

**Factors Affecting Children's Learning During COVID-19**

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## **Abstract**

In spring 2020, an estimated 55.1 million children in the United States experienced school closures related to COVID-19 (Education Week, 2020). As a result of these closures, 93% of families reported their children's schools transitioned to virtual learning. (U.S. Census, 2021). Research has found significant gaps in students' learning because of these COVID-19 pandemic school closures. This chapter describes the educational areas most negatively impacted by the COVID-19 school closures as identified by families and schools. The negative impacts were especially significant for students of color, families from near or below the poverty line, and students with disabilities. As discussed below, students' learning during COVID-19 was most impacted by lack of internet/technology, quality of and frequency of engagement in instruction, and attendance at virtual learning sessions. The chapter concludes with recommendations for decreasing the learning gaps left in the wake of the COVID-19 school closures.

Children of all ages across the world have experienced significant learning difficulties in reading and mathematics during the COVID-19 pandemic (Azevedo et al., 2022; National Association of Educational Progress, 2022; Schult et al., 2022). These difficulties are greater for children from low-income families, from families of color, for those who do not speak English at home, and for those with special needs (Barnett & Jung, 2021; Reardon, 2022; Sonnenschein et al., 2022a, b; NWEA, 2022). In other words, the effects of the COVID-19 pandemic have disproportionately affected children already at significant risk for learning difficulties in school (Azevedo et al., 2022; Blaskó et al., 2022).

The children most at risk for learning difficulties during COVID-19 are more likely to already experience what have been called opportunity gaps for learning in the schools they attend (Carter & Weiner, 2013), and experience other challenges related to growing up in urban environments (Anyon, 2014; Oster et al., 2021; Payne, 2008). The impact of COVID-19 on children's educational progress remains somewhat unknown, however, because there is still limited research on the longer-term outcomes on children. Many of what appear to be negative issues for children (e.g., relatively limited access to technology) are really affects that were present prior to the pandemic but now have increased or are having a greater impact. In addition, children who learn virtually have been shown not to learn as much as children who attend in-person schools (Oster et al., 2022)

This chapter focuses on what families and schools identify as areas of concern and need during COVID-19 which could have resulted in children's learning losses. We begin with a brief overview of data documenting the learning difficulties children have experienced during COVID-19. We then turn to possible reasons for these learning difficulties. These include children's limited access to appropriate technology and internet, engagement in learning

activities, quantity and quality of the instruction, and attendance. We focus on children from preschool through high school age and note that most of the research has been conducted with children at the younger end of this age range. The final section of this chapter offers suggestions for improving the learning outcomes of all children, particularly those most at risk for difficulties. Much of the research on this topic comes from U.S. families and children but, as appropriate, we cite research from other countries, when available.

### **Background**

COVID-19 is a respiratory illness that has resulted in a global pandemic with a death toll of over 6 million to date (WHO COVID-19 Dashboard). Although the effects of COVID-19 have extended to every aspect of daily life, we focus here on the educational effects due to its unprecedented disruption to children's education because of the shift to full-time virtual instruction for significant portions of the 2019-2020 and 2020-2021 school years. During the spring of 2020, an estimated 55.1 million children in the United States experienced the suspension of in-school classes (Education Week, 2020) and 93% of all households reported engaging in distance learning (U.S. Census, 2021).

Although researchers have expressed concern that young children will lose both cognitive and social learning opportunities due to pandemic-related school closures (Fuller, 2020; Hirsh-Pasek et al., 2020; Sonnenschein et al., 2021a), data are only beginning to emerge confirming the anticipated learning losses for children of all ages. Based on a review of the prior absenteeism and summer learning loss literature, Kuhfeld et al. (2020) modeled the potential impact of the pandemic on student test scores using data from about 5 million U.S. elementary school children. According to Kuhfeld et al.'s (2020) model predictions, children returning to school in fall 2020 would start school with 63-68% of their learning gains in reading and 37-50% of their gains in mathematics. Relatedly, a recent study examining the impact of COVID-19 school closures in

