UNIVERSITY OF MISSISSIPPI

DIGITAL LEARNING
in Mississippi through
COVID-19

Trends, Innovations, & Policy Recommendations

GEER 2.7 Data Project: Final Report, September 2022

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EXECUTIVE SUMMARY

From the onset of the COVID-19 pandemic in early 2020 through the present day, Mississippi leaders have confronted evolving challenges to the state's public education system. The efforts of state leaders as well as local educators, administrators, students, and families to meet these challenges are not only inspirational, but they offer important lessons for the future of digital learning and academic acceleration post-pandemic. These are the efforts that this research project set out to examine.

This study includes qualitative research in three Mississippi school districts to explore the impact of the pandemic on student learning in Spring 2020 and in the 2020-2021 school year as well as a follow-up in 2021-2022 school year. Also included is examination of available quantitative data from 2018-2019 through 2021-2022 for Mississippi public PK-12 schools. Both the qualitative and quantitative research portions were reviewed by an expert peer panel of Mississippi leaders. This study also includes information regarding the Mississippi Connects Digital Learning Coaching Program. This final report offers policy recommendations to inform future education delivery policies and programs and related supports for students, families, and educators.

Key findings across the study are as follows:

Mississippi Transformed its Education Technology Infrastructure

- State leaders collaborated to prioritize access to technology tools and resources for all families through the Mississippi Connects initiative,[i] resulting in the purchase of nearly 400,000 devices by 148 out of 150 Mississippi districts by December 2020, and 144 districts leveraging broadband support.[ii] Before the pandemic, only 23 out of the state's public school districts had a 1:1 technology initiative.[iii]
- Other elements of Mississippi Connects include digital curriculum and learning management systems; professional development; telehealth and teletherapy;[iv] a Digital Learning Coaches program, a Digital Teacher Academy,[v] and a Digital Learning Instructional Guide with detailed guidance, tools, and resources.[vi]

Mississippi Developed and Adapted State Virtual Learning Policies

- The Mississippi Department of Education (MDE) developed and adapted virtual learning policies throughout the pandemic. As districts planned for the 2020-2021 school year, the State Board of Education provided three options for delivery of instruction: in-person, virtual, or a hybrid of both.[vii]
- In Spring/Summer 2021, the state provided a draft virtual learning policy, collected public comments, and published the policy in mid-July.[viii] For the start of the 2021-2022 school year, the state initially required districts to operate fully in person or to also offer a fully virtual option following specified criteria with local board approval. However, pandemic spikes during that school year resulted in state flexibility allowing districts to offer virtual or hybrid instruction[ix] for set windows of time.[x]

- For the start of the 2022-2023 school year, MDE directed that the State Board of Education policies that directed in-person instruction as the primary model remain in effect. MDE provided links with details about the virtual learning policies and related information on its website.[xi]

Mississippi School Districts Adjusted to Changing Conditions

An examination of efforts in three case study districts – Gulfport, Leland, and Marshall County – in 2020-2021 showed the following themes:

- The greatest overall areas of challenge included: Attendance; Instruction; Academic Policies; Student Well-being; and Virtual and Family Engagement.
  - Stakeholders consistently described learning loss and social and emotional challenges for students despite improvements to delivery of instruction. They were consistently concerned about the need to sustain technology and connectivity supports for families and many were also concerned about screen time for students and teachers.
- Innovative practices were found in the following general areas: Staffing; Training; Assignments; Scheduling; Devices; and Family Engagement.
  - Districts with stronger technology systems and supports in place already were better prepared at the onset of the pandemic but still faced issues.
  - Stakeholders reported a variety of perspectives about resources and policies, most commonly pointing to online platforms or learning management systems (LMS) as well as improved training being the most helpful. They all noted improvements by the end of the 2020-2021 school year, with several cases of teachers becoming more adept and receiving more support.
  - Districts noted significant improvements to reduce the digital divide; while more support will be needed to sustain these improvements, much progress has been made. These results suggest technology in education is here to stay.

Statewide Data Points to Promising Trends About Academic Recovery

- Instructional Delivery:
  - It appears that nearly half of districts reopened for the 2020-2021 school year using an instructional delivery model different than what they originally planned for in July. By the middle of the school year, it appears that the same number of districts were operating in person, with a virtual option available to students.
  - A lack of reliable data about instructional delivery limits the capacity of this full quantitative study to examine specific correlations between learning modes and outcomes across student populations.

- **Enrollment and Attendance:**
  - The state reported an overall enrollment decline since 2018-2019.
  - The greatest relative enrollment decline by student subgroup was for Alaska/Native American students (who make up a small percentage of the total statewide student population) and White students.
  - There was an increase in enrollment for Hispanic/Latino and Two or More Races.
  - Enrollment changes between the 2020-2021 and 2021-2022 school years were much smaller than the drops experienced between 2018-2019 and 2020-2021, indicating a leveling off as the effects of the pandemic started to lessen.
  - Significantly more students missed 50 or more days of school in 2021-2022 compared to 2018-2019 and over 50,000 more students statewide missed between 18-50 days of school in 2021-2022 compared to 2018-2019; these figures are likely impacted significantly by quarantines related to the ongoing spread of COVID-19 and require further study.

- **Devices and Broadband:**
  - Generally, districts with the largest enrollment had the greatest number of devices purchased and expenditures for broadband, with some notable exceptions.
  - Of the top 10 districts in terms of expenditures for devices through Mississippi Connects, four already had a 1:1 device initiative prior to the pandemic.
  - Larger concentrations of districts with larger device expenditures were found in the Delta and Southwest regions, while concentrations of districts with smaller device expenditures were found in the North and East regions.
  - According to the BrightBytes Technology and Learning Survey in Spring 2022, 9-10% of parents, teachers, and students do not have access to broadband internet.

- **Student Achievement:**
  - Average kindergarten readiness scores in Fall 2021 and Spring 2022 (end of school year) were lower than in 2018-2019, but the overall percent of growth over time (percent change) was similar to the 2018-2019 school year. This growth trend holds promise for future years.
  - Over the last decade, Mississippi has made historic gains in student achievement, especially in NAEP reading scores. While the pandemic caused many Mississippi school districts to see declines in student achievement (following national trends), Spring 2022 assessment results demonstrated a significant rebound in student achievement.
  - Districts with the steepest declines in 2020-2021 tended to be districts with a high proportion of low-income students (using percent Title I as a proxy for income), and the opposite was generally true for districts with the least declines.
  - Higher performing districts in 2020-2021 typically had more explicit resources, communications, and programming details in their reopening plans for that school year.
  - More districts with the steepest declines in ELA and math 2020-2021 were located in the North and Delta regions, which differed from the most common region of the districts with the smallest declines – the Gulf Coast.
  - When full district and subgroup level data is available for the 2021-2022 school year, it will be important to examine outliers from the state average to identify needed supports for students and schools.

- **Student Participation and Graduation Rates:**
  - Mississippi bucked the national trend of much lower participation in state assessments in 2021, boasting an overall participation rate in line with previous years.
  - Districts that saw large declines in MAAP participation generally saw greater declines in math participation than in ELA in 2021.
  - Many of the same districts that saw the largest declines in MAAP participation also saw the largest declines in MAAP proficiency statewide in 2021.
  - Nine of the 10 districts with the largest declines in both ELA and math participation from 2018-2019 through 2020-2021 were in the Delta region. Of the 10 with the smallest decline in ELA participation, five were in the North. For the smallest decline in math participation, four were in the Gulf Coast and four in the North.
  - As of September 30, 2022, MAAP assessment participation data from 2021-2022 school year were unavailable for public release.
  - Overall, the state of Mississippi improved from a graduation rate of 84% in 2018-2019 to 88.4% in 2021-2022.
  - From 2018-2019 to 2020-2021, Alaskan Native or Native American students and Asian students were the only groups to decline in graduation rates, but both showed positive gains in 2021-2022.
  - Black or African American students showed the greatest graduation rate gains from 2018-2019 to 2021-2022, outpacing the state average along with Hispanic or Latino students.
  - An important area for further exploration can be found in student groups or districts that saw significant declines in student academic performance through the pandemic, yet had an increase in graduation rates.

*Recommendations for How State Leaders Can
Help to Shape the Future of Digital Learning*

This research project indicates the following themes that policymakers should consider when examining options for digital learning and education recovery post-pandemic:

- A need to focus on students most impacted according to available evidence;
- The need and potential for cross-sector collaboration;
- The importance of effective communication and dissemination of information;
- The critical role of high-quality curriculum and training;
- Identification of ongoing funding to support education technology and other innovations; and
- Support for continued and coordinated data collection and research.

The recommendations below draw on these themes:

- **Create a State Advisory Task Force and Regional Acceleration Hubs.**
  - Convene a State Advisory Task Force to Advance Education including students, families, educators, and local and state leaders, drawing from existing cohorts (MDE Advisory Councils, Digital Learning Coaches, Technical Advisory Committee) to:
    - Examine all relevant data on pandemic recovery efforts and identify implications for state and district actions.
    - Lead efforts to explore sustainability of funding for evidence-based best practices.
  - Create Regional Acceleration Hubs for collaboration across organizations by geographical locations to:
    - Promote coordination of resources from existing community organizations, government, philanthropy, advocacy, business, and other groups and extend the reach of services.
    - Empower representatives of these organizations to help match local needs with regional offerings. Existing Mississippi Regional Education Service Agencies (RESA) could be leveraged and/or expanded to support these efforts. One leader from each Hub could participate in the Advisory Task Force.

- **Promote High-Quality Digital Learning.**
  - Support equitable digital learning programming and access statewide:
    - Continue to support all districts in their efforts to leverage elements of digital learning that are proving successful in accelerating student learning and preparing students for college and career by:
      - Widely communicating efforts such as the Digital Learning Coaches program[xii] and Digital Learning Instruction Guide[xiii].
      - Hosting and sharing a list of approved district-run virtual learning programs.

- Requiring all districts to maintain an up-to-date emergency response plan for virtual learning with clear communications mechanisms.
  - Continue to review and approve district-run virtual options on a yearly basis:
    - Study and adapt specified conditions in the state virtual learning policy.
    - Explore ways to expand student access to virtual learning options for students in districts without an approved program.
    - Depending on the results of the efforts above over the next few years, the Task Force could consider plans to initiate development of a full-time state-run virtual learning option.
  - Continue and consider expanding "a la carte" access to virtual and digital programming for courses students can't access otherwise through their school district.
  - Avoid having teachers simultaneously instruct both in-person students (i.e., in a classroom) and students participating remotely in a virtual program.
  - Highlight high-quality digital instructional materials and practices for a virtual environment; expand and promote aligned professional learning opportunities; and prioritize adapting social and emotional learning curriculum to virtual environments.
  - Incorporate some in-person assessments into any fully virtual instructional model.

- **Drive Learning Acceleration.**
  - Focus on the academic advancement of all students through supports that meet individual needs through:
    - Vetted tutoring and credit recovery programs with subsidized costs for low-income families;
    - The state's successful coaching programs;
    - Guidance and/or resources to before- and after-school child care providers and other community support organizations;
    - Appropriate technology, connectivity, and training supports for these programs through Mississippi Connects; and
    - Data collection efforts to understand which groups of students are most in need of support.
  - Utilize Regional Acceleration Hubs to coordinate and distribute information about these offerings.

- **Continue to Support Technology Infrastructure and Training.**
  - Support district procurement, implementation, and effective use of LMS and education technology tools.
  - Expand upon successes and further the reach of effective education technology efforts statewide. This includes:

- Continued training on the use of technology accessibility tools;
- Conducting a program evaluation study on the impact of digital learning resources and supports;
- Expanding a consistent statewide data system for tracking the use of devices and reliability of internet connectivity in districts and homes;
- Adding a navigator component to family engagement efforts; and
- Developing a statewide plan to ensure device replacement for technology purchased during the pandemic.

  › Create an intergovernmental working group of leaders from relevant state agencies (the new Broadband Expansion and Accessibility of Mississippi (BEAM) office, MDE, Mississippi Department of Information Technology Services, Mississippi Public Service Commission) focused on internet access to share data, resources, and strategies with families. Coordinate information-sharing through Regional Acceleration Hubs.

- **Conduct Ongoing Research to Drive Informed Strategies.**
  › Continue to document and analyze the impact of the pandemic on student learning and identify evidence-based interventions.

  › Create a longitudinal study of PK-12 student cohorts comparing annual progress through at least 2026. Identify consistent reporting methods and infrastructure to ensure comparable data across districts.

  › Study the effectiveness of state-approved virtual instruction programs, including conditions for success, enrollment and participation (including chronic absenteeism) by student population, and student outcomes.

  › Measure student usage of digital applications and their impact on student success through BrightBytes EdTech Impact and expand this analysis statewide.

  › Continue to evaluate parent, teacher, and student use of technology through evaluation tools such as BrightBytes Technology and Learning Survey.

  › Include qualitative research to examine specific districts and their instructional approaches over time to dig more deeply into emerging data trends.

  › Make as much data publicly available as possible so that independent entities can do their own analyses and use the information to make strategic decisions.

  › Tap the recommended State Advisory Task Force to Advance Education to collectively examine the data and its implications for state and district actions and to inform any needs for updating data collection.

MISSISSIPPI PANDEMIC RESPONSE FOR EDUCATION TECHNOLOGY

The onset of COVID-19 resulted in the closure of Mississippi schools from March 14, 2020 through the end of the 2019-2020 school year. During that time period, MDE provided guidance and resources to districts to support virtual learning, and state and federal leaders waived regular education including attendance, promotion, and assessment/accountability requirements.

In addition to this flexibility, in Spring 2020 MDE created and shared a digital learning guide, surveyed local districts to understand technology gaps, and used the findings to inform a plan to close those gaps. Recognizing the significant needs across the state to expand access to the internet and to learning devices and systems, state leaders prioritized closing the digital divide in short order. This priority became the Mississippi Connects initiative, which was supported by two laws passed on July 9, 2020.[xiv]

The Equity in Distance Learning Act (Senate Bill 3044) provided $150M for education technology including devices, learning management systems, and more to schools based on average daily attendance in the 2019-2020 school year.[xv] The Mississippi Pandemic Response Broadband Availability Act (House Bill 1788) dedicated $50M for districts and schools to expand broadband services; this funding was distributed by MDE based on federal broadband data.[xvi]

State leaders collaborated to implement this legislation quickly and provided guidance and support to districts in identifying and procuring technology and broadband needs. The effort resulted in the purchase of nearly 400,000 devices by 148 out of 150 Mississippi districts by December 2020, and 144 districts leveraging broadband support.[xvii] This was a transformational effort; before the pandemic, only 23 out of the state's public school districts had a 1:1 technology initiative.[xviii] Other elements of Mississippi Connects include digital curriculum and learning management systems; professional development; and telehealth and teletherapy.[xix] In 2021-2022, the state implemented the Digital Learning Coaches program and a Digital Teacher Academy to continue supporting district use of technology.[xx] State leaders highlighted Mississippi Connects as a founda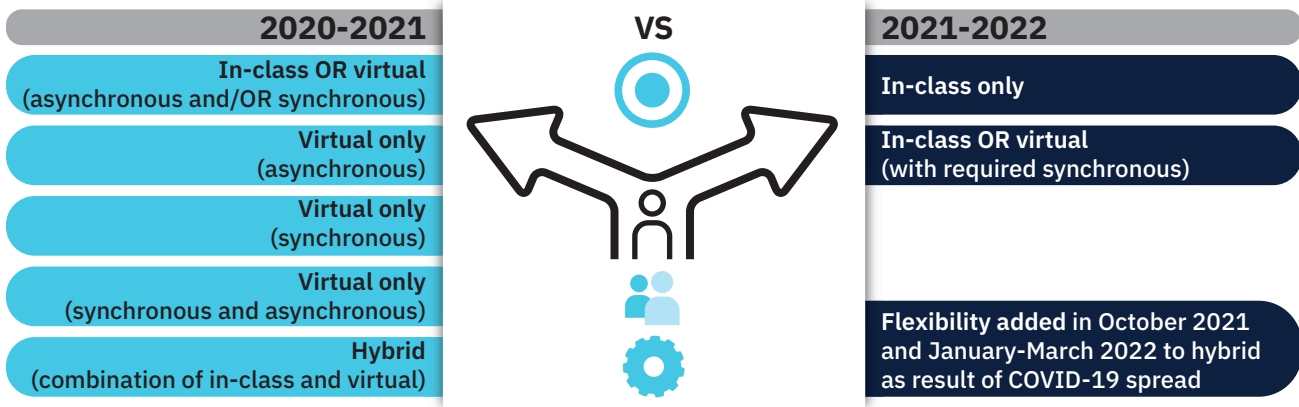tional element of the state's education pandemic response in the Mississippi State Plan for the American Rescue Plan (ARP) Elementary and Secondary School Emergency Relief (ESSER) Fund.[xxi] In 2022, the state also published a Digital Learning Instructional Guide with detailed guidance, tools, and resources to inform digital learning practices in Mississippi.[xxii]

MDE also made efforts to develop and adapt virtual learning policies throughout the pandemic. As districts planned for the 2020-2021 school year, the State Board of Education provided three options for delivery of instruction: in-person, virtual, or a hybrid of both (in a hybrid model, districts could offer students either a fully virtual or fully in-person option or could provide individual students with a combination of attending in person on certain days and learning virtually on other days).[xxiii] MDE made efforts to collect district-level data on instructional delivery methods throughout the school year, but at the time of this report such data are considered unreliable.

In Spring/Summer 2021, the state provided a draft virtual learning policy, collected public comments, and published the policy in mid-July.[xxiv] For the start of the 2021-2022 school year, the state initially required districts to operate fully in person or to also offer a fully virtual option following state-specified criteria with local board approval. However, the rapid spread of COVID-19 across Mississippi at the start of the 2021-2022 school year resulted in the state's decision to temporarily waive the new policy and allow districts to offer virtual or hybrid instruction through October 31, 2021, as students and educators were forced to quarantine.[xxv] A similar window for hybrid flexibility was offered from January 20 through March 11, 2022.[xxvi] The final guidance for the 2021-2022 school year was posted on the MDE website, along with District Operation Plans for that year as submitted to the Department by May 28, 2021.[xxvii]

For the start of the 2022-2023 school year, MDE directed that the State Board of Education policies that directed in-person instruction as the primary model for 2021-2022 remain in effect. MDE provided links with details about the virtual learning policies and related information on its website.[xxviii]

INSTRUCTIONAL MODALITIES

2020-2021	VS	2021-2022
In-class OR virtual (asynchronous and/OR synchronous)		In-class only
Virtual only (asynchronous)		In-class OR virtual (with required synchronous)
Virtual only (synchronous)		
Virtual only (synchronous and asynchronous)		
Hybrid (combination of in-class and virtual)		Flexibility added in October 2021 and January-March 2022 to hybrid as result of COVID-19 spread

PROJECT OVERVIEW & METHODOLOGY

The University of Mississippi (UM) received a grant from the Governor's Emergency Education Relief (GEER)[xxix] fund to study the correlation between virtual, hybrid, and in-person instruction during the COVID-19 pandemic and initial and longer-term student engagement and academic outcomes in Mississippi. This included an examination of quantitative data from the 2018-2019 school year through the 2021-2022 school year, as well as qualitative research in three Mississippi school districts to explore the impact of the pandemic on student learning in Spring 2020 and in the 2020-2021 school year. An interim report was completed in April 2022, focusing on the qualitative findings and available quantitative data through the 2020-2021 school year. Additional data are included in this final report regarding the Mississippi Connects Digital Learning Coaches initiative as well as follow-up with district leaders at two of the case study district sites. The goal of this project is to identify what Mississippi leaders can learn from this experience to inform future education delivery policies and programs and related supports for students, families, and educators.

This final report covers:

- The qualitative study of virtual and digital learning in three case study districts in 2020-2021, including follow-up activities in 2021-2022;
- Analysis of publicly available quantitative data on student outcomes from the 2018-2019 school year through the 2021-2022 school year;
- Information about the Mississippi Connects Digital Learning Coaches and initial teacher cohorts served by the coaches
- An overview of the BrightBytes Technology and Learning Survey data from parents, educators, and students from Spring 2021, Fall 2021, and Spring 2022; and
- Relevant policy recommendations for the future of digital learning and academic acceleration post-pandemic. Each of these elements has been informed by the work of an expert peer panel of Mississippi leaders who have examined the project research and provided particular contextual perspectives to improve the policy recommendations.

Project Staff and Partners

UM partnered with HCM Strategists to support the 2021 qualitative research study, expert peer review, and analysis of available quantitative data to inform resulting policy recommendations. UM completed follow-up interviews in 2022 with case study districts, conducted an analysis of Digital Learning Coaches' work through focus groups with digital learning coaches and a survey of teachers who participated in the cohorts, and compared the BrightBytes Technology and Learning Survey data over the periods of Spring 2021, Fall 2021, and Spring 2022.

The UM project staff included:
Dr. David Rock, *Dean, School of Education*
Dr. Sara Platt, *Assistant Professor of Special Education/ Assistant Director of Assessment*
Elizabeth Sweeney, *Doctoral Research Assistant*
Hailey Hamil, *Undergraduate Student Worker*
Savannah Armistead, *Undergraduate Student Worker*

The lead HCM project staff included:
Jocelyn Pickford, *Senior Affiliate*
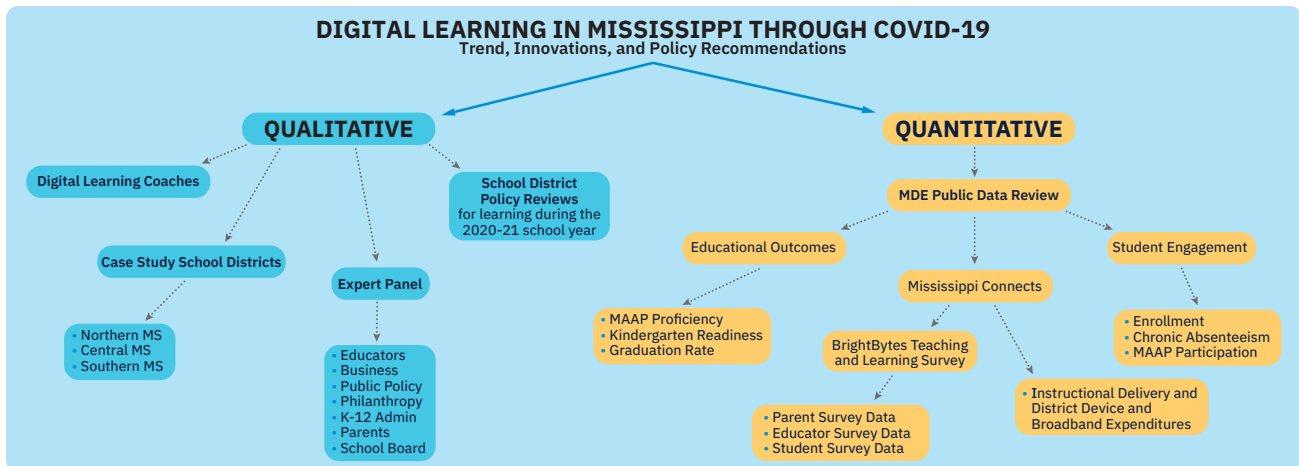Duncan Robb, *Director & Associate Principal of Innovation and Policy, K12*

Qualitative Study Methodology

Case Study District Identification

- HCM created matrices identifying key distinguishing characteristics of 17 potential case study districts across the state to help identify a set of three with diverse representation of geography, student demographics, virtual learning information, and state accountability grades. The team consulted with state leaders for additional input in narrowing the list and began outreach to potential participants to determine which would be willing to participate in the study. This resulted in the identification of Gulfport, Leland, and Marshall County as case study districts.

Feedback and Interview Protocols

- HCM created moderator guides for case study district feedback session participants, including district administrators, educators, families, and students,

DIGITAL LEARNING IN MISSISSIPPI THROUGH COVID-19
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QUALITATIVE
- Digital Learning Coaches
- Case Study School Districts
  - Northern MS
  - Central MS
  - Southern MS
- School District Policy Reviews for learning during the 2020-21 school year
- Expert Panel
  - Educators
  - Business
  - Public Policy
  - Philanthropy
  - K-12 Admin
  - Parents
  - School Board

QUANTITATIVE
- MDE Public Data Review
- Educational Outcomes
  - MAAP Proficiency
  - Kindergarten Readiness
  - Graduation Rate
- Mississippi Connects
  - BrightBytes Teaching and Learning Survey
    - Parent Survey Data
    - Educator Survey Data
    - Student Survey Data
  - Instructional Delivery and District Device and Broadband Expenditures
- Student Engagement
  - Enrollment
  - Chronic Absenteeism
  - MAAP Participation

as well as an interview protocol for state leader feedback sessions. HCM consulted with Adam Burns of Edge Research for input in refining these guides. Modifications were made to the guides in Summer 2021 given the need to accommodate case study district availability by scheduling sessions close to the start of the 2021-2022 school year.

- UM researchers completed the IRB approval process regarding follow-up interviews with case study district leaders in the 2021-2022 school year.

Feedback Sessions and In-depth Interviews

- HCM conducted 11 virtual feedback sessions with district leaders, educators (including school leaders and teachers), parents/families, and students between late May and August 2021. Participants were recommended by district leaders and offered insights from their vantage points on virtual learning in their schools and districts.
- HCM conducted additional individual in-depth interviews or small group feedback sessions with a set of state leaders to probe initial goals for Mississippi Connects and virtual learning in 2021.
- UM researchers completed follow-up interviews with two out of three case study schools in 2022. The third case study district was unavailable.

Evidence Collection

- HCM gathered publicly available information on case study districts, including their remote/hybrid learning plans and related resources and materials, 2020 summer and return to school plans, key district information and points of contact, and any relevant news coverage of district activities. HCM also collected information provided by MDE to guide and support district virtual learning plans.
- HCM organized materials into electronic folders, compiled themes from district feedback sessions and state leader interviews into companion documents, and included district profiles.
- UM researchers collected publicly available materials regarding technology in the case study districts in the 2021-2022 school year.

Expert Peer Panel Review

Interim Peer Review

- HCM drafted a list of potential stakeholder experts to represent the following: teacher, parent, superintendent, school board member, policy leader, education advocacy, business, and philanthropy. The project team solicited input from state leaders on the list and potential experts to fill panelist roles. This resulted in the initial identification of seven experts; one of these experts was trained for the panel but had to withdraw before completing the role. In late summer/early fall of 2021, six panelists participated in peer review activities to inform the interim policy recommendations.
- HCM created a review tool for peers to use in examining evidence collected and identifying innovations, best practices, and challenges in virtual learning plans and implementation. Importantly, the project team noted

that the goal of this process was to identify both challenges and successes and not to cast negative judgment on specific school districts operating in a pandemic.

- After participating in a training session, peers had roughly two weeks to complete and submit independent reviews of materials via Google Forms. The project team examined these reviews to identify trends, themes, and questions for further discussion.
- HCM conducted a virtual meeting using the discussion guide to identify areas of consensus across the peers and inform updates to the study results.

Final Peer Review

- HCM created a revised review tool for the peers to use when submitting feedback. The tool asked peers to provide feedback on overall themes, recommendations, and methods for dissemination.
- Prior to opening the final review window, HCM facilitated a meeting with four new peers to provide an orientation to the project and the review process. All peers then had two weeks to review the entire report and provide feedback.
- Once the review window was closed, HCM analyzed the raw feedback and created a summary of key takeaways. HCM then created a discussion guide with questions for additional peer input to help us incorporate specific pieces of feedback.
- The project team conducted a virtual call with all peers together and used the discussion guide to facilitate the conversation. Both written feedback and highlights from the facilitated discussion are incorporated into this final report.

Digital Learning Coaches Focus Groups

- The UM project team obtained approval from the UM Institutional Review Board (IRB) to conduct focus groups or individual interviews with digital learning coaches.
- UM collaborated with the MDE Digital Learning Coaches Director to recruit coaches to participate in focus group interviews.
- Fourteen Digital Learning Coaches participated in focus group interviews.
- Interviews provided information regarding the first-year implementation process, lessons learned, as well as successes and challenges.

Survey of Teachers Served by Digital Learning Coaches (DLC)

- UM collaborated with the MDE Digital Learning Coaches Director to recruit teachers who participated in the DLC program in year 1 (2021-2022) and teachers who would participate in year 2 (2022-2023).
- A total of 63 teachers (43 from the 2021-2022 school year; 20 from 2022-2023 school year) completed the Digital Age Teaching Scale (DATS)[xxx] survey.
- DATS survey items are based on the International Society for Technology in Education (ISTE) Educator Standards.

Quantitative Study Methodology

HCM advised UM on desired disaggregated data elements to collect from MDE. UM worked directly with MDE to gather publicly available data and create a consolidated spreadsheet of data from 2018-2019, 2019-2020, 2020-2021, and 2021-2022 for this report. Data include:

- Outcomes: MAAP proficiency, kindergarten readiness, graduation rate
- Engagement: Enrollment, chronic absenteeism, MAAP participation
- Mississippi Connects: Instructional delivery and district device and broadband expenditures
  - ‣ Important caveat: MDE cautions instructional delivery data is not reliable. The state is in the process of verifying valid data for future analyses. This has limited much of the original intended analysis for this project.

Note: Data were disaggregated where available by state categories of gender, race/ethnicity, socioeconomic status, students with disabilities, English learners.

Using the spreadsheet created by UM, HCM examined the data to look for trends and potential areas for further exploration. HCM also examined the publicly available District Learning-at-Home and Summer Enrichment Plans (2020) and MDE District Restart and Recovery Plan Summaries (2020-2021).

