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Divergent and Inequitable Teaching and Learning Pathways During (and Perhaps Beyond) the Pandemic

Key Findings from the American Educator Panels Spring 2021 COVID-19 Surveys

Key Findings

- K–12 schools' operational models—fully remote, fully in-person, or hybrid—varied considerably in 2020–2021. Those schools that were fully remote tended to serve higher percentages of students of color and low-income students than their in-person counterparts.
- Reported instructional time and curriculum coverage in 2020–2021 were significantly lower in schools that were fully remote for the majority of the school year.
- Seventy-four percent of principals in fully remote schools estimated that their students' average achievement in mathematics was below grade level in spring 2021, compared with 63 percent of principals in hybrid settings and 46 percent of principals in fully in-person settings.
- Remote teachers' estimates of student assignment incompleteness and absenteeism were almost twice as high as those of teachers in fully in-person settings.
- Although teachers in the highest-poverty schools and those with most students of color reported more student access to free tutoring, they were less likely to report access to reading specialists and one-on-one student-teacher meetings.
- Nearly all schools providing any in-person instruction had at least some safety measures (e.g., a requirement to wear face masks) in place. However, teachers' opinions about the necessity of safety measures varied depending on their schools' operational models.
- One-third of teachers who have taught fully remotely for the majority of the 2020–2021 school year either indicated a preference to do at least some remote teaching in the future or otherwise had no preference.
- One-third of schools reported plans to offer remote instruction to any student who wants it, even after the pandemic has passed. Schools that have been remote for the majority of the 2020–2021 school year were much more likely than those that have been mostly in person to be planning for a remote option in future school years.

The 2020–2021 school year has been like no other. Because of the coronavirus disease 2019 (COVID-19) pandemic, most K–12 schools across the United States have reduced in-person learning for students to a few days per week or have been physically closed for most of the school year. Despite a push from the Biden administration to reopen most schools and resume in-person instruction this spring (White House, 2021), federal data indicate that 55 percent of 4th graders and 65 percent of 8th graders were receiving at least some remote instruction as of March 2021 (National Center for Education Statistics, 2021).

We already know that schools' choices of operational models (i.e., in-person, hybrid, or remote) matter for teaching and learning. In October 2020, teachers in remote settings—as compared with their in-person counterparts—consistently reported less contact with their students, lower average daily attendance rates, lower rates of student assignment completion, and a greater need for a variety of resources, from strategies to help students catch up to more up-to-date computers (Diliberti and Kaufman, 2020).

Yet, we do not know enough about how K–12 schools' operational models have affected teaching and learning over the course of the 2020–2021 school year. Furthermore, although two in ten district superintendents have said that they are considering remote learning options after the pandemic (Schwartz et al., 2020), we have not heard yet from school principals or teachers about whether their experiences this school year have changed their preferences and expectations for remote learning in subsequent school years.

New research conducted by the RAND Corporation provides responses directly from teachers and principals about their schools' experiences with remote and in-person learning this school year and their plans for the future. In this Data Note, we summarize selected findings on teaching and learning during the 2020–2021 school year by drawing on surveys administered via the RAND American Educator Panels (AEP) to nationally representative samples of K–12 teachers and principals in March 2021. The AEP's high-quality, probability-based sampling and weighting procedures enable us to provide

nationally representative data that complement other research efforts that have examined schooling over the course of the pandemic.

Our findings consistently indicate that remote schooling was associated with fewer instructional opportunities and potentially poorer student outcomes compared with in-person schooling. These outcomes include less teacher-reported curriculum coverage (i.e., whether teachers covered all of the content they would in a normal school year), more teacher-reported student absenteeism, and lower principal-reported achievement in mathematics and English language arts (ELA). Nevertheless, teachers and principals who have been in remote settings this school year appear to be far more comfortable with the idea of providing remote instruction in some form, even after the pandemic recedes. Taken together, these findings suggest that the pandemic has set schools on diverging pathways depending on whether they were mostly remote or in person over the course of this school year.

We highlight only a subset of key findings in this Data Note; accompanying technical documentation (Kaufman et al., 2021) provides nationally representative totals for all survey questions administered to teachers and principals. All differences highlighted in this Data Note are statistically significant ($p < 0.05$). Additional topics addressed in these surveys that are not covered in this Data Note include educators' stress levels, the likelihood of teachers leaving the profession, their need for additional supports, and staffing priorities for next school year. A RAND report on the state of teachers and teaching, which will be released soon after this report, will cover some of these topics (Steiner and Woo, forthcoming). The accompanying technical documentation also includes responses for educators in schools serving at least 50 percent Black and Hispanic students and for those in schools serving 50 percent or more students who qualify for free or reduced-price lunch (FRPL) (Kaufman et al., 2021). In this report, we define the *highest-poverty schools* as those with 75 percent or more students eligible for FRPL. We define *schools with the most students of color* as those with 75 percent or more non-White students.

Schools’ Operational Models— Fully Remote, Fully in Person, or Hybrid—Varied Considerably in 2020–2021, with Fully Remote Schools Tending to Serve More Students of Color and Low-Income Students

Consistent with other research (e.g., Gross, Opalka, and Gundapaneni, 2021; National Center for Education Statistics, undated-a), our data indicate wide variation in schools’ operational models over the 2020–2021 school year. According to school principals we surveyed, one in five schools were fully in person for the majority of the school year, while another one in five were fully remote. The remaining roughly 60 percent of schools offered some hybrid of in-person and remote instruction. Three-quarters of schools switched their predominant operational model at least once over the course of the school year. Principals of schools that had been mostly hybrid this school year had more switches (2.6 switches) on average than their fully remote (1.4 switches) and fully in-person (1.5 switches) counterparts.

Importantly, schools that used different operational models for the majority of the 2020–2021 school year tended to serve different student populations. The vast majority of fully remote schools in our sample (85 percent) served urban and suburban populations, while most fully in-person schools served towns and rural areas (see Table 1). Fully remote schools served student populations that were 72 percent non-White on average, while fully in-person schools had student populations that were mostly White. Fully remote schools also served higher percentages of low-income (i.e., FRPL-eligible) students on average than fully in-person or hybrid schools. These data add to the growing body of evidence that low-income students and students of color have received less in-person learning over the course of this school year (Diliberti and Kaufman, 2020; National Center for Education Statistics, 2021; Schwartz et al., 2021).

Concerns have loomed in the media and among researchers about whether students in remote settings

TABLE 1
Types of Student Populations Served by Schools Using Various Operational Models for the Majority of the 2020–2021 School Year

Population	Total (%)	Operational Model		
		Fully In-Person (%)	Hybrid (%)	Fully Remote (%)
School grade level				
Elementary	55	61	55	52
Secondary	45	39	45	48
School locale				
Urban or suburban	59	36	60*	85*
Town and rural	41	64	40*	15*
Student demographics				
Percentage of non-White students served	48	29	47*	72*
Percentage of FRPL-eligible students served	54	47	53*	65*

NOTES: We relied on self-reported survey data from teachers and principals to categorize school grade levels. Data on school locales and student demographics come from the 2019–2020 Common Core of Data.

