Research Brief

Equity and Student Growth

Lessons Learned from the COVID-19 Pandemic

ECRA Group
Education | Consulting | Research | Analytics

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Introduction

At ECRA Group, we celebrate educational leaders and school districts across the nation and their response to a once-in-a-hundred year pandemic. The overnight innovations while under immense pressure and the willingness of all educators to adapt is remarkable. Despite the seemingly insurmountable challenges, significant progress was made.

Educational leaders have observed, first-hand, the asymmetric impact the COVID-19 pandemic has had on students within their community. The ECRA study on equity and student growth over the span of the pandemic had three objectives:

1. **Document the progress that students made**
2. **Quantify the magnitude of unfinished learning for specific student groups**
3. **Develop an analytic framework for school leaders to measure equity and growth recovery**

The study examined 67,081 students in Illinois grades 2 through 8 over the 15-month pandemic period beginning in the Winter of 2020 and ending in the Spring of 2021. The study used academic growth as the primary outcome. Academic growth is an important student outcome to assess learning rates of individual students, and to evaluate the effectiveness of equity efforts.

Executive Summary of Findings

It is important to note that nationally the term learning loss has been used to refer to the impact of the pandemic on student growth. However, ECRA prefers the term unfinished learning as we believe it more accurately reflects the current evidence regarding learning rates during the pandemic. Students did grow academically during the pandemic. Some students did not finish their learning congruent with pre-pandemic expectations.

The study has three main findings:

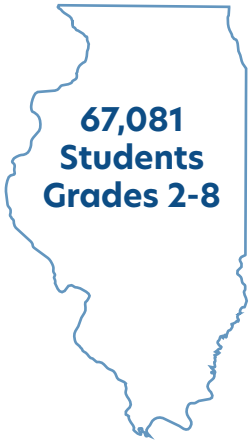
- **Students made significant progress over the course of the pandemic, but did not grow at rates consistent with pre-pandemic levels.** Overall, the study observed roughly 4.3 months of unfinished learning in reading and 4.9 months of unfinished learning in mathematics.

- **The effects of the pandemic on student growth were asymmetric in that unfinished learning was far greater for certain student groups.** Students designated as Black, Hispanic, Low-Income, and English Language Learners were amongst the student groups that were most impacted by the pandemic.

- **Some students grew at a rate equal to or better than pre-pandemic levels.** Despite the challenges faced, some students thrived.

Math	Reading
4.9	**4.3**
Months of learning recovery needed	**Months of learning recovery needed**

