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The impact of the COVID-19 pandemic on students and educational systems, critical actions for recovery, and the role of research in the years ahead

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Introduction

In March 2020, schools across the United States were abruptly closed as part of public health efforts to protect students and their communities from the spread of SARS-CoV-2. Throughout the pandemic, educators and students have continued teaching and learning, demonstrating resilience, perseverance, and creativity to sustain schooling under unprecedented circumstances. At the onset of the pandemic, educators' roles shifted dramatically, as they worked tirelessly to provide some of the essential services that schools have long provided to students, such as food and health supports, while trying to make sure students also had access to technology and materials that would enable them to learn from home (Ali et al., 2021). Similarly, parents, students, and families took on radically reconfigured roles, shifting careers, schedules, and living situations to support learning from home. The backdrop of all these shifts was a global pandemic that, to date, has infected 38 million people and killed over 600,000 (New York Times, n.d.) and created chaotic conditions in the US economy (Smart, 2021). These health and economic effects have been disproportionately borne by low-income, Black, and Latinx communities, due to systemic inequality that has led to inequitable access to healthcare, income inequality, and disproportionate employment in high-risk, "essential" jobs (Tai et al., 2020; Fortuna et al., 2020).

It is difficult for children to learn if they are sick or hungry, or if they have family members who are sick, dying, or grieving. Some students have found themselves without a safe, stable place to live, lacking basic necessities, and disconnected from needed services and supports when schools—a primary avenue for public service delivery—closed for months on end. Making learning in the pandemic even more challenging, many of these students have lacked reliable access to the internet, computers, and work space (Aguilar et al., 2020, Polikoff

et al., 2020). And working parents have often found themselves unable to stay at home with their children, sometimes leaving them without needed supervision and support. This has been especially difficult for children in the early grades who may not be able to independently follow directions or navigate online assignments, as well as for some students in upper grades, who may need support to stay on task and away from online distractions such as social media. These instructional support issues are compounded for those with special needs (Garbe et al., 2020).

Though the vast majority of students in the 2020-21 school year experienced disruption in their schooling contexts, there was wide variation across the United States. Available data show that some states (such as Montana and Wyoming) were open for in-person instruction almost all year, while others (such as Hawaii and California) were largely remote (Oster et al., 2021), and that urban school districts were less likely to be in-person than rural districts (Burbio, n.d.). Schools most likely to physically close were generally lower performing, and served higher shares of students of color, students who experienced homelessness, students with limited English proficiency, and student who were eligible for free or reduced-price school lunches (Parolin & Lee, 2021). These associated educational disruptions presented critical challenges for many of America's students on top of the health and economic effects of COVID-19.

The challenges of the pandemic coincided with growing social consciousness of racial injustice. Simultaneous with the pandemic arose waves of demonstrations and uprisings in response to systemic racism and injustices experienced by Black Americans. Increased attention to police violence and anti-Black racism as well as the rise in anti-Asian hate crimes and turbulence surrounding immigrant rights (i.e., DACA) have been societal stressors that students and families in these communities have faced while navigating the pandemic. A national election underscoring partisan animus punctuated the social unrest and growing divisions in the country.

The combined circumstances of the pandemic, schooling disruptions, and racial reckoning have led to public concern about the impacts on student learning and well-being. Of greatest concern to the public in terms of the impact of the pandemic on students is the risk of students falling behind academically; the greatest concern for parents specifically is the impact on students' emotional and mental health is their greatest concern (Hough et al., 2021). This report seeks to address the following questions: (1) What is known regarding the scope and scale of education-related loss brought on by the pandemic? (2) What can be done to support schools, families, and communities in recovery? and (3) What are the knowledge gaps that, if addressed by appropriate research, could support schools, families, and communities as they recover from losses related to COVID-19? This report is not meant to be exhaustive of all research in this area, but rather is intended to provide an overview of the findings of early research on the impact of the pandemic on K-12 students.

Although many are eager for schools to return to normal, it is critical to acknowledge that the pre-pandemic "normal" was underserving the nation's most vulnerable children and youth. As we look to the future, education systems should not put back into place the previous

practices that led to inequities but rather reimagine and rebuild systems that support all students to thrive. In this moment, education research has the opportunity to inform efforts to not only reverse the effects of pandemic-induced lost learning opportunities but also lay the groundwork for systemic transformation that leverages evidence-based approaches to build back for equity in educational opportunities (Office of Civil Rights, 2021). By assessing the scope and variability of the impact of the pandemic on students, education research can inform school systems in their ongoing efforts to effectively deploy resources, support, and interventions to meet students' needs. Moreover, amid the disruption, the pandemic has borne innovation, some which was crisis-driven, but has shown itself to be worthy of sustaining on an ongoing basis. Education research will be critical for identifying and evaluating opportunities and approaches for improving equity and success into the future.

However, this research has limitations, and one must acknowledge the complexities in any endeavor to measure the impacts of the events of 2020 and 2021 on the lives of students, their families, and communities, particularly for those disproportionately impacted. We note three major caveats in particular. First, researchers generally define the impact of this period by measuring the difference between student test scores during the pandemic and scores prior to pandemic (or expected scores based on pre-pandemic trajectories). But defining impacts in this way masks the resilience and much of the learning that in fact occurred for students in these unprecedented context—outcomes that assessments are unlikely to recognize. Relying on individual student data in this way can inadvertently signal a focus on individual students, rather than a focus on the degree to which systems were able to provide students with the conditions and opportunities they needed for learning. Secondly, in the effort to assess the impact of the pandemic on students, we recognize that although COVID-19 has been a defining component of the past two school years, in truth a constellation of issues, that include the public health crisis, but also economic factors, school disruptions, racial reckoning, political unrest, and more, may be affecting student learning and well-being during this period. With this in mind, we refer to the pandemic throughout the report, but acknowledge that we cannot disentangle the effect of the pandemic from the multitude of compounding stressors facing students and families in this period. And finally, throughout the pandemic, our knowledge needs have been high, but data has been scarce. As we discuss later in this report, large-scale data collection efforts were temporarily ceased at the onset of the pandemic, and when student learning data was collected, student-level data on learning modality (i.e., whether students were learning remotely, in person, or hybrid) that would allow researchers to study heterogeneity in instructional modality was not readily accessible.

In what follows, we present early findings on the impact of the pandemic. In later sections of this report, we offer a more expansive approach for how to think about leveraging research to address the differential impacts experienced during the pandemic. The generational scale of the impact of the pandemic calls upon the need for a national research infrastructure to study consequences of the pandemic and paths forward in the years ahead.

The Impact of the Pandemic on Students and School Systems

The Impact of the Pandemic on Student Academic Learning

At the onset of the COVID-19 pandemic in spring 2020, education researchers predicted a drop in K-12 student learning due to the anticipated extended school closures. Termed the "COVID slide," projected changes in student learning levels were based upon research focusing on losses that occur when school is out of session in the summer (Kuhfeld & Tarasawa, 2020). This COVID "learning loss" model was premised on the assumption that schools closed in March 2020 would resume in the fall, and analyses suggested that students would return in fall 2020 retaining 70 percent of the learning gains in reading relative to a typical school year, with students even further behind in math.

However, the reality of COVID-19's impact on schooling across the country ran counter to initial assumptions of the COVID slide research. First, pandemic-disrupted schooling persisted for longer than initially anticipated, with some states—including the country's largest, California—conducting school almost entirely online for over a year. But in other ways, schooling amid the pandemic was better for students than initial models predicted because even in schools that were physically closed, teaching and learning continued, albeit through distance or hybrid instruction. There is some research showing that, though learning did appear to stagnate in spring 2020, learning rates in fall 2021 improved to achieve gains similar to pre-pandemic rates (Domingue et al., 2021). This growth pattern suggests that educators may have adjusted nimbly to constraints imposed in response to COVID-19 to find new approaches for meeting students' learning needs amid the pandemic.

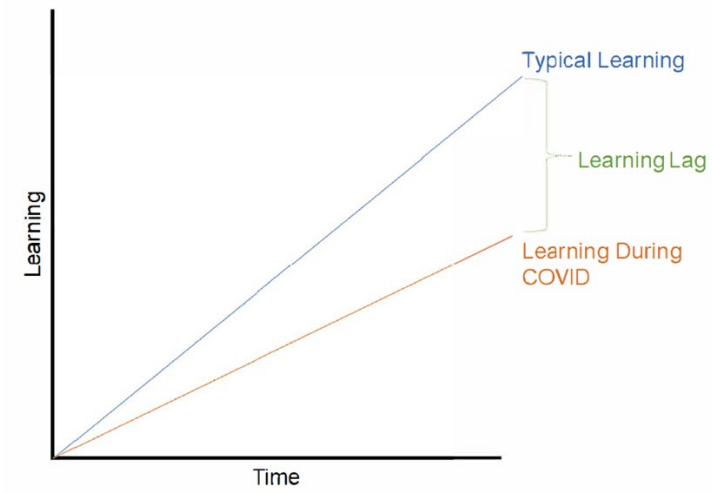
Further, the concept of summer learning loss is not an exact analogue for the concerns stakeholders have for student learning during the pandemic. Summer learning loss research (Alexander et al., 2007; Cooper et al., 1996), finds that students lose the equivalent of one month of what they have learned during the school year over the summer break, with particularly detrimental effects in math computation and spelling, as measured by the difference between assessments made at the end of the school year and the beginning of the subsequent fall. Suggested explanations for the summer learning loss phenomenon include the differential availability of opportunities to practice academic material over summer (e.g., reading practice is more readily available than math practice), and differences in the material's susceptibility to memory decay (with fact- and procedure-based knowledge more easily forgotten than conceptual knowledge) (Cooper et al., 1996).

