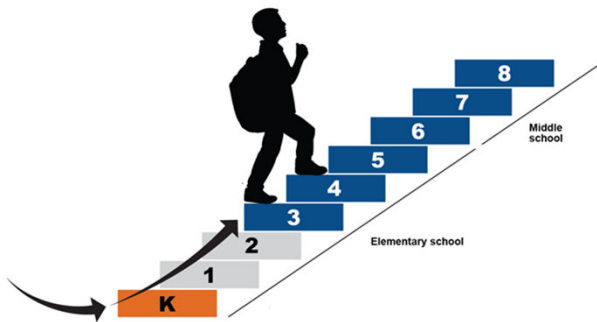# How Unfinished is Student Learning?

Presented by:

John Gatta, CEO
ECRA Group

Welcome! This is John Gatta, CEO of ECRA Group.

I'm excited to share some preliminary ECRA research results regarding the effects of the Covid-19 pandemic on unfinished learning.

The results contained in this presentation are based on an interim analysis of an ongoing study. Final study results will be published at a later date.

Should you be interested in replicating this study in your state or local district, you can contact me via twitter @jlgatta or questions@ecragroup.com.

ECRA Group Study of Unfinished Learning

Objectives:

- Quantify the magnitude of unfinished learning
- Develop a framework for school leaders to drive growth recovery

ECRA's study of unfinished learning has two objectives:

1. Quantify the magnitude of unfinished learning

2. Develop a framework for school leaders to drive growth recovery

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. ECRA's study defines the pandemic period beginning in Winter of 2020 and continuing through of Spring 2021.

Study Sample (Interim Analysis)

Illinois

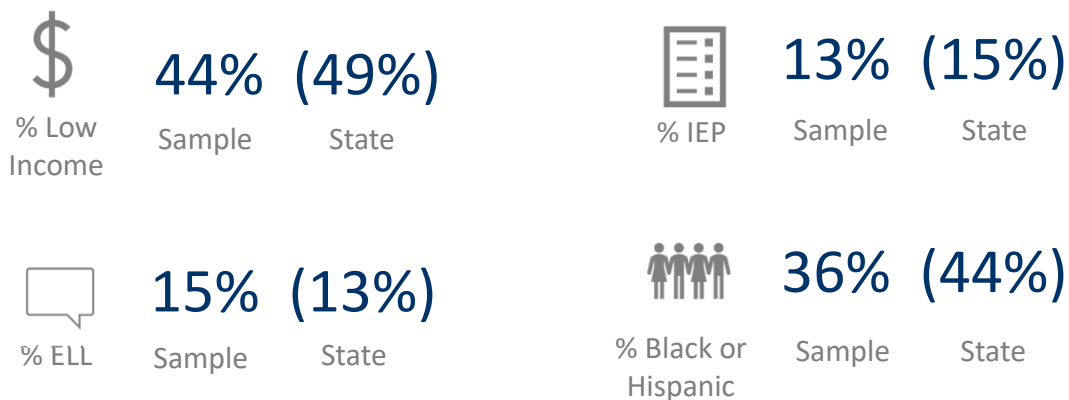State

26,116

Students

Assessment Results Grades 2-8

Grades

Interim results contained in this presentation are based on available assessment data on roughly 26,000 students in Illinois grades 2 through 8.

Sample Characteristics (State)

$
% Low Income

44% (**49%**)
Sample   State

▤
% IEP

13% (**15%**)
Sample   State

▭
% ELL

15% (**13%**)
Sample   State

👥
% Black or Hispanic

36% (**44%**)
Sample   State

The sample is representative of the state overall. For example, within the sample,

- 44% of students were identified as low income compared to 49% of students across the state
- 15% of students were identified as ELL compared to 13% across the state
- 13% of student were identified as IEP compared to 15% across the state
- 36% of students were identified as black or Hispanic compared to 44% across the sate

