NORTH CAROLINA
State Board of Education
Department of Public Instruction

Report to the North Carolina General Assembly

Report to the NC General Assembly: Statewide Trends in Student Digital Learning Access

§ G.S. 115C-102.9(c)

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INTRODUCTION

The Statewide Trends in Digital Learning Report reflects an overview of the current digital learning landscape throughout Public School Units (PSUs), and reports on the status of home connectivity and home access to computing devices by PSU.

PSUs annually submit information data through the Student Digital Learning Dashboard and NC Digital Learning Media Inventory Surveys. In 2023, the NC Digital Learning and Media Inventory (NCDLMI) and the Student Digital Learning Survey to collect specific digital learning metrics on educators, students, and school infrastructure in accordance with § G.S. 115C-102.9(c). G. S. § 115C-102.9. Digital learning dashboard requires that the State Board of Education shall establish and maintain an electronic dashboard to publicly display information related to digital learning. Each public-school unit shall annually submit all categories of information included in the digital learning dashboard to DPI. The State Board shall include in the dashboard, at a minimum, the following categories of information to be reported:

(1) In-school digital device access, including the following information disaggregated by public school unit, school, and grade level:
    (a) Number and percentage of students with access to digital devices within the school.
    (b) Source of digital devices, such as the public school unit or the student's home.
    (c) Type of device.
(2) Out-of-school digital device access, including the following information disaggregated by public school unit, school, and grade level:
    (a) Number and percentage of students with access to digital devices outside of the school.
    (b) Source of digital devices, such as the public school unit, the student's home, or both.
    (c) Type of device.
    (d) For homes with no devices, reason for lack of devices.
(3) Out-of-school internet connectivity, including the following information disaggregated by public school unit, school, and grade level:
    (a) Number and percentage of students with internet connectivity outside of the school available by the following categories:
        a. Students with connectivity at home.
        b. Students without connectivity at home but who have regular and reliable access to other sources of connectivity.
        c. For students without home connectivity, primary source for internet connectivity outside of the school.
    (b) Type of connectivity, such as broadband, satellite, or dial-up.
    (c) For homes with no connectivity, reason for lack of connectivity.

The North Carolina Digital Learning Plan (Appendix A), updated in 2022, is the framework, which provides a roadmap for the NC Digital Learning Program. This plan provides a growth model for the Department of Public Instruction, Public School Units, and schools in educational technology. With an understanding that technology touches most aspects of the current and future workforce, this plan provides goals within 5 focus areas that are necessary for creating exceptional student learning

environments that support students in gaining the digital literacy skills needed to participate in that workforce. The 5 focus areas are Leadership and Vision, Human Capacity, Curriculum Instruction and Assessment, Technology Infrastructure and Devices, and Data Privacy/Security. To support the goals of this plan, the North Carolina Department of Public Instruction has provided a variety of resources to the Public School Units throughout North Carolina.

This report provides the most current data and programmatic information in alignment with the North Carolina Digital Learning Plan. The data for the Digital Learning Dashboard as required by session law: 115C-102.9 is collected by the PSU. The provides detailed data by PSU and grade level. There were 217,332 responses from PSUs. The data collected for this report was the implementation year and was gathered from February to June of 2023. The data is expected to have higher participation in the 24-25 school year due to gathering the data throughout the year versus a smaller spring window.

IN SCHOOL AND OUT OF SCHOOL DIGITAL DEVICES

In School Devices

Schools need to be fully equipped to offer students learning experiences that allow them to research, create, and collaborate with digital resources. Creating transformative student learning experiences enhanced by digital teaching and learning involves careful planning and an ongoing investment to ensure students can access up-to-date information, engage effectively with digital resources, participate in interactive and multimedia-rich learning experiences, and access learning materials and resources tailored to their individual learning styles and needs. Students must have access to technology devices to access information, lessons, and learning resources. School devices have helped to close the digital divide. Access to devices, both in school and at home, has leveled the playing field for NC public school students. This ensures uninterrupted continuity of learning and enables students to actively engage in research and expand their knowledge base.

Key findings from the Student Digital Dashboard survey regarding in School devices include:

- 83.6% of Public-School Units (PSUs) reported a 1:1 device-to-student ratio
- 114 out of 115 Local Education Agencies (LEAs) allow students to take home devices in one or more grade levels.
- 162 out of 215 Charters, Regional, and Lab Schools allow students to take home devices.
- 1,978,305 student devices are available in PSUs, with a significant increase of 350,000 units from 2017-18 due to ESSER funds.
- 65 LEAs and 50 charter schools offer a bring your own device program.

