Remote Learning Study
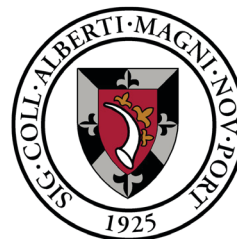
DECEMBER 2022

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Remote Learning Study

DECEMBER 2022

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About CCERC

The Center for Connecticut Education Research Collaboration (CCERC) is a research partnership between the Connecticut State Department of Education (CSDE) and institutions of higher education across Connecticut. CSDE sets the agenda, identifies projects, and allocates funding for CCERC. The University of Connecticut manages funding and provides an administrative team. A Steering Committee composed of researchers from various Connecticut institutions guides the administrative team in developing and approving research projects and reports. Researchers from Connecticut universities and colleges constitute the research teams. The mission of CCERC is to address pressing issues in the state's public schools through high quality evaluation and research that leverages the expertise of researchers from different institutions possessing varied methodological expertise and content knowledge.

CCERC was formed initially using federal relief funds to investigate the impact of the COVID-19 pandemic on learning and well-being and recovery efforts in the state's schools. The partnership was subsequently institutionalized to respond to ongoing evaluation and research needs of the CSDE, provide research opportunities for Connecticut researchers, and foster collaboration across the state's institutions of higher education.

Remote Learning Study

DECEMBER 2022

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A mixed-methods audit of Connecticut school districts' emergency response to the COVID-19 pandemic was conducted in fall 2021. This audit was requested by the Connecticut General Assembly in Section 389 of Public Act 21-2ss. (iStock Photo)

Executive Summary

In fall 2021, the Center for Connecticut Education Research Collaboration (CCERC) selected a team of researchers from Yale University and the University of Connecticut to conduct a mixed-methods audit of school districts' emergency response to the COVID-19 pandemic. This audit was requested by the Connecticut General Assembly in Section 389 of Public Act 21-2ss. The study we conducted in response to this request had the four main goals described below.

Project Goals

1. Document the **implementation** of remote learning models by local and regional boards of education during the first two school years impacted by the COVID-19 pandemic (2019-20 and 2020-21)

2. Document how districts supported **learning and student well-being**

3. Document how districts supported **teaching and teacher well-being**

4. Examine links between **learning conditions and student outcomes**, including absenteeism and academic performance

Data Source 1
State-level administrative data

Data Source 2
A survey of district leaders across Connecticut

Data Source 3
A survey of all K-12 Connecticut public school teachers

Data Source 4
Teacher focus groups

In fall 2021, CCERC selected a team of researchers from Yale University and the University of Connecticut to conduct a mixed-methods audit of school districts' emergency response to the COVID-19 pandemic.

Methodology and Analysis

Data Sources. The study used four data sources: 1) state-level administrative data; 2) a survey disseminated in winter 2022 to district leaders in every Connecticut school district and state-approved private special education program (APSEP); 3) a survey disseminated in spring 2022 to all K-12 Connecticut public school teachers, and; 4) focus groups conducted in summer 2022 with selected teachers who responded to the teacher survey.

Analyses. For the administrative data, we used inferential statistics to assess the effects of remote learning on student outcomes. We descriptively summarized survey data and used a coding scheme to summarize focus group data. Finally, we merged elements from the District Inventory with the administrative data to assess the effect of district conditions on student outcomes.

Findings

Caveats. Before summarizing the findings, it is important to note that readers should avoid generalizing findings from the teacher survey and focus groups to the entire state. The teacher survey had a low response rate, and participants may not be representative of the overall teacher population. Similarly, focus group participants were drawn from survey respondents and should not be treated as a representative sample. Additionally, focus groups are intended to provide context rather than generalizable data. Therefore, we caution readers not to draw broad conclusions from these data.

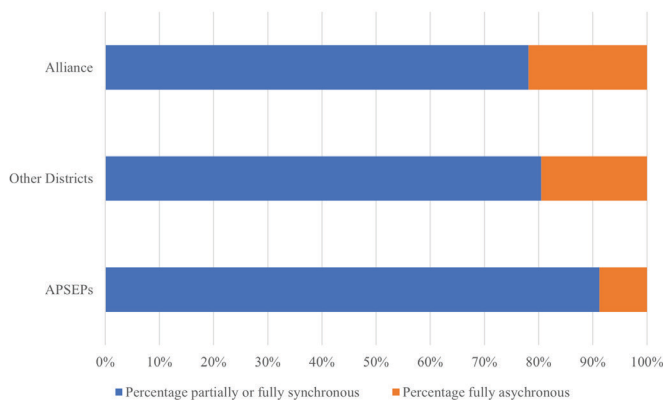### Goal 1. Document the implementation of remote learning models

- Most districts reported providing partially or fully synchronous remote instruction during spring 2020, with only slight variation across grade levels. In contrast, most teacher survey and focus group participants reported that they provided fully asynchronous instruction during this period.

Figure F1. Spring 2020 synchronous instruction in elementary schools

■ Percentage partially or fully synchronous ■ Percentage fully asynchronous

- Districts reported that despite all efforts, in May 2020, approximately one-third of students were accessing remote learning less than half the time it was provided. Many teacher survey and focus group participants believed that student disengagement resulted from inadequate adult supervision and other family concerns.

- During the 2020-21 school year, districts with a large percentage of

> ❝ *The study had four main goals: Document the implementation of remote learning models by local and regional boards of education during the first two school years impacted by the COVID-19 pandemic; Document how districts supported learning and student well-being; Document how districts supported teaching and teacher well-being; Examine links between learning conditions and student outcomes, including absenteeism and academic performance.*

high-needs students[1] provided less opportunity for in-person learning than districts with a smaller percentage of high-needs students. In addition, uptake of in-person learning opportunities was lower among schools with a large percentage of high-needs students, especially during the transition from fully remote learning to in-person learning in fall 2020 and winter 2021.

- Focus group participants reported that the frequent changes in

teaching modality during the 2020-21 school year caused them to cover less material. Teacher survey respondents also reported that they covered a smaller proportion of the curriculum in 2020-21 than in years prior to the pandemic.

- Focus group and teacher survey participants reported that concurrent hybrid instruction was extremely challenging; without adequate training and instructional technology, teachers found it overwhelming to teach students in person and on screen simultaneously.

- When comparing 2020-21 to spring 2020, 96-98% of Alliance districts, non-Alliance districts, and APSEPS reported that teachers were more fluent with remote learning technologies, and 88-94% reported that teachers were better at integrating recommended apps/tools.

Goal 2. Document how districts supported learning and student well-being

- Depending on their grade level and district type, teacher survey respondents reported that in the spring of 2020, 29-55% of their students were progressing with grade level learning and 41-59% of their students were in touch with their teachers daily.

- Again, depending on their grade level and district type, teacher

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1 The Connecticut State Department of Education's high needs classification includes students who have a disability, are classified as English learners, and/or are eligible for free or reduced-price meals.

survey respondents reported that in 2020-21, 42-53% of their fully remote students were progressing with grade-level learning, compared to 51-62% of their hybrid students and between 66% and 77% of their fully in-person students.

- Alliance districts, non-Alliance districts, and APSEPs reported that the percentage of students at all levels with access to a district-provided Chromebook, laptop, or iPad increased dramatically, from 60-72% on March 1, 2020 to 91-95% on November 1, 2020.

- Focus group participants told us that the proportion of students dealing with stress, anxiety, depression, and social isolation was higher during the pandemic than they had ever seen. They reported that student coping skills and maturity levels were below what would be expected for their grade level.

Goal 3. Document how districts supported teaching and teacher well-being

- Focus group and teacher survey participants reported that their well-being suffered from constant changes in class scheduling, pressing student and parent needs, shifting COVID guidelines, fear for their personal health, and absences due to teacher and student quarantines. They shared that these factors created a chaotic and stressful environment, yet they received inadequate support for their well-being from their school or district administrations. Depending on their grade level and district type, 47-58% of teacher survey participants said their district's support for their physical health was somewhat or extremely inadequate, and 63-68% said the same of their district's support for their social-emotional well-being.

- Districts reported making substantive changes to administrator and teacher roles to adapt to remote learning and accommodate student and district needs; in focus groups and surveys, many teachers said they found the added responsibili-

ties overwhelming.

- Districts reported using formal and informal approaches to teacher professional development related to remote learning, including producing their own online teacher resources. Depending on their grade level and district type, between 40% and 60% of teacher survey participants said they had received an adequate amount of professional development across a variety of topics.

- Districts said they will continue to use learning management systems, SEL resources, and videoconferencing systems put in place during COVID to support future learning. Most (63-85%, depending on grade level and district type) teacher survey participants who reported using new instructional technologies during the pandemic indicated that they would like to continue using those resources.
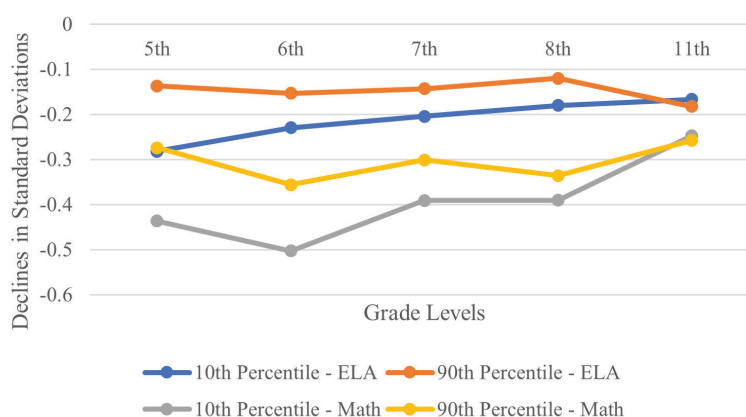
Goal 4. Examine links between learning conditions and student outcomes

- The pandemic was associated with reduced school enrollment in fall 2020, especially among the lower grades.

- In the lower grades, schools with the lowest share of in-person days had the largest declines in ELA and Math test scores. However, we observed no differences on 11th grade SAT scores based on share of

in-person days.

- Schools with lower shares of in-person days had lower attendance rates. This was most pronounced in grades 2-5. Declines in attendance were smaller when students had more opportunity for in-person learning, especially in elementary and middle school.

- Focus group teachers expressed significant concern about the amount of learning loss their students experienced. They reported that student's writing and math skills were significantly below expectations and that high school students were not prepared to take AP courses.

- Focus group participants reported that teachers and students struggled in dual learning models. They felt that they were not able to attend fully to either group of students and worried about the lack of supervision for students participating remotely.

- District-reported social services referrals for students were associated with lower test scores and proficiency. This was likely because the pandemic had differential social-emotional effects on students across schools in ways that depressed their academic performance. These effects were not captured by traditional measures of schools' need (for example, the share of high-needs students).

Pandemic Year Test Score Declines by Share of Days in Person

Y-axis: Declines in Standard Deviations (0, -0.1, -0.2, -0.3, -0.4, -0.5, -0.6)
X-axis: Grade Levels (5th, 6th, 7th, 8th, 11th)

Legend:
- 10th Percentile - ELA
- 90th Percentile - ELA
- 10th Percentile - Math
- 90th Percentile - Math

Recommendations

We recommend developing a statewide plan for potential disruptions to in-person learning that focuses on lessons learned about effective practices during the pandemic and includes input from a diverse group of administrators, educators, and parents. The plan should:

1. Provide resources and guidance to support safe in-person learning

Schools with less access to in-person learning experienced larger declines in student outcomes, and the uptake of in-person learning was lower in schools with larger percentages of high-need students than in schools with smaller percentages of such students. Districts had a great deal of autonomy in whether and how to implement learning models (remote, hybrid, or in-person), which led to different access to learning opportunities. Districts also varied in their ability to purchase safety equipment like desktop shields and high-quality masks for teachers and students. Students, especially those in high-needs schools, would benefit if the state provided more guidance and supports for schools to offer and engage students in in-person learning, including resources to support effective family engagement.

2. Ensure that all districts have adequate instructional technology, professional development, and curriculum resources for remote or hybrid instruction

The pandemic revealed dramatic inequity among districts in resources to support the pivot to remote instruction. The pivot was smoother for districts that had already implemented 1:1 computing, learning management systems, online curriculum resources, and professional development to support teachers in using these resources. Communities also varied in terms of whether families had the resources to support online learning, such as stable internet access. These differences in how quickly and effectively districts could pivot to remote or hybrid instruction and in families' ability to access remote learning had a dramatic impact on students. Developing an emergency plan for timely and efficient delivery of instructional technology, professional development, and curriculum resources for remote or hybrid instruction could shorten the time districts need to respond to emergencies in the future.

3. Carefully consider the challenges of concurrent hybrid instruction

Teachers generally expressed strong negative opinions about concurrent hybrid instruction (simultaneously teaching students in-person and remotely). The majority said it was overwhelming, especially with little support for providing it effectively. In 2022, the Connecticut General Assembly passed Public Act 22-80[2], which prohibits concurrent hybrid instruction. If elected officials decide to remove this prohibition in the future, our recommendation is to provide the necessary material and human resources as well as professional development to increase the likelihood of successful implementation.

4. Practically assess student academic progress and social-emotional well-being

As we note, the negative association between social service referrals and students' tests scores and proficiency likely reflects differential community or student vulnerability to the socio-emotional impacts of the pandemic. . Further, traditional measures of school or student need do not seem to capture baseline differences in student vulnerability to these pandemic effects. We recommend developing practical approaches for assessing students academically in remote environments when in-person assessments are not possible. Similarly, we recommend assessing the social-emotional well-being of students during and beyond times of crisis. Doing so would provide valuable information for targeted support.

5. Provide adequate resources to support student academic and social-emotional well-being

Effective student learning during a crisis is likely to require substantial resources like those described in our third recommendation. It also requires guidance and resources for supporting diverse academic needs, including the needs of special education students and English Learner students. Addressing students' social-emotional needs also requires resources, along with school structures designed to respond to those needs as they evolve. Evidence-based approaches to consider supporting in schools include multi-tiered systems of support (MTSS), social-emotional learning (SEL), and Positive Behavior Interventions and Supports (PBIS). These approaches should include formative evaluation or continuous quality improvement to gauge progress and quality of implementation. Learner analytics and artificial intelligence

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2 Section 25-2a of Connecticut Public Act 22-80 defines dual instruction as "the simultaneous instruction by a teacher to students in-person in the classroom and students engaged in remote learning," and section 25-2c "prohibits the provision of dual instruction as part of remote learning."

also show promise for supporting evidence-based decision making and identifying at-risk students.

6. Support families so they can support their students

Families are essential partners in education at any time, but even more so when students are learning from home. This study documented the observation (common among educators) that students whose families could provide adequate support fared better academically, socially, and emotionally during the pandemic. Some caregivers struggled to support their students academically because working outside the home was essential to their families' survival. Other caregivers struggled with remote learning because they didn't have necessary resources or information. We recommend that the state develop resources for families in multiple languages to support communication, technology use, mental health, nutrition assistance, and other needs.

7. Design a plan that mitigates the strain on educators

This study documented that educators experienced high levels of work-related stress during the first two years of the COVID-19 pandemic. Although teachers consistently reported that the first three months of the pandemic were difficult, many said that during that period, they felt their school and district leaders and their communities were compassionate and supportive. However, teachers consistently reported different challenges in the 2020-21 school year and beyond: many felt that they were asked to carry unreasonable burdens in terms of their personal health and safety, their workload, and their accountability for student achievement. Although many teachers reported that the later period was challenging, expectations of teachers varied across schools and districts. We recommend that the state develop guidelines for teacher job responsibilities during an extended crisis to reduce stress, burnout, and attrition.

8. Acknowledge and reward educators' sacrifices and commitments

Over the course of this study, we heard from many teachers who said they had not been acknowledged or rewarded for their dedication and personal sacrifices during the pandemic. Many said public discourse about teachers had become extremely negative, and that the appreciation they felt early in the pandemic disappeared as the crisis wore on. Teachers expressed frustration that they had made the same sacrifices as other essential workers without receiving hazard pay, sick time for COVID-related absences, or other benefits. Numerous teachers spoke about the failed legislation that sought to award extra years of service toward retirement and the difference such an acknowledgement would make for their morale. We recommend that state and local leaders seek additional ways to acknowledge and reward educators' sacrifices and commitments during the pandemic and potentially during future crises.

(iStock Photo)

Full Report

BACKGROUND

In fall 2021, the Connecticut COVID-19 Education Research Collaborative (CCERC) selected a team of researchers from Yale University and the University of Connecticut to conduct a mixed-methods audit of school districts' emergency response to the COVID-19 pandemic. This audit was requested by the Connecticut General Assembly in Section 389 of Public Act 21-2ss. The study in response to this request aimed to learn and share with state and local leaders:

1. How local and regional boards of education provided remote learning during the first two school years impacted by the COVID-19 pandemic (2019-20 and 2020-21);

2. How remote learning impacted the quality of instructional delivery, and;

3. How remote learning impacted K-12 students' educational progress, physical and emotional development, and access to special services, including mental health and nutrition services.

Project Goals and Research Questions

Goal 1. Implementation: Document the implementation of remote learning models

Q1a. What remote learning formats did districts use and how did these learning formats vary by district type?

Q1b. What general curricular student learning outcomes were targeted?

Q1c. What did administrators and teachers say about the challenges of and strategies for different learning formats?

Q1d. How did approaches to remote learning change over time, and how did these changes affect teachers and students?

Goal 2. Supports for Students: Document how districts supported learning and student well-being

Q2a. What do administrators and teachers say about the pandemic's effects on students and their families?

Q2b. What technological and other resources did districts provide to support student learning during the pandemic, and what technology challenges did students experience?

Q2c. What resources were available to support students' physical and emotional well-being during the pandemic, compared to before the pandemic?

Goal 3. Supports for Teachers: Document how districts supported teaching and teacher well-being

Q3a. What do administrators and teachers say about how the pandemic and the resources provided affected teaching and teacher well-being?

