

COVID- 19 Learning Loss: Questions and Promising Practices

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Abstract

Learning loss is a dilemma that has been with educators and students for many years. Often learning loss can be explained by examining measurement issues that define student learning. The recent COVID-19 pandemic, however, has raised the concern of educators worldwide. During the pandemic, many schools were closed and students received instruction online. The online model of teaching was new to many teachers and learners. The development of these courses was often problematic as teachers may not have the skills to develop online courses. Additionally, a great deal of concern has been expressed about the effectiveness of online instruction and the effect it may have had on student learning and teachers' ability to effectively use this form of program delivery. Examined in this paper, are the factors that affect student learning and ways that schools were effective in delivering their instructional programs which indicated minimization of students' learning loss. This paper offers suggestions for the implementation of effective instruction that will enhance student learning.

Keywords: COVID-19, disadvantaged students, interrupted schooling, learning loss

COVID Learning Loss: Questions and Promising Practices

Introduction

Learning loss is a topic that has been of interest for some time. School personnel have expressed concerns that students might not retain foundational knowledge in subject areas and would find it difficult to move to more difficult tasks in the school curriculum that build on previously introduced information (Alexander, Entwisle, & Olson, 2007). This is particularly true with students who are struggling in school (Bowers & Schwarz, 2018).

It is not unusual to find that teachers spend time during the initial stages of a class to review material that was presented in the previous prerequisite class in which the student was enrolled with the belief that the student may have forgotten or not retained previously learned material. This may be an entirely valid issue and it does illustrate educators' concerns related to learning loss.

Learning loss takes many forms. In a very familiar illustration is the student who is able to answer questions Friday after an instructional period. Teachers will sometimes note that the student 'knows' the material on Friday only to find out that the student cannot correctly respond to the taught material on Monday. Teachers may explain this as an illustration of a 'learning loss.'

Likewise, longer term learning loss is illustrated by students who scored well on a test at the end of the school year but were unable to use the material when school resumed in the fall. In the same vein, school administrators may have found that some children who reportedly did well on their studies and received high grades for their classwork, did not perform well on a subsequent standardized test. In many of these cases, the blame was put on the child as being unmotivated or ascribed to a condition in which the child was simply not a 'good test taker'. School personnel often missed the point that students may have been accurate on a task but slow in their rate of response. The slowness of response may be seen as an indication that the child may not have adequately learned the task.

Percentage of correct responses do show accuracy but accuracy alone fails to distinguish the difference between a child who is highly accurate but is in the initial stages of learning and one who is proficient, accurate, and can comfortably use the skill at a functional rate. Therefore, the child who is accurate but slow may not have adequately learned a task so that it is remembered or could be used in a functional manner. Thus, what seemed to be a measure of student learning using just percentage of correct responses is shown to be an inadequate measure of learning by not considering the rate of the student's response.

COVID-19 and Learning Loss

Presently, there is great interest in learning loss as it applies to the effect of the COVID-19 pandemic and the degree to which students could not retain previously taught material or may have fallen behind academically due to a disruption in their educational setting. This disruption could be due to the cancellation of school and/or the implementation of remote learning through delivery of instruction via the internet. Schoolwork electronically sent home to the child or the absence of an organized curriculum that is designed to meet the child's needs could have been contributing factors in the child's learning of academic skills.

The recent pandemic and alterations in the delivery of student academic content has raised the specter of the fear of student learning loss. The COVID-19 epidemic was an unparalleled challenge to schools in all countries. Some schools stayed in session and simply sent students home if the student tested positive for COVID-19. Other schools dismissed the entire class for home study if one student tested positive, and, yet other school areas simply cancelled classes and established some form of home study in hopes that the epidemic would abate, and students could be called back to school.

Forum on Public Policy

The pandemic was real and produced significant problems, but it may be difficult to know the exact extent of the problems such as student growth, possible disproportionate effects of the effects that alternate curriculum delivery models had on specific populations, what mitigating interventions were effective and the effect that changes in the delivery had on home life, and challenging problems. These are questions that can only be answered with more research, but there are some important clues as to the effects of COVID-19 on student learning.

Currently, research only hints at some of the answers related to the effects of COVID-19 on various school populations. Researchers have identified some instructional variables and policy decisions that seem to have been effective, however, research will provide more definitive answers.

