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Review of Literature: COVID-19 Learning Loss and Strategies for Recovery

At a Glance

The COVID-19 pandemic led to school closures nationwide and disruptions in learning. School districts are trying to understand the impact that these disruptions had on student learning and achievement and develop strategies to recover from a possible learning loss. Given the unprecedented nature of this pandemic, little data and research is available. Researchers resorted to study other types of school closures or out-of-school periods, such as summer vacation, to attempt to understand the impact of this event. Recent research suggests that the pandemic did not affect all students equally and that it contributed to increasing the already existing achievement gaps. Research suggests that learning acceleration is an appropriate strategy to help recover from the learning loss.

When the COVID-19 pandemic led to school closures worldwide, school districts throughout the country and the world resorted to online learning for delivering instruction. Following the closure of schools, some school districts began a phased reopening and while some students returned to school for in-person learning, many others finished the 2020-21 school year online. By the end of the 2020-21 school year, it had been over a year since schooling was disrupted by the pandemic. School closures brought various challenges and affected schools and education in various ways, from navigating online instruction, reopening schools following CDC guidelines, to more long-term challenges such as the impact that school closures and the disruption to in-person learning had on students.

Understanding the academic impact of COVID-19 and ways to recover from it is of great interest to school leaders, administrators, and teachers. However, given that it has been an unprecedented event, little data and research is available. Researchers and school districts have begun discussing the impact and developing strategies to best help students. This information capsule summarizes and discusses available research regarding the impact that the COVID-19 pandemic has had on student learning and the best strategies to move forward.

Learning Loss

The disruptions to schooling caused by the pandemic have affected learning; however, the extent of their effect is unknown. While not much data is available to date, researchers

and schools believe that it affected students' achievement and growth negatively (Kuhfeld, Soland, et al., 2020). Researchers are using the label "learning loss" to describe and understand the impact that the pandemic has had on student learning and academic development (Patrinos & Donnelly, 2021). Learning loss can be defined as a decline in student knowledge and skills and has mostly been studied in relation to the summertime (Patrinos & Donnelly, 2021). In terms of the pandemic, learning loss is the decrease in learning that took place between pre-pandemic times and the pandemic times we are still experiencing. Betebenner and Wenning (2021) described this phenomenon as a decrease in student academic growth that results in a decrease in attainment.

Estimating Learning Loss

In order to develop strategies to help students who have been affected by the pandemic, it is necessary to understand how much loss, if any, took place. Researchers have developed projections of the potential impact that the COVID-19 pandemic had on academic achievement (Betebenner & Wenning, 2021; Kuhfeld, Soland, et al., 2020; Kuhfeld, Tarasawa, et al., 2020). While the COVID-19 pandemic is an unprecedented event, researchers have relied on existing knowledge on the impact of missing school to predict the learning loss that has taken place during the school closures. Kufheld, Soland, and colleagues (2020) relied on existing research on the impact of summer break, weather-related school closures, and absenteeism to inform projections of the COVID-19 related learning loss. These authors believe that it is not only important to understand the short-term and long-term impacts on achievement, but also how variable achievement is as a result of the pandemic. For their study, Kufheld, Soland, and colleagues (2020) utilized the Northwest Evaluation Association Measures of Academic Progress (NWEA MAP) Growth assessment which provided a national sample of millions of students in grades 3-8 who completed the assessment during the 2017-18 and 2018-19 school years. Utilizing these data, the researchers developed two sets of projections, one based on the summer loss literature and a second one based on the absenteeism literature. Relying on the summer loss research, the authors projected that students who returned to school in the fall of 2020 had made only 63-68% of the learning gains in reading relative to a normal school year, and 37-50% of the learning gains in mathematics. For students going from 5th grade into 6th grade, the learning gains in math were projected to only be 19%. Projections based on the absenteeism literature were more concerning, with learning gains under 30% for both reading and math. Results from these predictions were in line with previous research suggesting that while being out of school negatively impacts learning, there is a bigger loss in mathematics than in reading. Based on both sets of projections the learning gains made by students during the 2019-20 school year were projected to be substantially lower than the gains made during a normal school year. In addition to these projections, these researchers also expected students to return with more variability in skills than during a typical year.