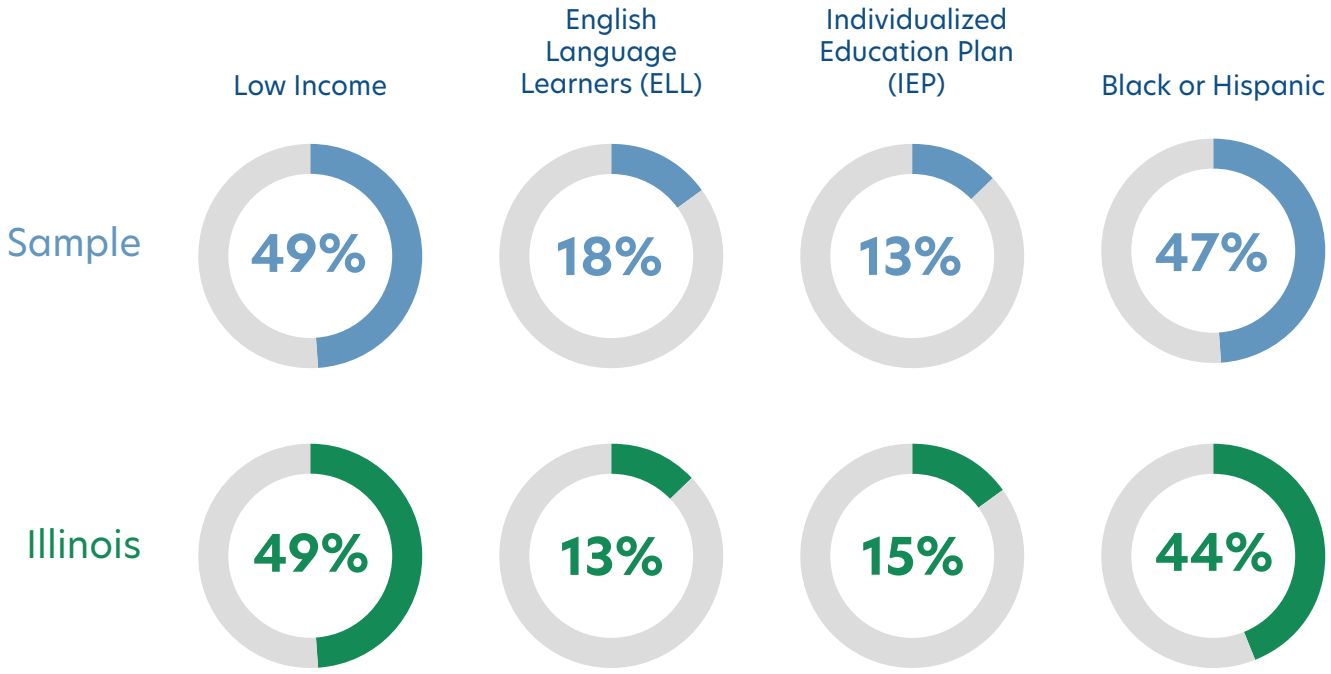
Study Sample



Results contained in this document are based on available assessment data on 67,081 students in Illinois grades 2 through 8.

Sample Characteristics

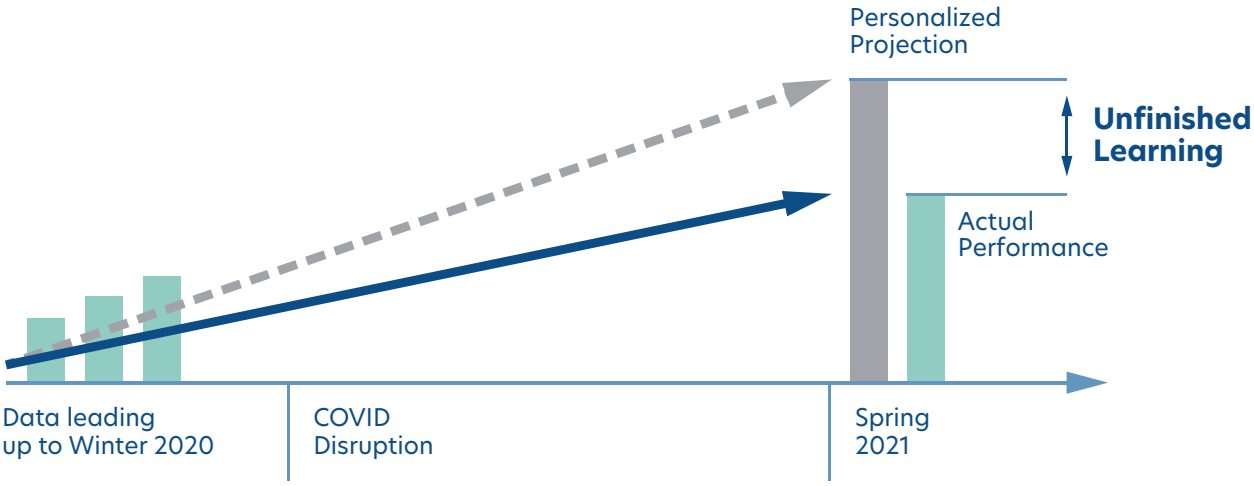
The sample is representative of the state overall.



Methodology

Unfinished learning within the ECRA study is defined as the gap between an individual student's observed assessment performance in the Spring of 2021 compared to a personalized projection as to where the student would have likely performed had the pandemic never happened. The period evaluated was from the Winter of 2020 to the Spring of 2021.

Personalized projections were established by training a predictive model using pre-pandemic data. The model learned the growth rates for each student leading up to the pandemic and generated a learning trajectory over the course of the pandemic under the assumption that COVID-19 had no impact. Personalized projections are unique to every student and are based on the histories of individual students and the growth trajectories of similar students within a local school district. Models were trained separately for each local school district within the study, and then combined across districts.



