are not very good at creating Hyperstudio or PowerPoint presentations. According to Figure 35, over 50 percent of fifth graders report that they never use a computer to create a Hyperstudio or PowerPoint presentation, while about 26 percent of eighth graders and 34 percent of eleventh graders report that they never create these types of presentations. A little over 40 percent of eighth and eleventh graders report that they almost never use a computer to create a Hyperstudio or PowerPoint presentation, while about 30 percent of fifth graders report that they almost never use a computer to create a Hyperstudio or PowerPoint presentation. Since students are not using these programs often, this might explain why more students do not feel comfortable about their ability to use these programs.

Figure 44 How well are you able to:
Creating Hyperstudio or PowerPoint presentation

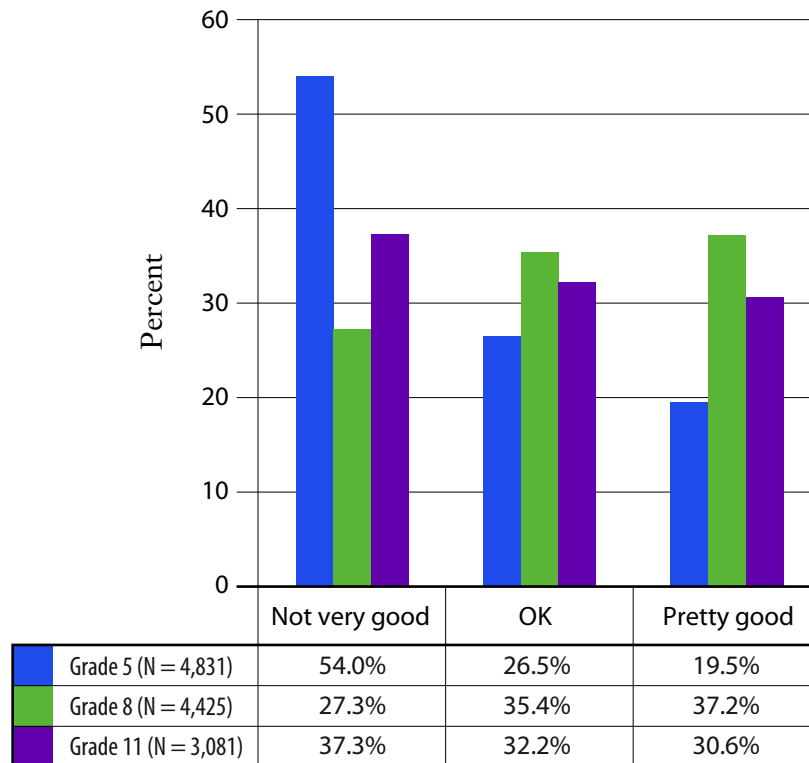


Figure 45 displays how students feel about their ability to play computer games. The majority of students feel that they are pretty good at playing computer games. As seen in Figure 36, fifth graders report playing computer games the most while eleventh graders report playing them the least. Since fifth graders are playing computer games more often, it makes sense that more fifth graders, as compared to eighth and eleventh graders, report feeling pretty good about being able to play computer games.