The team also discussed with MDE the possibility of gathering any additional data around Mississippi Connects devices, LMS, and broadband allocation and usage – including BrightBytes Technology and Learning Survey data, and district waiver requests. While most of these data were not publicly available, the BrightBytes Technology and Learning Survey data were obtained through a public records request. UM researchers requested the Brightbytes Technology and Learning Survey results from Spring 2021, Fall 2021, and Spring 2022. Parents, educators, and students (elementary and secondary) across the state of Mississippi completed this survey. Researchers analyzed the survey data for trends regarding device and broadband usage in home and school, teachers' use of technology for instruction, and students' use of technology in the classroom.

Policy Recommendations Methodology

Based on all available evidence gathered for the study, the project team drafted interim policy recommendations for peer review in late Summer 2021. Following the expert peer review and group discussion session and initial quantitative data analysis, interim recommendations were updated and finalized for the 2021 interim report. In Summer 2022, four additional educator panelists joined the expert panel to participate in final review activities (all peers are listed in Appendix A). The group of 10 expert peers reviewed the full interim report, reflected on more recent experiences, and provided additional insight into the recommendations. The final set is found in the Policy Recommendations section.

GUIDING QUESTIONS

The overarching questions guiding this complete study are as follows:

- What is the correlation between virtual, hybrid, and in-person instruction and initial and longer-term student engagement and academic outcomes in Mississippi?

- What can Mississippi leaders learn from this experience to inform future education delivery policies and programs and related supports for students, families, and educators?

QUALITATIVE FINDINGS FROM 2020-2021

Case Study Districts

Following the district selection process described in the Methodology section above in Spring 2021, the team identified three case study districts as depicted in the map to the right: Gulfport, Leland, and Marshall County school districts.

These districts offer diversity of geography and demography, as shown in the chart below.[xxxi]
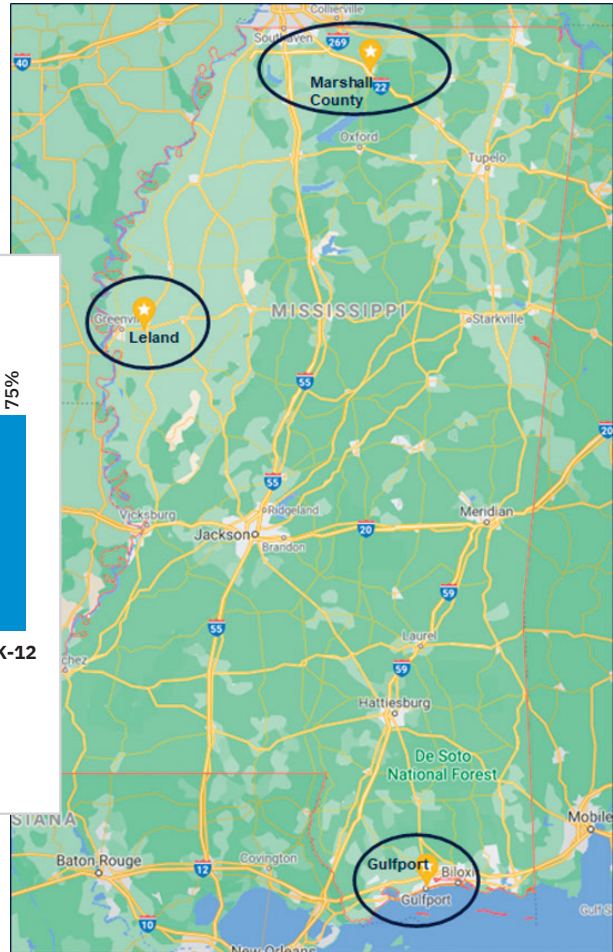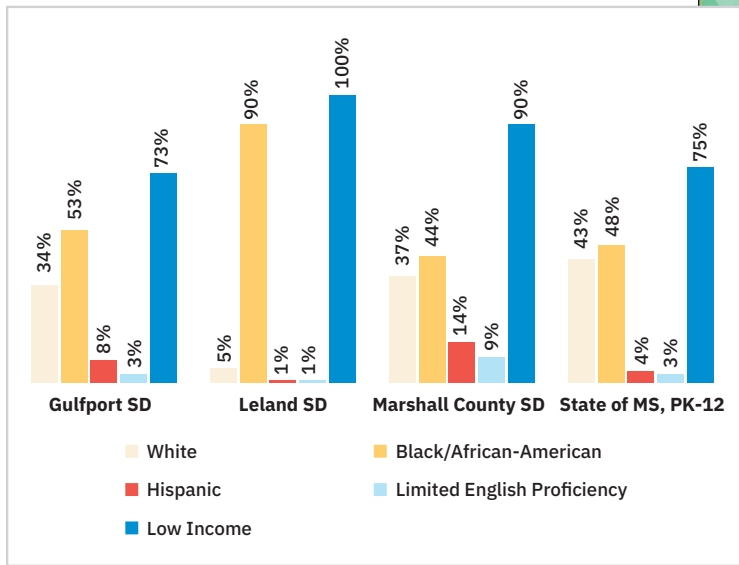
The districts also vary across student population, 2020-2021 instructional model and estimated students in each model, and 2019 accountability grade and per pupil expenditure (PPE), as shown below.[xxxii]

District	# of Students (2021)	20-21 Instructional Models	Estimated %/Model December 2020	2019 Accountability Grade	PPE (2019)
Gulfport	6,367	Full-time in-person with parent-requested virtual option	75% in-person/25% virtual	A	$8,844.07
Leland	763	Virtual only	N/A	D	$13,698.14
Marshall County	2,740	Hybrid in-person with parent-requested virtual option	70% hybrid/30% virtual	C	$8,842.56
					STATE: $9,189.61

As described in the [Methodology](#) section, feedback sessions were conducted across stakeholder groups in Gulfport, Leland, and Marshall County school districts in Spring and Summer 2021. Participants were recommended by district leaders and offered insights from their vantage points on virtual learning in their schools and districts. Overall, these key takeaways from the district feedback sessions were noted in the following areas:

Virtual Instruction
- Districts with stronger technology systems and supports in place already were better prepared but still faced issues.
- Stakeholders all noted improvements by the end of the 2020-2021 school year, with several cases of teachers becoming more adept and receiving more support.
- Stakeholders consistently described learning loss and social and emotional challenges for students despite improvements to delivery of instruction.

Resources and Policy
- Stakeholders reported a variety of perspectives about resources and policies, most commonly pointing to online platforms or learning management systems (LMS) as well as improved training being the most helpful.

Mississippi Connects and Technology
- Districts noted significant improvements to reduce the digital divide; while more support will be needed to sustain these improvements, much progress has been made. These results suggest technology in education is here to stay.
- Stakeholders are consistently concerned about the need to sustain technology and connectivity supports for families and many are also concerned about screen time for students and teachers.

Following the district evidence collection and feedback sessions, the expert peer review process was used to further examine the findings and elevate examples and strategies that could benefit others statewide. The peers often highlighted specific documents or referenced best practices in their review of district materials. Samples of this are included below. Full responses from expert peer reviewers, along with summary and analysis of these responses for each district, has been provided to the UM project team but is not intended for public reporting to maintain anonymity in peer feedback.

Sample Peer Highlights
Gulfport
- "An investment was clearly made into creating a comprehensive virtual learning program, as evidenced by its Virtual Learning website[xxxiii] that includes technology resources and curricula as well as a basic explanation of what virtual learning entails."
- "The school district clearly defined their plan to return to in-person learning. The plan appeared to be well planned and clearly presented to parents and students. The district utilized the Gulfport Summer

Academy to 'continue the process of accelerating students that may have fallen behind.'"
- "The district had a clear, well-implemented plan in place and the virtual learning program was comprehensive."
- "Gulfport deserves credit for taking a proactive approach to the logistics of returning to in-person instruction, as its District Restart and Recovery Plan Guidance and Summary includes clear protocols for reduced capacity transportation, social distancing, and other COVID-19 mitigation strategies."
- "Using weekly newsletters as well as embracing social media posts, physical letters, one-way calling services, and print media ensure that all stakeholders are notified, as opposed to word of mouth or isolated teacher postings."

Leland
- "It was clear that there was a comprehensive plan created with a lot of attention to details. Participants noted that the plan was thorough and included additional supports such as virtual connection opportunities for families."
- "I was very impressed that clearly thought was given to student mental health, having mentioned 'universal screeners' in their Return to Learn plan and the use of community wraparound services in their Summer 2020 plan."
- "The positive aspect of LSD's technology plan is its transparency to student connectivity, making it clear that students could access school WiFi from the parking lots of the buildings and that MiFi would be strategically placed on school buses throughout the district for more equitable access. The district also released lists of educational resources available online to assist EL learners as well as another list in Appendix B of their Distance Learning Plan."
- "And their Summer Distance Learning Plan even contemplated how to work with families with 'No Access Options' and a transition plan."
- "LSD utilized Twitter to share information and surveys with stakeholders, as well as Facebook and the district website.[xxxiv] A complete COVID-19 Parent Handbook was also created to streamline information for non-educators, complete with hyperlinks for additional information."
- "Simple gestures like Zoom Coffee Fellowship and Coffee & Conversation add a less abrasive touch to a rather trying time."
- "Leland's COVID-19 Communication Plan touts the importance of 'maintaining a two-way conversation with stakeholders,' a goal which Leland sought to achieve by utilizing a community survey and soliciting community feedback. In the Distance Learning Plan, Leland also makes clear that teachers and counselors are expected to be 'available to students and families during work hours,' and that teachers are encouraged to 'communicate frequently with parents in a language they understand.'"
- "It is a good sign that the first goal of Leland's Instructional Plan for virtual instruction was a

'comprehensive data collection system [that] will effectively monitor individual student and program progress.'"

Marshall County

- "Marshall resumed in-person instruction with a hybrid schedule for the 2020-2021 school year. The Reopening Plan clearly describes this approach, which includes one day a week dedicated to 'remediation/enrichment' and 'providing equitable services based on IEPs, 504s' – a good sign for prioritizing addressing learning loss."
- "Teachers make contact daily with virtual students. This year correspondence will include the district website,[xxxv] Remind, SchoolStatus, social media, mass call systems, email, phone calls, etc."

An evaluation of all of the qualitative findings was used to identify key challenges and barriers as well as innovative practices with virtual learning from the onset of the pandemic through the 2020-2021 school year. These are described below.

Key Challenges and Barriers

The main challenges reflected in this study are around the following categories:

- Attendance;
- Instruction;
- Academic policies;
- Student well-being; and
- Virtual and family engagement.

In terms of attendance, districts had to grapple with managing absences when a student needed to quarantine after being exposed to COVID-19. There was also a similar issue for teachers needing to quarantine, coupled with the issue of a lack of substitute teachers. For instruction, teachers found it difficult to manage both virtual and in-person lessons, as the delivery of instruction and managing student needs varied greatly depending on the method of instruction. State leaders also noted in interviews challenges with some districts using less common or unsupported LMSs, despite available state support and funding for recommended systems. District feedback session participants and peer reviewers pointed to the importance of strong LMSs for virtual learning.

As for the academic policies, some felt as though the virtual learning option had less rigorous grading and promotion standards than the in-person learning option, with one reviewer even stating, "The virtual option was less rigorous and may have contributed to more learning loss." Further, it was not clear to expert peers that decision-making was data-informed. Aside from logging attendance and absentee data, there was no evidence of other data collection and how that might inform district-level decision making. One peer reviewer stated, "It is clear that attendance was well tracked. It is unclear what data are collected outside of attendance tracking, and how that data is going to be used."

Another challenge for districts was around the unique needs of different students. Some felt the needs of middle schoolers were not adequately addressed. These students are old enough to perhaps not require adult supervision but not as mature as high schoolers in some cases. Other students began to feel screen fatigue when receiving virtual instruction, or struggled with the lack of direct interaction with their friends and peers. One student said, "I had no social interactions during virtual [instruction] except in sports. I felt left out sometimes." Teachers also struggled in the virtual environment, often finding it difficult to monitor their students' chats, microphones, and videos.

Disruptions or issues with connectivity often went unreported. This makes it difficult to quantify just how often teachers and students struggled with virtual engagement. One state leader noted, "Connectivity is still the gorilla in the room. There are still students with older devices."

Families also faced challenges with their child's virtual environment. There were issues of equity across households, where there was uneven support for students depending on the situation at home. There were also concerns around the responsibility for district-issued devices, with some families reluctant to take or use a device if costs for damage could be incurred. A state leader explained, "Socioeconomic status (SES) made a huge difference in success. Lower SES tends to translate to less understanding of technology and the resources and training that would go into a successful virtual learning rollout."

Innovative Practices

Despite the challenges, teachers, students, parents, and expert peer reviewers identified innovative practices and creative solutions through virtual learning. Innovative practices were identified in the following areas:

- Staffing;
- Training;
- Assignments;
- Scheduling;
- Devices; and
- Family engagement.

Some districts took an innovative approach to staffing during virtual education by hiring a dedicated virtual education administrator or virtual coordinator. This lifted the burden on teachers managing both in-person and hybrid students. Another effective practice in this area was the use of dedicated virtual lead teachers to help with peer training and support.

In terms of training, a creative and flexible solution was to offer virtual access to statewide or district-offered professional development opportunities for teachers. Also effective were "train the teacher" opportunities at the school-level. One peer reviewer emphasized the helpful practice of setting aside dedicated time on given days for teacher training. An educator stated, "We received extensive and helpful professional development around teaching virtually. We also joined after-school review sessions and extra help sessions on Fridays."

With regard to assignments, the state's emphasis on high-quality curriculum proved important for a virtual

environment as well. Educators and families appreciated instructional resources with adaptive strategies for digital learning. One educator described the helpful use of virtual binders to track student materials, noting that it was easier for some students to keep track of assignments virtually rather than organizing significant amounts of paper from different subjects.

Another innovative practice was around scheduling. While many students faced challenges with screen fatigue, districts responded with more flexibility around when students could complete their independent work, often blending live and independent learning. On this subject, an educator noted, "We found success in keeping synchronous Zoom classes as similar to a regular, in-person classroom as possible with bell-ringers, sets, independent practice, etc. Kids needed structure." There is room for more innovative scheduling in the future; one state leader offered, "If we weren't in a health crisis a hybrid model might enable things like a student doing an internship for part of the day. We hear a lot from educators wanting to leverage what happened this year for a better future."

Highlights from the peer reviewers on device distribution noted that students received devices that were already charged and set up for them to log in and begin their virtual instruction. In addition, software was pre-installed on the devices to monitor student activities and screen time. This level of technical support was widely appreciated by study participants and MDE was commended for its robust support. One peer reviewer summed it up by stating, "What MDE was able to accomplish in such a short time was nothing short of a miracle."

Finally, in terms of family engagement, peer reviewers noted multiple opportunities for students to have virtual touchpoints with their teachers, and to check in with their teachers on a daily basis. The peer reviewers also applauded when districts prioritized student and family access to telehealth.

CASE STUDY DISTRICT FOLLOW-UP FROM THE 2021-2022 SCHOOL YEAR

Summary of District Reports

The UM research team conducted follow-up interviews with leaders of the case study districts in summer 2022. The purpose of the interviews was to learn about what had taken place during the 2021-2022 school year as the majority of schools in Mississippi had shifted away from virtual instruction, and to gather insights as leaders reflected on successes and challenges one year later. Two of the three case study districts participated; one was unable to take part in the follow-up.

Status of Technology in the Districts

For fall of 2021, the Mississippi State Board of Education required districts to resume in-person instruction as the primary mode of teaching, and schools in Mississippi returned in person for the 2021-2022 school year. It was for most of them, as one district leader described, "much more an attempt to get back to what pre-COVID schooling looked like." The school district that began with a hybrid schedule for the 2020-2021 school year, with students taking turns attending two days of the week, returned to 100% in person for 2021-2022. Another district returned to traditional in-person learning, but also launched a virtual program for 2021-2022 that started its second year in 2022-2023. The district that provided instruction completely virtually for 2020-2021 returned in person for 2021-2022, appearing to have operated with a districtwide mask mandate.

With students back in classrooms, virtual instruction was not offered in the way it had been in the 2020-2021 school year. As one leader stated, "Virtual instruction as an adaptation to COVID did not exist last year." However, both districts that participated in follow-up interviews noted examples of how the experience of virtual instruction during the pandemic led to a greater willingness among schools and teachers to use the digital format to extend learning in other ways. One leader cited dual enrollment teachers live streaming to other campuses and teachers preparing videos and flipped learning experiences for students. Another leader described short-term virtual learning offered to students for special circumstances, such as a student who had an opportunity to travel or one who had to be out of school for a period of time.

A Reflection on What Was Learned: One Year Later

District leaders' perceptions of the impact of virtual instruction on student learning were mixed. One leader described the impact as "overall net negative" and pointed to state and national data as evidence of the widespread learning loss that resulted from the time spent virtual learning. Another leader saw both positives and negatives with the increased use of technology in education: while access to a wealth of online information can be a benefit, it can also be overwhelming, for both students and teachers. And though online software tools enable teachers to quickly and accurately assess their students, not all

teachers are utilizing the data to drive instruction. "It's like we've replaced textbooks and hand grading and all this stuff that took time, making it more efficient, but it's like we've also taken out that thought process."

As these districts continue to integrate technology into instruction, leaders acknowledge that good practices have emerged, but so has the importance of balance or boundaries with regard to technology. One leader observed that schools that made conscious decisions to have student devices allowable in only certain time periods of the class had much better overall results in student learning. Similarly, the other leader reported the need to strike a balance with technology use reached "the point where, we're telling teachers we don't want to see them [students] on computers, like turn them off."

Leaders cited a number of successes that came out of the experience with virtual learning. One leader saw the benefit of administration and teachers developing greater capacity for flexibility and risk taking, because out of necessity, everyone had to learn new things. This district is now 1:1, that is, every student now has a device, which allows teachers to continue to utilize 1:1 learning within the classroom setting. "COVID forcing us to go to virtual learning allowed some really good practices to continue even as we had students return in-person in the classroom." Another leader echoed this sentiment, noting the increased "comfort level" with technology and its use to support individual students -- the idea that if a student is out, they don't have to stop learning. In addition, teachers and administrators are now more likely to use technology for enhanced communication with stakeholders.

Leaders identified a number of areas where growth is needed in order to continue the implementation of technology into students' everyday lives. A major concern revolves around funding. One district leader wants to find a way to continue the 1:1 initiative that ESSER funds made possible, recognizing the importance of exposing students to technology as part of preparing them for the future. The other hopes to find a way to continue to offer the virtual academy post-ESSER.

Looking ahead, both district leaders noted the need for continued professional development to help teachers integrate technology to support learning, not replace it. Explained one leader, "I think that teachers need to go back to the basics of writing lessons and figuring out technology so that students are using it to show what they know, create a product, that sort of thing. As far as delivery of information, I think that that needs to come from the teacher." The other leader would like greater guidance or clarity from the state regarding technology skills to be taught or integrated at each grade level.

Both leaders also acknowledged the need to find focus with regard to technology. One leader felt that teachers currently have access to so many resources, that many of them probably aren't aware of all that they have. The other leader, whose district had opted into many MDE

procured software subscriptions, seemed to agree: "We probably need to start shifting into this idea of paring back and getting really good at the things that we want to continue to focus on."

For both leaders, the biggest positives to come out of virtual learning were the opportunities made possible by greater capacity of technology. For one leader, access for students was the best thing – "putting a connected device in kids' hands. I think the benefits of that far outweigh the negatives, even though there are negatives that we need to address." For the other leader, the virtual academy was the best thing – "it allows these students that really need it, an opportunity … if this works well for the student, if this is how they're learning the best, if they're really growing, then we need to provide this opportunity."

THE DIGITAL LEARNING COACHES PROGRAM

The Mississippi Connects initiative through the Mississippi Department of Education (MDE) established the Digital Learning Coaches (DLC) program in 2021. MDE has instructional and professional development coaches in literacy, math, and various subject areas. Unlike the literacy and math coaching programs, where schools are assigned coaches based on need indicated by assessment data, the DLC program is a voluntary program where district administrators actively choose to participate. Other programs, such as literacy coaching, will be assigned to a district and/or a school based on the performance of the reading and English language arts state assessments.

DLCs trained the first cohort of teachers in the 2021-2022 school year. District administrators applied to participate in the program, and cohorts organized by region (Northeast, Northwest, Southeast, Southwest) were formed to serve schools and teachers throughout the state. Coaches reported to a Regional Coordinator who works with the coaches in that specific region and also provides direct supports and training in schools. The program also has an overall Director of the entire state DLC program, which includes all the Regional Coordinators and the individual coaches.

An important lesson learned in year one of the DLC program involved the need for building administrators to support DLC initiatives. Initially, many educators and some building administrators did not understand the purpose, nature, or commitment needed regarding the DLC program. Therefore, in year two, administrators were required to attend training and sign an agreement outlining the duties and responsibilities involved with DLC participation.

Digital Learning Coach Focus Groups (July 2022)

In July 2022, UM project staff conducted focus groups with MDE DLCs. Coaches were grouped in the region that they served in year one of the program (school year 2021-2022). Fourteen of the 20 coaches participated.

The following is a summary of the information gathered from the focus group interviews.

Professional Experiences of the DLCs
- K-12 Teachers
- K-12 Librarians
- K-12 Administrators
- Educational Technology Experts
- Other MDE coaches (professional development)

Primary DLC Skillset
- Knowledge and skills in the area of classroom technology and pedagogy
- Problem-solvers in technology
- Flexibility in terms of instructional design (in-class versus virtual learning)

Goals of the DLC Program
- Assist and support teachers to utilize 21st century technology skills in their instructional practice
- Streamline and lighten teacher workload through technology tools (working smarter not harder)
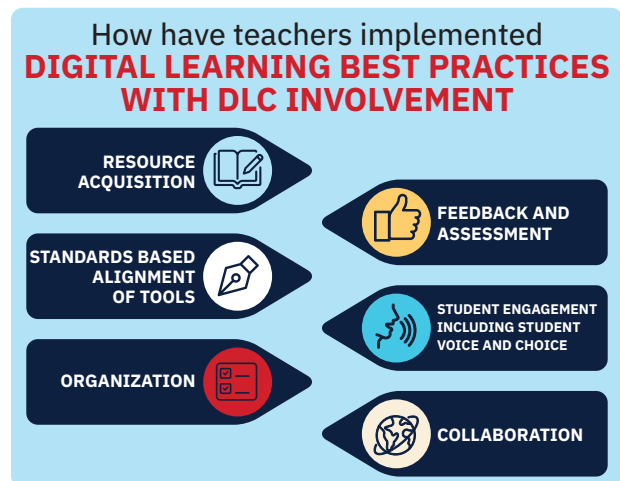- Incorporate digital learning practices
- Train teachers to use the Digital Learning Instruction Guide with standards aligned tools, accessibility, formative assessments, feedback, and digital citizenship
- Promote active learning and engagement among students
- Establish an equal partnership with teachers that is cost-free and not tied to formal evaluation

Challenges Encountered by DLCs
- Lack of administrator support or understanding of the program
- Teacher resistance to coaching and relationship building
- Limited or no training for educators on how to use technology tools purchased
- Infrastructure issues including spotty or no broadband access in the school building
- Not enough time for teachers to meet or work with coaches
- Communication and perception of the program - some teachers did not understand that the program was not tied to formal evaluations or they were not "targeted"

Areas Where Cohort Teachers Needed the Most Support
- Student engagement with technology
- Understanding and teaching digital citizenship
- Behavior management of students with technology
- Accessibility and culturally responsive practices with technology
- Formative assessment and feedback

How have teachers implemented
DIGITAL LEARNING BEST PRACTICES WITH DLC INVOLVEMENT

RESOURCE ACQUISITION
STANDARDS BASED ALIGNMENT OF TOOLS
ORGANIZATION
FEEDBACK AND ASSESSMENT
STUDENT ENGAGEMENT INCLUDING STUDENT VOICE AND CHOICE
COLLABORATION

Essential Resources That DLCs Need
- Infrastructure (broadband internet access) that is reliable and consistent
- Training for coaches and teachers
- Digital tools and access to tools
- The Digital Learning Instruction Guide developed by MDE [vi]

- Structure for coaching (building level and individual teacher plans) and process for setting goals and tracking progress

What are the **FUTURE STEPS OR GOALS FOR THE DIGITAL LEARNING COACHES PROGRAM?**

- ACCESS TO DIGITAL LEARNING COACHES IN MORE SCHOOLS
- TRAINING FUTURE TEACHERS AS PART OF LICENSURE OR TEACHER PROGRAMS
- MORE DIGITAL LEARNING COACH IMPLEMENTATION GUIDES IN SCHOOLS
- DEVELOPING 21ST CENTURY LEARNING SKILLS
- BECOMING AN ESTABLISHED PROGRAM LIKE OTHER SUBJECT AREA COACHES

Survey Results from Teachers Who Participated in the Digital Learning Coach Program

Data Collected July 2022-August 2022

UM GEER 2.7 project staff conducted a survey of teachers who participated in the 2021-2022 DLC cohorts, as well as teachers who would be entering the DLC cohorts for 2022-2023 school year. A total of 63 teachers completed the survey: 43 participants from the 2021-2022 cohort and 20 participants from the 2022-2023 cohort.

The Digital Age Teaching Scale (DATS) Survey Information

The Digital Age Teaching Scale (DATS)[xl] is a 36-item survey that provides a measure of teachers' application of the International Society for Technology in Education (ISTE) Standards for Educators. The ISTE Standards for Educators are used in teacher training programs and have been adopted by many states as the guidance for teachers in the area of technology.

The DATS[xl] provides a measure of teachers' skills in the following areas

Area Assessed	Descriptions Connected to ISTE Standards
Use of technology	Teachers are using technology to facilitate authentic student learning, differentiated instruction, and personalized learning.
Authorship rights	Teachers teach students digital citizenship concepts, such as citing and identifying sources, intellectual property, and how to manage personal data.
Student-teacher relationship	Empowering students and providing voice and choice for their learning.
Data for instructional practice	Using assessment data to improve instructional practice.
Collaboration for student success	Providing opportunities for students to collaborate with classmates and others outside the classroom to increase student learning.
Effective digital tools	The ability to identify and use effective digital tools.
Student feedback	Providing students with meaningful feedback on a routine basis.

ANALYST
Use data to drive instruction and provide alternate ways for students to demonstrate competency and use assessment date to guide progress.

LEARNER
Learn from and with others and explore promising practices that leverage technology to improve student learning.

LEADER
Seek opportunities to support student empowerment, help shape a shared vision, and advocate for student equality.

CITIZEN
Inspire students to contribute responsibly in the digital world and guide them to be curious, wise, empathetic, safe, and ethical.

COLLABORATOR
Collaborate with others to improve practice, discover and share resources, and solve problems with others around you.

DESIGNER
Design authentic, learner-driven activities and environments that recognize and accommodate learner variability.

FACILITATOR
Model creative expression, empower students to take ownership of their learning and create opportunities for students to innovate, and solve problems.

THE INTERNATIONAL SOCIETY FOR TECHNOLOGY IN EDUCATION'S STANDARDS

Grade Level Taught by Teacher Participants

Grade Level	Number of Participants	Percentage
Lower Elementary (PreK-3)	18	29%
Upper Elementary (4-6)	11	17%
Middle School/ Junior High	17	27%
High School	17	27%
Total	63	100%

Number of Teachers in Each Cohort

Teacher Cohort	Number of Participants
2021-2022	43
2022-2023	20
Total	63

DATS Results

Participants rated the 36 DATS items on a five-point Likert scale with ratings of *Strongly Disagree, Disagree, Neither Agree or Disagree, Agree*, or *Strongly Agree*. Most responses on these 36 items were in the *Agree* to *Strongly Agree* range. This indicates that the majority of the teachers surveyed believed they were demonstrating the practices aligned with the ISTE Educator Standards. The graphs below show scores of teachers in the 2021-2022 and 2022-2023 teacher cohorts. The following items where 10% or more of respondents indicate *Neither Agree nor Disagree* are of particular note.
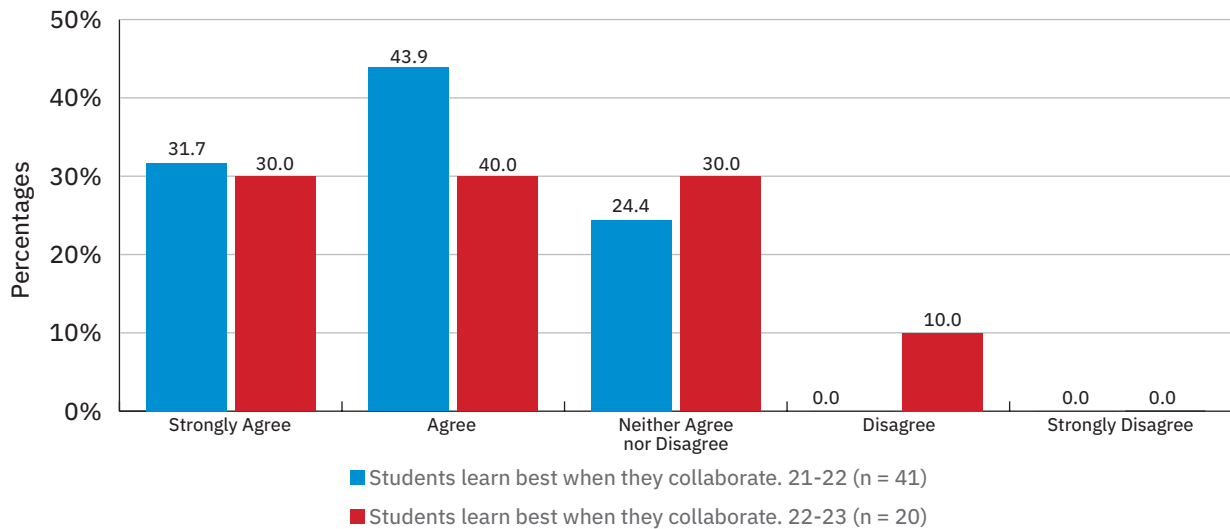
Q5: Technology helps educators reflect upon their work and the work of their students.