* Indicate that the hybrid and/or fully remote percentage was statistically different ($p < 0.05$) from the corresponding fully in-person percentage.

have received any “live” (i.e., synchronous) instruction with a teacher online (Camera, 2021). Our data indicate that the large majority of fully remote schools (nine in ten) provided at least one synchronous class per day. Our data also show that most teachers in hybrid schools (68 percent) were delivering concurrent instruction (i.e., teaching students remotely and in-person at the same time), despite the difficulties that teachers have reported in doing so (Loewus, 2021).

Reported Instructional Time and Curriculum Coverage in 2020–2021 Was Significantly Lower in Schools That Were Fully Remote for the Majority of the School Year

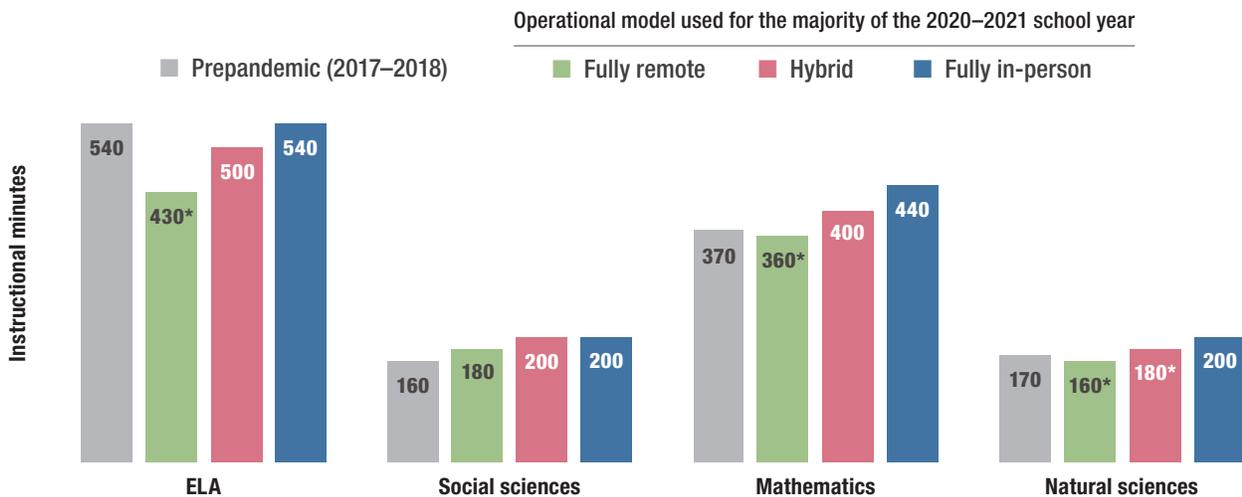
Principals were asked how many hours of *learning activities*—which was defined in the survey as including classroom instruction but excluding homework time—students in the highest grade level in their schools were expected to undertake in a typical school week across several subjects (art/music, ELA, world languages, social sciences, mathematics, natural sciences, and physical education). According to principals’ reports, fully remote schools offered 24 hours of learning activities per week in these subjects to students in the highest grade level in their schools, compared with 27 hours per week in hybrid schools and 28 hours per week for fully in-person schools.

We now focus on differences in learning time among elementary students in particular to draw comparisons with prepandemic instructional time. In the 2017–2018 school year, the National Teacher and Principal Survey asked educators to report the average number of minutes their third-grade students spent on different subjects per week (National Center for Education Statistics, undated-b). Figure 1 compares their responses with principals’ estimates of instructional time in these same subjects for their elementary students in the 2020–2021 school year.

As shown in Figure 1, our data suggest that elementary students in fully remote settings received fewer instructional minutes in core academic subjects than their counterparts who were attending school in person in the 2020–2021 school year. Furthermore, students attending elementary school remotely in 2020–2021 also appeared to be receiving fewer instructional minutes—especially in ELA—than their counterparts in the 2017–2018 school year.

FIGURE 1
Elementary Students in Remote Settings Received Less Instructional Time Than Students in In-Person Settings

Educators’ Estimates of Instructional Time in the 2020–2021 School Year Among Students in Schools with Different Operational Models Compared with Instructional Time in the 2017–2018 School Year



NOTES: This figure is based on the following survey question asked of school principals: “Roughly how many hours of learning activities in each of the following subjects have students in the highest grade level in your school been expected to undertake during a typical week of the 2020–21 school year?” Learning activities include classroom instruction, whether in-person or remote, but exclude homework time ($n = 633$). Responses were converted from hours to minutes. Data for 2017–2018 are from the National Teacher and Principal Survey administered by the National Center for Education Statistics.

* Indicates that the number of instructional minutes reported by principals in hybrid and/or fully remote settings was statistically different ($p < 0.05$) from the corresponding number of instructional minutes reported by principals in fully in-person settings.

Although these data are not perfectly comparable because of question wording and sample differences, we include them as a useful reference point to guide future investigation.¹

When asked separately about any scheduling changes that their schools had made in the 2020–2021 school year, principals in remote and hybrid settings were more likely than their peers in fully in-person settings to report that they had decreased instructional minutes in at least some courses (see Table 2). Furthermore, nearly half of fully remote principals said that their schools had shortened the school day, compared with only two in ten principals in fully in-person settings. These findings comport with principals’ reports about instructional minutes in each subject—as we have noted earlier—as well as with reports from superintendents that were provided in February 2021 (Schwartz et al., 2021).

In addition to reporting reduced instructional time, teachers in fully remote and hybrid schools were more likely to report lower curriculum coverage than their counterparts in in-person schools. Although teachers across the board reported that curriculum coverage was lower this year than is typical, only 15 percent of teachers in fully remote settings—compared with 35 percent of their counterparts in fully in-person settings—said that they had covered all or nearly all of what they would cover in a more normal school year. Similarly, one-third of principals in fully remote schools reported changing grading policies to assign incompletes rather than failing grades, which is five times the proportion of principals of fully in-person schools who reported doing so.

Taken together, these data indicate that teaching and learning pathways in fully remote and hybrid settings were likely less rigorous and comprehensive than those available in in-person settings. The

¹ Readers should keep in mind that these data are not completely comparable for two reasons: First, the 2017–2018 data are specifically for third graders, while the 2020–2021 data are from all elementary school leaders reporting on the highest grade in their school. Elementary principals likely had in mind fifth or sixth graders—who are typically at the highest grade level in elementary schools—when they estimated instructional time in various subjects. Second, the question was asked somewhat differently in these two surveys. That said, these data provide a useful comparison point to examine how the instructional time offered across models in 2020–2021 may relate to prepandemic levels.

TABLE 2
School Time, Curriculum Coverage, and Grading Policies, by School Operational Model for the Majority of the 2020–2021 School Year

Policy	Total (%)	Operational Model		
		Fully In-Person (%)	Hybrid (%)	Fully Remote (%)
Schools reporting a shortened school day	27	17	25*	47*
Schools reporting decreased instructional minutes	22	11	21*	34*
Teachers covering all or nearly all of the curriculum they would typically cover	21	35	19*	15*
Schools changing grading policies to assign incompletes rather than failures	19	6	20*	32*

NOTES: The results in this table are based on the following survey question to teachers: “Of the curriculum content you would have typically covered by this time in the school year, what proportion have you been able to cover?” (*n* = 1,015). Results also are based on the following questions to school principals: “Which of the following changes to the school schedule or calendar has your school adopted for this school year (2020–21)?” (*n* = 1,139) and “Which of the following changes to instructional programming has your school adopted for this school year (2020–21)?” (*n* = 1,138).