Figure 45 **How well are you able to:**
Play computer games

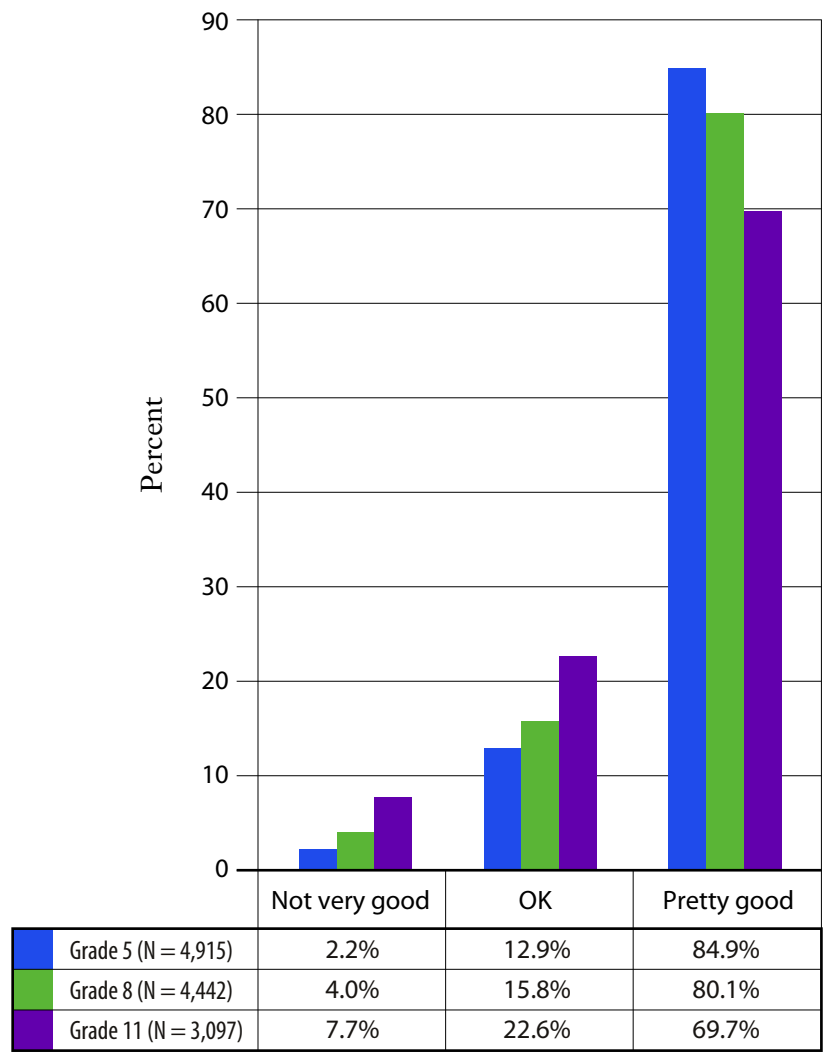
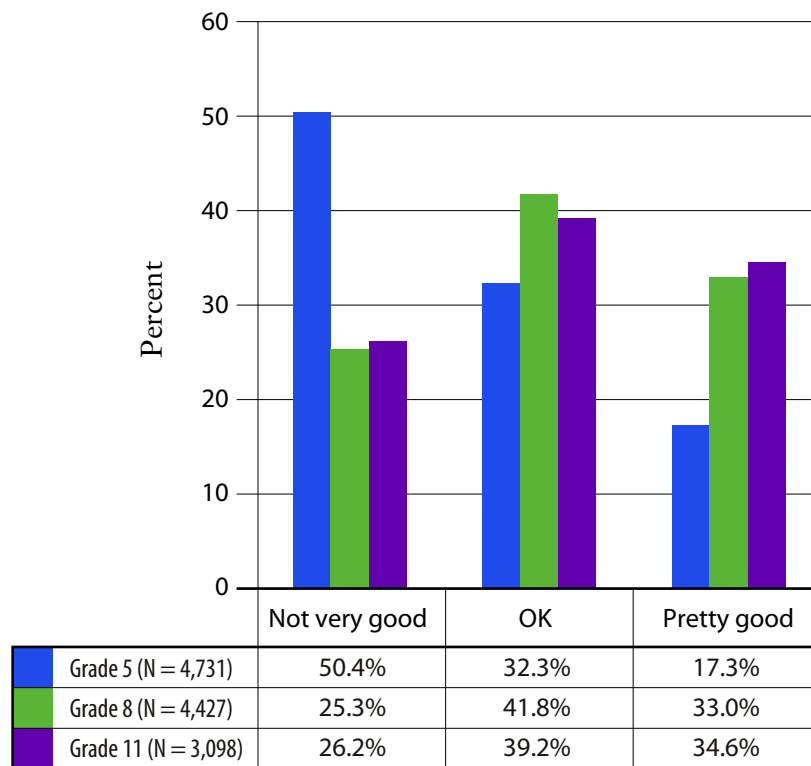


Figure 46 displays how students feel about their ability to work with a spreadsheet or database. About 50 percent of fifth graders feel that they are not very good at working with spreadsheets and databases, while about 25 percent of eighth and eleventh graders report that they are not very good at working with spreadsheets and databases. According to Figure 37, about 20 percent of eighth and eleventh graders report using spreadsheets or databases once a month, while only about 10 percent of fifth graders report using them once a month. Fifth graders are the least likely to report using spreadsheets and databases, and they are more likely to report feeling that they are not very good at using them well.

Figure 46 **How well are you able to:**
Work with spreadsheets/databases



Computer-Related Beliefs

Figure 47 displays students' beliefs about the quality of the products they create when they use a computer instead of when they use paper and pencil. The majority of students feel that they do create a better product when using a computer. A higher percentage of students in grades eight and eleven, however, believe that their products are better when they create them on computer.

Figure 47 When using a computer (instead of paper and pencil) to do your schoolwork, do you:

Create a better-looking finished product (than if you didn't use a computer)?