In essence, the analytic strategy compared observed learning trajectories over the course of the pandemic to learning trajectories that likely would have occurred if the pandemic never happened. Addressing the counterfactual of what would have likely happened to individual students had the COVID-19 pandemic never happened is the key to measuring unfinished learning and growth recovery.

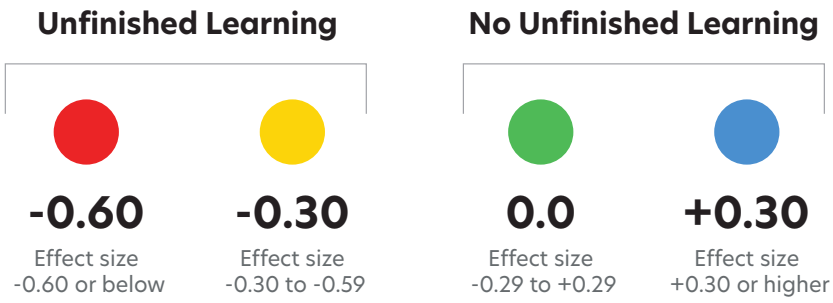
Study Outcome

The outcome for the study was academic growth expressed as an effect size. Specifically, the effect size is the standardized difference between a student's performance and their projected performance on the metric of z-score. Expressing student growth as an effect size has the advantage of leveraging decades of research on educational effect sizes and permits growth to be averaged across tests, subjects, and grades, or any other variables of interest – allowing for ease-of-use and actionable results through thresholds.

The study used research-based thresholds for educational effect sizes to categorize the degree of unfinished learning that exists.

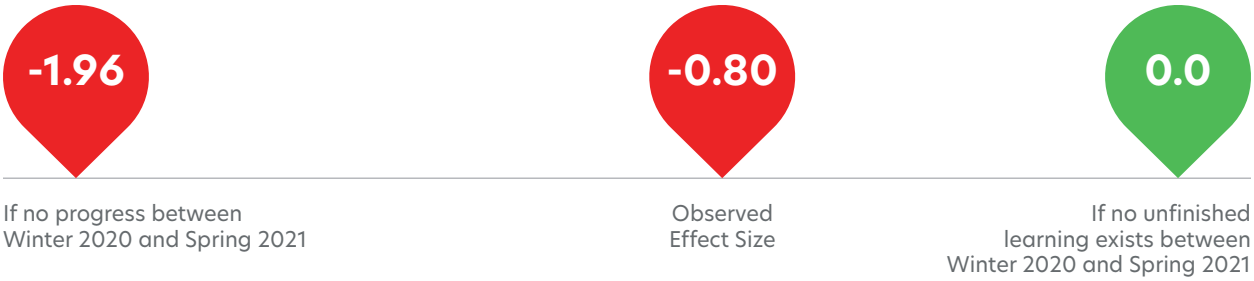
An effect size of 0.0 reflects no impact of the pandemic on student learning. The following categories were applied:

- **Blue** - Learning rates better than pre-pandemic levels
- **Green** - Learning rates consistent with pre-pandemic levels
- **Yellow** - Unfinished learning
- **Red** - Significant unfinished learning



Unfinished Learning Grades 2-8

Math Effect Size



Math Effect Size Analysis

Understanding the impact of the pandemic on student learning requires one to quantify where within the continuum of plausible math effects the study results lie.

An effect size of 0.0 reflects no unfinished learning – meaning the pandemic had no impact on mathematics.

We can use the study's predictive model to calculate the effect size corresponding to no progress during the pandemic – meaning students are at the same spot academically in math in the Spring of 2021 as they were in the Winter of 2020. This results in an effect size of -1.96.