Inspection of other demographics shows a similar pattern. It is expected that the sample will become even more representative as more data becomes available.
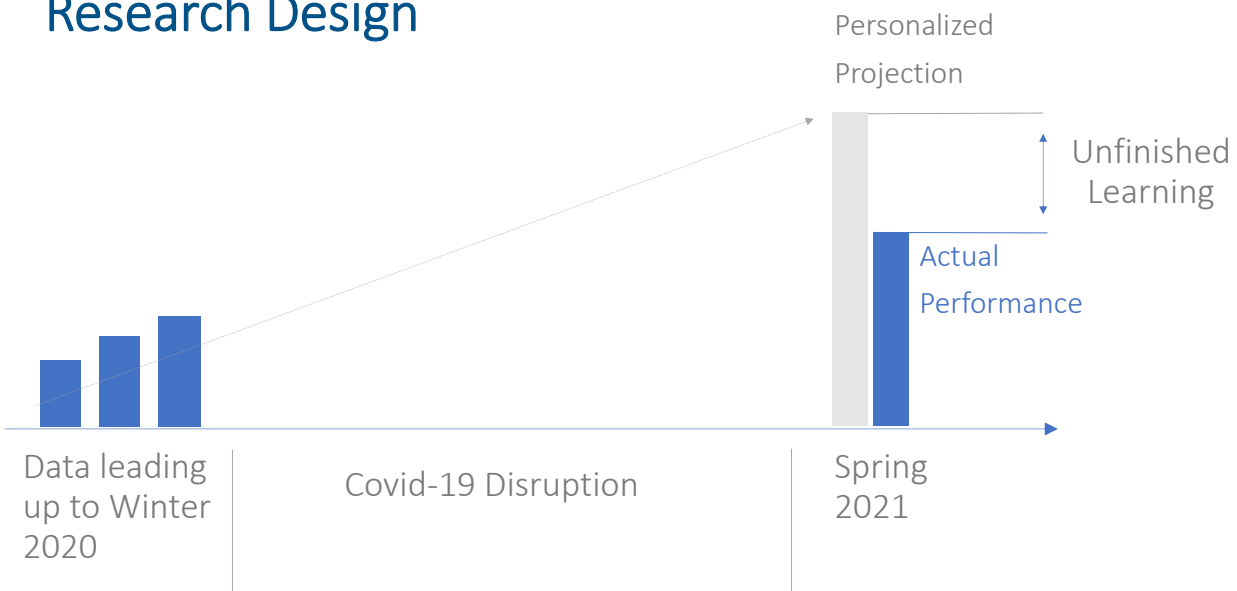
Unfinished learning within the ECRA Group study is defined as the gap between an individual student's observed assessment performance in the Spring of 2021 compared to a personalized projection as to where the student would have likely performed had the pandemic never happened. The period being evaluated is the Winter of 2020 to the Spring of 2021.

Personalized projections were established by training a predictive model using pre-pandemic data. The model learns the growth rates for each student leading up to the pandemic and generates a learning trajectory over the course of the pandemic under the assumption that Covid-19 has 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 the 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 is to compare observed learning trajectories over the course of the pandemic to learning trajectories that likely would have occurred if learning was uninterrupted by COVID-19. 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.

Unfinished Learning
Expressed as a Personalized Effect Size

Unfinished Learning		No Unfinished Learning	

-0.60	**-0.30**	**0.0**	**+0.30**
Effect size -0.60 or below	Effect size -0.30 to -0.59	Effect size -0.29 to +0.29	Effect size +0.30 or higher

Using a projected versus actual framework allows researchers to express the difference between a student's performance and their projected performance as a personalized effect size. Expressing learning rates as an effect size has the advantage of leveraging decades of research on educational effect sizes and allows learning 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 uses 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

Preliminary Findings

- Strong evidence that students have made progress
- Strong evidence of unfinished learning
- Strong evidence of asymmetric impact of pandemic
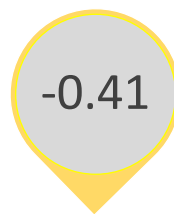
ECRA's preliminary findings support the following:

- Strong evidence that students have made progress

- Strong evidence of unfinished learning

- Strong evidence of asymmetric impact of pandemic

Unfinished Learning Grades 2-8

Reading Effect Size

-1.21		**-0.41**	**0.0**
If no progress between Winter 2020 and Spring 2021		Observed Effect Size	If no unfinished learning exists between Winter 2020 and Spring 2021

Understanding the impact of the pandemic on student learning requires one to quantify where within the continuum of plausible effects the study results lie. We know, as a matter of definition, that an effect size of 0.0 reflects no unfinished learning – meaning the pandemic has had no impact.