Following the study described above, Kuhfeld, Tarasawa, and colleagues (2020) utilized data from the NWEA MAP Growth assessment for fall 2020 to examine students' performance relative to a normal school year and to compare to the projections previously

made by NWEA. For this study, researchers utilized fall 2020 data for 4.4 million students in grades 3-8. While many have raised questions regarding the usefulness of this data due to remote administration, the NWEA has confidence in the quality of the data from remote administrations for most grades in grade 3 and up (Kuhfeld, Lewis, et al., 2020). When comparing fall 2019 data (pre-pandemic) to fall 2020 (pandemic), the authors found that, on average, student achievement during the fall 2020 administration was similar to pre-pandemic achievement in reading; however, it was 5 to 10 percentile points lower in math. Additionally, the authors also explored within-student growth by examining winter and fall 2020 data and found evidence of student growth in both reading and math (except for math in grades 5 and 6), but the growth in math was lower than in a typical school year. When comparing the data to the projection previously released, the authors found that, on average, students did better than it was previously expected in reading. In math, students scored as projected in grades 4-6, and slightly higher in grades 7-8. While these results can be perceived as optimistic, they should be interpreted with caution given that assessment data was not available for all students and it likely underrepresented the most vulnerable subgroups of students. In fact, while the authors found that, on average, reading scores for fall 2020 were in line with scores from fall 2019, there were small declines among Hispanics and Blacks in higher elementary grades.

Other organizations have also started performing analyses to understand the effect that the pandemic had on their students. The Metro Atlanta Policy Lab for Education utilized 2017-18 to 2020-21 formative assessments from three metro-Atlanta school districts to explore the effects of the pandemic on student learning. These three districts utilize MAP Growth or i-Ready assessments (both computer-based tests). The researchers found that, at the beginning of the 2020-21 school year, the learning loss that had taken place following the school closures was moderate (no more than two or three months of lost learning). However, by the first half of that school year, the learning loss had increased, and students were now three to six months or more behind on their learning compared to where they would have been without a pandemic. Additionally, they found that the learning loss or reduction in achievement growth was uneven and the effect varied across subjects, grade levels, and student demographic characteristics (Sass & Goldring, 2021).

Another education testing company that has begun exploring the impacts of COVID-19 on student learning is Curriculum Associates. They utilized their i-Ready Diagnostic grade-level placement data to compare student achievement during the winter 2020-21 administration to what would have been expected during a typical school year. Results showed that compared to a typical school year, during the winter 2021 administration, fewer students were ready for grade-level content and more students were behind. The unfinished learning (the term they used instead of “learning loss”) was greater for students in grades 1-7 in reading, and in all grades in math, particularly elementary grades. There was a greater percentage of students not ready for grade-level learning in schools with a majority Black and Hispanic students and schools located in low-income areas. In addition, Curriculum Associates also examined results from fall 2020 and compared them

to winter 2021 and found inconclusive evidence of students catching up from the first to the second administration (Curriculum Associates, 2021).

Importance of Data

While the COVID-19 pandemic affected the entire world, not everyone was affected equally; research suggests that the damage caused by the pandemic can exacerbate the already existing inequalities that affect minority students such as Blacks, Hispanics, Native Americans, English language learners (ELL), and students with disabilities (Kuhfeld, Tarasawa, et al., 2020). Given this uneven impact, schools should take some time to better understand how their students were impacted and consider that the strategies needed to help students might not be the same for all.

In an article published by the National Center for Assessment to help better understand the pandemic learning loss and learning recovery, Betebenner and Wenning (2021) emphasize that while the big question is how to help students, school districts and leaders should answer three questions prior to developing and implementing programs to help students recover. The authors mention that answering (1) who needs help, (2) what do they need help in, and (3) how much help is needed is just as important as answering the question of how to help students. First, understanding who needs help or who is experiencing or has experienced learning loss can point to particular subgroups (ethnicity, SES), grades, or schooling modality during the pandemic (online vs. physical). Answers to this question can help formulate a recovery timeline and understanding of whether the recovery is possible in months or years. Second, identifying what areas students have experienced learning loss in can help to better tailor the strategies needed for recovery. Learning loss could have taken place in specific content areas or sets of standards. Third, it is important to understand the magnitude of learning loss; it can be larger for low-achieving students or students in a specific school.