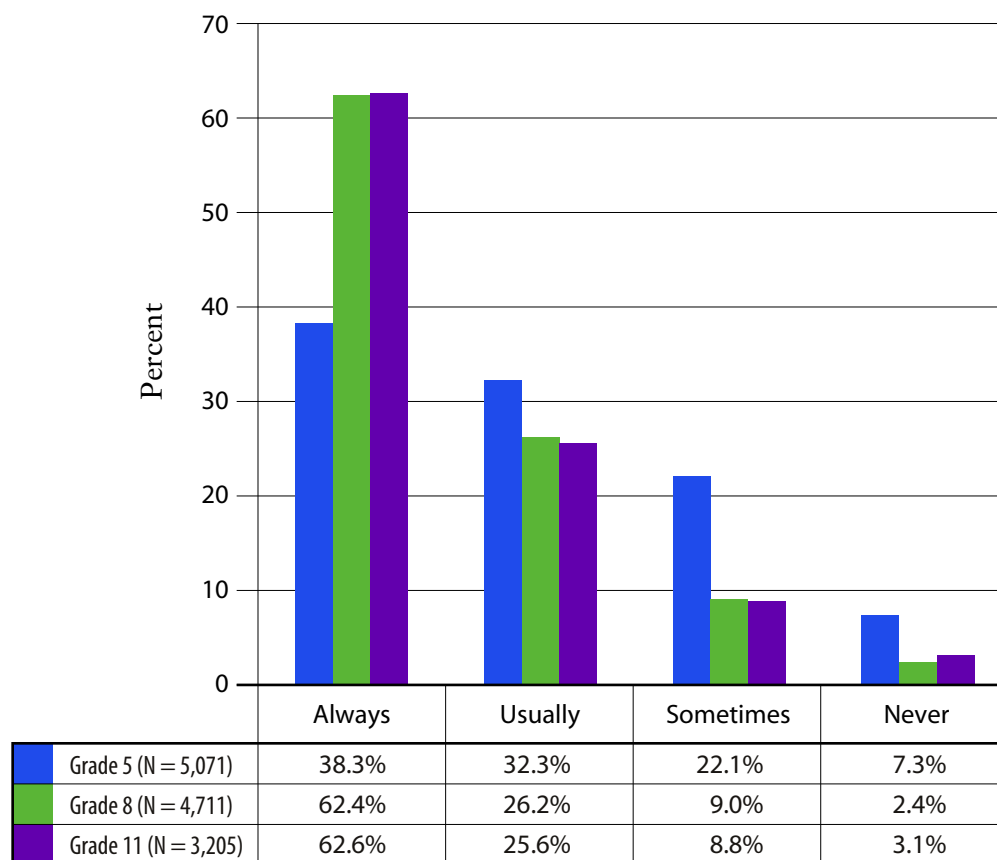


Figure 48 displays students' beliefs about their writing when they use a computer instead of when they use paper and pencil. The majority of students feel that they always or usually write better when using a computer instead of paper and pencil.

Figure 48 When using a computer (instead of paper and pencil) to do your schoolwork, do you:

Write better?

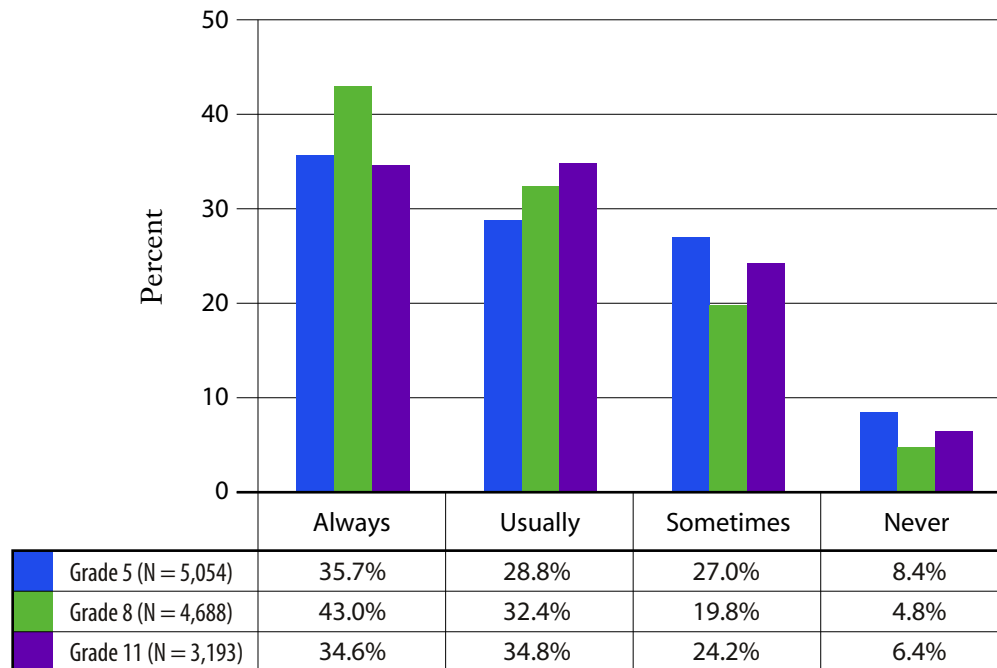


Figure 49 displays students' beliefs about their use of shortcuts or being lazy when they use a computer instead of when they use paper and pencil. Almost half of the fifth graders indicate that they never take shortcuts or become lazy, while about half of the eighth and eleventh graders believe that they sometimes take shortcuts or become lazy. Overall, more eighth and eleventh graders than fifth graders feel that they do get lazy or take shortcuts when using a computer.