Q3b. What technological resources did districts/schools provide to teachers to support remote and hybrid learning, and what technology challenges and strategies did teachers report?

Q3c. What types and amount of professional development did districts/schools provide to teachers to support remote and hybrid learning (e.g., training on education technology, pedagogy of virtual teaching, etc.)?

Q3d. What tools and strategies introduced during the pandemic do administrators and teachers say they will continue to use in their practice?

Q3e. What lessons do administrators and teachers say they learned regarding teaching and learning during the pandemic and how the state could improve in a future pivot to remote learning?

Goal 4. Student Outcomes: Examine links between learning conditions and student outcomes

Q4a. To what extent were students able to access remote learning?

Q4b. What do teachers say about the association of learning models and conditions with student attendance and performance?

Q4c. How were remote learning models and conditions associated with changes in student attendance and performance on standardized assessments?

DATA SOURCES

This study involves four data sources: 1) state-level administrative data; 2) a survey disseminated to district leaders in every Connecticut school district and state-approved private special education program (APSEP); 3) a survey disseminated to all K-12 Connecticut public

school teachers; 4) and focus groups conducted with selected teachers. We provide more detail on each of these sources below, including Table 1.

CSDE Administrative Data

The Connecticut State Department of Education (CSDE) provided fall and end-of-year enrollment files for all students enrolled in publicly funded Connecticut schools during school years 2014-15 through 2020-21 and fall of 2021-22. The fall file identifies the school and district of enrollment for each student as of October 1, in addition to three indicators of whether students were part of the categories CSDE uses to define high needs students: (1) free or reduced-price lunch eligible (FRPL), (2) student with a disability (SWD), and English Learner (EL). The end-of-year file identifies the final school and district of enrollment, the number of days enrolled, and the number of days present/in attendance at that school. For 2020-21, the state provided monthly data by student for the number of days enrolled and in attendance separately by in-person and remote days. Except for 2019-20, administrative data also contains Smarter Balanced Assessment (SBA) English Language Arts (ELA) and Mathematics test scores and proficiency for third through eighth grade students and SAT English and Mathematics scores and proficiency based on state established standards for 11th grade students (starting in 2015-16). For 2020-21, administrative data also indicates whether the test was administered in person or online. The list of SDE student data elements is available in Tables A1-A3 of Appendix A. (Note: Appendices are available at ct.gov/ccerc)

For 2020-21, the CSDE provided weekly data collected from Local Education Agencies (LEAs) on learning models: remote, hybrid, or in-person, where the state classified hybrid as 25 to 75% of time in-person. Traditional school districts (including local and regional districts), Regional Education Service Centers (RESCs), charter school districts, endowed and incorporated academy districts (EIADs), the Connecticut Technical Education and Career System (CTECS), and Approved Private Special Education Programs (APSEPs) participated in weekly collection of learning models data. The list of learning models data elements is available in Table A4 of Appendix A.

Table 1. Study data sources

Data Source	Description	Representation/response rate
Administrative Data	CSDE provided fall and end-of-year enrollment files for school years 2014-15 through 2020-21, plus fall enrollment 2021-22. Other indicators included student demographics, attendance, and academic performance measures.	Data included all public-school students in CT. For example, the fall 2019 file included 527,829 students, and the fall 2020 file included 513,079 students.
Learning Models Data	CSDE provided data from the weekly learning models survey that districts were required to complete for 2020-21	Data include all local school districts (137); regional school districts (17); charter districts, RESCs, and EIADs (29); and APSEPs (63).
District Inventory	Survey disseminated to senior leaders in every CT school district and APSEP; topics included district practices and policies before and during the COVID-19 pandemic.	Data were provided by 96% of local school districts (132/137), 100% of regional school districts (17/17), 97% of charter districts, RESCs, and EIADs (28/29), and 87% of APSEPs (55/63).
Teacher Survey	Survey disseminated to all K-12 Connecticut public school teachers about instructional practices, perceived supports, and challenges before and during the COVID-19 pandemic.	Just over 6% of public-school teachers responded (approximately 2600 teachers). Forty out of 186 districts had a response rate greater than 10%. Interpret with caution.
Focus Groups	Twelve 90-minute focus groups from a sample of teachers stratified by grade level and district type.	Sixty-seven teachers from K-12 schools across urban, suburban, and rural districts.

Note: APSEP = state-approved private special education program; RESC = Regional Educational Service Center; EIAD = endowed and incorporated academy district

CCERC Remote Learning District Inventory

The team developed the CCERC Remote Learning District Inventory to collect information from district administrators about districts' remote learning policies and practices during the 2019-20 and 2020-21 school years. The district inventory included questions about learning models, learning goals, staffing, professional development, assessment, student supports, student engagement, and student behavior outcomes across a range of time periods—before the pandemic, during spring 2020, and during the 2020-21 school year. Some survey items were based on the Spring 2021 American Educator Panel COVID-19 Surveys developed by the RAND Corporation,[i] while others were developed by our team in collaboration with state and local education leaders. Most district inventory items were multiple choice, and some of those included an "other (please describe)" option with a text-entry field. The district inventory also included a small number of open-response questions. More information about the district inventory items is available in Table A5 of Appendix A2.

The inventory was administered online and organized into four sections: one group of district-wide questions, followed by a group of questions for each education level (elementary, middle, and high school); education-level questions were displayed only for levels that a district served. The survey was designed so that different administrators from a district could complete the sections of the survey that fell under their purview; a table of contents allowed district administrators to jump between sections. In March 2022, administrators from three districts piloted the survey and provided feedback. We created a unique online survey link for each Connecticut school district noted in the CSDE Administrative Data section above. In early April 2020, the team sent each district's superintendent or other lead administrator a personalized email with the district's unique survey link. These administrators were asked to work with their leadership teams to complete the district inventory.

We sent multiple follow-up messages to these senior leaders and to their leadership teams in April and May, and the SDE followed-up with district leaders in late May and June. **When the district survey closed in early July, district surveys had been submitted by 96% of local school districts (132/137), 100% of regional school districts (17/17), 97% of charter school districts, RESCs, and EIADs (28/29), and 87% of APSEPs (55/63).**

CCERC Remote Learning Teacher Survey

The teacher survey focused on classroom teachers' experiences during the 2019-20 and 2020-21 school years. Specifically, the teacher survey included questions about teaching assignments, teaching models, teaching challenges, professional development, educational technology, and student academic and behavioral outcomes. Although the district survey included many of the same topics, the teacher survey was designed to elicit teachers' perceptions of classroom practices and student experiences. As in the district survey, teacher survey items were developed by the research team in collaboration with state and local education stakeholders, drawing inspiration from the Rand American Educator Panel COVID-19 Surveys,[ii] InTASC Model Core Teaching Standards,[iii] and TeachingWorks High-Leverage Practices.[iv] In May 2022, approximately 20 teachers from a variety of districts piloted the survey and provided feedback that we used to finalize it. Most teacher survey items were multiple choice, although some of them included an "other (please describe)" option with a text-entry field. The teacher survey also included an extended text-entry item at the end, asking respondents to comment about their experiences as a Connecticut teacher during the COVID-19 pandemic. More information about the teacher survey items is available in Table A6 of Appendix A. However, to reduce the burden on teachers to complete the survey, we used a planned missing design,[v] which reduced the number of items displayed to each teacher (more information is provided in the next section).

Teacher survey recruitment. We launched the teacher survey on May 20, 2022, and we invited the participation of all classroom teachers from local school districts, regional school districts, RESCs, charter school districts, EIADs, CTECS, and APSEPs. Recruitment materials clarified that classroom teachers included general education teachers, special education teachers, ESL teachers, subject area teachers, specialist area teachers, and other teachers who provide direct classroom instruction. Initially, the research team sent the survey recruitment email to district leaders (superintendents, assistant superintendents, directors, etc.) and asked them to forward it to their district's teachers. At our request, CSDE sent the recruitment email to school leaders (principals and assistant principals) and asked them to forward it to their teachers. CSDE also asked the Connecticut Education Association (CEA), the American Federation of Teachers of Connecticut (AFT Connecticut), Connecticut Association of Schools (CAS), and Connecticut Administrators of Programs for English Language Learners (CAPELL) to distribute the recruitment materials to their members. Responses rates remained low, and after three weeks, the CSDE gave us permission to email the teacher survey invitation directly to all certified teachers who were employed in Connecticut public schools during the 2019-20 and/or 2020-21 school year. There was no way to directly email teachers employed in APSEPs. **The survey closed on July 28, 2022 with approximately 2,620 usable responses, for an estimated response rate of 6.2% of all public school teachers.[vi] Out of 186 districts, only 40 had a response rate greater than 10%.**

Teacher survey sample. Among teachers who participated in the teacher survey, 35% were from Alliance districts and 65% were from non-Alliance districts, compared to 40% and 60%, respectively, of all Connecticut teachers in 2021-22. In terms of grade level, 36% of survey respondents were elementary teachers, 20% were middle school teachers, 32% were high school teachers, and 12% taught at multiple levels or in

ungraded settings[1]; CSDE does not report teacher grade level assignments in a comparable manner. Approximately 12% were special education teachers, compared to 16% of Connecticut teachers, and survey respondents had more years of teaching experience than Connecticut teachers. Approximately 80% of teacher survey respondents identified as female, compared to 76% of Connecticut teachers. As a whole, survey respondents were slightly older than the Connecticut teacher population (43% over age 50, compared to 34% of Connecticut teachers). Most survey respondents identified as white (86%, compared to 90% of Connecticut teachers), with smaller proportions identifying as Hispanic or Latino of any race (5%, equal to the percentage of Connecticut teachers) and Black or African American (3%, compared to 4% of Connecticut teachers). See Tables A7-A13 for more detailed information.

Teacher Focus Groups

We developed the focus group protocol for this project to collect in-depth information about teacher experiences; the protocol can be found in Table A14 in Appendix A. We asked teacher focus group participants to reflect on their greatest teaching challenges, how they connected with students, and their students' greatest needs in the spring of 2020 and in the 2020-2021 academic year. We asked them about the teaching models (in person, remote, hybrid) that were used at the beginning of the 2020-2021 school year, how teaching models changed over time, and the supports that were offered to help them navigate these changes. Specifically, we asked them about the training and supports (e.g., technology, curriculum resources, or resources to support students) that were offered to them to assist with changes in teaching models, including how helpful these supports were and what else they needed to teach effectively in these models. We asked teachers what kinds of supports they provided to parents/caregivers who were helping their children navigate the different learning models.

We also asked teachers to compare student learning, achievement, and emotional reactions, and behavior in the 2020-2021 school year versus pre-pandemic years. We asked what resources or skills were available to address these student concerns and what else was needed, as well as what supports teachers were offered to promote their own physical and emotional well-being. Finally, with an eye to future disruptions to in-person teaching, we asked teachers to share lessons learned, helpful resources that they continue to use to enhance teaching, and policy and procedural considerations.

Focus group recruitment. We recruited teachers for the focus groups through an interest form linked to the end of the teacher survey. Respondents who clicked on that link were asked to provide their basic employment information: school district, district type (rural, suburban, urban), job title, type of school (elementary, middle, high), years of teaching experience, etc.). We used this information to select a stratified sample of teachers based on their district type (rural, suburban, and urban districts). The stratification also accounted for teachers' roles to ensure a mixture of general education, special education, and specialist teachers. Within these strata, we selected teachers at random to participate in a focus group; we emailed selected teachers with the date and time of their focus group and a link to an online enrollment form, which included a consent form and a demographic survey. All participating teachers received a $100 gift card. It is important to note that the low response rate to the teacher survey (see above) meant that the pool of teachers who could be selected for focus groups was small.

Focus group sample. Two facilitators (Kaufman and Griffin) from our qualitative team conducted twelve 90-minute focus groups by Zoom in August 2022 with a total of 67 teachers from K-12 schools in urban, suburban, and rural districts. The focus groups were audio recorded. A majority (70%) of focus group participants were from non-Alliance districts and 30% were from Alliance districts, compared to 60% and 40%, respectively, of Connecticut teachers. Focus group teachers described their school districts as urban (45%), suburban (43%), and rural (12%);[2] participants taught at the elementary (34%), middle (33%), and high school level (37%). Most were general education teachers (75%), and the rest were special education teachers (15%) and other teachers (11%, for example, ESL teachers or specialists). In comparison, 84% of Connecticut's K-12 teachers are classified as general education teachers and 16% as special education teachers.[3] The mean number of years teaching was 17 (min. 2 and max. 36, SD= 8.73).

Most participants were in age groups 30-39 years (31%), 40-49 years (24%), and 50-59 years (31%), whereas most Connecticut teachers are in age groups 30-39 years (26%), 40-49 years (29%), and 50-59 years (24%). Most participants identified as female (79%), compared to 76% of Connecticut teachers. Finally, the majority identified as white (85%), with 10% identifying as Black or African American (10%) and 8% identifying as Hispanic or Latino. Overall, 90% of Connecticut teachers identify as white, with much small proportions identifying as Black or African American (4%), Hispanic or Latino of any race (5%), or another race (1%). See Tables A15 and A16 in Appendix A for more information about the focus group participants.

DATA ANALYSIS

We conducted analyses for each of the data sources described above. As noted, we also conducted analyses on merged administrative and district-level survey data. We describe our analytical approaches below.

Analytic Approach for Administrative Data

Our goal for analyzing administrative data (in isolation from other data) was to examine the pattern of Local Education Agency (LEA) decisions to offer in-per-

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1 CSDE does not report teacher grade level assignments in a comparable manner.
2 CSDE does not classify districts in terms of urbanicity.
3 CSDE classifies teachers into two categories: general education teachers and special education teachers. ESL teachers, subject area teachers, specialists, etc. are considered general education teachers.

son learning opportunities (including hybrid and/or fully in-person learning), and study how those opportunities relate to student enrollment, attendance, and student test scores during the 2020-21 school year. We also examined whether these outcomes varied across schools as a function of student composition, following state guidance to use the share of high needs students, defined as the fraction of students in a school who are classified as free or reduced-price lunch (FRPL) eligible, students with disabilities (SWD), and/or English Learners (EL). We focused on school composition in order to compare more homogeneous institutions, as opposed to comparing large public-school districts to individual endowed or charter schools that comprise their own LEA.

We first estimated simple cross-sectional models of school and district decisions about providing a hybrid and/or fully in-person learning opportunity, which we to as in-person learning. Given the dramatic heterogeneity across LEAs, these models are estimated based on schools' share of high needs students to assess the likelihood that a school of a given student composition belonged to an LEA that provided in-person learning opportunities.

Next, we used student-level difference-in-differences analyses to examine enrollment, attendance and test scores comparing changes within schools during the pandemic and between schools belonging to LEAs that provided more in-person learning compared to schools that provided less in-person learning. Given the strong negative correlation between the share of high needs students and in-person learning opportunities, we also estimated models controlling for the likelihood of providing in-person opportunities based on both share of high needs students and the type of LEA.

Analytic Approach for District Inventory

As noted above, **the data collected through the district inventory reflects the policies and practices reported by the districts serving most Connecticut students.** Part of

Table 2. District Inventory Indicators of Remote Learning Conditions

1. Spring 2020 synchronous learning

2. Spring 2020 student access to technology for remote learning

3. Summer 2020 preparation for fall 2020

4. Improvements in online learning from spring 2020 to 2020-21

5. Rigor of student assessment during 2020-21

6. Social services referrals for students during 2020-21

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our strategy for analyzing these data was to present descriptive statistics to the State regarding the policies and practices around remoting learning. In doing this, it was also important to present the data with context—disaggregating it by education level, district type, and school year (where available). These descriptive results are presented in Appendices C-E for all survey items. For open-response questions from the district inventory, a research assistant used open coding to group districts' responses into themes. After these codes were reviewed by another member of the research team, she summarized the responses by theme; these summaries are presented in Appendixes C-E. The research assistant used a similar approach for district inventory items that offered an "other (please describe)" option; each summary is located below the relevant table in Appendices C-E.

Our second goal was to identify a set of district inventory items that described the ***teaching and learning conditions*** most likely to impact student outcomes data so that we could examine how district practices were associated with student outcomes. First, we collectively selected items that might serve as predictors of student effects based on theory. We cycled through this process until we agreed on a set of items and organized those items into two main

domains for the 2019-20 school year and four for the 2021-22 school year (see Table 2). Then we conducted a series of factor analyses on several of the selected items. This approach helped us determine how to use items in ways that were reliable and valid. Details regarding the six district indicators of remote learning conditions are provided in Tables B1 and B2 of Appendix B.

Analytic Approach for Teacher Survey Data

As noted above, we used a planned missing design when administering the teacher survey to lower the number of survey items each teacher was asked to complete. This approach is intended to be used for conducting inferential statistics, which was our original intent. Specifically, we intended to create district-level indicators that could be combined with the district survey and administrative data to assess student outcomes. However, this plan was not viable due to the low teacher response rate, meaning that multiple imputation was of limited use. Therefore, in this report we present only unimputed results.

We need to emphasize again that because of the low response rate, the teacher survey should be interpreted with extreme caution. With only 22% of districts achieving a response rate of 10% or more, it would be inappropriate to generalize the results of this survey to the entire state without additional information. As with the district inventory, we conducted descriptive analyses by school level and district type. For teacher survey items that offered an "other (please describe)" option, a research assistant used open coding to group teachers' responses into themes. She then summarized the responses by theme; each summary is located below the relevant table in Appendices C-E. For the single open-response question at the end of the teacher survey, which received 1,500 responses, two research assistants and two other members of the team worked independently to review approximately 100 responses and generate a list of possible codes. One member of the group then created a hierarchical coding framework that was reviewed by the other members.

After the group reached consensus, a research assistant coded all responses, grouped the codes by research question, and summarized the responses for each code. These summaries are reflected in the qualitative findings in the Results section; the summaries can be found in Appendices C-E.