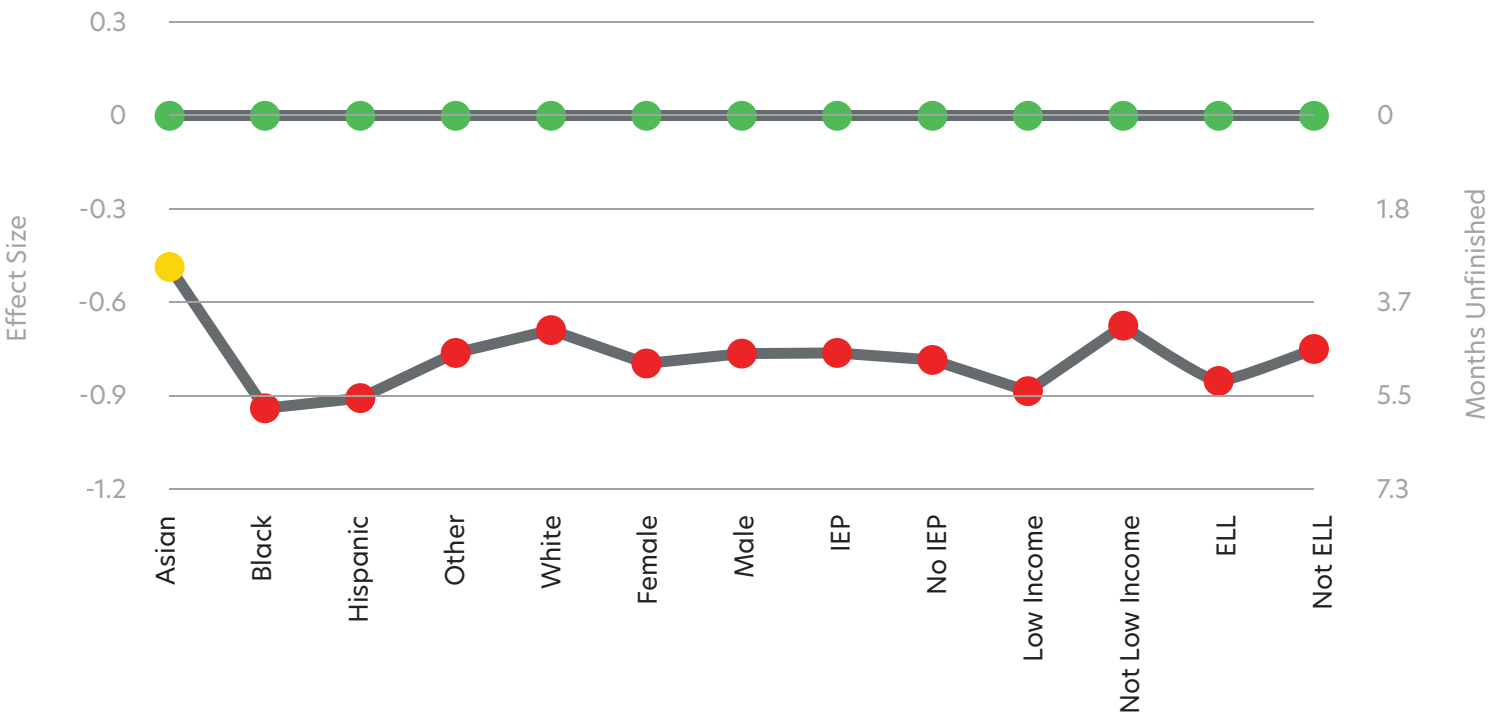
Combined with the observed mathematics effect size of -0.80, the following findings emerged:

- **Progress was made during the pandemic** in that the effect size for mathematics is well above the effect size of no progress.
- **Unfinished learning exists** as the observed effect size of -0.80 is below zero and within the significant unfinished learning category, both statistically and from an educational relevance perspective. The -0.80 effect size suggests there is roughly 4.9 months of unfinished learning in math.

Qualitative analysis suggests that districts with more days of in-person learning tended to have less unfinished learning in math.

Unfinished Learning by Student Group

Math



Math Student Group Analysis

The effects of the pandemic on unfinished learning in math are asymmetric in that some student groups have more unfinished learning than others.

In general, students designated as Black, Hispanic, Low Income, and English Language Learners (ELL) have more unfinished learning than other student groups. All student groups showed unfinished learning in math.

It is important to note that this finding is related to personalized student growth, and is distinct from the proficiency gap that existed prior to the pandemic. ECRA's research revealed that student groups are below where the same group would likely be had the pandemic never happened. The larger degree of unfinished learning that exists for some student groups indicates the proficiency gap is widening as some student groups are falling further behind.

It is imperative that our educational systems address this inequity as growth recovery plans are established.