In 2022-23, student devices increased by 350,000 units from 2017-18. Data indicates the most prevalent devices used by students are laptops (1,648,504) and tablets (328,916). Tablets are predominately utilized in the lower grades (K-5). The increase in devices is due to an increase in funds from the Elementary and Secondary School Emergency Relief (ESSER) program. Some Schools also

maintain student-use desktops that are not for take-home usage; therefore, the number of student devices exceeds the student population statewide.

Out of School Access to Devices

Devices at home provide students with opportunities for continued educational growth beyond the classroom. The survey revealed:

- 91.5% of students have access to devices outside of school.
- 71.2% of at-home student devices are provided by student's Public School Unit (PSU)
- 3.7% of respondents indicated a lack of digital devices at homes.

Survey results indicated financial constraints were the top reason for students who lack a device at home at twenty-eight percent.

Out of School- Home Device (Figure 1)

Grade Level	K	1	2	3	4	5	6	7	8	9	10	11	12	13	Total	%
No Home Device	1211	1181	1090	979	894	838	526	542	398	177	124	93	87	0	8140	3.7%
Prefer not to answer	1487	1486	1333	1422	1389	1107	642	605	600	69	83	52	82	0	10357	4.8%
Yes/Family	4881	4649	4534	4401	4289	4206	3035	3145	2765	2323	2093	2045	1684	59	44109	20.3%
Yes/School	4731	5003	5024	5676	6383	6311	9014	9474	9776	12253	11480	9328	8371	217	103041	47.4%
Yes/School and Family	2801	3221	3299	3415	3513	3623	3991	4162	4398	5416	5504	4680	3448	214	51685	23.8%

Out of School-Device Type (Figure 2)

Grade Level	K	1	2	3	4	5	6	7	8	9	10	11	12	13	Total	%
Android/Kindle Tablet	160	127	138	87	62	53	17	8	13	2	4	2	0	0	673	6.1%
Apple Desktop	6	2	6	10	3	3	12	9	1	3	3	4	0	0	62	0.6%
Apple Laptop	19	12	18	29	18	29	21	26	24	31	29	31	13	0	300	2.7%
Chromebook	217	222	209	201	231	260	142	147	125	101	39	32	12	0	1938	17.6%
iPad	147	154	159	140	151	163	54	33	35	19	19	11	5	0	1090	9.9%
N/A	250	240	248	214	219	244	210	167	162	816	707	601	530	32	4640	42.3%
Prefer not to answer.	83	80	79	70	65	80	15	22	33	12	11	10	3	0	563	5.1%
Windows Desktop	27	34	20	38	24	49	45	31	54	42	29	23	17	0	433	3.9%
Windows Laptop	57	62	79	83	82	107	82	85	92	137	133	125	63	32	1219	11.1%
Windows Tablet	11	9	12	6	10	6	5	2	2	0	1	0	0	0	64	0.6%

Out School-Lack of a Device (Figure 3)

Grade Level	K	1	2	3	4	5	6	7	8	9	10	11	12	13	Total	%
A device is not provided by the school.	18	20	21	23	19	14	9	8	3	0	0	0	0	0	137	11.6%
A device is too expensive to purchase.	44	54	42	39	50	33	23	9	15	4	5	2	5	0	331	28.0%
Broken, damaged, or outdated device(s).	33	17	33	21	26	20	19	6	9	1	1	1	0	0	195	16.5%
Family chooses to not purchase a device.	22	21	22	15	16	13	4	5	3	3	3	2	0	0	135	11.4%
Lack of internet to use device at home.	16	15	8	5	5	9	4	1	1	4	3	1	0	0	76	6.4%
Other	21	15	12	10	6	8	5	5	6	1	2	1	3	0	104	8.8%
Prefer not to answer.	16	18	18	21	20	19	25	21	27	3	4	3	4	0	206	17.4%

OUT OF SCHOOL INTERNET CONNECTIVITY

Access to internet connectivity outside of school premises is key for students' success as it facilitates the uninterrupted continuation of learning beyond the confines of the classroom. It allows students to seamlessly transition from school-based activities to independent study at home, ensuring that educational progress remains consistent. This connectivity empowers students to access a wealth of online resources, engage in collaborative learning experiences, and pursue independent research projects. PSUs reported that:

- 89% of families report adequate access to home internet.
- 13.9% of respondents indicate intermittent connectivity.
- 2.0% express dissatisfaction with the quality of their home internet connection
- 2.0% of respondents utilize either a dedicated hotspot device or leverage the hotspot functionality of their mobile phones
- 2.0% satellite-based internet connections

Survey data reveals that 89.5% of families affirm the presence of sufficient internet access within their households. However, 13.9% of respondents indicate intermittent connectivity, while 2.0% express dissatisfaction with the quality of their home internet connection.