Thus, the concept of "learning loss," as conceived in summer learning loss research literature, is applied to the skills and knowledge that students *learned* when school was in session, but *lost* over the summer, as measured by assessments. During the pandemic, school was in session and teaching and learning was ongoing, though often at a distance. "Learning lag" (Pier et al., 2021) is a concept more apropos to the circumstances of student learning during the pandemic and thus better captures the concern that students were not learning content and mastering skills at the same rate as they would be expected to be in a typical year. Teachers reported incomplete curriculum coverage during the pandemic: they provided more

review and less coverage of new content than in typical years (Hamilton et al., 2020). Conceivably, this finding alone could result in learning lag, but a multitude of additional factors may have contributed to slower learning rates during the pandemic, such as inadequate access to technology, competing responsibilities in the home, or physical and mental health challenges.

COVID-19 learning lag. Based on historical data, researchers can model what academic learning trajectories would look like in a typical academic year for students. However, an exogenous disturbance of the magnitude of the COVID-19 pandemic would presumably alter students' predicted learning trajectories. The difference between estimates of what students would have learned in a typical year and what they actually learned during the pandemic is what we refer to in this report as "learning lag." Figure 1 depicts a stylized representation of this change to student learning trajectories.

Figure 1. Conceptualizing "learning lag" associated with COVID-19



System leaders, education stakeholders, and researchers often rely on standardized test results to provide information on student learning and school performance. In the past, results from these assessments of student learning have been particularly critical for understanding equity patterns by enabling analyses of between-group differences in achievement. However, in spring 2020, the U.S. Department of Education issued blanket waivers for standardized testing and accountability for all states in the 2019-20 school year amid the early weeks of school closures in response to the pandemic. Standardized tests would have provided insight into the educational effects of the COVID-19 pandemic, but the logistical challenges of securely administering these assessments remotely were insurmountable at a time when school systems were strained to maintain instruction and student support during the sudden shift to distance learning. For the 2020-21 school year, the U.S. Department of Education granted school districts flexibility in how and when they administer the exams, but not waivers. The results from these 2021 exams were not yet available at the time this report is being written. In the absence of standardized assessments, researchers have analyzed interim and formative

assessment data collected during this period to shed light on the degree of learning lag associated with the pandemic.

Scope and variability of learning lag. Analyses of interim and formative assessment data collected during the pandemic confirmed that, indeed, student learning growth has slowed in comparison to typical years. This slowdown in learning growth may not come as a surprise because of the significant challenges that students, families, and educators had to overcome to continue teaching and learning under pandemic conditions. This decline in learning was not experienced by all students equally, however. In what follows, we summarize three sets of studies that leverage historical data together with formative assessments collected during the 2019-20 and 2020-21 school years to examine differences in learning patterns between pre-pandemic school years and pandemic-affected school years. These studies estimate the degree of learning lag associated with COVID-19 and the extent to which student subgroups had differently affected learning rates.

COVID-19 Impacts on Student Learning Evidence from Interim Assessments in California and South Carolina. Using results from three different interim assessments—the NWEA MAP Growth, Renaissance Learning Star, and Curriculum Associates i-Ready—administered to approximately 100,000 students in Grades 4-8 across 19 local education agencies (LEAs) in California and to over 200,000 students in Grades 4-8 across 54 LEAs in South Carolina. Pier et al. (2021) assess the degree to which students' learning is lagging relative to what would be expected in a typical year by comparing interim assessment data from winter 2021 to student learning progress in pre-pandemic school years (beginning in fall 2017).

The study found that, overall, student learning was lagging behind by about 2.6 months in English language arts and 2.5 months in math. Analyses of student subgroup outcomes show that students with disabilities and students who are English learners, economically disadvantaged, previously low-achieving, homeless, Native American and Pacific Islander, Latinx, or Black were experiencing more severe impacts of the pandemic than their peers.

Nearly all of the LEAs in the California sample were offering only distance-only learning during this study. And while a greater proportion of LEAs in South Carolina were teaching in-person, the lack of available data at the student and school levels on whether students were learning fully remotely or in a hybrid environment made it impossible to control for or differentiate the role of learning environment in either state. Nevertheless, the South Carolina dataset included a variable on whether students *tested* remotely or in person, which could serve as an imperfect proxy for learning environment. These data indicate that the students who took tests remotely experienced greater learning lag than those who completed the assessments in person (Education Analytics, 2021). This suggests that distance learning results in greater learning lag than in-person or hybrid learning. Other research studying the impact of instructional mode and student learning similarly found that, on average, more in-person instruction produced more learning (West et al, 2021).

Changing Patterns of Growth in Oral Reading Fluency During the COVID-19 Pandemic. Younger students are not traditionally included in conventional assessment systems, but there are reasons to be uniquely concerned about learning lag for students in third grade and younger. This is because the early grades are a pivotal period for developing foundational literacy skills for reading, which is an ability that unlocks learning in other areas. Third grade reading skills have been shown to predict long-term outcomes, such as high school graduation; in fact, students who are not reading proficiently in third grade are four times less likely to graduate from high school on time than proficient readers (Hernandez, 2011).

Learning lag research by Domingue et al. (2021) focuses on the impact of the pandemic on students' oral reading fluency development (ORF) in students in Grades 1-4. The researchers used data from a literacy assessment system, Literably. Typically recorded in person in a classroom setting, the assessment technology allowed remote recording of student readings during the pandemic, enabling the researchers to study changes in growth of ORF related to disruptions in schooling through various phases of the pandemic using data from over 250,000 scores collected in over 100 school districts spread across 22 states.[1] Their analysis revealed that growth in ORF stalled in the spring of 2020 and remained stagnant until fall 2020, with Grades 2 and 3 most affected. Second and third graders were 7.3 and 7.7 words per minute behind their expected fluency level respectively (representing 26 percent and 33 percent of the expected yearly gains). Learning rates in fall 2021 improved, but increases were insufficient to recoup ground lost earlier in the pandemic.

A troubling new pattern emerged in the oral reading fluency data when comparing across districts. Although oral reading fluency levels are, by definition, higher in high-performing districts than low-performing districts, growth rates of fluency *development* between students in high- and low-achieving districts have historically been similar. However, Domingue et al. discovered that during the pandemic, slopes of oral reading fluency growth in high-performing districts were steeper than the slopes of the lines in low-performing districts. These gaps in growth rates between high- and low-achieving districts, not generally observed in previous years, appear to be emerging as a consequence of the COVID-19 pandemic. This difference in growth rates likely reflects the resource challenges more common in low-performing districts (e.g., barriers to accessing devices and connectivity, food insecurity, etc.) that were not pressing in high-performing districts. If left unchecked, this pattern will result in a widening of preexisting achievement gaps.

Analyses of nationwide i-Ready data. Other research comparing learning during COVID-19 to historical average levels of learning prior to COVID-19 using nationwide samples found that, on average, students are behind by the equivalent of three months of learning in mathematics and one-and-a-half months of learning in reading. Dorn et al. (2020) used assessment data from the i-Ready platform in fall 2020 for students in Grades K-5 and found

[1] The dataset did not include information on mode of instructional delivery (i.e., in-person, remote, or hybrid). Future analyses will investigate differences in outcomes in fall 2020 based on mode of instructional delivery.

that students learned 67 percent of the math and 87 percent of the reading that grade-level peers would typically have learned by the start of the school year. The learning lag was especially acute in schools that predominantly serve students of color.

Curriculum Associates' (2021) examination of i-Ready assessment results from students in winter 2021 found that students in Grades 1-7 are behind where they have been in typical years in reading, with the largest lags in early elementary grades, where the percentage of students who are on grade-level has decreased by 10 percentage points for Grades 1-2. In Math, all grades (Grade 1-8) were behind where cohorts have been in typical years, with elementary Grades 1–5 and early middle school lagging more than other grades. The largest drop was found in Grade 4 in which the percentage of students who are on grade-level decreased by 16 percentage points. Disaggregated data by school-level demographic information indicate that learning lag is greater for students in schools serving majority Black and Latinx students, and those located in lower-income zip codes. While more students place on grade level in winter than in fall in both reading and math, the *difference* relative to historic performance by the winter was still growing.