Unfinished Learning Grades 2-8

Reading Effect Size

Reading Effect Size Analysis

Understanding the impact of the pandemic on student learning requires one to quantify where within the continuum of plausible reading effects the study results lie.

An effect size of 0.0 reflects no unfinished learning – meaning the pandemic had no impact on reading.

We can use the study's predictive model to calculate the effect size corresponding to no progress during the pandemic – meaning students are at the same spot academically in reading in the Spring of 2021 as they were in the Winter of 2020. This results in an effect size of -1.44.

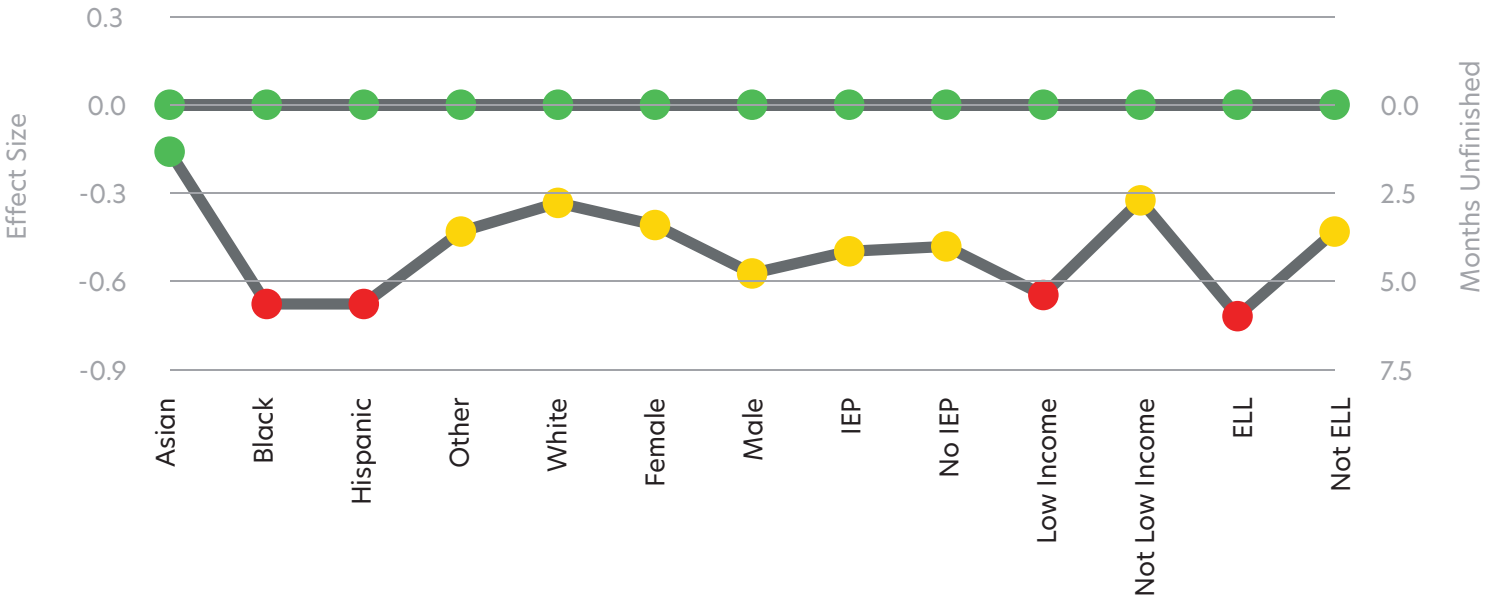
Combined with the observed reading effect size of -0.52, the following findings emerged:

- **Progress was made during the pandemic** in that the effect size for reading is well above the effect size of no progress.
- **Unfinished learning exists** as the observed effect size of -0.52 is below zero and within the unfinished learning category, both statistically and from an educational relevance perspective. The -0.52 effect size suggests there is roughly 4.3 months of unfinished learning in reading.

Qualitative analysis suggests that districts with more days of in-person learning tended to have less unfinished learning in reading.

Unfinished Learning by Student Group

Reading



Reading Student Group Analysis

The effects of the pandemic on unfinished learning in reading are asymmetric in that some student groups have more unfinished learning than others.

In general, students designated as Black, Hispanic, Low Income, and English Language Learners (ELL) have more unfinished learning in reading than other student groups.