In terms of the specific internet connections observed, most households rely on broadband connections. 2.0% of respondents utilize either a dedicated hotspot device or leverage the hotspot functionality of their mobile phones, with an additional 2.0% relying on satellite-based internet connections. Figure 5 below provides details on the types of internet connections available at home.

Consistent Internet Access Availability (Figure 4)

Grade Level	K	1	2	3	4	5	6	7	8	9	10	11	12	13	Total	%
No	71	67	65	45	40	37	19	7	18	14	9	8	4	0	404	1.1%

Prefer not to answer.	23	44	54	37	41	30	8	6	10	656	555	475	463	32	2434	6.4%
Sometimes	128	151	128	102	104	128	64	53	73	97	54	46	21	0	1149	3.0%
Yes	2761	2973	2879	2879	2819	2714	2443	2488	2816	3044	2282	2325	1633	46	34102	89.5%

Type of internet service (Figure 5)

Grade Level	K	1	2	3	4	5	6	7	8	9	10	11	12	13	Total	%
Broadband/DSL	1172	1377	1262	1309	1265	1373	796	769	756	1572	1273	1081	890	8	14903	61.3%
Dial-Up	8	5	4	1	3	6	3	2	2	3	0	1	2	0	40	0.2%
Fiber	234	208	216	208	198	231	178	148	148	119	118	97	57	1	2161	8.9%
Hotspot device	31	30	21	29	17	26	14	18	12	14	4	9	3	0	228	0.9%
Other	109	92	89	102	84	95	75	96	106	94	108	117	64	0	1231	5.1%
Personal Hotspot from cell phone	45	42	28	25	25	23	15	17	17	9	8	3	2	0	259	1.1%
Prefer not to answer	60	69	96	94	106	109	28	20	41	1201	1212	1018	933	32	5019	20.6%
Satellite	67	56	55	48	40	52	27	19	21	40	21	17	14	0	477	2.0%

Reason for Inconsistent Connectivity (Figure 6)

Grade Level	K	1	2	3	4	5	6	7	8	9	10	11	12	13	Total	%
Broken or outdated equipment	3	1	1	0	0	0	0	0	1	1	0	0	0	0	7	0.2%
Family chooses not to have internet	6	0	2	0	1	4	2	2	1	0	0	1	0	0	19	0.5%
Internet available but not adequate	6	7	7	2	6	7	8	5	10	4	4	3	2	0	71	2.0%
Internet available but not dependable	43	51	53	53	53	73	20	19	21	67	28	13	11	0	505	13.9%
Internet available but too expensive.	35	31	24	15	25	18	10	3	14	11	4	0	1	0	191	5.2%
No alternatives provided by the school	3	1	4	1	1	0	0	1	0	0	1	0	1	0	13	0.4%
No cell signal, hotspots do not work	3	2	4	5	2	0	1	1	2	0	3	0	1	0	24	0.7%
Not available where the home is located	8	15	14	11	12	10	9	5	7	5	4	3	1	0	104	2.9%
Prefer not to answer	81	88	78	75	74	74	14	11	23	658	556	477	465	32	2706	74.3%

RECOMMENDATIONS

The following recommendations for PSUs have been developed from the survey responses and the data from the Digital Learning and Media Inventory. The recommendations will assist PSUs at maintaining current inventory and resources. They serve as actionable strategies aimed at maintaining a positive digital experience to enhance student learning.

Recommendation 1: Explore ongoing funding to sustain a four-year refresh rate for student and staff devices

Over the past three years, there has been an increase in the quantity of student devices provided by schools, signifying a positive trend in digital access. However, a pressing concern for Public School Units (PSUs) revolves around the sustainability of these devices at their current levels due to funding constraints. Specifically, 48.6% of the 323 PSUs surveyed expressed apprehension regarding the adequacy of funding to support device refresh cycles once the Elementary and Secondary School Emergency Relief (ESSER) funds have been expended.