In summary, COVID-19 is associated with student learning rates that put students roughly 2-3 months behind what would be expected in more typical years; the available data range from Grade 1-8; impacts on high school students has yet to be established, although we provide some evidence about disruptions from high-school to college in the box below. The learning lag, though widespread, has not affected all students equally. Research has consistently found learning lag to be more severe among student subgroups that were already vulnerable to academic struggle, including students with disabilities, English learner, Black, Latinx, and low-income students. Early analyses appear to show that students learning in-person experienced less learning lag than those learning online. We also note that more students were missing from assessment databases during the pandemic. For example, roughly a quarter of students who took fall 2019 NWEA MAP assessments did not appear in fall 2020 assessment datasets (Kuhfeld et al., 2020), and these students tended to be students of color and low-income students. If the performance of students who are academically behind was not adequately captured in assessments, then learning lag findings are likely being underestimated. While there is some evidence from the 2020-21 school year to indicate that student learning has started to pick up, early findings indicate that this progress has not been sufficient to make up for learning stagnation from earlier in the pandemic. We note that there may be other forms of learning gains during the pandemic that have not yet been captured in extant literature. We return to this point in our suggestions for future research.

The Impact of the Pandemic on Student Wellness and Social-emotional Development

Alongside concerns about the impact of the pandemic on student academic learning, questions about the impact of the pandemic on student wellness, including students' emotional and mental health and social-emotional development, are also growing areas of concern. Indeed, for parents the impact off the pandemic on students' emotional and mental health

outweighs academic concerns (Hough et al., 2021). Nearly half of parents of teens surveyed nationwide reported a new or worsening mental health condition for their child since the start of the pandemic, with one in three parents with teen girls and one in five parents with teen boys reporting new or worsening anxiety in their child (C. S. Mott Children's Hospital , 2021). Among students surveyed between September and December 2020 across 14 states, the number one obstacle to their learning was feeling depressed, stressed, or anxious, with Latinx, Black, and multiracial students facing more obstacles on average than White or Asian students (YouthTruth, 2021). The mental health crisis is surfacing not only among teens but also in younger children: between April and October 2020, the proportion of children between the ages of 5 and 11 visiting an emergency department because of a mental health crisis climbed 24 percent compared to that same time period in 2019; among 12- to 17-year-olds, the number increased by 31 percent (Leeb et al., 2020). A recent review of research on student social-emotional well-being by a panel of experts estimated that approximately 30 to 40 percent of students have experienced negative impacts on their mental or social-emotional health during the pandemic. And while some students fared well initially, or even fared better when learning remotely than they did in person before the pandemic, these positive effects did not last. Meanwhile, negative effects for students increased over time (Hamilton et al., 2021). In what follows, we summarize two studies that seek to better understand the ways in which the pandemic affected student wellness.

Student Well-Being and Learning Conditions During the Pandemic: Evidence from the CORE Districts. Anticipating the need for schools and districts to understand their students' social-emotional well-being, in spring 2020, CORE Districts, Education Analytics, and Policy Analysis for California Education began developing a survey to understand student wellness and learning conditions amid the pandemic. The diagnostic survey was administered to approximately 32,000 students across Grades 4-12 in 126 California schools from three districts that are part of the CORE Data Collaborative at the beginning of the 2020–21 school year (Wang et. al, 2021). At this time, these districts were conducting all instruction online. An exploratory factor analysis identified four factors underlying the items related to student well-being: (1) personal well-being (e.g. during the past week, how often did you feel happy?), (2) interpersonal well-being (e.g. when I need help, I find someone to talk to), (3) school learning environment (e.g. last year at school was there at least one teacher or other adult in your school that really cared about you?), and (4) home/online learning environment (e.g. when you were learning from home this past spring, how often were you able to access your schoolwork that was online?).

Survey results showed that although students generally rated their learning environments relatively highly and consistently across grades, they gave relatively lower ratings for their personal and interpersonal well-being. Analyses uncovered different response patterns among student subgroups related to their well-being. Elementary students reported higher ratings on personal well-being than did students in middle and high school, and older students reported higher ratings on interpersonal well-being. Girls rated their interpersonal well-being significantly higher than boys, and boys rated their personal well-being significantly higher than girls. English learner students rated their interpersonal well-being consistently lower than non-

ELs. Students with disabilities also self-reported significantly lower interpersonal well-being than students without disabilities, particularly in middle and high school. When connecting students' well-being with academics, the study found that secondary school students' interpersonal well-being was correlated with academic achievement (Wang et. al, 2021).

Students Attending School Remotely Suffer Socially, Emotionally, and Academically. In February 2020, just weeks prior to school closures, researchers (Duckworth et al., 2021) administered the Character Lab Student Thriving Index — a survey assessing students' social, emotional, and academic experience — to over 6,500 high school students in a large and demographically diverse public school district in Florida as part of an ongoing research partnership. These data established a baseline of student social, emotional, and academic wellness. In October 2020, after families were offered the option of remote or in-person classes, the survey was administered again and researchers were able to compare the student wellness measures between students learning remotely and in-person. Though the students were not randomly assigned to a learning modality, researchers were able to control for baseline measures, demographics, and prior achievement.

Results showed that students learning in-person experienced significantly higher levels of well-being in each of three areas: socially (e.g., feeling like they fit in, having positive relationships with adults in their school community), emotionally (e.g., feeling good about life overall, feeling relaxed and happy versus feeling sad), and academically (e.g., finding classes interesting and believing they could succeed in their classes). Duckworth et al. refer to this difference in well-being between remote and in-person learners as a "thriving gap." Differences in well-being were comparable across gender, race/ethnicity, and socioeconomic status. Though the difference was significant between students in Grades 10-12, it did not achieve statistical significance among ninth graders.

In summary, the pandemic has generally had a negative effect on students' personal and interpersonal well-being, with different subgroups faring better than others. Notably, surveys of English learners and students with disabilities indicate that their well-being is significantly lower than non-English learners and students without disabilities, respectively. Also, learning online is associated with lower measures of social, emotional, and academic well-being than in-person learning.

The Impact of the Pandemic on School Systems

In addition to the impacts of the pandemic on students, it has also had profound impacts on school systems and the adults within those systems. Almost half of the public school teachers who voluntarily stopped teaching after March 2020 and before their scheduled retirement left because of the COVID-19 pandemic. For many of these teachers, the pandemic had exacerbated what were already high stress levels pre-pandemic by forcing them to, among other things, work more hours and navigate an unfamiliar remote environment. Stress was the most common reason for leaving public school teaching early—almost twice as common as insufficient pay (Diliberti et al., 2021). Similar concerns about burnout and turnover are

emerging for principals and district administrators as well (DeMatthews et al., 2021). Successfully navigating school through and out of the pandemic will rely on the capacities and expertise of educators and leaders, thus workforce attrition is a critical concern for long-term recovery.

During the pandemic, school systems have become flash points for prevailing racial tensions (e.g., critical race theory). Aggression from local residents, clashes with school boards, and community backlash to diversity, equity, and inclusion efforts are taking their toll on already exhausted school leaders (Kingkade, 2021). Expectations regarding masking and vaccinations are intense and ongoing points of polarization within school communities (Shivaram, 2021; Klapper, 2021).

School districts have experienced declining student enrollment over the course of the pandemic. Total K-12 enrollment dropped by roughly 3 percent in 2020-21 compared with the previous school year, with a more severe drop among younger students: the combined number of preschool and kindergarten students decreased by 13 percent last year (Mahnken, 2021). Districts that offered only distance instruction had significantly larger enrollment declines than those that offered in-person instruction (Dee et al., 2021). Rates of homeschooling also saw a sharp increase during the pandemic (Eggleston and Fields, 2021). Many parents of younger children opted out of schooling altogether. The sharpest drops in enrollment were seen in kindergarten, in which fall enrollments declined by 9.4 percent between 2019 and 2020, with the steepest kindergarten losses in the poorest neighborhoods (Goldstein & Parlapiano, 2021). Drops in enrollment have implications for the scope of support that students will need to make up for lost learning opportunities if and when they return to school. The enrollment drops also have broader implications for the sustainability of resources and public appetite for investment in public schooling.

Research-based Paths Forward to Center Student Learning and Well-being

Educators and school leaders may feel daunted by the dual challenges of addressing learning and social-emotional needs during an ongoing pandemic. When faced with data on declines in learning rates and widening achievement gaps, school leaders may feel a sense of urgency to address these concerns with a vigilant focus on increasing test scores. In what follows, we present an alternative vision, one that builds from the science of learning and development, for how school can be reimagined to address whole child needs of students—not only their academic needs but also their needs for relationships, wellness, and engagement in learning that is meaningful to them. This set of approaches was developed in partnership with over forty education, community, and research organizations across California (Rebuild and Reimagine, 2021). Taken together, these practices represent a consensus vision for how to support student learning and wellbeing amid COVID-19 and beyond, and they provide the foundation for our research recommendations, to follow.

Center relationships among families, students, and educators. Prioritizing building and nurturing relationships of mutual support and high expectations among students, families, and educators will be the foundation upon which recovery can be built. Stable, positive, and supportive relationships help students overcome adverse experiences and are essential precursors for cognitive development and learning (Cantor et al., 2019). Actions that educators can take to foster stronger school-based relationships include the following.