Analytic Approach for Focus Group Data

We created verbatim transcripts of the audio recordings from each of 12 focus groups. Our qualitative leads developed a coding scheme for the focus group data and tested it by independently coding the same two transcripts, then meeting to review their codes to ensure agreement and inter-rater reliability. A primary and secondary coder was assigned to each of the remaining 10 transcripts, each of which was coded to consensus. Data from the transcripts was entered into a database for thematic analysis.

Analytic Approach for Integrated Data (Administrative and District Inventory Data)

After using the district inventory data to produce district indicators of remote learning conditions, we merged district-level values into the administrative data, which allowed us to examine the effects of COVID-related district practices on student outcomes. For each remote learning condition (aka treatment), we examined whether the data rejected the following null hypothesis:

Student and school exposure to the following district-level remote learning condition had no impact on any of the following outcomes: student attendance or chronic absenteeism among second-through 12th-grade students, Smarter Balance assessment scores or proficiency among fifth- through eighth-grade students on ELA or Math assessments, and SAT scores or proficiency of 11th grade students on English or Math assessments.

In other words, we examined whether each indicator impacted any outcomes at any grade. Note that we could not examine attendance for kindergarten and first-grade students or test outcomes for

Table 3. Student outcomes examined in the merged data set

Outcome	Description
1. Attendance rates	Percentage of days absent, 0-100% (Grades K-12)
2. Chronic absenteeism	Binary indicator describing whether student was absent for 10% of days or more (Grades K-12)
3. ELA and Math Assessment Scores	Scale scores for SBAC (Grades 5-8) and SAT (Grade 11)
4. ELA and Math Assessment Proficiency	Binary indicators describing whether student achieved proficiency according to cutoff scores for SBAC (Grades 5-8) and SAT (Grade 11) (binary indicators describing whether student achieved proficiency according to cutoff scores, 0/1)

third and fourth grade students because all analyses were conditional on pre-pandemic (i.e., 2018-19) student outcomes.

We began with a series of inferential analyses in which we tested the association of each of the six conditions in Table 2 (above) with each of the four outcomes in Table 3 (below). For example, we examined the association of spring 2020 learning models with student attendance, absenteeism, standardized assessment scores, and standardized assessment proficiency. For tests that allowed us to reject the null hypothesis, we followed our inferential analyses with exploratory analyses designed to detect which specific outcomes and grade levels were affected by the condition (see Table 3). This approach aimed to incorporate as much data from the district inventory as possible, while considering the implications for statistical power, type I error, and parsimonious explanations of effects.

We also created a pre-analysis plan that detailed whether an analysis would be inferential or exploratory. Further, to guard against "researcher degrees of freedom" in data analysis—that is, researchers inadvertently tweaking analyses to reach the findings they desire—we preregistered this plan. The preregistration detailed the analyses we would conduct to address our main questions, and it clearly specified which analyses would be inferential versus exploratory. Preregistration greatly limits researcher bias by forcing the researchers to commit to an analysis plan that they developed before conducting analyses. After receiving approval from the CCERC directors, we posted our detailed pre-analysis plan on Open Science Framework at https://osf.io/axreb (also summarized in Appendix B). We then began analyzing the merged data set. Any departures from the pre-analysis plan are carefully documented in Appendix B.

How to interpret study findings

Three caveats should be noted. First, readers should avoid generalizing certain findings in the report to the entire state. Specifically, the teacher survey had a low response rate (~6%). Thus, it would be inaccurate to extrapolate results from that survey to the larger population of teachers. Second, though the data from the teacher focus groups is informative, focus groups cannot be fully representative of the state's teacher population. Again, care should be taken about generalizing with these findings. Third, when examining the potential effects of district choices, it is challenging to account for correlations between the many variables affecting students during the pandemic. For example, though we control directly for the fact that high needs districts provided fewer opportunities for in-person learning during the pandemic, our finding of lower pandemic learning losses in districts that provided more in-person learning could still be driven by other differences between districts besides whether they offered more or less in-person learning. Despite their limitations, these data sources provide valuable context when interpreted in combination with other data that is more representative, namely the district inventory and the administrative data. We have tried to draw conclusions that integrate findings across all these data sources, and we encourage readers to do the same.

RESULTS

Goal 1. Implementation: Document the implementation of remote learning models

Q1a. What remote learning formats did districts use and how did these learning formats vary by district type?

Quantitative findings

We analyzed administrative data to examine the remote learning formats used by districts over time. Our simple cross-sectional models of the availability of in-person learning opportunities (hybrid or fully in-person) based on administrative data revealed that **schools with a large share of high needs students were less likely to provide some in-person learning at the beginning of the 2020-2021 school year and less likely to offer a higher share of days in-person over the course of the school year.** Results were similar for choice schools (i.e., RESCs, charters, and CTECS). For example, an initial hybrid or in-person option was available to 95-99% of students in traditional public schools with a 25% or lower share of high needs students, but to only 80-90% of students in schools with 60-70% high needs students (available to a higher percentage of students in elementary school grades). In choice schools, less than 10% of students on average in such high needs schools had access to early in-person

Goal 1 Key Findings

- Most districts reported providing partially or fully synchronous remote instruction during spring 2020, with only slight variation across grade levels. In contrast, most teacher survey and focus group participants reported that they provided fully asynchronous instruction during this period.

- Districts reported that despite all efforts, in May 2020, approximately one-third of students were accessing remote learning less than half the time it was provided. Many teacher survey and focus group participants believed that student disengagement resulted from inadequate adult supervision and other family concerns.

- During the 2020-21 school year, districts with a large percentage of high needs students provided fewer opportunities for in-person learning than districts with a smaller percentage of high needs students. In addition, uptake of in-person learning opportunities was lower among schools with a large percentage of high needs students, especially during the transition from fully remote learning to in-person learning in fall 2020 and winter 2021.

- Focus group participants reported that the frequent changes in teaching models during the 2020-21 school year caused them to cover less material. Teacher survey respondents also reported that they covered a smaller proportion of the curriculum in 2020-21 than in years prior to the pandemic.

- Focus group and teacher survey participants reported that concurrent hybrid instruction was challenging; without adequate training and instructional technology, teachers found it overwhelming to teach students in person and on screen simultaneously.

- When comparing 2020-21 to spring 2020, 96-98% of Alliance districts, non-Alliance districts, and APSEPs reported that teachers were more fluent with remote learning technologies, and 88-94% reported that teachers were better at integrating recommended apps/tools.

learning. Similarly, traditional public schools with smaller shares of high needs students had 78%, 70%, and 60% of days in person for elementary, middle, and high school, but traditional public schools with larger shares of high needs students had 72%, 61%, and 55% of days in person, respectively. Detailed results are described in Appendix C and shown in Tables C1-C3.

The March 2020 pivot to remote learning was sudden and unexpected, and districts in Connecticut and across the nation initially anticipated it would last only a few weeks. As this timeframe was gradually extended through the end of the 2019-20 school year, districts' approaches to remote learning evolved. On the district inventory, **over 78% of districts across grade levels and district types reported that by May 2020, they were providing partially or fully synchronous instruction to students using videoconferencing** (Figures F1-F3 and Table C5 in Appendix C); APSEPs did this somewhat more than Alliance districts or non-Alliance districts. Although almost all districts reported that they were providing a substantial amount of synchronous instruction by May 2020, teacher survey respondents indicated that a large percentage of students were receiving remote instruction with less than one real-time/synchronous class each day. **Among teachers from Alliance districts, 53%, 53%, and 46% percent of elementary, middle, and high school teachers, respectively, reported that they were teaching most of their students primarily through asynchronous instruction, compared to 49%, 54%, and 57% of elementary, middle, and high school teachers, respectively, from non-Alliance districts** (Table C6).

For the 2020-21 school year, over 94% of Alliance districts and non-Alliance districts reported that their elementary through high schools were offering instruction using a partial or fully synchronous learning model to students who remained fully remote (Table C7). For hybrid students, a somewhat lower percentage of districts (over 83%) reported that they were using partially or fully

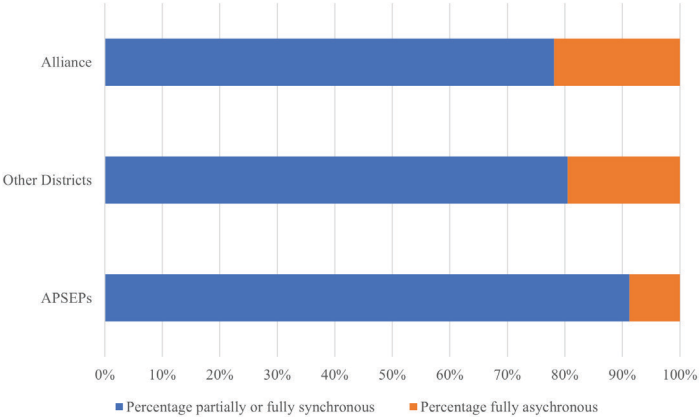Figure F1. Spring 2020 synchronous instruction in elementary schools

Figure F2. Spring 2020 synchronous instruction in middle schools

Figure F3. Spring 2020 synchronous instruction in high schools

synchronous instruction when hybrid students were learning from home (Table C8), with values lowest at the elementary level and highest at the high school level; values were somewhat lower in Alliance

districts than in non-Alliance districts. Less than 5% of elementary, middle, and high school teacher survey respondents reported that they were providing their students less than one synchronous class

per day during the 2020-21 school year (Table C9).

As noted elsewhere in this report, districts allowed families to choose between two or more learning models offered by the district for the 2020-21 school year (fully remote along with fully in-person and/or hybrid), and preferences varied across districts. For example, differences between Alliance districts and non-Alliance districts were striking. The teacher survey asked teachers to estimate approximately what percentage of their students attended school in fully in-person, hybrid, or fully remote models for most of the 2020-21 school year. Teachers from Alliance districts reported an average of 34%, 27%, and 18% of their elementary, middle, and high school students, respectively, learned in person for most of the 2020-21 school year; teachers from non-Alliance districts reported that 52%, 37% and 24% of these students learned in person over the same period. Conversely, teachers from Alliance districts reported that 30%, 30%, and 40% of their elementary, middle, and high school students learned remotely for most of 2020-21; teachers from non-Alliance districts reported that 20%, 17%, and 21% of their elementary, middle, and high school students learned remotely.

Qualitative findings

Focus group participants reported using a **variety of teaching models in the spring of 2020**, the majority being asynchronous, where students either picked up paper packets once per week or weekly assignments were posted in an online classroom management system like Google Classroom. About one-third of the focus group participants reported that their districts were providing synchronous teaching virtually. A few participants indicated that their districts offered a mix of synchronous and asynchronous lessons. Some reported that after a few weeks they began to move from paper packets to online assignments.

When **the 2020-2021 school year began**, most the focus group participants reported that their districts were using a **hybrid teaching model**. Most teachers participating in the focus groups re-

ported that hybrid teaching meant their classes were split in half, with each group attending in person two days per week and completing their work independently the other three days. Some teachers reported a subset of students were **fully remote**, meaning that they learned from home every day. Other teachers reported that students participated in class virtually, via video-conference, on the days they worked at home. This model can be described as **dual instruction**, a model in which the teacher delivers instruction simultaneously to students in-person in the classroom and students engaged in remote learning. About 15% of the focus group participants indicated that their districts were **providing remote instruction only well into the academic year**, although some districts offered students with disabilities and ELs an in-person leaning option. About 7% of focus group participants indicated that their districts **began the school year fully in person**. Finally, about 10% of the focus group participants reported that their district offered **a remote academy option**, with dedicated teachers for students whose parents chose to keep them at home.

Q1b. What general curricular student learning outcomes were targeted?

Quantitative findings

Just as approaches to teaching and learning evolved over the first 16 months of the pandemic, so did districts' primary goals for teaching and learning. **For the spring of 2020, about 50% of districts reported that their primary goal across all grade levels for core academic subjects was to continue grade level learning, though values were somewhat lower for Alliance districts (45-50%) compared to non-Alliance districts (60-63%)** (Table C11). The remaining districts reported less ambitious primary goals for core academic subjects: maintaining contact with students (over 20% of districts) or minimizing learning loss (over 25% of districts). In non-core areas (music, art, health/PE), a smaller percentage of districts reported primary goals of continuing grade level learning and minimizing

learning loss, with a larger percentage of districts reporting that their primary goal was staying in touch with students (Table C12). For special services, 36-40% of Alliance districts reported that their primary goal was to continue on-grade learning, and 40-42% of Alliance districts reported that their primary goal was to minimize learning loss, compared to 48-50% and 33-34% for non-Alliance districts (Table C13).

A substantially higher percentage of districts reported that their primary goal for the 2020-21 school year was to continue grade-level learning. For fully remote students, 74-78% of Alliance districts reported that grade-level learning was their primary goal (values highest at the elementary level and lowest at the high school level), and a slightly higher percentage of non-Alliance districts reported the same (Table C14). For hybrid students, the percentage of Alliance districts reporting grade-level learning as their primary goal was somewhat higher, with a larger percentage of Alliance districts indicating "other" as their primary goal (Table C15). The district inventory did not ask about the primary goal for fully in-person students in 2020-21.

Assessment practices also evolved over the 2019-20 and 2020-21 school years. Across all school levels, most Alliance and non-Alliance districts reported that they used attendance (>94%), completion of classroom assignments (>93%), performance on classroom tests (>87%), and performance on standardized assessments (>70%) to assess student progress in fall 2019-winter 2020 (Tables C16-C18) and 2020-21 (Tables C22-24). Values were noticeably lower in spring 2020 (Tables C19-C21), particularly for the use of classroom quizzes and tests (>69%) and standardized assessments (>37%). Although teacher survey respondents generally reported 2020-21 grading practices that were similar to those reported in the district inventory, the percentage of teachers reporting that they used standardized assessments to assess student progress was substantially lower (approximately 64%, 49%, and 21% for elementary, middle, and high school teachers) than reported by districts for the same period (Tables

C25-C27).

Similar to district-reported assessment practices, the percentage of districts reporting that they used an early warning system to detect student risk factors was substantially lower in the spring of 2020 (Tables C30, C33, C36) than before the pandemic (C29, C32, and C35) or during the 2020-21 school year (Tables C31, C34, and C37). Grading practices also varied over the course of the pandemic, with a higher percentage of districts reporting pass/fail grading (33%, 51%, and 60% at the elementary, middle and high school levels, respectively) and the suspension of grades (31%, 20%, and 12% of elementary, middle and high school levels, respectively) in the spring of 2020, compared to before the pandemic or during the 2020-21 school year (Tables C38-C46).

Q1c. What did administrators and teachers say about the challenges of and strategies for different learning formats?

<u>Quantitative findings</u>

Districts reported that **despite all efforts, in May 2020, about one-third of students were accessing remote learning less than half the time it was being provided** (Table C47), likely contributing to learning loss for those students. Percentages were similar for Alliance districts and non-Alliance districts at the elementary level, but higher for Alliance districts than for non-Alliance districts at the middle and high school levels. Although districts indicated that technology was likely an issue (including inadequate internet connections and hardware issues), they reported that inadequate parental support and supervision or students' limited attention spans were likely more problematic, since many parents were working or were unable to facilitate online learning for other reasons (Table C48).

The teacher survey also asked about the percentage of students who were logging in to remote learning less than half the time in spring 2020. Teacher survey respondents reported that about 40% of students were accessing remote learning less than half the time, but values were somewhat higher for Alliance districts

than for non-Alliance districts (Table C49). Based on the early results of the district inventory, teacher survey respondents were asked to rank a longer list of possible reasons that these students weren't participating in remote learning in spring 2020, which include two options not listed in the district inventory: *inadequate adult supervision* and *other family reasons*. Teacher ratings from Alliance districts and non-Alliance districts indicated that inadequate adult supervision was perceived as the largest problem at all grade levels, except for high school teachers from Alliance districts, who indicated that other family responsibilities were a larger obstacle (Table C50).

During 2020-21, approximately one-fifth of fully remote students were accessing remote instruction less than half the time (Table C51). During this period, percentages were higher at all levels for Alliance districts than for non-Alliance districts (23% to 31% of elementary to high school students in Alliance districts, compared to 17% to 22% of elementary to high school students in non-Alliance districts; Table C51), likely meaning that a larger proportion of Alliance students experienced learning loss. As for May 2020, districts indicated that technology was probably part of the issue, particularly internet connectivity and hardware issues, but once again, districts indicated that "other" issues were more problematic (Table C52). Again, districts cited inadequate parental support and supervision, but they also named disengagement as a major issue.

The teacher survey asked about the percentage of fully remote learners, hybrid learners, and fully in-person learners who missed school more than half the time in 2020-21. Alliance district teachers reported average rates of 32%, 34%, and 41% of elementary, middle, and high school remote learners, respectively; teachers from non-Alliance districts reported lower rates of 21%, 30%, and 32%, respectively (Table C53). Across all school levels, teachers from Alliance and non-Alliance districts reported that lower percentages of hybrid learners missed school more than half the time, compared to remote learners (Table

C54). Percentages were lower still for in-person learners, with Alliance teachers reporting average rates of 23%, 23%, and 30% for elementary, middle, and high school in-person learners, respectively, and non-Alliance districts reporting average rates of 12%, 17%, and 22%, respectively (Table C55). As described above, the teacher survey asked respondents to rank a longer list of possible reasons for student disengagement in 2020-21 than the district inventory had provided to administrators. For spring 2020, teacher respondents from Alliance districts and non-Alliance districts indicated that inadequate adult supervision was the most likely explanation across all school levels, with the same exception described above: high school teachers from Alliance districts gave the same mean ranking for inadequate adult supervision and other family responsibilities (Table C56).