In 2022, the Nation's Report Card references data from National Center for Educational Statistics (NCES) indicating that the test scores of fourth graders who are nine years of age in the United States declined in reading and math during the COVID-19 pandemic. They note, however, that some groups, such as those in the lower quartile in reading and mathematics, had greater losses than those in the upper quartiles. They also noted that some groups had little loss such as those in urban areas. NCES notes that these are preliminary data and do not address the disparity of scores that may exist between schools related to instructional procedures, in person learning versus remote learning and that the reported effect may not be typical of learners of all ages.

Barnum (2022) reports data from the NWEA (a research-based organization that provides support to educators and students) which indicate that in 2021, students' reading scores fell 3 - 6% and mathematics scores fell 8 - 12%. In 2022, students made more progress in reading and mathematics as compared to the previous year. The data came from 8 million students and suggested that after one year of post pandemic instruction during which schools were open, students made up 30% of their learning loss. The data suggest that learning loss was real and point to marginalized students having a greater learning loss than other groups who had higher initial performance scores. Nonetheless, as Camp (2022) noted, these losses were not inevitable but resulted from some of the decisions made by school leaders such as the closing of schools and facing the challenges of remote delivery of instruction.

Adding to the effects are a host of unanticipated problems or 'echo' problems. Issues such as teacher retention and school attendance certainly existed before the pandemic but came to be much more serious problems during and after the COVID-19 pandemic.

The pandemic and its effect on school is a tangled problem that involves numerous components. It is not a simple problem with easy answers. Rather, it is complex and involves issues with data definitions and projections that create numerous unanswered questions. As in most cases, however, data suggest that some interventions and curriculum delivery models were found to be more effective than others. Additionally, we know that many students did experience difficulties in school during the pandemic, but it is important to remember that teachers did as well as they could being asked to make sudden changes in curriculum delivery often without adequate assistance. Clearly, schools and parents worked hard to ameliorate student concerns during the pandemic, but they were faced with new problems and timelines for decisions that put a good deal of strain on students, teachers, and parents.

There seems to be, however, broad agreement that the lessons that were learned during the pandemic may help to produce more effective instructional programs in the future. The lessons learned from schools that responded successfully to the pandemic may provide some information about successful educational practice and policy that can be used as part of the regular curricula.

The Numbers Related to COVID-19 and their Effect on Schools

The COVID-19 pandemic affected every country but it is often difficult to determine the extent of the problems given the lack of agreement about the number of cases or the effect that COVID-19 had on

Forum on Public Policy

social and educational institutions. For example, it is difficult to know exactly how many people were affected by COVID-19. In some cases, incidence rates reflected the number of COVID-19 tests that were positive, but an unknown number of people tested multiple times and received positive infection results. These cases were often counted as individual novel infections, therefore producing unreliable numbers for determining the total number of people infected. Furthermore, some countries did not have the infrastructure for testing and some countries began testing sometime after the beginning of the pandemic. As a result, it was very difficult to know exactly how many people were infected or if these numbers were decreasing or increasing and likewise it is unclear how many school-aged children suffered from COVID-19.

Reports of deaths related to COVID-19 may have not been uniformly collected. Some regions of the world may have underreported numbers due to comorbidity. COVID-19 may have been a contributing factor but not the only reason for the death. Moreover, some countries may have not been motivated to report numbers of death because of the attention it might draw to a lack of effective treatment or that it may have taken time away from treating those infected with COVID-19 (Ioannidis, 2020; Duflo, Kiessel, & Lucas, 2021). Regardless of these estimates, it is clear that a significant number of students and their families were affected by COVID-19.

Schools often struggled to deliver effective educational programs to students during the pandemic. Schools, however, had multiple platforms to reach school aged children during the pandemic. In 2021, the United Nations International Children's Emergency Fund (UNICEF) reported that policy measures designed to ensure learning continuity through broadcast or digital media were implemented and potentially reached a maximum of only 69% of school aged children in the world from preprimary to secondary level. UNICEF also notes that 31% of school children worldwide (463 million) cannot be reached by broadcast or internet-based instruction due to the lack of adequate technology in homes, schools, and internet delivery sites.

Online instruction appeared to be the most common way to deliver instruction to children and youth who were at home due to school closures with 83% of countries using this method of instructional delivery. It is unclear, however, what percentage of children had adequate connectivity, hardware and supervision to ensure that there was engaged learning. Some researchers note, however, that some families may not be able to afford the hardware for students to connect with online learning and that some areas of the world do not have the infrastructure that would allow student to engage in online learning (Angrist, de Barros, Bhula, Chakera, Cummiskey, DeStefano, Floretta, Kaffenberger, Piper, & Stern, 2021).