the Netherlands found that primary school children made little to no learning gains in mathematics, reading, and spelling during distance learning. The effects were even greater for children from homes with lower education levels (Engzell et al., 2021). In perhaps the largest study to date, Kuhfeld et al. (2022) examined changes in reading and mathematics test scores of 5.4 million U.S. children in grades 3 through 8 over the course of the pandemic. In fall 2021, reading scores were .09 to .18 *SD* lower than they were pre-pandemic (fall 2019) for peers of the same grade-level. Similarly, mathematics scores were .20 to .27 *SD* lower in fall 2021 compared to pre-pandemic test scores in fall 2019. The authors noted that these reductions in achievement were larger than those attributed to other large-scale school disruptions (e.g., U.S. Hurricane Katrina). Existing disparities were also exacerbated, as achievement gaps between low- and high-poverty schools widened in math (~20%) and reading (~15%). A recent report from the National Association of Educational Progress (NAEP, 2022) also documented learning losses with drops in academic achievement observed in both reading and math for U.S. 9-year-olds. NAEP reported that declines in achievement cut across performance levels, but reductions in achievement scores were greater for those students who were categorized as lower-performers (10th and 25th percentile) than higher-performers (75th and 90th percentile). A similar pattern occurred with children from low-income families and children of color (Reardon, 2022).

### **Factors Affecting Children's Learning**

#### **Access to Internet and Appropriate Technology**

Although we live in an increasingly technological world, access to technology and the internet is still less available for children from low-income families and people of color (National Center for Educational Statistics, 2022). Being able to participate in virtual instruction requires

access to technology and the internet as well as instructors (teachers and/or parents) who know how to assist children with the relevant forms of technology.

Many urban school systems in the U.S. made computers or tablets and internet available to children in their school systems during COVID-19. However, access to computers or tablets often required that parents put much effort into completing forms to receive such computers or tablets. Access to the internet often required families to go to inconveniently located hot spots thereby making it difficult for their children to access (Araque et al., 2013; Dubois et al., 2021; Mitchell, 2020).

Sonnenschein et al. (2021a) used an online survey in May 2020, at the beginning of COVID-19 with 162 U.S., mainly middle-income mothers of children ages 2-9. Home usage of digital tools reportedly was higher than during pre-COVID-19, especially with children in the upper half of the age bracket. Children also used digital devices to engage in literacy activities, and this, too, was higher than during pre-covid.

Even when children had access to the appropriate technology, many teachers, particularly preschool ones, reported not knowing how to use the relevant technology their school system provided (Hechinger Report, 2022; Sonnenschein et al., 2022c). A similar problem was experienced by parents (Sonnenschein & Stites, 2021). On the other hand, parents became more comfortable assisting their children with digital devices for doing their schoolwork as COVID-19 progressed (Sonnenschein et al., under review).

### **Engagement, Quantity and Quality of the Instruction Children Received**

Children's engagement in learning activities results from parents' attitudes about engagement and what children see their parents doing among other factors (Sonnenschein et al., 2016). Research with children between two and 9 years of age showed that children during

COVID-19 were more likely to engage in educational activities at home when their parents were less stressed, felt comfortable with the technology (Sonnenschein & Stites, 2021).

The amount and type of instruction children receive and how well it is differentiated to their strengths and needs matters (Baumgartner et al., 2003; Hall et.al., 2004). The available research suggests that this was an issue when most instruction was virtual (Hechinger Report, 2022). For example, Stites et al. (2021) used an online survey with 166 parents of children ages 2 through 9 and found that there was little focus on children's social development and more emphasis on reading than mathematics. As various theorists have noted children's social skills are critical for their mastering academic topics (Hechinger Report, 2022; Hirsh-Pasek et al., 2020). Note that Godwin et al. (under review) found that the amount of time devoted to online instruction in reading and mathematics became comparable as children progressed through elementary school. Their online study has about 40 teachers. Barnett and Jung (2021) in a U.S. national survey of about 1000 families found that the amount of time parents reported engaging in reading activities with their preschool children decreased during the pandemic from pre-pandemic levels. Sonnenschein et al. (2021b) conducted an online study with about 360 mainly middle-income U.S. parents of children between 5 and 18 years. Parents were asked to report about how they assisted their children with distance learning. Parents typically taught content to their children, monitored their progress, or helped with using technology. Parents of younger children were more likely to directly teach their children whereas parents of older children spent more time monitoring their progress. Interestingly, regardless of the specific type of assistance given, parents who reported being involved in their children's distance learning reported being stressed.

### **Attendance and Amount of Instruction**

Children need to attend school to benefit from available instruction. Both attendance and the amount of instruction received during COVID-19 was an issue, particularly for low-income children. Barnett and Jung (2021) reported that low-income preschoolers in the U.S. were less likely to enroll in virtual instruction or return to school when virtual instruction ended. Tomaszewski et al. (2022) reported that attendance in Australian secondary school was significantly lower for low-income children. And Godwin et al. (under review) found that U.S. elementary school children reportedly received less instruction during COVID-19 than during the pre-pandemic.

