

Use of Educational Technology for Instruction in Public Schools: 2019–20

First Look

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Introduction

This report is based on the public school survey “Use of Educational Technology for Instruction.” The survey was conducted by the National Center for Education Statistics (NCES). NCES is part of the Institute of Education Sciences (IES), U.S. Department of Education (ED). The Office of Educational Technology (OET) asked NCES to conduct the survey. National policy about technology for education is developed by OET, another part of ED. Policies include the National Education Technology Plan (NETP). The NETP is a national plan for using technology to improve learning. It focuses on using technology to change how children are taught in order to provide greater access to high quality education. The growing use of technology affects the education of students both in school and out of school. While access to technology can give great learning opportunities to students, technology alone does not guarantee a better education. Schools and teachers play a central role in using technology to strengthen teaching and learning.

This report shows national data from a sample survey of public schools about their use of technology for teaching and learning during the 2019-20 school year. Questions were asked about conditions before the coronavirus pandemic started. Schools that completed the survey after the coronavirus pandemic started were asked to report about pre-pandemic experiences. This report presents data about public school technology resources and ways that schools use these resources to teach. This includes whether schools have computers for each student and if students can take school-provided computers home. The number of computers in the school and where they are in the school is also considered. Data on the quality of computers and software used for teaching and learning are included. In addition, estimates on how well internet connections work in the parts of the school used for teaching and learning are shown. Respondents were also asked about online resources used for teaching and learning at the school. Challenges teachers face using technology for teaching and how teachers are trained to use it was another survey topic. Questions about training include the types of staff who work with teachers to make better use of technology for teaching and learning. Respondent views of how student learning is affected by the use of educational technology were also sought. Respondents were principals or other school staff who know how technology is used at the school for teaching and learning. Data about teachers in the report are from these respondents. This needs to be kept in mind while reading the report and report tables. Computers were defined as desktop, laptop, and tablet computers. They included Chromebooks and iPads. Smartphones were not counted as computers.

Data were collected in spring 2020 using the Fast Response Survey System (FRSS). FRSS is designed to collect focused data from national samples of districts, schools, or teachers. It is designed to limit burden on respondents and to be collected quickly. The survey was mailed to 1,300 public schools in the 50 states and the District of Columbia. A letter that went with the survey and the survey itself indicated that the principal or the person in the school who knew the most about the use of technology for teaching and learning in the school should answer. Respondents could fill out a paper questionnaire or complete one online. Tables including estimates referenced in this document and standard error tables can be found in appendices A and B. The material in appendices C and D provides more information about how the data used in the report were collected and the questionnaire that was used. Additional statistics from the survey data can be found [here](#).

Statistics presented in the report are weighted. Weights were used to make the data represent all public schools, not just those who answered. Standard errors are also provided. Sampling leads to some uncertainty in the statistics and standard errors can be used to account for that uncertainty. Appendix A presents tables of national estimates and appendix B presents standard errors for the estimates. Information about how the survey was designed and fielded, response rates, and other measures of data quality is in

appendix C. Appendix C also has definitions of the variables in the report (i.e., school characteristics). The questionnaire is in appendix D.

Because the report is meant to introduce new data from the survey through tables with very basic information, only select findings are given. Findings were chosen to show the range of data available from the survey and not to discuss all of the collected data. They do not stress any one issue. Readers should not treat comparisons of the estimates as causal. Many variables in the report are related to each other. How they might interact is not studied here. Comparisons drawn in the findings were tested using statistical tests. These are based on standard errors noted above. Statistical tests were set to measure differences using a .05 level of significance using Student's t tests. No adjustments were made for multiple comparisons.

Selected Findings

This section presents estimates based on survey answers from public schools on their use of technology for teaching and learning. Information is about the 2019-20 school year before the start of the coronavirus pandemic.

- Forty-five percent of schools reported having a computer for each student (table A-1). An extra 37 percent reported having a computer for each student in some grades or classrooms. Fifteen percent let students in all grades take school-provided computers home and another 8 percent let students in some grades take them home.
- About one third (34 percent) of computers for student use in school were given to individual students to carry with them during the school day (table A-2). Thirty-nine percent of the student-use computers stayed in a specific classroom, 16 percent moved between classrooms, and 10 percent were in resource rooms, computer labs, and library and media centers.
- In addition to the 15 percent of schools that let all students take computers home, another 15 percent let students take computers home on a short-term basis (tables A-1 and A-3). About a tenth of all schools (9 percent) gave mobile hotspots or web-enabled devices with paid data plans for students to take home.
- A little over 8 in 10 schools rated the overall quality of computers used for teaching and learning as good (52 percent) or very good (30 percent) (table A-3). About the same percentage rated the overall quality of their software for teaching and learning as good (53 percent) or very good (31 percent). About 9 out of 10 schools reported that their computers met the school's teaching and learning needs to a moderate (38 percent) or large extent (52 percent). Roughly the same percentage said it was usually (41 percent) or always easy (51 percent) for teachers to find enough computers to use with their students.
- Nearly two-thirds (64 percent) of schools said that internet connections in teaching and learning areas of the school were very reliable (table A-3). About half (52 percent) reported having problems to a small extent with internet connections or speed when large numbers of students were online. Another 20 percent of schools do not have these problems at all.
- About two-thirds of schools said that leaders at the school have moderate (42 percent) or a lot of flexibility or leeway (23 percent) in choosing the types and amount of learning and teaching technology bought for the school (table A-3). About three-quarters of schools said that leaders at the school have moderate (43 percent) or a lot of leeway (30 percent) in choosing the types and amounts of training, or professional development, teachers get on using technology for teaching and learning.
- Schools reported how broadly online resources were used for teaching and learning at school. Table A-4 presents the range of resources asked about and shows that half used interactive textbooks to a moderate (35 percent) or large extent (15 percent). About the same percentage used self-contained packages - 34 percent to a moderate extent and 21 percent to a large extent.
- A little over 70 percent of schools said that their teachers used technology for activities normally done in the classroom to a moderate (47 percent) or large extent (24 percent) (table A-5). In comparison, about half said that their teachers used technology for classroom work that would not be possible without it to a moderate (37 percent) or large extent (10 percent).
- Nearly half of schools said that their teachers were given training that focused on how to use a computer or software to a moderate (36 percent) or large extent (11 percent) (table A-5). About the same percentage said that their teachers were trained on how to use technology for teaching and learning during classes for specific subjects to a moderate (40 percent) or large extent (13 percent).

- Schools were asked about the types of staff who work with teachers to bring technology into classes for teaching and learning. Fifty-seven percent reported that content specialists, or experts, from the school or district work with teachers for this purpose (table A-6). Schools reported using experts in educational technology (61 percent) or other classroom teachers with training in technology (65 percent). Three out of four schools reported using other types of school staff like library media experts (76 percent).
- When asked about how technology was affecting student learning, 33 percent of schools said they strongly agreed that the way it is used in their school helped students to be more independent and self-directed (table A-7). Similar percentages said that technology helped students to learn at their own pace (35 percent) and to learn collaboratively with peers (30 percent). Forty-one percent said it helped students learn more actively, and 27 percent said it helped students think critically.
- Roughly half of schools strongly agreed that teachers in their school want to use technology for teaching (49 percent) (table A-8). Rates of strong agreement were lower when schools were asked whether they agreed that teachers are sufficiently trained in how to use technology (18 percent), that teachers have enough training to use technology for teaching (18 percent), and that technical support for technology in the school is good enough (34 percent). Fourteen percent strongly agreed that other priorities in classes limited the use of technology for teaching and learning in their classrooms.
- As shown in table A-9, schools reported on a variety of challenges for teachers in using technology for teaching and learning in the school. A little less than two-thirds said that lack of time for teachers to become familiar with new technologies and then use them for teaching was a moderate (43 percent) or large challenge (22 percent).
- Schools were asked about challenges their teachers face in using technology for teaching purposes. Twenty two percent said that outdated computers or software was a moderate challenge (table A-10). Another 12 percent said that was a large challenge. Twenty six percent of schools said that lack of support on how to use technology for teaching was a moderate challenge and another 8 percent said it was a large challenge.

Appendix A

Tables

Table A-1. School provides computers for students: Percent of public schools reporting on whether the school has a computer for every student and whether students are allowed to take school-provided computers home at the end of the day, by school characteristics: School year 2019-20

Characteristic	School has a computer for every student			School allows students to take computers home ¹		
	Yes, for every student in school	Yes, for every student in some grade levels or classrooms	No	Yes, in all grade levels	Yes, in some grade levels	No
All public schools	45	37	19	15	8	78
Instructional level^{2,3}						
Elementary school	33	45	22	‡	6	93
Middle school	63	20	16	31	7	61
High school/other secondary	63	27	10	39	12	49
Enrollment size³						
Less than 300	53	33	14	10	13	76
300 to 499	41	38	21	9	6!	86
500 to 999	41	39	20	16	5	79
1,000 or more	50	32	18	36	10	54
Community type⁴						
City	45	35	20	12	3!	85
Suburban	34	41	25	14	7	79
Town	54	34	12!	18	3!	79
Rural	53	34	13	16	15	70
Percent of students eligible for free or reduced-price lunch⁴						
Less than 35 percent ⁵	41	37	22	17	4	79
35 to 49 percent	50	30	20	22	12!	66
50 to 74 percent	39	45	17	13	10	77
75 percent or more	53	33	15	6	7!	87

! Interpret data with caution; the coefficient of variation is at least 30 percent but less than 50 percent.

‡ Reporting standards not met. The coefficient of variation for this estimate is 50 percent or greater.

¹ Does not include computers assigned only to special education students or computers borrowed on a short-term basis.

² Elementary school has low grade PK-4 and high grade PK-8; middle school has low grade 5-8 and high grade 5-8; high/other secondary has all other schools with one or more grades 1-12.

³ As reported in the survey.

⁴ Based on Common Core of Data information.

⁵ Includes schools with missing values as reported on the Common Core of Data files used to derive this school-characteristic variable.

NOTE: Computers include desktop, laptop, and tablet computers (including Chromebooks and iPads). Smartphones are not included in the definition of computers. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Use of Educational Technology for Instruction," FRSS 110, 2020.

Table A-2. Student access to computers at school: Number of students per computer in public schools and percentage distribution of computers for student use in various school locations, by school characteristics: School year 2019-20

Characteristic	Number of students per computer ¹	Percent of computers for student use				
		Assigned to individual students to carry with them	Assigned to stay in a specific classroom	Move from classroom to classroom	In resource rooms, computer labs, library/media center	In other locations
All public schools	1.1	34	39	16	10	#
Instructional level^{2,3}						
Elementary school	1.1	22	50	18	10	#
Middle school	1.0	42	33	16	9	‡
High school/other secondary	1.0	45	29	14	11	#
Enrollment size³						
Less than 300	1.0	26	44	18	12	‡
300 to 499	1.1	29	42	18	11	#!
500 to 999	1.1	33	42	15	9	#!
1,000 or more	1.1	42	33	15	9	#!
Community type⁴						
City	1.1	30	46	15	9	#!
Suburban	1.1	37	34	19	9	#!
Town	1.1	35	41	14	10	!!
Rural	1.0	34	39	14	12	!!
Percent of students eligible for free or reduced-price lunch⁴						
Less than 35 percent ⁵	1.1	38	32	20	10	#!
35 to 49 percent	1.1	42	34	15	10	#!
50 to 74 percent	1.1	33	40	16	10	!!
75 percent or more	1.1	20	58	11	10	!!

Rounds to zero.

! Interpret data with caution; the coefficient of variation is at least 30 percent but less than 50 percent.

‡ Reporting standards not met. The coefficient of variation for this estimate is 50 percent or greater.

¹ Computed by dividing the number of students in all public schools by the total number of computers for student use in all public schools.

² Elementary school has low grade PK-4 and high grade PK-8; middle school has low grade 5-8 and high grade 5-8; high/other secondary has all other schools with one or more grades 1-12.

³ As reported in the survey.

⁴ Based on Common Core of Data information.

⁵ Includes schools with missing values as reported on the Common Core of Data files used to derive this school-characteristic variable.

NOTE: Computers include desktop, laptop, and tablet computers (including Chromebooks and iPads). Smartphones are not included in the definition of computers. Respondents were asked to count all computers for student use and count each computer in only one location. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Use of Educational Technology for Instruction," FRSS 110, 2020.

Table A-3. Access to and quality of educational technology: Percent of public schools reporting on various aspects of educational technology in the school, by school characteristics: School year 2019-20

Characteristic	School allows students to take computers home on short-term basis ¹	School provides mobile hotspots or web-enabled devices with paid data plans students take home	Overall quality of instructional computers			Overall quality of software used for instruction ²			Extent computers meet school's instructional needs			How easy is it for teachers to find enough computers to use with their students		
			Poor or fair	Good	Very good	Poor or fair	Good	Very good	Not at all or small extent	Moderate extent	Large extent	Always or usually difficult	Usually easy	Always easy
All public schools	15	9	18	52	30	16	53	31	10	38	52	8	41	51
Instructional level^{3,4}														
Elementary school	10	5	19	52	29	17	53	30	13	40	47	9	42	49
Middle school	18	15	14	53	33	10	56	34	4	33	62	7	38	55
High school/other secondary	26	17	19	51	30	19	49	32	8	36	57	6	39	55
Enrollment size⁴														
Less than 300	19	7!	24	49	27	27	50	23	13	39	49	5!	42	53
300 to 499	13	6!	19	53	29	13	57	30	12	38	51	9	39	52
500 to 999	11	9	16	52	32	13	52	35	9	39	53	10	39	51
1,000 or more	23	26	11	54	35	8	54	38	5	37	58	6	48	46
Community type⁵														
City	16	9	20	56	24	14	60	26	14	38	48	9!	47	44
Suburban	15	13	19	49	32	14	54	32	9	36	54	11	41	48
Town	11!	5!	14	52	34	16	49	35	5!	40	54	11!	24	66
Rural	17	7	17	51	31	20	47	33	10	39	51	3!	41	55
Percent of students eligible for free or reduced-price lunch⁵														
Less than 35 percent ⁶	10	9	14	48	38	12	53	35	5!	37	58	8!	40	53
35 to 49 percent	17	13	21	54	25	19	53	28	13	45	42	8!	38	54
50 to 74 percent	15	8	20	54	26	20	52	28	12	35	53	6!	47	47
75 percent or more	21	8	20	53	27	16	53	31	14	37	49	11	38	51

See notes at end of table.