Figure 49 When using a computer (instead of paper and pencil) to do your schoolwork, do you:

Take shortcuts and "get lazy?"

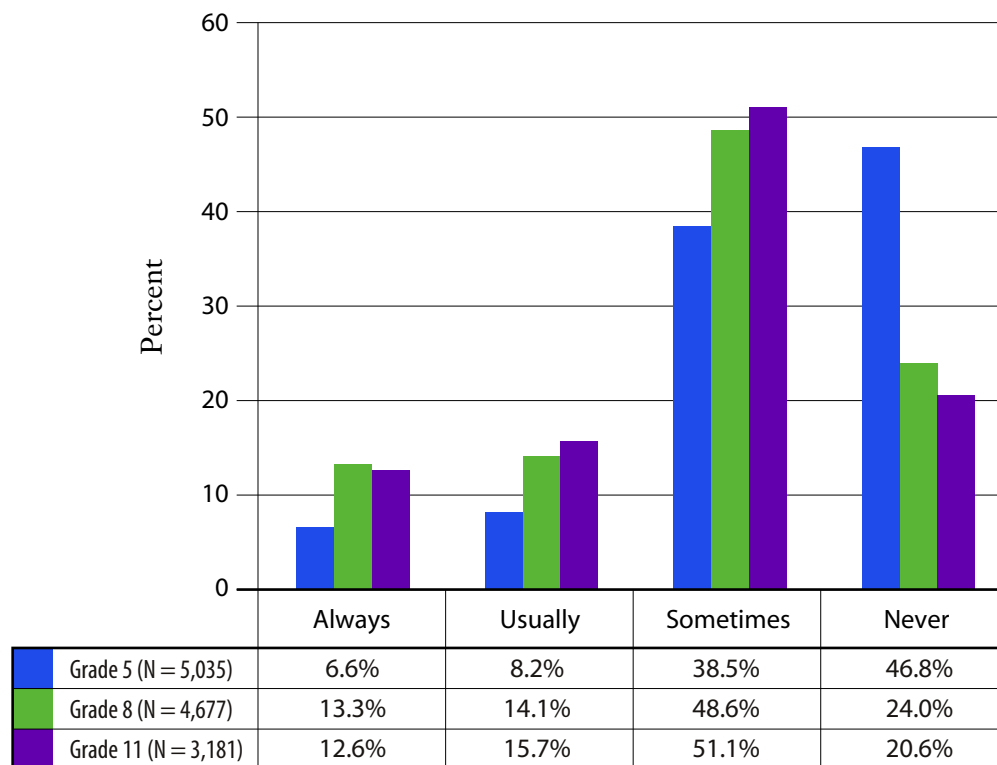


Figure 50 displays students' beliefs about the amount of time they spend with other students in their class when they use a computer instead of when they use paper and pencil. About half of the students in each grade believe that they sometimes spend more time with classmates when using computers, while between 25 and 33 percent of students indicate that they never spend more time with other students when using a computer.

Figure 50 When using a computer (instead of paper and pencil) to do your schoolwork, do you:

Spend more time working with other students in your class

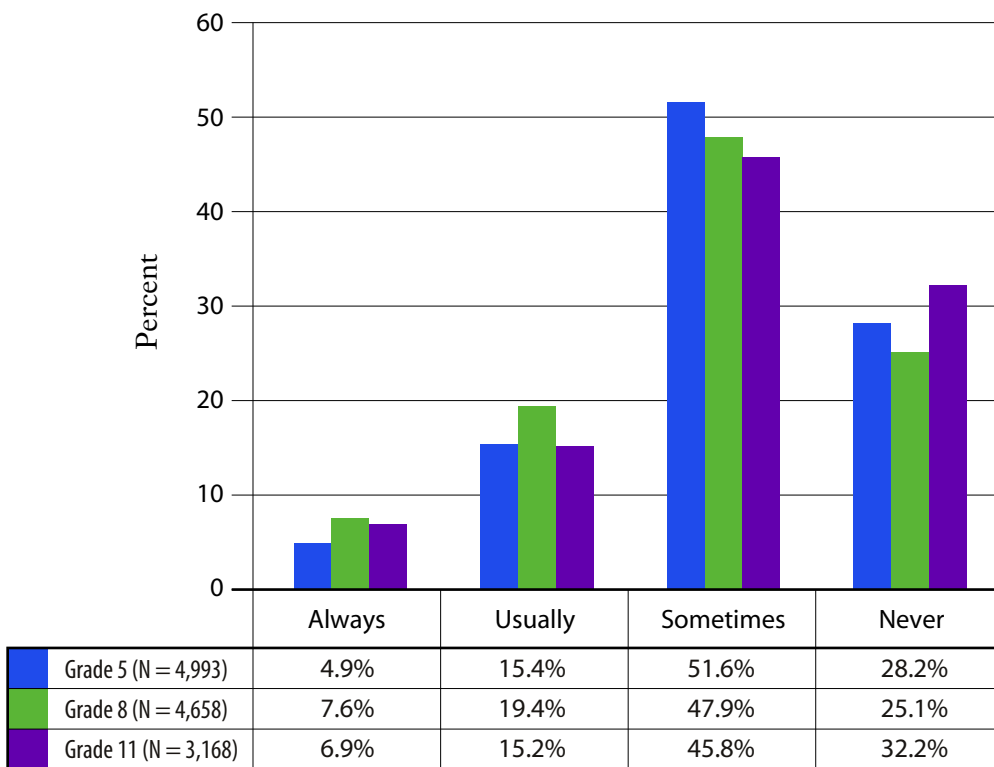


Figure 51 displays students' beliefs about whether they understand things better when they use a computer instead of when they use paper and pencil. The majority of students in each grade indicate that they sometimes or usually understand things better when using a computer. Between 9 and 14 percent of students feel that they never understand things better while using a computer, between 17 and 26 percent believe that they always understand things better when using a computer.

Figure 51 When using a computer (instead of paper and pencil) to do your schoolwork, do you:

Seem to understand things better when using a computer

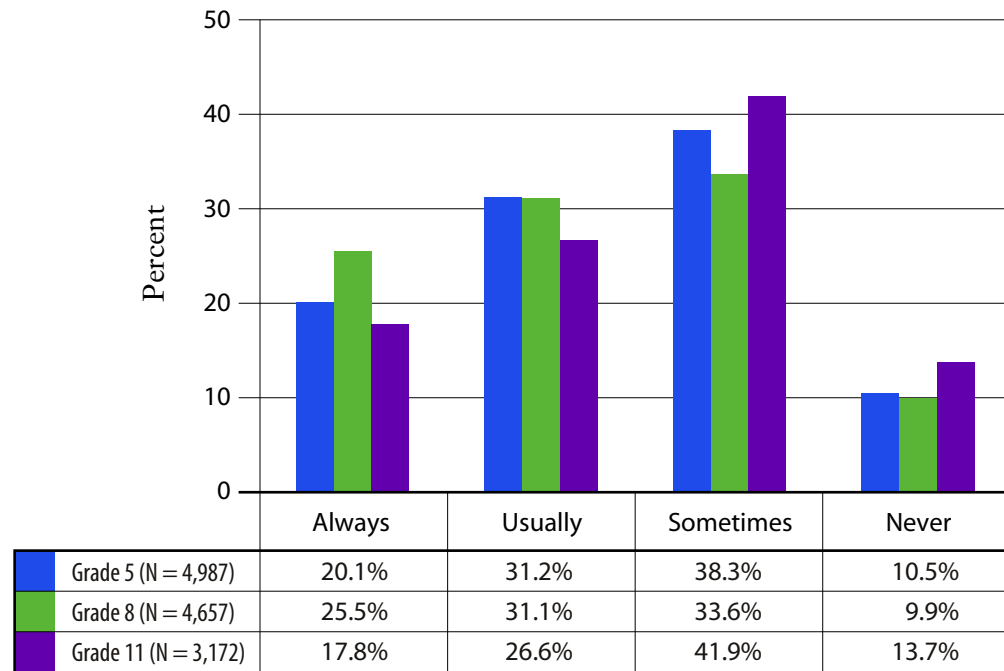


Figure 52 displays students' beliefs about whether they work harder on assignments when they use a computer instead of when they use paper and pencil. Roughly 15 percent of students believe that they never work harder when using a computer, while between 31 and 39 percent believe they sometimes work harder. Roughly 30 percent believe they usually work harder.

Figure 52 When using a computer (instead of paper and pencil) to do your schoolwork, do you:

Work harder at your assignments when using a computer

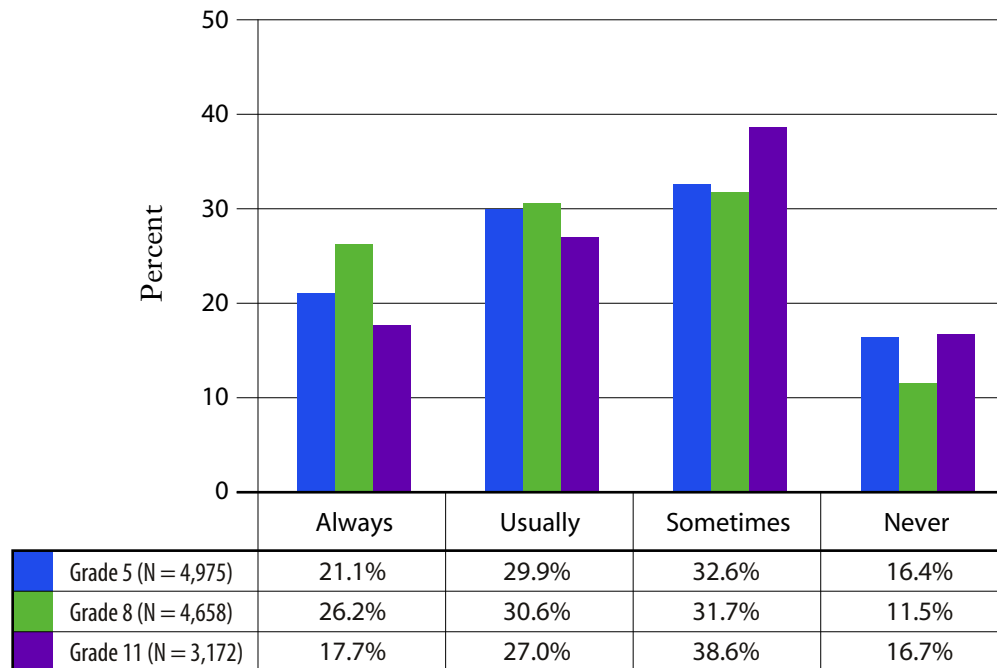


Figure 53 displays students' beliefs about whether they find it easier to just copy from CD ROMs and the Internet when they use a computer instead of when they use paper and pencil. Most striking is the substantially higher percentage of fifth graders, as compared to eighth and eleventh graders, who report that they never find it easier to copy. Whereas about 25 percent of eighth and eleventh graders feel that it is never easier to copy, 38 percent of fifth graders believe that it is never easier to copy.

Figure 53 When using a computer (instead of paper and pencil) to do your schoolwork, do you:

Find it easy to just copy things from CD ROMs and the Internet

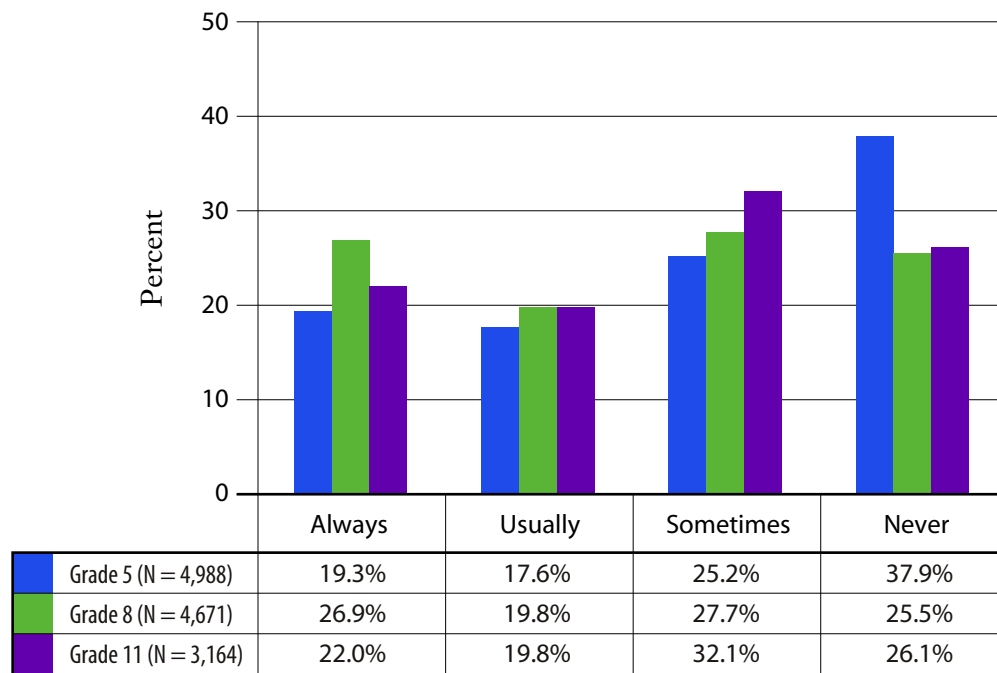


Figure 54 displays students' beliefs about whether they get more confused when they use a computer instead of when they use paper and pencil. A large percentage, between 55 and 65 percent of students, believe that they never get more confused. A higher percentage of fifth graders (36 percent) report that they sometimes become confused as compared to eighth graders (27.4 percent) and eleventh graders (27.8 percent). Less than 10 percent of students within each grade level believe that they usually or always become more confused when they use a computer.