Proactively connect one-on-one with each and every family. Decades of research have established that family–school partnerships are essential to student learning and school improvement (Henderson & Mapp, 2002; Bryk & Schneider, 2002). An essential first step towards building strong connections between schools and families is to connect proactively with each family. Specifically, teachers and school leaders should be provided time and support to reestablish individual, personalized connections with students and their families so that they feel known and valued as well as have access to trusted school-based resources for guidance.

Create dedicated time and space for relationship building and reengagement. Belonging is a basic human need (Baumeister & Leary, 1995) that is particularly salient after extended periods of isolation and distancing. During the pandemic, fewer than half of students reported feeling like they belonged in their school community (YouthTruth, 2021). Schools can support relationship building and reengagement by ensuring each student has a connection with a supportive adult and providing time to strengthen school-based relationships, through advisories or mentorship programs (DiMartino & Clarke, 2008). Regularly monitoring student engagement and conditions for learning within the classroom can provide feedback and data to continuously improve students' belonging and engagement in class (Gripshover & Paunesku, 2019). And although some may question the use of instructional time for activities like recess, arts, field trips, and outdoor education, these opportunities, when implemented well, contribute to student wellness, critical thinking, engagement, belonging, and, ultimately, learning (London, 2021; Ardoin & Bowers, 2020; Falk & Dierking, 2010; Bowen & Kisida, 2019).

Implement positive and restorative discipline practices. When students return to school, rules and norms for behavior will need to be reestablished after extended periods of distance learning and physical distancing. Schools should thus dedicate time and space at the beginning of the year for reviewing behavioral expectations (Marsh et al., 2018), and also analyzing and understanding patterns in disciplinary data (Osher et al., 2015). Shifts from zero tolerance policies to restorative approaches (Sandwick et al., 2019) have been shown to promote a safe and equitable school culture and result in marked drops in suspensions (Washburn & Willis, 2018). Research also suggests that schools would benefit from reconsidering visible security measures and the school resource officer role (Tanner-Smith & Fisher, 2016).

Understand whole child needs. Schools and districts must be prepared to anticipate students' mental and emotional health, physical health, and social systems of support and to treat these as fundamental to learning. To do so, schools should have in place comprehensive systems for screening and monitoring student well-being and learning needs. The following are

actions that educators can take to ensure systems are in place to assess and understand whole child needs.

Conduct regular student wellness screenings. Schools will need to be prepared to identify and address social, emotional, and behavioral issues affecting students. Administering universal screenings and analyzing the resulting data will help schools to connect identified students to support teams and appropriate providers as well as adhere to tiered intervention and follow-up protocols (SAMHSA, 2019).

Assess student learning and review data on attendance, engagement, and grades. Teachers will need information on what students know and don't know to guide their instructional planning. School leaders will similarly require information on student learning needs to guide school-level program development and intervention planning. Relying strictly on teacher-designed formative assessments would be burdensome for teachers, introduce variability in assessment quality, and limit school and district understanding about real-time student learning progress. Districts currently not using a formative assessment platform provider (Munyan-Penney & Barone, 2020) could benefit from starting the year with a system in place to quickly gather low-stakes data to inform classroom- and school-level decision-making (Hough et al., 2018). Investing in assessment literacy and data analysis capacity will be critical to identify and address the individual needs of students at the classroom, school, and district levels.

Create an individualized action plan to meet the whole child needs of every student. Each student has had a unique experience during the pandemic and data should be used to inform the instruction and interventions they receive. Multi-Tiered System of Supports (MTSS) is a systematic approach that schools can apply to ensure that instruction and intervention are matched to students' academic, behavioral, and social-emotional needs (Koppich, 2020). Another personalized action plan is the Individualized learning plan (ILP), which is both a document and a process that students use—with support from school counselors, teachers, parents, and guardians—to define their career goals and postsecondary plans in order to inform their decisions about their courses and activities throughout high school (Office of Disability Employment Policy, n.d.). Whether using MTSS or ILPs, research recommends starting with an asset-based mindset when developing learning plans for students

Strengthen staffing and deepen community-based partnerships to address students' individualized learning and mental health needs. Policy and practice in K–12 schools are guided primarily by a two-component framework: (a) instruction and (b) management. Other school personnel serve to support one or both of these components. Because of the myriad challenges to student learning and engagement associated with the pandemic, an enhanced framework is necessary to ensure that efforts to address these challenges are explicitly and purposefully pursued as a primary and essential component of schooling. In the current context, the third component—*learning supports*—is necessary to address factors that affect learning, development, and teaching as well as to reengage students in classroom instruction

(Adelman & Taylor, 2020). The following are approaches to staffing and implementing learning supports offered in schools.

Pair students with high-dosage tutoring. High-dosage tutoring programs pair students individually with the same adult two or more times per week to receive individualized instruction as part of the regular school day. In effective high-dosage tutoring models, students and their tutors build strong relationships and meet more than once per week. These programs have been shown to reduce learning gaps, helping students to make up more than a year's worth of material (Nickow et al., 2020). Tutors can work with more than one student but with no more than three students at a time. A clear vetting process for tutors is established and they receive training and ongoing support.

Provide mental health supports. Identifying, tracking, and referring students with mental and behavioral health concerns involves multiple steps and processes, but the ultimate goal is to ensure that the right services are matched to needs. To do so, schools should establish and implement the following four steps: (1) establish a multidisciplinary, school-based structure, team, and process for organizing a comprehensive, integrated continuum of support and opportunities to support student learning, promote student wellness, and address barriers to learning; (2) develop a centralized, schoolwide referral system for students, teachers, and families to connect to appropriate resources; (3) map the resources available to support mental health and development, using the full scope of resources available in the school and community; and (4) prepare to review the effectiveness of interventions and supports collaboratively and systematically (SAMHSA, 2015, https://www.samhsa.gov/sites/default/files/ready_set_go_review_mh_screening_in_schools_508.pdf).

Offer expanded learning opportunities. To meet students' social and emotional needs while advancing their learning towards grade-level standards, it is critical to invest strategically in expanded learning opportunities and partners. Regular participation in expanded learning programming is associated with improved social-emotional and academic outcomes (Vandell, 2013), often with greater effects for low-income youth and youth of color (Mahoney et al., 2005). Another benefit is that parents and guardians value these programs, with 83 percent of parents of children in afterschool programs agreeing that they help working parents keep their jobs (Afterschool Alliance, 2014). When it comes to collaboration among schools, districts, and expanded learning partners, three primary principles emerge as critical drivers for effective partnerships in a restorative restart: (1) collaboratively plan and implement integrated services; (2) provide integrated supports that reflect the science of learning and development; and (3) prioritize equity (Vance et al., 2021).

Staff up to support student reengagement. Community school strategies have emerged as a promising approach to mitigate the social and learning impacts of COVID-19. Community schools have been described as "a place-based strategy in which schools partner with community agencies and allocate resources to provide an integrated focus on academics, health and social services, youth and community development, and community engagement"

(Maier et al., 2018, p. 17). The core staffing role, sometimes called a "community school coordinator" or "resource manager," is a dedicated, site-based administrator whose focus is to provide a consistent organizational "backbone" to cross-sector partnerships and programs. Serving as "chief of staff," this person's role is to work with site leaders to leverage the assets of community and civic partners as well as to ensure that they are responsive to the specific needs of school communities.

Prioritize Racial Equity, Relevance, and Rigor in Curriculum and Instruction. Increased attention to police violence and anti-Black racism as well as the rise in anti-Asian hate crimes during the pandemic underscore the urgency for districts and schools to explicitly address racial equity as part of teaching and learning (Jeung et al., 2021; Quirk, 2020). It is critical for attention and resources to be directed towards providing high-quality instruction that prioritizes racial equity and is relevant and rigorous for all students.

Advance racial equity in curriculum and teaching. A first step towards advancing racial equity in instruction is for educators to reflect personally on bias and the historical foundations of race and racism as well as about their impact on the lives of students and in society. This is essential in large part because teachers' belief in their students' academic capabilities is known to be vital for student success (Hallinan, 2008; Jussim & Harber, 2005); however, research has found that teachers tend to underestimate the academic abilities of students of color compared to their White peers, even after controlling for prior test scores and homework completion. These underestimations of student ability have been shown to harm students' self-conception and lead to poorer academic outcomes (Cherng, 2017).

Culturally responsive teaching offers a method for addressing these concerns. It is defined as "using the cultural knowledge, prior experiences, frames of reference, and performance styles of ethnically diverse students to make learning encounters more relevant to and effective for them" (Gay, 2010, p. 31). Culturally responsive approaches scaffold learning by helping connect instruction to students' individual experiences and cultural resources. Leveraging prior knowledge, experience, and interests, teachers can reduce the cognitive load and mental effort of navigating cultural differences, creating space for new learning (Darling-Hammond et al., 2020).

Offer students choice and voice in their learning. Students who have lost their engagement in learning need to have their interests recharged, and to feel they have choices and a voice in the learning process (Benner et al., 2019). Universal Design for Learning (UDL) is a framework that can enhance student choice and voice in the classroom. It offers educators a guide to making instruction work for all learners through engagement, accessibility, and choice of expression. Problem- or project-based work also fosters student choice and voice by enabling students to pursue expertise in areas of personal interest (Barron et al., 1998).