Percentages

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
21-22	34.9	55.8	9.3	0.0	0.0
22-23	30.0	55.0	15.0	0.0	0.0

■ Technology helps educators reflect upon their work and the work of their students. 21-22 (n = 43)
■ Technology helps educators reflect upon their work and the work of their students. 22-23 (n = 20)
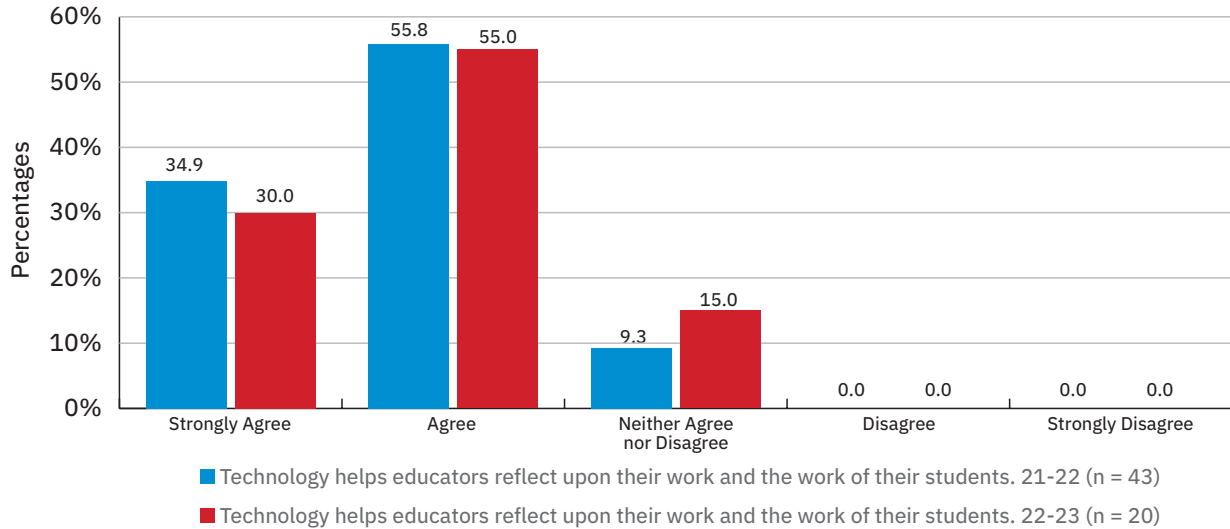
Question 5 focused on the use of technology as a tool for reflection of teachers' own work as well as students. With more scores in the *Neither Agree nor Disagree* category, it may indicate that teachers need additional training in the ways that technology could be used for assessment purposes.

Q21: Students learn best when they collaborate.

Percentages

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
21-22	31.7	43.9	24.4	0.0	0.0
22-23	30.0	40.0	30.0	10.0	0.0

■ Students learn best when they collaborate. 21-22 (n = 41)
■ Students learn best when they collaborate. 22-23 (n = 20)

Question 21 provides a measure of teachers' beliefs regarding student collaboration. This item is linked to the student collaboration area of the DATS. There was a high percentage of cohort teachers in the *Neither Agree nor Disagree* category. These scores may indicate that in teachers' experiences, students do not learn as much during collaboration activities with technology. Teachers may need additional training and supports regarding effective student collaboration with technology.

Q26: Technology fosters independent learning/thinking.

Percentages

|	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
21-22	34.1	53.7	9.8	2.4	0.0
22-23	25.0	50.0	25.0	0.0	0.0

■ Technology fosters independent learning/thinking. 21-22 (n = 41)
■ Technology fosters independent learning/thinking. 22-23 (n = 20)
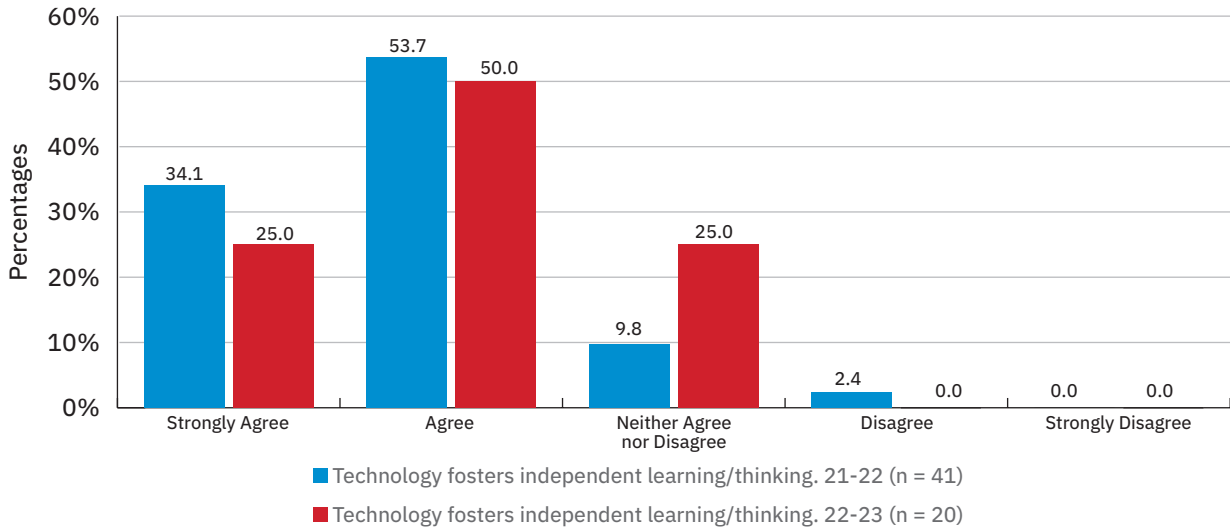
Question 26 refers to the use of technology to help develop independent learning/thinking. This question is in the area of use of technology. Twenty-five percent of the 2022-2023 cohort indicated that they *Neither Agree* *nor Disagree* with the statement. These scores may indicate that teachers may need additional training to help students use technology for critical thinking activities.

Q33: I can identify new digital tools for student learning.

Percentages

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
21-22	28.2	69.2	2.6	0.0	0.0
22-23	25.0	50.0	25.0	0.0	0.0

■ I can identify new digital tools for student learning. 21-22 (n = 39)
■ I can identify new digital tools for student learning. 22-23 (n = 20)
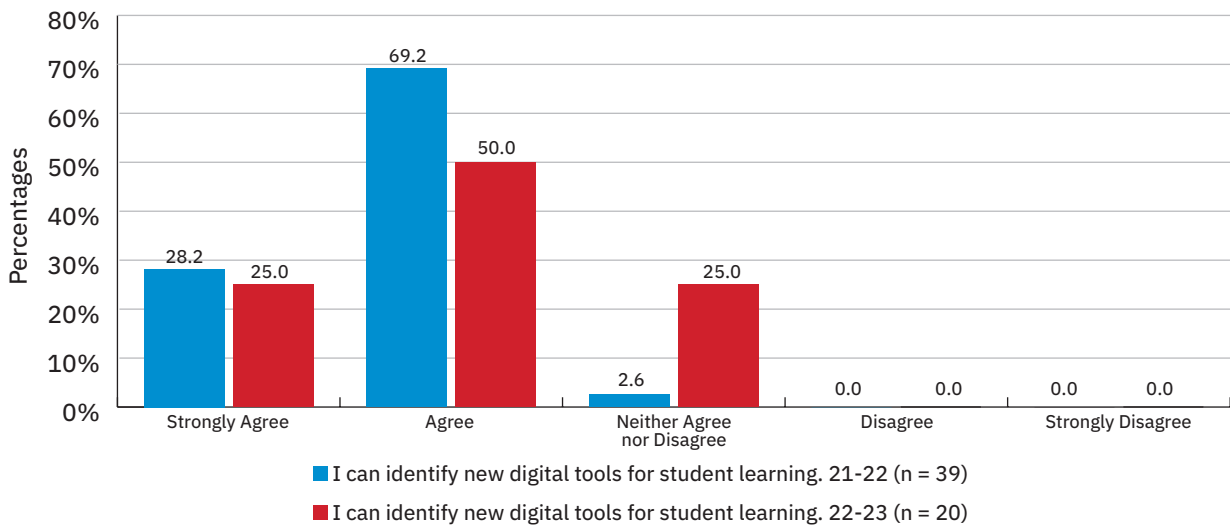
Question 33 falls in the area of effective digital tools. The graph indicates that the newest cohort (2022-2023) has lower skills in this area. DLC focus groups indicate that digital tool use and evaluation is part of the DLC coaching process.

QUANTITATIVE FINDINGS

Mode of Instructional Delivery

The original intent of this study was to focus on the impact of the mode of instructional delivery on student outcomes in Mississippi through the pandemic. The goal was to look at individual districts' delivery models – in-person, virtual, or hybrid – alongside student academic and engagement outcomes. Unfortunately, at the time of this report, MDE has advised that district-level instructional delivery data are not reliable.

A look at national research into this topic reveals that students in virtual or hybrid learning saw declines in academic growth compared to those learning fully in person. According to the National Bureau of Economic Research (NBER), declines in student scores on state assessments in Spring 2021 were greater than previous years for districts with less in-person instruction. Using data from 12 states, NBER found that math pass rates dropped by 14.2 percentage points overall – but with a 10.1 percentage point smaller dip for districts operating fully in person. The impact on ELA scores was lesser overall, but with an outsized impact on districts with greater populations of Black, Hispanic, and free and reduced price lunch eligible students.[xxxvi] A report from the Center on Reinventing Public Education (CRPE) analyzing information from the 2021-2022 school year found a close relationship between learning delays and the amount of time students spent out of school or learning virtually.[xxxvii]

A July 2021 CDC report looking at disparities in student access to instructional delivery modes found that in Mississippi, students of color were 15.8% more likely to lack access to any option other than virtual through most of the 2020-2021 school year.[xxxviii] Analyses of the impact of virtual learning on student outcomes in states like Texas,[xxxix] Georgia,[xl] and North Carolina[xli] also point to the negative effect of remote modes of instruction as compared to fully in-person learning.

Spring 2020 School Closures and Summer 2020 Enrichment Plans

At the onset of the pandemic, districts were forced to essentially send students and teachers home overnight, with little to no time for planning or providing materials, including technology, for use at home. In May 2020, MDE required districts to submit plans outlining their at-home learning and summer enrichment offerings for 2020. These plans are found here[xlii] and required districts to indicate:

- Instructional Delivery During Building Closure: Virtual; Packets/Assignments; or Blended
- Instructional Content During Building Closure: MDE Resources; District Developed/Hosted; or Blended
- Final Course Grade Calculation Method for 2019-2020 and Method of Feedback
- Summer Enrichment Delivery: Virtual; Packets/Assignments; or Blended
- Communication with Families
- Transcripts and Senior Transitions
- Assurances for Continued Learning for All Students, Students with Disabilities, and English Language Learners

While many districts indicated in these plans that the instructional delivery method during building closures was a blended approach of both virtual and paper/packet, the validity of this reporting cannot be verified. For example, our qualitative study showed that some districts relied on paper packets that families could pick up from schools at specified times, or that educators delivered directly in some cases – yet these districts indicated a blended approach on the state form. Further, districts that had strong technology infrastructure in place prior to the pandemic were able to use that technology for some virtual learning, but comprehensive plans were not in place, and it is impossible to verify the extent to which virtual learning took place and what that learning entailed.

A closer look at elements of these plans across a group of districts identified as top and bottom performers for student ELA and math proficiency through the pandemic is found on page 26.

2020-2021 Instructional Delivery Plans

In August 2020, MDE required districts to submit plans detailing their return-to-school approach for the 2020-2021 school year. These details include instructional delivery modes and details, Carnegie Unit Course plans, attendance collection and policies, transportation arrangements, provision of meals, mask and sanitation procedures, health and safety precautions and interventions, extracurricular activities, technology and academic support to families, and communications about closures. These plans are found here[xliii] and analysis of key elements for top and bottom performing districts for student academic proficiency is found on page 26.

In addition to these plans, MDE collected instructional delivery information describing how districts operated in the middle of the school year. Mississippi First also conducted a desk review[xliv] to understand which instructional delivery method districts were using near the middle of the school year. Although there are many discrepancies in reported instructional delivery between the middle-of-year MDE report and the information Mississippi First found online around the same time, it is useful to examine these data to get a sense of how districts planned to operate and which delivery they used in practice. Based on reported information:

- 71 – or a little under half – of school districts reopened for the 2020-2021 school year using a delivery method different than what they planned for in the summer.
- 42 districts appear to have planned for and opened in person with a virtual option.
- 14 appear to have planned for and opened using hybrid instruction.
- 16 appear to have planned for and opened with entirely virtual instruction.
- By the middle of the year, 42 districts appear to have been operating in person with a virtual option.
- About 10 more districts appear to have been operating with a hybrid model.
- Six fewer appear to have been operating virtually.
- 65 districts reported something different via a MDE survey versus research from Mississippi First.

Examining our case study districts, Gulfport offered in-person instruction as well as a separate fully virtual learning option for the 2020-2021 school year. Data for Marshall County and Leland did not match across the various sources, though our qualitative study showed that Marshall County operated with a hybrid model, while Leland planned for hybrid but remained virtual for the whole school year.

Trends

- It appears that nearly half of districts reopened for the 2020-2021 school year using an instructional delivery model different than what they originally planned for in July.
- By the middle of the school year, it appears that the same number of districts were operating in person, with a virtual option available to students.
- A lack of reliable data about instructional delivery limits the capacity of this full quantitative study to examine specific correlations between learning modes and outcomes across student populations.

Available State Data: 2018-2019 to 2020-2022[xlv]

The original goal of the quantitative analysis element of this project was to examine data from the last full school year before the pandemic (2018-2019) through the 2021-2022 school year to identify any meaningful findings relative to instructional delivery models. Given that district and subgroup instructional delivery data from this period of time are not available from the state at the time of writing, our study shifted to use the available data to look for groups of students and/or areas of the state with particular successes or challenges over this time period. The project interim report, completed in April 2022, includes an examination of the top and bottom 10 performing districts across a variety of indicators from 2018-2019 through 2020-2021. At the time of completion of this final report, 2021-2022 district-level data

were not available for every indicator. Thus, the following section focuses on statewide trends through 2021-2022 while pointing to some interim report findings that are worth further investigation when all relevant 2021-2022 data are made public.

Enrollment & Attendance

Public school enrollment nationwide has declined throughout the pandemic as some families have sought alternatives to virtual or hybrid learning.[xlvi] This is also true in Mississippi. In December 2020, then State Superintendent Carey Wright spoke about the enrollment trends over time, noting a 5% drop from 2018-2019 to 2019-2020, a substantial increase in homeschooled students, and state efforts to understand where other unenrolled students have gone.[xlvii] A *New York Times* article described a 24% decrease in kindergarten enrollment in the 2020-2021 school year in Jackson, MS, where the district offered only a virtual option that fall.[xlviii]

Examining statewide PK-12 enrollment data from the 2018-2019 school year through 2021-2022, we see that overall enrollment dropped from 470,668 students to 442,000 – a difference of 6% in that time span. Enrollment declined across gender as well as racial and ethnic subgroups with two exceptions. The Hispanic or Latino student population increased from 18,762 to 20,507 (9%) and students of Two or More Races increased from 11,729 to 16,423 (40%).

While most other subgroups experienced an enrollment decrease close to the state average, the decrease in Asian students was lower at 4% and the decrease in Alaskan Native/Native American was greater at 9%. Also of note, enrollment changes between the 2020-2021 and 2021-2022 school years were much smaller than the drops experienced between 2018-2019 and 2020-2021, indicating a leveling off as the effects of the pandemic started to lessen.

State of Mississippi Enrollment Change, 2018-2019 to 2020-2021

State of MS Enrollment by Subgroup	18-19 Enrollment	19-20 Enrollment	20-21 Enrollment	21-22 Enrollment	% Change 18-19 to 20-21	% Change 20-21 to 21-22	% Change 18-19 to 21-22
All	470,668	465,913	442,627	442,000	-6%	0%	-6%
Female	230,232	228,090	216,810	216,604	-6%	0%	-6%
Male	240,436	237,823	225,817	225,396	-6%	0%	-6%
Black or African American	226,491	222,025	211,217	208,187	-7%	-1%	-8%
White	207,166	203,676	190,886	190,700	-8%	0%	-8%
Alaskan Native or Native American	1,090	1,100	958	988	-12%	3%	-9%
Asian	5,125	5,166	5,079	4,914	-1%	-3%	-4%
Hispanic or Latino	18,762	19,728	19,443	20,507	4%	5%	9%
Native Hawaiian or Pacific Islander	305	322	287	281	-6%	-2%	-8%
Two or More Races	11,729	13,896	14,757	16,423	26%	11%	40%

In addition to enrollment, MDE shared a comparison of the number of days absent per student from 2018-2019 through 2021-2022. While the total number of days absent per student actually dropped in 2021-2022 relative to previous years, this is to be expected given the 6% drop in enrollment over that time period. Further, the impact on individual students is concerning; 13,187 students missed more than 50 days of school in 2021-2022 – an increase of 134% from 2018-2019. Over 50,000 more students missed between 18 and 50 days of school over that same time period, as well.[xlix] It is critical to note here that in 2021-2022, COVID-19 was still spreading and likely causing ongoing quarantines and extended absences, which may account for a significant amount of this increase.

Regardless of the reason for absence, it will be important to continue studying attendance and engagement trends and elevating opportunities to re-engage students who have faced long periods of disruption from instruction.

State of Mississippi Absences per Student (Excused and Unexcused), 2018-2019 to 2020-2022

Days Absent per Student	2018-19	2019-20	2020-21	2021-22
<18	397,957	428,410	354,779	312,943
18-50	73,124	38,495	84,330	123, 405
>50	5,638	2,053	13,231	13,187
Total	476,719	468,958	452,340	449,535

Trends
- The state reports an overall enrollment decline since 2018-2019.

- The greatest relative enrollment decline by student subgroup is for Alaska/Native American students (who make up a small percentage of the total statewide student population) and White students.
- There is an increase in enrollment for Hispanic/Latino and Two or More Races.
- Enrollment changes between the 2020-2021 and 2021-2022 school years were much smaller than the drops experienced between 2018-2019 and 2020-2021, indicating a leveling off as the effects of the pandemic started to lessen.
- Significantly more students missed 50 or more days of school in 2021-2022 compared to 2018-2019 and over 50,000 more students statewide missed between 18-50 days of school in 2021-2022 compared to 2018-2019; these figures are likely impacted significantly by quarantines related to the ongoing spread of COVID-19 and require further study.

Enrollment, Devices, and Broadband
Mississippi Connects provided unprecedented technology capability and support to school districts, students, and families in 2020. Each district was eligible for financial support to cover broadband connectivity as well as 1:1 device and LMS access.

The charts below show the top and bottom 10 districts in terms of expenditures on devices through Mississippi Connects. District student enrollment data are included for additional context, as is the district location as classified by the relevant regional education service agency (RESA).[l] These include: Delta Area Association for Improvement of Schools (DAAIS), East Mississippi Center for Educational Development (EMCED), Gulf Coast Education Initiative Consortium (GCEIC), North Mississippi Education Consortium (NMEC), Southwest Mississippi Education Consortium (SMEC), and Southern Regional Educational Service Agency (S-RESA). The asterisk (*) indicates districts that had a 1:1 device initiative prior to the pandemic.[li]

10 Districts with Largest Mississippi Connects Device Expenditures, 2020

Public School District	$ Spent on Devices	# Devices Purchased	Broadband Fund Distribution	19-20 Student Enrollment	RESA
Desoto County	$19,775,819.37	27,770	$1,227,482.80	34,752	DAAIS
Harrison County	$11,026,622.50	16,000	$760,267.04	14,780	GCEIC
Rankin County*	$7,754,248.28	14,416	$848,997.36	19,160	SMEC
Jackson Public	$7,450,504.46	17,882	$1,408,028.31	22,510	SMEC
Lowndes County*	$4,471,754.20	5,594	$915,069.48	5,528	NMEC
Madison County*	$4,283,104.02	10,125	$347,158.17	13,310	DAAIS
Jones County	$3,855,141.49	9,034	$1,346,275.83	8,837	S-RESA
Lamar County	$3,606,301.30	7,329	$660,352.10	10,718	GCEIC
Vicksburg Warren*	$3,477,309.88	8,280	$546,694.83	7,556	SMEC
Greenville	$3,319,605.55	4,569	$302,748.82	4,244	DAAIS

10 Districts with Smallest Mississippi Connects Device Expenditures, 2020

Public School District	$ Spent on Devices	# Devices Purchased	Broadband Fund Distribution	19-20 Student Enrollment	RESA
Holmes Consolidated	0	0	$498,236.39	2,965	SMEC
Baldwyn	0	0	$103,361.43	761	NMEC
North Panola	$52,374.19	125	$191,376.96	1,405	DAAIS
Okolona Separate*	$119,413.15	285	$87,184.21	570	NMEC
Chickasaw County	$205,306.82	490	$67,893.70	512	NMEC
Coffeeville	$231,767.78	518	$66,026.45	464	NMEC
Hollandale	$271,389.75	575	$48,306.26	570	DAAIS
Enterprise	$277,792.69	663	$169,982.86	937	EMCED
East Jasper Consolidated	$293,767.55	635	$192,591.36	847	EMCED
Richton	$326,829.18	740	$170,428.47	641	S-RESA
Union	$339,476.70	760	$108,615.45	987	EMCED
Attala County	$351,564.48	747	$208,997.00	1,046	EMCED

Not surprisingly, many of the state's largest districts in terms of student enrollment saw the largest overall expenditures on devices, including Desoto County, Harrison County, Rankin County, Jackson Public, Madison County, Jones County, Lamar County, and Vicksburg Warren. Three of these – Rankin, Madison, and Vicksburg Warren – already had a 1:1 device initiative prior to COVID-19. It could be interesting to further explore how these districts leveraged Mississippi Connects to improve device support across the district. In addition, two smaller districts also appear on this top 10 device expenditure list – Lowndes County (which was also 1:1 pre-pandemic) and Greenville. Among the top 10 districts for device expenditures, the largest concentrations of districts regionally were located in the Delta (DAAIS) and Southwest (SMEC) regions (three each).

In terms of the bottom 10 spenders on devices, two districts reported zero dollars (Holmes Consolidated and Baldwyn) – but it is possible that this is a reporting error. As expected, most of the rest of this list is comprised of smaller districts in terms of student enrollment. Regionally, the largest concentrations of these districts were found in the North (NMEC) and East (EMCED) regions (four each).

Trends

- Generally, districts with the largest enrollment had the greatest number of devices purchased and expenditures for broadband, with some notable exceptions for potential investigation.
- Of the top 10 districts in terms of expenditures for devices through Mississippi Connects, four already had a 1:1 device initiative prior to the pandemic.
- Larger concentrations of districts with larger device expenditures were found in the Delta and Southwest regions, while concentrations of districts with smaller device expenditures were found in the North and East regions.

Student Achievement

Mississippi has made historic gains in student achievement over the last 10 years. According to an analysis by the George W. Bush Institute, National Assessment for Educational Progress (NAEP) proficiency in fourth grade reading increased 10 percentage points from 2011 to 2019, which was the biggest increase of any state during that time. During this same time, 8th grade reading proficiency increased by four percentage points, which was among the largest increases among all states, and was also among the largest for Black and Hispanic students. Math proficiency also increased – 14 percentage points for 4th graders and five percentage points for 8th graders.[lii]

While there is no NAEP data after 2019 yet, we can use Mississippi's historical improvement on NAEP as context for the impact of the pandemic on achievement. Reflecting nationwide trends,[liii] most Mississippi school districts saw declines in student achievement between 2019 and 2021. In addition to statewide declines in Mississippi Academic Assessment Program (MAAP) math and English language arts (ELA) achievement as described below, kindergarten readiness results were down about five percentage points in 2021 from 36.6% in 2019.[liv] In addition, according to MDE's analysis, the gap in achievement between low income students and non-low income students increased, even as scores for both groups worsened.[lv] As we note here, inconsistencies in instructional delivery data make it difficult to link these declines to virtual and hybrid instruction, though other states have been examining this relationship with concerning results.[lvi]

In Summer 2022, MDE published the statewide assessment results from Spring 2022, which showed a significant rebound in academic achievement from the prior year. After a major dip in scores in Spring 2021, students statewide on average returned to achievement levels similar to those from 2019, before the pandemic.

MDE pointed to several factors for these impressive gains, including state and local investments in technology and learning acceleration supports as well as increased experience in functioning among the disruptions created by COVID-19.[lvii]

New state NAEP data are scheduled to be released shortly after the writing of this report,[lviii] at which time it will be important to note whether trends in Mississippi mirror the national trends that were recently announced, or instead reinforce the gains demonstrated in the 2022 MAAP results.

Kindergarten Readiness

The following chart depicts average statewide kindergarten readiness scores (KR) from 2018-2019 through 2021-2022:

18-19 KR Score (Fall 18) 501

18-19 KR Score (Spring 19) 711

19-20 KR Score (Fall 19) 502

21-22 KR Score (Fall 21) 487

21-22 KR Score (Spring 22) 686

% Change, Fall 18 to Fall 21 . . . .-3%

% Change, Spring 19 to Spring 22 . . . .-4%

% Change, Fall 18 to Spring 19 . . . . . . 42%

% Change, Fall 21 to Spring 22 . . . . . . 41%

Mississippi average KR scores indicated lower initial and final scores in the 2021-2022 school year when compared to the 2018-2019 school year. At the beginning of the 2018-2019 school year, the state average KR score was 501. At the end of the 2018-2019 school year, the average kindergarten readiness score was 711. Initial scores in the 2019-2020 school year were the similar (the average was 502). Due to the pandemic, no spring scores were available in Spring 2020. Average KR scores in Fall 2021 (487) and end of year (686) were lower, but the overall percent of growth over time (percent change) was similar to the 2018-2019 school year. This growth trend holds promise for future years.

English Language Arts Results

According to data from the MAAP administration, statewide ELA proficiency dropped from 41.7% in 2019 to 34.8% in 2021, a 6.9-percentage-point dip.[lix] In 2021-2022, students recovered the learning losses observed the previous year, reaching 42.2% proficiency – the highest in state history.[lx]

It is worth noting that ELA also saw a mid-pandemic success story in Mississippi. Eighth-grade ELA was the only subject and grade that did not see a decline in the percentage of students proficient or advanced from 2019 to 2021.[lxi] Mississippi's successful focus on literacy is highlighted in an analysis from the Foundation for Excellence in Education, which found that students in early grades when this focus began saw greater improvements in reading according to NAEP through 2019, the last year of available data.[lxii]

In the interim report for this project, the team examined the top and bottom 10 school districts in terms of percentage point declines in ELA scores between 2019

and 2021. Further reinforcing troubling trends regarding the pandemic's impact on academic outcomes for low-income students over that time period, the districts that saw the steepest declines in ELA tended to be those with schools with a high proportion of students who receive free or reduced-price lunch. The federal Title I program, which provides free or reduced-price lunch to all students who apply and whose family income is 185% of the poverty line or less, is typically the proxy used in education to understand the number of low-income students at a school.[lxiii] Unsurprisingly, some districts with the smallest declines or even improvements in ELA were serving a smaller proportion of low-income students.

The district student size (overall 2020-2021 district enrollment) and location as classified by the relevant regional education service agency (RESA)[lxiv] were also examined. Of the 10 districts with the largest declines in ELA proficiency from 2018-2019 through 2020-2021, eight were located in the North (NMEC) region. Of the 10 with the smallest declines in ELA during that time, five were located in the Gulf Coast (GCEIC) region.

Mathematics Results

Across Mississippi, the decline in proficiency from 2018-2019 through 2020-2021 was larger in MAAP math, which again reflected national trends. Math proficiency fell from 47.4% students proficient in 2019 to 34.8% in 2021, a 12.5-percentage-point drop. In the 2021-2022 school year, students statewide rebounded to a 47.3% math proficiency rate, just below that of 2018-2019.[lxv]

The 10 districts with the steepest declines in math proficiency from 2018-2019 through 2020-2021 identified in the interim report were more likely to have a high percentage of low-income students. Unlike what is seen in ELA results, some districts moved from math proficiency rates in the 30-40% range in 2019 to almost no students proficient at all in 2021. In terms of regional distribution of the bottom 10 performing districts for math proficiency through 2020-2021, five of them were located in the Delta (DAAIS) region and four in the North (NMEC) region. Of the top 10 performing districts for math over that time, four were located in the Gulf Coast (GCEIC) region.

When district-level achievement data for 2021-2022 becomes available, it will be important to re-examine districts with the steepest declines to identify those in need of continued support, especially given the statewide rebound. If concentrations of lower performing districts are found in certain region(s), extra focus can be directed in those areas. See the "Policy Recommendations" on page 54 for specific suggestions around tailored regional supports.

Analysis of Top and Bottom Performing District Spring & Summer 2020 and 2020-2021 School Year Plans

Using the information described above from 2018-2019 through 2020-2021 (not including 2021-2022), a comparison was developed between the district Fall 2020 restart plans submitted to MDE[lxvi] for the 10 districts with the largest and smallest declines in ELA, and the 10 districts with the largest and smallest declines in math, respectively, to note any differences or commonalities across those plans. The plans were closely examined to note differences in the strategies detailed, such as

the types of instructional content delivered and method of delivery, final course calculation methods, summer learning methods, and communication and participation strategies. Of note, the greatest variance in district plans existed with the final course calculation methods and the communication and participation strategies. Most plans, irrespective of their performance ranking, used similar strategies for instructional delivery and instructional content. One main difference between the top performing and lower performing districts was how descriptive the plans were. For both top performing ELA and math districts, plans were more likely to include lengthy descriptions of actions, systems used, and issues encountered with data validity instead of just marking a multiple-choice option.