Table A-3. Access to and quality of educational technology: Percent of public schools reporting on various aspects of educational technology in the school, by school characteristics: School year 2019–20—continued

Characteristic	Reliability of internet connection in instructional areas			Extent of internet problems when large numbers of students are online				Flexibility school-level leaders have in determining type and amount of technology purchased for school				Flexibility school-level leaders have in determining type and amount of professional development in technology for school			
	Not reliable or slightly reliable	Some-what reliable	Very reliable	Not at all	Small extent	Moderate extent	Large extent	None	Minimal	Moderate	A lot	None	Minimal	Moderate	A lot
All public schools	7	29	64	20	52	24	4	5	30	42	23	3	24	43	30
Instructional level^{3, 4}															
Elementary school	7	29	64	20	52	24	4!	5	34	41	20	3!	27	45	26
Middle school	5!	27	69	16	57	24	3!	4	32	43	20	2!	24	43	31
High school/other secondary	7	32	61	23	48	23	6	4	19	46	32	3!	15	39	43
Enrollment size⁴															
Less than 300	9!	26	64	22	53	21	‡	5!	24	47	24	‡	22	46	32
300 to 499	4!	32	64	16	49	30	5!	‡	38	37	21	3!	31	42	24
500 to 999	8	28	64	23	53	20	4!	6	29	43	22	5!	22	42	31
1,000 or more	4!	32	64	15	52	27	6	5!	27	43	24	2!	13	45	40
Community type⁵															
City	7!	33	60	14	54	27	5!	9!	31	41	20	4!	22	39	35
Suburban	5!	32	63	22	51	23	4!	4!	39	39	18	‡	32	41	24
Town	3!	26	71	31	47	19	‡	‡	22	49	23	4!	16	50	30
Rural	9	25	66	19	54	23	4!	2!	23	46	29	‡	18	46	34
Percent of students eligible for free or reduced-price lunches⁵															
Less than 35 percent ⁶	4!	29	67	21	57	20	2!	5!	27	42	26	2!	24	41	32
35 to 49 percent	‡	31	65	18	54	27	‡	4!	36	40	20	‡	24	47	29
50 to 74 percent	8!	30	62	26	42	28	4!	5!	30	43	22	5!	26	37	32
75 percent or more	14	25	61	13	54	22	11	5!	30	45	21	4!	20	50	26

See notes at end of table.

Table A-3. Access to and quality of educational technology: Percent of public schools reporting on various aspects of educational technology in the school, by school characteristics: School year 2019-20—continued

! Interpret data with caution; the coefficient of variation is at least 30 percent but less than 50 percent.

‡ Reporting standards not met. The coefficient of variation for this estimate is 50 percent or greater.

¹ Excludes schools that report they allow all students to take computers home. Also, does not include computers assigned to special education students for home use.

² Includes instructional software accessed through the Internet as well as software loaded on the computers.

³ Elementary school has low grade PK-4 and high grade PK-8; middle school has low grade 5-8 and high grade 5-8; high/other secondary has all other schools with one or more grades 1-12.

⁴ As reported in the survey.

⁵ Based on Common Core of Data information.

⁶ Includes schools with missing values as reported on the Common Core of Data files used to derive this school-characteristic variable.

NOTE: Computers include desktop, laptop, and tablet computers (including Chromebooks and iPads). Smartphones are not included in the definition of computers. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), “Use of Educational Technology for Instruction,” FRSS 110, 2020.

Table A-4. Online tools for instruction: Percent of public schools reporting on the extent to which various types of online resources are used for instruction at the school, by school characteristics: School year 2019-20

Characteristic	Interactive textbooks ¹				Non-interactive (“click-through”) textbooks ²				Supplemental materials ³			
	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 public schools	15	34	35	15	25	43	27	5	3	31	46	20
Instructional level^{6,7}												
Elementary school	20	35	31	14	31	39	25	5!	5	38	41	16
Middle school	7	29	42	22	18	45	30	7	‡	21	51	26
High school/other secondary	9	37	43	12	14	50	30	6	#	20	56	24
Enrollment size⁷												
Less than 300	19	36	35	10!	31	42	25	2!	7!	29	47	17
300 to 499	20	32	33	16	27	38	27	8!	‡	38	44	16
500 to 999	13	36	35	16	23	46	26	5!	3!	31	44	22
1,000 or more	5!	32	44	20	11	47	33	8	#	15	58	28
Community type⁸												
City	12	45	26	17	26	48	20	6	5!	36	40	20
Suburban	17	24	42	17	25	38	29	8	‡	25	53	19
Town	16!	41	33	10!	29	41	25	‡	‡	34	45	16
Rural	17	34	36	13	22	45	31	2!	‡	32	44	22
Percent of students eligible for free or reduced-price lunch⁸												
Less than 35 percent ⁹	16	31	38	15	24	46	25	5	‡	30	46	21
35 to 49 percent	12!	36	39	12	21	41	32	6!	‡	30	50	17
50 to 74 percent	18	40	30	12	31	44	21	3!	4!	32	44	19
75 percent or more	16	30	33	21	23	37	32	7!	4!	31	45	21

See notes at end of table.

Table A-4. Online tools for instruction: Percent of public schools reporting on the extent to which various types of online resources are used for instruction at the school, by school characteristics: School year 2019-20—continued

Characteristic	Self-contained instructional packages ⁴				Interactive experiences ⁵			
	Not at all	Small extent	Moderate extent	Large extent	Not at all	Small extent	Moderate extent	Large extent
All public schools	12	33	34	21	21	58	19	2
Instructional level^{6,7}								
Elementary school	12	31	33	24	22	57	19	‡
Middle school	11	29	40	20	16	60	21	4!
High school/other secondary	12	40	33	14	21	57	18	5!
Enrollment size⁷								
Less than 300	12	28	41	19	24	52	21	4!
300 to 499	16	32	28	24	23	58	19	‡
500 to 999	9	36	33	22	19	61	18	2!
1,000 or more	6	38	37	18	15	59	23	3!
Community type⁸								
City	10	37	30	23	23	52	22	2!
Suburban	11	31	34	24	16	57	24	3!
Town	15!	37	34	14	21	66	13!	‡
Rural	12	30	38	20	24	59	15	2!
Percent of students eligible for free or reduced-price lunch⁸								
Less than 35 percent ⁹	11	36	40	13	19	57	23	2!
35 to 49 percent	16	34	32	17	21	58	17	4!
50 to 74 percent	12	31	31	26	20	62	16	2!
75 percent or more	8	28	31	33	25	53	20	‡

See notes at end of table.

Table A-4. Online tools for instruction: Percent of public schools reporting on the extent to which various types of online resources are used for instruction at the school, by school characteristics: School year 2019-20—continued

Characteristic	Resources that teachers locate themselves				Online materials teachers create themselves			
	Not at all	Small extent	Moderate extent	Large extent	Not at all	Small extent	Moderate extent	Large extent
All public schools	1!	14	47	39	5	39	37	20
Instructional level^{6,7}								
Elementary school	‡	17	48	34	7	47	34	13
Middle school	‡	10	45	45	3!	27	38	32
High school/other secondary	‡	8	44	47	‡	27	43	29
Enrollment size⁷								
Less than 300	‡	16	47	36	6!	43	33	18
300 to 499	‡	15	44	39	4!	45	38	13
500 to 999	‡	14	48	38	5	37	37	21
1,000 or more	‡	6	46	47	‡	20	40	38
Community type⁸								
City	‡	16	46	37	4!	41	34	21
Suburban	‡	13	48	38	4!	37	35	24
Town	‡	14	47	36	‡	43	37	10
Rural	‡	13	45	41	5!	37	40	18
Percent of students eligible for free or reduced-price lunch⁸								
Less than 35 percent ⁹	‡	15	47	37	5!	36	37	23
35 to 49 percent	‡	10!	52	37	7!	39	32	22
50 to 74 percent	‡	15	42	42	6!	36	40	18
75 percent or more	‡	16	46	38	‡	47	36	14

Rounds to zero.

! Interpret data with caution; the coefficient of variation is at least 30 percent but less than 50 percent.

‡ Reporting standards not met. The coefficient of variation for this estimate is 50 percent or greater.

¹ Interactive textbooks are electronic or digital books designed to include active reader participation via links or embedded reader-enacted functions.

² Noninteractive textbooks are digital copies of what would be a hard-copy book and lack such features such as links to additional content or quizzes, audio content and other functions to help guide readers to further information.

³ Examples provided in the survey were: study guides, online science modules or labs, practice exams.

⁴ Examples provided in the survey were: Read 180 and Imagine Math.

⁵ Examples provided in the survey were: visits with NASA astronauts, National Geographic expeditions, scientific field studies.

⁶ Elementary school has low grade PK-4 and high grade PK-8; middle school has low grade 5-8 and high grade 5-8; high/other secondary has all other schools with one or more grades 1-12.

⁷ As reported in the survey.

⁸ Based on Common Core of Data information.

⁹ Includes schools with missing values as reported on the Common Core of Data files used to derive this school-characteristic variable.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Use of Educational Technology for Instruction," FRSS 110, 2020.

Table A-5. Teacher use of educational technology: Percent of public schools reporting on the extent to which various statements about educational technology apply to the teachers at the school, by school characteristics: School year 2019-20

Characteristic	Use technology for activities normally done in the classroom ¹				Use technology for classroom activities not possible without technology ²			
	Not at all	Small extent	Moderate extent	Large extent	Not at all	Small extent	Moderate extent	Large extent
All public schools	3!	26	47	24	5	47	37	10
Instructional level^{3, 4}								
Elementary school	4!	33	46	17	7	51	34	7
Middle school	‡	14	49	36	3!	39	44	14
High school/other secondary	#	17	49	34	3!	44	40	14
Enrollment size⁴								
Less than 300	‡	32	46	18	‡	52	35	9
300 to 499	‡	29	51	19	9	48	35	8
500 to 999	3!	24	45	28	5!	44	41	10
1,000 or more	‡	13	46	40	‡	45	39	16
Community type⁵								
City	‡	31	39	27	11!	42	34	12
Suburban	‡	23	49	26	4!	45	42	9
Town	‡	24	51	22	‡	57	34	6!
Rural	4!	26	50	20	3!	51	36	10
Percent of students eligible for free or reduced-price lunch⁵								
Less than 35 percent ⁶	‡	25	51	22	5!	46	39	11
35 to 49 percent	‡	23	49	25	4!	50	38	9
50 to 74 percent	‡	30	40	28	5!	49	35	11
75 percent or more	‡	26	49	23	8!	47	37	9

See notes at end of table.

Table A-5. Teacher use of educational technology: Percent of public schools reporting on the extent to which various statements about educational technology apply to the teachers at the school, by school characteristics: School year 2019-20—continued

Characteristic	Are provided professional development on mechanics of how to use a computer or software				Are provided professional development on how to use technology for instructing specific curriculum areas			
	Not at all	Small extent	Moderate extent	Large extent	Not at all	Small extent	Moderate extent	Large extent
All public schools	7	46	36	11	5	42	40	13
Instructional level^{3,4}								
Elementary school	8	49	34	9	6	42	42	10
Middle school	4!	42	37	16	2!	39	42	17
High school/other secondary	5	42	39	14	6	43	34	16
Enrollment size⁴								
Less than 300	7!	48	35	10	4!	49	36	11
300 to 499	7!	52	31	11	9	40	40	10
500 to 999	8	45	37	10	3!	42	42	13
1,000 or more	4!	30	45	21	4!	30	41	25
Community type⁵								
City	11	38	37	14	8!	36	37	18
Suburban	5!	49	32	13	‡	42	41	14
Town	10!	45	37	8!	9!	42	41	8
Rural	4!	50	38	8	4!	47	40	9
Percent of students eligible for free or reduced-price lunch⁵								
Less than 35 percent ⁶	9	41	37	14	4!	41	40	15
35 to 49 percent	5!	47	36	12	4!	41	41	14
50 to 74 percent	6!	49	36	9	7!	46	36	11
75 percent or more	8!	51	32	9!	6!	40	43	10

Rounds to zero.

! Interpret data with caution; the coefficient of variation is at least 30 percent but less than 50 percent.

‡ Reporting standards not met. The coefficient of variation for this estimate is 50 percent or greater.

¹ Examples provided in the survey were: to grade quizzes, to facilitate a class lecture or discussion.

² Examples provided in the survey were: to conduct online simulations, manipulate 3-D models, take virtual tours.

³ Elementary school has low grade PK-4 and high grade PK-8; middle school has low grade 5-8 and high grade 5-8; high/other secondary has all other schools with one or more grades 1-12.

⁴ As reported in the survey.

⁵ Based on Common Core of Data information.

⁶ Includes schools with missing values as reported on the Common Core of Data files used to derive this school-characteristic variable.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Use of Educational Technology for Instruction," FRSS 110, 2020.