Finally, the district inventory asked about digital cheating. The same percentage of Alliance districts and non-Alliance districts (61%) reported that digital cheating was much more of a problem or somewhat more of a problem at the high school level during the pandemic than before the pandemic. Values were lower at the middle school level (53% of Alliance districts and 47% of non-Alliance districts) and lower still at the elementary level (33% for Alliance districts and 25% of non-Alliance districts). A much lower percentage of APSEPs indicated that digital cheating was much or somewhat more of a problem during the pandemic (23%, 10%, and 4% at the high school, middle school, and elementary levels, respectively) (Table C57). Similarly, the highest percentage of teacher survey respondents reported that digital cheating was much more of a problem or somewhat more of a problem at the high school level, with the lowest percentages at the elementary level. Notably, teachers reported substantially higher values than district inventory respondents. Between 73% and 85% of high school teachers in Alliance and non-Alliance districts, respectively, said that digital cheating was somewhat or much more of a problem, along with 67% and 71% of Alliance and non-Alliance middle school teachers,

respectively, and 63% and 50% of Alliance and non-Alliance elementary school teachers, respectively (Table C58).

Qualitative findings

Focus group participants and teacher survey respondents **uniformly agreed that dual instruction—concurrently teaching some students in the classroom and others in class virtually—was not workable** in the fall of 2020. They reported that teachers struggled, often without support from their districts, to have the technology in place, to attend to both groups of students and provide them with the support they needed, and to make sure that the students were OK. One teacher participating in the focus groups shared the sentiment of many by saying:

"Dual-teaching was the worst idea ever … you were emotionally drained, you were physically drained, in the beginning I was, like, 'Oh my God, how am I going to do this?' and it never got easier."

Another teacher said:

"You would not expect a teacher to teach in two classrooms (across the hall from each other) at the same time while physically in the building with students. Yet, that is what we were doing while teaching with our [dual-teaching] model."

Some focus group participants reported that **dual instruction was so stressful that it was the impetus for some to leave the teaching profession.** Teachers participating in the focus groups reported that many of the **students who were remote did not do their assignments**, and teachers struggled to identify solutions to assess remote students' progress. Many teachers expressed significant challenges with the policy that **allowed students to move between in-person and remote classes with no notice.** They reported never knowing who would be in person on a given day, making it difficult for them to plan or to engage students in group activities. Educators participating in the focus groups also spoke of the constraints they were under because some of their students were remote. Teacher survey respondents and focus group partici-

pants reported that they were challenged to find ways to **engage the remote students in hands-on lessons** and had to develop two sets of lesson plans: one for in-person students and one for remote students. Additionally, many focus group participants reported that they were u**nable to take a break in the day to bring their students outside,** as the remote students would be left with no supervision. Some teachers reported that their districts always **had one teacher or paraprofessional in the classroom and the other in the virtual classroom,** which allowed for all students to have an adult who could provide guidance for the lessons and make sure that student behavior remained appropriate.

Some focus group participants spoke about **the challenge of providing educational content for their students.** In districts that were asynchronous, they spoke about the significant work to **create or identify mechanisms to deliver the curriculum.** Most prepared paper packets for the students, and some supplemented these with videos. Once schools transitioned to remote teaching, focus group participants and teacher survey respondents talked about the **difficulty of translating their in-person lessons to the online format.** This included figuring out how to teach hands-on lessons (e.g., science labs) remotely. Several focus group participants and teacher survey respondents talked about **losing the ability to differentiate the work for their students** and to monitor student academic progress due to the significant time needed to translate the curriculum for independent learning. When asked about strategies, some reported that **they partnered with other teachers in their schools and divided up the lessons that needed to be modified.** Other participants indicated that they wished their school had used this strategy.

Q1d. How did approaches to remote learning change over time, and how did these changes affect teachers and students?

Quantitative findings

The district inventory asked administrators to report on the availability of remote learning opportunities before the start of the pandemic (Tables C61-C63). Across all grade levels, less than 4% of Alliance and non-Alliance districts reported that some of their teachers were teaching virtually, except for non-Alliance high school teachers (11%); percentages were somewhat higher for APSEPs. The percentage of students learning virtually was also low for Alliance districts and non-Alliance districts at the elementary (<10%) and middle school levels (<13%), but substantially higher at the high school level (43% and 33%, respectively). The percentage of Alliance districts and non-Alliance districts who reported that they had the capability to manage and deliver virtual/remote learning was somewhat larger, but still small: 16%, 16%, and 30% of Alliance districts at the elementary, middle, and high school levels, respectively, and 19%, 30%, and 36% of non-Alliance districts, at the elementary, middle, and high school levels, respectively. The teacher survey asked respondents to report whether they had any experience with a variety of learning models, and **a very small percentage of teachers at any level reported that they had pre-pandemic experience with these hybrid or virtual learning models** (Table C64).

The district inventory also asked administrators to select all that applied from a list of improvements to remote learning from 2019-20 to 2020-21. **Across Alliance and non-Alliance districts and across all school levels, 96-98% of districts reported that teacher fluency with remote learning technologies had improved, and 88-94% of districts reported that teachers' integration of recommended apps/tools had improved** (Tables C65-C67). Similarly, the teacher survey asked teachers to select all that applied from a list of ways their own approach to remote/hybrid instruction might have improved from 2019-20 to 2020-21. Among teachers from Alliance and non-Alliance districts across elementary, middle, and high schools, 85-93% of teachers reported that "I became more

comfortable using available learning technologies" and 80-89% reported that "I became more knowledgeable about available learning technologies" (Tables C68-C70).

In addition, the teacher survey asked respondents to estimate how much of the curriculum they were able to cover in the 2019-20, 2020-21, and 2021-22 school years, compared to what they typically would have covered before the pandemic. Across all levels, **teachers indicated they covered a smaller amount of the curriculum during pandemic years, compared to previously** (Table C72), but covered a larger percentage in 2021-22 than in the first two years impacted by the pandemic. Elementary teachers reported a lower mean percentage in 2019-20 than middle or high school teachers but a higher mean percentage in 2021-22. In addition, at each level, teachers from Alliance districts reported lower mean percentages than teachers from non-Alliance districts for all levels and years.

Qualitative Findings

Teacher focus group participants and teacher survey respondents reported that **as the 2020-21 school year progressed, there were many changes in how students were taught.** Many focus group participants reported that their schools moved from hybrid to completely virtual between mid-November and mid-December in an attempt to mitigate transmission of COVID-19 between students and teachers. Others reported moving from hybrid to in-person with the option of students joining remotely. One focus group teacher said, "One constant was change, things were always changing," and a teacher survey respondent reported that the frequent changes were "exhausting and stressful." Teachers in the focus groups and survey participants alike believed that the **frequent changes in teaching models during the 2020-2021 school year meant that less material was covered.**

Goal 2. Supports for Students: Document how districts supported learning and student well-being

Goal 2 Key Findings

- Depending on their grade level and district type, teacher survey respondents reported that in the spring of 2020, 29-55% of their students were progressing with grade level learning and 41-59% of their students were in touch with their teachers daily

- Again, depending on their grade level and district type, teacher survey respondents reported that in 2020-21, 42-53% of their fully remote students were progressing with grade-level learning, compared to 51-62% of their hybrid students and 66-77% of their fully in-person students.

- Alliance districts, non-Alliance districts, and APSEPs reported that the percentage of students at all levels with access to a district-provided Chromebook, laptop, or iPad increased dramatically, from 60-72% on March 1, 2020, to 91-95% on November 1, 2020.

- Focus group participants said that the proportion of students dealing with stress, anxiety, depression, and social isolation was higher during the pandemic than they had ever seen. They reported that student coping skills and maturity levels were below what would be expected for their grade level.

Q2a. What do administrators and teachers say about the pandemic's effects on students and their families?

Quantitative findings

To detect how students were doing academically at the start of the pandemic, the teacher survey asked respondents to indicate what percentage of students were exhibiting each of several academic behaviors in spring 2020. **Teachers reported that 39-55% of their elementary, middle, and high school students were progressing with grade level learning in spring 2020**; teachers from Alliance districts reported lower mean percentages than teachers in non-Alliance districts and lower values for younger students than for older students. **Teachers reported that 41-59% of their students were in touch with their teachers daily,** with values lowest for high school students in Alliance districts and highest for elementary students in non-Alliance districts. Importantly, **teachers reported that a meaningful percentage of students were performing better while learning remotely than they had in person**; values ranged from 9% for elementary school students from

Alliance districts to 16% for high school students from non-Alliance districts. (Table D1).

Teacher survey respondents from Alliance and non-Alliance districts reported similar values for elementary, middle, and high school students in 2020-21: **42-53% of fully remote students were progressing with grade-level learning, 43-64% were in contact with the teacher every day, and 12-16% were performing better than they had in person** (Table D2). In contrast, district inventory results indicate that higher percentages of fully remote students were meeting these benchmarks in the 2020-21 school year. According to the district inventory (Table D3), 67-84% of fully remote students were in contact with their teachers daily during the 2020-21 school year, with mean percentages lowest for high school students in Alliance districts and highest for elementary students in non-Alliance districts; percentages were within that range for APSEPs as well. Districts reported that 81-88% of fully remote students were working on grade-level content in 2020-21, with mean percentages again lowest for high school students in Alliance districts and highest

for elementary students in non-Alliance districts; percentages were lower for APSEPs. Finally, districts reported that 19-39% of fully remote students were completing advanced or enrichment content in 2020-21, with mean percentages lowest for middle school students in Alliance districts and highest for high school students in non-Alliance districts; values were higher still for elementary students from APSEPs.

The teacher survey also asked respondents to indicate what percentage of hybrid and fully in-person students were exhibiting these academic behaviors during the 2020-21 school year (Tables D4 and D5). Depending on their grade level and district type, **teachers reported that 51-62% of their hybrid students were progressing with grade level learning and 66-77% of their fully in-person students were progressing with grade-level learning,** with teachers from Alliance districts consistently reporting lower values. Teachers reported that 16-23% of their hybrid students and 23-31% of their fully in-person students were completing advanced or enrichment content in 2020-21, compared to 13-19% of students in spring 2020 (Table D1).

In addition, the teacher survey asked respondents to rate the adequacy of their districts' support for student learning. At each level, a substantially smaller percentage of teachers from Alliance districts said that support for student learning was *somewhat adequate* or *extremely adequate*, with values lowest at the high school level. Specifically, 48% and 64% of elementary teachers from Alliance and non-Alliance districts, respectively, said that support for student learning was *somewhat adequate* or *extremely adequate*, compared to 48%-56% of middle school teachers from Alliance and non-Alliance districts, and 39-51% of high school teachers from Alliance and non-Alliance districts (See Table D6).

The district inventory and teacher survey both asked about changes in problematic behavior during the pandemic compared to before. About 21-42% of Alliance districts and non-Alliance districts reported that cyberbullying was *somewhat more of a problem* or *much more of a problem* during the pandemic than before, with higher values reported for higher grades than for lower grades and for Alliance districts compared to non-Alliance districts (Table D7). Teacher survey respondents generally reported higher values than districts (44-60%); in both Alliance and non-Alliance districts, middle school teachers reported higher values than elementary or high school teachers (Table D8). Across all levels, over 86% of Alliance districts and other districts reported that excessive screen time was *somewhat* or *much more of a problem* (Table D9), compared to over 91% of teachers (Table D10). Similarly, most Alliance districts and non-Alliance districts reported across all levels that lack of connection to school was *somewhat* or *much more of a problem*; values ranged from 89% to 97% (Table D11). Teacher survey respondents reported lower values, ranging from 79% of elementary teachers from non-Alliance districts to 92% of high school teachers from non-Alliance districts (Table D12).

Teacher survey respondents were asked about the extent to which their special education (IEP) students and EL students in the 2020-21 school year were receiving the supports normally provided. About 35% and 55% of elementary teachers from Alliance and non-Alliance districts, respectively, said that their students in 2020-21 were *mostly* or *completely* receiving the services specified in their IEPs, compared to 31% and 48% of Alliance and non-Alliance middle school teachers, respectively, and 30% and 43% of Alliance and non-Alliance high school teachers (Table D14). Most of the remaining teachers responded *somewhat*, and 12% or fewer responded *not at all*. Values were lower for EL students, with only 29% and 43% of elementary teachers from Alliance and non-Alliance districts reporting that their EL students were *mostly* or *completely* receiving the services normally provided, compared to 22% and 35% of Alliance and non-Alliance middle school teachers, respectively, and 18% and 31% of Alliance and non-Alliance high school teachers, respectively (Table D15). The percent-age of teachers replying *not at all* was somewhat higher for EL services than for IEP services.

Finally, teacher survey respondents were asked to review a list of resources and indicate the level of student need during the pandemic, compared to before. Elementary and middle school teachers from Alliance and non-Alliance districts indicated that technology devices, improved Wi-Fi access, and behavioral health services were their students' greatest needs; elementary and middle school teachers from Alliance districts also indicated that students' greatest needs included food assistance and "other" (Tables E16 and E17). High school teachers from Alliance and non-Alliance districts reported similar results, although they also indicated that special courses were one of their students' greatest needs (Table E18.)

Qualitative findings

Challenges and strategies related to student engagement

The teaching challenge that was most frequently mentioned by focus group participants was **student engagement**. In the **spring of 2020** focus group participants and teacher survey respondents reported that many districts made the decision that the **final grades for the academic year would not be lower than the grades students had on the last day of in-person classes.** They reported that not grading the students made it very hard for students to stay motivated or connected to school, which **resulted in some students not participating in schoolwork at all and most not completing all their assigned work.** One teacher said:

"[Engagement] definitely went down, especially once it became known that basically whatever GPA they had when we went out was going to be what they stayed with ... our district felt that it was very punitive to punish someone for not doing their work in these exceptional times."

Most focus group participants reported that their **districts were initially asynchronous, and many did not have required time online.** One

teacher said:

"When we first started during the spring of 2020, none of our online time was required time, so everything was asynchronous and engagement in the lessons that were being posted was probably the biggest challenge."

Once students were online, many focus group participants and teacher survey respondents reported challenges that impacted engagement, including **schools not requiring students to have cameras on; students having other priorities** like caring for younger siblings or working to help support their families; and **younger students needing help** from an adult to complete lessons or log on. Some focus group participants reported that they did not know how to engage students through technology. Teacher survey respondents also reported that students became increasingly dependent on devices and social media, leading to digital cheating.

Issues with engagement persisted into the **2020-2021 school year**, when many focus group participants and teacher survey respondents reported that their schools were using concurrent hybrid teaching models (also known as dual instruction). Teachers reported that it was **difficult to both attend to the students in the classroom and to engage the students joining remotely.** Students at home often had their cameras off, were distracted (e.g., by others at home, or by playing video games), and some just did not log on. Focus group participants also noted that in the fall of 2020 it was **very hard for students to adjust to being back in the classroom.** One teacher said:

"They were less engaged; we had trouble trying to get them to focus in class ... we had a lot of social issues. It seems that they had regressed significantly, not only academically but emotionally and socially as well."

Another struggle reported by focus group participants was that some **students did not believe they had to complete their schoolwork**, because they thought that just like in the spring of 2020, grades would not count. One educator said:

"I would say that last year the greatest challenge we had was getting the students to believe that they could fail this time ... they didn't believe it, so ... there was quite a large amount of students that were retained because they did nothing all year."

In the spring of 2020, many focus group participants reported that they **used technology** to engage their students. Some reported that their schools instituted **"office hours"** when teachers were available to meet with students individually or in small groups. Others provided this medium as a way for their students to socialize, opening Zoom 20 minutes before class or scheduling a "lunch bunch" or a non-instructional class meeting where their students could spend time together. Early in the pandemic, some participants reported that their districts **asked teachers to call or email their students and their families multiple times per week** to keep them connected. Others reported innovative ways that they used technology to engage their students. Even though their district was asynchronous, some elementary school teachers **started each day with a morning meeting,** trying to keep some type of routine for their students. In districts where not all students had access to a computer, teachers would record a video of morning meeting and email the link to families. One teacher said:

"And so every morning I would shuffle up my cards and I would say good morning to every one of my kids on the recording, and parents told me that the kids would say, 'Good morning, Mrs. M.' back when they heard their name."

In the older grades, focus group participants would **post a fun question or a poll in Google Classroom**. Some used this to take attendance, and others as a strategy to get their students to log on. **Other focus group participants made videos** to keep students engaged, for example, reading books aloud, and for students who could not be synchronous they made videos explaining the assignments. A few made personal videos for each student as a way to connect. For synchronous participants, teachers

reported engaging in activities like bringing a pet to school or giving a tour of their home. Some participants noted that **because they were teaching from home, their students got to know them as people and not just as teachers.**

Other engagement strategies reported by the focus group participants included **sending birthday cards to students, doing a car parade, dropping off care packages for graduating students, and delivering awards to students.** Two pre-K teachers made "flat Stanley" cardboard cutouts of themselves and sent one to each student so that when students were watching videos or listening to a story their teacher was in the house with them. When they returned to school in the fall of 2020, **some focus group participants used SEL curricula to reconnect with students. A few paired students in the classroom with those learning remotely** for group activities, providing a peer connection for students at home.

Teacher survey respondents reported that **students who were engaged and motivated, as well as those whose parents were able to support their academic development, were successful** with remote learning.

Student Learning and Achievement

Focus group participants and teacher survey respondents expressed **significant concern about the amount of learning loss** that students have experienced. They reported that **writing and math skills were significantly below expectations** and that high school **students were not prepared to take AP courses.** One respondent to the teacher survey said:

"Students covered up their lack of progress/mastery during fully remote that are discovered once we returned to school."

Another reported:

"At the high school level, over half the population of our students cannot do basic math or write a grammatically correct sentence."

Focus group participants indicated that the amount of **content being covered**

between March of 2020 and June of 2021 was less than half of what was typically covered. Many attributed this reduced content to the fact that students "could only handle so much" because of the social-emotional impacts of the pandemic. While focus group participants **felt that the increased focus on SEL is necessary**, they worried about how students would learn the material missed. Some teacher survey respondents noted that **students seemed to forget how to be students** during the pandemic. Many focus group participants expressed concern that the curriculum in the 2020-2021 school year began where it typically does and did not focus on helping students to learn missed content from the spring of 2020. **They noted not just** *"a summer slide but a six-month slide."* Some teacher survey respondents said that **students were passed on to the next grade** at the end of the 2019-2020 school year despite being academically at least one grade level behind.