Among the 10 districts with the largest declines in ELA and math:

- All used blended instructional delivery methods, combining online, distance learning, remote, and e-learning methods as well as packets and assignments.

- During school building closure, all but one used a combination of MDE resources as well as district-selected online or hybrid content and make-and-take instructional packets and resources. In terms of instructional content, most of these districts chose a combination of MDE resources and individual district developed resources. However, some chose to forego the MDE resources. There was minimal description across all plans for this section.

- The districts varied widely across how they calculated the final course grade for the 2019-2020 school year.

- For summer enrichment, most districts chose a blend of distance/virtual/e-learning and remote methods, along with packets and assignments.

- In terms of communication and participation, the districts chose a wide variety of strategies including letters to families, social media posts, text messages to families, and emails to families. In addition, some districts were descriptive about which additional resources they used outside of the multiple-choice options provided. These included, for example, iReady and Edgenuity programs, as well as Class Dojo and Remind software to keep in contact with students and parents.

- For summer learning and enrichment, most of the districts chose a combination of distance methods as well as packets and assignments. There was very little variance in this section. However, one district chose an on-site in-person learning option for students. Many of these districts detailed summer learning and enrichment opportunities and many utilized extended school year services.

Among the 10 districts with the smallest declines in ELA and math:

- Most districts chose a combination of virtual and port-folio or project based instructional delivery methods during school closures. One district noted that they also provided Wi-Fi access and hotspots to students.

- These districts were more descriptive than those with the largest declines in naming resources they used outside of MDE resources and district-developed content. For example, one district outlined how

teachers utilized Google classroom and Edmentum to deliver content. Another district utilized Curriculum Associates as well as the Mississippi Public Broadcasting network to reach students.

- For the final course grade calculation, these districts varied in their chosen method. Many districts provided additional comments on this section of their plans, noting that video conferences, Zoom, Google Meet, or Google Classroom were used to communicate grading information with parents. Furthermore, districts noted issues with the data they were collecting on students, and went in depth on accountability measures or kindergarten promotion guidelines.

- For summer learning and enrichment, most districts chose a combination of virtual and project-based learning methods. Districts were very forthcoming about their actions in this section of their plans, noting the use of hybrid or face-to-face summer instruction, a rotating instructional system based on students' skill needs, as well as the various online platforms used. Districts also detailed how the summer learning and enrichment plans varied from grade to grade in their plans. Some districts named credit recovery options, individual learning plans, Edmentum, targeted support to students in the bottom 25% during the summer, choice board activities available online, and making behavioral specialists available, to name a few.

- There was a similar broad use of communication and participation methods, but these districts were more descriptive on other methods of contact they utilized including the district website, surveys, and phone calls. These included different phone and email tools to communicate with parents, outreach strategies varying by grade level, mass calling strategies, and special learn-from-home websites. One district described a weekly principal memo distributed to parents and students. Overall, these districts were much more descriptive in their plans.

This plan analysis closely aligns with the major themes identified in our virtual learning study expert peer review analysis in ""Project Overview & Methodology" on page 9 It was clear where districts were explicit in the resources they were providing for instructional delivery, communications and outreach, and summer program-ming. The only area of the analysis that was not as clearly reflected in the district plans was data-driven decision making. Only one district mentioned the validity of the data they collected and accountability for districts based on the data.

Trends

- Average kindergarten readiness scores in Fall 2021 and Spring 2022 (end of school year) were lower than in 2018-19, but the overall percent of growth over time (percent change) was similar to the 2018-2019 school year. This growth trend holds promise for future years.

- Over the last decade, Mississippi has made historic gains in student achievement, especially in NAEP reading scores. While the pandemic caused many Mississippi school districts to see declines in student

achievement on MAAP (following national trends), Spring 2022 assessment results demonstrate a significant rebound in student achievement.

- Districts with the steepest MAAP declines in 2020-2021 tended to be districts with a high proportion of low-income students (using percent Title I as a proxy for income), and the opposite was generally true for districts with the least declines.
- Higher performing districts on MAAP in 2020-2021 typically had more explicit resources, communications, and programming details in their reopening plans for that school year.
- More districts with the steepest declines in MAAP ELA and math 2020-2021 were located in the North and Delta regions, which differed from the most common region of the districts with the smallest declines – the Gulf Coast.
- When full district and subgroup level data are available for the 2021-2022 school year, it will be important to examine outliers from the state average to identify needed supports for students and schools.

Student Participation

Another important element for consideration in the impact of the pandemic on students is participation in annual state testing. Mississippi bucked the national trend of much lower participation in state assessments in 2021, boasting an overall participation rate of 96.9%, which was in line with previous years.[lxvii] At the time of writing this report, participation rate data for 2021-2022 was not available.

The interim report for this project examined the top and bottom 10 districts in terms of changes in participation rates for state-required MAAP exams from 2018-2019 through 2020-2021. In ELA, four districts went from over 95% of eligible student participation in 2018-2019 to losing nearly 10 percentage points or more. This stands in stark contrast to the statewide percentage point change of only -0.76 during that time, a notable achievement

given the circumstances. Further, while the 10 districts with the smallest decline in MAAP ELA participation over this time period saw relatively small percentage point changes overall, four of them saw enrollment declines much larger than the state average, despite posting gains in MAAP ELA participation.

As with districts experiencing the greatest decline in MAAP ELA participation, those with the steepest MAAP math participation drops were well outside the statewide percentage point change of -1.67. As with ELA participation trends, a few of the 10 districts with the smallest decline in MAAP math participation saw enrollment declines much larger than the state average during this time period.

Looking at the regional distribution of the top and bottom 10 performing districts in terms of MAAP participation from 2018-2019 through 2020-2021, some clear trends emerge. Nine of the 10 districts with the largest declines in both ELA and math participation over that time period were in the Delta (DAAIS) region. Of the 10 with the smallest decline in ELA participation, five were in the North (NMEC). For the smallest decline in math participation, four were in the Gulf Coast (GCEIC) and four in the North (NMEC).

Graduation Rate Trends

A look at high school graduation rates in 2018-2019,[lxviii] 2020-2021,[lxix] and 2021-2022[lxx] shows changes over time. Overall, the state of Mississippi improved from a graduation rate of 84% in 2018-2019 to 88.4% in 2021-2022. Some subgroup populations experienced greater graduation rate fluctuations through the pandemic than others. From 2018-2019 to 2020-2021, Alaskan Native or Native American students and Asian students were the only groups to decline in graduation rates, but both showed positive gains in 2021-2022. Black or African American students showed the greatest graduation rate gains from 2018-2019 to 2021-2022, outpacing the state average along with Hispanic or Latino students.

Group	18-19 Graduation Rate	19-20 Graduation Rate	20-21 Graduation Rate	21-22 Graduation Rate	% Graduation Rate Change 18-19 to 20-21	% Graduation Rate Change 20-21 to 21-22	% Graduation Rate Change 18-19 to 21-22
Mississippi (statewide)	84.02%	85.01%	87.70%	88.40%	4.38%	0.70%	4.38%
Female	88.54%	89.26%	91.60%	92.0%	3.46%	0.40%	3.46%
Male	79.58%	80.86%	83.79%	84.8%	5.29%	1.01%	5.22%
Black or African American	80.73%	81.91%	86.04%	87.3%	6.58%	1.01%	6.57%
White	87.68%	88.34%	89.85%	89.7%	2.47%	-0.15%	2.02%
Alaskan Native or Native American	86.07%	81.81%	81.31%	87.0%	-5.53%	5.69%	0.93%
Asian	93.36%	92.65%	91.49%	94.5%	-2.00%	3.01%	1.14%
Hispanic or Latino	79.34%	83.10%	83.72%	85.0%	5.52%	1.28%	5.66%
Native Hawaiian or Pacific Islander	82.35%	83.33%	94.73%	85.7%	15.03%	-9.03%	3.35%
Two or More Races	81.54%	85.55%	85.74%	85.8%	5.15%	0.06%	4.26%

An important area for further exploration can be found in student groups or districts that saw significant declines in student academic performance over this time period, yet had an increase in graduation rates.

Trends

- Mississippi bucked the national trend of much lower participation in state assessments in 2021, boasting an overall participation rate in line with previous years.
- Districts that saw large declines in MAAP participation generally saw greater declines in math participation than in ELA in 2021.
- Many of the same districts that saw the largest declines in MAAP participation also saw the largest declines in MAAP proficiency statewide in 2021.
- Nine of the 10 districts with the largest declines in both ELA and math participation from 2018-2019 through 2020-2021 were in the Delta region. Of the 10 with the smallest decline in ELA participation, five were in the North. For the smallest decline in math participation, four were in the Gulf Coast and four in the North.
- Overall, the state of Mississippi improved from a graduation rate of 84% in 2018-2019 to 88.4% in 2021-2022.
- From 2018-2019 to 2020-2021, Alaskan Native or Native American students and Asian students were the only groups to decline in graduation rates, but both showed positive gains in 2021-2022.
- Black or African American students showed the greatest graduation rate gains from 2018-2019 to 2021-2022, outpacing the state average along with Hispanic or Latino students.
- An important area for further exploration can be found in student groups or districts that saw significant declines in student academic performance through the pandemic, yet had an increase in graduation rates.

BRIGHTBYTES DATA ANALYSIS

BRIGHTBYTES BACKGROUND INFORMATION

The Mississippi Department of Education (MDE) partnered with educational data and analytics provider BrightBytes to collect data on technology use in Mississippi K-12 schools. BrightBytes provides MDE with two data collection instruments. The first is the Ed Tech Impact tool which is installed on Mississippi school devices as part of the Mississippi Connects program. The Ed Tech Impact tool is typically downloaded as an extension and tracks applications and tools used by students and educators. Data obtained can be used to determine which software and applications teachers and students are using for teaching and learning, and to what extent, which may inform future planning for digital instruction. Data from the Ed Tech Impact were not requested for this study.

The second tool is the Technology and Learning Survey. This survey is completed at specific intervals by parents, teachers, and students in grades 3-12. Survey data are collected once per semester. Data from the Technology and Learning Survey tool were obtained from a MDE public records request.

The Technology and Learning Survey framework focuses on four main areas: Classroom, Access,

Environment, and Skills. Classroom questions assess the use of technology across the domains of digital citizenship, assessment, assistive technology, collaboration, and critical thinking. Access questions measure students'/teachers'/parents' ability to connect with devices and the internet at home and school. Environment questions investigate support for technology use, professional development, and beliefs regarding technology. The Skills questions evaluate students'/teachers'/parents' abilities to use social media, create multimedia presentations, and conduct research online.

Data Used for this Report

The BrightBytes Technology and Learning Survey data from the reporting periods of Spring 2021, Fall 2021, and Spring 2022 were provided through a MDE public records request. Statewide parents, educators, and elementary and secondary students completed the surveys during the three data collection periods. Some participants did not provide data for every question. The n value on each question reflects the number of responses to the question in that data set.
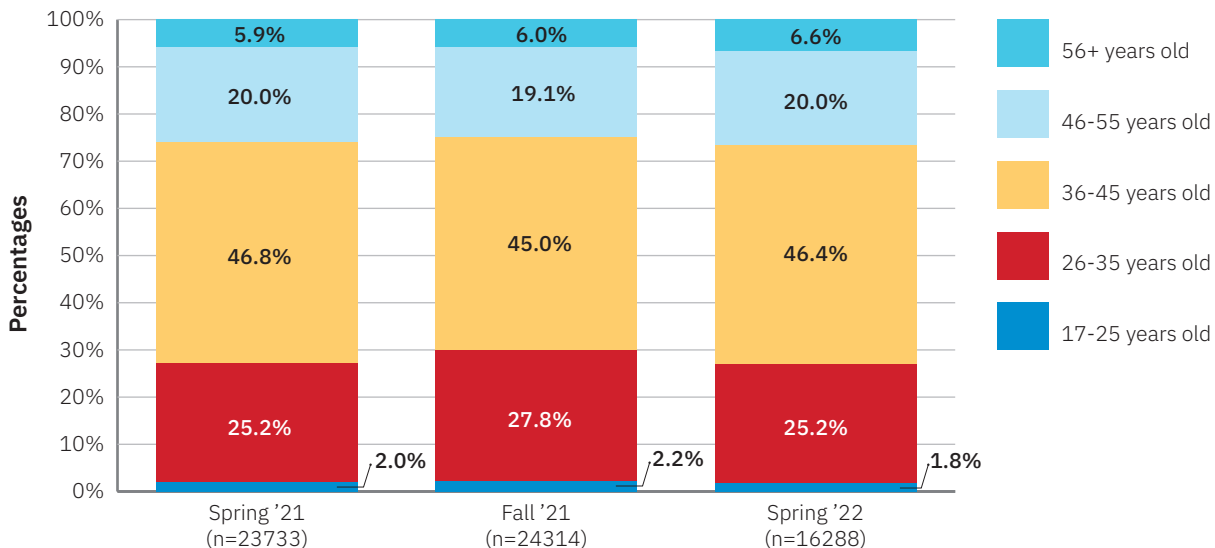
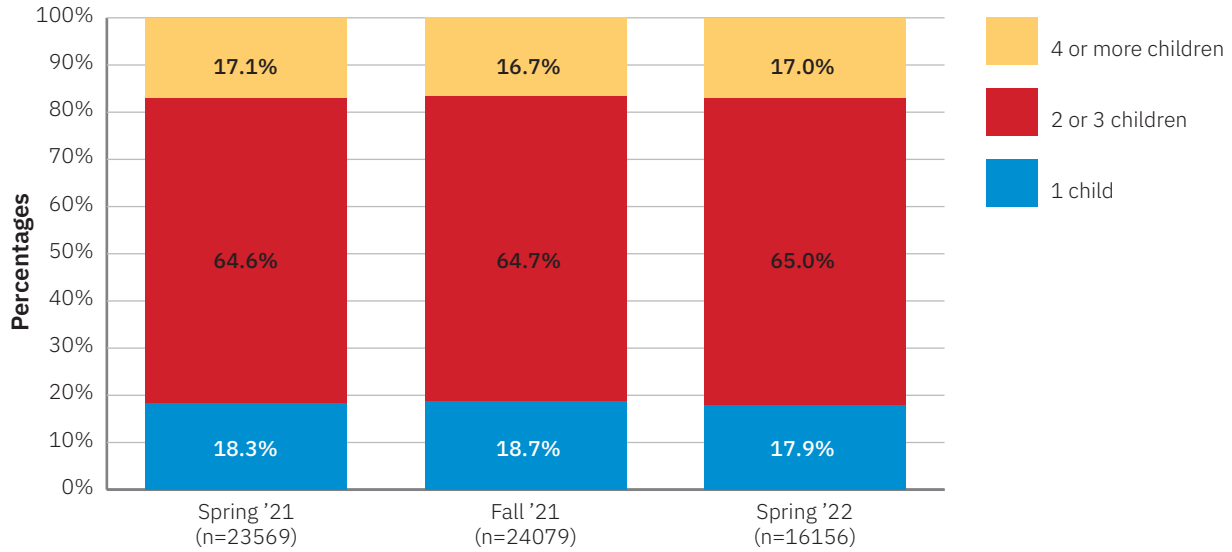## PARENTS' BRIGHTBYTES DATA

Parent Demographic Data

The majority of the parents who completed the BrightBytes survey had two or more children and were in the age range of 35-45 years old. Parent data are

reported for elementary to secondary students combined. The following data displays the range of parent ages and number of children parent respondents had.

Age Range for Parent Respondents

Number of Children of Parent Respondents

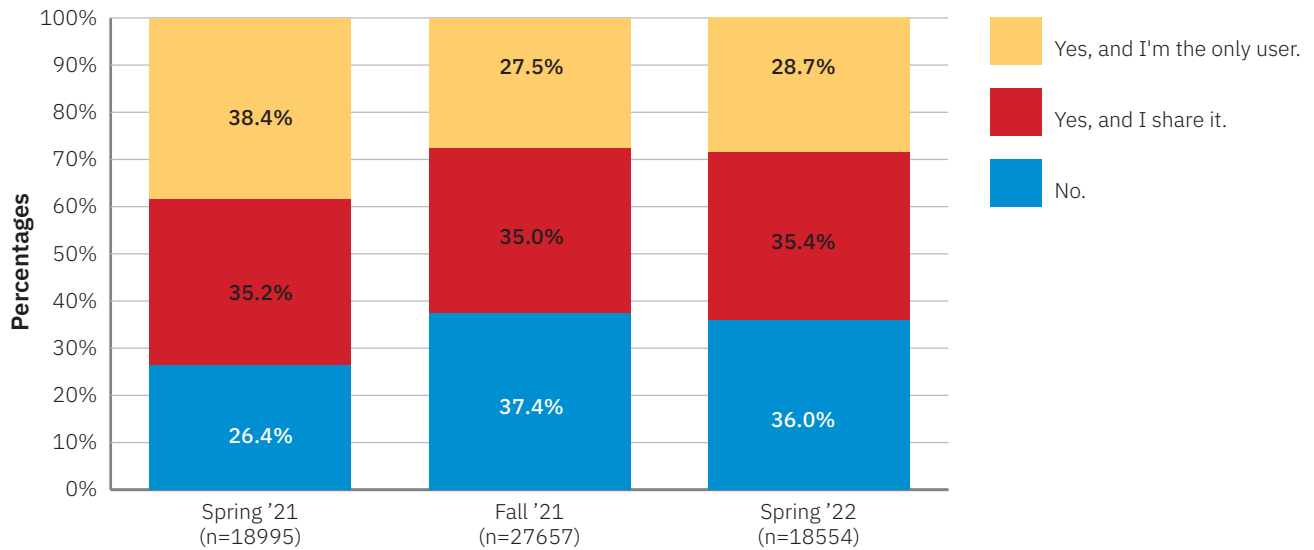|	4 or more children	2 or 3 children	1 child
Spring '21 (n=23569)	17.1%	64.6%	18.3%
Fall '21 (n=24079)	16.7%	64.7%	18.7%
Spring '22 (n=16156)	17.0%	65.0%	17.9%

Parent Access to Technology

The following trends were present:
- Parent survey responses in Spring 2022 indicated that parents owned more laptops than tablets and smartphones.
- Parents had higher percentages of sharing smartphones and tablets than sharing laptop computers.
- Approximately 9% of parents surveyed did not have internet access at home. This rate remained consistent during the three reporting periods.

Parent Ownership of Technology Devices (Spring 2022)

	Yes, and I'm the only user.	Yes, and I share it.	No.
Spring '21 (n=18995)	38.4%	35.2%	26.4%
Fall '21 (n=27657)	27.5%	35.0%	37.4%
Spring '22 (n=18554)	28.7%	35.4%	36.0%

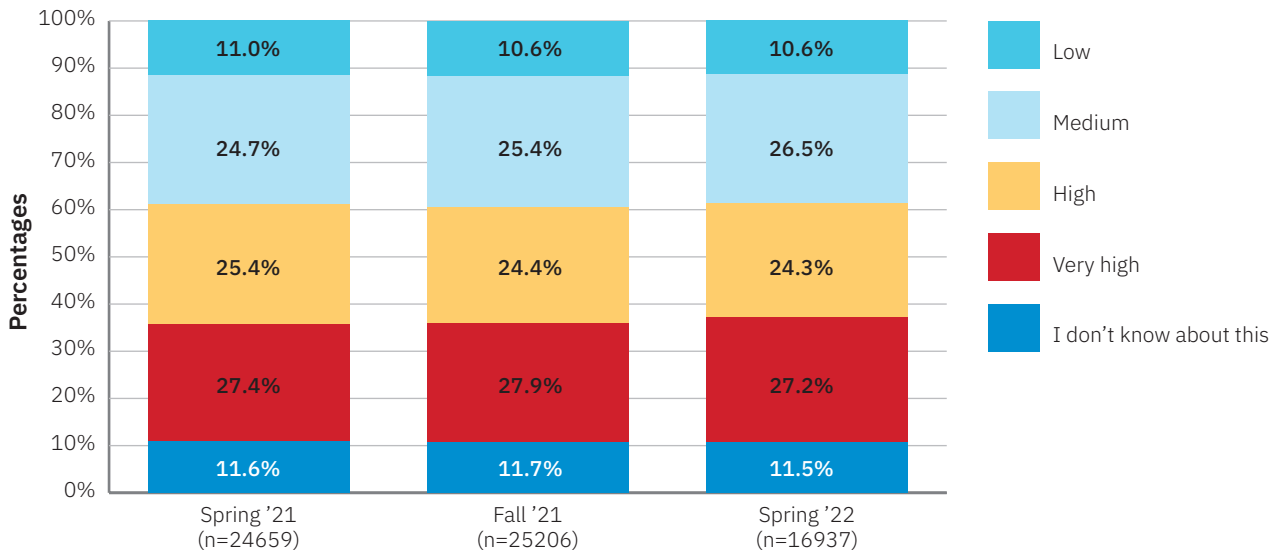## Parent Internet Access at Home

Percentages

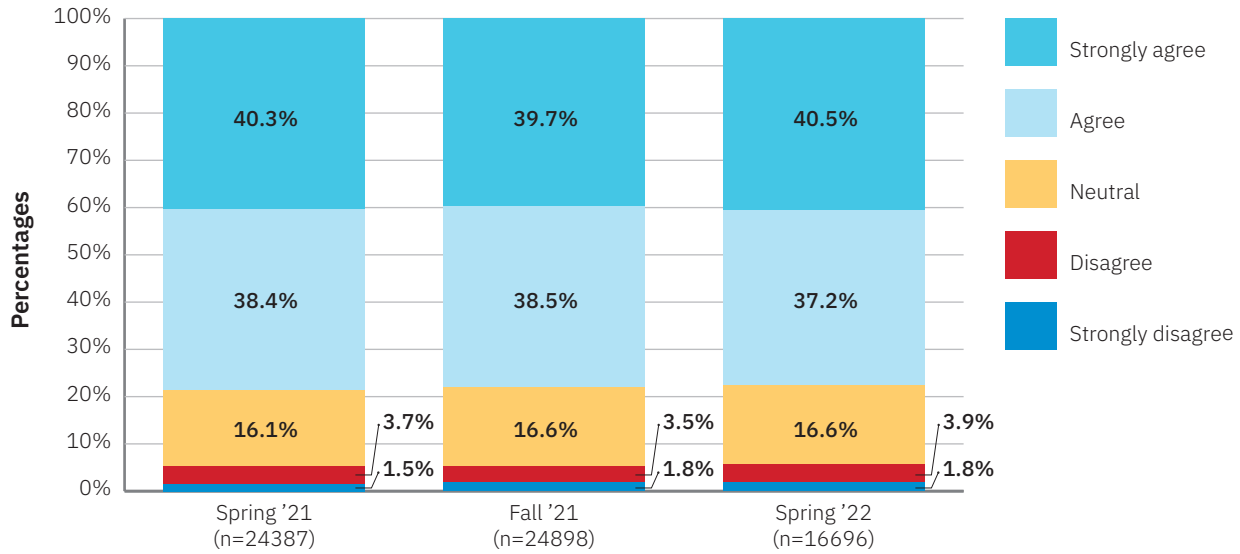|	Spring '21 (n=26110)	Fall '21 (n=26923)	Spring '22 (n=18084)
Yes	91.3%	90.3%	90.4%
No	8.7%	9.7%	9.6%
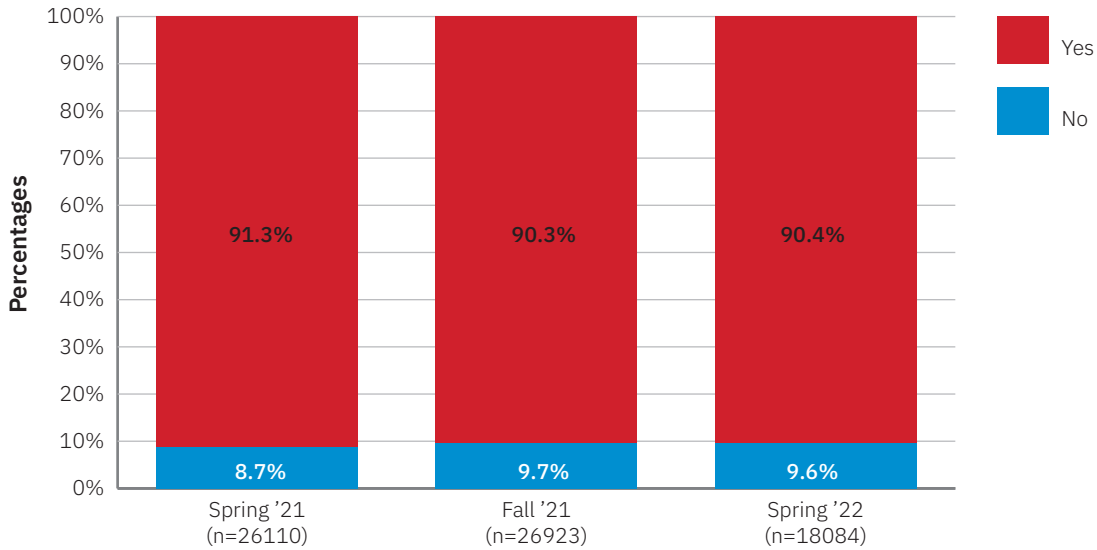
Parent Perceptions of Technology

- About 22% of parents surveyed indicated that they "didn't know about this" or had "low" confidence regarding teaching their child how to create an online presence. This concept is related to digital citizenship.
- Parents' perception of technology use in the classroom enhancing a child's learning remained fairly consistent over the three reporting periods. Approximately 5% did not agree that technology enhanced children's learning.
- Parents' desire to learn about technology was fairly consistent over the three data periods.
  - This may indicate that parents continued to want to learn more regarding technology use and their child's learning throughout the Spring 2021 through Spring 2022 timeframe.

Parent Confidence Regarding Teaching Child How to Create Online Presence

Percentages

	Spring '21 (n=24659)	Fall '21 (n=25206)	Spring '22 (n=16937)
Low	11.0%	10.6%	10.6%
Medium	24.7%	25.4%	26.5%
High	25.4%	24.4%	24.3%
Very high	27.4%	27.9%	27.2%
I don't know about this	11.6%	11.7%	11.5%

Parent Perception of Technology Use in the Classroom Enhancing Child's Learning

	Spring '21 (n=24387)	Fall '21 (n=24898)	Spring '22 (n=16696)
Strongly agree	40.3%	39.7%	40.5%
Agree	38.4%	38.5%	37.2%
Neutral	16.1%	16.6%	16.6%
Disagree	3.7%	3.5%	3.9%
Strongly disagree	1.5%	1.8%	1.8%

Parent Desire to Learn about Technology Use

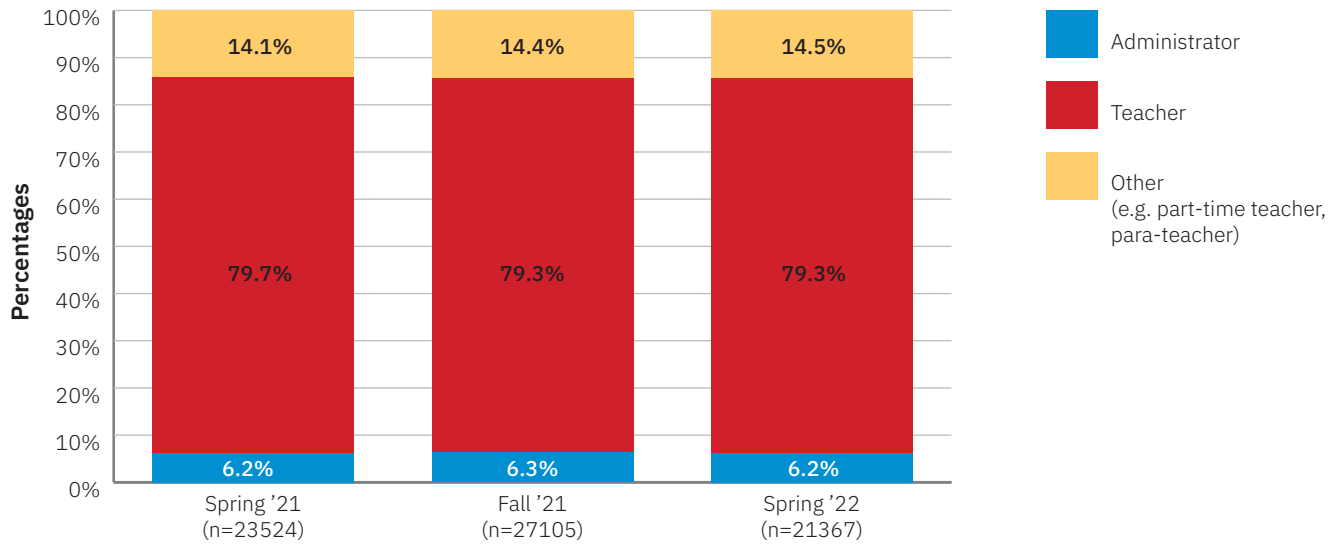|	Spring '21 (n=16593)	Fall '21 (n=24760)	Spring '22 (n=16593)
Strongly agree	33.0%	32.5%	32.4%
Agree	42.6%	41.6%	41.4%
Neutral	20.2%	21.4%	21.4%
Disagree	2.9%	2.9%	3.3%
Strongly disagree	1.4%	1.5%	1.6%
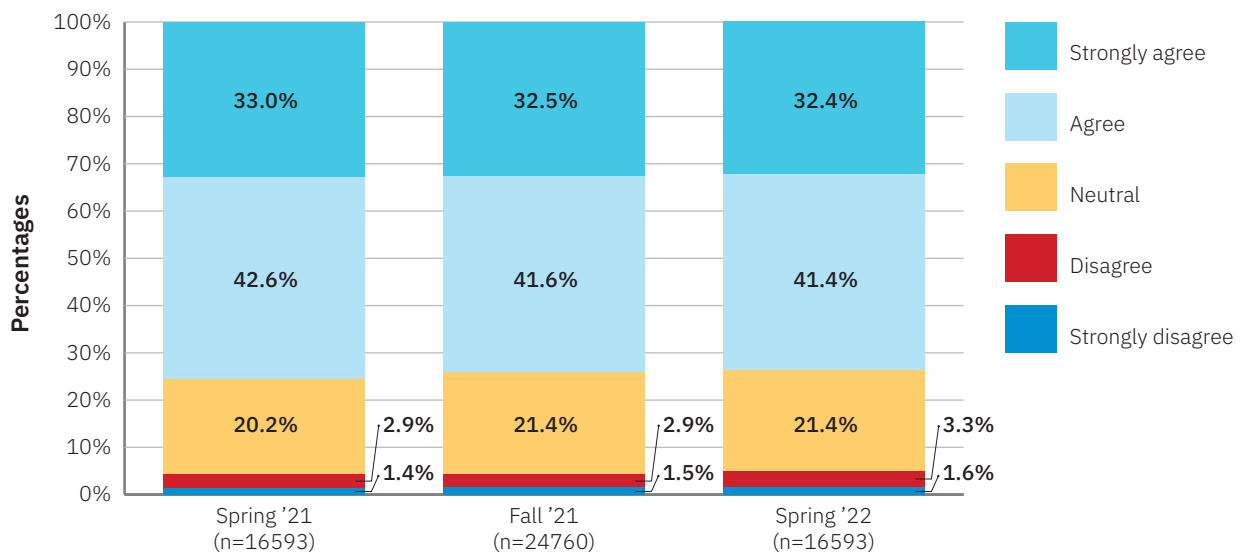
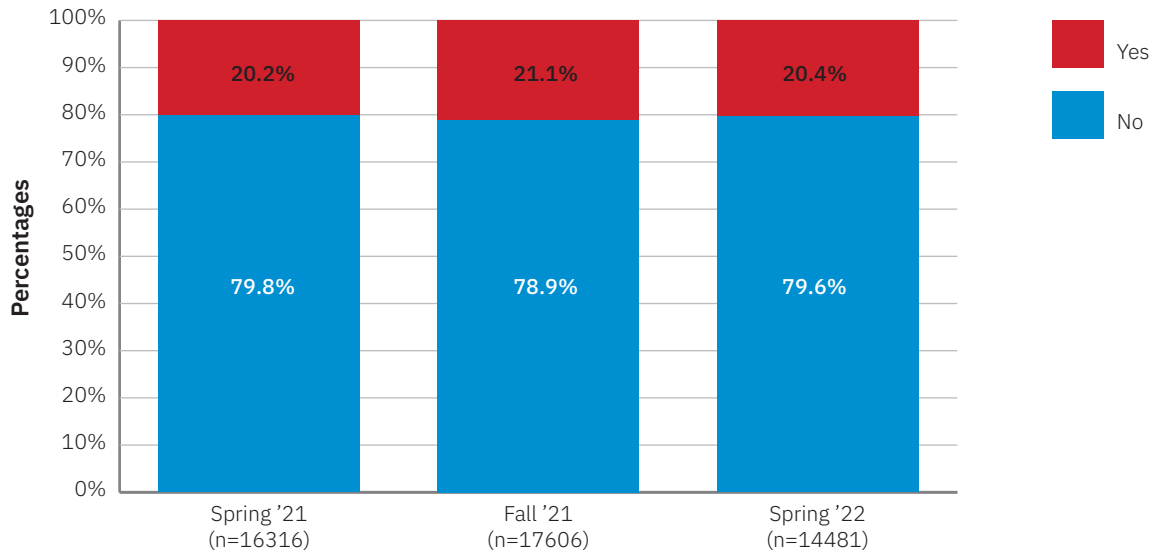## Educators' BrightBytes Data

Demographic Data

- Approximately 79% of the educator respondents were teachers.
- Approximately 14% were other roles such as teacher assistants or part-time teachers.
- Approximately 6% of respondents were administrators.
- Approximately 20% of teachers were special education teachers.