Support teachers to achieve racial equity, relevance, and rigor in curriculum and instruction. Schools and districts will need to provide robust professional learning and collaboration opportunities to support instructional practice that is equitable, relevant, and

rigorous. A review of studies of professional development over three decades found that effective professional development incorporates most of the following elements: (a) it is content focused; (b) it incorporates active learning; (c) it supports collaboration; (d) it uses models of effective practice; (e) it provides coaching and expert support; (f) it offers feedback and reflection; and (g) it is of sustained duration (Darling-Hammond, et al., 2017).

Focus on priority standards and lessons to accelerate learning. Students will be entering the 2021–22 school year having covered less of the previous year's content than they typically would have. Districts can support teachers by reviewing student data and each grade level's scope and sequence from the previous year and identifying priorities to guide instructional planning for the upcoming year or by providing support for schools to do this work. This prioritization will be the first step in ensuring that teachers are prepared to help all students attain the prerequisite knowledge and skills required for learning current grade-level content. Identifying instructional priorities to scaffold teacher planning can be done in a collaborative process that focuses on prioritization, not elimination of standards (Ainsworth, 2013; Reeves, 2001). High-quality instruction with an emphasis on grade-level content with differentiated support benefits all students, especially those furthest behind and should be prioritized over remediation approaches (TNTP, 2020).

Lay the groundwork for systemic transformation. Schools and districts will need to put systems and interventions in place to promote learning recovery and acceleration, as well as student whole-child needs. In addition, schools and districts should also engage diverse teams to monitor improvement and build towards long-term change. Special attention must be paid to diverse stakeholder engagement, elevating student and family voices, and fostering labor-management collaboration. More than ever before, schools and districts will need to be adaptive, resilient, and innovative to meet the needs of students during the restorative restart to school. Close monitoring of data (e.g., formative assessments, attendance, and assignment completion) and swift, responsive adaptation can help schools continuously improve (Grunow et al., 2018).

Impacts on the community college sector

The pandemic's impact on the higher education sector has been similarly acute to that seen in K-12 schools. According to the National Student Clearinghouse (2021), higher education enrollment fell to new lows this spring. Overall spring enrollment fell to 16.9 million from 17.5 million, marking a one-year decline of 3.5 percent or 603,000 students, seven times worse than the decline a year earlier. Community colleges and private for-profit four-year institutions felt the most impact. Enrollment disruptions or delays in college participation were disproportionately felt by low-income students. These disruptions or delays in postsecondary schooling reduce the likelihood of degree completion and diminish lifetime earnings.

In California, community college enrollment dropped precipitously in fall 2020 – the total number of enrolled students fell by 12 percent in fall 2020, relative to the prior year (California Community Colleges Chancellor's Office, 2021). All racial and ethnic groups experienced large enrollment decreases, but Black, Native American, and Latinx students experienced the largest. Male students, older students, and new students experienced disproportionately large declines. Enrollment fell the most for first-year students in the community college system, in basic skills courses, and in fields such as engineering/industrial technology, education, interdisciplinary studies, and art. Enrollment declines were smaller for continuing students, in academic courses transferable to four-year institutions, and in business and science fields (Bulman & Fairlie, 2021). Enrollment losses were felt throughout the entire community college system, with larger declines in some regions across the state (Burke & Willis, 2021)

Surveys of post-secondary students underscore the personal disruption and difficulty that community college students have experienced during the pandemic (Office of Civil Rights, 2021). Fifty-six percent of enrolled community college students surveyed reported that they reduced their course loads as a result of COVID-19 (Reed et al., 2021). Furthermore, prospective students decided against enrolling in community college. In October 2020, of surveyed households nationwide who reported "plans for community college" for at least one member of their household, more than 40 percent reported that the prospective student is cancelling all plans for community college; another 15 percent are either taking fewer classes or switching programs. Community college students are cancelling their plans for higher education at more than twice the rate of four-year college students. Reasons for changes to community college plans included: changes to the format and content of college classes, concern about the virus, and affordability. Low-income prospective community college students were approximately three times more likely than high-income prospective students to cancel all community college plans (Belfield & Brock, 2020).

A closer look at the reported well-being of community college students in the Los Angeles Community College District (LACCD), the largest community college district in the United States, paints a picture of the extent of the personal impact of the pandemic on the lives of community college students. In the Hope Center's survey of students from LACCD (2021), 64 percent reported experiencing basic needs insecurity (i.e. food or housing). Six percent of community college students reported having been sick with COVID-19 themselves, 40 percent had a close friend or family member who was sick with COVID-19, and 18 percent lost a loved one to COVID-19. Over a third of students reported experiencing at least moderate anxiety.

These early findings of the effects of the pandemic at community colleges, which serve high percentages of lower-income and minority students, have implications for policy, impending budgetary pressures, and future research. Community colleges can and should play an essential role during the crisis and recovery because they (1) train the workforce that is vital for treating the sick and keeping the nation safe, (2) offer an open access and affordable first step for students seeking bachelor's degrees, (3) have deep roots in their local communities,

and (4) have a track record of adapting to changing circumstances and priorities (JFF, 2020). In this time of crisis, it will be critical for the federal government to increase funding to community colleges to help the nation recover from the COVID-19 pandemic, and to ensure that the many students whose college degree goals were disrupted or derailed are able to get back on track. And, beyond adequate funding, it will be imperative to look for new models of recovery in communities and community colleges that rebuild toward equity and resilience (for example, see *Thriving Together: A Springboard for Equitable Recovery and Resilience in Communities Across America*).

Research Agenda for Learning Recovery and Equity in the Longer Term

Education policy and practice is at an inflection point, with an opportunity to learn from what has transpired since the onset of the pandemic and to use that knowledge to inform decisions about how to navigate through the next critical phase. This moment also offers the potential for reimagining and rebuilding public schools for the long-term in order to meet the learning needs of students using approaches consistent with the science of learning and development. What are the research knowledge gaps that, if addressed, could support schools and communities as they recover from losses related to COVID-19? Below we describe four areas of research that inform learning recovery in the short-term, and improved system performance and equity in the longer term:

1. What happened? What can we learn from how school systems responded in the first year-and-a-half of the pandemic (spring 2020-summer 2021)?

- How have teachers and administrators been affected by the pandemic (mental health, morale, turnover). In what ways were prior workforce issues exacerbated? What new workforce concerns have arisen?
- What has been learned about the uses of technology, especially online instruction? Which groups did it work for or not? What specific content areas and skills were particularly challenging to teach and learn at a distance? Were there any that seemed well suited to remote learning? What innovations should be kept and used to improve instruction in the future?
- What do close analyses of the experiences and outcomes of English learners, students with disabilities, Black students, and low income, homeless, foster youth, and LGBTQ+ students experiences and outcomes show? These students were not only more likely to be affected by the pandemic but also more likely to have remained online in the spring.
- What unique factors characterize pandemic response and recovery in rural school systems that have lower rates of both vaccination and internet connectivity?

2. What is happening? How can we monitor and learn from what will happen in the 2021-22 school year?

- How is the infusion of federal and state one-time monies being implemented and what is the impact? In particular, what is being done to support mental health/SEL as well as academic learning, and what are the quality and impact of those efforts? What evidence-based interventions are being used and how have they been selected? How will these efforts be sustained?
- How can schools best identify students in need of mental health support, i.e., those with adverse childhood experiences and chronic stress?
- Which personalized learning strategies are most effective at accelerating learning?
- To what extent is the MTSS model being implemented, and what are the infrastructure, resources, and culture necessary for this approach to result in improvements for students?
- What is the ongoing role of technology in classrooms as part of instruction and learning-recovery interventions?
- How are schools/systems addressing issues of racial injustice as well as methods for teaching about this subject matter?
- How can schools prepare for the anticipated surge of kindergarteners who were kept home last year, and for incoming kindergarteners who did not attend preschool during the pandemic?
- Which schools are continuing to offer online instruction or prohibiting it, and why? Which students are enrolling? What are the equity implications and potential for newly segregated schooling? What is the quality of instruction, and where are there opportunities for support (e.g., counseling, extracurricular)? How are teachers supported and prepared to teach online? Which students thrive and which don't thrive in virtual school, and why – what could be learned about the conditions that enable those to thrive and could that knowledge inform in-person schooling?
- What are the current patterns in student enrollment? Are families sending their students to public schools, if so why, and what are the system implications?
- Once standardized testing resumes, what patterns will we see in learning recovery and acceleration?

3. How can capacity be built for long-term improvement? What can we learn about building institutional capacity so that school systems can not only address recovery but also reliably and equitably serve whole-child needs?

- What organizational capacities are necessary for organizations to transform to meet student needs? How can systems develop their capacity for improvement and impact?
- How can the K–12 education system be better aligned with higher education systems and the labor market to ensure successful transitions for young adults between high school and postsecondary pursuits? How can financial aid be made more transparent and accessible?
- What mechanisms can be put in place to hold school systems accountable for providing opportunities to learn as opposed to just the outcomes?
- What resources, systems, and policies are necessary to professionalize teaching and build a robust and diverse pipeline of teachers in the current context and into the future?