* Indicate that the percentage of hybrid and/or fully remote schools (based on principal report) or teachers was statistically different (*p* < 0.05) from the corresponding percentage of fully in-person schools or teachers.

concentration of reduced instructional time, less curriculum coverage, and lax grading policies in remote settings is especially concerning because remote schools served higher percentages of non-White and FRPL-eligible students on average than fully in-person schools (see Table 1). This means that historically disadvantaged student populations presumably are the students who received a less rigorous educational experience in the 2020–2021 school year, despite a likely need for more support before and during the pandemic.

Considerable technology obstacles might be contributing to less-rigorous instruction in remote versus in-person settings. As we show in the text box, in many schools that were fully remote or offered

Did remote teachers and learners have the technology and support they needed at home during 2020–2021? Our data suggest that they did not.

- Principals in schools that have been remote for the majority of the 2020–2021 school year estimated that 97 percent of their students had access to a digital device at home in spring 2021 and 88 percent had an adequate internet connection. Although these percentages are high, they remain below the universal coverage required to facilitate remote learning.
- Only eight in ten teachers in both remote and hybrid school settings said that they had internet that was fast and reliable enough to deliver instruction.
- Three in ten remote teachers said that they experienced technical problems more often than one day per week. Nearly half of remote teachers said the same about their typical student.
- Three in ten remote teachers said that their school’s or district’s technical support was not adequate in spring 2021, with the bulk of these teachers saying that support has never been adequate.

hybrid instruction, both teachers and students sometimes did not have an adequate internet connection and lacked technical support.

Nearly Three-Quarters of Principals of Fully Remote Schools Estimated That Their Students’ Average Achievement Was Below Grade Level in Mathematics in 2020–2021, Compared with 63 Percent in Hybrid Settings and 46 Percent in Fully In-Person Settings

We asked principals to estimate the average achievement level of their students in spring 2021 and in a normal prepandemic school year in both ELA and mathematics on the following scale: far below grade level (i.e., by more than one grade), somewhat below grade level, at grade level, somewhat above grade level, or far above grade level (i.e., by more than one grade). Overall, all principals’ estimates of school-level average achievement were considerably lower

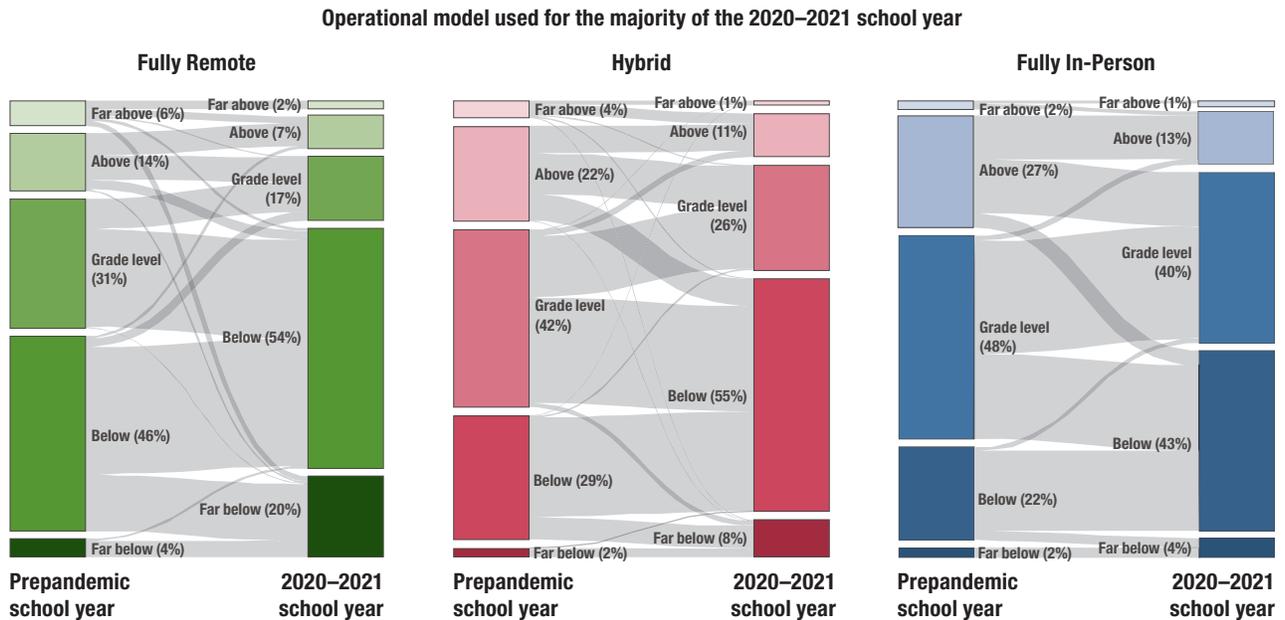
for 2020–2021 compared with what they estimated for previous prepandemic school years. For example, while 33 percent of principals indicated that their students’ average achievement in mathematics was somewhat or far below grade level in previous years, 61 percent indicated that mathematics achievement was below grade level this year. Similarly, while 30 percent of principals reported that students’ average achievement in ELA was somewhat or far below grade level in previous years, 55 percent said the same for this year.

Although overall, principals estimated school-level achievement to be considerably lower this year compared with prepandemic years, principals in remote and hybrid schools were much more likely to estimate lower achievement this year than their counterparts in fully in-person settings were. Figure 2 captures how the distribution of principals’ reports of average school-level student achievement in mathematics has changed from prepandemic years to this school year (2020–2021). The thickest lines in Figure 2 reflect the most-common shifts in average mathematics achievement in a prepandemic school year compared with 2020–2021. In fully remote and

FIGURE 2

Student Achievement in Mathematics Shifted from Grade Level to Below Grade Level or Stayed Below Grade Level in Fully Remote and Hybrid Schools

Shifts in Principals' Perceptions of Students' Mathematics Achievement, by Operational Model, from a Prepandemic School Year to the 2020–2021 School Year



NOTES: This figure is based on the following survey items asked of school principals: “Please estimate the average achievement of your students in English language arts (ELA) and mathematics as of today” and “Please estimate the average achievement of your students in English language arts (ELA) and mathematics at this point in the school year in a normal, pre-pandemic year.” We report principals’ responses only for mathematics in this figure. The survey questions also included a “don’t know” option that was selected by less than 1 percent of respondents and has been omitted from this figure. (n = 1,026.)

hybrid schools, the two most common shifts were (1) average student achievement moving from at grade level in a prepandemic school year to somewhat below grade level in 2020–2021 and (2) average student achievement staying somewhat below grade level from past years to 2020–2021. For fully in-person schools, the two most common shifts were (1) average student achievement remaining at grade level from past years to 2020–2021 and (2) average student achievement moving from at grade level in a prepandemic school year to somewhat below grade level.