Also noted in the UNICEF report, television had the potential to reach the most students globally, but that number was only 62% of the school aged population. Radio, which would seem to be a ubiquitous method of information delivery was seen as only reaching 16% of the population and that 75% of students who cannot be reached by remote learning come from rural areas and/or belong to the poorest households.

These numbers paint a picture of an educational and social problem which was extremely difficult to address but one in which the consequences may be quite serious. UNICEF (2021) estimates that more than 1 billion children were at risk of falling behind in schools due to school closures that were aimed at stopping the spread of COVID-19. The World Bank and United Nations Educational, Scientific, and Cultural Organization (UNESCO) estimated that learning poverty – a measure of those unable to read a story or understand a simple story - may increase globally from 53% to 63% due to the pandemic and that an estimated \$10 trillion dollars in lifecycle earnings could be lost by the increasing numbers of students who suffer from learning poverty due to the pandemic.

Forum on Public Policy

Many of the numbers related to the effects of the pandemic are based on estimates and projections of estimates so there is some question as to their accuracy which is reflected in revisions of information as more data are collected (Gill & Saavedra, 2022).

A number of schools did masterful jobs in bringing instructional designers together with teachers to develop curriculum that was effective. In these settings, there was an effort to have some level of supervision in the home or learning settings in which students could be supervised or assisted in staying on task and addressing student needs. Some schools often partnered with local cable companies or government satellite feeds to ensure that there were broadcasts that addressed curriculum at each grade level. This electronic intervention necessitated making hardware available to students which required a financial commitment to students and their families.

Some schools did not have the financial resources to make technology available and often times simply provided students with worksheets to complete at home. Some schools also required teachers to develop lessons in an online format. Teachers complained that they did not have the skill, expertise or time to become instructional designers and that it would not be possible to complete this type of curriculum transformation in the short time allocated (Azevedo, Hasan, Goldemberg, Geven, & Iqbal, 2021).

Effective schools, however, had a robust data collection system that allowed them to identify when a teacher or student was having a serious problem. These data could then be used to focus efforts and materials in most needed areas. Schools that did not have a data management system had little ability to detect who was having a learning or implementation problem and the materials required to address the problem.

These issues point to areas of concern in school districts globally and have led to curriculum reform and efforts to have effective systems in place if the pandemic or some other sort of serious issue resurfaces or occurs. Moreover, the lessons learned reflect best practice in teaching with or without a pandemic so addressing these issues can point the way for curriculum reform and future successes.

Effective Actions During the Pandemic

The professional literature provides a great deal of information about how to address learning loss and ways that school effectively dealt with COVID-19. But of interest were the perceptions and opinions of teachers and administrators in schools who believed they were effective in dealing with students, parents, and curriculum delivery during the pandemic. Their stories were essential in validating the specific challenges and successful practices. Of interest were the perceptions and opinions of teachers and administrators in looking back at the time of the pandemic and examining the specifics of their school lives during the pandemic and their reflections of successful and unsuccessful practices.

It was critical to examine schools that were successful in delivering the instructional program during the pandemic so that successful practices could be identified. To this end, thirty randomly chosen state departments of education in the United States were contacted and asked to identify schools that they believed had a successful educational response to the delivery of an instructional program during the pandemic. In all cases, the person at each Department of Education had a supervisory or advisory role with schools and indicated they had knowledge of schools that were successful in implementing instructional programs during the pandemic. When contacted some schools indicated they did not have an interest in participating in this study but 44 schools did. Thirty of the 44 schools were selected for interviews. These schools were geographically dispersed and administrators or lead teachers in the schools were interviewed. There were 14 elementary and 16 secondary schools - and either a school administrator or curriculum coordinator was interviewed.

Forum on Public Policy

The central question that guided communications with participating school personnel was “*What interventions or policies seemed to be the most effective in affecting student learning during the pandemic?*” The answers to these questions were followed by clarifying questions related to how their schools garnered student and parent support and participation, what were the most important lessons that were learned about teaching students during the pandemic, and what would you not do again if there was another pandemic and school participation was affected. The answers that we received were extremely consistent and were followed by more questions related to lessons learned during the pandemic.

The interviews and investigations of what seemed to work only samples students in schools in the United States and is only an exploratory examination and is not presented as a controlled research design. The consistency of the answers, however, point to some lessons that could be helpful for all educators and suggest the need for a more controlled study.