- The largest group of educator respondents taught for 10-19 years. The second largest group of respondents was educators who had 20+ years of experience.
- The largest group of administrator respondents had 4-9 years of experience. The second largest group was 3 or fewer years of experience as an administrator.

Educator Roles

Chart: Stacked bar chart showing Educator Roles by term.

Legend:
- Administrator (blue)
- Teacher (red)
- Other (e.g. part-time teacher, para-teacher) (yellow)

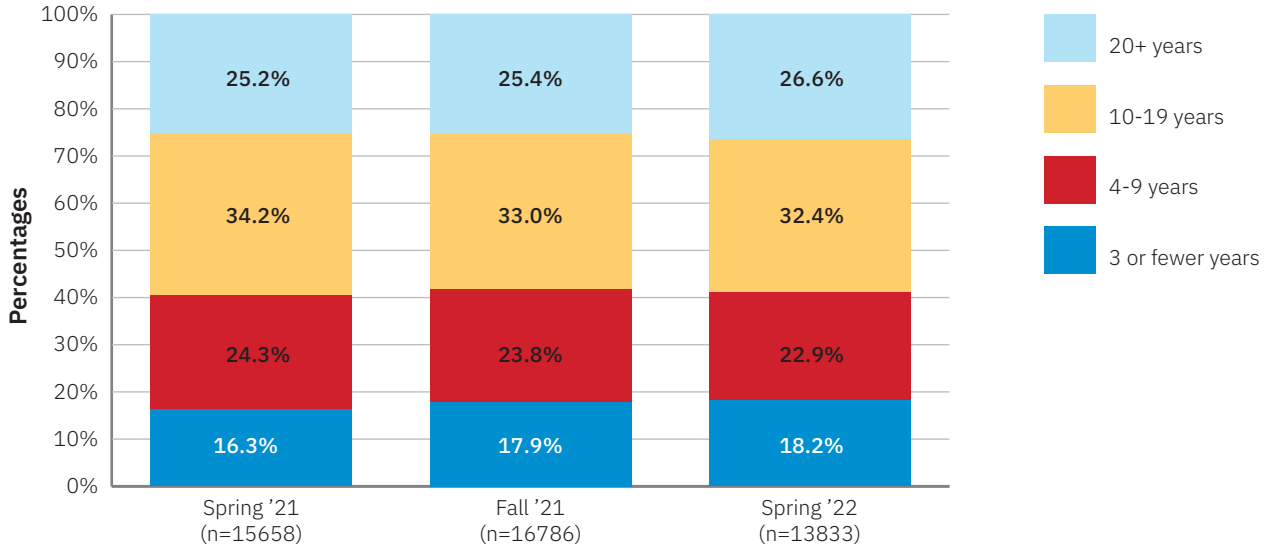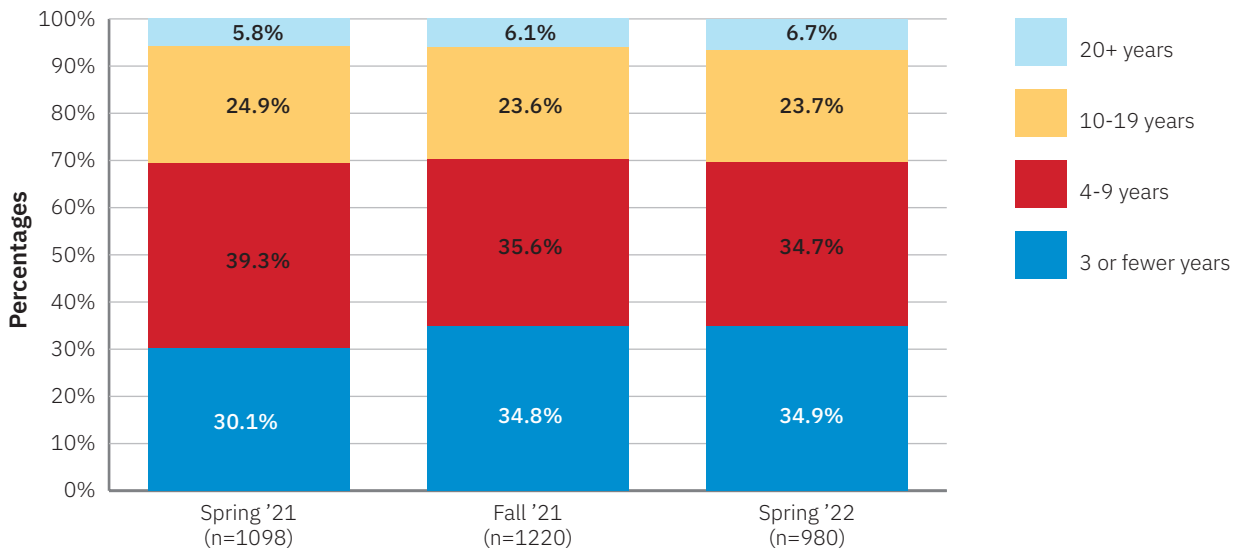| Term	Administrator	Teacher	Other
Spring '21 (n=23524)	6.2%	79.7%	14.1%
Fall '21 (n=27105)	6.3%	79.3%	14.4%
Spring '22 (n=21367)	6.2%	79.3%	14.5%

Are you a special education teacher?

This includes working in self-contained or departmentalized classrooms, pull-out settings, or other forms of special education instruction.

Legend:
- Yes (red)
- No (blue)

Term	Yes	No
Spring '21 (n=16316)	20.2%	79.8%
Fall '21 (n=17606)	21.1%	78.9%
Spring '22 (n=14481)	20.4%	79.6%

Number of Years Teaching

Chart legend: 20+ years, 10-19 years, 4-9 years, 3 or fewer years

	Spring '21 (n=15658)	Fall '21 (n=16786)	Spring '22 (n=13833)
20+ years	25.2%	25.4%	26.6%
10-19 years	34.2%	33.0%	32.4%
4-9 years	24.3%	23.8%	22.9%
3 or fewer years	16.3%	17.9%	18.2%

Number of Years as a School Administrator

Chart legend: 20+ years, 10-19 years, 4-9 years, 3 or fewer years

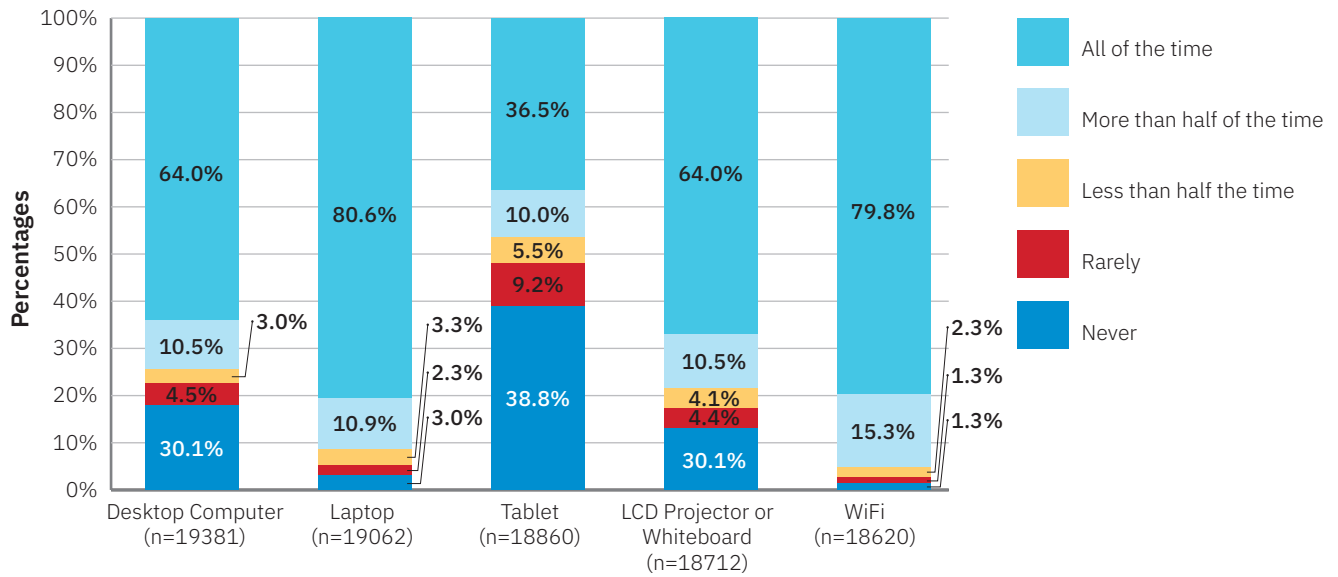|	Spring '21 (n=1098)	Fall '21 (n=1220)	Spring '22 (n=980)
20+ years	5.8%	6.1%	6.7%
10-19 years	24.9%	23.6%	23.7%
4-9 years	39.3%	35.6%	34.7%
3 or fewer years	30.1%	34.8%	34.9%

Educator Technology Access

Educator Current Device Usage

- In the Spring 2022, the most used technology tools in the classroom (rated "all of the time") were laptop (80.6%), Wi-Fi (79.8%), LCD projector or whiteboard (67%), and desktop (64%).
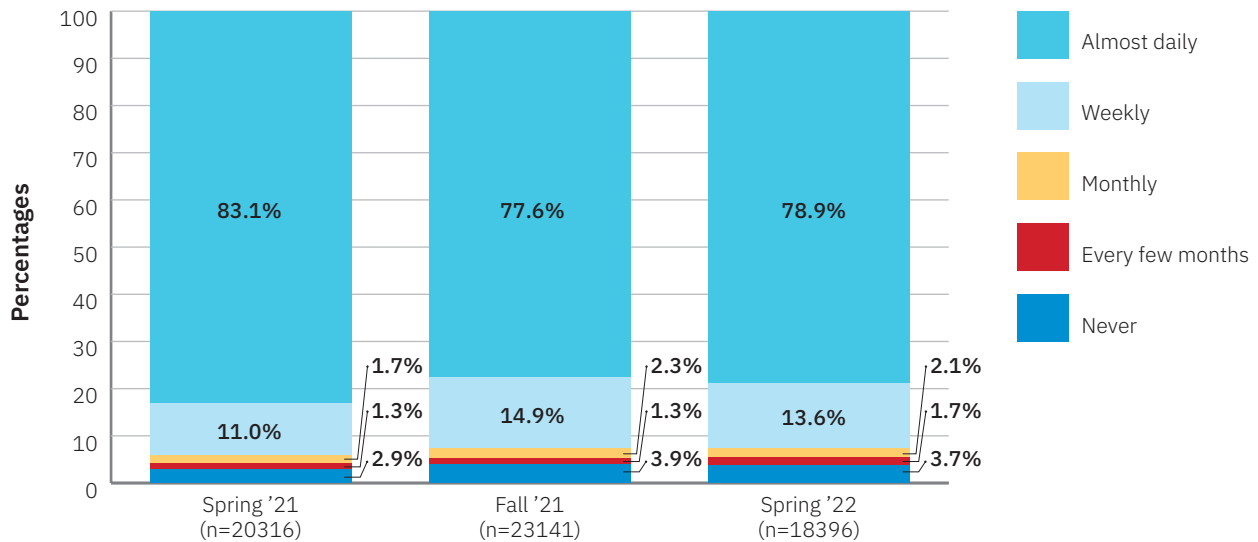- In the Spring 2022, the least used tool by educators was a tablet (36.5%).

Student Current Device Usage as Reported by Educators

- Daily usage of devices such as laptop, desktops, and tablets declined from Spring 2021 to Spring 2022 (83.1% to 78.9%).
- The majority of educators reported daily to weekly device usage with students.
- Educators reported that 90% of students have a ratio of one device to every student. This was consistent from Spring 2021 to Spring 2022.
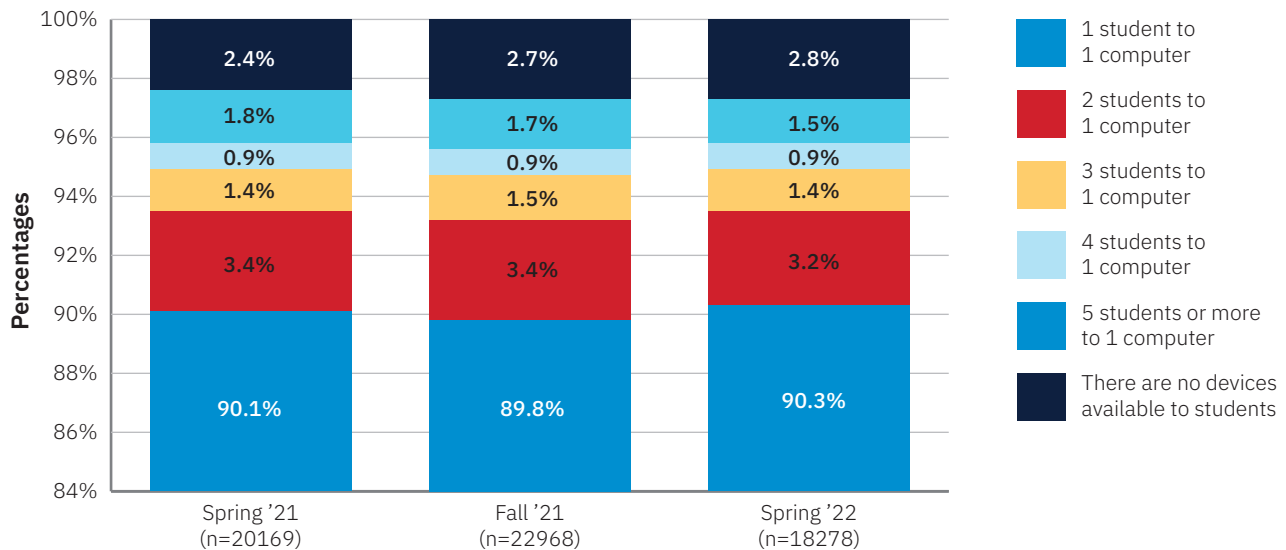
How often can you access the following school- or district-provided technologies for your use in class? (Spring 2022)

Percentages

Category	Desktop Computer (n=19381)	Laptop (n=19062)	Tablet (n=18860)	LCD Projector or Whiteboard (n=18712)	WiFi (n=18620)
All of the time	64.0%	80.6%	36.5%	64.0%	79.8%
More than half of the time	10.5%	10.9%	10.0%	10.5%	15.3%
Less than half the time	3.0%	3.3%	5.5%	4.1%	2.3%
Rarely	4.5%	2.3%	9.2%	4.4%	1.3%
Never	30.1%	3.0%	38.8%	30.1%	1.3%

How often do your students use computer devices (desktop, laptop, tablets)?

Percentages

Category	Spring '21 (n=20316)	Fall '21 (n=23141)	Spring '22 (n=18396)
Almost daily	83.1%	77.6%	78.9%
Weekly	11.0%	14.9%	13.6%
Monthly	1.7%	2.3%	2.1%
Every few months	1.3%	1.3%	1.7%
Never	2.9%	3.9%	3.7%

On average, what is the student to device (e.g. desktop, laptop, or tablet) ratio available for your students?

Legend:
- 1 student to 1 computer
- 2 students to 1 computer
- 3 students to 1 computer
- 4 students to 1 computer
- 5 students or more to 1 computer
- There are no devices available to students

Spring '21 (n=20169):
- 90.1%
- 3.4%
- 1.4%
- 0.9%
- 1.8%
- 2.4%

Fall '21 (n=22968):
- 89.8%
- 3.4%
- 1.5%
- 0.9%
- 1.7%
- 2.7%

Spring '22 (n=18278):
- 90.3%
- 3.2%
- 1.4%
- 0.9%
- 1.5%
- 2.8%

Educator Environment

- In response to the statement "I find good solutions when I have a problem with technology," educators' responses in the *Strongly Agree* category increased from Spring 2021 (27.7%) to Spring 2022 (32%). Less than 4% rated that statement in the *Disagree* to *Strongly Disagree* range across the Spring 2021 to Spring 2022 time period. But 19.6% to 22% provided a *Neutral* response to this question in the same time period.
  - ‣ This may indicate that additional training and support may be needed when problems arise with technology use in the classroom.
- A similar pattern was shown with the statement "I easily find new technologies to meet my teaching goals." In the Spring 2021, 25.7% rated that statement *Neutral*, while 4.8% indicated *Disagree* and
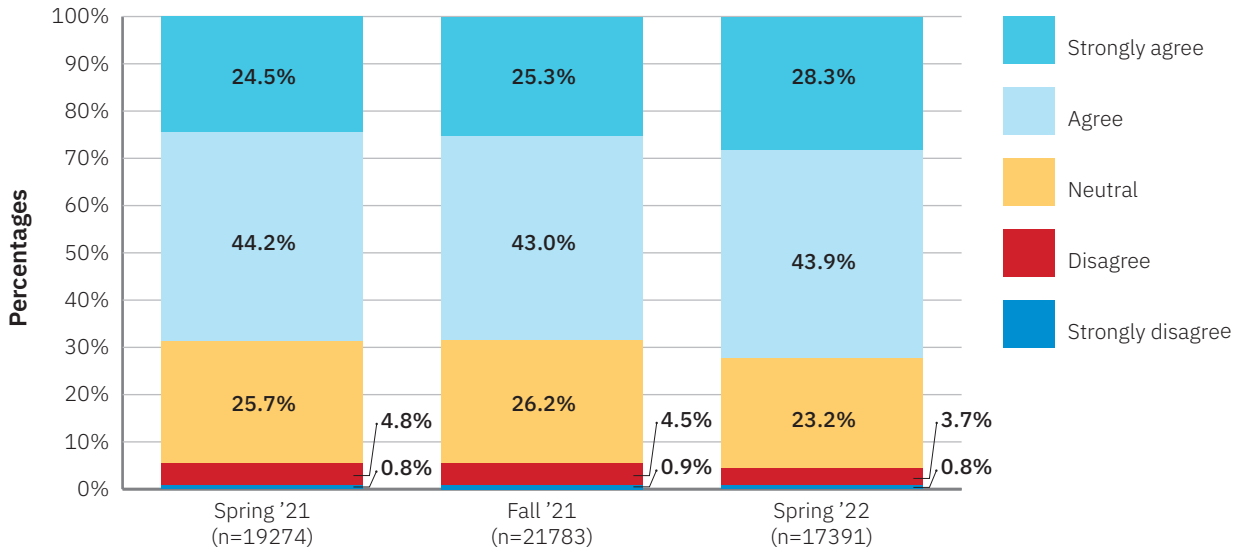
Strongly Disagree 0.7%. In the Spring of 2022, 23.2% reported neutral ratings and 3.7% rated *Disagree*.
  - ‣ This indicates that educators may need additional support with finding new technologies to meet teaching goals.
- Another statement, "I feel confident managing a classroom where students are using technology," had approximately 80% of teachers rating *Agree* or *Strongly Agree*. The *Neutral* category had 15.9% in Spring 2021, 16.4% in Fall 2021, and 14.1% in Spring 2022.
  - ‣ This may also indicate that some teachers may need some support managing student behavior when using technology in the classroom.
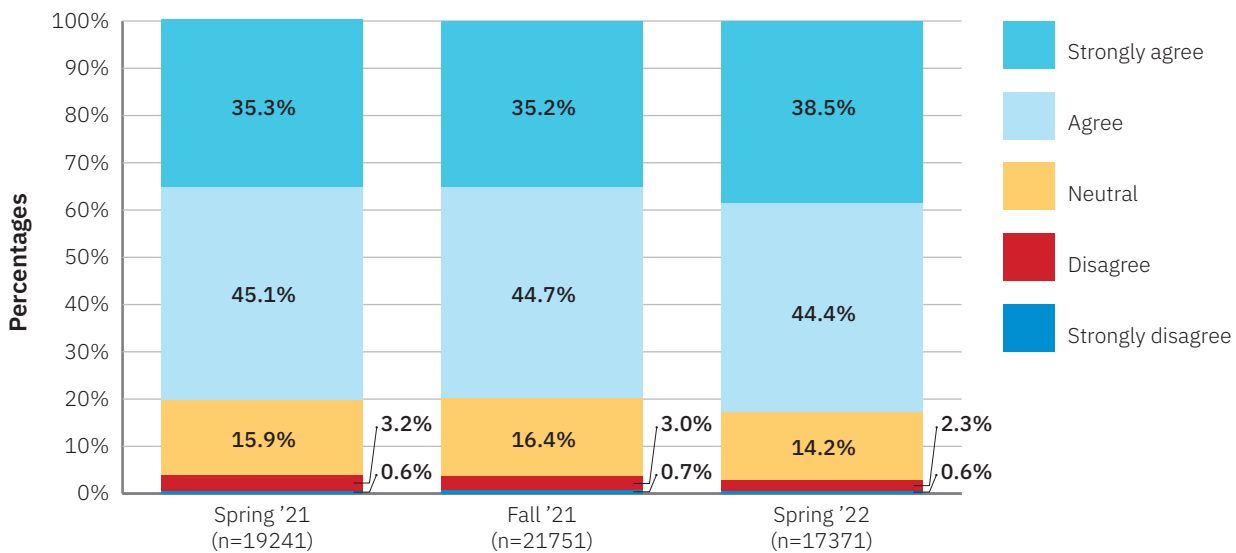
I find good solutions when I have a problem with technology.

Legend:
- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

Spring '21 (n=19314):
- 27.8%
- 45.2%
- 22.1%
- 4.0%
- 0.9%

Fall '21 (n=21837):
- 29.0%
- 43.9%
- 22.2%
- 3.8%
- 1.0%

Spring '22 (n=17428):
- 32.0%
- 44.5%
- 19.6%
- 3.2%
- 0.7%

I easily find new technologies to meet my teaching goals.

Stacked bar chart. Percentages (y-axis) by term.

Response	Spring '21 (n=19274)	Fall '21 (n=21783)	Spring '22 (n=17391)
Strongly agree	24.5%	25.3%	28.3%
Agree	44.2%	43.0%	43.9%
Neutral	25.7%	26.2%	23.2%
Disagree	4.8%	4.5%	3.7%
Strongly disagree	0.8%	0.9%	0.8%

I feel confident managing a classroom where students are using technology.

Stacked bar chart. Percentages (y-axis) by term.

Response	Spring '21 (n=19241)	Fall '21 (n=21751)	Spring '22 (n=17371)
Strongly agree	35.3%	35.2%	38.5%
Agree	45.1%	44.7%	44.4%
Neutral	15.9%	16.4%	14.2%
Disagree	3.2%	3.0%	2.3%
Strongly disagree	0.6%	0.7%	0.6%

Administrative Perspective on Technology

- Mississippi administrators evaluate teachers with the Teacher Growth Rubric (TGR), which is part of the Professional Growth System. One the items on the TGR involves the teacher's use of time, space, and resources (which includes technology).
    - This item specifically mentions technology, but technology could be integrated in a variety of items on the TGR.

- According to the survey, the majority of Mississippi administrators discuss teachers' use of technology during observations and evaluations. Approximately 10-11% never to rarely discuss it with teachers they observe or evaluate. Approximately 8% of surveyed administrators never to rarely recognize teachers for their use of technology.

Administrator Questions (Spring 2022)

Legend:
- All of the time
- More than half of the time
- Less than half of the time
- Rarely
- Never

I discuss technology use with teachers during class observations or visits. (n=1208)
- 36.1%
- 38.0%
- 15.5%
- 5.8%
- 4.6%

I discuss technology use with teachers during evaluations. (n=1169)
- 34.8%
- 38.8%
- 15.3%
- 5.7%
- 5.4%

I recognize teachers for integrating technology into their teaching. (n=1142)
- 39.8%
- 40.7%
- 10.8%
- 4.4%
- 4.3%
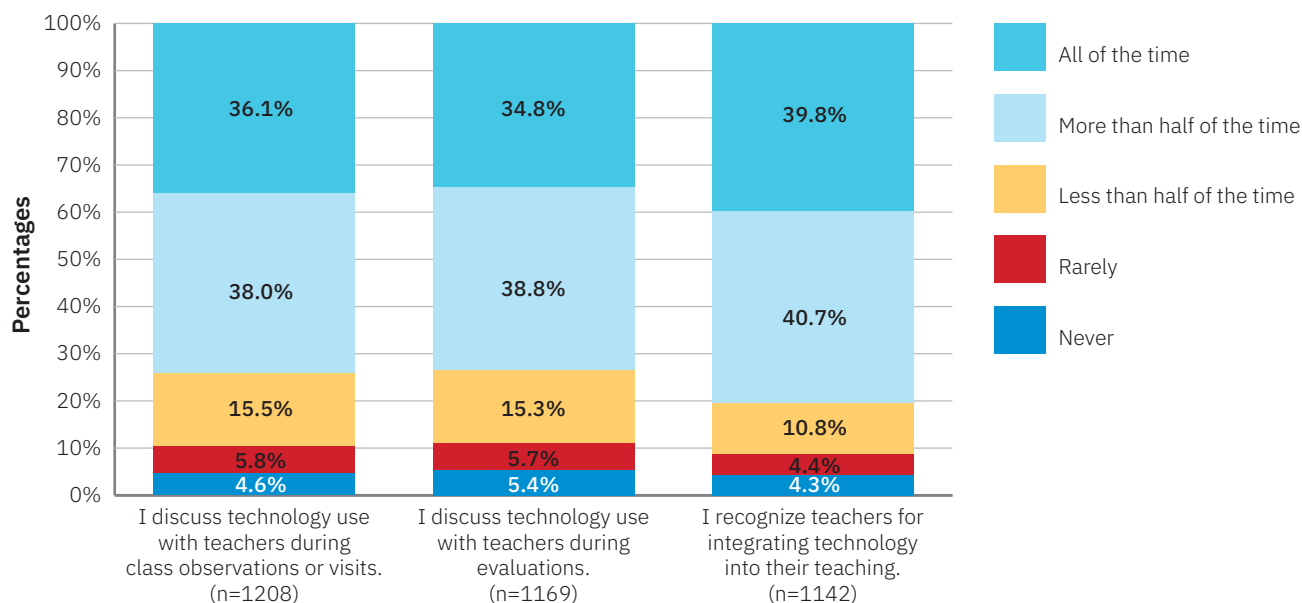
Technology Tool Use in Classroom

Posting Course Materials Online
- The educator survey for Spring 2021 showed the highest number of educators posting weekly course materials online (68%). During the Fall 2021 and Spring 2022 periods, this number decreased to 57.7% and 54.4% respectively.
- In the Fall 2021 and Spring 2022 periods, a greater number of teachers stopped posting materials online for students. In Spring 2021, 15.2% of educators never posted materials online for students. In Fall 2021, 20.8% never posted any materials online, and in Spring 2022, 22.2% never posted materials online for students.