Refreshing devices will maintain an effective educational environment. Modern technology ensures students have access to the latest information and online resources, enhancing their learning experience. Up-to-date devices can securly run contemporary software applications, providing students with a wealth of relevant and current information that supports their educational growth and exploration of new concepts.

Moreover, using modern technology in education aligns students' skills with those needed in the current workforce. Exposure to updated tools and software familiarizes students with the digital skills required for future careers, enhancing their adaptability and employability.

It is recommended to investigate ongoing funding based on an annual 25% refresh rate of the student population at each school. This will provide a four-year refresh cycle for each school. It is important to note that 28% of the responding families cited the prohibitive cost of purchasing devices for home use as a key factor necessitating continued provision of devices by the PSU. This underscores the critical role of sustained device provisioning in ensuring continuous learning opportunities beyond the home.

Recommendation 2: Increase School Technical Support

This recommendation is to ensure that with the increase is devices there is technical support to maximize device usage. The number of school technicians has remained stable while the number of technology assets has significantly increased. North Carolina schools employ 919 technicians to support 2,724 public schools across the state for a total of 2,288,677 student and staff devices. This reflects a current technician ratio in NC per device as 1 technician per 2,491 devices. While device management consoles are an effective tool in increasing technician capacity, PSUs report a need for additional staff to maintain computers and supporting technologies. The supporting technologies are a wide array of technology beyond student and staff devices, including audiovisual equipment, connectivity infrastructure, office equipment such as copiers and printers, security systems, software, telecommunication devices thereby necessitating a versatile and multifaceted skill set. The current number of technicians may decrease due to the ESSER funding no longer being available. PSUs need to have at least be able to maintain the current ratio to sustain current levels.

Recommendation 3: Increase Instructional Support

It is recommended to explore sustainable funding options for Public School Units (PSUs) for Instructional Technology Facilitators (ITF) to support technology integration. Currently, North Carolina has 1,074 ITFs serving 2,742 schools, which averages about 1 ITF for every 2.5 schools statewide. This ratio may vary among PSUs, with some not having ITFs and others assigning them to cover multiple schools. The introduction of ESSER funds has led to an increase in the number of ITFs; however, these positions may face discontinuation after the 2023-24 school year when ESSER funding concludes. PSUs are reporting a need to maintain existing ITF positions and have concerns of loss of staff with pandemic relief funding sunsetting. There is a licensure code and evaluation for Instructional Technology Facilitators (ITFs), but there is no dedicated state-level funding for these positions.

Recommendation 4: Ensure Home Connectivity for all Students and Staff

While significant strides have been made in enhancing connectivity, 4.1% of respondents still have unreliable internet connections. The top three reasons reported for inconsistent or no access to the internet:

- 13.9% available but not dependable
- 5.2% too expensive
- 2.9% not available where the home

It remains imperative for the North Carolina Department of Public Instruction (NCDPI) to sustain collaborative efforts with external partners, working towards the overarching objective of ensuring consistent and dependable connectivity for every household in the state. This ongoing commitment is paramount in bridging the digital divide and promoting equitable access to educational resources. This will be an even larger issue in the future with the Affordable Connectivity Program which had 900,000 homes participate in North Carolina, according to USAC, no longer available.

In summary, the expansion of technology in classrooms continues, with recent technologies emerging, such as artificial intelligence for education. Ensuring that students have access to necessary resources is important to maintain a high-functioning and effective classroom environment, supported by experienced personnel skilled in supporting learning and technology. Providing students with the digital skills necessary for future work demands, which increasingly incorporate recent technologies is essential to maintain a competitive NC workforce and successful educational experience Consideration of the recommendations outlined will help sustain the current levels of PSU technology and the needs reported.

Primary Resources:

- Department of Public Instruction
  - [Digital Learning Plan](#)
  - [Artificial Intelligence Guidance](#)

- 100% of LEA's opted into Home Base 2022-2023
  - Instructional Information System
  - NCEES (NORTH CAROLINA EDUCATOR EFFECTIVENESS SYSTEM) Professional Development

- Learning Management Systems
  - Canvas
  - Google Classroom
  - SeeSaw

- Student Devices Used
  - Chromebooks (72%)
  - IPADs (13%)
  - Windows Laptops (10%)