Table A-6. Helping teachers use educational technology: Percent of public schools reporting on the types of staff who work with teachers to integrate educational technology into classroom instruction, by school characteristics: School year 2019-20

Characteristic	District or school curriculum specialist focused on curriculum content	District or school educational technology specialist focused on educational technology	Classroom teachers with specialized training in educational technology	Other types of school staff ¹
All public schools	57	61	65	76
Instructional level^{2, 3}				
Elementary school	56	60	60	74
Middle school	62	66	73	78
High school/other secondary	55	61	72	77
Enrollment size³				
Less than 300	44	49	59	68
300 to 499	58	57	53	78
500 to 999	60	68	72	77
1,000 or more	75	80	85	86
Community type⁴				
City	62	61	61	73
Suburban	68	70	71	81
Town	39	53	59	78
Rural	46	56	63	71
Percent of students eligible for free or reduced-price lunch⁴				
Less than 35 percent ⁵	54	66	65	77
35 to 49 percent	55	62	63	74
50 to 74 percent	53	59	63	81
75 percent or more	68	56	68	70

¹ Examples provided in the survey were: library media specialist, principal, resource teacher. Respondents were asked to exclude classroom teachers and curriculum and educational technology specialists reported in other categories.

² Elementary school has low grade PK-4 and high grade PK-8; middle school has low grade 5-8 and high grade 5-8; high/other secondary has all other schools with one or more grades 1-12.

³ As reported in the survey.

⁴ Based on Common Core of Data information.

⁵ Includes schools with missing values as reported on the Common Core of Data files used to derive this school-characteristic variable.

NOTE: Respondents were asked to report an individual staff member in only one category.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Use of Educational Technology for Instruction," FRSS 110, 2020.

Table A-7. How educational technology assists with learning: Percent of public schools reporting on the extent they agree or disagree with statements about how the educational technology used in the instructional program at the school helps students in various ways, by school characteristics: School year 2019-20

Characteristic	Be more independent and self-directed				Engage in more active learning				Learn at their own pace			
	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree
All public schools	33	59	7	1!	41	52	6	1!	35	55	9	1!
Instructional level^{1, 2}												
Elementary school	33	59	7	‡	44	50	6	‡	38	53	8	‡
Middle school	36	58	5!	1!	43	51	5!	‡	35	54	9	‡
High school/other secondary	33	59	7	2!	33	59	6	2!	29	59	10	2!
Enrollment size²												
Less than 300	32	61	7!	‡	36	56	8!	‡	37	51	11	‡
300 to 499	31	59	9	‡	47	47	6!	‡	35	56	8	‡
500 to 999	36	56	6!	2!	41	53	5!	2!	35	55	8	2!
1,000 or more	34	60	5!	‡	41	54	3!	‡	30	60	8	‡
Community type³												
City	40	48	10	‡	46	47	5!	‡	44	45	9	‡
Suburban	32	62	4!	‡	47	49	4!	‡	33	58	7	‡
Town	27	68	‡	‡	29	66	‡	‡	25	69	6!	‡
Rural	32	59	8	‡	36	54	9	‡	35	53	12	‡
Percent of students eligible for free or reduced-price lunch³												
Less than 35 percent ⁴	28	62	7	3!	37	55	6!	2!	30	59	8	3!
35 to 49 percent	32	57	9!	‡	38	51	9!	‡	30	58	9	‡
50 to 74 percent	36	57	7!	#	42	52	6!	‡	40	49	11	‡
75 percent or more	39	57	3!	‡	50	48	‡	‡	43	50	7!	#

See notes at end of table.

Table A-7. How educational technology assists with learning: Percent of public schools reporting on the extent they agree or disagree with statements about how the educational technology used in the instructional program at the school helps students in various ways, by school characteristics: School year 2019-20—continued

Characteristic	Learn collaboratively with peers				Think critically			
	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree
All public schools	30	53	15	2!	27	58	13	2
Instructional level^{1, 2}								
Elementary school	28	54	16	2!	28	57	13	2!
Middle school	37	50	13	‡	26	58	14	‡
High school/other secondary	31	53	13	3!	23	60	12	5!
Enrollment size²								
Less than 300	25	54	21	‡	28	57	13	3!
300 to 499	30	56	11	‡	25	61	11	‡
500 to 999	32	50	16	‡	27	57	15	2!
1,000 or more	37	53	8	‡	28	60	9	3!
Community type³								
City	33	47	17	‡	34	52	11	‡
Suburban	31	55	12	‡	28	60	10	‡
Town	23	60	17	‡	19	63	17!	‡
Rural	31	53	15	‡	23	60	15	3!
Percent of students eligible for free or reduced-price lunch³								
Less than 35 percent ⁴	33	52	12	3!	28	57	12	3!
35 to 49 percent	30	52	16	2!	22	60	14	4!
50 to 74 percent	27	54	18	‡	25	57	17	‡
75 percent or more	30	56	14	‡	31	60	8!	‡

Rounds to zero.

! Interpret data with caution; the coefficient of variation is at least 30 percent but less than 50 percent.

‡ Reporting standards not met. The coefficient of variation for this estimate is 50 percent or greater.

¹ Elementary school has low grade PK-4 and high grade PK-8; middle school has low grade 5-8 and high grade 5-8; high/other secondary has all other schools with one or more grades 1-12.

² As reported in the survey.

³ Based on Common Core of Data information.

⁴ Includes schools with missing values as reported on the Common Core of Data files used to derive this school-characteristic variable.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Use of Educational Technology for Instruction," FRSS 110, 2020.

Table A-8. Supports for using educational technology in school: Percent of public schools reporting on the extent they agree or disagree with various statements about the use of educational technology in the instructional program at the school, by school characteristics: School year 2019-20

Characteristic	Teachers are sufficiently trained in mechanics of technology				Teachers are sufficiently trained to integrate technology into instruction				Teachers are interested in using technology in instruction			
	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree
All public schools	18	58	20	4	18	50	26	6	49	45	5	†
Instructional level^{1, 2}												
Elementary school	16	59	20	5	17	47	29	7	51	43	6	†
Middle school	20	57	21	2!	21	57	21	†	49	47	4!	†
High school/other secondary	21	58	17	4!	20	53	22	4!	46	48	6	†
Enrollment size²												
Less than 300	14	67	17	†	18	51	29	†	55	40	5!	#
300 to 499	17	55	22	6!	15	49	27	8!	48	45	7!	†
500 to 999	18	57	20	5!	19	51	25	6	48	46	5!	†
1,000 or more	31	49	19	†	27	48	21	†	44	51	4!	#
Community type³												
City	20	50	23	8!	20	42	29	9	53	40	6!	†
Suburban	21	57	19	3!	19	49	26	6!	53	42	5!	#
Town	16	68	13!	2!	18	54	23	†	52	44	†	#
Rural	13	63	21	3!	16	56	25	3!	42	52	6!	†
Percent of students eligible for free or reduced-price lunch³												
Less than 35 percent ⁴	20	56	20	4!	21	47	26	7	51	44	5!	#
35 to 49 percent	14	65	17	3!	15	53	28	4!	42	50	8!	†
50 to 74 percent	15	61	21	4!	19	52	25	5!	51	42	6!	†
75 percent or more	21	54	20	5!	18	49	25	7!	52	44	4!	#

See notes at end of table.

Table A-8. Supports for using educational technology in school: Percent of public schools reporting on the extent they agree or disagree with various statements about the use of educational technology in the instructional program at the school, by school characteristics: School year 2019-20—continued

Characteristic	Technical support for educational technology is adequate				Competing priorities in the classroom adversely affect the use of educational technology			
	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree
All public schools	34	42	20	5	14	54	27	5
Instructional level^{1,2}								
Elementary school	32	40	22	6	14	54	28	4!
Middle school	37	44	16	‡	15	49	27	8
High school/other secondary	36	43	16	5	14	56	25	6
Enrollment size²								
Less than 300	37	37	21	4!	12	54	30	5!
300 to 499	32	40	22	6!	15	54	24	7!
500 to 999	31	45	19	5!	15	54	28	4
1,000 or more	38	47	12	‡	19	53	23	5!
Community type³								
City	34	35	25	7!	23	48	24	5!
Suburban	35	40	19	5!	13	57	25	6!
Town	26	56	15!	‡	16	46	35	3!
Rural	35	43	18	4!	9	58	28	5
Percent of students eligible for free or reduced-price lunch³								
Less than 35 percent ⁴	37	41	18	4!	15	49	31	6
35 to 49 percent	33	44	18	5!	17	62	19	2!
50 to 74 percent	36	38	21	6!	10	54	28	8
75 percent or more	27	45	22	6!	16	53	27	3!

Rounds to zero.

! Interpret data with caution; the coefficient of variation is at least 30 percent but less than 50 percent.

‡ Reporting standards not met. The coefficient of variation for this estimate is 50 percent or greater.

¹ Elementary school has low grade PK-4 and high grade PK-8; middle school has low grade 5-8 and high grade 5-8; high/other secondary has all other schools with one or more grades 1-12.

² As reported in the survey.

³ Based on Common Core of Data information.

⁴ Includes schools with missing values as reported on the Common Core of Data files used to derive this school-characteristic variable.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Use of Educational Technology for Instruction," FRSS 110, 2020.

Table A-9. Challenges teachers have for using educational technology at school: Percent of public schools reporting on the extent to which various issues are challenges for teachers in using educational technology for instruction at the school, by school characteristics: School year 2019-20

Characteristic	Teachers' lack of time to become familiar with new technologies and integrate them in instruction				Steep learning curve for teachers regarding educational technology				Ensuring technology use is truly contributing to learning			
	Not a challenge	Small challenge	Moderate challenge	Large challenge	Not a challenge	Small challenge	Moderate challenge	Large challenge	Not a challenge	Small challenge	Moderate challenge	Large challenge
All public schools	5	30	43	22	8	42	43	7	10	34	42	14
Instructional level^{1, 2}												
Elementary school	4!	31	41	24	8	39	45	8	11	35	40	14
Middle school	5	28	46	21	6	44	44	5	6	37	45	12
High school/other secondary	8	28	46	19	8	46	39	7	9	28	47	16
Enrollment size²												
Less than 300	6!	37	39	17	10!	45	39	7!	15	34	41	10
300 to 499	4!	29	45	22	7!	34	52	7!	10	30	41	19
500 to 999	4!	25	44	27	7	44	41	8	7	37	42	14
1,000 or more	7	26	47	19	8	45	41	6	8	31	51	10
Community type³												
City	8!	26	40	27	14	35	39	11	11	31	44	14
Suburban	5	30	43	22	8	44	41	7	12	34	40	15
Town	‡	35	41	20	5!	45	47	‡	5!	39	41	15!
Rural	3!	30	47	20	4!	43	47	6!	8	34	45	13
Percent of students eligible for free or reduced-price lunch³												
Less than 35 percent ⁴	5!	32	41	22	9	43	41	7!	10	38	39	13
35 to 49 percent	3!	25	45	26	3!	37	50	9!	8!	22	48	21
50 to 74 percent	5!	31	46	18	7!	46	40	7!	11	36	45	8
75 percent or more	7!	29	41	23	12	38	44	6!	9!	35	40	16

See notes at end of table.

Table A-9. Challenges teachers have for using educational technology at school: Percent of public schools reporting on the extent to which various issues are challenges for teachers in using educational technology for instruction at the school, by school characteristics: School year 2019-20—continued

Characteristic	Identifying high quality technology resources to address learning needs				Staying up to date with technology				Helping students learn basic skills computer skills			
	Not a challenge	Small challenge	Moderate challenge	Large challenge	Not a challenge	Small challenge	Moderate challenge	Large challenge	Not a challenge	Small challenge	Moderate challenge	Large challenge
All public schools	10	34	44	11	10	31	44	15	18	49	27	7
Instructional level^{1, 2}												
Elementary school	12	34	43	11	10	30	45	15	13	48	31	8
Middle school	7	37	45	11	9	33	45	13	23	51	21	5!
High school/other secondary	10	32	46	12	10	34	38	18	28	48	19	5
Enrollment size²												
Less than 300	10!	32	51	7	11!	31	40	18	21	45	31	‡
300 to 499	10	35	41	14	12	25	49	15	15	47	31	7!
500 to 999	10	35	44	11	7	35	43	15	17	50	23	9
1,000 or more	14	34	40	12	9	38	39	14	25	54	19	3!
Community type³												
City	13	34	39	13	10!	33	43	14	21	45	22	12
Suburban	11	34	44	12	12	30	45	13	18	49	28	5!
Town	8!	41	42	9!	7!	35	46	11	19	49	29	‡
Rural	9	32	50	9	7	30	42	20	16	51	29	5!
Percent of students eligible for free or reduced-price lunch³												
Less than 35 percent ⁴	13	30	44	13	14	35	37	15	23	45	26	5!
35 to 49 percent	7!	28	51	15	7!	23	47	23	16	41	32	11
50 to 74 percent	6!	43	43	7!	4!	37	44	15	17	52	28	3!
75 percent or more	15	37	40	8!	12	28	50	10	14	57	21	8!

! Interpret data with caution; the coefficient of variation is at least 30 percent but less than 50 percent.

‡ Reporting standards not met. The coefficient of variation for this estimate is 50 percent or greater.

¹ Elementary school has low grade PK-4 and high grade PK-8; middle school has low grade 5-8 and high grade 5-8; high/other secondary has all other schools with one or more grades 1-12.

² As reported in the survey.

³ Based on Common Core of Data information.

⁴ Includes schools with missing values as reported on the Common Core of Data files used to derive this school-characteristic variable.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Use of Educational Technology for Instruction," FRSS 110, 2020.