Focus group participants believed that the **frequent changes in teaching models** during the 2020-2021 school year meant that less material was covered. They also reported that students had *"internalized the decreased expectations"* from the spring of 2020, when missing schoolwork or poor attendance did not impact their grades. Many elementary school teachers participating in the focus groups expressed **a notable difference in achievement between students who had parents' support to complete their work in the spring of 2020 and those who did not.** Others noted that some **parents did their child's schoolwork** in the spring of 2020, so when they returned to school in the fall of 2020, their deficits were more pronounced than anticipated. Focus group and teacher survey participants reported that **students receiving special education and EL supports struggled**, as they were not getting the support they needed and fell far behind. One educator said that *"EL students were uniquely poorly suited for online learning."* Some teacher survey respondents noted that language barriers made it difficult for some parents to en-

gage with teachers or help their student with schoolwork. A positive outcome expressed by many teacher survey respondents and focus group participants was that their **student's technology skills had grown significantly** and that this was especially true for students who previously lacked access to technology at home. Teacher survey respondents also noted that many students became more flexible in their learning and more able to work collaboratively with their peers.

Student Emotional Concerns

Focus group participants were asked how their students' emotional concerns in the 2020-2021 school year, such as stress, anxiety, depression, and trauma, compared to before the pandemic. The focus group participants and teacher survey respondents reported that although some students were very resilient, **the pandemic had a significant emotional impact for many, if not most of their students. The rates of students dealing with stress, anxiety, depression, and social isolation were beyond anything they had ever seen.** One teacher said:

"It really literally broke my heart to see teenagers unable to even speak to each other, to see people scared in the hallway or get yelled at because they are not wearing a mask correctly but not being given a hello".

Focus group participants and teacher survey respondents reported that **student coping skills, conflict resolution skills, and maturity levels were below what was expected for their grade level.** They noted that **going back to school was emotionally difficult for their students** and that many had "forgotten how to socialize." Many focus group participants and teachers responding to the survey noted the **detrimental impact that student social-emotional stress had on their academics** and how it had been hard to see their students struggle. One said:

"So it was like we were not giving them what they needed socially, and then academically they were feeling like, well, nobody cares anyway so I'm not going to do anything."

Another stated:

"Students lack more empathy … There are constant bullying, fights, and crying students with drama."

Teachers in the focus groups observed a **significant increase in the number of students who had an IEP for emotional disturbance.** Some focus group participants and teacher survey respondents who teach at secondary schools reported **increased incidents of self-harm, suicide attempts, psychiatric inpatient stays, and students who died by suicide.** One educator said:

"I'm just seeing much higher levels of anxiety and depression and isolation. Where students feel like they don't know how to make friends anymore. And high school can be lonely anyways, but if you go through it completely by yourself and you don't know how to go up to someone and make friends, that's so hard for these kids."

Another stated:

"[Our school] had more students hospitalized for psych issues in the last two years than in the previous 14 combined."

Focus group participants also reported that it was not just the students who were struggling **but that teachers and administrators also needed support.** One educator said:

"Everybody has difficulty with the social emotional and the whole pandemic. It was a collective trauma for everybody."

Student Behavior

Focus group participants and teacher survey respondents **noted a significant number of concerns regarding student behavior.** They indicated that students had less ability to self-regulate, which led to a significant increase in **behavioral problems including fighting, bullying, cheating, truancy, and being disrespectful to peers and school staff.** Focus group participants and survey respondents reported that students were **exhibiting more limited conflict resolution skills compared to before the pandemic. Participants believed that this was partially due to increased stress**

and limited socialization. One teacher said:

"Kids emotionally are further behind, and they're not ready for some of the demands that are being asked of them."

Many teacher survey respondents and focus group participants **expressed frustration that school administration was not holding students accountable** for violent behavior, instead allowing it to continue. Some respondents indicated that their **administrations attempted to ease the impact of the pandemic on students by relaxing school rules and lowering expectations** for student conduct, resulting in negative student behaviors becoming unmanageable. One educator said:

"Kids were getting away with physical violence towards themselves and teachers, swearing at teachers, and they would basically go to an administrator … and, you know, they might get a lollipop, and that's not an exaggeration. And then they'd go back to class."

Even with the increase in behavioral issues, focus group participants reported that **most students were happy to be back in school.** Teacher survey respondents reported that even a small amount of time in school improved students' mental health.

Q2b. What technological and other resources did districts provide to support student learning during the pandemic, and what technology challenges did students experience?

Quantitative findings

The district inventory indicated that before the pandemic, access to electronic devices varied by district type and by school level. Approximately 78% of Alliance districts indicated that every elementary student had access to a school-provided device for use in school, compared to 71% of other districts and 55% of APSEPs (see Table D21). At the high school level, 80% of Alliance districts and 74% of other districts reported that every student had access to a school-provided device for use in school, compared to 60% of APSEPs (see Table D29); values were similar at

the middle school level (see Table D25). A much lower percentage of districts indicated that every student had their own school-provided device for use at home or school (see Tables D21, D25, and D29).

District inventory results also indicated that access to electronic devices changed over time. **Alliance districts, non-Alliance districts, and APSEPs reported that the percentage of students at all levels with access to a district-provided Chromebook, laptop, or iPad increased from March 1, 2020, to November 1, 2020.** For example, districts overall reported that 60 % of elementary students had access to a district-provided device on March 1, but this value increased to 87% on May 1 and 95% on November 1 (Tables D22-D24). The percentages of students with access to a district-provided device were typically lower at younger grades. Although values were lower in Alliance districts than in non-Alliance districts on March 1, values were higher in Alliance districts than non-Alliance districts on May 1 and November 1; values were consistently lowest in APSEPs (Tables D22-D24, D26-D28, D30-D32).

Teacher survey respondents were asked to rate the adequacy of student access to 1:1 devices at two different times. (See Tables D33-D34). Between 79% and 85% of teachers from non-Alliance districts reported that their access to 1:1 devices for students was somewhat adequate or extremely adequate in spring 2020, compared to 63% to 75% of teachers from Alliance districts. For the 2020-21 school year, between 92% and 94% of non-Alliance districts reported that their access to 1:1 devices for students was somewhat or extremely adequate, compared to between 85% and 87% of teachers from Alliance districts. Although access increased at all levels for both types of districts, the percentage of teachers that reported somewhat or adequate access was consistently lower in Alliance districts.

The district inventory asked about changes over time in internet access to support online learning (see Tables D35-D36). Alliance districts reported

that the mean percentage of students with sufficient internet access to participate in online learning increased from 69% on March 1, 2020 (before the pandemic) to 93% on November 1, 2020 (eight months later), whereas non-Alliance districts reported a higher mean percentage of 83% on March 1 and 96% on November 1 and APSEPs reported lower mean percentages of 73% on March 1 and 90% on November 1. When asked to predict what would have happened without district action, Alliance districts reported that by November 1, 2020, a mean percentage of 66% of students would have had sufficient internet access for full participation in online learning, compared to 84% reported by non-Alliance districts and 81% for APSEPs.

Qualitative findings

Internet and bandwidth, access to computer devices, and technology skills to log on and use software platforms were the most common student challenges with technology that focus group participants and teacher survey respondents shared. They noted that these challenges were **heightened for elementary school children and for students with disabilities.** As one special education teacher in the focus group said:

"Every day, I would log on as a student so I could make a video of myself accessing the assignments in every class and send that to my students. They just couldn't figure out how to do all the technology."

For students who needed technology support at home, focus group participants said that many **parents were not equipped to assist their child with the remote learning technology** and that a substantial amount of their week was spent helping (via phone, written resources, and videos) parents log on to the remote learning platform, monitor their child's virtual attendance, and locate assignments, schedules, and other student resources. Some parents also needed support from teachers in assisting their child with class assignments and how to manage their schedules. **For parents with limited English profi-**

ciency, training and supports were insufficient.

Participants in the focus groups and teacher survey noted that over time, students in need were provided Wi-Fi hotspots and Chromebooks to assist with their virtual learning. The timing of these supplies varied among participants' districts. Some teachers said that some hotspots did not work or that they were insufficient to support the bandwidth needed to participate in remote learning.

Q2c. What resources were available to support students' physical and emotional well-being during the pandemic, compared to before the pandemic?

<u>Quantitative findings</u>

During the first two years of the COVID-19 pandemic, districts worked to support students' physical and emotional well-being, as well as their academic development. Many districts focused resources on nutrition support. **In the district inventory, 69-84% of Alliance districts reported that they were offering free meals to all elementary, middle, or high school students before the pandemic, compared to 13-18% of non-Alliance districts and 26-38%% of APSEPs** (see Table D39). However, 94% of Alliance districts and 88% of other districts offered free take-away meals to all students in the spring of 2020 (see Table D40); during the 2020-21 school year, 97% of Alliance districts and 92% of non-Alliance districts offered free in-school meals to all students (see Table D41). Very few APSEPs (8%) offered free take-away meals to all students in spring 2020, though 42% offered free in-school meals to all students during the 2020-21 school year.

The district inventory asked how the allocation of resources for social services referrals and the number of referrals changed over time. For spring 2020, 50% of Alliance districts reported that they allocated a lot more resources or somewhat more resources for social services referrals compared to before the pandemic, followed by 35% of non-Alliance districts and 28% of APSEPs (see Table D42). For the same period, 56%

of Alliance districts reported that they referred a lot more or somewhat more students for social services compared to before the pandemic, followed by 36% of non-Alliance districts and 16% of APSEPs (see Table D43). **For the 2020-21 school year, 74% of Alliance districts reported that they allocated a lot more or somewhat more resources for social services referrals compared to spring 2020, followed by 61% for non-Alliance districts and 25% for APSEPs** (see Table D45); values were similar for the number of students referred (see Table D46). The results show that over the first two school years affected by the pandemic, Alliance districts saw a dramatically larger increase in the allocation of resources for social services referrals and in the number of students referred, compared to non-Alliance districts and APSEPs. Tables D44 and D47 summarize how districts described their efforts to connect students to social services in spring 2020 and school year 2020-21, respectively.

In terms of support for emotional well-being, the district inventory asked how student participation in virtual or in-person counseling meetings changed during the pandemic, compared to before the pandemic (see Table D48). The percentage of districts reporting that counseling visits were much more common or more common ranged across district types and grade levels, from 66% of elementary schools in Alliance districts to 60% of high schools in Alliance districts and from 56% of elementary schools in non-Alliance districts to 71% of high schools in non-Alliance districts. Smaller percentages of APSEPs reported that counseling visits were much more common or more common, ranging from 24% of APSEPs serving elementary school students to 41% of APSEPs serving high school students.

The district inventory also asked districts to indicate which of eight social-emotional learning (SEL) programs or approaches they were using at different school levels during the 2019-20 and 2020-21 school years (see Tables D49-D51). **Across all district types and grade levels, fewer districts**

reported using PBIS during the 2020-21 school year, compared to 2019-20. Similarly, more districts across all types and grade levels reported using Restorative Practices and RULER in 2020-21 compared to 2019-20; the use of Second Step also seemed to increase at the elementary and middle school levels in Alliance districts.** Notably, there was also an increase in the number of districts reporting that they were using other SEL programs, and no change in the number of districts reporting they were using no SEL program.

The teacher survey asked respondents to rate the adequacy of their schools' support for students' physical health and social-emotional well-being. **At all levels, a substantially smaller percentage of teachers from Alliance districts said that support for students' physical health was *somewhat adequate* or *extremely adequate*, with values lowest at the high school level.** Specifically, 41% and 54% of elementary teachers from Alliance and non-Alliance districts, respectively, said that support for students' physical health was somewhat adequate or extremely adequate, compared to 42% and 48% of middle school teachers, and 32% and 46% of high school teachers (Table D52). **Similarly, a substantially smaller percentage of teachers from Alliance districts said that support for students' social-emotional well-being was somewhat adequate or extremely adequate, with values again lowest at the high school level.** Specifically, 39% and 50% of elementary teachers from Alliance and non-Alliance districts, respectively, said that support for students' social-emotional well-being was somewhat adequate or extremely adequate, compared to 38% and 43% of middle school teachers, and 34% and 45% of high school teachers (See Table D53). Notably, values on these items were lower than for the item in which teachers were asked to rate their schools' support for student learning (Table D6).

<u>Qualitative findings</u>

Most focus group participants and many

teacher survey respondents reported that **their districts increased use of SEL programs**, including RULER and Second Step. While they appreciated the recognition of student needs and the time allocated for this work, **many felt it was not enough**. One educator stated:

"There's no set SEL program that would ever be adequate enough for what we were facing in the moment, and so it's hard to pinpoint a specific resource that would accommodate what was happening".

Some focus group participants and teacher survey respondents reported that their districts were able to add staff to do outreach to students not coming to school (e.g., staff that could provide tutoring; additional social workers, school psychologists and guidance counselors). However, the need was so great that **many districts struggled to provide the level of supports needed by the students.** Focus group participants and teacher survey respondents who worked with **students receiving special education or EL services noted that their students did not receive all the supports typically available to them,** and students with emerging concerns could not be assessed. One educator said:

"So I do think that a lot of the students didn't get the services that they should have during that time because it was virtually impossible to meet what an IEP said that was written before remote learning was even a thing."

Some participants from the Special Education focus groups expressed their support for the newly developed electronic IEP, CT SEDS portal. They hoped that the system would be easy for parents to access and use and felt that it would support students with IEPs and 504s if future remote learning mandates occur. One educator said:

"The idea of having everything electronic and translated for parents and in a portal where parents can access all of those documents sounds wonderful."

Focus group participants reported that students were often unable to access supports such as physical, occupational,

and speech therapy. They also reported that families who tried to find community-based mental health services for their students often struggled because of the shortage of providers.

Goal 3. Supports for Teachers: Document how districts supported teaching and teacher well-being

Q3a. What do administrators and teachers say about how the pandemic and the resources provided affected teaching and teacher well-being?

Quantitative findings

The district inventory included two open-ended items about staffing adjustments. Many districts (n=49, Table E1) reported that in spring 2020, they shifted teacher and staff responsibilities or reassigned teachers and staff to new roles to support remote learning. For fall 2020, districts reported that new hires were the main staffing adjustment (n=54, Table E2); they largely hired teachers and other staff to teach and support fully remote students, although reassigning teachers and staff was still common (n=33, Table E2).

When asked about a variety of safety-related activities conducted in the summer of 2020 to prepare for fall 2020, almost all districts reported buying personal protective equipment such as masks and shields (nearly 100%), providing COVID safety training for teachers (96%), and making building improvements including ventilation, air purification devices, and directional signs (92%); values for safety training and building improvements were slightly higher for Alliance districts than for other districts (Table E3).

Goal 3 Key Findings

- Focus group and teacher survey participants reported that their well-being suffered from constant changes in class scheduling, pressing student and parent needs, shifting COVID guidelines, fear for their personal health, and absences due to teacher and student quarantines. They shared that these factors created a chaotic and stressful environment, yet they received inadequate support for their well-being from their school or district administrations. Depending on their grade level and district type, 47-58% of teacher survey participants said their district's support for their physical health was somewhat or extremely inadequate, and 63-68% said the same of their district's support for their social-emotional well-being.

- Districts reported making substantive changes to administrator and teacher roles to adapt to remote learning and accommodate student and district needs; in focus groups and surveys, many teachers said they found the added responsibilities overwhelming.

- Districts reported using formal and informal approaches to teacher professional development specifically related to remote learning, including producing their own online teacher resources. Depending on their grade level and district type, between 40% and 60% of teacher survey participants said they had received an adequate amount of professional development across a variety of topics.

- Districts said they will continue to use learning management systems, SEL resources, and videoconferencing systems put in place during COVID to support future learning. Most (63-85%, depending on grade level and district type) teacher survey participants who reported using new instructional technologies during the pandemic indicated that they would like to continue using these resources.

The teacher survey asked respondents to rate the difficulty of eighteen aspects of teaching during the pandemic compared to before. Mean values indicated that elementary teachers from Alliance districts and non-Alliance districts rated *Coping with unexpected challenges or interruptions during teaching* as most challenging, along with the high ratings for *facilitating student engagement, motivating students to complete assignments,* and *preparing students for summative assessments (high stakes tests and unit tests)* (Tables E4). Middle and high school teachers rated *eliciting student participation during instruction, facilitating student engagement,* and *motivating students to complete assignments* as most difficult (Tables E5 and E6). Across all grade levels, teachers from Alliance districts rated these aspects of teaching as slightly less challenging than teachers from non-Alliance districts.

Teacher survey respondents were asked how adequately their school supported staff members' physical health and social-emotional well-being. Across district types, only 23-33% of elementary, middle, and high school teachers reported that support for staff members' physical health was *somewhat adequate* or *extremely adequate*, with values generally lower for teachers from Alliance districts. Similarly, only 18-26% of elementary, middle, and high school teachers reported that support for staff members' social-emotional well-being was *somewhat adequate* or *extremely adequate*, with values generally lower for teachers from Alliance districts. (Tables E8-E11).