Importantly, schools that were fully remote for the majority of 2020–2021 were more likely to have average student mathematics achievement below or far below grade level before the pandemic than

their hybrid and remote counterparts. In addition, the percentages of principals who estimated average student achievement shifting to below or far below grade level, or staying below grade level, were greatest in remote schools. As a result, 20 percent of principals in fully remote schools reported that average student achievement was *far* below grade level in spring 2021, compared with 8 percent of principals in hybrid schools and just 4 percent of principals in fully in-person schools. Although we display mathematics achievement trends alone in Figure 2, ELA achievement trends were similar.

Fully Remote Teachers' Estimates of Student Assignment Incompletion and Absenteeism Were Nearly Twice as High as Those of Teachers in Fully In-Person Settings

We asked teachers about other student outcomes this school year beyond student achievement. In our fall 2020 report, we noted lower average daily attendance among students in general compared with pre-pandemic attendance, especially in schools that were fully remote (Diliberti and Kaufman, 2020). Table 3 illustrates continued higher absenteeism and missed assignments among students in hybrid and remote settings compared with their counterparts in fully in-person settings, according to teacher reports as of March 2021. Readers should keep in mind that fully remote schools served higher percentages of non-White and FRPL-eligible students on average than their fully in-person counterparts. Accordingly, teachers in the highest-poverty schools and in schools serving the most students of color reported the following particularly negative outcomes this school year:

- Overall, the teachers in our sample estimated that 21 percent of their students, on average, were not completing most of their assignments. In comparison, teachers in the highest-poverty schools and those with the most students of color reported that an average of 31 and 29 percent of their students, respectively, were not completing most of their assignments.
- Similarly, teachers overall estimated that an average of 17 percent of their students were failing a course that they were teaching at the time of the survey. However, teachers in the highest-poverty schools estimated the same for 26 percent of their students, and teachers in schools serving the most students of color said the same for 24 percent of their students.

TABLE 3
Proportion of Students in Each Outcome Category, as Reported by Teachers, by School Operational Model for the Majority of the 2020–2021 School Year

Category	Total (%)	Operational Model		
		Fully In-Person (%)	Hybrid (%)	Fully Remote (%)
Students not turning in most of their assignments over the past month (according to their teachers)	21	14	21*	25*
Students with a failing grade (according to their teachers)	17	12	18*	20*
Students absent most school days over the past month (according to their teachers)	10	6	11*	11*

NOTES: The results in this table are based on the following survey question to teachers: "Of the students that you are assigned to teach, please indicate roughly how many students fall into each of the following categories?" (n = 1,038). Teachers also were asked to estimate the total number of students they are assigned to teach so that we could calculate the proportions falling into each category.

* Indicate that the percentage of students reported by hybrid and/or fully remote teachers was statistically different ($p < 0.05$) from the corresponding percentage of students reported by teachers in fully in-person schools.

These data make it clear that students who started out with some disadvantages prior to the pandemic likely have not been participating as fully in school this year, although we do not know how absenteeism, assignment completion, and course failure rates in 2020–2021 compare with rates in previous school years. To make matters more complex, schools likely have less information about how students in remote settings are doing this school year because—as our data confirm—they have been absent from school more, are missing more assignments, and may not be receiving grades for their performance.

Although Teachers in the Highest-Poverty Schools and Those with the Most Students of Color Reported More Student Access to Free Tutoring, They Were Less Likely to Report Access to Reading Specialists and One-On-One Student-Teacher Meetings

The previous section details concerns about negative student outcomes—especially among students in fully remote and hybrid settings—in the 2020–2021 school year. Recent policy conversations have turned to possible evidence-based supports to address unfinished learning related to the COVID-19 pandemic. The recently enacted American Rescue Plan Act of 2021 allocates \$123 billion to help schools to this end (U.S. Department of Education, Office of Elementary and Secondary Education, undated).

Our survey asked teachers about the extra supports that were already available to students at their school in 2020–2021, either as an option or a requirement. Our results suggest that some of the students who might be in need of additional help had access to a variety of supports in 2020–2021. Teachers in remote settings were more likely than their counterparts in in-person settings to say that their students had access to one-on-one meetings with teachers and free tutoring. However, fewer remote teachers said that their students had access to reading specialists.

Aside from differences in academic supports by schools' operational model in 2020–2021, there were also important differences by school characteristics. As noted in Figure 3, teachers in the highest-poverty schools and those with the most students of color reported significantly more access to free tutoring compared with those in the lowest-poverty schools and with the fewest students of color. The opposite was true for one-on-one meetings with teachers and access to reading specialists: Teachers in the highest-poverty schools and with the most students of color reported significantly less access to those

supports compared with their peers in lower-poverty schools and those with more White students.

We also observed one difference in the supports being provided to students based on teachers' estimates of the average achievement level of their students: ELA teachers who reported that they serve mostly students with above-grade-level achievement were significantly more likely to report having a reading specialist at their school compared with teachers serving mostly below-grade-level students. This is the opposite of the trend we might expect, in that we might hypothesize that teachers with more students who are below grade level would have more access to additional supports. That said, it is possible that teachers are reporting more above-grade-level achievement in ELA precisely because they have access to a reading specialist.

Regardless of teachers' estimates of average student achievement in mathematics and ELA, teachers were equally likely to indicate that their students had access to one-on-one meetings with teachers, free tutoring, and meetings with mathematics specialists. This is also potentially concerning because teachers with more students performing below grade level ideally would have more supports than teachers with above-grade-level students. Taken together, these data suggest that supports being provided to students are not necessarily commensurate with the students' needs.

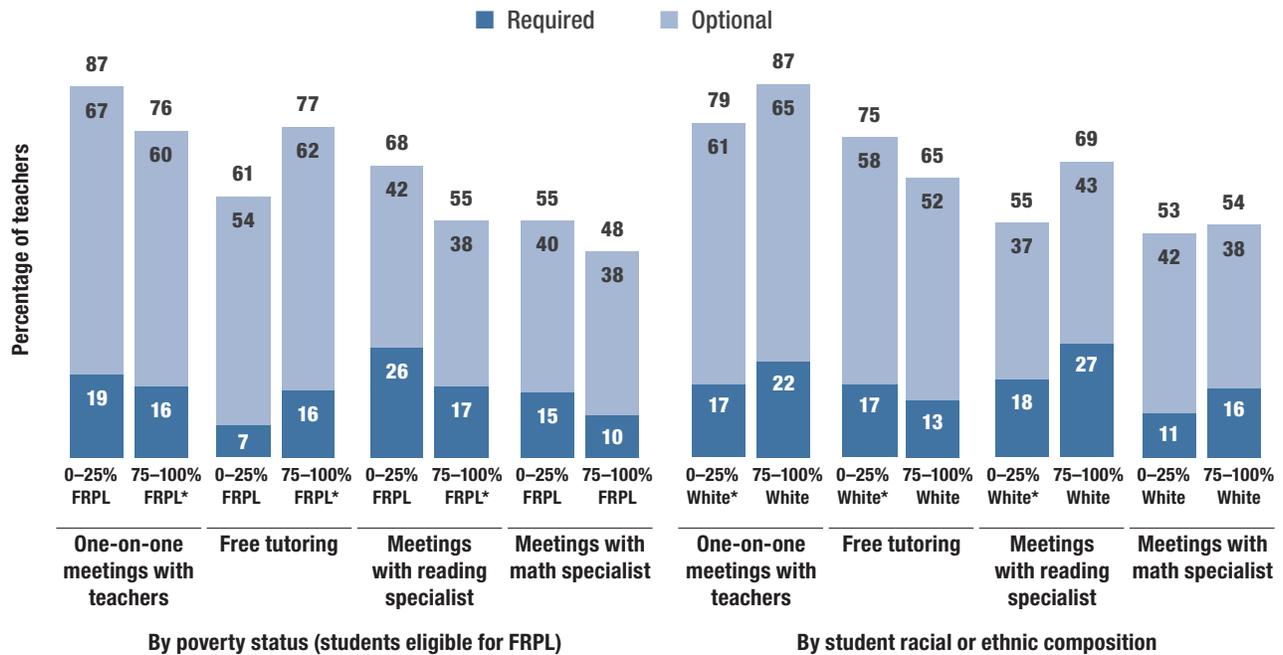
Nearly All Schools Providing In-Person Instruction at Some Point in the School Year Had Safety Measures in Place, Although Teachers' Opinions About Safety Measures Varied