Table A-10. Equipment and coaching limitations to using educational technology: Percent of public schools reporting on the extent to which outdated or insufficient hardware, software, or support are challenges for teachers in using educational technology for instruction at the school, by school characteristics: School year 2019-20

Characteristic	Outdated computers or software				Insufficient number of computers				Insufficient or inadequate software			
	Not a challenge	Small challenge	Moderate challenge	Large challenge	Not a challenge	Small challenge	Moderate challenge	Large challenge	Not a challenge	Small challenge	Moderate challenge	Large challenge
All public schools	30	36	22	12	48	25	16	11	42	35	17	6
Instructional level^{1,2}												
Elementary school	28	37	22	13	43	27	18	12	38	36	18	7
Middle school	32	37	21	10	55	19	15	12	47	35	13	5!
High school/other secondary	34	35	19	12	56	22	14	8	49	31	16	4!
Enrollment size²												
Less than 300	24	38	22	16	53	27	12	8!	38	40	15	7!
300 to 499	35	31	24	10	46	24	20	11	44	34	16	6!
500 to 999	28	40	21	11	47	22	18	12	43	32	18	7
1,000 or more	40	33	18	8	45	29	12	14	45	35	17	‡
Community type³												
City	24	35	22	19	43	24	16	16	37	38	14	11
Suburban	35	34	22	9	44	25	20	11	41	32	22	5!
Town	32	38	21	9!	59	18!	16	8!	54	29	12	‡
Rural	29	39	21	11	52	27	12	8	43	38	15	5!
Percent of students eligible for free or reduced-price lunch³												
Less than 35 percent ⁴	35	38	18	9	53	21	17	10	47	31	18	4!
35 to 49 percent	26	35	26	13	46	28	15	11	40	36	20	4!
50 to 74 percent	26	38	23	13	46	27	17	10!	40	41	13	6!
75 percent or more	31	33	22	14	45	25	17	14	39	33	15	12

See notes at end of table.

Table A-10. Equipment and coaching limitations to using educational technology: Percent of public schools reporting on the extent to which outdated or insufficient hardware, software, or support are challenges for teachers in using educational technology for instruction at the school, by school characteristics: School year 2019–20—continued

Characteristic	Insufficient or inadequate internet speed				Insufficient or inadequate support on how to use technology in the classroom			
	Not a challenge	Small challenge	Moderate challenge	Large challenge	Not a challenge	Small challenge	Moderate challenge	Large challenge
All public schools	52	32	11	5	24	42	26	8
Instructional level^{1, 2}								
Elementary school	51	35	10	5	22	44	26	8
Middle school	57	26	12	6	28	41	26	5!
High school/other secondary	53	28	13	6	28	39	26	8
Enrollment size²								
Less than 300	50	36	10	4!	21	47	22	10
300 to 499	51	32	12	5!	23	37	33	7!
500 to 999	56	27	11	6	24	44	24	8
1,000 or more	49	35	9	6	35	36	26	3!
Community type³								
City	45	35	15	6!	26	38	25	11
Suburban	58	28	10	5!	25	39	31	5!
Town	57	32	8	‡	21	53	21	5!
Rural	50	33	11	6!	23	44	24	9
Percent of students eligible for free or reduced-price lunch³								
Less than 35 percent ⁴	56	31	9	3!	26	39	24	10
35 to 49 percent	51	36	8!	6!	21	39	36	‡
50 to 74 percent	50	33	14	4!	23	46	23	7!
75 percent or more	50	27	13	10	25	44	23	8!

! Interpret data with caution; the coefficient of variation is at least 30 percent but less than 50 percent.

‡ Reporting standards not met. The coefficient of variation for this estimate is 50 percent or greater.

¹ Elementary school has low grade PK-4 and high grade PK-8; middle school has low grade 5-8 and high grade 5-8; high/other secondary has all other schools with one or more grades 1-12.

² As reported in the survey.

³ Based on Common Core of Data information.

⁴ Includes schools with missing values as reported on the Common Core of Data files used to derive this school-characteristic variable.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), “Use of Educational Technology for Instruction,” FRSS 110, 2020.

Appendix B
Standard Error Tables

Table B-1. Standard errors for table A-1 - School provides computers for students: Percent of public schools reporting on whether the school has a computer for every student and whether students are allowed to take school-provided computers home at the end of the day, by school characteristics: School year 2019-20

Characteristic	School has a computer for every student			School allows students to take computers home		
	Yes, for every student in school	Yes, for every student in some grade levels or classrooms	No	Yes, in all grade levels	Yes, in some grade levels	No
All public schools	2.0	2.5	1.7	1.0	1.2	1.5
Instructional level						
Elementary school	2.9	3.6	2.5	†	1.8	1.9
Middle school	3.4	2.7	2.8	3.5	1.8	3.5
High school/other secondary	2.9	2.8	1.7	2.9	2.1	3.1
Enrollment size						
Less than 300	4.8	4.8	3.8	2.1	3.3	3.9
300 to 499	4.1	4.6	3.6	1.5	2.0	2.5
500 to 999	3.2	3.3	2.8	1.8	1.1	2.1
1,000 or more	3.9	4.1	2.8	3.8	2.5	3.8
Community type						
City	4.4	4.5	3.7	2.0	1.1	2.1
Suburban	3.1	3.9	3.0	1.7	1.8	2.3
Town	6.7	6.3	4.4	3.3	1.2	3.6
Rural	4.3	4.0	3.0	2.0	2.9	3.3
Percent of students eligible for free or reduced-price lunch						
Less than 35 percent	3.4	4.1	3.0	2.0	1.1	2.1
35 to 49 percent	4.9	4.7	3.9	3.0	3.8	4.9
50 to 74 percent	4.3	5.0	3.5	2.3	2.6	3.1
75 percent or more	4.9	4.8	3.3	1.8	2.3	2.9

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Use of Educational Technology for Instruction," FRSS 110, 2020.

Table B-2. Standard errors for table A-2 - Student access to computers at school: Number of students per computer in public schools and percentage distribution of computers for student use in various school locations, by school characteristics: School year 2019-20

Characteristic	Number of students per computer	Percent of computers for student use				
		Assigned to individual students to carry with them	Assigned to stay in a specific classroom	Move from classroom to classroom	In resource rooms, computer labs, library/media center	In other locations
All public schools	0.02	1.7	1.6	1.0	0.4	0.1
Instructional level						
Elementary school	0.03	2.4	2.6	1.9	0.6	0.1
Middle school	0.02	2.9	2.5	1.9	0.6	†
High school/other secondary	0.03	3.0	2.6	1.5	0.8	0.1
Enrollment size						
Less than 300	0.04	3.4	4.2	2.7	1.0	†
300 to 499	0.04	3.3	3.4	2.5	0.7	0.2
500 to 999	0.03	2.6	2.5	1.7	0.6	0.1
1,000 or more	0.03	3.4	3.1	1.7	0.9	0.2
Community type						
City	0.03	3.2	3.4	2.0	0.6	0.1
Suburban	0.03	2.5	2.4	1.7	0.6	0.1
Town	0.04	4.4	3.9	3.0	0.9	0.2
Rural	0.03	2.8	2.8	1.7	0.8	0.2
Percent of students eligible for free or reduced-price lunch						
Less than 35 percent	0.03	3.0	2.8	1.9	0.7	0.1
35 to 49 percent	0.04	4.0	3.8	2.2	0.7	0.2
50 to 74 percent	0.03	3.6	3.4	2.0	0.8	0.2
75 percent or more	0.04	3.5	3.5	1.8	0.9	0.2

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Use of Educational Technology for Instruction," FRSS 110, 2020.

Table B-3. Standard errors for table A-3 - Access to and quality of educational technology: Percent of public schools reporting on various aspects of educational technology in the school, by school characteristics: School year 2019-20

Characteristic	School allows students to take computers home on short-term basis	School provides mobile hotspots or web-enabled devices with paid data plans students take home	Overall quality of instructional computers			Overall quality of software used for instruction			Extent computers meet school's instructional needs			How easy is it for teachers to find enough computers to use with their students		
			Poor or fair	Good	Very good	Poor or fair	Good	Very good	Not at all or small extent	Moderate extent	Large extent	Always or usually difficult	Usually easy	Always easy
All public schools	1.4	1.1	1.6	2.3	2.2	1.5	2.4	2.0	1.4	2.1	2.0	1.2	1.9	1.9
Instructional level														
Elementary school	2.1	1.5	2.5	3.2	3.1	2.3	3.4	3.0	2.2	3.3	3.0	1.9	2.9	2.9
Middle school	2.4	2.5	2.4	3.6	3.4	2.0	3.1	2.9	1.2	2.9	3.0	1.8	3.3	3.2
High school/other secondary	3.0	2.3	2.4	3.4	3.0	2.6	3.1	2.7	1.7	3.2	3.3	1.4	3.1	3.0
Enrollment size														
Less than 300	3.6	2.2	3.9	5.7	4.7	4.2	5.0	4.3	3.6	4.6	4.6	2.4	4.8	4.5
300 to 499	2.7	1.8	3.4	4.5	4.2	2.7	4.5	3.9	2.8	4.2	4.1	2.6	4.1	4.1
500 to 999	1.9	1.7	2.4	3.3	3.4	2.3	3.3	3.3	1.9	3.5	3.3	1.9	3.4	3.4
1,000 or more	3.2	3.6	2.3	3.7	3.7	2.0	3.3	3.1	1.5	3.5	3.7	1.6	3.5	3.5
Community type														
City	3.2	1.9	4.0	4.3	3.8	3.6	4.7	4.0	3.6	4.5	5.0	2.7	4.4	4.1
Suburban	2.5	2.2	3.1	3.8	3.2	2.5	3.8	3.7	2.4	3.9	3.8	2.3	3.5	3.7
Town	3.9	1.7	4.1	6.7	6.3	4.2	5.8	5.4	2.6	5.8	6.2	4.1	4.7	5.4
Rural	2.8	2.1	2.9	4.2	4.1	3.5	4.1	3.9	2.6	3.6	3.6	1.4	3.8	3.8
Percent of students eligible for free or reduced-price lunch														
Less than 35 percent	1.8	1.8	2.8	3.5	3.6	2.5	3.6	3.7	1.8	3.5	3.8	2.3	3.8	4.0
35 to 49 percent	3.6	3.0	4.1	5.0	3.9	4.2	5.1	4.3	3.4	4.8	4.3	2.7	5.3	5.3
50 to 74 percent	3.1	1.8	3.2	4.2	3.6	3.8	4.6	3.6	3.2	4.2	4.2	2.1	4.2	4.2
75 percent or more	3.5	2.0	3.9	4.9	4.1	3.6	5.3	4.6	3.5	4.6	4.4	3.0	4.5	4.3

See notes at end of table.

Table B-3. Standard errors for table A-3 - Access to and quality of educational technology: Percent of public schools reporting on various aspects of educational technology in the school, by school characteristics: School year 2019-20—continued

Characteristic	Reliability of internet connection in instructional areas			Extent of internet problems when large numbers of students are online				Flexibility school-level leaders have in determining type and amount of technology purchased for school				Flexibility school-level leaders have in determining type and amount of professional development in technology for school			
	Not reliable or slightly reliable	Some-what reliable	Very reliable	Not at all	Small extent	Moderate extent	Large extent	None	Minimal	Moderate	A lot	None	Minimal	Moderate	A lot
All public schools	1.0	1.9	2.0	2.0	2.3	1.9	0.8	1.0	2.0	2.2	1.7	0.7	2.1	2.2	2.1
Instructional level															
Elementary school	1.6	2.8	3.0	3.0	3.6	2.9	1.2	1.5	3.1	3.2	2.5	1.1	3.2	3.2	2.9
Middle school	1.6	3.1	3.2	2.2	3.6	3.0	1.1	1.3	2.8	3.4	2.7	0.9	2.6	3.4	3.3
High school/other secondary	1.6	3.1	2.8	2.8	3.1	2.6	1.5	1.1	2.4	3.4	3.0	1.1	2.1	3.2	3.4
Enrollment size															
Less than 300	2.8	4.6	4.9	4.8	5.0	4.1	†	2.2	4.6	5.2	4.2	†	4.5	5.3	4.7
300 to 499	1.6	4.3	4.3	2.9	4.7	4.2	1.9	1.8	4.5	4.3	3.5	1.5	4.3	4.2	3.9
500 to 999	1.9	3.0	3.4	3.0	3.5	3.1	1.3	1.6	2.6	3.1	2.6	1.5	2.9	3.4	3.1
1,000 or more	1.4	4.0	3.9	2.4	3.9	3.5	1.6	1.7	3.2	4.0	3.2	0.9	2.2	3.5	3.4
Community type															
City	2.5	4.1	4.4	3.3	4.6	3.9	1.9	2.8	4.0	4.5	3.9	2.0	3.9	4.7	4.6
Suburban	1.7	3.5	3.4	3.2	4.0	3.3	1.6	1.5	3.7	4.1	2.9	†	3.8	4.0	3.2
Town	1.3	4.8	4.9	6.3	6.3	5.1	†	†	5.0	5.9	4.6	1.6	4.4	6.1	5.8
Rural	2.4	3.7	3.9	3.1	3.7	3.5	1.4	0.8	3.5	3.7	3.5	†	3.3	3.9	3.7
Percent of students eligible for free or reduced-price lunch															
Less than 35 percent	1.2	3.4	3.7	3.2	3.7	3.1	0.9	1.7	3.2	3.6	2.8	1.2	3.4	3.6	3.6
35 to 49 percent	†	4.2	5.0	4.1	4.4	3.9	†	1.7	4.9	5.4	3.8	†	4.2	5.1	4.4
50 to 74 percent	2.4	4.2	4.5	4.4	4.6	4.2	1.7	2.2	4.1	4.4	3.2	1.8	4.2	4.3	4.0
75 percent or more	3.2	3.9	4.1	3.3	4.5	3.8	3.0	2.1	4.3	5.3	4.0	1.8	3.7	4.2	4.2

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), “Use of Educational Technology for Instruction,” FRSS 110, 2020.