Finally, the teacher survey asked respondents to rate how much they needed a variety of resources and supports during the pandemic, compared to before. Responses were very similar for Alliance districts and non-Alliance districts, but they varied by grade level. Elementary teachers from Alliance districts and non-Alliance districts reported that their greatest needs were *remote and/or hybrid lesson plans* and *additional staff* for three purposes: to address students social and emotional needs, to support students' use of instructional technology,

and to help with concurrent instruction (Table E12). Middle and high school teachers from Alliance and non-Alliance districts also reported that their greatest needs included r*emote and/or hybrid lesson plans* and *additional school staff who can address students' social and emotional needs*, along with *strategies to keep students engaged and motivated* (Tables E13- E14). In addition, high school teachers said that one of their greatest needs was *strategies to catch students up to grade level.*

Qualitative Findings

Throughout the focus group discussions and in responses to the teacher survey, participants expressed **concern for their own emotional well-being while trying to meet their expanded teaching responsibilities** during the spring of 2020 and the 2020-2021 school year. They discussed the stress and strain from working additional hours to learn new technologies, adapt their curriculum to varying teaching models, and attending to COVID-19 safety protocols while also keeping students engaged and connected. Some respondents to the teacher survey reported that staff shortages and a lack of substitute teachers left them covering other classes and other activities (e.g., lunch duty). Many also reported frustration that the boundary between home and work dissolved during the pandemic. Participants indicated that **school leaders failed to recognize their efforts in response to the growing demands placed on them.** They also said that leadership expected teachers to be flexible to meet student needs, but teachers were not receiving that flexibility in return from the administration. Participants indicated that **constant changes to class scheduling, pressing student and parent needs, shifting COVID guidelines, and absences due to teacher and student quarantining created a chaotic and stressful atmosphere.** As one teacher explained, *"Everyone became really skilled at pivoting on a dime!"*

Many focus group participants and teacher survey respondents said that they were **fearful for their physical**

safety in their school buildings, especially before COVID vaccinations were available. Some indicated that they were not supplied with masks or COVID tests despite mandates to return to their buildings. One teacher said:

"It felt so unsafe having to go into that building every day in 2020-21. The school district clearly just wanted to get students in person to be babysat and didn't care about us giving them an education or keeping them and ourselves from getting COVID."

Another stated:

"Just as other professions were protected, so should we have been".

Focus group participants who were special education teachers and those teaching younger grades shared concerns for their physical well-being because of the way they interacted with and assisted students. As one teacher explained:

"At the preschool level, you're going to help the kids tie their shoes and so on. There were things that we weren't supposed to be doing [for the kids], but how could you not at that age? I am immune compromised. In the beginning [of the 2020/21 school year] it was scary. These kids aren't wearing masks and they're coughing and sneezing all over me and I'm wiping their noses."

Many teacher survey respondents reported that **the stress of teaching during the pandemic** led many peers to resign from teaching, move their retirement to an earlier date, or seriously consider leaving the profession. They attribute this to teachers feeling less safe, having an increased workload without fair compensation, and experiencing increased work-related stress.

Teacher survey respondents **reported feeling disrespected during the pandemic.** They said that they had to work much harder without appreciation or increased compensation. They expressed frustration about leadership structures and inflexible policies that prevented them from teaching in ways they believed would best serve students. They also expressed disappointment that legislation was not passed to give

teachers credit toward retirement for two extra years of service. They said that a failure to engage their expertise and feedback throughout the pandemic showed a lack of respect for teachers. Expressing a concern shared by many focus group participants and teacher survey respondents, one teacher said:

"Our school boards and government officials need to start listening to teachers, who are highly educated professionals, about what the needs are in the classrooms."

Supports Provided to Promote Teacher Well-Being. Focus group participants and teacher survey respondents indicated that **their school and district leadership gave them limited support** during the 2020-2021 school year to protect their physical and emotional well-being. Participants noted that the most common types of supports provided to teachers by school administration were links to online resources for self-care or wellness events, email reminders to take care of themselves, and occasional time off from meetings to recharge. Some participants had access to a mental health hotline, town hall–style meetings, or a school psychologist or social worker. Many said that support from their colleagues was critical for their well-being during the pandemic.

Many focus group participants indicated that supports provided were inadequate and that messages from the administration to "take care of themselves" while they were simultaneously being asked to work harder felt insincere. Some felt that the lack of a unified policy or articulated district position about self-care and teacher well-being left teachers unsure about how to prioritize their well-being while balancing teaching responsibilities. As one teacher put it:

"Our administration talked about social-emotional care, but I didn't feel like it was geared toward teachers. They expected us to be there for the students and parents, but there wasn't anyone looking out for us. They just wanted more curriculum. It was a lot."

Q3b. What technological resources did districts/schools provide to teachers to support remote and hybrid learning, and what technology challenges and strategies did teachers report?

<u>**Quantitative findings**</u>

The district inventory asked about the technology resources available to teachers before the COVID-19 pandemic. At all grade levels, **Alliance districts were less likely than non-Alliance districts to report that before the pandemic, teachers had access to technology integration support (42-44% vs. 57-60%) and learning management platforms like Google Classroom (22-60% vs. 60-83%)**, with values consistently lowest in elementary school and highest in high school. However, Alliance districts were slightly more likely to report that teachers were using apps, including Remind and Class Dojo, to communicate with parents (60-78% vs. 66-74%), with values consistently lowest in high school and highest in elementary school (Tables E17-E19).

Districts were asked to report what technologies were provided to teachers to support remote learning in spring 2020 and in the 2020-21 school year. For spring 2020, the highest percentage of districts reported that they provided Chromebooks to elementary teachers (85% and 71% of Alliance districts and non-Alliance districts, respectively), followed by laptops (55% and 52% respectively), and Wi-Fi hotspots (46% and 42%, respectively); in these three categories, percentages were consistently higher for Alliance districts. For the 2020-21 school year, Alliance districts reported slightly lower values for Chromebooks and higher values for laptops and Wi-Fi hotspots, whereas non-Alliance districts reported slightly higher values for Chromebooks and laptops and slightly lower values for Wi-Fi hotspots (Table E20). **Chromebooks, laptops, and Wi-Fi hotspots were the technologies that the highest proportion of districts reported providing to middle and high school teachers, with values general increasing between spring 2020 and 2020-21.** However, differences between Alliance

districts and non-Alliance districts were less consistent at the middle and high school levels than at the elementary level, with non-Alliance districts sometimes reporting higher levels of access than Alliance districts. (Tables E21 and E22).

When districts were asked to report what learning management platforms they provided to teachers in spring 2020 and 2020-21, the most common option at all levels was Google Classroom, ranging from 79% to 84% for Alliance districts and from 82% to 94% for non-Alliance districts, decreasing slightly between spring 2020 and 2020-21 (Tables E23-E25). The second most common option for elementary teachers was SeeSaw, reported by 36% and 58% of Alliance and non-Alliance districts, respectively, in spring 2020 and approximately 58% of both Alliance and non-Alliance districts in 2020-21 (Table E23). The second most common option for middle and high school teachers in Alliance districts was "Other" (16-20%, with a variety of platforms mentioned; Tables E24-E25). In non-Alliance districts, the second most common option was Seesaw for middle school teachers (24-26%, Table E24) and Schoology for high school teachers (15-17%, Table E24-E25).

Districts were also asked to report the apps and tools that were most used by teachers. Alliance districts and non-Alliance districts reported that Google Forms and YouTube were the most-used apps for elementary teachers in spring 2020 (reported by 69-78% of districts), with values generally higher for 2020-21 (Table E26). Trends were similar for middle school teachers (values ranged from 74-84% in spring 2020 and slightly higher in 2020-21l Table E27) and high school teachers (74-87% in spring 2020 and slightly higher in 2020-21; Table E28). Approximately 64-71% of Alliance districts and 33-39% of non-Alliance districts reported that in spring 2020, they used a single-sign-on system (like Clever) that could record what apps were being used by teachers and students, but a sizeable proportion (27% and 15.3% of Alliance and non-Alliance districts, respectively) reported that did not use the associated analytics (Table E29). The percentage of Alliance districts

using a single sign-on system increased slightly in 2020-21 (71-76%); while the percentage increased substantially for non-Alliance districts (54-58%), it was still notably lower than for Alliance districts (Table E30). When asked about technology-related preparation for fall 2020, over 93% of Alliance district and other districts reported creating online resources for teachers and over 72% reported that they had adopted new learning management tools (Table E31).

The teacher survey took a broader view and asked teachers to rate the adequacy of their access to three different categories of instructional technology in spring 2020 and in 2020-21. Responses consistently improved over time, although the percentage of teachers saying access was *somewhat adequate* or *extremely adequate* was consistently lower for Alliance districts than for non-Alliance districts. Approximately 36% of all elementary teacher respondents said that access to hardware/software for concurrent hybrid instruction was *somewhat adequate* or *extremely adequate* in spring 2020, compared to 60% in 2020-21. Approximately 50% of all elementary teachers said that access to learning apps was *somewhat adequate* or *extremely adequate* in spring 2020, compared to 77% in 2020-2021. Approximately 64% of all elementary teachers said access to a learning management system was *somewhat adequate* or *extremely adequate* in spring 2020, compared to 82% in 2020-21. (Tables E32 and E33). The trend was similar among middle school teachers, with the percentage of middle school teachers reporting adequate access to hardware/software for concurrent hybrid instruction increasing from 43% to 67%, the percentage reporting adequate access to learning apps increasing from 66% to 86%, and the percentage reporting adequate access to learning management systems increasing from 80% to 92% (Tables E34 and E35). The same trend was present among high school teachers, with the percentage of all high school teachers reporting adequate access to hardware/software for concurrent hybrid instruction increasing from 46% to 65%, the percentage reporting adequate access to learning apps increasing from 67%

to 76%, and the percentage reporting adequate access to learning management systems increasing from 80% to 90% (Tables E36 and E37).

Qualitative findings

Many of the teachers participating in the focus groups and teacher survey respondents reported that in the spring of 2020, they had a very steep learning curve to be able to teach remotely. One teacher said:

"For me, it was the technology and getting everything I needed on the computer to share with my students … I'm okay with tech, but this was like learning a whole different career or something. That whole piece of it definitely stressed me the most."

Teachers received training to learn new technologies required to teach via an online platform. Some reported that this training was adequate, but **many felt that these trainings were not helpful or were too time intensive given the immediacy of their need to pivot to online learning.** Some participants noted that their districts provided self-guided training through a variety of online resources. Many said that they were not given adequate time to participate and integrate the trainings to support their needs. One educator said:

"The training was minimal and was even more, I hate to say insulting, but it was kind of insulting. They would send links to videos or articles on how we can teach ourselves on what we could be doing that might be helpful without setting any time aside to give us the training or the time to teach ourselves."

Peer support was a training resource frequently cited by teacher survey respondents and focus group participants. Many noted that their peers would help those in need learn how to navigate Teams, Zoom, Google Meet, and various learning platforms. They would also meet informally to share best practices for creating video content and translating curriculum to an online format. This was especially true for hands-on subjects such as home economics, theater, and science labs.

Some participants said that in the spring

of 2020 **many of their students did not have access to technology,** with some lacking a device and others lacking internet access or having limited bandwidth in their homes. This was especially true for teachers in urban and rural districts. Some focus group participants reported that **they did not have enough bandwidth at home** with their family members either working from home or engaged in virtual learning. They were also **challenged to teach students and their parents how to use learning management systems like Google Classroom.** Some focus group participants and teacher survey respondents reported that their districts had IT staff providing information and training for families. But in others, it was the teacher's responsibility to assist the families. One teacher said:

"My district was playing catch-up with technology. We were not one to one to start off with, so it was like learning to teach kids how to use computers. Being a tech teacher while also teaching history."

Other participants spoke of younger children struggling to log in without assistance. As one teacher said:

"These are third graders, they're nine years old, and many of them did not have parents that were able to help them because the parents were trying to work, so I feel like the technology piece for my students was the most challenging for them."

In **fall 2020**, many focus group participants reported being overwhelmed with the amount of technology that was available to them. Though some liked the ability to choose the programs that worked best for them, others lamented **the lack of direction from their district,** leaving students and families to have to figure out multiple platforms. Focus group participants also reported significant difficulties in getting their classrooms set up for dual instruction, noting that there were many issues and appropriate technology solutions were not always provided. Every focus group participant who used **dual instruction reported that it was difficult if not impossible.** One teacher stated:

"Dual teaching was hellacious ... an incredible challenge and technologically untenable. I said at the time it took me three times longer to get everything done, which I think in retrospect it was six or seven times longer ... I was not getting through curriculum."

When asked about successful strategies for using technology to support COVID-era learning, focus group participants spoke about the significant benefit when **all their students were provided with a device and internet access.** Others said that the IT staff at their schools were heroes. And participants from a few districts reported that the **professional development they received was invaluable.** And some developed **innovative strategies** so that their dual teaching would be successful. One educator said:

"I took kind of like a mixer board and I hung two overhead mics in my classroom like you would for a choir. I ran those into a mixer board along with a mixer coming off of my Mac, which had a level ear microphone and then I had an output which was the speakers from Zoom so the kids in the room could hear the kids at home and the kids at home could actually participate in the discussions."

Q3c. What types and amount of professional development did districts/schools provide to teachers to support remote and hybrid learning (e.g., training on education technology, pedagogy of virtual teaching, etc.)?

<u>Quantitative Findings</u>

The district inventory asked districts how many hours of paid professional development in the spring of 2020 had been devoted to strategies and skills for remote learning. Approximately 36% of districts reported that they provided 6 or fewer hours, 43% reported that they provided 7-18 hours, and 21% reported that they provided 19 or more hours. Values were similar for Alliance districts and non-Alliance districts, whereas APSEPs provided dramatically less paid professional development (Table E41).

Districts were asked whether they con-

ducted a variety of PD-related activities during summer 2020. Most districts reported that they provided paid professional development related to learning technologies (73%) and strategies for remote teaching (71%), with values higher for Alliance districts and lower for non-Alliance districts. Over 55% of districts reported that they offered voluntary learning opportunities and resources on these topics (Table E42).

Finally, districts were asked how many hours of paid professional development during the 2020-21 contract year had been devoted to strategies for remote and/or hybrid instruction. About 25% of Alliance and non-Alliance districts reported that they provided 6 or fewer hours. The majority of the remaining Alliance districts provided 19 or more hours, whereas the majority of the remaining non-Alliance districts provided 7-18 hours (Table E43). As in spring 2020, APSEPs provided substantially less paid professional development during the 2020-21 school year, compared to Alliance and non-Alliance districts.

The teacher survey asked respondents to consider the professional development they had completed in four areas over the past five years—both professional development provided by their district and professional development they had completed on their own. **Approximately 36-60% of elementary, middle, and high school teachers reported they had received the amount of PD they needed or more across a variety of topics.** Among elementary teachers, 52% said they had received an adequate amount of professional development on learning management systems, compared to 44% for PD on content-specific online instructional materials, 36% for PD on SEL during remote or hybrid instruction, and 40% for PD on other strategies and skills for remote/hybrid instruction. Values were similar for elementary teachers from Alliance districts and non-Alliance districts (Table E44). Approximately 60% of middle and high school teachers said they had received the amount they needed or more when it came to professional development on learning management

systems; compared to 50% and 46%, respectively, for PD on content-specific online instructional materials; 40% and 43% for PD on SEL during remote or hybrid instruction, and 41% and 46% for PD on other strategies and skills for remote/hybrid instruction (Tables E45 and E46). Values were higher for middle school teachers from Alliance districts than for middle school teachers from non-Alliance districts, whereas values were lower for high school teachers from Alliance districts than for high school teachers from non-Alliance districts.

Q3d. What tools and strategies introduced during the pandemic do administrators and teachers say they will continue to use in their practice?

<u>Quantitative Findings</u>

The district inventory asked districts which of a list of online practices they planned to continue using after the pandemic. **The most common online practices districts indicated they would continue using after the pandemic were virtual meetings with parents (94%), followed by virtual teacher professional development (82%).** Other practices reported by a majority of Alliance and non-Alliance districts include continuing use of their learning management system and/or digital learning tools, one or more stand-alone online course (for example, credit recovery or advanced coursework), online diagnostic or benchmark assessments, and virtual meetings with students (for example, counselors, social workers, or therapists meeting with students to provide services; Table E49).

Relatedly, teacher survey respondents were asked about online materials or technologies they had begun to use since the pandemic started. Respondents were also asked which of these online materials they would like to continue using after the pandemic. Almost 80% of elementary school teachers from Alliance districts and non-Alliance districts reported that they had started to use a new learning management system and new content-related online instructional materials during the pandemic, with approximately 60% reporting that they

had started to use new online SEL-related instructional materials (Table E50). The majority (63-85%) of elementary teachers who reporting using new online materials or technologies indicated that they would like to continue doing so (Table E51). Approximately 70% of middle school teachers and 64% of high school teachers reported that they had started using new content-related online instructional materials during the pandemic; less than 50% of middle school and high school teachers began using the other online materials or technologies during the pandemic (Table E50). However, **like elementary teachers, most middle and high school teachers (64-87%) who reported using new online materials or technologies during the pandemic indicated that they would like to continue doing so** (Tables E52-E53).

Qualitative findings

Focus group participants were asked if they would retain any new tools or strategies that they began to use during the pandemic. The **most frequent responses were related to technology. Participants spoke about the benefits of learning management systems,** including Google Classroom or Class Dojo. Some continued to have students **upload their homework assignments** into the management systems, eliminating the need for papers to be turned in and returned. They spoke of how efficient this was, with one teacher saying that her students *"no longer had to decipher my handwriting to get feedback."* Some participants **uploaded supplemental materials** such as videos providing additional explanation of a concept covered in class. Many spoke of the added convenience of using the system to **communicate with students** or their parents through an *"information hub."* Focus group participants also spoke about additional uses for the system, including the **option of telling students which lessons to review if they were out** sick or had been suspended. Many appreciated having their **lessons digitalized** and available for their students and found that the **students were more responsible and independent when the**

materials were readily available for them. Some also reported that having more learning tools available for all students created *"greater opportunities for equity"*.

Focus group participants say they continued to use some digital tools with students. Those working with EL students talked about the benefit of **Google Translate,** which allows students to be more independent in their work and demonstrate increased problem-solving skills. Others spoke about the benefits of **audio books and speech-to-text tools,** which allow students with learning differences to receive information and communicate their thoughts more independently. Participants also reported significant benefits from using **document cameras** when teaching remotely and said they continued to use them in the classroom.