The following text box outlines many of the safety precautions that schools were offering as of March 2021. Interestingly, the percentage of school leaders who reported some form of COVID-19 testing was up considerably from when principals last reported on safety precautions for our October 2020 survey.

FIGURE 3

Students Who Needed Academic Support Most Might Not Have Gotten It in the 2020–2021 School Year

Percentages of Teachers Reporting Various Optional or Required Academic Supports, by School Poverty Level and Student Racial or Ethnic Composition



NOTES: This figure is based on the following survey question asked of teachers: “Indicate whether you or your school offers any of the following forms of extra help to students” (n = 1,013). Subgroup percentages may not sum to totals because of rounding.

* Indicates a statistically significant difference (p < 0.05) in the percentage of teachers reporting that the support was available, by poverty status and student racial/ethnic composition.

Although we did not specifically ask about whether schools were offering COVID-19 tests in our October 2020 survey, almost no principals wrote that they were offering testing as an “other” safety measure. It is likely that the growing guidance on COVID-19 testing (e.g., Faherty et al., 2021) and increased funding for testing has supported schools in undertaking more testing.

We also asked teachers about the safety measures that would need to be implemented before they felt safe providing in-person learning during the pandemic. Their responses generally matched the measures that principals reported providing, in that the vast majority of teachers whose schools were still fully remote said that face masks needed to be required for staff and students for them to feel comfortable going back. In addition, seven in ten fully

remote teachers reported social distancing of six feet or more as a measure that would make them feel safe.

Teachers in schools that were still remote had a higher threshold for returning to in-person schooling than those who were already back in person. For example, four in ten fully remote teachers, compared with only two in ten fully in-person teachers, wanted all staff to have proof of vaccination, and about half of remote teachers wanted regular COVID-19 testing for all students and staff.

The majority of principals and teachers (83 and 75 percent, respectively) had received at least one dose of a vaccine at the time of this survey in March 2021. Significantly lower proportions of principals and teachers in schools that were fully in person reported having received a vaccination (75 percent and 68 percent, respectively) compared with those

What safety precautions did principals in schools that offered at least some in-person instruction report having in place as of March 2021? Our data suggest that many safety measures are being used.

- Virtually all schools (92 percent) were requiring face masks for school staff, and 85 percent were requiring the same for students.
- Roughly half of schools were asking COVID-19 screener questions, and half were taking staff and/or student temperatures on their arrival.
- Half of schools were conducting COVID-19 testing in-house in some form. More commonly, schools were testing only those staff or students who were suspected to have symptoms (about 30 percent of schools) rather than conducting regularly scheduled testing. Only 14 percent of schools reported weekly or monthly testing of all staff, and 6 percent reported weekly or monthly testing of all students.
- Forty-two percent of schools reported upgrading their heating, ventilation, and air conditioning (HVAC) systems. Although nearly half of schools were leaving doors and windows open to increase airflow, only 35 percent were offering outdoor instruction.

who were fully remote (92 percent and 80 percent, respectively) (Figure 4). These differences in vaccination uptake likely are not related to differences in access: About half of principals in fully remote, hybrid, and fully in-person settings reported that their schools were providing vaccinations at a site within the district. Principals in urban areas were significantly more likely to have reported that they received a vaccination dose compared with their counterparts in rural areas or towns. That said, we did not observe similar differences between teachers based on urbanicity. Principals in fully remote schools were more likely to have reported advocating to the state to prioritize teacher vaccinations and to have provided information to teachers about the importance of getting vaccinated, which may be because principals in fully remote schools had a greater impetus to get their staff fully vaccinated so that they could open up.

We asked the remaining 17 percent of principals and 25 percent of teachers whether they planned to get vaccinated “as soon as [they] are able.” In response, a little more than three-quarters reported “no” or “I don’t know,” while the rest indicated that

they did plan to receive the vaccine (see Figure 4). These data suggest that most K–12 educators who intend to get vaccinated may have been vaccinated already.

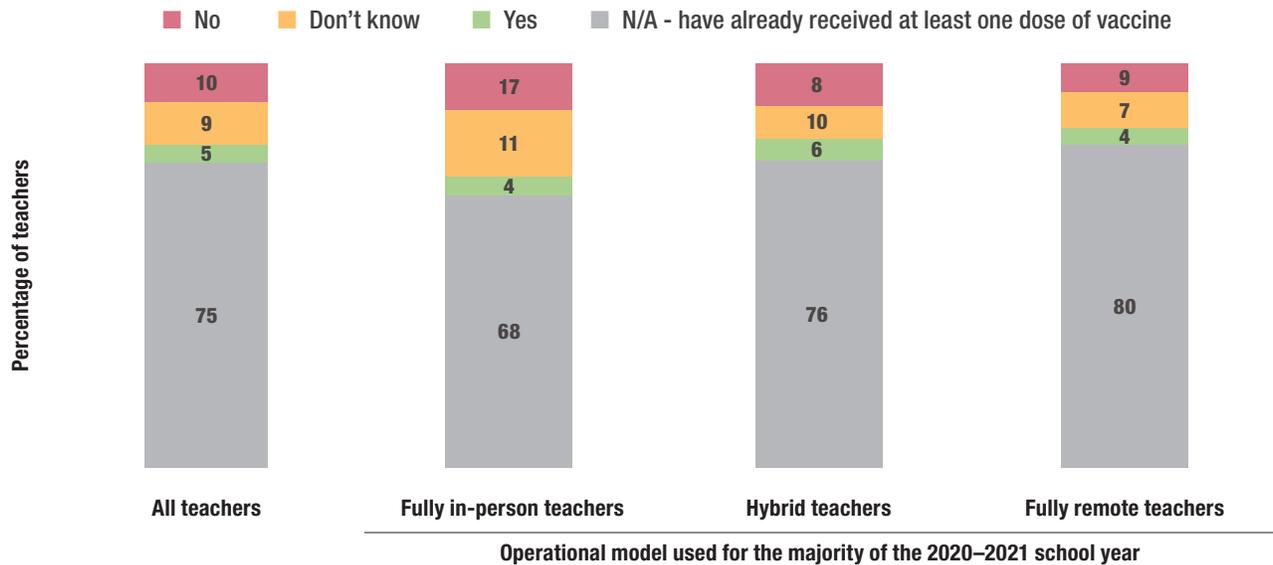
Teachers and Principals in Schools That Have Been Fully Remote for the Majority of the 2020–2021 School Year Were More Likely to Report Using New Technology and Instructional Approaches

Many school leaders reported changes to their instructional programming this year, including new online curriculum (55 percent); new social or emotional learning programming (35 percent); software, courses, or coursework to help students catch up (34 percent); a learning management system (28 percent); and various other innovations that might affect schooling in the future. Principals in schools that were fully remote were more likely to indicate that they had adopted all of these innovations compared

FIGURE 4

Most K–12 Educators Who Intend to Get Vaccinated May Have Already Gotten Their Vaccine

Percentage of Teachers Indicating That They Planned to Receive a COVID-19 Vaccination, by School Operational Model for the Majority of the 2020–2021 School Year



NOTE: This figure is based on the following survey questions asked of teachers: “Do you plan to receive the COVID-19 vaccination as soon as you are able?” and “Have you received at least one dose of the COVID-19 vaccination?” (*n* = 1,029).

with their peers in fully in-person schools (see Table 4).