- How can school systems improve their data infrastructure for more efficient data collection and improved use? What can be done to integrate student data sets within institutions, and then between institutions/sectors?
- How do systems continue to navigate the politics of COVID while addressing the interest-based pressures pulling school boards/local leaders in vastly different directions? How do we enhance engagement while advancing the public good (e.g. how to avoid the "loudest voices" phenomenon)?
- How can school district personnel develop working knowledge of cost-benefit analysis and which processes and structures support its use in decision-making?
- How can we ensure equitable distribution of funds in the long-term and what are effective ways to increase public willingness to invest in education?
- What is the appropriate/effective role of the state in public education?
- What knowledge and skills do teachers require in order to be able to implement competency-based approaches to teaching and learning?

4. What research methods will provide the knowledge we need in the short- and long-term? What research methods are best equipped to help us understand student needs and how best to meet them?

- How can we elevate the rigor and impact of student-centered research that captures the nuances of student experiences, intersectional identities, and their motivations to learn?
- How can researchers better engage those who are closest to the students (i.e., families) to inform how to best serve them?
- IES has historically invested in quantitative, quasi-experimental and experimental research. But what is needed now is an understanding of the processes, structures, and conditions associated with efforts to support recovery (which could complement the IES School Pulse Panel). This will require an investment in qualitative and mixed-methods research and training opportunities.
- What are models for increasing interdisciplinary and interagency (e.g., education, transportation, housing, labor, etc.) research that can be applied in education to increase interdisciplinary research on schools? Despite decades of efforts to bridge research and practice, the divide is still wide. What have we learned about effective research-practice partnerships?
- What data infrastructure is needed to produce research that will support interdisciplinary and interagency efforts that centers on racial equity? How can this research include data on families, communities, out-of-school experiences, work histories, etc.?

Conclusion

Returning to school "as normal" will not be sufficient to meet student needs or to close long-standing equity gaps that have only been exacerbated during the extended school closures

and pandemic-disrupted schooling. During past periods in which schools faced increased scrutiny and urgency to raise student achievement, they have fallen into a myopic focus on elevating test scores, particularly for those students with the lowest scores. Concern about student learning levels and equity led to the 2004 No Child Left Behind, which caused many school districts to increase reading and math instruction at the expense of other components of the curriculum, best-practice instructional approaches, and teachers' relationship development with students (Berliner, 2011; Crocco & Costigan, 2007; Henley et al. 2007). While this policy approach has increased understanding of between-group differences in achievement, research has shown that it has failed to increase learning meaningfully or to close achievement gaps (Braun et al., 2010; Chudowsky et al., 2009).

In the wake of COVID-19, the achievement alarm is sounding again, with many concerned about learning loss and the disproportionate impacts of the pandemic on students by race and income. This time, however, rather than focusing on test prep and further narrowing the curriculum, the focus should be on a whole-child response that expands learning to support wellness, connection, and engagement. All students should return to school with a restorative restart, one that will lay the groundwork for reimagining and rebuilding public education over the long term. A research agenda aligned with this vision will be critical for advancing it into the future.

References

Afterschool Alliance. (2014). *America after 3PM: Afterschool programs in demand*. http://www.afterschoolalliance.org/documents/ aa3pm-2014/aa3pm_national_report.pdf

Aguilar, S. J., Galperin, H., Baek, C., & Gonzalez, E. (2020, October 14). When school comes home: How low-income families are adapting to distance learning. https://doi.org/10.35542/osf.io/su8wk

Ainsworth, L. (2013). *Prioritizing the Common Core: Identifying specific standards to emphasize the most*. Lead + Learn Press.

Alexander, K. L., Entwisle, D. R., & Olson, L. S. (2007). Lasting consequences of the summer learning gap. *American Sociological Review*, 72(2), 167-180. https://doi.org/10.1177/000312240707200202

Ali, T., Chandra, S., Cherukumilli, S., Fazlullah, A., Hill, H., McAlpine, N., McBride, L., Vaduganathan, N., Weiss, D., Wu, M. (2021). Looking back, looking forward: What it will take to permanently close the K–12 digital divide. San Francisco, CA: Common Sense Media. https://www.southerneducation.org/wp-content/uploads/2021/01/Looking-Back-Looking-Forward-Report-01272021.pdf

Ardoin, N. M., & Bowers, A. W. (2020, December 9). *Environmental education and nature-rich experiences: Essential for youth and community well-being during the COVID-19 pandemic and beyond*. Policy Analysis for California Education. https://edpolicyinca.org/newsroom/environmental-education-and-nature-rich-experiences

Barron, B. J. S., Schwartz, D. L., Vye, N. J., Moore, A., Petrosino, A., Zech, L., & Bransford, J. D. (1998). Doing with understanding: Lessons from research on problem- and project-based learning. *Journal of the Learning Sciences*, *7*(3–4), 271–311. https://doi.org/10.1080/10508406.1998.9672056

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*(3), 497–529. https://doi.org/10.1037/0033-2909.117.3.497

Belfield, C. & Brock, T. (2021). Behind the Enrollment Numbers: How COVID Has Changed Students' Plans for Community College. Community College Research Center. https://ccrc.tc.columbia.edu/easyblog/covid-enrollment-community-college-plans.html

Benner, M., Brown, C., & Jeffrey, A. (2019, August 14). *Elevating student voice in education*. Center for American Progress. https://www.americanprogress.org/issues/education-K–12/reports/2019/08/14/473197/elevating-student-voice-education

Berliner, D. (2011). Rational responses to high stakes testing: The case of curriculum narrowing and the harm that follows. *Cambridge Journal of Education*, *41*(3), 287–302. https://doi.org/10.1080/0305764X.2011.607151

Bowen, D. H., & Kisida, B. (2019). Investigating causal effects of arts education experiences: Experimental evidence from Houston's Arts Access Initiative. In *Houston Education Research Consortium* (Research Report for the Houston Independent School District, Vol. 7, Iss. 4). Kinder Institute for Urban Research, Rice University. https://kinder.rice.edu/research/investigating-causal- effects-arts-education-experiences-experimental-evidence-houstons-arts

Bryk, A. S., & Schneider, B. (2002). *Trust in schools*. Russell Sage Foundation.

Bulman, G. & Fairlie, R. (2021). The Impact of COVID-19 on Community College Enrollment and Student Success: Evidence from California Administrative Data [Working Paper]. National Bureau of Economic Research. https://doi.org/10.3386/w28715

Burbio *(n.d.). K-12 school opening tracker*. https://cai.burbio.com/school-opening-tracker/

Burke, M. & Willis, D. (2021, April 12). California's community colleges at critical crossroads as more students opt not to attend. *EdSource*. https://edsource.org/2021/californias-community-colleges-at-critical-crossroads-as-more-students-opt-not-to-attend/652637

Braun, H., Chapman, L., & Vezzu, S. (2010). The Black-White achievement gap revisited. *Education Policy Analysis Archives*, *18*, 21. https://doi.org/10.14507/epaa.v18n21.2010

Burbio School and Community Events Data Platform. (2021, March 22). *K–12 school reopening trends*. Burbio. https://info.burbio.com/ school-tracker-update-mar-22

California Community Colleges Chancellor's Office (2021, March 22). Agenda Item Details. https://go.boarddocs.com/ca/cccchan/Board.nsf/goto?open&id=BYS2LK02B713

Cantor, P., Osher, D., Berg, J., Steyer, L., & Rose, T. (2019). Malleability, plasticity, and individuality: How children learn and develop in context. Applied Developmental Science, 23(4), 307–337. https://doi.org/10.1080/ 10888691.2017.1398649

Cherng, H.-Y. S. (2017). If they think I can: Teacher bias and youth of color expectations and achievement. *Social Science Research*, *66*, 170–186. https://doi.org/10.1016/j.ssresearch.2017.04.001

Chudowsky, N., Chudowsky, V., & Kober, N. (2009, October). *Are achievement gaps closing and is achievement rising for all?* (ED507909). Center on Education Policy. https://files.eric.ed.gov/fulltext/ED507909.pdf

Cooper, H., Nye, B., Charlton, K., Lindsay, J., & Greathouse, S. (1996). The effects of summer vacation on achievement test scores: A narrative and meta-analytic review. *Review of educational research*, *66*(3), 227-268.doi.org/10.3102/00346543066003227

Crocco, M. S., & Costigan, A. T. (2007). The narrowing of curriculum and pedagogy in the age of accountability: Urban educators speak out. *Urban Education*, *42*(6), 512–535. https://doi.org/10.1177/0042085907304964

C. S. Mott Children's Hospital National Poll on Children's Health. (2021, March 15). How the pandemic has impacted teen mental health (Mott Poll Report). C. S. Mott Children's Hospital, Michigan Medicine. https://mottpoll.org/sites/default/files/documents/031521_MentalHealth.pdf

Curriculum Associates. (2021). What we've learned about unfinished learning. https://www.curriculumassociates.com/-/media/ mainsite/files/i-ready/iready-understanding-student-needs-paper-winter-results-2021.pdf

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017, June 5). *Effective teacher professional development*. Learning Policy Institute. https://learningpolicyinstitute.org/product/effective-teacher-professional-development-report

Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, *24*(2), 97–140. https://doi.org/10.1080/10888691.2018.1537791

Dee, T., Huffaker, El, Philips, C., & Sagara, E. (2021). The Revealed Preferences for School Reopening: Evidence from Public-School Disenrollment. Stanford CEPA. https://cepa.stanford.edu/content/revealed-preferences-school-reopening-evidence-public-school-disenrollment

DeMatthews, D., Carrola, P., Reyes, P. & Knight, D. (2021). School Leadership Burnout and Job-Related Stress: Recommendations for District Administrators and Principals, The Clearing House: A Journal of Educational Strategies, Issues and Ideas, 94:4, 159-167, DOI: 10.1080/00098655.2021.1894083

Diliberti, M., Schwartz, H., & Grant, D. (2021). Stress Topped the Reasons Why Public School Teachers Quit, Even Before COVID-19. Santa Monica, CA: RAND Corporation. https://www.rand.org/pubs/research_reports/RRA1121-2.html.