Focus group participants discussed the benefits of having **virtual PPTs, parent-teacher conferences, and school open houses,** as more parents were able to attend without having to miss work and more of these meetings could happen during the workday, allowing teachers to be home in the evenings. Some reported that their schools continued to offer **virtual office hours** where teachers are available during their planning period or after school to meet individually with students; teachers said that some students are more comfortable meeting virtually.

Focus group participants and teacher survey respondents also spoke of **systemwide changes** that they hoped would continue. **Many said that *"one-to-one technology needs to stay in schools"*** providing equitable access to technology for all students and allowing them to continue to use the tools they adopted when teaching remotely. Some hoped that districts would continue to use technology to offer school remotely on severe weather days. Some participants suggested that districts find a way to have a permanent remote learning option for students who *"thrive in that environment."*

SEL was also mentioned by many of the teachers who participated in the focus

groups. **They spoke of the desire to keep the focus on SEL,** recognizing that *"children need that piece (social-emotional) to be intact and in place for them to address the academic piece."*

Some reported appreciating the **SEL curricula** that were offered in their school, such as RULER or Second Step, because these curricula teach ways for children to identify their feelings and a common language to talk to their teachers and peers about them. Some said that they appreciated the schoolwide implementation of these programs as they have found ways to **integrate SEL into the academic curriculum.**

Q3e. What lessons do administrators and teachers say they learned regarding teaching and learning during the pandemic and how the state could improve in a future pivot to remote learning?

Quantitative Findings

Three teacher survey items were designed to explore teacher perceptions of five learning models that were implemented widely over the first 16 months of the pandemic:

- Fully in-person instruction;
- Concurrent hybrid instruction (also known as dual instruction), where teachers provide in-person and remote instruction to different students at the same time;
- Non-concurrent hybrid instruction, where teachers provide in-person instruction and remote instruction at different times;
- Fully remote instruction, where teachers interact with their students during one or more synchronous/real-time class each school day; and
- Fully remote instruction, where teachers interact with their students for less than one synchronous/real-time class each school day

Specifically, the survey asked teachers to rank these five learning models in terms of how they would prefer to teach after the pandemic, how prepared they feel to implement each model, and how effective they believe each model to be.

Across all grade levels and both district types (Alliance and non-Alliance), **teachers consistently indicated that in-person instruction was their first choice, with non-concurrent hybrid instruction as a distant second, followed by fully remote instruction with synchronous interactions, concurrent hybrid instruction, and finally fully remote asynchronous instruction** (Table E55). When asked to rank the five learning models in terms of how prepared they felt to implement them, respondents ranked them in the same order (Table E56). When asked to rank the learning models in terms of effectiveness, teachers responded somewhat differently. Though fully in-person instruction was ranked as most effective, non-concurrent hybrid instruction was ranked second most effective, and fully remote asynchronous instruction was ranked as least effective (similar to teacher preferences and preparedness), ranks were reversed for the other two models: concurrent hybrid instruction was ranked as more effective than fully remote synchronous instruction (third and fourth most effective, respectively; Table E67). These results may indicate that teachers see some benefit in concurrent hybrid instruction even though they find it challenging.

Qualitative Findings

Across focus groups, **participants expressed their appreciation for the opportunity to share their teaching and learning experiences during spring 2020 and the 2020-2021 school year.** Many indicated that it was the first time that they had been asked to share their experiences professionally. Participants provided policy and practice recommendations to prepare for future disruptions to in-person learning.

Focus group participants emphasized the need for a **statewide plan** that is developed using best practices from districts with **input from a diverse group of administrators, educators, and parents.** For many, district-level planning and supports during the pandemic were inconsistent, confusing, and ever-changing, and they revealed inequities

in the types and quality of teacher and student supports across districts. As one teacher said:

"It was like night and day between my district and my child's district. There was so much confusion."

A teacher survey respondent said:

"The pandemic exposed gross and shameless education inadequacies throughout the state of Connecticut. Poor and disenfranchised students in this wealthy state have very separate and very unequal schools."

Focus group participants would like the statewide plan to outline **consistent resources (e.g., technology), dedicated professional development and planning time, and clear expectations about teaching priorities to support them in their teaching role.** As one participant stated:

"Having more consistent expectations and statewide or regional recommendations would have made us felt like we are all in the same boat rather than some people are in a yacht and some are in a dinghy fending for themselves."

To seamlessly pivot to a remote learning environment in the future, focus group participants said that a statewide **technology plan** should articulate how teachers and families will be supported with the **necessary equipment** to effectively engage in remote learning, as well as how **training, supports, and resources will be provided to parents** to help them monitor their child's remote learning progress. This plan should include access to translated resources for parents in multiple languages. One teacher said:

"I would say that I put a lot of effort into training parents. If this should happen again, it would make my job a lot easier if someone would train parents."

Focus group participants also said they would like to have a **state repository (resource bank) of training materials and curriculum resources** from their peers that includes remote teaching best practices, lesson plans, curriculum adaptations, and virtual engagement strategies to reduce the burden of re-envisioning their curriculum to accommo-

date remote learning.

Last, focus group participants and teacher survey respondents reported student learning successes with **remote learning academies that had dedicated teachers**, as these students were able to progress through the curriculum at the typical pace. **They felt that this strategy would work long-term for students** who have peer issues, are bullied, have social anxiety, are introverts, or are easily distracted.

Goal 4. Academic Outcomes: Examine links between learning models and student outcomes

Q4a. To what extent were students able to access remote learning?

Quantitative findings from administrative data analysis

As described in Q1a, analysis of administrative data showed that schools with a large share of high needs students were less likely to provide some in-person learning at the beginning of the 2020-21 school year and less likely to offer a higher share of days in person over the course of the school year. Further, **uptake of in-person options between October and March was also lower in schools with large shares of high needs students,** with uptake rates of 76%, 71%, and 65%, respectively, for elementary, middle, and high schools with smaller shares of high needs students, and rates of 52%, 51%, and 45%, respectively, for schools with larger shares of high needs students. Detailed results are described in Appendix C, which includes Figures C1-C2 and Tables C1-C3.

Our analysis of administrative data revealed substantial heterogeneity in the extent to which districts offered in person learning opportunities to students, and substantial heterogeneity in the uptake of those options by students. In local and regional public-school districts, the probability of students having either a hybrid or in-person option averaged around 90%: higher (95-98%) for districts at the 25th percentile for share high needs students (lowest values at the high school level) but falling to 60-70%

Goal 4 Key Findings

- The pandemic was associated with reduced school enrollment in fall 2020, especially among the lower grades.

- In the lower grades, schools with the lowest share of in-person days had the largest declines in ELA and Math test scores. However, we observed no differences on 11th grade SAT scores based on share of days in-person.

- Schools with lower shares of in-person days had lower attendance rates. This was most pronounced in grades 2-5. Declines in attendance were smaller when students had more opportunity for in-person learning, especially in elementary and middle school.

- Focus group teachers expressed significant concern about the amount of learning loss students experienced. They reported that student's writing and math skills were significantly below expectations and that high school students were not prepared to take AP courses.

- District-reported social services referrals for students were associated with lower test scores and proficiency. This likely was because the pandemic had differential social-emotional effects on students across schools in ways that depressed their academic performance. These effects were not captured by traditional measures of schools' need (for example, share of high needs students).

for districts at the 75th percentile for high needs students (again, lowest values at the high school level). Similarly, the proportion of in-person days offered over the entire school year ranged from 60% of all days for high school to 80% for elementary school at the 25th percentile for share high needs students, but from 55% to 70% at the 75th percentile. The proportion of days in person ranged much more widely by share of high needs students for Regional Education Service Centers (RESC) and charter schools—from 90% to 98% at 25th percentile to 76% to 63% at the 75th percentile—and it was much lower overall for endowed and incorporated academies, falling to between 35% and 50% of days.

In terms of uptake, though districts offered many more in-person days at the end of the school year (37% of days between September and December and 68% of days between April and June), student uptake improved only modestly, with student in-person enrollment days increasing from 70% of in-person days offered to 80% of days offered between the same two periods. Further, student uptake of in person learning opportunities was much lower in schools with larger shares of high needs students. For example, a district that offered 10 additional in-person days between September and December saw an increase of 7.6 days of in-person student enrollment on average for schools around the 75th percentile of share of high needs, but an increase of only 5.2 days at the 25th percentile. This in-person enrollment response gap narrowed as the school year progressed, especially in the April to June period, with 5.7 days at the 75th percentile and 4.5 at the 25th percentile for 10 additional days offered in person.

Our student-level difference-in-difference analyses of administrative data indicate that the provision of hybrid or in person learning opportunities had minimal impact on fall 2020 enrollment decisions. The only major declines in enrollment occurred for public pre-K and kindergarten, with at most minor declines in the likelihood that a student enrolled in public school in the fall of 2020 was also enrolled in the fall of 2021 (typically never more than a 1 percentage point decline; see Table F1). For kindergarten enrollment declines, we use students enrolled in first grade in the fall of 2022 as a lower bound on fall 2021 kindergarten enrollment loss, since some parents may have simply delayed kindergarten enrollment by a year during the pandemic. Only about 87% of fall 2022 first-graders had been enrolled in kindergarten in September of 2021, and by June of 2022 the share had risen only to 91%. However, even in this heavily affected population, we could not detect any impact of the share of days offered in person on enrollment, as shown in Tables F2-F4 in Appendix F.

Quantitative summary of district inventory indicators

As described in the *Data Analysis* section above, we identified a set of district inventory items that describe the teaching and learning conditions most likely to impact student outcomes data. This allowed us to integrate data from the district inventory with the administrative data to examine the association between district practices and student outcomes. The first district inventory indicator describes students' access to synchronous instruction in spring 2020; districts received a value of 0 if they indicated that instruction was fully asynchronous or a value of 1 if they indicated that instruction was partially or fully synchronous. As shown in Figures F1-F3 on page 15 (and Table F15 in Appendix F), **the percentage of districts reporting synchronous instruction varied by district type.**

The second district inventory indicator describes students' access to remote learning at the start of the pandemic, based on items about the percentage of students with adequate internet access and access to devices for remote learning as of March 1, 2020. As shown in Figure F4 (and Table F16 in Appendix F), **access to remote learning varied systematically by district type.** The next indicator describes activities districts reported doing in the summer of 2020 to prepare for fall 2020. As shown in Figure F5 (and Table F17 in Appendix F), most districts selected at least half the options.

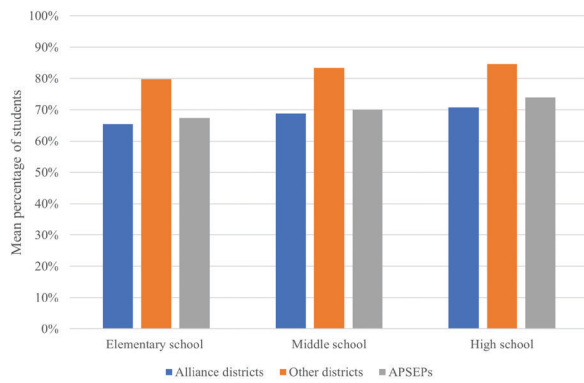## Figure F4. Spring 2020 student access to remote learning

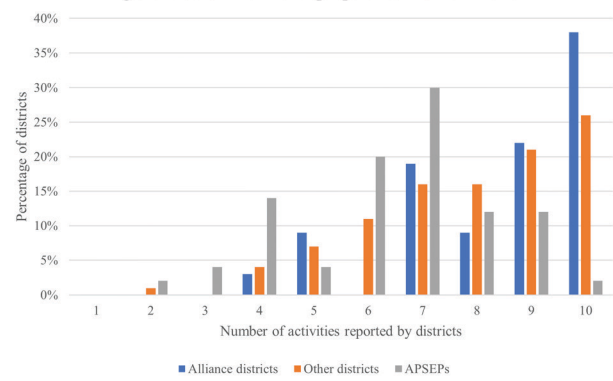## Figure F5. Summer 2020 preparation for fall 2020

Figure F6. 2020-21 improvements to remote learning in elementary schools
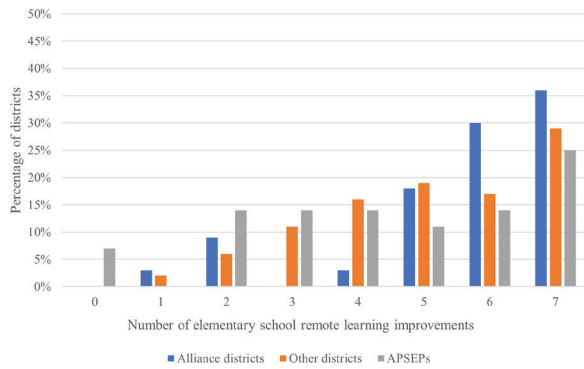

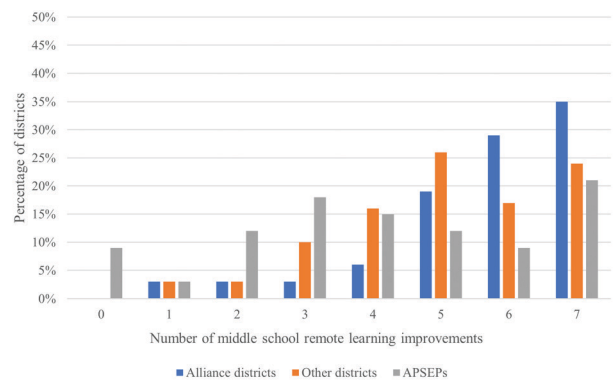## Figure F7. 2020-21 improvements to remote learning in middle schools

Figure F8. 2020-21 improvements to remote learning in high schools
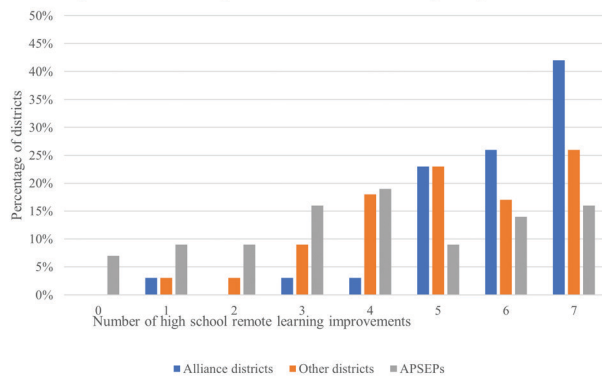

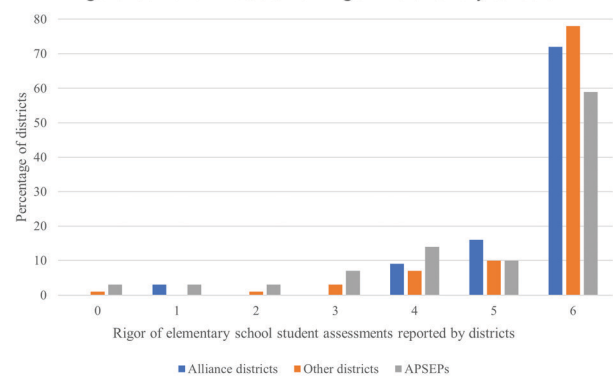## Figure F9. 2020-21 assessment rigor in elementary schools

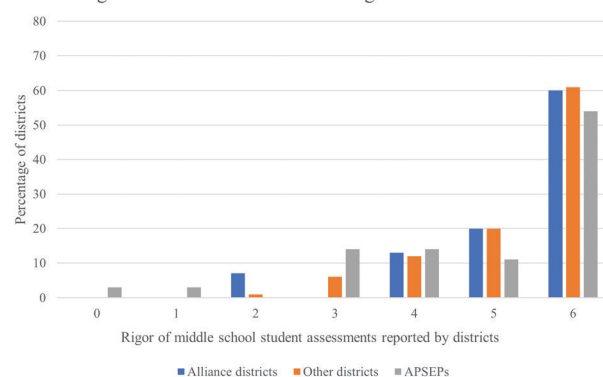## Figure F10. 2020-21 assessment rigor in middle schools

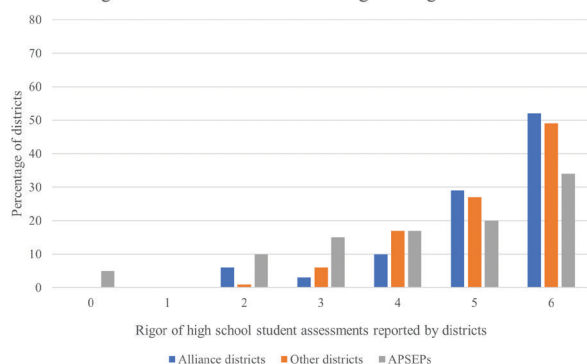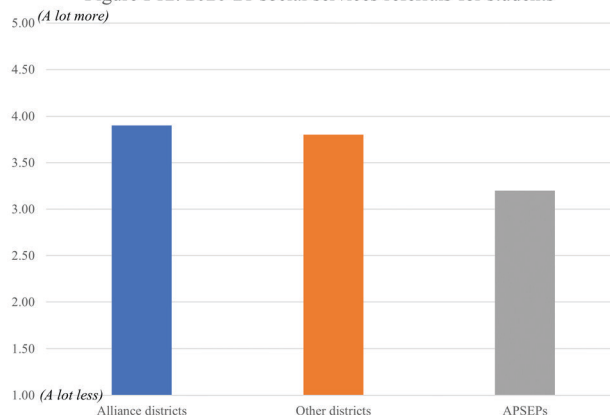Figure F11. 2020-21 assessment rigor in high schools

Figure F12. 2020-21 social services referrals for students

The remaining three indicators related to teaching and learning conditions during the 2020-21 school year. The fourth indicator describes improvements to online learning that districts reported for the 2020-21 school year, compared to spring of 2020. Most districts reported five or more improvements, as shown in Figures F6-F8 (and Table F18 in Appendix F).