The most consistent comments we received about successful school practices were:

1. The curriculum has to be clear, challenging and focused on important elements of learning.
2. Teachers have to be organized and have the resources to focus on specific groups of students.
3. There has to be data that teachers and parents responded to and indicated that student learning was measured and problems addressed.
4. Effort has to be spent on training parents and/or caregivers on how to work with their children and report concerns.
5. Effective strategies during the pandemic were similar to the effective pre-pandemic methods that were effective.
6. Students have to attend and be on task for the lessons – this was the most consistent answer.
- 7.

On the face of it, the answers to these comments reflect the importance of good instructional methodology before and during the pandemic. The respondents note that the curriculum has to be relevant, effectively delivered with a measurement system that identifies and responds to problems in a timely way. The most consistent and emphatic response was that students need to be present and on task for the instructional lessons for learning to occur. While this point about attendance seemed obvious, this was the one element that gave schools the greatest problem during the pandemic.

Most of the schools noted that they had an online instructional program and that there was a need to work with students to ensure that they were engaged with the program. This necessitated an increased effort in parent or caretaker training and encouragement to offer community wide programs that sometimes consisted of centers in which students could go for additional help. There were a wide variety of delivery models for this sort of supplementary assistance, and it had to be tailored to the needs of the community and constituent groups. Certainly, there were students who were too ill to make themselves available for these kinds of services, but this type of enhanced supervision was a critical elements of successful school programs.

The respondents from the schools who were interviewed also reported that simultaneous platforms such as television and radio with instructional material appropriate for the age of the child were important tools to address student learning. These schools also reported a robust training for parents and caregivers in how to tutor students at home. The details of these programs differ, but there was an agreement of the importance of this training. Schools also reported the importance of frequent and targeted assessment so that student problems could be identified and addressed in a timely manner.

The issue of student supervision was extremely important to the schools that were interviewed. In some cases, social workers and teachers combined to pay home or community visits to ensure that there was supervision and that students were engaged with the material.

Forum on Public Policy

Respondents also indicated that little difference between effective instructional strategies used prior to and during the pandemic. They noted that good teaching is good teaching regardless of conditions. They certainly recognized, however, that the format of good teaching changed during the pandemic since suddenly students were being taught at a distance. Teachers and administrators noted that techniques such as careful preplanning, the use of empirically proven instructional procedures, opportunities for student responses, teacher enthusiasm, and frequent and targeted assessments of student responses that are used in instructional planning are all commonly recognized as effective instructional strategies regardless of the delivery method.

Unanticipated Consequences

An unanticipated consequence of this supervision was that there a number of students who were not attending the online or remote sessions – this has become known as ‘ghost students’. In some cases, it was found that the students were being counted as active learners on ledgers that were used for school funding, but may not have attended any of the online or distance activities.

In several states, this checking led to questions about past fraudulent reporting of students attending schools or instructional activities. This checking led to the examination of past attendance records. In Oklahoma, for example, a state in which student attendance was tied to school funding, they found that in years prior to the pandemic schools had been overpaid by \$187 million dollars for students who didn’t attend school but were reported as attending. There are also some estimates that the fraudulent reporting of student attendance may have increased during the pandemic. This problem of fraudulent reporting that may not have been caught had it not been for enhanced student attendance record keeping during the pandemic (Goldstein, Popescu, & Hanna-Jones, 2020).

The issue of student nonattendance during the pandemic has had a residual effect of an increasing amount of student absenteeism post pandemic. While there are a number of definitions of absenteeism, the United States Department of Education noted that before the pandemic 1 out of 7 students were chronically absent and that number may have increased to 4 out of 10 after the pandemic. This same problem with student absenteeism has been noted in other countries as well (Blad, 2022).

Data from several countries suggest that schools that were shuttered or implemented student lessons through online and other remote learning efforts (Dickler, 2021). This has resulted in critics of online learning noting that online learning failed the students who were exposed to this method of program delivery. In fairness, however, many of these online programs were developed by teachers in a very short time span and did not have the advantage of review and assistance by curriculum and online learning specialists. Further, there are data, that suggest that a mixed method of program delivery was effective and that online platforms may be a useful tool in the construction and delivery of instructional program for children (The World Bank Brief, 2022).

Anecdotally, many school districts have noted the retirement or quitting of teachers after the pandemic. Teachers report that they were simply asked to do too much without adequate assistance and are unwilling to face another problem with such an inadequate solution. The result has been a significant loss of teachers especially those who have had many years in the classroom. Again, an unanticipated consequence of the pandemic.