Table B-4. Standard errors for table A-4 - Online tools for instruction: Percent of public schools reporting on the extent to which various types of online resources are used for instruction at the school, by school characteristics: School year 2019-20

Characteristic	Interactive textbooks				Non-interactive (“click-through”) textbooks				Supplemental materials			
	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 public schools	2.0	2.1	2.1	1.5	2.2	2.1	1.8	0.9	0.9	2.2	1.9	1.8
Instructional level												
Elementary school	3.1	3.2	3.2	2.1	3.5	3.2	2.7	1.5	1.4	3.4	3.0	2.6
Middle school	1.7	3.2	3.1	3.1	2.5	3.2	3.0	1.7	†	2.5	3.3	3.0
High school/other secondary	2.0	3.1	3.4	1.9	2.4	3.4	2.9	1.4	†	2.5	3.2	3.1
Enrollment size												
Less than 300	4.3	5.0	5.1	3.0	5.1	5.0	4.4	1.0	2.9	4.6	5.1	3.3
300 to 499	3.7	4.0	4.4	3.3	4.3	4.4	3.8	2.6	†	4.4	4.1	3.3
500 to 999	2.4	3.4	2.9	2.7	2.9	3.2	2.8	1.5	1.2	3.5	3.3	2.9
1,000 or more	1.9	3.3	3.5	3.1	2.5	3.1	3.3	1.9	†	2.7	3.8	3.2
Community type												
City	3.3	4.3	4.2	3.5	4.1	4.1	3.5	1.8	2.2	4.6	4.8	3.6
Suburban	3.2	3.4	3.8	2.9	3.5	3.5	3.0	2.0	†	3.3	3.5	2.8
Town	5.3	5.7	5.2	3.6	6.3	7.1	5.5	†	†	5.9	5.6	3.7
Rural	3.4	3.9	4.2	3.0	3.6	4.3	4.0	0.6	†	4.1	3.9	3.2
Percent of students eligible for free or reduced-price lunch												
Less than 35 percent	2.8	3.5	3.7	2.5	3.5	3.6	3.4	1.4	†	3.7	3.8	2.6
35 to 49 percent	4.1	4.5	4.4	3.1	3.8	4.3	4.3	2.2	†	4.8	4.9	3.4
50 to 74 percent	4.3	4.8	4.1	3.1	4.4	4.2	3.4	1.5	1.8	4.5	4.0	3.9
75 percent or more	3.8	4.3	4.9	3.8	4.3	4.5	4.3	2.9	2.1	4.8	5.2	3.8

See notes at end of table.

Table B-4. Standard errors for table A-4 - Online tools for instruction: Percent of public schools reporting on the extent to which various types of online resources are used for instruction at the school, by school characteristics: School year 2019-20—continued

Characteristic	Self-contained instructional packages				Interactive experiences			
	Not at all	Small extent	Moderate extent	Large extent	Not at all	Small extent	Moderate extent	Large extent
All public schools	1.3	2.0	1.9	1.9	1.7	2.1	1.7	0.5
Instructional level								
Elementary school	2.1	3.0	3.0	3.0	2.7	3.2	2.5	†
Middle school	1.8	2.9	3.1	2.7	2.1	3.2	2.8	1.2
High school/other secondary	2.3	3.0	3.2	2.6	2.5	3.1	2.2	1.6
Enrollment size								
Less than 300	3.3	3.7	4.4	3.7	4.1	4.9	4.4	1.6
300 to 499	3.3	4.5	3.7	4.1	3.5	4.0	3.6	†
500 to 999	1.8	3.2	3.1	2.8	2.7	3.3	2.8	0.8
1,000 or more	1.7	3.3	3.7	2.7	2.8	3.6	3.0	1.4
Community type								
City	2.6	4.5	4.0	4.1	4.0	4.6	3.9	1.0
Suburban	2.3	3.6	3.7	3.7	2.5	4.2	3.1	1.3
Town	4.8	6.0	5.5	3.9	5.4	6.2	4.4	†
Rural	2.4	3.2	3.9	3.2	3.4	3.7	2.9	0.9
Percent of students eligible for free or reduced-price lunch								
Less than 35 percent	2.3	3.9	3.5	2.2	3.2	4.0	3.3	0.6
35 to 49 percent	3.6	3.9	3.9	3.4	3.7	4.8	3.8	2.0
50 to 74 percent	2.8	4.2	3.7	4.2	3.3	4.0	3.2	0.9
75 percent or more	2.3	4.4	4.6	4.8	4.4	4.9	4.1	†

See notes at end of table.

Table B-4. Standard errors for table A-4 - Online tools for instruction: Percent of public schools reporting on the extent to which various types of online resources are used for instruction at the school, by school characteristics: School year 2019-20—continued

Characteristic	Resources that teachers locate themselves				Online materials teachers create themselves			
	Not at all	Small extent	Moderate extent	Large extent	Not at all	Small extent	Moderate extent	Large extent
All public schools	0.4	1.4	2.3	2.1	1.0	2.4	2.5	1.8
Instructional level⁴								
Elementary school	†	2.4	3.6	3.3	1.7	3.6	3.6	2.5
Middle school	†	1.9	2.8	3.0	1.2	3.1	3.4	3.4
High school/other secondary	†	1.9	3.3	3.3	†	3.1	3.3	3.0
Enrollment size								
Less than 300	†	3.8	5.5	4.5	2.5	5.5	5.3	3.7
300 to 499	†	3.2	4.2	4.3	1.9	4.5	4.2	2.9
500 to 999	†	2.3	3.8	3.6	1.6	3.4	3.6	3.0
1,000 or more	†	1.7	3.7	3.6	†	3.2	3.8	3.7
Community type								
City	†	3.4	4.9	4.9	1.7	4.9	4.4	3.8
Suburban	†	2.4	3.6	3.6	1.6	3.7	3.5	3.2
Town	†	4.3	5.2	5.6	†	6.4	6.0	2.7
Rural	†	2.7	4.0	3.7	1.7	4.2	4.3	2.9
Percent of students eligible for free or reduced-price lunch								
Less than 35 percent	†	2.6	3.5	3.3	1.7	4.0	3.8	3.1
35 to 49 percent	†	2.9	4.7	4.5	2.7	4.7	4.5	3.7
50 to 74 percent	†	3.0	4.0	4.0	2.0	4.6	4.3	3.5
75 percent or more	†	3.9	5.1	4.8	†	5.0	4.7	3.9

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Use of Educational Technology for Instruction," FRSS 110, 2020.

Table B-5. Standard errors for table A-5 - Teacher use of educational technology: Percent of public schools reporting on the extent to which various statements about educational technology apply to the teachers at the school, by school characteristics: School year 2019-20

Characteristic	Use technology for activities normally done in the classroom				Use technology for classroom activities not possible without technology			
	Not at all	Small extent	Moderate extent	Large extent	Not at all	Small extent	Moderate extent	Large extent
All public schools	0.8	2.2	2.4	1.6	1.2	2.3	2.2	1.3
Instructional level								
Elementary school	1.4	3.4	3.6	2.4	1.8	3.5	3.2	1.7
Middle school	†	2.2	3.4	3.1	1.1	3.3	3.2	2.1
High school/other secondary	†	2.4	2.9	2.8	1.4	3.1	3.1	2.3
Enrollment size								
Less than 300	†	4.8	5.1	3.4	†	4.8	4.6	2.6
300 to 499	†	4.0	4.5	2.9	2.6	4.9	4.5	2.4
500 to 999	1.4	2.9	3.4	3.1	1.7	3.4	3.4	1.9
1,000 or more	†	2.9	4.2	3.7	†	3.3	3.4	2.8
Community type								
City	†	4.7	4.5	3.9	4.0	4.5	4.3	2.8
Suburban	†	3.3	4.2	3.3	1.6	3.8	3.6	2.1
Town	†	5.5	6.2	3.5	†	5.3	5.3	2.1
Rural	1.8	3.4	3.9	2.7	1.1	4.0	4.0	2.3
Percent of students eligible for free or reduced-price lunch								
Less than 35 percent	†	3.3	3.4	2.8	2.3	4.1	3.7	2.5
35 to 49 percent	†	4.5	4.7	3.9	2.0	4.5	4.6	2.3
50 to 74 percent	†	4.4	4.7	3.6	1.9	4.3	4.1	2.6
75 percent or more	†	4.5	5.1	3.8	2.6	5.1	4.8	2.5

See notes at end of table.

Table B-5. Standard errors for table A-5 - Teacher use of educational technology: Percent of public schools reporting on the extent to which various statements about educational technology apply to the teachers at the school, by school characteristics: School year 2019-20—continued

Characteristic	Are provided professional development on mechanics of how to use a computer or software				Are provided professional development on how to use technology for instructing specific curriculum areas			
	Not at all	Small extent	Moderate extent	Large extent	Not at all	Small extent	Moderate extent	Large extent
All public schools	1.3	2.4	2.4	1.4	0.9	2.3	2.3	1.4
Instructional level								
Elementary school	2.0	3.6	3.5	2.0	1.5	3.4	3.4	1.9
Middle school	1.3	3.1	3.2	2.3	0.8	3.4	3.7	2.4
High school/other secondary	1.5	3.6	3.0	2.6	1.7	3.3	3.0	2.2
Enrollment size								
Less than 300	3.0	5.3	5.3	2.3	1.9	5.2	4.9	2.6
300 to 499	2.3	4.6	4.4	2.7	2.7	4.8	4.6	2.6
500 to 999	1.9	3.2	3.2	2.1	1.0	3.1	3.2	2.3
1,000 or more	1.7	4.0	4.1	3.3	2.0	3.3	3.8	3.3
Community type								
City	3.3	4.4	4.6	3.3	2.5	4.4	4.8	3.6
Suburban	1.8	3.3	3.4	2.4	†	3.7	3.7	2.5
Town	4.0	5.9	5.8	2.6	3.5	6.5	6.0	2.5
Rural	1.8	4.2	4.3	2.1	1.2	4.4	4.2	1.8
Percent of students eligible for free or reduced-price lunch								
Less than 35 percent	2.5	3.6	3.7	2.6	1.6	3.9	3.9	2.6
35 to 49 percent	2.2	5.0	4.9	3.1	1.8	5.2	4.9	3.2
50 to 74 percent	1.8	4.7	4.8	2.3	2.2	4.3	4.1	2.4
75 percent or more	2.7	5.2	4.8	2.7	2.4	4.7	5.0	2.7

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Use of Educational Technology for Instruction," FRSS 110, 2020.

Table B-6. Standard errors for table A-6 - Helping teachers use educational technology: Percent of public schools reporting on the types of staff who work with teachers to integrate educational technology into classroom instruction, by school characteristics: School year 2019-20

Characteristic	District or school curriculum specialist focused on curriculum content	District or school educational technology specialist focused on educational technology	Classroom teachers with specialized training in educational technology	Other types of school staff
All public schools	2.2	2.0	2.0	1.9
Instructional level				
Elementary school	3.3	3.1	3.1	2.8
Middle school	3.3	3.1	2.6	2.8
High school/other secondary	3.0	2.9	3.2	2.6
Enrollment size				
Less than 300	5.0	4.7	5.3	4.3
300 to 499	4.5	4.0	4.3	3.9
500 to 999	3.4	2.9	3.2	2.8
1,000 or more	3.4	3.4	2.7	2.7
Community type				
City	4.5	4.7	4.3	4.1
Suburban	3.8	3.2	3.0	3.0
Town	6.4	5.5	5.9	5.1
Rural	4.0	3.6	3.7	3.5
Percent of students eligible for free or reduced-price lunch				
Less than 35 percent	3.7	3.8	3.5	3.0
35 to 49 percent	5.0	4.7	4.4	3.8
50 to 74 percent	4.3	4.1	4.3	3.5
75 percent or more	4.5	5.2	4.3	4.7

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Use of Educational Technology for Instruction," FRSS 110, 2020.

Table B-7. Standard errors for table A-7 - How educational technology assists with learning: Percent of public schools reporting on the extent they agree or disagree with statements about how the educational technology used in the instructional program at the school helps students in various ways, by school characteristics: School year 2019-20

Characteristic	Be more independent and self-directed				Engage in more active learning				Learn at their own pace			
	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree
All public schools	2.1	2.1	1.1	0.4	2.1	2.1	1.1	0.4	2.4	2.2	1.2	0.4
Instructional level												
Elementary school	3.1	3.2	1.7	†	3.3	3.2	1.6	†	3.6	3.4	1.8	†
Middle school	3.0	3.0	1.5	0.6	2.9	3.3	1.6	†	3.3	3.5	2.1	†
High school/other secondary	3.4	3.3	1.6	0.8	3.2	3.1	1.5	0.9	3.4	3.1	1.7	0.8
Enrollment size												
Less than 300	4.5	4.6	2.5	†	5.0	4.8	2.6	†	5.1	4.8	3.0	†
300 to 499	4.4	4.5	2.5	†	4.7	4.7	2.1	†	4.5	4.7	2.2	†
500 to 999	3.4	3.6	1.7	0.9	3.4	3.5	1.6	0.9	3.5	3.5	2.0	0.9
1,000 or more	3.6	3.8	1.5	†	3.6	3.5	1.3	†	3.3	3.9	2.4	†
Community type												
City	4.7	5.1	2.8	†	4.5	4.5	2.1	†	4.4	4.9	2.6	†
Suburban	3.9	4.0	1.4	†	4.1	4.1	1.2	†	3.8	3.8	1.8	†
Town	5.0	5.3	†	†	5.2	5.4	†	†	4.7	4.9	2.2	†
Rural	3.7	3.8	2.3	†	3.9	3.8	2.4	†	4.1	4.0	2.6	†
Percent of students eligible for free or reduced-price lunch												
Less than 35 percent	3.1	3.7	2.0	1.2	3.6	3.8	1.9	1.1	3.3	3.7	2.1	1.2
35 to 49 percent	4.6	5.0	3.1	†	4.8	4.8	3.1	†	4.3	4.5	2.8	†
50 to 74 percent	3.9	4.0	2.1	†	4.4	4.1	2.1	†	4.4	4.0	2.7	†
75 percent or more	4.5	4.8	1.4	†	5.3	5.3	†	†	5.7	5.8	2.2	†

See notes at end of table.