An important step on the road to recovery is understanding where students are concerning their academic development, which requires data. However, state assessments were canceled in 2020 due to the pandemic; the 2021 data might not be available for all students. Interim assessments administered in the fall and winter of 2020, as well as available spring 2021 assessments can help to start answering these questions and designing strategies for recovery. Once these questions have been answered, schools and leaders are faced with questions regarding how students will recover and what this recovery looks like. In an attempt to answer these questions, the article by the National Center for Assessment (Betebenner & Wenning, 2021) describes four possible scenarios for academic recovery: (1) the worst scenario, where the learning loss continues and there is no recovery at all, (2) the L-shaped recovery scenario, which depicts a reality where students do not continue to fall behind but do not recover, (3) the U-shaped recovery, where students recover from the learning loss over multiple years, and (4) lastly, the V-shaped recovery, the best scenario, where students recover from the loss quickly. The authors further explain that the scenarios presented are not exhaustive and, due to the unequal impact of the pandemic, more than one recovery scenario can take place in the same school. Given that multiple recovery paths are possible in one

school, the goal would be to maximize the number of students who experience a U- or V-shaped recovery. In order to achieve this, it is important to understand the magnitude of the learning loss that took place; for instance, the history of the state- or district-level growth can help inform the recovery plans and timelines (Betebenner & Wenning, 2021). Failing to understand and address students' needs regarding the magnitude of the loss can lead to a K-shaped recovery; this is one where the existing achievement gap is further increased by high-achieving students following a U- or V-shaped recovery and low-achieving students experiencing one of the two non-recovery scenarios.

Recovering from Learning Loss

Once school districts and leaders gain a better understanding of the learning loss that took place due to the pandemic, they can start planning for recovery. Predictions and preliminary analyses of available data after returning to schools have shown that in fact, some learning loss has taken place, particularly in math (Kuhfeld, Tarasawa, et al., 2020). This can have negative consequences for students who pre-pandemic were at grade-level and even more severe for those who were already performing below grade-level. The most common and often used approach utilized to help students is remediation. Remediation involves providing students with "work better suited for earlier grades" (TNTP, 2021, p. 1), and while teachers are very familiar with this approach, previous research suggests that it might not be the best one (TNTP, 2018) and further increase the achievement gap (TNTP, 2020). Based on existing research suggesting that some subgroups of students might have experienced greater learning loss, schools need a recovery strategy that will not further increase the existing gap.

Research suggests that learning acceleration, an approach that involves providing the students with grade-level content and strategically incorporating previous grade-level content when needed for mastering the new material being presented, can help students recover from the learning loss experienced due to the pandemic. Such an approach allows students to spend most of their time on grade-level content to avoid further falling behind (TNTP, 2021). As described in TNTP's Learning Acceleration Guide (2020), implementing learning acceleration relies heavily on planning and understanding the learning loss that students experienced. As a starting point, stakeholders should design a plan for diagnosing the learning loss. It is crucial to understand exactly what content knowledge and skills students are missing; identifying the unfinished learning will help teachers plan their instruction. Once this has been identified, teachers can tackle the unfinished learning; for this, teachers must have a clear understanding of the standards, topics, and tasks that are part of the grade-level content and which knowledge and skills students will need to understand it. Throughout the process, teachers should monitor the progress that students are making on the grade-level content; teachers should adjust their instruction accordingly; and school leaders and district personnel should adjust the support provided to the teachers. Through this approach, "leaders and teachers should focus on filling in only the most critical gaps—and not in isolation, but at the moment they are needed" (TNTP, 2020, p. 8).

Acceleration, as a strategy for recovery, has begun gaining attention throughout the country (National Governors Association, 2021), and various states have included learning acceleration in their recovery plans (e.g., Connecticut and Missouri). Additionally, the U.S. Department of Education suggests the use of acceleration as a means to recover from the lost instructional time (U.S. Department of Education, 2021). Research conducted in over 100,000 K-5 classrooms that utilized acceleration for math during the 2020-21 school year shows promising results. Data from Zearn, an online math platform utilized in elementary schools nationwide, was used for the analyses. Prior to the beginning of the 2020-21 school year, Zearn provided teachers with an acceleration strategy utilizing their platform; some teachers chose to use the acceleration while other chose remediation. Results from grades 3-5 were utilized to compare the progress of students who experienced acceleration versus remediation. Students who experienced acceleration struggled less and made more progress on grade-level learning (27% more grade-level lessons completed) than those who experienced remediation. The study found that acceleration was particularly helpful for students of color and those from low-income families (TNTP, 2021).