DiMartino, J., & Clarke, J. H. (2008). The heart of school. *Principal Leadership*, *9*(3), 16–19. https://eric.ed.gov/?id=EJ829634

Domingue, B. W., Hough, H. J., Lang, D., & Yeatman, J. D. (2021, March). *Changing patterns of growth in oral reading fluency during the COVID-19 pandemic* [Policy Brief, Working Paper]. Policy Analysis for California Education. https://edpolicyinca.org/ publications/changing-patterns-growth-oral-reading-fluency-during-covid-19-pandemic

Dorn, E., Hancock, B., Sarakatsannis, J., & Viruleg, E. (2020, December). *COVID-19 and learning loss—Disparities grow and students need help*. McKinsey & Company. https://www.mckinsey.com/industries/public-and-social-sector/our-insights/covid-19-and- learning-loss-disparities-grow-and-students-need-help#

Duckworth, A., Kautz, T., Defnet, A., Satlof-Bedrick, E., Talamas, S. N., Luttges, B. L., & Steinberg, L. (2021). Students Attending School Remotely Suffer Socially, Emotionally, and Academically. *Educational Researcher.* https://doi.org/10.3102/0013189X211031551

Education Analytics (2021). Learning Change Models: Fall-to-fall and Fall-to-winter Results from South Carolina and California. Education Analytics. https://www.edanalytics.org/resources/learning-change-models-fall-to-fall-and-fall-to-winter-results-from-south-carolina-and-california

Eggleston, C., & Fields, J. (2021, March 22). Homeschooling on the rise during COVID-19 pandemic. United States Census Bureau. https://www.census.gov/library/stories/2021/03/homeschooling-on-the-rise-during-covid-19-pandemic.html

Falk, J. H., & Dierking, L. D. (1997). School field trips: Assessing their long-term impact. *Curator: The Museum Jo urnal*, *40*(3), 211–218. https://doi.org/10.1111/j.2151-6952.1997.tb01304.x

Fortuna, L. R., Tolou-Shams, M., Robles-Ramamurthy, B., & Porche, M. V. (2020). Inequity and the disproportionate impact of COVID-19 on communities of color in the United States: The need for a trauma-informed social justice response. *Psychological Trauma: Theory, Research, Practice, and Policy*, *12*(5), 443-445. https://doi.org/10.1037/tra0000889

Garbe, A., Ogurlu, U., Logan, N., & Cook, P. (2020). COVID-19 and Remote Learning: Experiences of Parents with Children during the Pandemic. American Journal of Qualitative Research, 4(3), 45-65. https://doi.org/10.29333/ajqr/8471

Gay, G. (2010). Teachers college record: Culturally responsive teaching: Theory, *research, and practice* (2nd ed.). Teachers College Press.

Goldstein, D. & Parlapiano, A. (2021). The kindergarten exodus. *The New York Times.* https://www.nytimes.com/2021/08/07/us/covid-kindergarten-enrollment.html

Gripshover, S., & Paunesku, D. (2019). *How can schools support academic success while fostering healthy social and emotional development?* Project for Education Research That Scales, Stanford University. https://perts.net/static/documents/Conditions_for_Learning-January_2020.pdf

Grunow, A., Hough, H., Park, S., Willis, J., & Krausen, K. (2018). *Towards a common vision of continuous improvement for California* (Getting Down to Facts II Technical Report). Policy Analysis for California Education. https://gettingdowntofacts.com/publications/towards-common-vision-continuous-improvement-california

Hallinan, M. T. (2008). Teacher influences on students' attachment to school. *Sociology of Education*, *81*(3), 271–283. https://doi.org/10.1177/003804070808100303

Hamilton, L., Gross, B., Adams, D., Bradshaw, C., Cantor, P., Gurwitch, R., Jagers, R., Murry, V., Wong, M. (2021). How Has the Pandemic Affected Students' Social- Emotional Well-Being? A Review of the Evidence to Date. CRPE. https://www.crpe.org/sites/default/files/sel_report_2021_final_8_10.pdf

Hernandez, D. J. (2011). Double jeopardy: How third-grade reading skills and poverty influence high school graduation. *Annie E. Casey Foundation*. https://files.eric.ed.gov/fulltext/ED518818.pdf

Henderson, A. T., & Mapp, K. L. (2002). *A new wave of evidence: The impact of school, family, and community connections on student achievement: Annual synthesis 2002* (ED474521). National Center for Family & Community Connections With Schools. https://files.eric.ed.gov/fulltext/ED474521.pdf

Henley, J., McBride, J., Milligan, J., & Nichols, J. (2007). Robbing elementary students of their childhood: The perils of No Child Left Behind. *Education*, *128*(1), 56–63. https://eric.ed.gov/?id=EJ790163

Hope Center (2021). #RealCollege 2021: Basic Needs Insecurity Among Los Angeles Community College Students During the Ongoing Pandemic A #RealCollegeCalifornia Report. The Hope Center. https://hope4college.com/wp-content/uploads/2021/07/RC2020_LACCD_Final.pdf

Hough, H. J., Byun, E., & Mulfinger, L. S. (2018). *Using data for improvement: Learning from the CORE Data Collaborative* [Report]. Policy Analysis for California Education. https://edpolicyinca.org/publications/using-data-improvement

Hough, H., Marsh, J., Myung, J., Plank, D., & Polikoff, M. (2021, July). *Californians and K–12 education amid COVID-19 recovery: Views from the 2021 PACE/USC Rossier Poll* [Report]. Policy Analysis for California Education. https://www.edpolicyinca.org/publications/pace-and-usc-rossier-polls-2021

Jeung, R., Yellow Horse, A., Popovich, T., & Lim, R. (2021). *Stop AAPI Hate national report*. Stop AAPI Hate. https://secureservercdn.net/104.238.69.231/a1w.90d.myftpupload.com/wp-content/uploads/2021/03/210312-Stop-AAPI-Hate-National-Report-.pdf

JFF Policy Leadership Trust (2020). Five Reasons Why Community Colleges Are Key to Our COVID-19 Recovery. JFF. https://www.jff.org/what-we-do/impact-stories/policy-leadership-trust/five-reasons-why-community-colleges-are-key-our-covid-19-recovery/

Jussim, L., & Harber, K. D. (2005). Teacher expectations and self-fulfilling prophecies: Knowns and unknowns, resolved and unresolved controversies. *Personality and Social Psychology Review*, *9*(2), 131–155. https://doi.org/10.1207/s15327957pspr0902_3

Kingkade, T. (2021, July 12). Schools see brain drain of educators following anti-critical race theory protests. NBC News. https://www.nbcnews.com/news/us-news/critical-race-theory-battles-are-driving-frustrated-exhausted-educators-out-n1273595

Klapper, R. (August 30, 2021). School Districts Worried About Staff Shortages if Forced to Fire Unvaccinated Teachers. *Newsweek*. https://www.newsweek.com/school-districts-worried-about-staff-shortages-if-forced-fire-unvaccinated-teachers-1624275

Koppich, J. (2020, August). *Expanding Multi-Tiered System of Supports in California Lessons from Sanger Unified and the Pivot–Sanger Multi-Tiered System of Supports Project.* [Report]. Policy Analysis for California Education. https://www.edpolicyinca.org/publications/expanding-multi-tiered-system-supports-california

Kuhfeld, M., & Tarasawa, B. (2020). The COVID-19 slide: What summer learning loss can tell us about the potential impact of school closures on student academic achievement [Research brief]. NWEA. https://www.nwea.org/research/publication/thecovid-19-slide-what-summer-learning-loss-can-tell-us-about-the-potential-impact-of-school-closures-on-student-academicachievement

Kuhfeld, M., Tarasawa, B., Johnson, A., Ruzek, E., & Lewis, K. (2020). Learning during COVID-19: Initial findings on students' reading and math achievement and growthLearning during COVID-19: Initial findings on students' reading and math achievement and growth. https://www.nwea.org/content/uploads/2020/11/Collaborative-brief-Learning-during-COVID-19.NOV2020.pdf