Along the same lines, as we show in the following text box, roughly 30 to 40 percent of all teachers we surveyed indicated using a new learning management system or new online instructional materials for mathematics or ELA that they had not used previously. About one in five teachers reported using new online materials for social and emotional learning.

Teachers in fully remote schools were somewhat more likely to report adopting online instructional materials for social and emotional learning. Otherwise, unlike principals, teachers across school operational models and other demographic subgroups reported similar use of these new technologies. The incommensurate responses of principals and teachers may be attributable to teachers in fully remote settings not using some of the new materials that principals reported that their schools adopted

or to teachers across settings using additional new materials beyond what their school adopted.

The vast majority of teachers taking up these new technologies—eight in ten teachers or more—indicated that they plan to continue using these materials after the pandemic, regardless of whether they had been teaching in-person or remotely this year.

TABLE 4

Adoption of New Curriculum Materials or Programs, by School Operational Model for the Majority of the 2020–2021 School Year

Change to Programming	Total (%)	Operational Model		
		Fully In-Person (%)	Hybrid (%)	Fully Remote (%)
Schools adopting new online-accessible curriculum or instructional materials	55	51	51	68*
Schools adding or increasing social and emotional learning programming	35	30	33	45*
Schools adding software, courses, or coursework to review previously taught content	34	24	36*	39*
Schools adopting a learning management system	28	23	27	34*

NOTES: The results in this table are based on the following survey question to school principals: “Which of the following changes to instructional programming has your school adopted for this school year (2020–21)?” (n = 1,138).

* Indicate that the percentage of hybrid and/or fully remote schools (based on principal report) was statistically different (p < 0.05) from the corresponding percentage of fully in-person schools.

Teachers and Principals in Schools That Have Been Fully Remote for the Majority of the 2020–2021 School Year Indicated More Plans or Preferences for Remote Learning in the Future Compared with Their Counterparts in Fully In-Person Settings

Despite the widely reported challenges presented by remote instruction, many school principals and teachers foresee that elements of remote instruction will be retained in a postpandemic future, particularly among those who had more experience with

What online platforms and instructional materials did teachers report using for the first time during the COVID-19 pandemic? New learning management systems were mentioned the most.

- Google Classroom was by far the most prevalent learning management platform mentioned by teachers (n = 150), followed by Canvas (n = 98).
- ELA and mathematics online materials were more wide-ranging. No more than 25 teachers reported the use of any one new material. However, the most commonly named ones were Nearpod, iReady, and IXL.

remote instruction in 2020–2021. We asked principals whether they plan to offer various technologies and remote learning formats in future years, even after the pandemic has passed (see Table 5). For almost every item we asked about—from virtual meetings with teachers, parents, and students to blended learning opportunities and fully remote options—those in schools that have been fully remote for most of this school year were more likely to be planning to offer these options in the future than those that have been in mostly in-person settings. In particular, nearly half (47 percent) of principals who have been in fully remote settings for the majority of the school year planned to offer remote instruction “to any family who wants it” in future years compared with roughly 30 percent of principals in schools that have been mostly hybrid or mostly in person.

Perhaps surprisingly, given our previous research on teacher burnout and media accounts on teachers’ struggles with remote learning (e.g., Diliberti and Kaufman, 2021; Ali, 2021), about one in five teachers among all of those we surveyed reported that they would like to teach remotely or in hybrid settings after the pandemic or otherwise had no preference.

TABLE 5
Principals’ Plans for Offerings in Post-Pandemic School Years, by School Operational Model for the Majority of the 2020–2021 School Year

Planned Offerings	Total (%)	Operational Model		
		Fully In-Person (%)	Hybrid (%)	Fully Remote (%)
Virtual meetings with parents	82	77	81	89*
Virtual teacher trainings or professional development	75	72	74	81*
Learning management system and/or digital learning tools or platforms	60	51	63*	63*
Virtual meetings with students (e.g., counselors meeting with students to provide services)	48	37	49*	57*
Remote instruction to any family who wants it	34	28	31	47*
One or more stand-alone online courses	30	26	29	37*
Blended learning courses with a combination of remote and in-person instruction	25	14	27*	32*
Blended learning courses with concurrent remote and in-person instruction	13	8	14*	18*

NOTES: The results in this table are based on the following survey question to school principals: “Do you plan to use any of the following online practices in future years even after the pandemic has passed?” (n = 1,145)

* Indicate that the percentage of hybrid and/or fully remote principals was statistically different (p < 0.05) from the corresponding percentage of principals in fully in-person schools.

Teachers who have been mostly remote were much more likely to say that they would prefer to teach this way in the future: One in three teachers who have taught fully remotely for the majority of the

2020–2021 school year indicated a preference to teach in remote or hybrid settings or had no preference, compared with only 10 percent of teachers in fully in-person settings and 20 percent of teachers in hybrid settings.

Plans for remote or blended instruction in the future also were more prevalent among principals in certain types of schools (i.e., city schools, the highest-poverty schools, and schools with the most students of color). These were the same types of schools that were most likely to have been offering remote instruction for the bulk of this school year. For example, 44 percent of principals in the highest-poverty schools reported plans to continue to provide remote instruction to those who want it compared with just 28 percent of principals in the lowest-poverty schools (Figure 5).

These findings suggest that principals’ and teachers’ experiences with remote instruction may have warmed them to the idea of planning for or providing more remote learning opportunities in future years, perhaps because they are more cognizant of the benefits these opportunities offer (e.g., flexible schedule, ability to use more online instructional tools) both to them and to students and families.