Furthermore, we can use the study's predictive model to calculate the effect size if students showed no progress during the pandemic – meaning students are at the same spot academically in the Spring of 2021 as they were in the Winter of 2020.

For reading, the effect size corresponding to no progress is -1.21.

The observed reading effect size from ECRA's research is -0.41, which means:

- Progress was made during the pandemic in that students, on average, learned roughly two thirds of what they would have learned during the same time period had the pandemic never happened.
- Significant unfinished learning exists as the observed effect size of -0.41 is in the unfinished learning category, both statistically and from an educational relevance perspective. Assuming constant rates of growth over the pandemic interval, the -0.41 effect size suggests there is roughly 4 months of unfinished learning in reading.

It should be noted that the study observed school districts with no unfinished learning as well as school districts with no progress. Qualitative analysis suggests the primary driver for the variation is the amount of in-person learning that existed during the pandemic. Districts with more days of in-person learning tended to have less unfinished learning.

Unfinished Learning Grades 2-8
Mathematics Effect Size

-1.73	-0.66	0.0
If no progress between Winter 2020 and Spring 2021	**Observed Effect Size**	**If no unfinished learning exists between Winter 2020 and Spring 2021**

A similar pattern exists for Mathematics:

We know, as a matter of definition, that an effect size of 0.0 reflects no unfinished learning – meaning the pandemic has had no impact on mathematics.

Furthermore, we can use the study's predictive model to calculate the effect size if students showed 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 -1.73.

The observed mathematics effect size from ECRA's research is -0.66, which signifies:

- There is more unfinished learning in Math than there is in Reading
- Progress was made during the pandemic in that students, on average, learned roughly two thirds of what they would have learned during the same time period had the pandemic never happened
- Significant unfinished learning exists as the observed effect size of -0.66 is within the significant unfinished learning category, both statistically and from an educational relevance perspective. Assuming constant rates of growth over the pandemic period, the -0.66 effect size suggests there is roughly 4.6 months of unfinished learning in math

Again, qualitative analysis suggests that districts with more days of in-person learning tended to have less unfinished learning.

Unfinished Learning by Student Group
Reading Effect Size
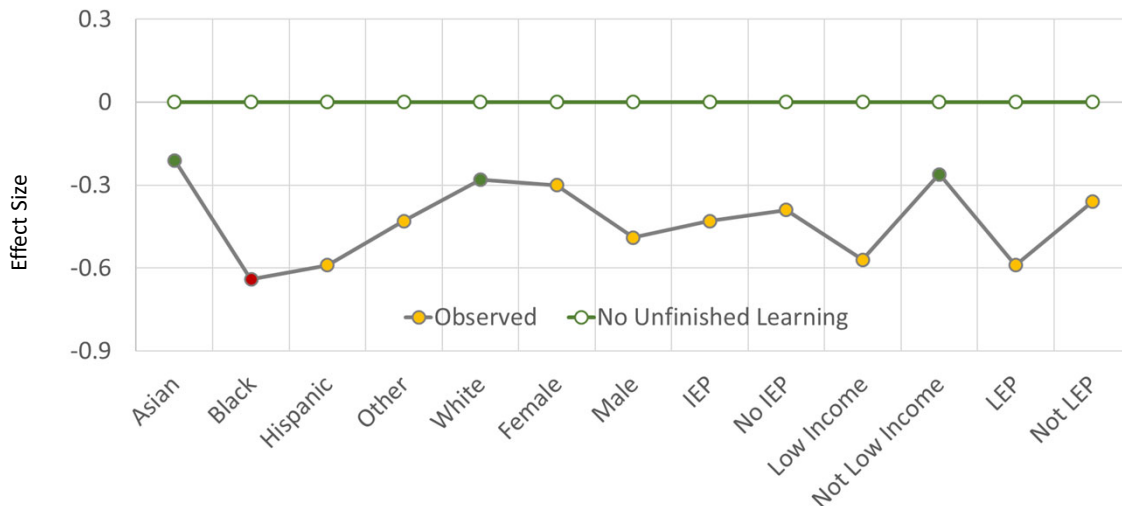
What about the impact of the pandemic on various student groups? Let's start with reading.