Video Use
- A similar trend was seen in teachers using online video content. Spring 2021 had the highest weekly percentage (54.3%) with declines in each following time period: Fall 2021 (50.1%) and Spring 2022 (45.1%). Educators who never used online video content in Fall 2021 (15.2%) increased usage in Spring 2022 (21.8%).

Searching for New Digital Tools
- In Spring 2021, 41% of surveyed educators reported that they were searching for new digital tools weekly. By Spring 2022, 34.7% of educators reported that they were searching weekly for new digital tools.
- Digital tools in this question are described as open educational resources, apps, websites, or new pedagogical practices.
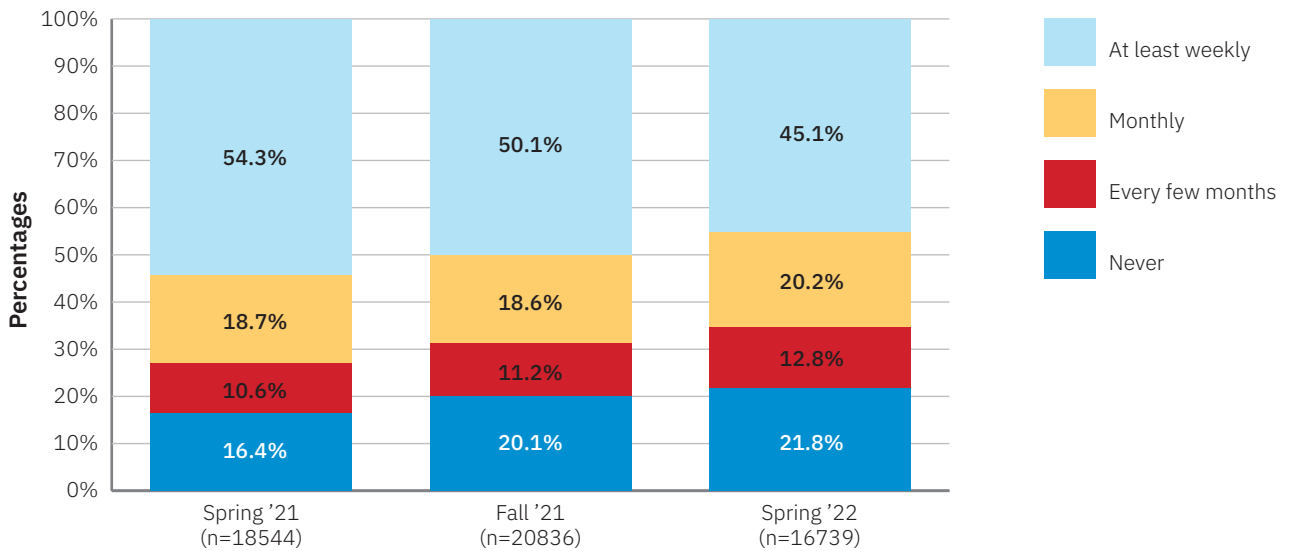
Use of Interactive Whiteboards or Display Devices
- Spring 2021 data indicated that 31% of educators were using interactive whiteboards or display devices for a majority of students at least weekly. It is important to note that many schools during the 2020-2021 school year were using a variety of instructional methods (virtual, hybrid, in-person learning).
- The Fall 2021 and Spring 2022 data indicated significant increases in interactive whiteboard or display devices for a majority of students at least weekly (75%). The Fall 2021 and Spring 2022 period included face to face instruction for students as the primary modality.
  ‣ This indicates that as teachers went back to the classroom, the tendency was to use the tools they had used before in face-to-face instruction.
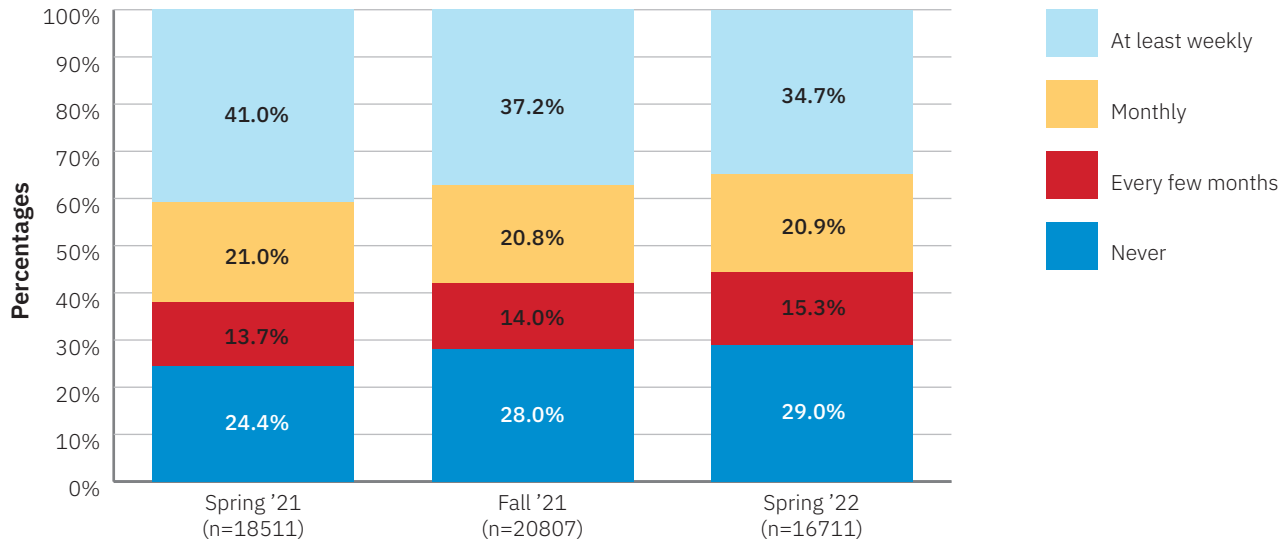
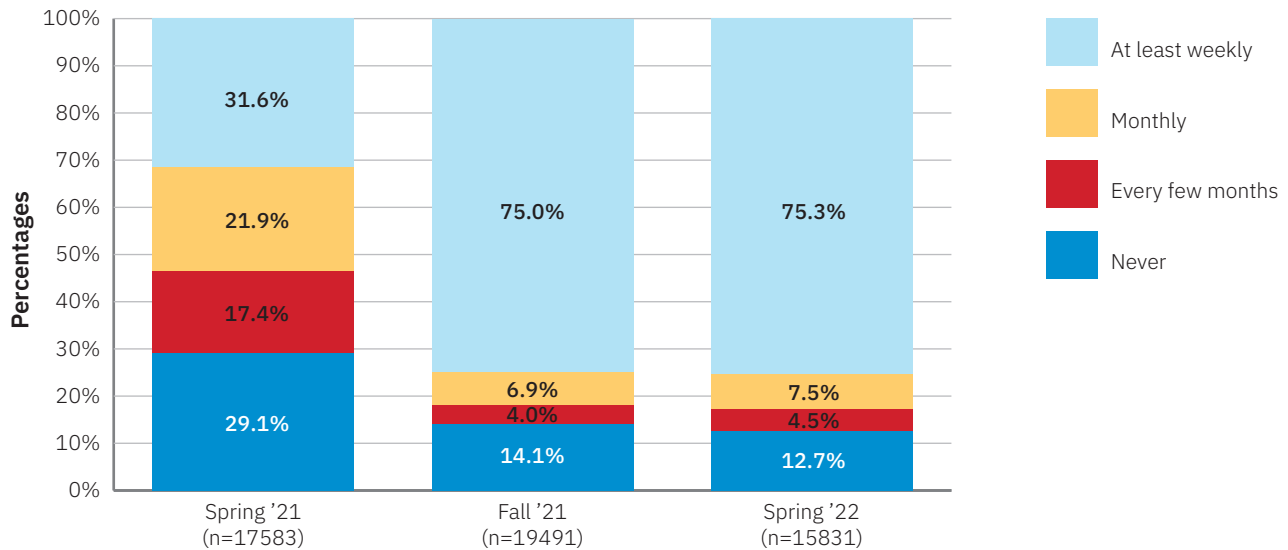## How frequently do you post course materials online for a majority of your classes?

Legend:
- At least weekly
- Monthly
- Every few months
- Never

	Spring '21 (n=18602)	Fall '21 (n=20928)	Spring '22 (n=16792)
At least weekly	68.0%	57.7%	54.4%
Monthly	9.9%	12.5%	13.1%
Every few months	6.9%	9.0%	10.3%
Never	15.2%	20.8%	22.2%
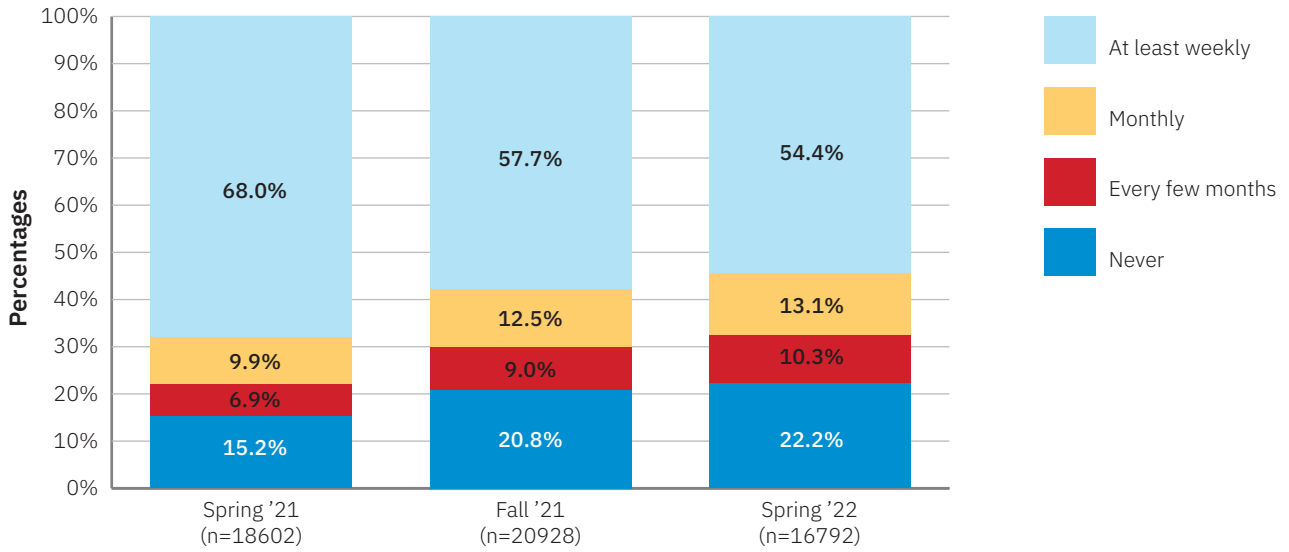
How frequently do you use online video content for a majority of your classes?

Legend:
- At least weekly
- Monthly
- Every few months
- Never

	Spring '21 (n=18544)	Fall '21 (n=20836)	Spring '22 (n=16739)
At least weekly	54.3%	50.1%	45.1%
Monthly	18.7%	18.6%	20.2%
Every few months	10.6%	11.2%	12.8%
Never	16.4%	20.1%	21.8%

How frequently do you curate digital learning resources and tools (e.g., open education resources, apps, websites, or new pedagogical practices) for a majority of your classes?

Legend: At least weekly, Monthly, Every few months, Never

	Spring '21 (n=18511)	Fall '21 (n=20807)	Spring '22 (n=16711)
At least weekly	41.0%	37.2%	34.7%
Monthly	21.0%	20.8%	20.9%
Every few months	13.7%	14.0%	15.3%
Never	24.4%	28.0%	29.0%

How frequently do you use interactive whiteboards or display devices (e.g., LCD projectors or large monitors) with a majority of your students?

Legend: At least weekly, Monthly, Every few months, Never

	Spring '21 (n=17583)	Fall '21 (n=19491)	Spring '22 (n=15831)
At least weekly	31.6%	75.0%	75.3%
Monthly	21.9%	6.9%	7.5%
Every few months	17.4%	4.0%	4.5%
Never	29.1%	14.1%	12.7%

Educator Use of Assistive Technology for Students

Definition of Assistive Technology

- According to the Mississippi Department of Rehabilitation Services[lxxi] (2022), "assistive technology is defined as the application of technology to alleviate barriers that interfere with the lives of individuals with disabilities and is intended to help the individual maintain or enhance his or her ability to function personally, socially, and/or vocationally."
- As part of the federal law called Individuals with Disabilities Education Act (IDEA), assistive technology needs must be considered for students with disabilities who have an Individual Education Program (IEP).[lxxii]
- Examples of assistive technology in the classroom include accessibility features on a computer, such as screen readers, speech to text applications, predictive text, translation programs, live captioning, speech amplification, and communication devices and software programs.

Survey Results

- According to the educator data across the three

survey periods, assistive technology use for general education students remained fairly consistent. Assistive technology was used by 34-36% weekly and by 13-14% monthly.

- The percentage of educators who reported using assistive technology at least weekly was in the 29-32% range across the three survey periods. Nine to 10% of surveyed educators reported using assistive technology with English Language Learners at least monthly across the three survey periods.
- The highest percentages (49-51%) of educators rated using assistive technology with students with disabilities at least weekly across the three survey periods. Approximately 12% of educators reported using

assistive technology with students with disabilities at least monthly across the three time periods.

- Approximately 12-13% rated that they never selected the assistive technology for the students across the three reporting periods, while 26-28% rated this item as not applicable to them.
  - ‣ Training for educators on assistive technology tools also remains an area of concern. Approximately 25% of educators reported that they never received training in the area of assistive technology across the three survey periods. Another 21-23% indicated that training in assistive technology was not applicable to them.

How frequently do you use assistive technology with general education students?
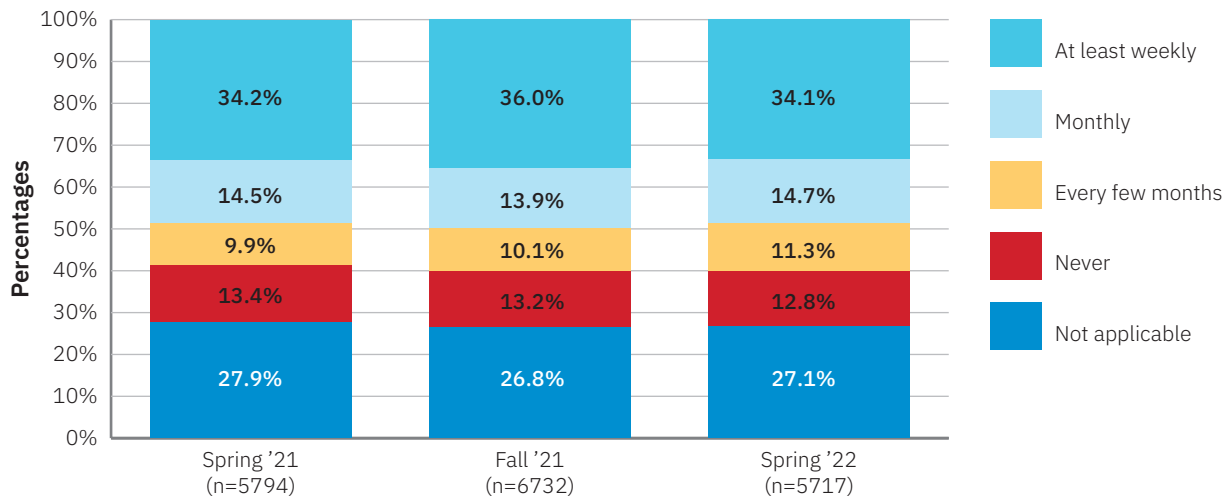
### How frequently do you use assistive technology with English Language Learners?
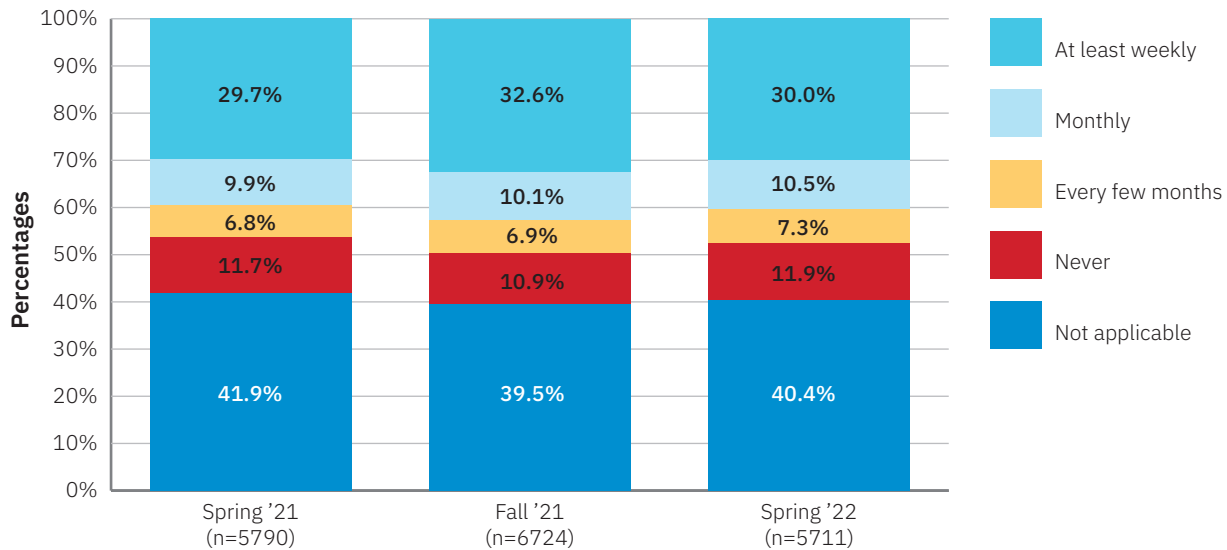
How frequently do you use assistive technology with special education students?

Legend:
- At least weekly
- Monthly
- Every few months
- Never
- Not applicable

	Spring '21 (n=5786)	Fall '21 (n=6721)	Spring '22 (n=5711)
At least weekly	49.1%	51.8%	50.1%
Monthly	12.4%	12.0%	12.8%
Every few months	9.5%	8.2%	9.4%
Never	6.2%	6.4%	6.4%
Not applicable	22.7%	21.7%	21.3%
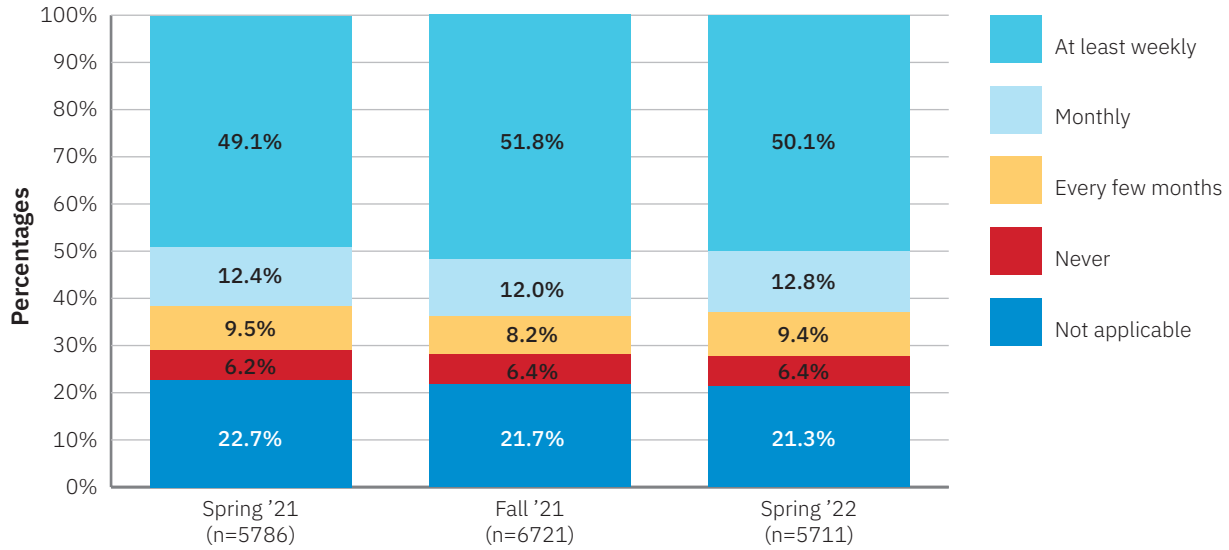
How frequently do you help decide which assistive technology your students will use?

Legend:
- At least weekly
- Monthly
- Every few months
- Never
- Not applicable

	Spring '21 (n=5780)	Fall '21 (n=6717)	Spring '22 (n=5707)
At least weekly	32.8%	35.5%	33.0%
Monthly	12.8%	12.7%	13.3%
Every few months	13.6%	13.4%	14.5%
Never	12.6%	12.0%	13.2%
Not applicable	28.2%	26.4%	26.1%
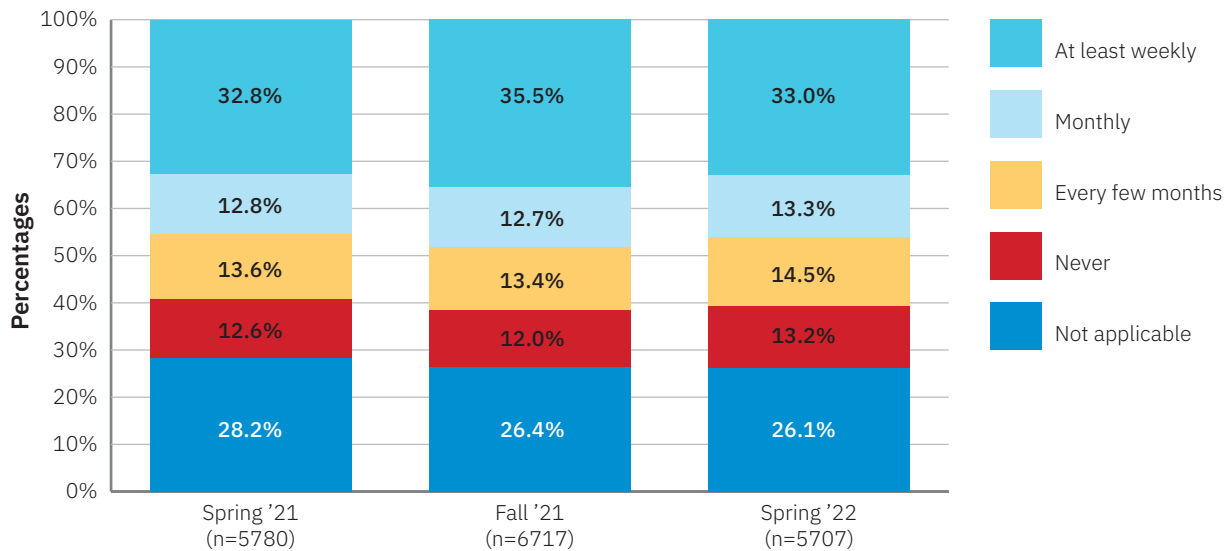
How frequently do you receive professional development on effective use of assistive technology?
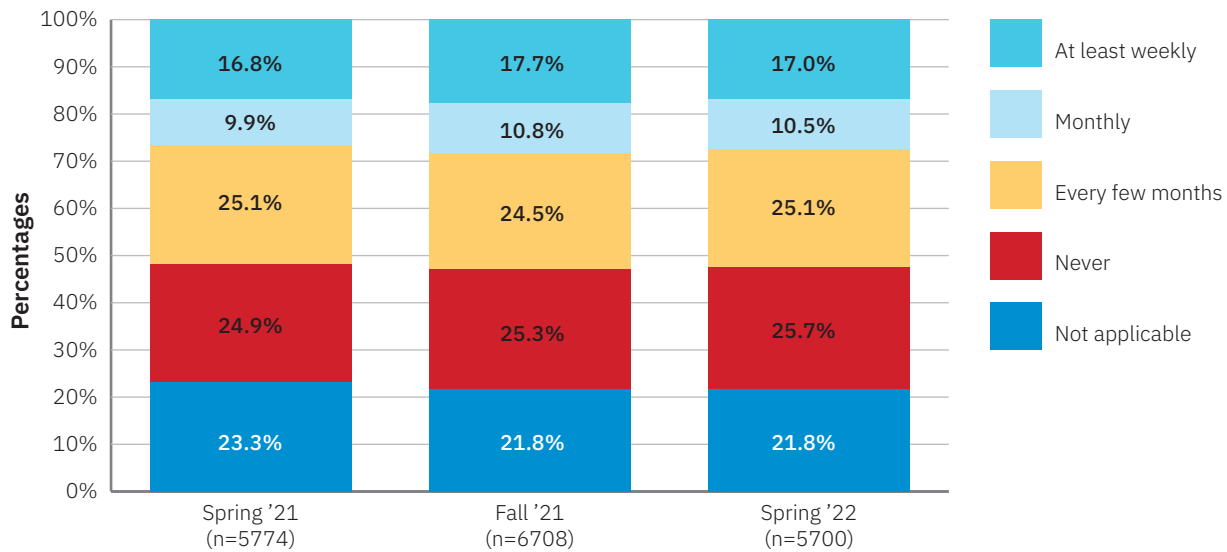
Educator Beliefs Regarding Technology

Educator Beliefs Regarding Devices, Connectivity, and Support

- Educators rated the quality of products and supports from *Poor* to *Excellent* over the three periods. Spring 2022 data are shared because it is the most current.
- Of the four areas evaluated (internet speed, computer devices, interactive whiteboards or displays, and supports for problems with instruction), educators rated interactive whiteboards or displays as the highest quality (33%). Computer devices was the second highest area (28% rated *Excellent*).
- The lowest ratings by educators were in the areas of Support for problems disrupting instruction (3% rated *Poor* and 7% *Below Average*) and Internet Speed ratings (3% rated *Poor* and 6% rated *Below Average*).