Table B-7. Standard errors for table A-7 - How educational technology assists with learning: Percent of public schools reporting on the extent they agree or disagree with statements about how the educational technology used in the instructional program at the school helps students in various ways, by school characteristics: School year 2019-20—continued

Characteristic	Learn collaboratively with peers				Think critically			
	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree
All public schools	2.2	2.3	1.7	0.5	2.0	2.2	1.7	0.6
Instructional level								
Elementary school	3.1	3.4	2.6	0.8	3.1	3.5	2.4	0.8
Middle school	3.0	3.1	2.1	†	2.9	3.4	2.5	†
High school/other secondary	3.4	3.3	2.5	1.1	2.8	2.9	2.0	1.5
Enrollment size								
Less than 300	4.4	5.6	4.0	†	4.5	5.1	3.3	1.1
300 to 499	4.4	4.6	2.8	†	4.0	4.4	3.0	†
500 to 999	3.2	3.3	2.7	†	3.3	3.5	2.5	0.9
1,000 or more	3.9	4.3	2.2	†	2.8	3.5	2.6	1.4
Community type								
City	4.2	4.7	3.7	†	4.2	4.5	3.1	†
Suburban	3.9	3.8	2.4	†	3.8	3.9	2.1	†
Town	4.3	5.4	4.6	†	4.2	5.4	5.3	†
Rural	4.0	4.3	2.7	†	3.5	4.2	3.0	1.0
Percent of students eligible for free or reduced-price lunch								
Less than 35 percent	3.7	3.7	2.5	1.4	3.6	3.9	2.3	1.4
35 to 49 percent	4.0	5.0	4.1	1.2	4.2	5.3	3.6	1.4
50 to 74 percent	3.8	4.6	3.3	†	3.6	3.9	3.2	†
75 percent or more	4.2	4.9	3.7	†	4.8	5.0	2.8	†

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Use of Educational Technology for Instruction," FRSS 110, 2020.

Table B-8. Standard errors for table A-8 - Supports for using educational technology in school: Percent of public schools reporting on the extent they agree or disagree with various statements about the use of educational technology in the instructional program at the school, by school characteristics: School year 2019-20

Characteristic	Teachers are sufficiently trained in mechanics of technology				Teachers are sufficiently trained to integrate technology into instruction				Teachers are interested in using technology in instruction			
	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree
All public schools	1.7	2.3	1.7	0.9	1.7	2.1	2.1	1.0	2.4	2.4	0.9	†
Instructional level												
Elementary school	2.7	3.6	2.6	1.3	2.6	3.2	3.1	1.6	3.5	3.5	1.4	†
Middle school	2.6	3.4	2.8	0.9	2.5	3.2	2.7	†	3.2	3.3	1.7	†
High school/other secondary	2.1	3.0	2.4	1.5	2.5	3.4	2.6	1.4	3.2	3.1	1.7	†
Enrollment size												
Less than 300	3.1	4.7	4.0	†	3.7	4.7	4.8	†	5.1	4.7	2.1	†
300 to 499	3.3	4.5	3.6	2.2	2.9	4.3	3.9	2.5	4.7	4.6	2.1	†
500 to 999	2.6	3.1	2.9	1.5	2.5	3.2	3.0	1.7	3.8	3.8	1.6	†
1,000 or more	3.7	3.9	2.9	†	3.5	4.2	3.1	†	4.2	4.3	1.5	†
Community type												
City	3.5	4.3	3.8	2.7	3.5	4.1	4.2	2.5	4.8	4.6	2.1	†
Suburban	3.5	3.8	2.7	1.4	2.8	3.6	3.4	2.0	3.7	3.4	1.6	†
Town	4.2	5.8	5.3	1.1	4.5	6.0	5.9	†	5.5	5.9	†	†
Rural	2.3	3.8	3.3	1.1	2.8	3.7	3.5	1.3	3.7	3.8	1.9	†
Percent of students eligible for free or reduced-price lunch												
Less than 35 percent	3.1	3.9	3.0	1.5	2.6	3.6	3.6	1.9	4.0	3.8	1.7	†
35 to 49 percent	2.6	4.0	3.2	1.4	2.8	4.8	4.8	1.7	5.3	4.8	2.4	†
50 to 74 percent	2.9	4.5	3.6	1.7	3.2	4.5	3.9	1.9	4.4	4.3	2.0	†
75 percent or more	5.0	5.9	3.8	2.2	4.4	5.3	4.1	2.6	5.4	5.3	1.9	†

See notes at end of table.

Table B-8. Standard errors for table A-8 - Supports for using educational technology in school: Percent of public schools reporting on the extent they agree or disagree with various statements about the use of educational technology in the instructional program at the school, by school characteristics: School year 2019-20—continued

Characteristic	Technical support for educational technology is adequate				Competing priorities in the classroom adversely affect the use of educational technology			
	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree	Strongly agree	Some-what agree	Some-what disagree	Strongly disagree
All public schools	2.1	2.1	1.5	1.0	1.5	2.4	2.2	0.9
Instructional level								
Elementary school	3.1	3.1	2.4	1.5	2.2	3.6	3.1	1.4
Middle school	3.0	3.7	2.6	†	2.6	3.3	3.2	1.9
High school/other secondary	3.1	3.2	2.4	1.3	2.2	3.1	2.7	1.3
Enrollment size								
Less than 300	4.7	4.9	3.9	2.0	3.2	4.9	4.8	1.8
300 to 499	4.2	4.7	3.8	2.2	3.3	4.6	3.8	2.2
500 to 999	2.9	3.3	2.6	1.6	2.5	3.5	2.9	1.1
1,000 or more	3.7	4.0	2.6	†	3.1	3.7	3.3	1.6
Community type								
City	4.4	4.2	3.9	2.5	4.0	4.6	4.5	2.2
Suburban	3.6	3.1	2.7	1.8	2.4	4.2	3.0	1.7
Town	5.3	6.5	5.0	†	4.1	5.6	5.9	1.2
Rural	4.0	3.8	3.1	1.5	2.3	3.9	4.0	1.4
Percent of students eligible for free or reduced-price lunch								
Less than 35 percent	3.8	3.6	2.8	1.8	2.9	3.9	3.6	1.6
35 to 49 percent	4.2	5.1	3.8	1.9	3.5	4.8	3.7	0.8
50 to 74 percent	4.3	4.0	3.9	2.3	2.6	4.7	3.9	2.3
75 percent or more	4.1	4.9	4.0	2.3	3.9	4.8	4.8	1.6

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), “Use of Educational Technology for Instruction,” FRSS 110, 2020.

Table B-9. Standard errors for table A-9 - Challenges teachers have for using educational technology at school: Percent of public schools reporting on the extent to which various issues are challenges for teachers in using educational technology for instruction at the school, by school characteristics: School year 2019-20

Characteristic	Teachers' lack of time to become familiar with new technologies and integrate them in instruction				Steep learning curve for teachers regarding educational technology				Ensuring technology use is truly contributing to learning			
	Not a challenge	Small challenge	Moderate challenge	Large challenge	Not a challenge	Small challenge	Moderate challenge	Large challenge	Not a challenge	Small challenge	Moderate challenge	Large challenge
All public schools	0.9	2.3	2.1	2.0	1.2	2.1	2.2	1.1	1.3	2.0	2.0	1.4
Instructional level												
Elementary school	1.4	3.4	3.2	3.0	1.7	3.1	3.3	1.8	2.1	3.2	3.2	2.1
Middle school	1.4	2.7	3.2	2.8	1.5	2.8	3.0	1.3	1.4	2.9	3.0	2.3
High school/other secondary	1.5	2.7	3.3	2.7	1.7	3.0	3.1	2.0	2.1	2.6	3.2	2.4
Enrollment size												
Less than 300	2.3	5.2	5.0	3.9	3.1	5.1	5.1	2.6	3.6	4.6	4.9	2.8
300 to 499	1.5	4.1	4.1	3.5	2.3	4.2	4.1	2.3	2.8	4.1	4.4	3.3
500 to 999	1.3	2.9	3.3	3.0	1.6	3.5	3.4	2.0	1.8	3.3	3.0	2.3
1,000 or more	2.0	3.4	4.0	3.2	1.9	4.0	3.8	1.7	2.1	3.3	3.1	2.2
Community type												
City	2.5	4.2	4.8	4.5	3.5	4.0	4.6	3.0	3.0	3.9	4.6	3.2
Suburban	1.4	3.9	3.4	3.3	2.0	4.0	4.0	2.0	2.5	3.5	3.1	2.5
Town	†	6.6	6.8	5.4	2.5	5.9	6.3	†	2.1	6.1	6.1	4.8
Rural	1.2	3.7	3.8	3.4	1.4	3.9	4.1	2.1	2.3	3.9	4.0	2.6
Percent of students eligible for free or reduced-price lunch												
Less than 35 percent	2.0	4.1	4.1	3.1	2.0	3.9	3.8	2.1	2.4	3.2	3.4	2.3
35 to 49 percent	1.1	4.4	5.3	4.1	1.4	4.6	5.2	2.9	2.8	3.8	4.2	3.8
50 to 74 percent	1.6	4.5	4.0	3.1	2.2	4.1	3.9	2.3	2.9	4.5	4.7	2.2
75 percent or more	2.2	4.8	4.3	4.5	3.1	4.7	4.8	2.5	2.9	4.5	4.4	3.5

See notes at end of table.

Table B-9. Standard errors for table A-9 - Challenges teachers have for using educational technology at school: Percent of public schools reporting on the extent to which various issues are challenges for teachers in using educational technology for instruction at the school, by school characteristics: School year 2019-20—continued

Characteristic	Identifying high quality technology resources to address learning needs				Staying up to date with technology				Helping students learn basic skills computer skills			
	Not a challenge	Small challenge	Moderate challenge	Large challenge	Not a challenge	Small challenge	Moderate challenge	Large challenge	Not a challenge	Small challenge	Moderate challenge	Large challenge
All public schools	1.5	2.0	2.0	1.3	1.3	2.0	2.1	1.4	1.5	2.1	1.9	1.2
Instructional level												
Elementary school	2.2	3.0	3.1	2.0	2.0	3.1	3.3	2.2	2.1	3.2	2.9	1.9
Middle school	1.4	3.4	3.1	2.0	1.7	3.2	3.3	2.5	2.7	3.1	2.3	1.8
High school/other secondary	1.8	2.9	2.9	2.1	1.8	2.9	3.1	2.6	2.8	3.0	2.4	1.2
Enrollment size												
Less than 300	3.1	4.9	5.0	2.0	3.3	4.4	5.2	3.5	3.8	4.9	4.6	†
300 to 499	2.8	4.5	4.6	3.1	3.0	3.6	4.5	3.1	3.2	4.5	4.2	2.3
500 to 999	2.4	3.3	3.2	2.0	1.7	3.3	3.4	2.3	2.3	3.4	2.7	2.1
1,000 or more	2.6	3.8	3.7	2.4	2.3	3.6	3.5	2.6	3.4	3.8	3.0	1.1
Community type												
City	3.4	4.2	4.4	3.3	3.0	4.2	4.4	3.3	3.5	4.4	3.8	3.2
Suburban	2.3	3.5	3.5	2.2	2.6	3.1	3.7	2.1	2.3	3.9	3.5	1.7
Town	3.4	6.2	6.2	3.0	3.2	5.8	6.0	3.2	5.0	6.3	5.6	†
Rural	2.3	3.7	3.9	2.0	2.0	3.7	4.2	3.3	2.6	3.8	3.4	1.8
Percent of students eligible for free or reduced-price lunch												
Less than 35 percent	2.7	3.4	3.9	2.6	2.5	3.4	3.3	2.4	3.1	3.4	3.4	1.8
35 to 49 percent	2.4	4.3	5.0	3.2	2.3	3.8	5.7	4.1	2.9	4.7	5.2	3.1
50 to 74 percent	2.1	4.2	4.2	2.1	1.6	4.5	4.2	2.9	3.0	4.3	3.9	1.5
75 percent or more	3.7	4.7	4.7	2.6	3.5	3.8	4.8	2.9	3.6	4.9	3.7	2.8

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Use of Educational Technology for Instruction," FRSS 110, 2020.

Table B-10. Standard errors for table A-10 - Equipment and coaching limitations to using educational technology: Percent of public schools reporting on the extent to which outdated or insufficient hardware, software, or support are challenges for teachers in using educational technology for instruction at the school, by school characteristics: School year 2019-20

Characteristic	Outdated computers or software				Insufficient number of computers				Insufficient or inadequate software			
	Not a challenge	Small challenge	Moderate challenge	Large challenge	Not a challenge	Small challenge	Moderate challenge	Large challenge	Not a challenge	Small challenge	Moderate challenge	Large challenge
All public schools	2.1	2.1	2.0	1.4	2.0	1.8	1.8	1.5	2.1	2.2	1.8	1.1
Instructional level												
Elementary school	3.2	3.1	3.0	2.0	2.9	2.7	2.7	2.1	3.3	3.4	2.8	1.7
Middle school	3.1	3.1	3.0	2.0	3.5	2.6	2.4	2.1	3.2	3.1	2.4	1.9
High school/other secondary	2.6	2.9	2.4	2.0	3.0	2.7	2.1	1.7	2.6	2.7	2.3	1.2
Enrollment size												
Less than 300	4.3	5.4	4.2	3.9	4.8	4.3	3.3	3.2	4.9	4.7	3.8	2.7
300 to 499	4.5	3.8	4.3	2.6	4.4	4.1	3.8	2.7	4.4	4.1	3.4	2.1
500 to 999	2.8	3.1	3.0	2.0	3.3	2.5	2.5	2.2	3.3	3.2	3.0	1.8
1,000 or more	3.8	4.2	2.8	2.4	3.1	3.1	2.3	2.8	3.1	3.3	2.7	†
Community type												
City	3.9	4.4	3.7	3.7	4.4	3.7	3.4	3.6	4.6	4.9	3.3	3.0
Suburban	3.5	3.2	3.4	2.1	3.3	2.9	3.2	2.3	3.1	3.3	3.4	1.6
Town	5.2	5.5	5.2	3.5	5.9	5.6	4.1	3.4	6.2	6.4	3.4	†
Rural	3.7	4.1	3.5	2.5	4.0	3.5	2.7	2.2	3.9	3.8	3.0	1.8
Percent of students eligible for free or reduced-price lunch												
Less than 35 percent	3.8	4.0	3.4	2.3	3.9	2.9	3.2	2.4	3.7	3.6	3.1	1.6
35 to 49 percent	4.2	4.8	4.2	3.5	4.9	4.8	3.4	3.1	4.7	4.0	4.0	2.2
50 to 74 percent	3.8	4.3	3.1	3.2	4.4	3.8	3.2	3.2	4.7	4.9	2.9	2.3
75 percent or more	4.5	5.0	4.2	3.3	4.3	3.9	3.3	3.4	4.7	4.6	3.9	3.4

See notes at end of table.