Unfortunately, the effects of the pandemic on unfinished learning have been asymmetric in that some student groups have more unfinished learning that others.

In general, Black, Hispanic, Low Income, and LEP students have more unfinished learning that other student groups.

This finding is distinct from the proficiency achievement gap that has existed prior to the pandemic. ECRA's research shows that certain 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 achievement 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 by Student Group

Math Effect Size
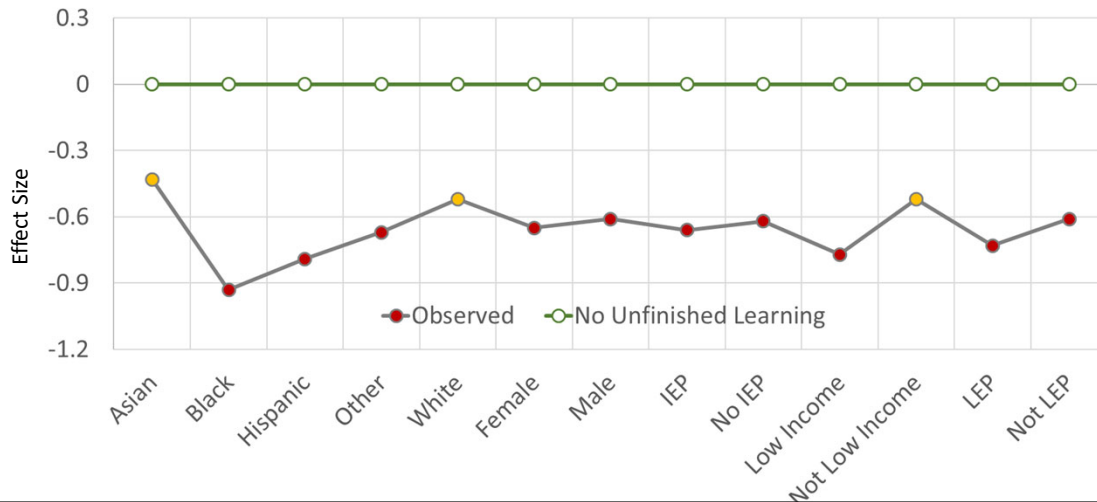
The same pattern exists for Mathematics as Black, Hispanic, Low Income, and LEP students have larger amounts of unfinished learning than other student groups.

Leading
Growth Recovery

So now that we have some insight into the effects of the pandemic on learning rates, how can school leaders drive growth recovery within their school districts?

The Pursuit of Zero Effect Size
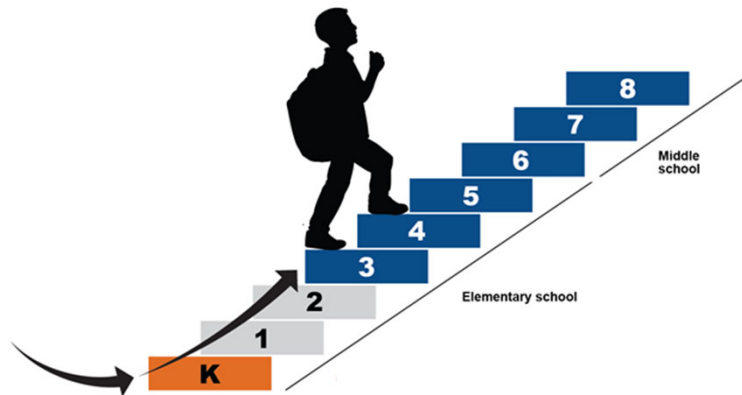
Driving growth recovery will require a steadfast commitment until the personalized effect size hits zero for every student. If an effect size persists, unfinished learning still exists.