Teacher Beliefs Related to Technology and Instruction

- The majority of surveyed educators rated that learning is more engaging with technology. Approximately 3-4% of educators disagreed with that statement.
- Teachers also indicated that they wanted to learn more about effective technology use for teaching and learning. Only 2-3% of teachers surveyed disagreed or strongly disagreed with this statement.
- The majority of teachers believe they are providing equitable access to technology for students with diverse needs. Approximately 2% did not agree with this statement.
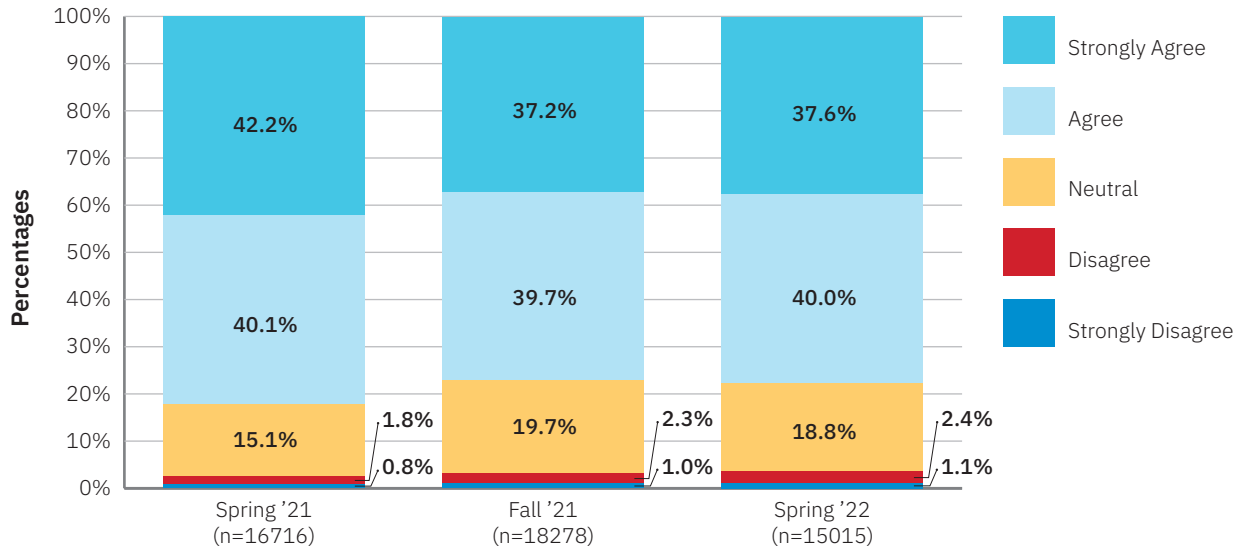
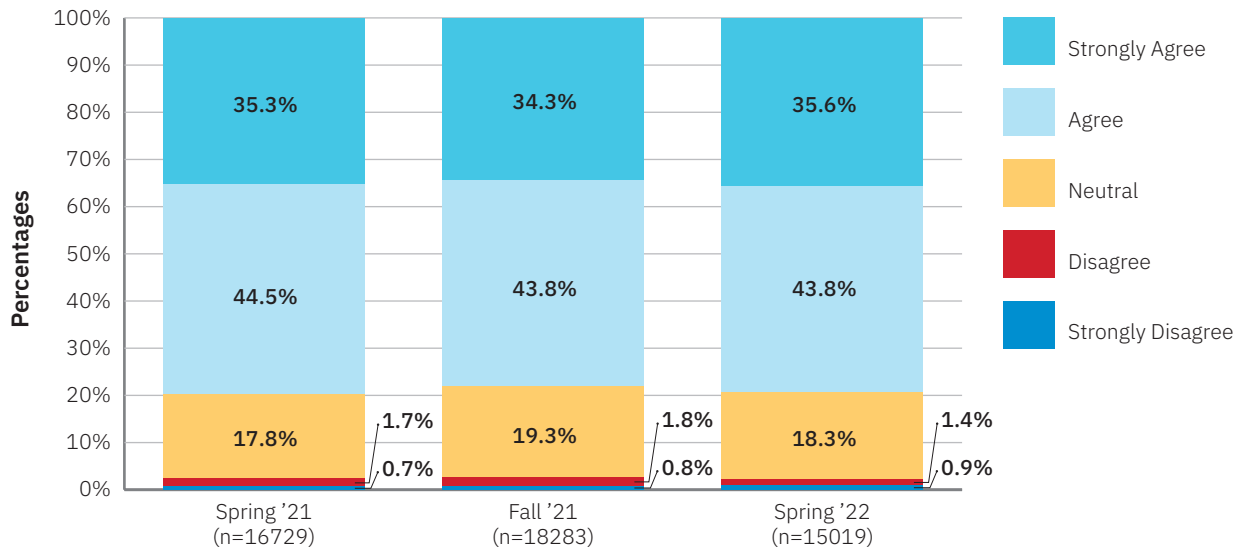## Rate the quality of the following technology products and services at your school. (Spring 2022)

Legend:
- Excellent
- Above average
- Average
- Below average
- Poor
- Not applicable

	Internet Speed (n=15198)	Computer Devices (n=15190)	Interactive Whiteboards or Display Devices (n=15181)	Support for Problems Disrupting Instruction (n=15169)
Excellent	26.4%	28.1%	33.3%	23.6%
Above average	29.3%	28.8%	27.5%	27.4%
Average	33.3%	33.8%	26.1%	35.1%
Below average	6.8%	6.3%	5.5%	7.7%
Poor	1.3%	2.5%	3.1%	3.8%
Not applicable	0.5%	0.5%	4.6%	2.4%

I think that learning is more engaging when using technology.
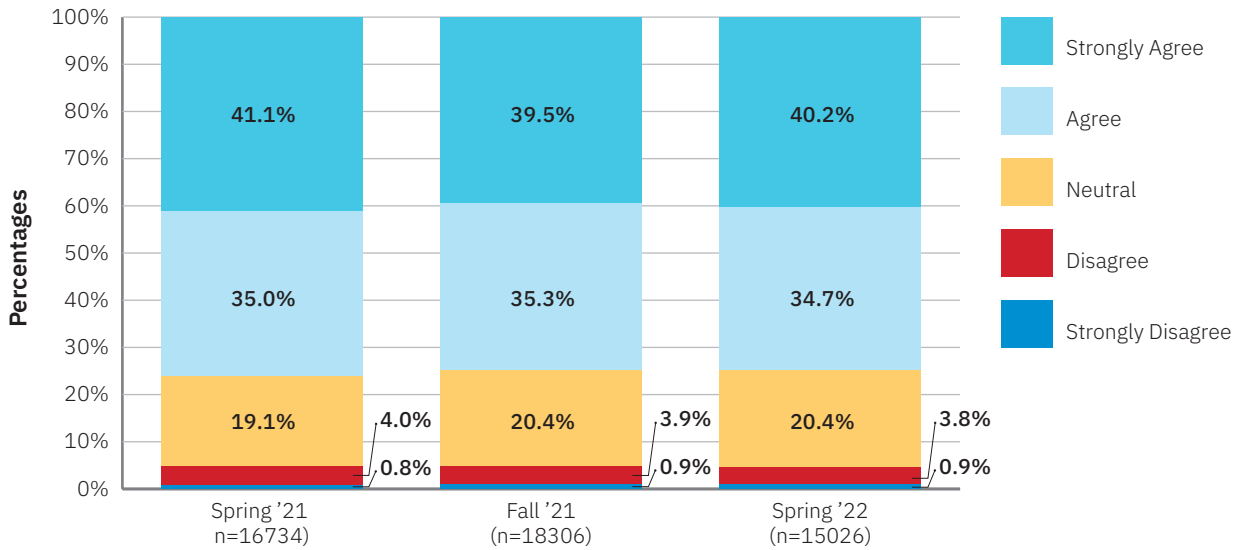
Legend:
- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

	Spring '21 n=16734)	Fall '21 (n=18306)	Spring '22 (n=15026)
Strongly Agree	41.1%	39.5%	40.2%
Agree	35.0%	35.3%	34.7%
Neutral	19.1%	20.4%	20.4%
Disagree	4.0%	3.9%	3.8%
Strongly Disagree	0.8%	0.9%	0.9%

I want to learn more about effective technology use for teaching and learning.

	Spring '21 (n=16716)	Fall '21 (n=18278)	Spring '22 (n=15015)
Strongly Agree	42.2%	37.2%	37.6%
Agree	40.1%	39.7%	40.0%
Neutral	15.1%	19.7%	18.8%
Disagree	1.8%	2.3%	2.4%
Strongly Disagree	0.8%	1.0%	1.1%

I provide equitable access to technology for students with diverse needs (e.g., using technology that best meets learner needs).

	Spring '21 (n=16729)	Fall '21 (n=18283)	Spring '22 (n=15019)
Strongly Agree	35.3%	34.3%	35.6%
Agree	44.5%	43.8%	43.8%
Neutral	17.8%	19.3%	18.3%
Disagree	1.7%	1.8%	1.4%
Strongly Disagree	0.7%	0.8%	0.9%

STUDENTS' BRIGHTBYTES DATA

Elementary

Demographic Data

Mississippi elementary students were surveyed in grades 3 to 6. See the demographic data table below regarding the distribution of the grade levels in each sample period. The majority of the students were in grades 3-5.

What grade are you in?
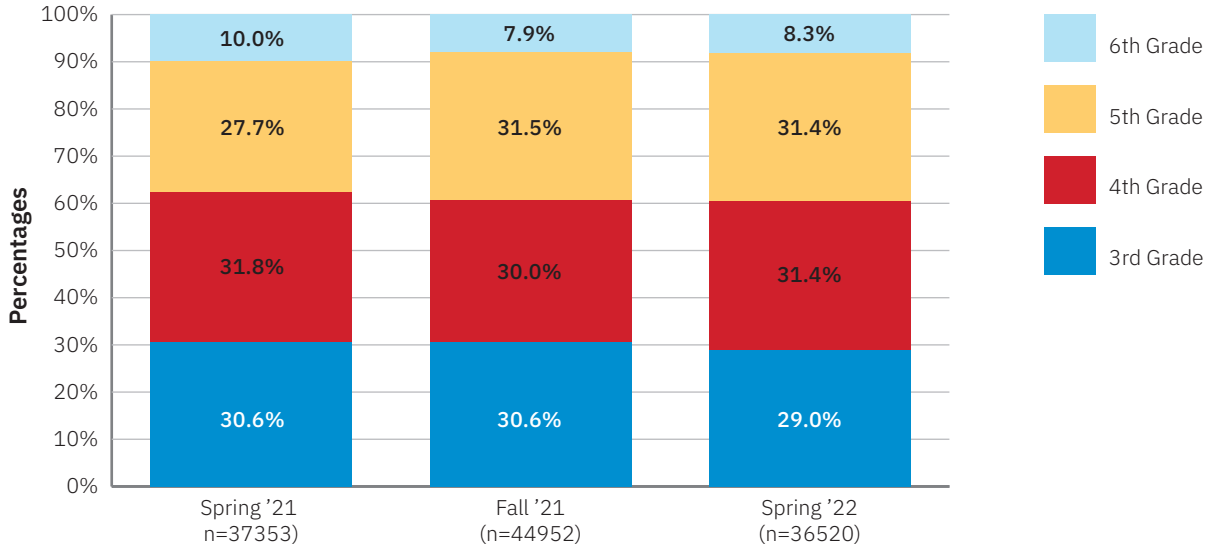
Student Device Access

- Approximately 22% of elementary students in Spring 2021 reported that they did not have access to a school-provided device. By Spring 2022, that number had decreased to 9%.
- Another trend over the three periods was in Spring 2021: higher numbers of students were taking the devices home every night (34%), but by Spring 2022, only 22% of students reported having access to taking the device home every night.
- Approximately 27% of surveyed elementary students in Spring 2021 reported that they couldn't take the device home. In Spring 2022, that number increased to 51%. This indicates that students had less access to school devices at home.

Do you have access to a school-provided device (e.g., Chromebook, PC, iPad, or Macbook Air)?
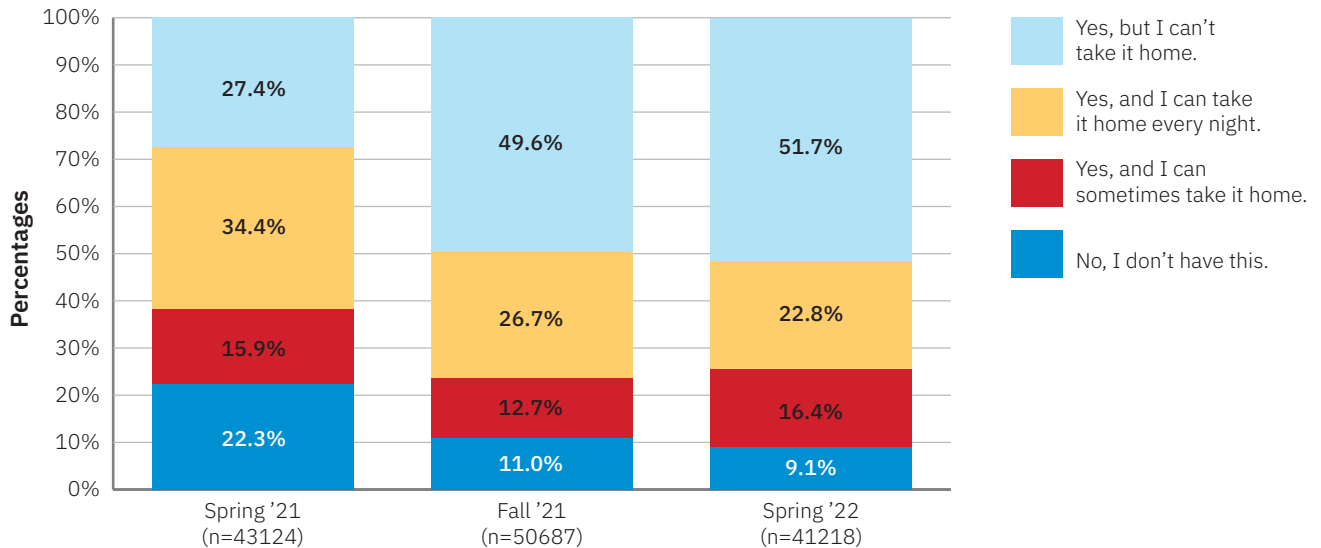
Student Technology Use in the Classroom

- Elementary students reported similar trends over the three data collection periods (Spring 2021, Fall 2021, and Spring 2022) in the following areas:
    ‣ Using online documents
    ‣ Working online with classmates
    ‣ Using technology to solve real world problems.
- The percentage of elementary students who reported that they "Never" use technology to solve real world problems during the Spring 2021 to Spring 2022 periods ranged from 48% to 52%.

‣ This may indicate that teachers may need some additional support and training on using technology for critical thinking and problem-solving activities for elementary students.
- Elementary students rated *Never* on the item "Working online with classmates" 39% to 44%.
    ‣ This indicates that a high percentage of students are not using technology for online collaboration.

How often do your teachers ask you to use online documents (e.g., Google Docs or Office 365)?
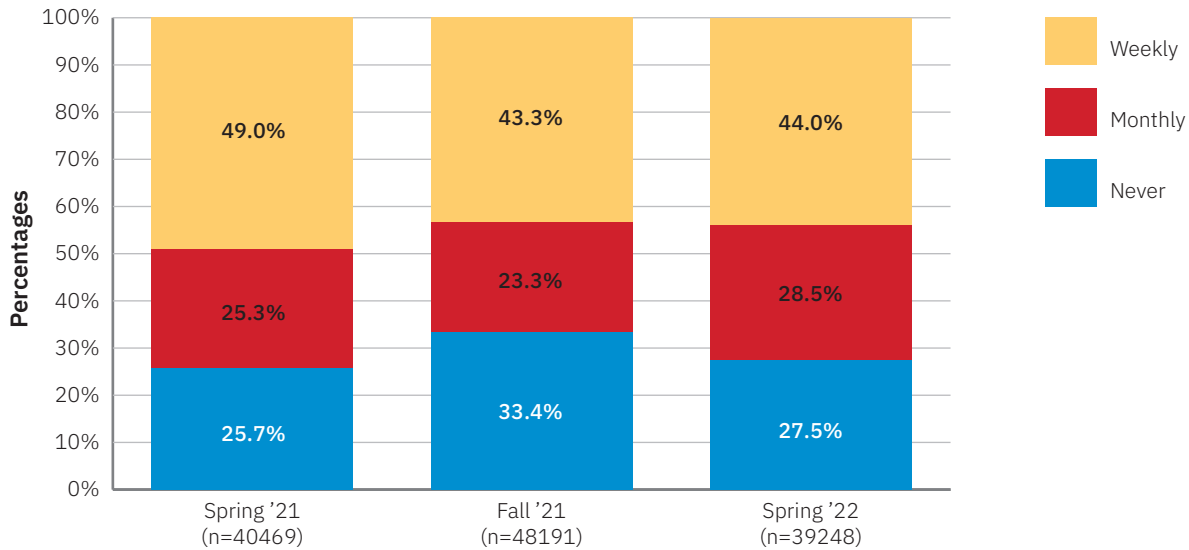
How often do your teachers ask you to work online with classmates?
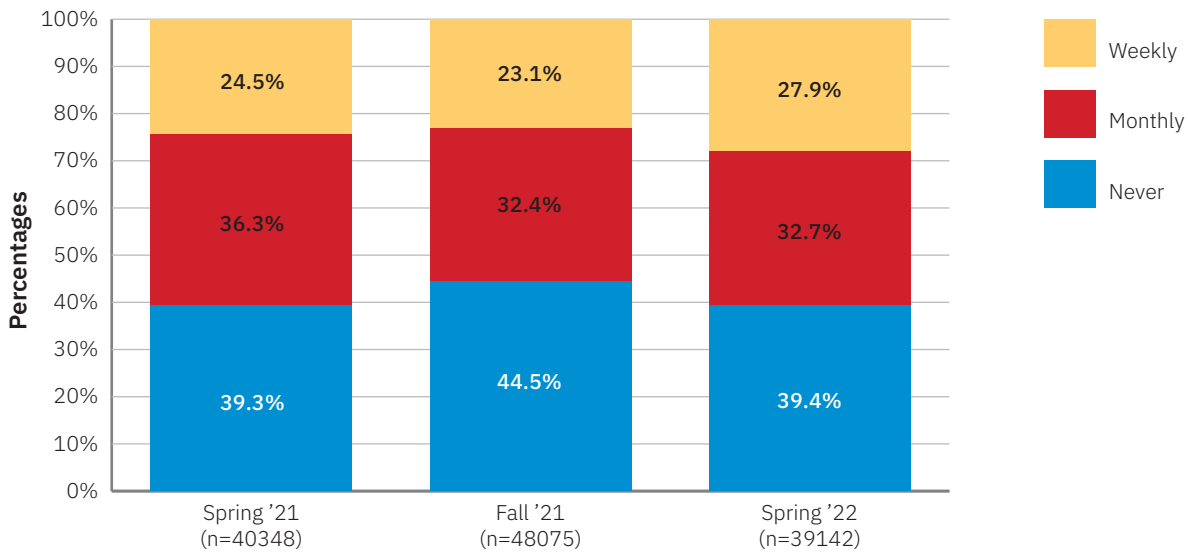
How often do your teachers ask you to solve real-world problems using technology?

Legend:
- Weekly
- Monthly
- Never

	Spring '21 (n=38568)	Fall '21 (n=46416)	Spring '22 (n=37745)
Weekly	28.2%	26.8%	27.4%
Monthly	23.4%	21.0%	24.2%
Never	48.4%	52.1%	48.4%
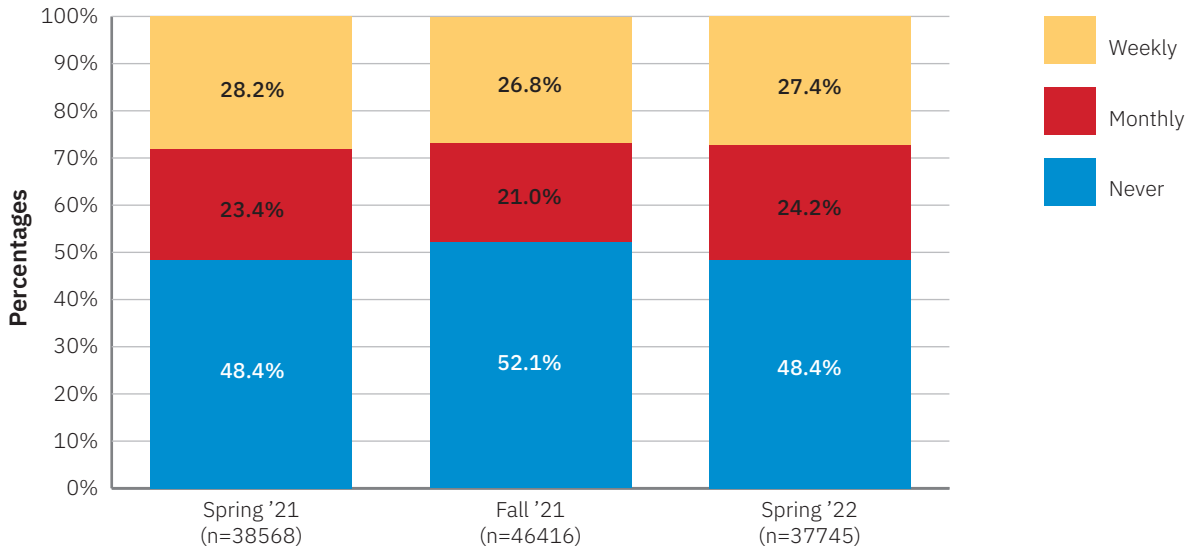
Middle School
Student Demographic Information

The graph below provides demographic information regarding the percentages of students in grades 3-9 who took that BrightBytes Technology and Learning Survey. Data collection for middle schools in Spring 2022 included a higher percentage of 9th graders than the previous two data surveys for middle school.

What grade are you in?

Legend:
- 9th Grade
- 8th Grade
- 7th Grade
- 6th Grade
- 5th Grade
- 4th Grade
- 3rd Grade

	Spring '21 (n=28341)	Fall '21 (n=36770)	Spring '22 (n=38190)
9th Grade	1.7%	0.9%	18.7%
8th Grade	31.6%	32.2%	24.8%
7th Grade	34.3%	33.6%	26.6%
6th Grade	25.0%	25.5%	20.2%
5th Grade	4.4%	3.9%	5.0%
4th Grade	1.9%	2.2%	2.6%
3rd Grade	1.5%	1.7%	1.9%
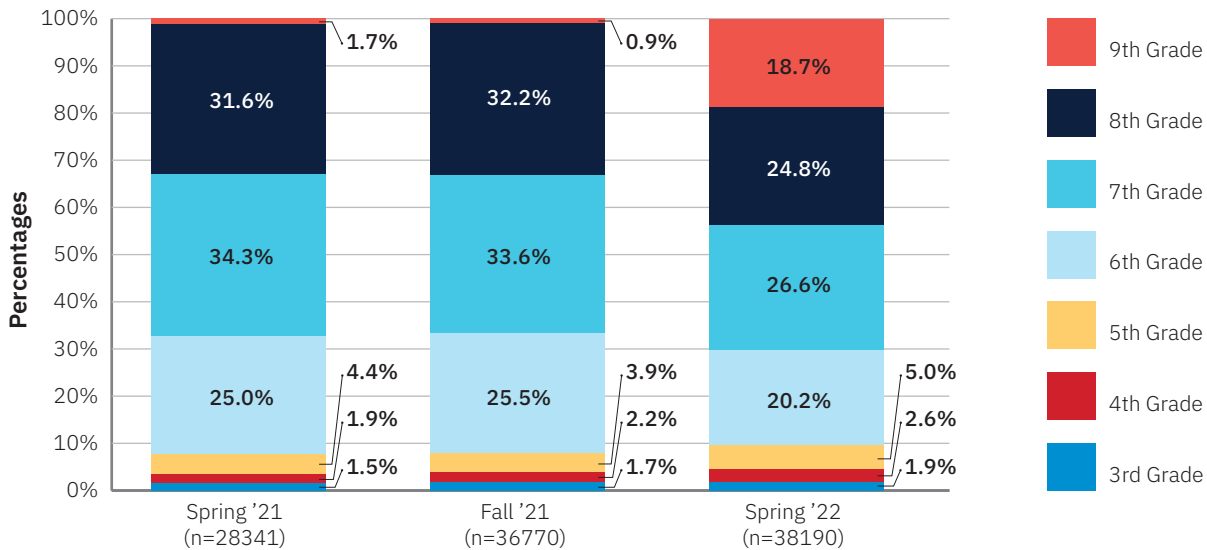
Middle School Student Device Use and Access
Student Device Use

- Across the three survey periods, the percentage of middle school students using computer devices (laptop, desktop, or tablet) on a daily basis was approximately 80-81%. This trend remained constant over the time frame studied.
- Across the three survey periods, the percentage of middle school students using computer devices (laptop, desktop, or table) on a weekly basis (at least 1-2 times per week) was approximately 11-12%.
- Device usage with surveyed Mississippi middle school and high school students showed a similar trend. (See the high school device use chart for comparison.)

Student Access

- During the three survey periods, the percentage of middle schoolers reporting they had access to a

device and were taking it home daily ranged from 70% (Spring 2021) to 67.1% (Spring 2022).
- Surveyed middle schoolers had more access to school devices at home than surveyed elementary students (Spring 2021 = 34.4%; Spring 2022 = 22.8%).

- Surveyed high school students (Spring 2021= 80.6%; Spring 2022 = 67.1%) had higher levels of access to school devices at home than the middle school and elementary students.

How often do you use computer devices (e.g., desktops, laptops, or tablets) in class?
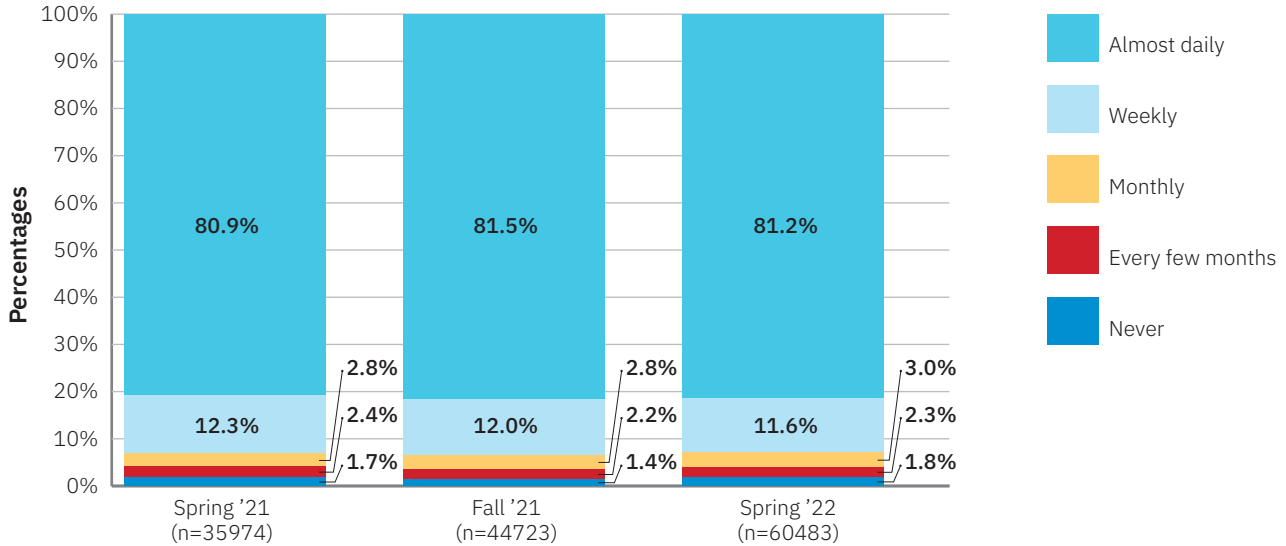
Do you have access to a school-provided device (e.g., Chromebook, PC, iPad, or Macbook Air)?
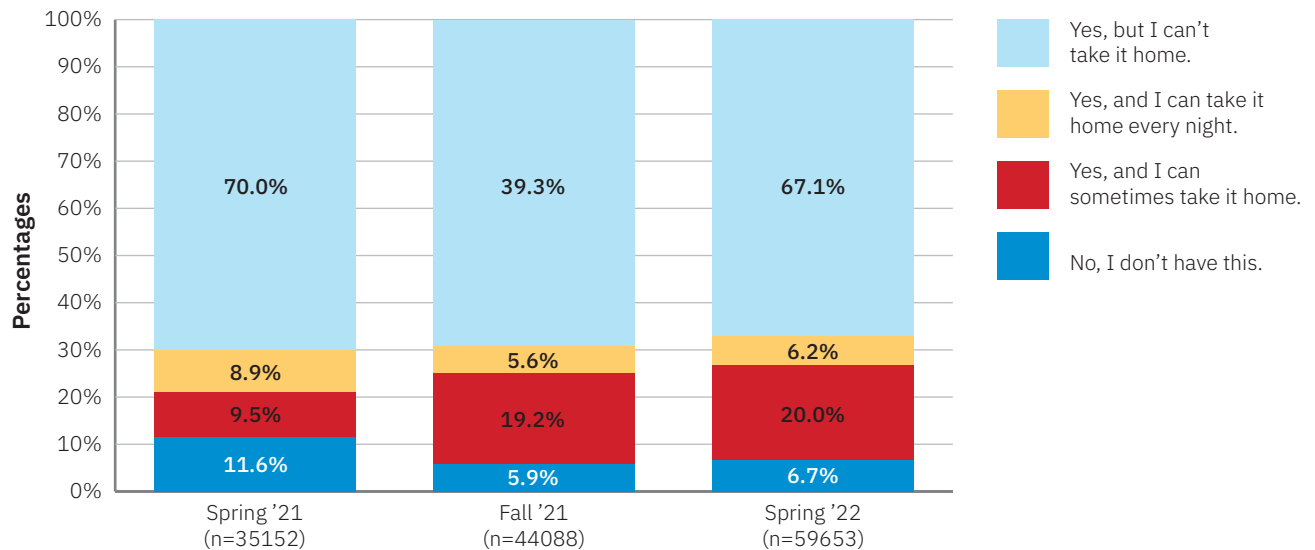
Student Perceptions of Technology
- Data from the three survey periods indicated that the majority of middle school students believed that their schools encouraged technology use for learning.
- Approximately 2-3% of middle school students strongly disagreed that their school encouraged

technology use for learning across the three survey periods.
- Approximately 5% of middle school students disagreed that their school encouraged technology use for learning across the three survey periods.

My school encourages technology use for learning.
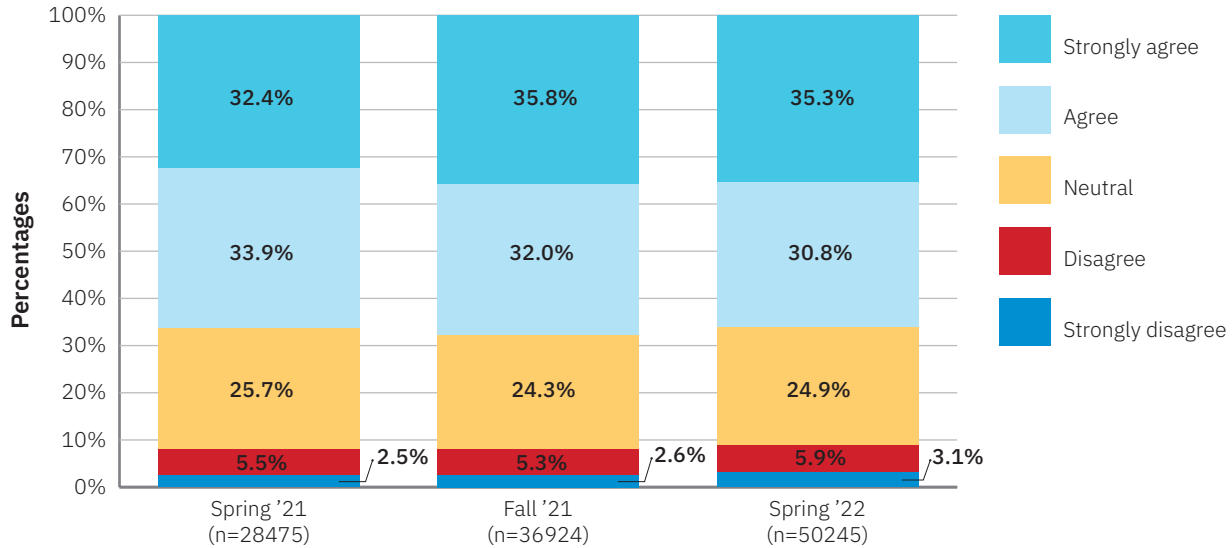
High School

Student Demographic Data

The graph below provides demographic information regarding the percentages of students in grades 6-12 who took that BrightBytes Technology and Learning Survey. Data collection for high schools in Spring 2022 included higher percentages of 6th-8th grade students than the Spring 2021 and Fall 2021 data time frames. Analyses of the data focused on the publicly released BrightBytes data for high school students at these three time periods.