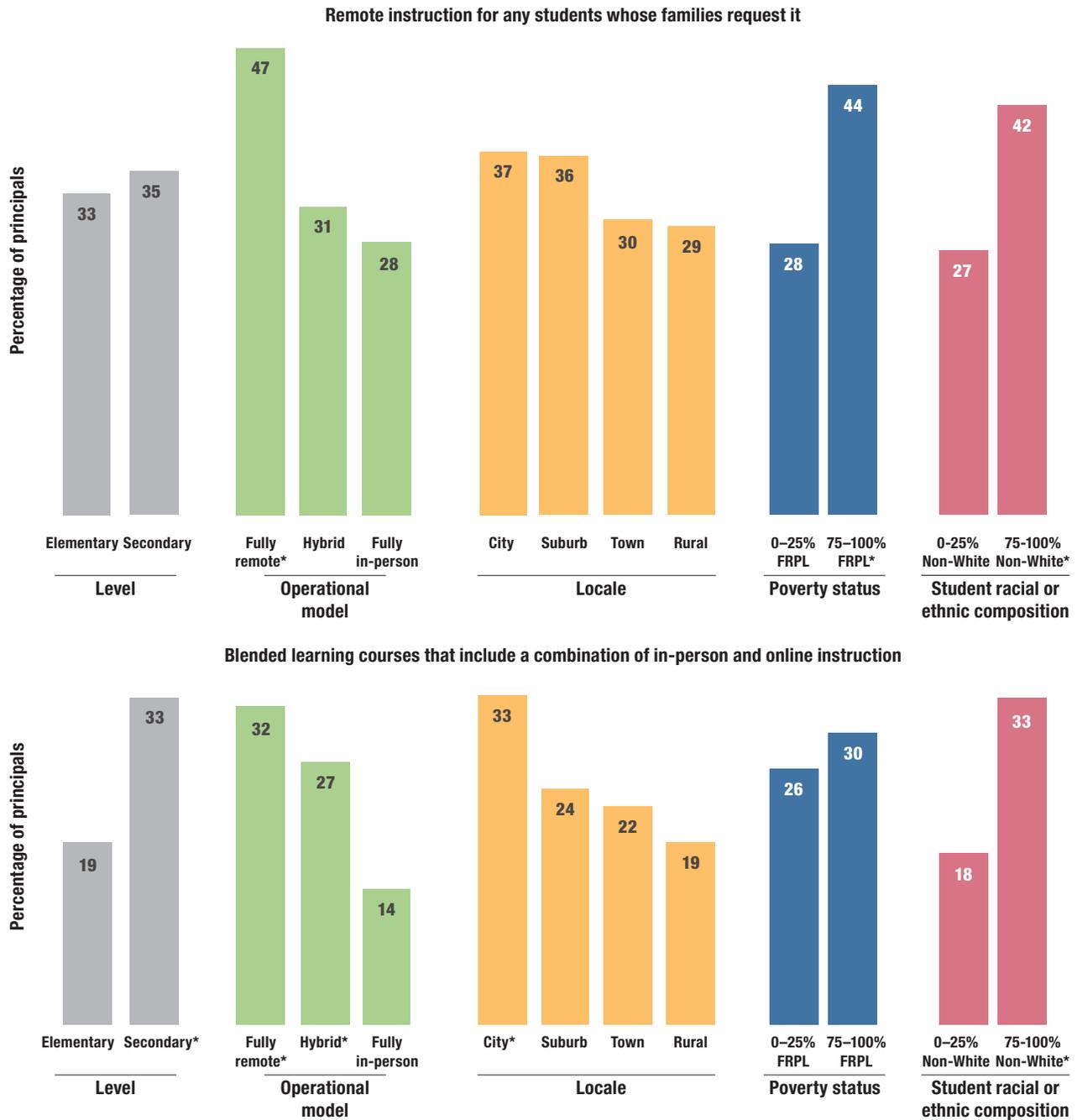
Conclusions and Recommendations

These data provide the first picture of students’ learning experiences across K–12 schools for the majority of the 2020–2021 school year. Although these data echo some of our teacher and principal survey findings from the beginning of this school year (Diliberti and Kaufman, 2020) and superintendents’ reports from winter 2021 (Schwartz et al., 2021), our findings provide the clearest evidence, to date, that students were on sharply different learning pathways depending on whether their schools were mostly remote or mostly in-person for the majority of the 2020–2021 school year. Specifically, principals and teachers in schools providing fully remote instruction for most of 2020–2021 were more likely to report less instructional time and lower curriculum coverage than their counterparts in in-person

FIGURE 5

Plans for Remote or Blended Instruction in Future School Years Were More Prevalent Among Principals in Certain Types of Schools

Percentage of Principals Who Reported Having Plans for Remote Instruction in the Future, by School Operational Model in 2020–2021 and School Characteristics



NOTES: This figure is based on the following survey question asked of principals: “Do you plan to use any of the following online practices in future years even after the pandemic has passed?” (n = 1,145)

* Indicate that the percentage in this subgroup was statistically different ($p < 0.05$) from the corresponding percentage in the reference group (elementary, fully in-person, rural, lowest-poverty schools, and schools with the lowest percentages of non-White students).

settings, and they reported that their students were much more likely to be absent, not complete assignments, and have lower average achievement.

Furthermore, the schools that have been fully remote for the majority of the school year tended to serve high percentages of non-White and FRPL-eligible students—student populations that have historically had lower student achievement than their White and more-advantaged peers. Although students with potentially higher needs—those in schools with higher poverty and more students of color—were more likely to receive tutoring, they were less likely to be provided with one-on-one meetings with teachers and access to reading specialists.

Our findings also illustrate that educators in fully remote schools were much more likely to report having adopted new curriculum and technology. Although we do not yet know the extent to which new technology will influence curriculum and instruction in the future, teachers' and principals' survey reports suggest that students in remote settings during the 2020-2021 school year likely will be the recipients of that technology and have more access to remote instruction in the future.

A big question will be whether this new technology that may be available to some students will put them at an advantage or disadvantage down the road. Although remote instruction was consistently linked with poorer instructional and student outcomes in our data during this school year (2020–2021), we cannot know from these descriptive data whether remote instruction is the cause of all of the negative trends we have observed. Remote learning has given many parents—and particularly parents of color—the ability to keep their families safe during a turbulent pandemic school year. The increased flexibility of remote learning could make it an appealing and useful option—for both students and teachers—in the coming years. Furthermore, remote learning environments could improve over time, given that schools largely stumbled into the remote learning environment with little preparation. In any case, the trends we have observed will be important to follow over time.

Using what we have learned from this year and past years, we offer the following five recommendations.

When making decisions about how to spend federal funds, district and school leaders should rely on multiple data points collected now and in the next year, including those related to absenteeism, performance on formative assessments, and students' potential nonacademic needs.

The \$123 billion that schools will be receiving as part of the American Rescue Plan is intended to help students catch up and receive more-holistic and supportive school experiences (Griffith, 2021). Although this funding is good news for schools, it is not yet clear whether it will reach all of the students who need it. According to guidance from the U.S. Department of Education, funding is being allocated to states and districts based on the Title I, Part A formula of the Elementary and Secondary Education Act (U.S. Department of Education, Office of Elementary and Secondary Education, undated). It is well documented that the Title I formula benefits some schools more than others (e.g., Congressional Research Service, 2017; Snyder et al., 2019), and it is not yet obvious whether all students who are in need of extra help because of lost opportunities to learn over the course of the pandemic are in Title I schools or whether they are concentrated more in some schools that receive this funding compared with other schools. Nevertheless, district leaders will be making decisions in the coming months about how to allocate these funds across their schools, and school and district leaders will need to decide how to spend these funds. School leaders also will need to identify which students are in need of extra supports.