Figure 54 When using a computer (instead of paper and pencil) to do your schoolwork, do you:

Get more confused when using a computer to do things

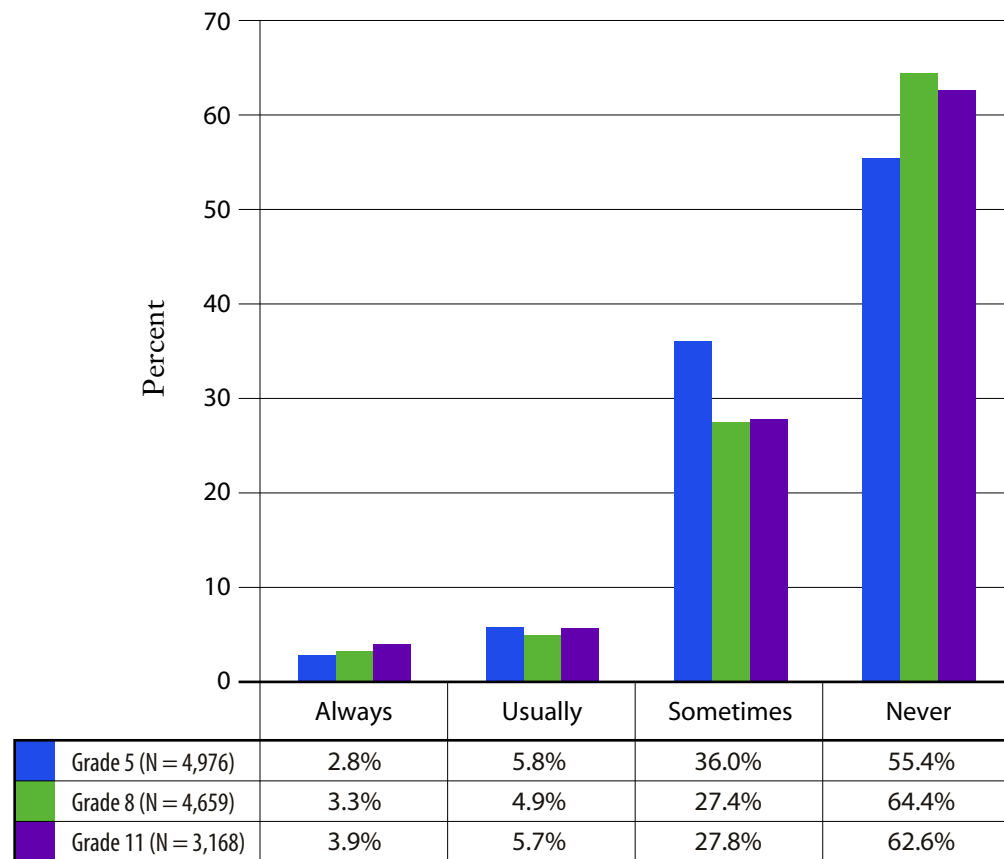
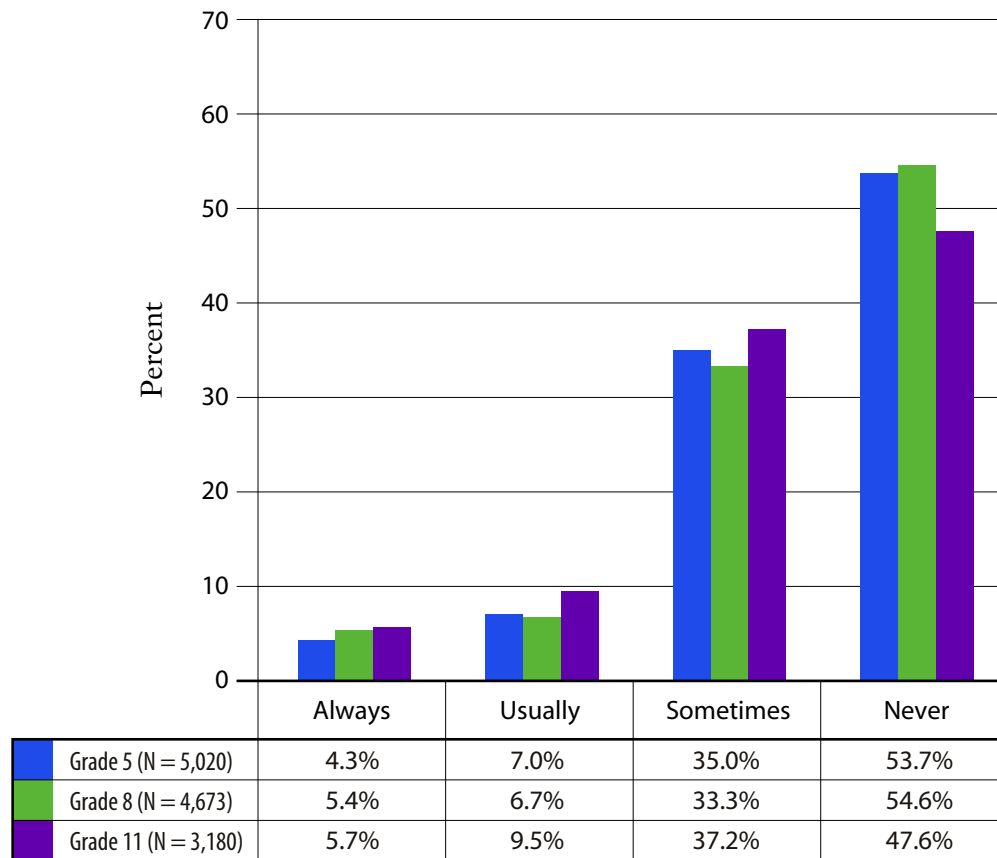