What grade are you in?
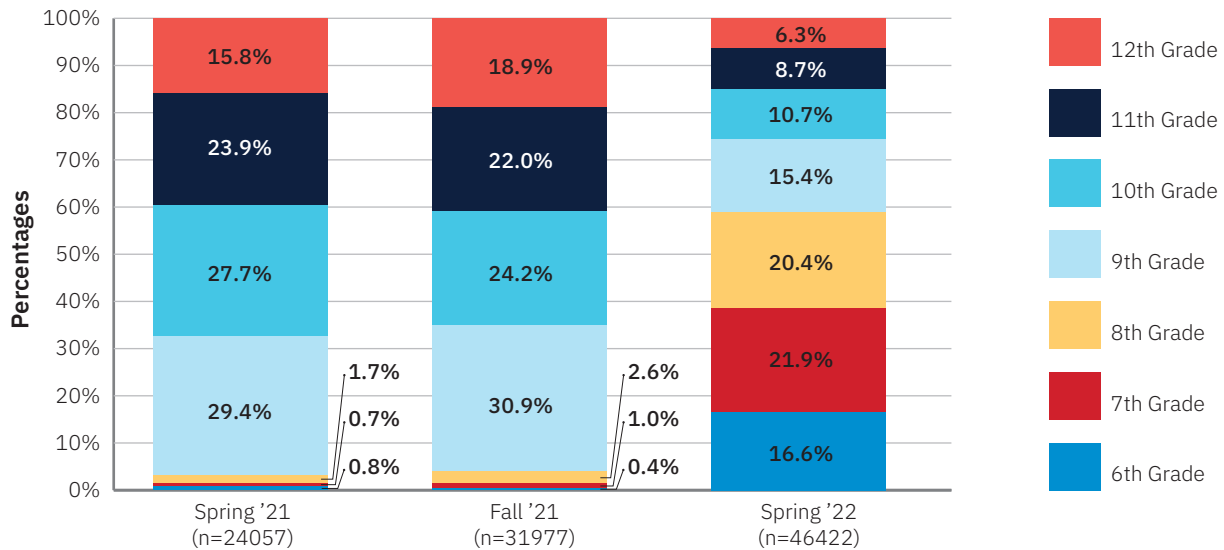
High School Student Device Use and Access

Device Use

- Across the three survey periods, the percentage of high school students using devices daily ranged from 80% to 84%. This is similar to the daily usage of middle school students surveyed.
- Across the three survey periods, the percentage of high school students using devices on a weekly basis ranged from 11% to 12%. This is similar to the reported weekly use by middle school students.

Student Access

- In the Spring 2021 and Fall 2021 survey results, 80-83% of surveyed high school students indicated that they had access to a device and took it home daily.
- This number changed significantly in Spring 2022. Approximately 67% reported that they could take it home every night, 20% reported that they couldn't take the device home, and 6.2% reported that they could take it home sometimes.

How often do you use computer devices (e.g., desktops, laptops, or tablets) in class?

Legend:
- Almost daily
- Weekly
- Monthly
- Every few months
- Never

	Spring '21 (n=29725)	Fall '21 (n=39547)	Spring '22 (n=60483)
Almost daily	80.9%	84.6%	81.2%
Weekly	12.6%	11.1%	11.6%
Monthly	2.3%	1.5%	3.0%
Every few months	2.0%	1.3%	2.3%
Never	2.2%	1.4%	1.8%

Do you have access to a school-provided device (e.g., Chromebook, PC, iPad, or MacBook Air)?

Legend:
- Yes, but I can't take it home.
- Yes, and I can somtimes take it home.
- Yes, and I can take it home every night.
- No, I don't have this.

	Spring '21 (n=29231)	Fall '21 (n=39087)	Spring '22 (n=59653)
Yes, but I can't take it home.	4.0%	3.4%	20.0%
Yes, and I can sometimes take it home.	6.2%	9.1%	6.2%
Yes, and I can take it home every night.	80.6%	83.1%	67.1%
No, I don't have this.	9.2%	4.4%	6.7%

Student Perception of Technology

- Over the three survey periods, the percentage of high school students reporting that they used technology to solve real-world problems on a weekly basis ranged from 38-41%.
- The percentage of high school students reporting that they used technology to solve real-world problems on a monthly basis ranged from 22-23%.

- Approximately 20-21% of surveyed high schoolers over the three survey periods reported that they never used technology to solve real-world problems.
  - This may indicate that teachers need additional support and training on how to use technology to solve problems as this relates to 21st century work skills.
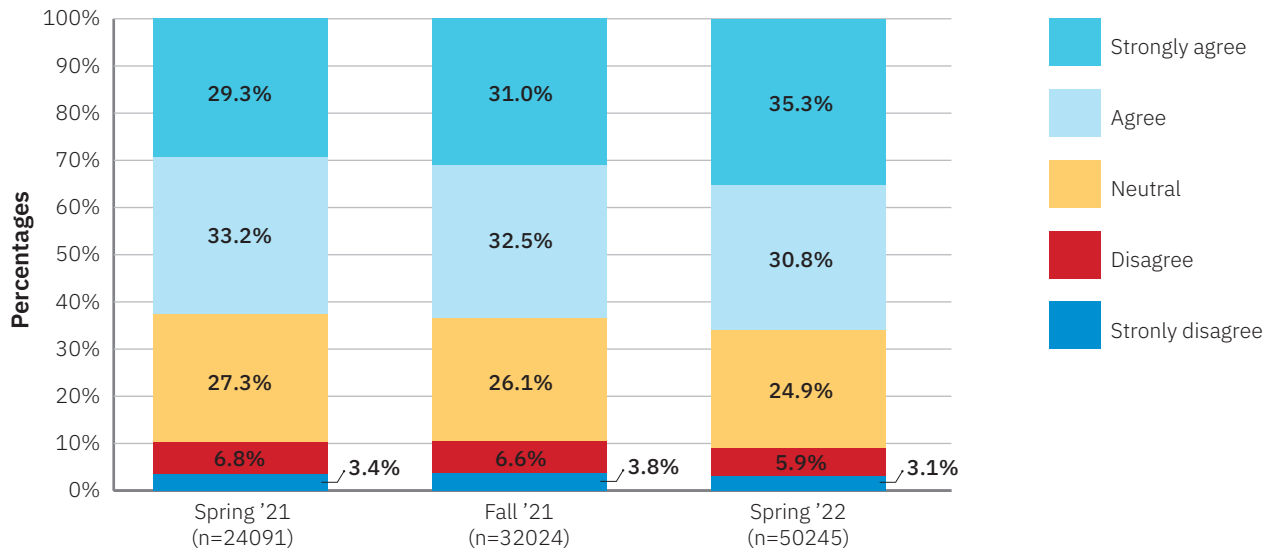
- The majority of high school students surveyed over the three periods indicated that they believed their schools encouraged technology use for learning. Approximately 9-10% of students over the three survey periods indicated that they disagreed to strongly disagreed that technology was encouraged in their schools.

Identify and solve real-world problems using technology.

	At least weekly	Monthly	Every few months	Never
Spring '21 (n=25038)	40.1%	23.7%	15.7%	20.5%
Fall '21 (n=33499)	41.1%	22.5%	15.0%	21.4%
Spring '22 (n=52250)	38.8%	23.4%	16.5%	21.3%

My school encourages technology use for learning.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Spring '21 (n=24091)	29.3%	33.2%	27.3%	6.8%	3.4%
Fall '21 (n=32024)	31.0%	32.5%	26.1%	6.6%	3.8%
Spring '22 (n=50245)	35.3%	30.8%	24.9%	5.9%	3.1%
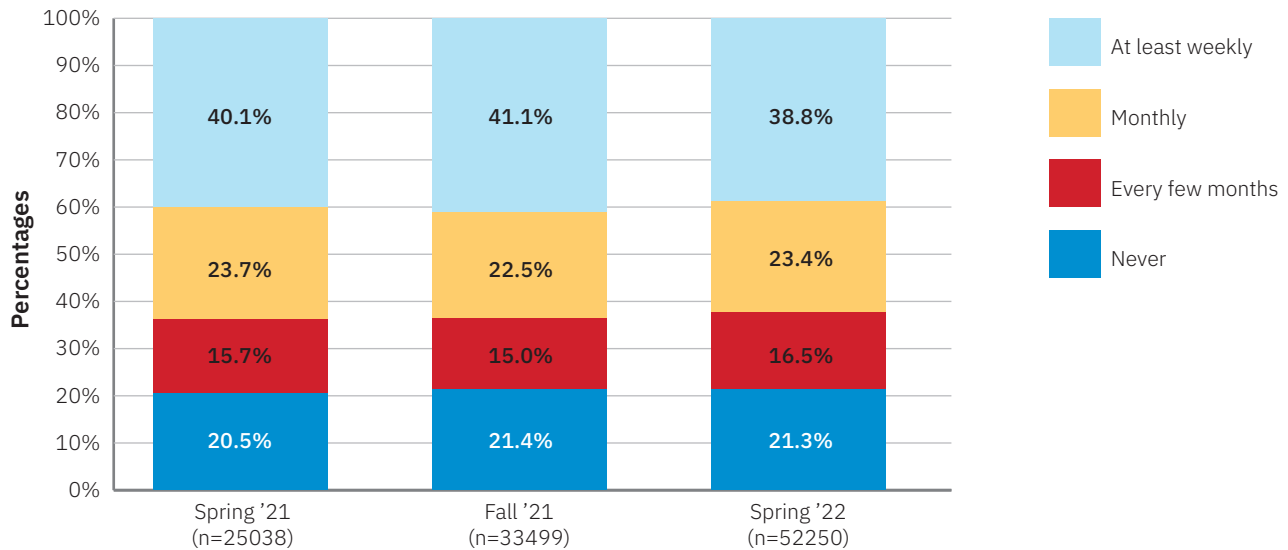
POLICY RECOMMENDATIONS

The following policy recommendations are informed by the research conducted and data analyzed for this project as well as an examination of relevant news and research from across Mississippi and the country. These recommendations reflect the evolution of the circumstances surrounding virtual and digital[1] learning in Mississippi from the onset of this study in April 2021 through its conclusion in September 2022. During that time period, improved conditions eliminated the need for full-time virtual learning for health and safety purposes. Now, the question facing Mississippi policymakers is whether and how elements of digital learning can support some students' academic acceleration following the pandemic's disruptions, as well as the state's vision to provide a "world-class educational system that gives students the knowledge and skills to be successful in college and in the workforce, and to flourish as parents and citizens."[lxxiii]

Themes for Policymakers

This study surfaced several key themes policymakers should consider when examining options for virtual and digital learning and the future of education in Mississippi post-pandemic:

- **A need to focus on students most impacted according to available evidence:** Available data show that the pandemic affected academic progress for students from low-income families most of all. In addition, certain cohorts and groups of students have faced unique challenges – such as students entering second grade in 2022 who have never had a "normal" school year, high schoolers who may have been working full-time jobs during virtual learning, students who have dropped out altogether, etc. Policies designed to help students recover from the tumult of school closures must benefit students most in need and strategies must be tailored to particular student circumstances.

- **The need and potential for cross-sector collaboration:** Mississippi Connects is a strong example of state leaders from all sectors (government, education, business, technology, philanthropy, advocacy) coming together to provide equitable access to technology supports quickly. This example illustrates that such an effort can be successfully executed in Mississippi around a common goal and provides a model for future collaborative activities.

- **The importance of effective communication and dissemination of information:** Resources, programs, and other supports – including instructional and mental health supports – must be shared through multiple channels (state and district vehicles, websites, social media, news media) and with strategic consideration of a variety of audiences (educators, students, families, community-based support providers, leaders). Descriptive guidance, including specific examples of best practices from leading districts, is important and help is needed to improve communications in lower performing districts.

- **The critical role of high-quality curriculum and training:** Proven curriculum and aligned educator training is the foundation of any effective instructional strategy – in person or virtual. Cohort models and the expansion and coordination of existing groups (MDE Teacher/Principal/Student Advisory Councils, Digital Learning Coaches) can extend the reach of quality instruction.

- **Identification of ongoing funding to support education technology and other innovations:** Technology in education, used appropriately in in-person as well as remote settings, is here to stay; districts will need continued support for devices and connectivity (especially considering the rate of technological advances), as well as educator and family training and support.

- **Support for continued and coordinated data collection and research:** The impacts of the pandemic on education will be felt for many years to come and the investment of resources and time for educational technology should be studied. Consistent, comparable data collection and sharing will help district and state leaders make informed decisions about future efforts.

Recommendations

State Advisory Task Force and
Regional Acceleration Hubs

Provide coordinated state and regional partnerships to broaden awareness of and support for education recovery.

- Building on the success of the coordinated effort to execute Mississippi Connects, the existence of several statewide and regional cohorts, and the need for continued collaboration around pandemic recovery, the state could:

  1. Create a State Advisory Task Force to Advance Education. This could include students, families, educators, and local and state leaders, drawing from existing groups such as MDE Advisory Councils, Digital Learning Coaches, Technical Advisory Committee, and others. The group could be convened quarterly to examine data on acceleration efforts and identify implications for state and district actions. The group could also lead efforts to explore sustainability of funding for evidence-based best practices. ESSER funding could be used to support the short-term planning and collaboration required to identify sustainable, long-term funding (such as federal ESEA, IDEA, Perkins, and WIOA funds) for education technology and training.

    ‣ This Task Force should be established as quickly as possible (ideally during the 2022-2023 school year) and be convened at least through 2025-2026 to study the impact of all COVID relief funding efforts. At the end of that time, the group should consider whether additional convenings are necessary.

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1   Virtual learning refers to students accessing instruction remotely outside of the school environment (without any in-person school or teacher access); digital learning refers to the use of education technology platforms, tools, and resources in any environment (at home, in school buildings, or any combination thereof).

‣ The group should make meetings as convenient and accessible as possible for a range of diverse participants spanning all major regions of the state, utilizing virtual meetings during late afternoon/early evening hours as needed for educators, students, and families. Training may be necessary to ensure all participants can access and understand relevant data and other meeting materials.

2. Create Regional Acceleration Hubs for collaboration across organizations by geographical locations. This would allow for coordination of resources from existing community organizations, government, philanthropy, advocacy, business, and other groups and extend the reach of services. Hubs could be led by representatives of these organizations who could help to match local needs with regional offerings. This could allow the state to extend the reach of existing efforts such as the Digital Learning Coaches, who are already serving regional areas, opportunities like the state Regional Family Literacy Nights,[lxxiv] and growing efforts to support telehealth, virtual and digital learning options, and other needs. One leader from each Regional Acceleration Hub could participate in the Task Force recommended above. Existing Mississippi Regional Education Service Agencies[lxxv] could be leveraged and/or expanded to support these efforts.

‣ These Hubs should be organized with input from the Task Force described above, with the goal to have them in place by Summer 2023 and to operate through at least 2025-2026.

‣ Hub leaders should meet to problem solve, share resources and best practices, and collaborate to ensure that groups of students that need resources receive them. Representatives should ideally come to the group with problems of practice and specific needs that they need help and input in order to address.

Digital Learning

Pursue a state-level strategy for high-quality digital learning that goes beyond a pandemic response and provides equitable access to technology to prepare all students in Mississippi for a successful future.

• **Programming and Access:** The state has already invested considerable resources into digital learning and should work to ensure that the best innovations from those investments produce ongoing public education opportunities for students and families. There is evidence from across the country that some students who choose a full-time virtual education option, under the right conditions and when that option is of high quality, can be successful. However, this research project has not yielded enough evidence to recommend that a particular existing full-time option should be scaled in Mississippi. Because each district was able to determine its own pandemic response for the 2020-2021 school year, and could propose a virtual option for state approval in 2021-2022 and

beyond, virtual options have varied widely. That said, this study has yielded information on what has – and could – go well. Through at least 2025-2026, the state should consider the following, while continuing to gather evidence on program effectiveness to inform future decisions:

1. Continue to support all districts in their efforts to leverage elements of digital learning that are proving successful in accelerating student learning and preparing students for college and career.

‣ The state should widely communicate state-led efforts such as the Digital Learning Coaches[lxxvi] and Digital Learning Instruction Guide[lxxvii] to share best practices, tools, and training opportunities that expand quality opportunities to more students.

‣ The state should host and share a list of approved district-run virtual learning programs so that other districts can access and learn from successful models.

‣ The state should require all districts to maintain an up-to-date emergency response plan for virtual learning with clear communications mechanisms for educators, students, and families. This plan could be submitted to MDE each summer in advance of the next school year and could communicate important information such as the district's online learning platform, programs, and tools so that the state can provide support as needed. The plan could be placed in effect during times of health and safety or weather emergencies to ensure as much continuity in learning as possible. In return, the state could host a clearinghouse of best practices from these district emergency response plans for other districts to access and learn from.

2. Continue to review and approve district-run, full-time virtual options such as the Gulfport Virtual Academy[lxxviii] on a yearly basis.

‣ Conditions for state approval should include (but not be limited to):

▪ Evidence of demand for this option adequate to necessitate the staffing and other support described below.

▪ Participant screening criteria to communicate expectations and realities of the learning environment and set students up for success.

▪ Ongoing data collection and review of virtual student engagement (attendance, enrollment) and learning outcomes to understand the efficacy of this offering, including analysis of all relevant subgroup populations.

▪ Support to ensure participating families consistently have adequate devices and connectivity, including working with the new state broadband office and/or other state or local organizations supporting internet access, as well as district support for families in navigating learning platforms.

- A plan for students with special needs or accommodations in virtual environments.
- Dedicated staff for virtual instruction.
- Clear expectations for attendance, balance between synchronous and asynchronous instruction, grading, and student and teacher schedules (e.g., how much time a day are they online, how much time is dedicated to homework, extracurricular activities, professional development, teacher interventions).
- Clarity on how often and the means by which teachers and families have regular check-ins and how parents can reach teachers individually, as well as any necessary training for families to support virtual instruction.
- High-quality virtual curriculum and training that includes a focus on social and emotional learning (SEL).
- An assessment policy that allows for real-time education data but mitigates the potential for cheating (see page 57).
- A vision for program sustainability that is responsive to changing conditions and allows for adaptations.

‣ The state should explore ways to expand virtual learning options for students in districts without an approved program.
- Gulfport Virtual Academy has instituted a tuition process whereby families of students in certain surrounding counties may apply to participate in the virtual program.[lxxix] State leaders could leverage the State Advisory Task Force and Regional Acceleration Hubs to share knowledge of strong virtual programs and expand opportunities to students in surrounding areas. The state should help to subsidize access for families in need through grant and/or philanthropic funding streams or other sources.

‣ Depending on the results of the efforts above over the next few years, the Task Force could consider plans to initiative development of a full-time state-run virtual learning option, either through a state-affiliated nonprofit or a vendor through an RFP process.
- To inform this process, the state must gather reliable data about the demand for virtual learning across the state to create a solid understanding of which families in which regions seek this option, and why. Further, it is important to understand the impact of virtual learning on student outcomes to better understand conditions for success.
- The Task Force should consider how district enrollment and accountability would work for students opting into a state virtual learning program.

3. Continue and consider expanding "a la carte"

access to virtual and digital programming for courses students can't access otherwise through their school district.
‣ The state could expand its review and vetting of online courses[lxxx] and programs like the MSU-RCU offerings[lxxxi] and UM High School,[lxxxii] and extend these opportunities to more students given new investments in technology via Regional Acceleration Hubs.
‣ From an equity perspective, the state should collect and analyze data about access to and uptake with online courses to identify gaps and any relevant interventions to ensure all students can benefit from quality options (as recommended in the Mississippi First Future of Schools Policy Vision).[lxxxiii]

- **Staffing:** This study yielded concrete feedback about staffing models for virtual and digital learning. The state should support efforts to:

1. Avoid having teachers simultaneously instruct both in-person students (i.e., in a classroom) and students participating remotely in a virtual program. Instead, virtual options should be staffed with dedicated educators who specialize in and focus on virtual instruction. Where program size necessitates, a dedicated administrator should oversee virtual learning programs.
   ‣ In the case of extended absences (including for medical issues) and/or quarantines for individual students, the state should continue to allow flexibility for teachers to instruct their students virtually for a limited period of times until they return to the classroom.

- **High-Quality Curriculum & Training:** Mississippi is leading the country with its investment in high-quality instructional materials. The state should expand upon this effort to support digital learning in several ways.

1. Highlight high-quality digital materials within Mississippi Instructional Materials Matter.[lxxxiv] This robust resource could elevate high-quality practices for a virtual environment in addition to those it already identifies.
2. Expand and promote targeted professional learning opportunities for teachers to support their mastery in using high-quality content across multiple instructional delivery methods. The MDE Office of Professional Development provides access to synchronous and asynchronous training opportunities. All districts can access these sessions, with priority and specialized sessions and coaching provided to those most in need. Mississippi Connects offers a Professional Development and Resources Hub[lxxxv] specifically focused on technology and digital learning. These resources can be connected to the Materials Matter site and shared via Regional Acceleration Hubs.
3. Building upon the Mississippi State Plan for ESSER Funds,[lxxxvi] prioritize adapting SEL curriculum to virtual environments. The SEL standards,[lxxxvii]

accompanying professional development, and associated resources[lxxxviii] should complement other vetted high-quality digital materials.

- **Assessment:** The integrity of academic assessments may be compromised if all are administered remotely. Virtual programs should implement policies that allow for "spot checking" student assessment results to identify outliers. Mississippi[lxxxix] used an in-person approach for state assessments in spring of 2021, even for virtual students. This practice illustrates that districts can bring virtual students to an in-person setting. In the future, this exercise can also be applied to other, more formative assessments. The state could:

  1. Require that assessments for virtual students occur in-person periodically. For example, a virtual program administering formative assessments could require each student to complete them inside a school building under supervision at least twice per year. Timing could be staggered for the entire population of students so that only a small percentage of virtual students are in the building on any given week or month.

  2. Leverage local community organizations to provide additional options for families uncomfortable with testing in a school facility.

  3. Consult with health officials on plans for in-person testing as long as the pandemic or other public health concerns are present.

Learning Acceleration

Focus on the continued academic advancement of all students through supports that meet individual needs.

- The significant disruptions to education caused by COVID will have lasting effects on student progress, and acceleration efforts will be necessary for the foreseeable future. The state should continue to invest in programs that support students most impacted by pandemic disruptions as they work to overcome those learning challenges. Through at least 2025-2026, the state could:

  1. Continue to provide and communicate access to vetted tutoring and credit recovery programs with subsidized costs for low-income families. This effort could include in-person and virtual options to expand the reach of quality programs and instructors, and Mississippi has already invested in programs that could be expanded and/or replicated. A focus on the early grades will be critical to address missed literacy instruction.

     ‣ MiSsion Acceleration[xc] is a tutoring pilot program funded by a GEER grant. The Mississippi Teacher Corps Virtual Summer School/Credit Recovery[xci] provided a virtual option in Summer 2020 and virtual and in-person opportunities in Summer 2021, with the added benefit of offering training for teachers in critical needs districts. In February 2022, MDE announced the investment of state COVID relief funding into several acceleration programs, such as web-based high dosage tutoring.[xcii]

2. Continue to invest in the state's successful coaching programs, which have recently expanded to include Digital Learning Coaches and Math Coaches, to provide additional supports to teachers, students, and families in the areas of greatest need for learning acceleration.[xciii] Extend training opportunities to parents and families on how to facilitate effective homework strategies and utilization of digital resources.

3. Provide guidance and/or resources to before- and after-school child care providers and other community support organizations to better equip them to support homework and learning outside of school.

4. Maintain appropriate technology, connectivity, and training supports for these programs through Mississippi Connects through the following:

   ‣ Focus on Digital Citizenship education and training for students and teachers.

   ‣ Focus on training all educators regarding the digital learning best practices included in the MDE Digital Learning Instructional Guide.[vi]

5. Continue and expand data collection efforts to understand which groups of students are most in need of support, including looking at trends by instructional delivery method, geography, demography, etc.

District, Educator, and Family Support for Technology

Ensure adequate and ongoing infrastructure and training for the use of technology in education.

- Mississippi has made tremendous progress in closing the digital divide and bringing education technology to students and families. However, more and ongoing efforts are needed to realize the full potential of this work – especially supporting district infrastructure and home connectivity. The state could:

  1. Continue to support district use of learning management systems (LMSs). One of the limitations with rolling out Mississippi Connects for the 2020-2021 school year had to do with districts using old or insufficient LMSs. Districts using these LMSs have done so likely because of scarcity of resources (time or funding) or lack of IT or education technology expertise locally. Other limitations were caused by inconsistent educator expertise and training and a lack of reliable data on technology use in schools. State supports could include:

     ‣ Providing a list of independently reviewed, highly-rated LMS options according to transparent criteria (virtual learning platform, access to telehealth, etc.). Recent research shows a majority of districts in Mississippi using one of four LMS platforms – Google Classroom, Canvas, Schoology, or Microsoft Teams.[xciv]

     ‣ Negotiating contracts as the purchasing agent for LMS agreements with high-quality, frequently-used LMSs to ease the process and reduce costs for districts.

     ‣ Requiring that districts move to a vetted LMS by a certain time or apply for a waiver or exception.

‣ Hiring state-level experts who can help with district LMS implementation when districts indicate that they do not have the capacity in house.

2. Expand upon successes and further the reach of effective education technology efforts statewide. State supports could include:

‣ Continued training on the use of technology accessibility tools.

‣ Adding guidance and best practices around professional learning opportunities, virtual home-school conferences, and other family supports to expand access.

‣ Conducting a program evaluation study on the impact of the Mississippi Connects [Digital Learning Coaches](#)[xcv] program and other digital learning resources and supports such as cohort coaching, the Digital Teacher Academy, instructional technologies, and digital learning resources.

‣ Continue and expand a consistent statewide data system for tracking the use of devices and reliability of internet connectivity in districts and homes (where virtual learning is extended to home).

‣ Adding a navigator component to family engagement efforts where adult mentors/guides are assigned to students and families to assist with effectively using technology to support education.

‣ Developing a statewide plan to ensure device replacement for technology purchased during the pandemic. The statewide plan needs to address funding for technology device purchases and other programming supports.

‣ Negotiating contracts with vetted, high-quality, widely used education technology tools similar to the recommendation for LMSs above to ease the process and reduce costs for districts.

3. Create an intergovernmental working group of leaders from relevant state agencies focused on internet access to share data, resources, and strategies with families.

‣ In 2022, the new Broadband Expansion and Accessibility of Mississippi (BEAM) legislation was enacted, creating a state office focused on broadband infrastructure.[xcvi] This office is now coordinating efforts under the Department of Finance and Administration and has started facilitating funding and grant opportunities for internet access. The BEAM office could lead the working group to coordinate strategies with other state agencies (MDE, Mississippi Department of Information Technology Services, Mississippi Public Service Commission).

Ongoing Research to Drive Data-Informed Strategies

Continue to document and analyze the impact of the pandemic on student learning and identify evidence-based interventions.

• To fully understand the impacts of several years of disrupted learning, ongoing and consistent data collection and analysis are needed. Given the likelihood for long-term impacts on student progress, it is necessary to establish consistent measures and research tactics to learn as much as possible and inform course corrections over time. The state should:

1. Create a longitudinal study of PK-12 student cohorts comparing annual progress through at least 2026. Where possible, include factors such as the district instructional delivery model (virtual, in-person, hybrid), use of state-vetted high-quality instructional materials, access to Digital Learning Coaches, etc. This will necessitate identifying consistent reporting methods and infrastructure to ensure comparable data across districts.

• Ensure disaggregation of data by all available subgroups, and tailor supports to groups with the greatest need for acceleration. Consider including a study of earlier academic outcomes of students who dropped out during the pandemic to determine whether any trends could be addressed through proactive strategies (for example, do early reading scores of eventual drop-outs point toward a need for more interventions in the early grades?).

2. Study the effectiveness of state-approved virtual instruction programs, including conditions for success, enrollment and participation (including chronic absenteeism) by student population, and student outcomes.

3. Measure student usage of digital applications and their impact on student success through BrightBytes EdTech Impact and expand this analysis statewide.

4. Include qualitative research to examine specific districts and their instructional approaches over time to dig more deeply into emerging data trends, especially relative to disproportionate impacts on specific subgroup populations (i.e., if student outcomes are better for districts using a certain instructional model, acceleration strategy, or curriculum, why? If a subgroup of students significantly underperformed relative to peers, why?).

5. Make as much disaggregated data publicly available as possible so that independent entities can do their own analyses and use the information to make strategic decisions.

6. Tap the recommended State Advisory Task Force to Advance Education to collectively examine the data and its implications for state and district actions and to inform any needs for updating data collection.

APPENDIX A

Expert Peer Panel Members

To review the findings of the qualitative case studies and inform resulting policy recommendations, the team assembled the following panel of Mississippi education leaders representing a range of organizations and expertise across the state. This initial panel reviewed interim materials and informed interim policy recommendations in late summer/early fall 2021:

Toren Ballard
Director of K12 Policy
Mississippi First

Carter Myers
President
Oxford School District Board of Trustees
and Director of Sales, BloomBoard, Inc.

Felicia Pollard
Parent, Academic Technology Specialist
Pontotoc City School District

Adam Pugh
Retired Superintendent
Lafayette County School District

Jamie Rasberry
Policy Director
Mississippi Alliance of Nonprofits and Philanthropy

Sarah Wansley
Teacher
Jones County School District
and MDE Teacher Advisory Council Member

In summer 2022, the following panelists were added to the team and all 10 expert peers participated in final review activities to inform the final report and policy recommendations:

Brittaney Boyd
Assistant Principal
Holmes County Consolidated School District

LaShana Middleton
Digital Learning Coach
Mississippi Department of Education

Allison Oliver
Behavior Specialist
DeSoto County Schools

Debra Smith
Elementary Music Teacher
Moss Point School District

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