In their decisionmaking, school and district leaders may be working with less data than usual. Our survey data suggest that students who have been in remote or hybrid settings for large portions of the school year may have been absent much more than their counterparts who were in school fully in-person, and it may be difficult for educators to know how much learning those students have lost and what other supports they need. Furthermore, students' nonacademic needs—such as the need

for counseling or other supports—may be particularly high but unmeasured through traditional data sources. For these reasons, leaders should consider collecting and using as much data as they can now (e.g., through student or parent focus groups, student surveys, and formative assessments) to make decisions about money to allocate to particular schools and interventions. They also should start making plans to collect data in the coming year about the use and impact of funding and interventions. These data would provide leaders with clear evidence about whether spending is supporting better outcomes. Researchers could help in this regard. Research-practice partnerships—and federal funding for such partnerships—may be the most useful way of tracking and understanding the effectiveness of school funding over time.

Researchers and policymakers should keep a close eye on instruction over the next school year to ensure that districts and schools have access to the right set of expertise and supports. Although tutoring already looks to be thoughtfully distributed among the schools that have been mostly remote versus mostly in-person this school year, other specialized staff, such as reading specialists, appear to be less targeted to students who need it the most. These supports may be more plentiful in higher-income and well-resourced schools. Although tutoring likely will be a useful support this school year and next, access to expert intervention staff and specialists in particular subjects may be the support that students need. However, we need more data and analysis to know whether this is true.

Researchers, policymakers, and district leaders should monitor the extent to which the technologies that many educators have switched to over the course of the pandemic—and plan to continue using in a postpandemic era—support teaching and learning. New technological innovations can lead to a variety of advantages and disadvantages that should be studied more over time, particularly if the adoption of new technologies or curricula is occurring more often in some school types than others. Federal and state policymakers should consider how to track data over time in terms of who is learning remotely

and how remote learning might be tied to a variety of teaching and learning outcomes. Although our data suggest less-rigorous instruction and poorer student outcomes for schools that have been fully remote this year, it does not necessarily mean that students who learn remotely will be disadvantaged, particularly if they choose to learn remotely (which was not always the case this year). In addition, it is likely that some remote instructional tools are better than others. Data collected over time on remote interventions and their effectiveness can help policymakers and researchers better understand the pros and cons of various technology. Furthermore, as noted earlier, school funding likely will be used to support a variety of technological innovations in schools and districts, so it is incumbent on those schools and districts to ensure that these innovations are supporting their students in the coming years through data-collection and research-practice partnerships.

School districts and policymakers should reflect on the variety of regulatory decisions that could support or obstruct remote learning. This report and others we have written (e.g., Diliberti and Kaufman, 2020; Schwartz et al., 2020; Schwartz et al., 2021) document just how much remote learning has changed the educational environment in 2020–2021. Schools are changing their calendars, changing their grading policies, and offering new instructional choices. Researchers, policymakers, and district administrators often have standardized ways of measuring educational inputs and outcomes that will need to be rethought in this new era. How should we be counting instructional minutes in hybrid and remote settings? How should teachers be counting attendance in asynchronous and synchronous remote learning environments? How should discipline be different for students in remote environments? Answering all of these questions will be urgent as schools move into new modes of teaching and learning in the coming years.

Federal and state policymakers should provide clear, consistent health and safety guidance to support school system decisionmaking. Our data suggest that at least some portion of educators will not be vaccinated next year. Furthermore, many children

and at least some adults working in schools—along with some parents—will remain unvaccinated for the foreseeable future. School systems will need to make multiple decisions about the best ways to support the safety and health of students and staff in the coming school year, and they will be looking for consistent federal and state guidance. Although

it will be important for federal entities, such as the Centers for Disease Control and Prevention and the U.S. Department of Education, to offer coherent and consistent guidance, state policymakers should offer guidance that does not conflict with and confuse school system decisionmaking on this front.

How This Analysis Was Conducted

In this report, we used responses from nationally representative surveys of 1,045 K–12 public school teachers and 1,183 school principals administered via the AEP in March 2021 (for more information, see Kaufman et al., 2021). This report provides teacher and principal responses overall and, in selected cases, for specific subgroups when differences were substantive and significant. All data have been weighted to provide nationally representative estimates. To assess whether differences were statistically significant at the $p < 0.05$ level, we performed a series of pairwise tests for each survey item that compared the weighted means of two subgroups at a time (e.g., fully in-person versus fully remote teachers, fully in-person versus hybrid teachers, fully remote versus hybrid teachers). Because the intent of this report was to provide descriptive information rather than to test specific hypotheses, no adjustments were made for multiple comparisons.

Data on school and student demographics were obtained by linking survey data files to the 2019–2020 Common Core of Data, which was issued by the National Center for Education Statistics (NCES). Our urbanicity definition aligns with the four-category locale definition used by NCES. To analyze differences by the percentage of minority (non-White) students and the percentage of students who were eligible for FRPL that respondents' schools served, we used the following FRPL categories: lowest (0 to less than 25 percent), mid-low (25 percent to less than 50 percent), mid-high (50 percent to less than 75 percent), and highest (75 percent or more). We relied on self-reported survey data from teachers and principals to categorize school grade levels. Educators in schools serving primarily kindergarten through fifth grade were placed in the elementary group, while those serving sixth through 12th grade were placed in the secondary group. Educators who serve an equal number of elementary and secondary grades were assigned to the secondary group.

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Key Recommendations in This Report

When making decisions about how to spend federal funds, district and school leaders should rely on multiple data points collected now and in the 2021–2022 school year.

Researchers and policymakers should ensure that districts and schools have access to the right set of expertise and supports.

Researchers, policymakers, and district leaders should monitor the extent to which new technologies they have adopted support teaching and learning.

School districts and policymakers should reflect on regulatory decisions that could support or obstruct remote learning.

Federal and state policymakers should provide clear and consistent health and safety guidance to support school system decisionmaking.

About This Report

The American Educator Panels (AEP) are nationally representative samples of teachers and school leaders across the country.

We are extremely grateful to the U.S. public school teachers and leaders who have agreed to participate in the panels. Their time and willingness to share their experiences are invaluable for this effort and for helping us understand how to better support their hard work in schools. We also thank Matthew Baird and Betheny Gross for helpful feedback that greatly improved this report. We also thank Monette Velasco and Blair Smith for their expertise in overseeing the publication and editing process for this report.

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RAND Education and Labor

This study was undertaken by RAND Education and Labor, a division of the RAND Corporation that conducts research on early childhood through postsecondary education programs, workforce development, and programs and policies affecting workers, entrepreneurship, and financial literacy and decisionmaking.

More information about RAND can be found at www.rand.org. Questions about this report or about the AEP COVID-19 surveys should be directed to jkaufman@rand.org, and questions about RAND Education and Labor should be directed to educationandlabor@rand.org.

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The AEP Data Note series is intended to provide brief analyses of teacher and school leader survey results of immediate interest to policymakers, practitioners, and researchers. If you would like to know more about the dataset, please visit *COVID-19 and the State of K–12 Schools: Results and Technical Documentation from the Spring 2021 American Educator Panels COVID-19 Surveys* (RR-A168-7, www.rand.org/t/RR-A168-7) for more information on survey recruitment, administration, and sample weighting. If you are interested in using AEP data for your own surveys or analysis or reading other AEP-related publications, please email aep@rand.org or visit www.rand.org/aep.

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