Figure 55 displays students' beliefs about whether they get frustrated more easily when they use a computer instead of when they use paper and pencil. About half of the students in each grade report that they never get frustrated easily when using a computer instead of paper and pencil. A very small percentage, about five percent, report that they always get frustrated more easily.

Figure 55 When using a computer (instead of paper and pencil) to do your schoolwork, do you:

Get frustrated more easily when using a computer to do things?



Summary

According to the information provided by the students, almost all students have access to a computer either at home or at school, and it seems that a large majority has access in both places. This is true across the three surveyed grade levels.

Except for about two percent of the students at each grade level, all students have access to at least one computer at home. A substantial percentage of students have two or more computers in their homes. Almost all students also have some type of Internet access at home, whether it is a dial-up modem or DSL/cable. Nearly all students must share the computer(s) with others in their homes. Most students, however, do not experience difficulty gaining access to their home computers.

According to Figure 7, eighth graders are using the computer at home for the most amount of time and fifth graders seem to be using the computer at home for the least amount of time. In school, older students are given more assignments that require the use of a computer as compared to younger students. Older students also experience less difficulty completing assignments that require a computer. Competition between siblings may make it more difficult for younger students to access computers at home.

In general, a higher percentage of eighth and eleventh graders use computers to chat/instant message, email, search the Internet for school, search the Internet for fun, work with mp3/music, and to write papers. In contrast, a higher percentage of fifth graders play computer games than do eighth and eleventh graders. Overall, eighth and eleventh graders spend more time using computers in their homes.

In school, students in fifth grade report more frequent use of computers. Fifth graders also report that they use computers more often in their classrooms while eighth and eleventh graders report using computers more often in labs and the library. When students experience problems with a computer in school, fifth graders more often rely on their teachers and to a slightly lesser extent their peers for assistance, while eighth and eleventh graders rely largely on their peers. Eighth graders are the most likely to rely on a technology specialist for assistance, while eleventh graders are the most likely to rely on a librarian for assistance.

The use of computers by students and their teachers varies across subject areas. According to fifth graders, the students use computers more in the classroom than teachers are using computers to teach with. According to the eighth and eleventh graders, the majority of their teachers, over 50 percent, never use computers when teaching class. The one exception occurs in eighth-grade science, where students report that about 36 percent of their teachers never use computers when teaching. Similar patterns appear for students' use of computers within each subject, with exceptions in science at eighth grade and English at eleventh grade, where students tend to use computers more frequently. Students in the eighth and eleventh grades report not using computers often while in school.

On the surface, there appears to be a relationship between the frequency with which students use a computer for different purposes and their ability to perform specific tasks. For example, a higher percentage of eighth and eleventh graders than fifth graders use email everyday. A higher percentage of eighth and eleventh graders also report that their ability to send and receive email is pretty good. It appears, then, that the more a student uses a computer for a given purpose, the more confident they feel in being able to perform a given task.



inTASC is a not-for-profit research group that works collaboratively with schools, educational agencies, and businesses to conduct research and development on a variety of issues related to technology and assessment. inTASC brings together researchers who have examined several aspects of technology and assessment in schools over the past decade to focus on new questions and issues that arise from the field. inTASC is unique in that it does not develop research studies and then seek schools to participate in research activities. Instead, schools, educational agencies, and businesses approach inTASC with their own ideas and/or questions that require systematic research to address. Research conducted by inTASC is developed, conducted, and often disseminated in collaboration with our educational and business partners.

inTASC believes that advances in educational technology and continuously emerging applications of those technologies coupled with growing demands to document impacts on teaching and learning requires a dual focus on instructional uses of technology and applications of technology to new forms of assessment. For this reason, inTASC collaborates on research that focuses on instructional uses of technology and on applications of computer-based technologies to the technology of testing and assessment. It is our hope that this dual focus will enable us to provide research-based information to schools and educational leaders about the impacts of educational technology, and to produce new forms of assessment that capitalize on the powers of computer-based technologies and that are more sensitive to the types of learning enabled by educational technologies.



Use, Support, and Effect of Instructional Technology Study

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