Table B-10. Standard errors for table A-10- Equipment and coaching limitations to using educational technology: Percent of public schools reporting on the extent to which outdated or insufficient hardware, software, or support are challenges for teachers in using educational technology for instruction at the school, by school characteristics: School year 2019-20—continued

Characteristic	Insufficient or inadequate internet speed				Insufficient or inadequate support on how to use technology in the classroom			
	Not a challenge	Small challenge	Moderate challenge	Large challenge	Not a challenge	Small challenge	Moderate challenge	Large challenge
All public schools	2.2	2.0	1.3	0.9	1.9	2.1	2.1	1.3
Instructional level								
Elementary school	3.3	3.0	2.0	1.4	2.7	3.3	3.1	1.9
Middle school	3.5	2.9	2.2	1.5	2.8	3.2	2.7	1.8
High school/other secondary	3.0	2.9	2.3	1.5	2.5	3.2	3.0	1.8
Enrollment size								
Less than 300	5.7	5.1	2.5	1.8	4.0	4.9	4.2	3.0
300 to 499	4.2	4.2	3.0	1.8	3.8	4.0	4.1	2.3
500 to 999	3.5	3.0	2.2	1.7	2.7	3.2	2.9	2.0
1,000 or more	3.5	3.5	1.9	1.8	3.4	3.5	3.1	1.2
Community type								
City	4.5	4.3	3.0	2.1	3.7	4.1	4.1	3.0
Suburban	3.6	3.3	2.3	1.6	3.2	4.0	3.6	1.8
Town	5.8	5.7	2.2	†	5.3	6.2	5.5	1.9
Rural	4.2	4.0	2.4	1.8	3.4	4.0	3.4	2.5
Percent of students eligible for free or reduced-price lunch								
Less than 35 percent	3.8	3.3	2.0	1.2	3.5	3.6	3.3	2.6
35 to 49 percent	5.4	4.4	2.5	2.2	3.7	4.8	4.4	†
50 to 74 percent	4.5	4.0	2.9	1.4	4.0	4.7	3.8	2.4
75 percent or more	4.3	4.0	3.1	2.9	4.5	5.3	4.4	2.8

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), “Use of Educational Technology for Instruction,” FRSS 110, 2020.

Appendix C
Technical Notes

Technical Notes

Fast Response Survey System

The Fast Response Survey System (FRSS) was established in 1975 by the National Center for Education Statistics (NCES), U.S. Department of Education. FRSS is designed to collect issue-oriented data within a relatively short time frame. FRSS collects data from state education agencies, local education agencies, public and private elementary and secondary schools, public school teachers, and public libraries. To ensure minimal burden on respondents, the surveys are generally limited to three pages of questions, with a response burden of about 30 minutes per respondent. Sample sizes are relatively small (usually about 1,200 to 1,800 respondents per survey) so that data collection can be completed quickly. Data are weighted to produce national estimates of the sampled education sector. The sample size permits limited breakouts by analysis variables. However, as the number of categories within any single analysis variable increases, the sample size within categories decreases, which results in larger sampling errors for the breakouts by analysis variables.

Sample Design

The sample for the FRSS survey *Use of Educational Technology for Instruction* consisted of approximately 1,300 regular public schools in the 50 states and the District of Columbia. The nationally representative sample was selected from the 2016-17 Common Core of Data (CCD) Public School Universe file, which was the most current file available at the time of selection. The sampling frame for the survey included only regular schools; vocational education, special education, alternative/other nonregular schools, and schools operated by the Department of Defense or Bureau of Indian Education were ineligible for the survey. School that did not offer at least one of the grades 1 through 12, virtual schools, and schools in the outlying U.S. territories were also ineligible for the survey. The school sampling frame was stratified by instructional level (elementary, middle, high, and other) and five enrollment size class (less than 300, 300 to 499, 500 to 999, and 1,000 to 1,499, and 1,500 or more) to create 20 primary strata. Within each primary sampling stratum, schools in the sampling frame were sorted by community type (city, suburban, town, rural) and categories of poverty level based on the percentage of students eligible for free/reduced-price lunch (missing, under 35 percent, 35 to 49 percent, 50 to 74 percent, 75 percent or more) to induce additional implicit stratification. The sample of schools was selected with probabilities proportionate to the square-root of the enrollment in the school.

Data Collection and Response Rates

Prior to contacting schools, informational letters were sent to the superintendents of the school districts where the sampled schools were located, and study staff implemented any special procedures required by school districts. Questionnaires and cover letters were mailed to the principal of each sampled school in January 2020. The letter stated the purpose of the study and requested that the questionnaire be completed by the principal or person most knowledgeable about the use of educational technology for instruction at the school. Respondents were offered options of completing the survey on paper or online. Telephone follow-up for survey nonresponse and data clarification was initiated in February 2020 and completed in June 2020. Respondents were asked to respond for the 2019-20 school year. In addition, when schools began to close due to the pandemic, schools were asked to respond to the survey based on the situation at the school prior to the pandemic.

Of the 1,300 schools in the sample, about 40 were found to be ineligible for the survey because they were closed, merged, or did not meet the eligibility requirements for inclusion (e.g., they were special education, vocational, or alternative schools). For the eligible schools, the weighted response rate using the base weights¹ was 64 percent. Among the respondents who completed the survey, 76 percent completed it via the Web and 24 percent completed it by paper (sent by mail, fax, or e-mail). The final weighted count of responding schools in the survey after nonresponse adjustment represents the estimated universe of eligible public schools in the 50 states and the District of Columbia—approximately 83,700 schools (table C-1).²

Table C-1. Number and percentage of responding public schools in the study sample, and estimated number and percentage of public schools the sample represents, by school characteristics: School year 2019-20

Characteristic	Respondent sample (unweighted)		National estimate (weighted) ¹	
	Number	Percent	Number	Percent
All public schools	800	100	83,700	100
Instructional level²				
Elementary school	250	32	50,600	60
Middle school	250	31	14,200	17
High school/other secondary	300	37	18,900	23
Enrollment size				
Less than 300	130	17	21,700	26
300 to 499	170	22	23,100	28
500 to 999	300	38	30,100	36
1,000 or more	190	24	8,900	11
Community type				
City	180	23	20,500	24
Suburban	280	35	28,000	33
Town	110	14	10,400	12
Rural	230	29	24,900	30
Percent of students eligible for free or reduced-price lunch				
Less than 35 percent ³	290	36	28,400	34
35 to 49 percent	170	22	16,900	20
50 to 74 percent	200	25	20,800	25
75 percent or more	140	18	17,600	21

¹Weighted count of responding schools using the final nonresponse-adjusted weights. The weighted count is an estimate of the number of eligible schools in the study universe.

²Elementary school has low grade PK-4 and high grade PK-8; middle school has low grade 5-8 and high grade 5-8; high/other secondary has all other schools with one or more grades 1-12.

³Includes schools with missing values.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), “Use of Educational Technology for Instruction,” FRSS 110, 2020.

¹ The school base weight is the inverse of the probability of selection of the school that accounts for circumstances that affect the school’s overall probability of selection that are identified after the data collection has begun, such as a merger or duplication.

² For more details about the development of survey weights, see the section of this report on weighting and sampling errors.

Imputation for Item Nonresponse

Schools with missing FRSS survey data were contacted by e-mail and telephone to collect the missing information. However, for cases in which this data retrieval was unsuccessful, missing survey data were imputed. Although item nonresponse was low (less than 3 percent for any item), missing data were imputed for the 69 items with a response rate of less than 100 percent. The missing items included both numerical data such as the estimated number of computers assigned to individual students, as well as categorical data such as whether students are allowed to take school-provided computers home with them. The missing data were imputed using a “hot-deck” approach to obtain a “donor” from which the imputed values were derived. Under the hot-deck approach, a donor that matched selected characteristics of the school with missing data (the recipient) was identified (Kalton 1983, pp. 65-104). The matching characteristics included instructional level, community type, and percent of students in the school eligible for free/reduced-price lunch. In addition, other relevant questionnaire items were used to form appropriate imputation groupings. Once a donor was found, the imputed value was simply the corresponding value from the donor. Note that data drawn from CCD were not imputed. Variables constructed from CCD are described in the variable section of this appendix.

Data Reliability

Although the survey was designed to account for sampling error and to minimize nonsampling error, estimates produced from the data collected are subject to both types of error. Sampling error occurs because the data are collected from a sample rather than a census of the population, and nonsampling errors are errors made during the collection and processing of the data.

Weighting and Sampling Errors

The responses were weighted to produce national estimates (table C-1). The weights were designed to reflect the probabilities of selection of the sampled schools, and were adjusted for differential unit (questionnaire) nonresponse. The nonresponse weighting adjustments were made within classes defined by school-level variables correlated with response propensity: instructional level, categories of school enrollment size, community type, and categories for percent of students eligible for free or reduced-price lunch. Within the final weighting classes, the base weights (i.e., the reciprocal of schools’ probabilities of selection) of the responding schools were inflated by the inverse of the weighted response rate for the class. Such weights are appropriate for analysis of the types of data collected in the survey.

The findings in this report are estimates based on the sample selected and, consequently, are subject to sampling variability. Because the survey data were collected using a complex sampling design, the variances of the estimates from the survey (e.g., estimates of proportions) are typically different from what would be expected from data collected with a simple random sample. Not taking the complex sample design into account can lead to an under- or overestimation of the standard errors associated with such estimates. To generate accurate standard errors for the estimates in this report, standard errors were computed using a technique known as jackknife replication (Levy and Lemeshow 1991). 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. A form of jackknife replication referred to as the JK1 method was used to construct the replicates. The mean square error of the replicate estimates around the full sample estimate provides an estimate of the variance of the statistic. To construct the replications, 100 stratified subsamples of the full sample were created and then dropped one at a time to define 100 jackknife replicates. Estimates of standard errors can be computed using statistical packages such as SAS or WesVar.

The standard error is a measure of the variability of an estimate 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 a 95 percent confidence interval. For example, the estimated percent of public schools that have a computer for every student in the school is 45 percent, and the standard error is 2.0 percent (tables A-1 and B-1). The 95 percent confidence interval for the statistic extends from 45 - (2.0 x 1.96) to 45 + (2.0 x 1.96), or from 41 to 49 percent. The 1.96 is the appropriate percentile from a standard normal distribution corresponding to a two-sided statistical test at the $p < .05$ significance level (where .05 indicates the 5 percent of all possible samples that would be outside the range of the confidence interval).

Comparisons can be tested for statistical significance at the $p < .05$ level using Student's t statistics to ensure that the differences are larger than those that might be expected due to sampling variation. Student's t values are computed to test the difference between estimates with the following formula:

$$t = \frac{E_1 - E_2}{\sqrt{se_1^2 + se_2^2}}$$

where E_1 and E_2 are the estimates to be compared and se_1 and se_2 are their corresponding standard errors.

Nonsampling Errors

Nonsampling error is the term used to describe variations in the estimates that may be caused by population coverage limitations and data collection, processing, and reporting procedures. The sources of nonsampling errors are typically problems such as unit and item nonresponse, differences in respondents' interpretations of the meaning of questions, response differences related to the particular time the survey was conducted, and mistakes made during data preparation. It is difficult to identify and estimate either the amount of nonsampling error or the bias caused by this error. To minimize the potential for nonsampling error, this study used a variety of procedures, including a pretest of the questionnaire with teachers who were part of the eligible population. The pretest provided the opportunity to check for consistency of interpretation of questions and definitions and to eliminate ambiguous items. The questionnaire and instructions were also extensively reviewed by NCES and OET. In addition, extensive editing of the questionnaire responses was conducted to check the data for accuracy and consistency. Respondents with questionnaires that had missing, inconsistent, or out-of-range items were contacted by e-mail or telephone to resolve problems. Survey responses received by mail, fax, or telephone were entered into the web survey application. Responses were entered a second time to ensure accuracy of entry. One potential source of nonsampling error is nonresponse bias, which is discussed in the following sections for unit (questionnaire) nonresponse and item nonresponse.

Unit Nonresponse Bias Analysis

Because NCES statistical standards and guidelines require a nonresponse bias analysis if the base-weighted unit response rate at any stage of data collection is less than 85 percent (Seastrom 2014), an analysis was conducted to identify potential nonresponse bias. This analysis used the following characteristics from the 2016-17 Common Core of Data (CCD) Public School Universe file:

- Instructional level (elementary, middle, high/other)
- Enrollment size class (less than 300, 300 to 499, 500 to 999, 1,000 or more)

- Community type (city, suburban, town, rural)
- Percent of students eligible for free or reduced-price lunch (less than 35 percent, 35 to 49 percent, 50 to 74 percent, 75 percent or more)
- Percent minority (less than 6 percent, 6 to 20 percent, 21 to 49 percent, 50 percent or more)
- Census region (Northeast, Midwest, South, West)

For each characteristic, a statistical test (*t* test) was conducted of the hypothesis that the base-weighted distribution of the respondent sample is the same as the base-weighted distribution of the total sample for the characteristic. An “X” in the middle column of Table C-2 indicates the characteristics where a statistically significant difference was found using this test.