It is important to note that this finding is related to personalized student growth, and is distinct from the proficiency gap that existed prior to the pandemic. ECRA's research reveals that student groups are below where the same group would likely be had the pandemic never happened. The larger degree of unfinished learning that exists for some student groups indicates the proficiency gap is widening as some student groups are falling further behind.

It is imperative that our educational systems address this inequity as growth recovery plans are established.

Equity Through Impact

An analytic framework for school leaders to measure equity and growth recovery

While equity and growth recovery initiatives take on many forms within school districts, personalized academic growth is an important outcome to measure impact.

The asymmetric impact of the pandemic presented in this report is a call to action for all educational leaders to assess the role they will play in supporting an equitable recovery.

As an industry, we need to move beyond comparing student growth rates to national or state averages, toward student growth that compares students to themselves in a more personalized way. This is accomplished by setting growth projections for students based on their own longitudinal profile as presented in this report. Personalized growth shifts the conversation from comparing students or groups of students to each other toward a growth mindset that rewards students for showing continuous improvement.

School leaders can use the approach of personalized effect sizes as an equity and growth recovery framework to:

Monitor personalized academic growth for individual students

Document academic growth for student groups

Evaluate the impact and return on investment that equity initiatives are having on academic growth

School leaders can leverage the research-based thresholds presented in this report to create actionable student groups, paying special attention to the unfinished and significant unfinished learning categories to drive equity initiatives. This analysis can be repeated in the fall, winter, and spring as new data become available to ensure an equitable growth recovery.

Appendix A - Math

Math - Grade Level Analysis

Grade Level	Observed Effect Size	Months of Recovery Needed
Grade 2	-0.87 🔴	3.8
Grade 3	-0.86 🔴	4.3
Grade 4	-0.94 🔴	4.7
Grade 5	-0.90 🔴	5.5
Grade 6	-0.79 🔴	7.2
Grade 7	-0.67 🔴	5.3
Grade 8	-0.56 🟡	5.2
All	**-0.80** 🔴	**4.9**

Math - Student Designation Analysis

Student Group	Observed Effect Size	Months of Recovery Needed
Asian	-0.47 🟡	2.9
Black	-0.94 🔴	5.8
Hispanic	-0.91 🔴	5.6
Other	-0.76 🔴	4.7
White	-0.68 🔴	4.2
Female	-0.80 🔴	4.9
Male	-0.77 🔴	4.7
IEP	-0.76 🔴	4.7
No IEP	-0.79 🔴	4.8
Low Income	-0.89 🔴	5.4
Not Low Income	-0.68 🔴	4.2
ELL	-0.86 🔴	5.3
Not ELL	-0.75 🔴	4.6

Appendix B - Reading

Reading - Grade Level Analysis

Grade Level	Observed Effect Size	Months of Recovery Needed
Grade 2	-0.63 🔴	3.1
Grade 3	-0.45 🟡	2.8
Grade 4	-0.49 🟡	3.6
Grade 5	-0.58 🟡	5.4
Grade 6	-0.52 🟡	5.9
Grade 7	-0.51 🟡	6.5
Grade 8	-0.46 🟡	7.3
All	**-0.52** 🟡	**4.3**

Reading - Student Designation Analysis

Student Group	Observed Effect Size	Months of Recovery Needed
Asian	-0.17 🟢	1.5
Black	-0.69 🔴	5.7
Hispanic	-0.69 🔴	5.7
Other	-0.44 🟡	3.7
White	-0.34 🟡	2.9
Female	-0.41 🟡	3.4
Male	-0.58 🟡	4.9
IEP	-0.51 🟡	4.2
No IEP	-0.49 🟡	4.1
Low Income	-0.66 🔴	5.5
Not Low Income	-0.33 🟡	2.8
ELL	-0.74 🔴	6.1
Not ELL	-0.44 🟡	3.7

Bringing decisions into focus.

At ECRA, we focus on helping school districts embed evidence-based practices via predictive models that empower school leaders with the information needed to ensure a more equitable environment where all students succeed. ECRA helps educators and school leaders realize their mission and vision in a way that inspires and engages the community, aligns resources, and provides a framework for continuous improvement.

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