Leeb, R. T., Bitsko, R. H., Radhakrishnan, L., Martinez, P., Njai, R., & Holland, K. M. (2020). Mental health–related emergency department visits among children aged <18 years during the COVID-19 pandemic—United States, January 1–October 17, 2020. *Morbidity and Mortality Weekly Report*, *69*. http://dx.doi.org/10.15585/mmwr.mm6945a3

London, R. A. (2021). *The importance of recess in California elementary school reopening* [Policy brief]. Policy Analysis for California Education. https://www.edpolicyinca.org/publications/importance-recess-california-elementary-school-reopening

Mahnken, K. (2021, June 28). New federal data confirms pandemic's blow to K-12 enrollment, with drop of 1.5 million students; Pre-K experiences 22 percent decline. The 74. https://www.the74million.org/article/public-school-enrollment-down-3-percent-worst-century/

Mahoney, J. L., Lord, H., & Carryl, E. (2005). An ecological analysis of after-school program participation and the development of academic performance and motivational attributes for disadvantaged children. *Child Development, 76*(4), 811–825. https://doi.org/10.1111/j.1467-8624.2005.00879.x

Maier, A., Daniel, J., Oakes, J., & Lam, L. (2018). Community schools: A promising foundation for progress. *American Educator,* 17–22. https://files.eric.ed.gov/fulltext/EJ1182081.pdf

Marsh, J., McKibben, S., Hough, H. J., Hall, M., Allbright, T. N., Matewos, A., & Siqueira, C. (2018, April). *Enacting social-emotional learning: Practices and supports employed in CORE districts and schools* [Practice brief]. Policy Analysis for California Education. https://edpolicyinca.org/publications/enacting-social-emotional-learning

Munyan-Penney, N., & Barone, C. (2020). *COVID-19 response: Diagnostic assessment*. Education Reform Now. https://edreformnow.org/blog/covid-19-response-diagnostic-assessment

National Student Clearinghouse Research Center (2021). Overview: Spring 2021 Enrollment Estimates. https://nscresearchcenter.org/wp-content/uploads/CTEE_Report_Spring_2021.pdf

New York Times (n.d.). Coronavirus in the U.S.: Latest Map and Case Count. Retrieved August 26, 2021. https://www.nytimes.com/interactive/2021/us/covid-cases.html

Nickow, A., Oreopoulos, P., & Quan, V. (2020). *The impressive effects of tutoring on PreK–12 learning: A systematic review and meta-analysis of the experimental evidence* (NBER Working Paper Series, No. w27476). National Bureau of Economic Research. https://doi.org/10.3386/w27476

Office for Civil Rights (2021). Eduction in a Pandemic: The Disparate Impacts of COVID-19 on America's Students. U.S. Department of Education. https://www2.ed.gov/about/offices/list/ocr/docs/20210608-impacts-of-covid19.pdf

Office of Disability Employment Policy (n.d.). Individualized learning plans across the U.S. U.S. Department of Labor. https://www.dol.gov/agencies/odep/program-areas/individuals/youth/individualized-learning-plan

Osher, D., Fisher, D., Amos, L., Katz, J., Dwyer, K., Duffey, T., & Colombi, G.D. (2015). Addressing the root causes of disparities in school discipline: An educator's action planning guide. Washington, DC: National Center on Safe Supportive Learning Environments. https://safesupportivelearning.ed.gov/sites/default/files/15-1547%20NCSSLE%20Root%20Causes%20Guide%20FINAL02%20mb.pdf

Oster, E., Jack, R., Halloran, C., Schoof, J., McLeod, D., Yang, H., Roche, J., & Roche, D. (2021). Disparities in learning mode access among K–12 students during the COVID-19 pandemic, by race/Ethnicity, geography, and grade level — United States, September 2020–April 2021. *MMWR. Morbidity and Mortality Weekly* Report, 70(26). https://doi.org/10.15585/mmwr.mm7026e2

Parolin, Z. & Lee, E.K. Large socio-economic, geographic and demographic disparities exist in exposure to school closures. *Nature Human Behavior*, 5, 522–528 (2021). https://doi.org/10.1038/s41562-021-01087-8

Pier, L., Christian, M., Tymeson, H., & Meyer, R. H. (2021 , June). C*OVID-19 impacts on student learning: Evidence from interim assessments in California* [Report]. Policy Analysis for California Education. https://edpolicyinca.org/publications/covid-19-impacts-student-learning

Polikoff, M., Saavedra, A., Korn, S. (2020). Not all kids have computers – and they're being left behind with schools closed by the coronavirus. https://theconversation.com/not-all-kids-have-computers-and-theyre-being-left-behind-with-schools-closed-by-the-coronavirus-137359

Quirk, A. (2020, July 28). *Mental health support for students of color during and after the coronavirus pandemic.* Center for American Progress. https://www.americanprogress.org/issues/education-K–12/news/2020/07/28/488044/mental-health-support-students-color-coronavirus-pandemic

Rebuild and Reimagine (2021). Reimagine and Rebuild California Schools Restarting School with Equity at the Center. https://reimaginecaschools.org

Reed, S., Friedmann, E., Kurlaender, M., Martorell, Rury, D., Moldoff, J., Fuller, R. & Perry, P. (2021). California College Students' Experiences during the Global Pandemic. California Student Aid Commission and California Education Lab. https://www.csac.ca.gov/sites/main/files/fileattachments/fall_2020_covid19_student_survey_results_presentation.pdf

Reeves, D. B. (2001). Standards make a difference: The influence of standards on classroom assessment. *NASSP Bulletin*, *85*(621), 5–12. https://doi.org/10.1177/019263650108562102

Sandwick, T., Hahn, J. W., & Ayoub, L. H. (2019). Fostering community, sharing power: Lessons for building restorative justice school cultures. *Education Policy* Analysis Archives, 27(145), Article 0. https://doi.org/10.14507/epaa.27.4296

Scafidi, B., Tutterow, R., & Kavanagh, D. (2021). This Time Really Is Different: The Effect of COVID-19 on Independent K-12 School Enrollments. *Journal of School Choice*, 1-26.

Shivraram, D. (2021, August 2021). The Topic Of Masks In Schools Is Polarizing Some Parents To The Point Of Violence. NPR. https://www.npr.org/sections/back-to-school-live-updates/2021/08/20/1028841279/mask-mandates-school-protests-teachers

Smart, T. (2021). State Economies Weathered Coronavirus Storm but Damage Lives On. U.S. News & World Report. https://www.usnews.com/news/best-states/articles/2021-03-09/state-economies-weathered-the-coronavirus-storm-but-the-damage-lives-on

Substance Abuse and Mental Health Services Administration [SAMHSA]. (2019). *Ready, set, go, review: Screening for behavioral health risk in schools*. https://www.samhsa.gov/sites/default/files/ready_set_go_review_mh_screening_in_schools_508.pdf

Tai, D. B. G., Shah, A., Doubeni, C. A., Sia, I. G., & Wieland, M. L. (2021). The disproportionate impact of COVID-19 on racial and ethnic minorities in the United States. Clinical Infectious Diseases, 72(4), 703-706.

Tanner-Smith, E. E., & Fisher, B. W. (2016). Visible school security measures and student academic performance, attendance, and postsecondary aspirations. *Journal of Youth and Adolescence*, *45*(1), 195–210. https://doi.org/10.1007/s10964-015-0265-5

TNTP. (2020). *COVID-19 school response toolkit—learning acceleration guide*. https://tntp.org/covid-19-school-response-toolkit/view/learning-acceleration-guide

Vandell, D. L. (2013). Afterschool program quality and student outcomes: Reflections on positive key findings on learning and development from recent research. In *The expanded learning & afterschool project: Expanding minds and opportunities* (Vol. 3, pp.

10–17). https://www.expandinglearning.org/expandingminds/article/afterschool-program-quality-and-student- outcomes-reflections-positive-key

Vance, F., Wolforth, S., & Kimner, H. (2021b). Expanded learning partnerships: A foundation for rebuilding to support the whole child [Policy brief]. Policy Analysis for California Education. https://edpolicyinca.org/publications/expanded-learning-partnerships

Wang, C., Pier, L., Meyer, R. H., & Webster, N. (2021, June). *Student well-being and learning conditions during the pandemic: Evidence from the CORE districts* [Report]. Policy Analysis for California Education. https://edpolicyinca.org/publications/student-well-being-and-learning-conditions-pandemic

Washburn, D., & Willis, D. J. (2018, May 13). The rise of restorative justice in California schools brings promise, controversy. *EdSource*. https://edsource.org/2018/the-rise-of-restorative-justice-in-california-schools-brings-promise-controversy/597393

West, M., Lake, R., Betts, J., Cohodes, S., Gill, B., Ho, A., Loeb, S., McRae, B., Schwartz, H., Soland, J., & Walker, M. (2021). How Much Have Students Missed Academically Because of the Pandemic? A Review of the Evidence to Date. CRPE. https://www.crpe.org/sites/default/files/8_5_final_academic_impacts_report_2021.pdf

YouthTruth. (2021). *Students weigh in, part II: Learning & well-being during COVID-19*. https://youthtruthsurvey.org/students-weigh- in-part2/