The ED COVID-19 Handbook (2021), released by the U.S. Department of Education (USDOE), details four approaches that schools and districts can use for acceleration. These approaches can all be used in combination: in-school acceleration, out-of-school programs, summer learning and enrichment, and tutoring programs. In order to select the appropriate intervention, schools and districts should consider the need (extent of learning loss), available resources, family input, and existing partnerships. Regarding tutoring programs, the USDOE, as well as other researchers, emphasize key aspects that make tutoring programs effective and serve the purpose of accelerating students (Robinson et al., 2021; USDOE, 2021); these include dosage, sizing, and scheduling among others. Research suggests that for tutoring to be an effective strategy it should be high dosage, three or more times per week for at least 30 minutes; in the case of younger (elementary level) students, shorter but more frequent sessions can be beneficial. Tutoring should be conducted one-on-one or in small groups with three to four students. It has been found to be effective for all grade levels, with reading tutoring most effective for grades K-2 and math tutoring most effective for older students. Studies have shown that tutoring programs that take place during the school day led to greater learning gains; however, these should be scheduled carefully to avoid students missing core subjects. Research has found that well-designed tutoring interventions can increase achievement by an additional three to fifteen months of instruction, and, when conducted three or more times per week over a period of time, it is one of the few interventions that has a positive effect on both reading and math achievement (as cited in Robinson et al., 2021).

Hanover Research compiled a toolkit (2020) with resources and research on best practices to assist teachers in mitigating the effects of COVID-19 and help students recover from learning loss. The report suggests that a common strategy that has been utilized for learning loss due to natural disasters and summer vacation is extended learning time, either as summer programs, extended year, or modified school days. The

authors suggest that while additional learning time is often used to combat learning loss, it is most effective when student attendance is strong. A common strategy for extended learning time is summer reading programs; the report discusses both classroom-based and home-based summer programs. The authors provide evidence suggesting that classroom-based summer programs of longer duration (between 44 and 210 hours) and with high parental involvement had the best results at reducing summer learning loss. Other best practices for effective summer programs include small class sizes (no more than 20 students), differentiated instruction, curriculum aligned with school year curriculum, high attendance rates, and parent involvement. (More information on summer learning programs can be found in Information Capsule Volume 1011 https://api.dadeschools.net/WMSFiles/244/Information%20capsules/2010-11/IC1011.pdf).

Conclusion

School closures and disruptions to learning due to the COVID-19 pandemic impacted students nationwide. While many school districts throughout the country reopened their doors for in-person learning during the 2020-2021 school year, not all students opted for in-person learning. School districts are trying to understand the impact that these disruptions had on student learning and achievement and develop strategies to recover from possible learning loss. Given the unprecedented nature of this pandemic, little data and research is available. Researchers resorted to studies on other types of school closures or out-of-school periods, such as summer vacation, to understand the impact of this event. Recent research suggests that the pandemic did not affect all students equally and that it can contribute to increasing the already existing achievement gaps. Studies found that students did in fact experience learning loss, with some declines in reading achievement among specific subgroups of students such as Hispanics and Blacks, and math achievement, in general, being 5 to 10 percentile points lower than pre-pandemic achievement.

Research suggests that learning acceleration is an appropriate strategy to help recover from learning loss. While remediation is often the go-to strategy for students who fall behind, resorting to remediation during this time can in fact hurt students instead of helping them recover. Through acceleration, students can receive grade-level material while also learning about previous material they need to comprehend the new information. Learning acceleration can be implemented in school or through tutoring programs; other strategies for recovery include summer programs. Regardless of the strategy school districts choose for recovery, it is important to keep in mind that not all students were affected equally, and it is crucial to understand who experienced learning loss, the areas in which they experienced it, and its magnitude. The path to recovery will not be the same for all students, and monitoring student progress utilizing data will help teachers adjust their instruction and help ensure that already existing achievement gaps are not further widened.

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