Table C-2. Indication of potential sources of bias based on comparisons between total sample distribution and base-weighted or nonresponse-adjusted respondent distributions of schools: School year 2019-20

Characteristic	Base-weighted respondent distribution ¹	Nonresponse-adjusted respondent distribution ²
Instructional level		
Enrollment size	X	X
Community type	X	
Percent of students eligible for free or reduced-price lunch	X	
Percent minority	X	X
Census region		

¹Test comparing total sample with respondent sample using the base weights.

² Test comparing respondent sample using nonresponse adjusted weights with total sample using the base weights.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), “Use of Educational Technology for Instruction,” FRSS 110, 2020.

To compensate for the differential response rates, weight adjustments were used to derive nonresponse-adjusted weights for analysis purposes. In general, such weight adjustments will reduce nonresponse bias if the variables used in forming the weight adjustment classes are correlated with response propensity (the probability that a sampled school will respond to the survey) and with the characteristics obtained from the survey. To examine the extent to which the nonresponse adjustments mitigated the effect of the differential response rates, a statistical test was conducted comparing the weighted distribution of the respondent sample using the nonresponse-adjusted weights with the corresponding weighted distribution of the total sample using the base weights. As indicated in the rightmost column of Table C-2, two of the characteristics that were previously statistically significant are no longer significant based on this test.

The nonresponse adjustment of the weights thus appears to be partially effective in removing differences between the distributions of the responding and nonresponding schools. Although some differences were not eliminated completely, subsequent analysis showed that the differences did not seem to be large enough to have a material impact on the weighted estimates derived from the survey. A comparison of weighted estimates of selected survey items before and after nonresponse adjustment indicated that for attribute variables, there were no significant differences for total schools. There was one difference for high/other schools between the nonresponse-adjusted estimates and the corresponding base-weighted estimates prior to adjustment. For numeric variables, most differences before and after nonresponse adjustment were found for high/other schools.

For more information on the bias analyses, refer to the FRSS:110 Data File Documentation (Gray and Lewis forthcoming).

Item Nonresponse Bias Analysis

NCES statistical standards and guidelines also require a nonresponse bias analysis if item-level response rates are below 85 percent. No items in the study had response rates below this threshold.

Definitions of Analysis Variables

Many of the school characteristics described below may be related to each other. For example, school instructional level and enrollment size are related, with high schools typically being larger than elementary schools. Other relationships between these analysis variables may exist. However, this First Look report focuses on national estimates and bivariate relationships between the analysis variables and questionnaire variables rather than more complex analyses.

Instructional level—Schools were classified according to their response to FRSS survey question 21 about the grades currently taught at the school.

Elementary school—low grade of PK through 4 and high grade of PK through 8

Middle school—low grade of 5 through 8 and high grade of 5 through 8

High school/other secondary—all other schools with one or more grades 1-12 and not falling in the above two categories.

Enrollment size—This variable indicates the total number of students enrolled in the school based on data from FRSS survey responses to question 22. The variable was collapsed into the following categories:

Less than 300

300 to 499

500 to 999

1,000 or more

Community type—This variable indicates the type of community in which the school is located, as defined in the 2016-17 CCD Public School Universe file. These codes are based on the location of school buildings. This classification system has four major locale categories—city, suburban, town, and rural—each of which is subdivided into three subcategories. This variable was based on the 12-category urban-centric locale variable from CCD and collapsed into the four categories below.

City—Territory inside an urbanized area and inside a principal city

Suburban—Territory outside a principal city and inside an urbanized area

Town—Territory inside an urban cluster

Rural—Territory outside an urbanized area and outside an urban cluster

Percent of students in school eligible for free or reduced-price lunch— Based on the 2016-17 CCD Public School Universe file data on the students in the school who are eligible to participate in the Free Lunch and Reduced Price Lunch Programs under the National School Lunch Act of 1946. The category for “Less than 35 percent” includes schools with missing data (about 7 percent of cases).

Less than 35 percent

35 to 49 percent
50 to 74 percent
75 percent or more

Definitions and Instructions Provided in This Survey

The following definitions and instructions were provided to respondents in the questionnaire.

- Please respond for the 2019-20 school year.³
- For purposes of this survey, computers include desktop, laptop, and tablet computers (including Chromebooks and iPads). Smartphones are not included in the definition of computers.

Contact Information

For more information about the survey, contact Christopher Chapman, National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education, Potomac Center Plaza, 550 12th Street SW, Washington, DC 20202; e-mail: chris.chapman@ed.gov; telephone: (202) 245-7103.

References

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³ Once schools began to close due to the pandemic, schools were asked to respond to the survey based on the situation at the school prior to the pandemic.

Appendix D
Questionnaire

U.S. DEPARTMENT OF EDUCATION
NATIONAL CENTER FOR EDUCATION STATISTICS
WASHINGTON, D.C. 20006-5651

O.M.B. No.: 1850-0733
EXPIRATION DATE: 10/2020

USE OF EDUCATIONAL TECHNOLOGY FOR INSTRUCTION
FAST RESPONSE SURVEY SYSTEM

NCES is authorized to conduct this survey by the Education Science Reform Act of 2002 (ESRA 2002, 20 U.S.C. §9543). While participation in this survey is voluntary, your cooperation is critical to make the results of this survey comprehensive, accurate, and timely. All of the information you provide may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151).

- **This survey is designed to be completed by the principal or the person most knowledgeable about the use of educational technology for instruction at the school indicated below.**
- **Please respond for the 2019-20 school year.**
- **For purposes of this survey, computers include desktop, laptop, and tablet computers (including Chromebooks and iPads). Smartphones are not included in the definition of computers.**

IF ABOVE **SCHOOL** INFORMATION IS INCORRECT, PLEASE MARK UPDATES.

Name of person completing this form: _____

Title of person completing this form: _____

Telephone number: _____ E-mail: _____

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

Please choose one of the following options to complete and submit the survey

- **Online:** complete and submit the survey online using the URL, username, and password above
- **Email:** mark your answers on a paper copy of the questionnaire, scan it, and email to: FRSSEdTech@westat.com
- **Fax:** mark your answers on a paper copy of the questionnaire and fax it toll-free to: 800-254-0984
- **Mail:** mark your answers on a paper copy of the questionnaire and mail it using the business reply envelope (if available) or mail to:

Westat FRSS Study (6197.05.01.02)
1600 Research Blvd., RB 3103
Rockville, MD 20850-3129

If you have any questions, contact:

The Westat FRSS Study Team

Phone: 855-813-4337 (toll-free) or E-mail: FRSSEdTech@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 collection 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 collection. If you have any comments concerning the accuracy of the time estimate, suggestions for improving this form, or any comments or concerns regarding the status of your individual submission of this form, please write directly to: Quick Response Information System (QRIS), National Center for Education Statistics (NCES), PCP, 550 12th Street, SW, 4th floor, Washington, DC 20202.

FRSS Form No. 110, 01/2020

- **Answer only for the school indicated on the front of this survey.**
- **For purposes of this survey, computers include desktop, laptop, and tablet computers (including Chromebooks and iPads). Smartphones are not included in the definition of computers.**

- Does this school have a computer for every student in the school? (*See definition of computer in box above.*)
 Yes ... (*Skip to question 3.*) No (*Continue with question 2.*)
- Does this school have a computer for every student in some grade levels or classrooms?
 Yes ... (*Continue with question 3.*) No (*Skip to question 4.*)
- Are students at this school allowed to take school-provided computers home with them at the end of the day? (*Do not include computers assigned only to special education students, or computers borrowed on a short-term basis.*)
 Yes, in all grade levels Yes, but only in some grade levels No.....
- How many **computers for student use** does this school have in the following locations?
 - See definition of computer in box above.
 - Count all computers for student use, and **count each computer in only one location.**

Location of computers for student use (count each computer only once)	Number of computers for student use (if none, enter 0)
a. Computers assigned to individual students that they carry with them during the school day	
b. Computers assigned to stay in a specific classroom	
c. Computers that move from classroom to classroom (e.g., on carts that teachers check out)	
d. Computers located in resource rooms, computer labs, or the library/media center	
e. Computers in other locations (<i>specify location</i>)	

- How would you rate the overall quality of the instructional computers at this school? (*Check one.*)
 Poor Fair Good Very good
- How would you rate the overall quality of the software used for instruction at this school? Include instructional software accessed through the Internet as well as software loaded on the computers. (*Check one.*)
 Poor Fair Good Very good
- To what extent do the computers at this school meet the school's instructional needs? (*Check one.*)
 Not at all Small extent Moderate extent Large extent.....
- When teachers at this school want to use computers with their students, how easy is it for them to find enough computers to use in a lab or in their classroom? (*Check one.*)
 Always difficult Usually difficult..... Usually easy Always easy.....
- In general, how reliable is the Internet connection in the instructional areas of this school? (*Check one.*)
 Not reliable Slightly reliable..... Somewhat reliable Very reliable
- To what extent does this school experience problems with Internet connectivity or speed when large numbers of students must be online at the same time (e.g., during state testing periods)? (*Check one.*)
 Not at all Small extent Moderate extent Large extent.....
- How much flexibility do school-level leaders at this school have in determining which types and how much educational technology is purchased for this school? (*Check one.*)
 None Minimal..... Moderate A lot.....
- How much flexibility do school-level leaders at this school have in determining which types and how much professional development in educational technology is provided for this school? (*Check one.*)
 None Minimal..... Moderate A lot.....

13. Does this school allow students to borrow computers to take home on a short-term basis (e.g., for a day or a week)? (Do not include computers assigned to special education students for home use.) (Check one.)
- Not applicable, all students take a district-or school provided computer home with them
- Yes, students can borrow computers on a short term basis
- No, students cannot borrow computers on a short term basis

14. Does this school provide mobile hotspots or web-enabled devices with paid data plans for students to take home for Internet access?
- Yes ... No

15. Please indicate the extent to which various types of online resources are used for instruction at this school. (Check one on each line.)

Type of online instructional resource	Extent online resources are used for instruction			
	Not at all	Small extent	Moderate extent	Large extent
a. School uses online, interactive textbooks in some courses/classes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. School uses online, non-interactive ("click-through") textbooks in some courses/classes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. School uses online supplemental materials for instruction (e.g., study guides, online science modules or labs, practice exams)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. School uses online self-contained packages for instruction (e.g., Read 180, Imagine Math)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. School participates in online interactive experiences (e.g., visits with NASA astronauts; National Geographic expeditions; scientific field studies)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Teachers use online resources that they locate themselves for instruction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Teachers create their own online instructional materials to use in their classes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. Please indicate the extent to which each of the following statements about educational technology applies to the teachers at this school. (Check one on each line.)

Educational technology use and professional development	Extent applies to teachers at this school			
	Not at all	Small extent	Moderate extent	Large extent
a. Teachers use educational technology for activities normally done in the classroom (e.g., to grade quizzes, to facilitate a class lecture or discussion)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Teachers use educational technology for classroom activities that would not be possible without technology (e.g., to conduct online simulations, manipulate 3-D models, take virtual tours)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Teachers are provided professional development that focuses on the mechanics of how to use a computer or specific software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Teachers are provided professional development that focuses on how to use educational technology during classroom instruction for specific areas of the curriculum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. Please indicate whether the following types of staff work with teachers at this school to integrate educational technology into classroom instruction. (Report a staff member in only one category.) (Check one on each line.)

Type of staff working with teachers at this school to integrate educational technology into instruction	Yes	No
a. District or school curriculum specialist whose primary focus is curriculum content	<input type="checkbox"/>	<input type="checkbox"/>
b. District or school educational technology specialist whose primary focus is educational technology	<input type="checkbox"/>	<input type="checkbox"/>
c. Classroom teachers who have received specialized training in educational technology	<input type="checkbox"/>	<input type="checkbox"/>
d. Other types of school staff (e.g., library media specialist, principal, resource teacher) (Exclude classroom teachers and curriculum and educational technology specialists reported above.)	<input type="checkbox"/>	<input type="checkbox"/>

18. Please indicate the extent to which you agree or disagree with each of the following statements about how student learning is affected by the ways that educational technology is used in the instructional program at this school. (Check one on each line.)

Effect of ways educational technology is used in this school	Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree
a. Helps students be more independent and self-directed in their learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Helps students engage in more active learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Helps students learn at their own pace	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Helps students learn collaboratively with peers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Helps students think critically	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19. Please indicate the extent to which you agree or disagree with each of the following statements about the use of educational technology in the instructional program at this school. (Check one on each line.)

Educational technology use in the instructional program at this school	Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree
a. Teachers are sufficiently trained in the mechanics of technology use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Teachers are sufficiently trained to integrate technology into classroom instruction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Teachers are interested in using technology in classroom instruction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Technical support for educational technology is adequate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Competing priorities in the classroom adversely affect the use of educational technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. Please indicate the extent to which each of the following is a challenge for teachers at this school in using educational technology for instruction. (Check one on each line.)

Type of challenge for teachers at this school in using educational technology for instruction	Not a challenge	Small challenge	Moderate challenge	Large challenge
a. Lack of time for teachers to become familiar with new technologies and integrate them into their instruction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. The steep learning curve for teachers regarding educational technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Ensuring that the use of technology is truly contributing to learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Identifying high quality educational technology resources that will address learning needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Staying up to date with the technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Outdated computers/software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Insufficient number of computers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Insufficient or inadequate software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Insufficient or inadequate Internet speed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Insufficient or inadequate support on how to use technology in the classroom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Teachers need to spend time helping students learn the basic skills needed to use computers effectively	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21. What grades are currently taught at this school? (Circle all that apply.)

PK K 1 2 3 4 5 6 7 8 9 10 11 12 Ungraded

22. How many students are currently enrolled at this school? _____

THANK YOU. PLEASE KEEP A COPY OF THIS SURVEY FOR YOUR RECORDS.