Many school and student groups seemed to do quite well during the pandemic. It was thought that marginalized students or those in at-risk or special education programs might manifest significant learning problems during the pandemic as compared with students in general education programs. Some initial data suggests that these students did suffer learning loss during the pandemic, but other data suggest that this might not be the case globally (Schult, Mahler, Fauth, & Lindner, 2022).

What may be the case, however, is that student success might be directly linked to the procedures put in place by schools and that schools that provided relevant learning developed by a team of educational professionals and measured in a timely manner by trained professional who responded to student data produced more learning gains than those school districts that did not. Therefore, there may be a more direct correlation between the elements of effective program development and the format of delivery than the type of learning platforms alone.

Some Interesting Answers to the Effectiveness of Instruction

Regardless of country, there are students who have significant learning loss and learning difficulties due to specific factors that are unique to certain subgroups of students (Bayrakdar & Guveli 2020; Sayer & Braun, 2020; Schuurman, Henrichs, Schuurman, Polderdijk, & Hornstra, 2021). There can be a wide number of these factors but some specialized areas of education - such as Exceptional Student Education (ESE) and Teaching English to Speakers of Other Languages (TESOL) - may provide some guidance to schools in developing programs to address curriculum and program delivery that meet the unique needs of these subgroups of students.

Although the above mentioned two subgroups (ESE and TESOL) were singled out, it is important to indicate that students within these programs have vastly differing educational needs. It is also necessary to note that students who belong to such subgroups may have some similarities related to barriers to learning that need to be overcome. To address these barriers, instruction has to be specialized, extremely efficient, and carefully monitored for effectiveness. This necessitates focusing on rate and accuracy and sometimes selecting the most critical skills to teach and linking these skills to real world experiences. Many of the approaches used in ESE and TESOL programs can be adopted and adapted to classrooms that have identified learning losses among general education students.

One particularly vulnerable and at-risk group of students is Students with Limited or Interrupted Formal Education (SLIFE). This is a subpopulation of learners that is often described as students who have missed years of schooling due to various factors including natural disasters, poverty, and civil unrest (Chang-Bacon, 2021; Marshall & DeCapua, 2018).

One of the effective practices that has come out of general education but has been emphasized as essential to the education of SLIFE and other students who fall academically behind is the activation of background knowledge and linking new information to what students already know. Adding to these is the need for teachers to make learning relevant to students and their lives (DeCapua & Marshall, 2018). Simply relating new lessons to what learners already know or helping them find a connection to their own lives, learners are better able to retain information. Collaboration with classmates during cooperative learning activities can increase comprehension and also the development of academic skills including critical thinking (Short, Becker, Cloud, Hellman, & Levine, 2018).

Equally, as important and also one of the most effective methods of teaching SLIFE, and other students who might be at-risk for falling further behind, is focusing instruction on building knowledge in content areas through emphasis on academic language and the development of literacy skills. Attention is placed on accelerating learners' literacy through the adaptation of lessons to align with students' specific needs. This usually requires collaborative efforts that involve teachers and other school-wide personnel to improve data related to students' needs and the facilitation of explicit instruction based on identified areas of needs (Custodio & O'Loughlin, 2020; Custodio & O'Loughlin, 2017; WIDA, 2015).

The educational programs for SLIFE and other at-risk students provide clues for how educational programs can be constructed and delivered to students who are experiencing academic challenges that hinder their progress. This is not to suggest that ESE and TESOL programs provide all the answers but

Forum on Public Policy

they do offer compelling suggestions for instructional programs that utilize approaches to teaching that often yield effective results.

Conclusion

Pointing the finger of blame related to learning loss may not provide a constructive foundation for effectively delivery of instructional programs. The simple fact of the matter is that people were simply overcome by the pandemic and decisions had to be made based quickly but may have been based on inadequate data. It is easy to look back and note the failures of some delivery models and school organization, but people worldwide made decisions based on what they considered to be best guess information. Additionally, decisions had to consider several factors such as economic impact, health care and the spread of the virus – not just educational pedagogy.

There is no question that people did as well as they could in dealing with the pandemic given the limited and volatile information that they had. Post-pandemic research has yielded some data on effective strategies and delivery models that will be further explored and clarified. Clearly, additional studies are needed and future research will undoubtedly build on the existing data. It is everyone's hope that educators have learned some global lessons and if similar situations arise will respond in a manner that reflects best practice.

We do know that learning loss is real, but we may not know the extent of it yet as more longitudinal data will have to be collected for a clearer opinion to be formed. That, however should not stop educational professional and policy makers from implementing effective programs that bring together parents and teachers in the development and implementation of effective educational programs.

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Forum on Public Policy

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