### **Conclusion**

This brief review of the literature on children's learning during COVID-19 focused on preschool through high school students. It attempted to document the source(s) of children's learning difficulties during COVID-19. One relevant issue was limited access, particularly for low-income children and children of color, to technology. Similar patterns occurred in the U.S. and Europe (Blasko et al., 2022). Not only was access to technology limited but teachers and families were not necessarily familiar with how to optimize the use of such technology (Sonnenschein et al., 2021b). The role that parents played pre-COVID-19 changed from a mainly supportive one at home to one where parents were expected to play a larger instructional role (Sonnenschein et al., 2021b). This interfered with parents' ability to fulfill their own job requirements and to take care of their other children. Two, children's attendance in programs or how much instruction they received was less than when instruction occurred in school. Three, virtual instruction made it difficult for young children such as preschoolers and kindergarteners to develop social skills. Others have noted that even as children get older, they learn better in a social context (Hechinger Report, 2022). And when children were in preschool and the first few



years of elementary school, virtual instruction focused more on reading than mathematics (Sonnenschein et al., 2021a).

### **Limitations of the Research and Future Directions**

Although the research reported here is an important start to documenting the impact of COVID-19 on children's educational development, there are significant limitations to the research and areas that need further exploration. One, we focused on children's education development. We considered traditional academic topics such as reading and mathematics, and the need to acknowledge the importance of the social context in children's learning. However, we did not consider the indirect effect that COVID-19 had through its direct impact on children's, family members', and teachers' social/emotional well-being. For example, several researchers have found that employment and financial insecurities increased during COVID-19 which could result in less time for parents and teachers to support virtual learning and more strained relations between teachers/parents and children (e.g., Barnett & Jung, 2021; Patrick et al., 2020; Prime et al., 2020; Russell et al., 2020; Sonnenschein et al., 2021a) which could indirectly impact children's availability for learning and the nature of the instruction they received from teachers during this time period. This is consistent with the bioecological model of Bronfenbrenner and Morris (2006) which discussed the interacting direct and indirect influences of various contexts (e.g., family, neighborhood, society) on children's development. Two, much of the impact of COVID-19 increased what already was educational difficulties or needs for certain demographic groups, e.g., children from low-income families and children of color (Reardon, 2022). Three, much of the research on the educational impacts of COVID-19 looked at short-term effects and was based with younger children (Oster et al., 2022) because of the length of time we have experienced the pandemic. In fact, many of the studies did not include any

educational outcome data. It is important to consider what are the longer-term effects. Four, many of the studies did not use representative samples, thus, limiting the generalizability of results.

### **Possible Educational Interventions**

Few programs have directly tested different educational interventions with children who experienced schooling disruptions due to COVID-19. Often research focused on COVID-19 takes a deficit perspective: Children are behind because of the gaps in instruction. However, if we are to close the gaps, we need to focus on meeting students where they are and build on their strengths (Sonnenschein & Sawyer, 2018). Rather than trying to teach the curriculum as written for a particular grade level, students should be assessed, and the instruction differentiated. Simply teaching to grade level expectations will likely increase the gaps in understanding. Taking a strengths-based approach is critical.

Along with differentiating instruction, Universal Design for Learning (UDL) should be incorporated into every aspect of learning to reduce any barriers to instruction (Hall et.al., 2004). This includes engaging students with real life examples of content and maintaining their engagement throughout the lesson; representing concepts in a variety of ways including concrete representations (e.g., mathematics manipulatives, photos of historical events, etc.); and, allowing students to express their understanding in ways that go beyond the traditional paper pencil formats (e.g., oral presentations, video presentations, etc.).

It goes beyond saying that family involvement is critical. Improving relations between the various contexts in which children develop (e.g., home and school) can lead to improved learning (Bronfenbrenner & Morris, 2006; Epstein, 2010). It is important to consider the strengths already present in children's homes and build upon those (Sonnenschein & Sawyer,

2018). Including parents can help ensure that consistent language and feedback are provided on different topics.

Finally, as Ramey and Ramey (1998) and others have noted, the intensity of an intervention is positively related to its effectiveness. Therefore, it is critical that interventions start as early as possible before children fall further behind. This is especially true as we close the learning gaps caused by the COVID-19 school closures.

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