The fifth indicator describes the rigor of the assessment practices that districts reported for 2020-21, on a scale of 0-6. Figures F9-F11 (and Table F19 in Appendix F) show that while most districts scored high on this measure, scores were lower for older grade levels. Finally, the sixth indicator describes the volume of social services referrals for students in 2020-21 (for example, for physical or behavioral health care, nutrition assistance, or housing assistance). This indicator is based on items about the resources allocated for social services referrals and the number of students referred, with a scale of 1-5. Figure F12 (and Table F20 in Appendix F) show that values were highest for Alliance districts and lowest for APSEPs.

Q4b. What do teachers say about the association of learning models and conditions with student attendance and performance?

Qualitative findings

In focus groups and on the teacher survey, teachers reported that **asynchronous education resulted in difficulty keeping students engaged** in their education. While focus group participants reached out to students

and families by phone and email, **some districts did not provide any online content, and in others not all students had access to online materials.** One educator said:

"I feel that spring [2020,] a lot of kids, we never heard from because they just, they had no way to access the distance learning plan and no way to connect with teachers and it was, sometimes you have three kids sharing one tablet, so if all teachers wanted the kids on at a certain time they could only have one kid on at a time."

Focus group participants reported that **teachers and students who were in dual-learning schools struggled.** They reported feeling that **they were not able to attend fully to either group of students and worried about the lack of supervision for students joining remotely.** The dual-teaching model was reported to be successful only in districts that **had one teacher or paraprofessional in the classroom and the other in the virtual classroom,** which allowed for all students to have an adult who could provide guidance for the lessons and make sure that student behavior remained appropriate.

Focus group participants and teacher survey respondents said that **many of the remote students in dual-teaching classes did not do their assignments,** and teachers struggled to assess their progress. Many of the participants expressed significant challenges with the policy that **allowed students to move**

between in-person and remote classes with no notice. They reported that they never knew who would be in person on a given day, making it difficult for them to plan or to engage students in group activities.

While some teacher survey respondents reported that having fewer students in a hybrid classroom led to students learning at a typical pace, most focus group participants felt that **students who were in schools that were hybrid had fewer opportunities to learn as they were typically in school half of the time or less and then given lessons to complete at home.** Participants reported that many students did not complete the work assigned for home. One teacher said:

"If the blue classes came on a Monday, most of them did not engage on Tuesday doing the work that I provided. And that work was reinforcement. It wasn't anything new. It was, you know, and it wasn't busy work, so I found that they really felt that they were going to school three days a week."

Focus group participants reported success with **remote learning academies that had dedicated teachers for students whose parents chose to keep them home.** These students were able to progress through the curriculum at the typical pace. Additionally, **teachers reported that some students thrived in the online environment, especially those who had peer issues, were bullied, had social anxiety, were introverts or were**

easily distracted.

Q4c. How were remote learning models and conditions associated with changes in student attendance and performance on standardized assessments?

<u>**Quantitative findings from administrative data analysis**</u>

Our student-level difference-in-differences analyses of administrative data show substantial declines in attendance during the 2020-21 school year, compared to prior years. **However, we found that declines in attendance were smaller when students had more opportunity for in-person learning, especially in elementary and middle school.** Comparing schools in districts that provided the largest and smallest shares of days in-person (100% elementary, 95% middle, and 82% high school at the 90th percentile as compared to less than 50% at the 10th percentile), we find declines of 2 percentage points in attendance rates for schools with the smallest shares of in-person days. Declines in elementary, middle, and high schools with the largest shares in-person days were 0, 1, and 1.5 percentage points, respectively. Although declines in attendance were larger for schools with a large share of high needs students, we found minimal evidence of differences between schools with large and small shares of high needs students in terms of the positive effects of in-person learning on attendance. Detailed results are described and shown in Tables F5 and F6 in Appendix F.

Our difference-in-difference analyses of administrative data show that test score declines were smaller in districts that provided the largest shares of days in-person compared to districts that provided the smallest shares of days in person. Smarter Balanced Assessment score losses ranged from 17% to 26% of a standard deviation in ELA and 33% to 44% of a standard deviation in math for schools with less opportunity for in-person learning (with larger losses in lower grades), whereas losses ranged between 11% and 15% of a standard deviation in ELA and 27% and 31% of a standard

deviation in math for schools with more opportunity for in-person learning, again comparing the 90th to the 10th percentile of schools in terms of share of in-person days offered. However, when we examined SAT scores in English and Math (administered statewide in 11th grade), we found no effect of in-person learning. Similar to our findings for attendance, declines in test scores were larger for schools with a large share of high needs students, but we found minimal evidence of differences between schools with large and small shares of high needs students in terms of the positive effects of in-person learning on test scores. Detailed results are described and shown in Tables F7-F10 in Appendix F.

In summary, our analyses show that learning losses during the pandemic were significantly larger in schools with a high share of high needs students. Declines in attendance rates and ELA test scores were larger in schools with large shares of high-need students regardless of district decisions concerning remote learning. These learning losses were exacerbated because these schools were also much less likely to belong to LEAs that were aggressive in returning to in-person learning. And even when the LEAs provided in-person learning opportunities, students in high needs schools were less likely to take up those opportunities. As a result, both district and family decisions concerning in-person learning likely led to substantially worse attendance rates and standardized test score performance in our most disadvantaged schools.

<u>**Quantitative findings from integrated data analysis**</u>

As described above, we conducted **inferential analysis of a merged data set that combines administrative data with data from the district inventory to examine the association of remote learning conditions with key student outcomes.** As noted above, for each of the six district inventory items, we examined the item's association with student attendance rates, whether a student was chronically absent, student scores on Smarter Balanced and SAT English language arts and mathematics,

and whether students scored at the proficiency level or higher on the same tests. Attendance and chronic absence were assessed separately by grade span: early elementary, later elementary, middle school, and high school. Test scores and proficiently levels were assessed separately by grade. Appendix F provides more detail on these analyses, with results shown in Table F21 for overall significance and Tables F22 and F23 for effects on specific outcomes and grades.

After correcting for the risk of type 1 error given that we are considering six district inventory items and four outcomes across many grades, we found strong evidence that district efforts to refer students to social services during the 2020-21 school year and the share of district students with online access in spring 2020 are strongly associated with student outcomes during the 2020-21 school year. We also find more marginally significant evidence that the rigor of student assessment activities pursued by districts was associated with student outcomes. We do not find evidence that synchronous versus asynchronous learning in spring 2020, the number of types of activities undertaken during the summer to prepare for 2020-21, or the number of areas of improvement in online learning were associated with student outcomes. However, the lack of findings for synchronous versus asynchronous learning may reflect the disconnect between district-reported data from the district inventory and teacher-reported data from the teacher survey and focus groups.

District efforts to refer students to social services during the 2020-21 school year and the share of students with online access in spring 2020 appear to be associated with test scores and/or test proficiency. For student referrals to social services, we observe lower test scores and proficiency levels as the resources allocated and number of referrals increases. This evidence of lower performance levels is observed across the board, with larger declines in Math test scale scores and proficiency levels as referral efforts increased, especially in lower grades, and

larger declines in ELA scores and proficiency for sixth grade. In terms of magnitude, a one-point in the five-point social services referrals scale was associated with a 1 to 2.5 percentage point decrease in the share of fifth-eight grad students proficient in Math in spring 2021 and a 1 percentage point decrease in the share of sixth grade students proficient in ELA. For the same grades, test scale scores in Math and ELA decreased by between 2.5% and 3.5% of a standard deviation.

Given that increased social services referrals (specifically, the relative number of referrals and the amount of resources for referrals in 2020-21, compared to before the pandemic) are associated with lower test scores, it is important to discuss what mechanisms may lie behind these effects. Given the low correlation with the share of high needs students, we do not anticipate that these results were caused by pre-pandemic differences between districts. Rather, one possible explanation is a type of reverse causality where, conditional on students' pre-pandemic needs, the students in some districts faced larger shocks and therefore needed more social services referrals, such that districts needed more resources for referrals. These same schools saw substantially larger declines in test scores, especially math test scores, during the pandemic, findings consistent with reports from teachers focus group and teacher survey participants about how students experienced significant emotional and psychological stress. A natural policy implication to draw from these results is that standard measures of district need and disadvantage may not fully capture the heterogeneous impacts of a crisis on districts' student bodies, and ongoing monitoring during a crisis may be required to identify districts where, due to unforeseen circumstances, learning losses are likely to be especially large.

For online access in spring 2020, **most of the estimates are positive, but only two are statistically significant: sixth-grade proficiency in math and 11th-grade proficiency in ELA (based on the state-established proficiency threshold for the SAT).** In terms of magnitude, a

20% increase in the share of students with online access, equivalent to one standard deviation, implies a 1.5 percentage point increase in the share of sixth-grade students proficient in Math in the spring of 2021 and a 1 percentage point increase in the share of 11th-grade students proficient in the ELA. Given the lack of any specific pattern in the grade and subject matter affected, one might reasonably conclude that although there were positive test score effects, they were sufficiently small that we can only detect effects when estimation errors lead to large magnitude estimates and we cannot reliably determine whether these estimated effects are concentrated in a specific grade or in a specific subject area. It is important to note that this analysis cannot distinguish between the effects of online access in spring 2020 and the possibility that online access in spring 2020 correlates with the quality of online learning during the 2020-21 school year.

For attendance and chronic absence, we observed effects for online access in spring 2020 and rigor of student assessment. For online access, chronic absence and attendance effects are unexpectedly negative, with better access in spring 2020 being associated with worse attendance in 2020-21. Notably, the estimates are quite small, less than 0.2% in terms of attendance rates and at most just over half a percentage point in terms of the share of students chronically absent in 2020-21. These effects may arise simply because good online access in spring 2020 was consistent with better ability to manage hybrid and on-line learning in 2020-21 and therefore may have led to better tracking of student attendance.

More rigorous district student assessment practices are also associated with differences in attendance and chronic absence during the pandemic. In this case, more rigorous assessment is associated with better attendance in middle school, but the effects are small in magnitude. A 1-point improvement in the 6-point assessment index has effects of less than 0.2% in terms of increased attendance rates and a reduction of only half a percentage point in the share of students chronically absent.

RECOMMENDATIONS

We recommend developing a statewide plan for potential future disruptions to in-person learning that focuses on lessons learned about effective practices during the pandemic and includes input from a diverse group of administrators, educators, and parents. The plan should:

1. Provide resources and guidance to support safe in-person learning

Schools with less access to in-person learning had larger declines in student outcomes, and the uptake of in-person learning was lower in schools with larger percentages of high needs students than for schools with smaller percentages of such students. Districts had a great deal of autonomy in whether and how to implement learning models (remote, hybrid, or in-person), which led to different access to learning opportunities. Districts also varied in their ability to purchase safety equipment like desktop shields and high-quality masks for teachers and students. Students, especially those in high needs schools, would benefit if the state provided more guidance and supports for schools to offer and engage students in in-person learning, including resources to support effective family engagement.

2.Ensure that all districts have adequate instructional technology, professional development, and curriculum resources for remote or hybrid instruction

The pandemic revealed dramatic inequity among districts in resources to support the pivot to remote instruction. The pivot was smoother for districts that had already implemented 1:1 computing, learning management systems, online curriculum resources, and professional development to support teachers in using these resources. Communities also varied in terms of whether families had the resources to support online learning, such as stable internet access. These differences in how quickly and effectively districts could pivot to remote or hybrid instruction and in families' ability to access remote learning have a dramatic impact on students. Developing an emergency plan for timely and efficient delivery of instructional technology, pro-

fessional development, and curriculum resources for remote or hybrid instruction could shorten the time districts need to respond to emergencies in the future.

3. Carefully consider the challenges of concurrent hybrid instruction

Teachers generally expressed strong negative, opinions about concurrent hybrid instruction (simultaneously teaching students in-person and remotely), the majority saying that it was overwhelming, especially with little support for doing it effectively. In 2022, the Connecticut General Assembly passed Public Act 22-80[4], which defines and prohibits concurrent hybrid instruction. If elected officials decide to remove this prohibition in the future, our recommendation is to provide the necessary material and human resources as well as professional development to increase the likelihood of successful implementation.

4. Practically assess student academic progress and social-emotional well-being

As we note, the finding of a negative association between social service referrals and students' tests scores and proficiency likely reflects differential community or student vulnerability to the social-emotional impacts of the pandemic. Further, traditional measures of school or student need do not seem to capture baseline differences in vulnerability to pandemic effects. We recommend developing practical approaches for assessing students academically in remote environments for cases when in-person assessments are not possible. Similarly, we recommend assessing the social-emotional well-being of students during and beyond times of crisis. Doing so would provide valuable information for targeted support.

5. Provide adequate resources to support student academic and social-emotional well-being

Effective student learning during a crisis is likely to require substantial resources like those described in our third recommendation. It also requires guidance and resources for supporting diverse academic needs, including the needs of

special education students and EL students. Addressing students' social-emotional needs also requires resources, along with school structures designed to respond to those needs as they evolve. Evidence-based approaches to consider supporting in schools include multi-tiered systems of support (<u>MTSS</u>), social-emotional learning (<u>SEL</u>) approaches, and Positive Behavior Interventions and Supports (<u>PBIS</u>). These approaches should include formative evaluation or continuous quality improvement to gauge progress and quality of implementation. Learner analytics and artificial intelligence also show promise for supporting evidence-based decision making and identifying at-risk students.

6. Support families so they can support their students

Families are essential partners in education at any time, but even more so when students are learning from home. This study documented the observation (common among educators) that students whose families could provide adequate support fared better academically, socially, and emotionally during the pandemic. Some caregivers struggled to support their students academically because working outside the home was essential to their families' survival. Other caregivers struggled with remote learning because they didn't have the resources or information.

We recommend that the state develop resources for families in multiple languages that support communication, technology use, mental health, nutrition assistance, and other needs.

7. Design a plan that mitigates the strain on educators

This study documented that educators experienced high levels of work-related stress during the first two years of the COVID-19 pandemic. Although teachers consistently reported that the first three months of the pandemic were difficult, many said that during that period, they felt their school and district leaders and their communities were compassionate and supportive. However, teachers consistently reported different challenges

in the 2020-21 school year and beyond: many felt that they were asked to carry unreasonable burdens in terms of their personal health and safety, their workload, and their accountability for student achievement. Although many teachers reported that this later period was challenging, expectations of teachers varied across schools and districts. We recommend that the state develop guidelines for teacher job responsibilities during an extended crisis to reduce stress, burnout, and attrition.

8. Acknowledge and reward educators' sacrifices and commitments

Over the course of this study, we heard from many teachers who said they had not been acknowledged or rewarded for their dedication and personal sacrifices during the pandemic. Many said public discourse about teachers had become extremely negative, and that the appreciation they felt early in the pandemic disappeared as the crisis wore on. Teachers expressed frustration that they had made the same sacrifices as other essential workers without receiving hazard pay, sick time for COVID-related absences, or other benefits. Numerous teachers spoke about the failed legislation that sought to award extra years of service toward retirement and the difference such an acknowledgement would make to their morale. We recommend that state and local leaders seek additional ways to acknowledge and reward educators' sacrifices and commitments during the pandemic and potential during future crises.

CONCLUSION

The COVID-19 pandemic triggered a public health crisis response that was unparalleled in modern history. The closing of schools and the various forms of remote learning that followed placed immense strain on students, their families, and educators, resulting in negative consequences that will be felt for many years to come. Many states, including Connecticut, have sought to learn from this crisis and to identify ways we might improve education to be better prepared for such events. The pandemic also ex-

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4 Section 25-2a of Connecticut Public Act 22-80 defines dual instruction as "the simultaneous instruction by a teacher to students in-person in the classroom and students engaged in remote learning," and section 25-2c "prohibits the provision of dual instruction as part of remote learning."

posed many areas in which our education systems can be improved more generally to better serve students in greatest need of support. This study is one of many efforts by the Connecticut COVID-19 Education Research Collaborative (CCERC) that seeks to uncover lessons from the pandemic to guide policy and practice. In response to Connecticut General Assembly Public Act 21-2ss, Section 389, we used multiple sources of data to accomplish four goals: 1) document the implementation of remote learning models; 2) document how districts supported learning and student well-being; 3) document how districts supported teaching and teacher well-being, and 4) examine links between learning conditions and student outcomes. Through the voices of district administrators and teachers captured in our surveys and focus groups, many lessons emerged about where the pain points were for district leaders, teachers, students, and their families. And through combining these data with administrative data, we uncovered valuable lessons about the learning conditions that helped and hindered educational success. As we detail in our recommendations, efforts to improve our educational system will require careful attention to the needs of all stakeholders invested in its success. Our hope is that this report contributes to that process.

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[ii] Ibid.

[iii] Council of Chief State School Officers. (2013). Interstate Teacher Assessment and Support Consortium (InTASC) Model Core Teaching Standards and Learning Progressions for Teachers 1.0: A Resource for Ongoing Teacher Development. Washington, DC: Author. Retrieved from https://ccsso.org/sites/default/files/2017-12/2013_INTASC_Learning_Progressions_for_Teachers.pdf.

[iv] TeachingWorks Resource Library. (2022). High-Leverage Practices. Ann Arbor, MI: TeachingWorks. Retrieved from https://library.teachingworks.org/curriculum-resources/high-leverage-practices/

[v] Rhemtulla, M. and G. R. Hancock (2016). Planned missing data designs in educational psychology research. Educational Psychologist 51(3-4): 305-316.

[vi] Out of 1194 teachers employed by approved private special education programs (APSEPs), fewer than 15 participated in the teacher survey. For this reason, we exclude APSEP teachers when reporting the response count and response rate for the teacher survey.

[vii] Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative research in psychology, 3(2), 77-101.

[viii] Nosek, B. A., et al. (2018). The preregistration revolution. Proceedings of the National Academy of Sciences 115(11): 2600-2606.

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