Leaders can use personalized effect sizes as a framework to build a growth recovery initiative and culture. It's the same number over, and over, and over again. It can be combined, filtered, averaged across any variables.

The key is it must be a personalized effect size to ensure individual students are measured against his/her learning rates prior to the pandemic. It doesn't work if it's a general state or national effect size. It must be personalized to each student.

Actionable Thresholds

Monitor Local Effect Sizes Against Pre-Pandemic Levels

🔵 Learning rates better than pre-pandemic levels

🟢 Learning rates consistent with pre-pandemic levels

🟡 Unfinished learning

🔴 Significant unfinished learning

School leaders can then use the research-based thresholds established in this study to create actionable student groups, paying special attention to the unfinished and significant unfinished learning categories.

This analysis should be conducted during the fall, winter, and spring as new data becomes available and to ensure transparency into the growth recovery effort.

Monitor Effect Sizes by Buildings (sample)

Student Growth and Effect Size by School

School:	Student Count^	% Met Benchmark	% High Growth	% Expected Growth	% Low Growth	Effect Size	
BUILDING 1	72	11%	12%	59%	29%	- 0.37	🟡
BUILDING 2	400	12%	10%	69%	22%	- 0.27	🟢
BUILDING 3	102	26%	13%	61%	26%	- 0.28	🟢
BUILDING 4	106	16%	8%	56%	35%	- 0.63	🔴
BUILDING 5	261	N/A	12%	62%	26%	- 0.30	🟡
BUILDING 6	419	10%	8%	68%	24%	- 0.37	🟡
BUILDING 7	126	15%	10%	61%	29%	- 0.43	🟡
BUILDING 8	42	12%	6%	65%	29%	- 0.50	🟡
ALL	1,528	13%	10%	65%	25%	- 0.35	🟡
EXPECTED			16%	68%	16%	0.00	

* Dot color is green for all growth scores that are not statistically significant
^ Student count only includes students with at least 2 predictors

**Percentages may not add to 100 due to rounding
***Results not reported for groups with fewer than 5 students

The results presented in this presentation are in broad summary form, but in order to drive growth recovery within your local school district, it is important to drill down into your district to better understand how to best address unfinished learning and how to best allocate resources.

This includes disaggregating by building and applying thresholds.

Monitor Effect Sizes by Grades (sample)

Student Growth and Effect Size by Grade

Grade	Student Count^	% Met Benchmark	% High Growth	% Expected Growth	% Low Growth	Effect Size	
03	215	19%	5%	51%	44%	- 0.92	🔴
04	189	13%	13%	55%	32%	- 0.36	🟡
05	212	12%	6%	59%	34%	- 0.60	🔴
06	219	9%	13%	76%	11%	- 0.01	🟢
07	199	7%	6%	72%	22%	- 0.31	🟡
08	210	4%	4%	66%	30%	- 0.56	🟡
09	134	N/A	18%	66%	16%	+ 0.04	🟢
10	113	N/A	11%	61%	28%	- 0.33	🟡
ALL	1,491	11%	9%	63%	28%	- 0.41	🟡
EXPECTED			16%	68%	16%	0.00	

* Dot color is green for all growth scores that are not statistically significant
^ Student count only includes students with at least 2 predictors

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Disaggregating by grade level.

Monitor Effect Sizes by Student Groups (sample)

Student Growth and Effect Size by Student Group

Group	Student Group	Student Count^	% Met Benchmark	% High Growth	% Expected Growth	% Low Growth	Effect Size
Ethnicity	Asian	14	27%	14%	79%	7%	+ 0.08 🟢
Ethnicity	Black	346	4%	7%	70%	23%	- 0.38 🟡
Ethnicity	Hispanic	162	10%	11%	64%	25%	- 0.32 🟡
Ethnicity	Other	207	10%	9%	67%	24%	- 0.30 🟡
Ethnicity	White	718	24%	13%	66%	22%	- 0.22 🟢
Gender	Female	720	17%	11%	70%	19%	- 0.16 🟢
Gender	Male	727	14%	10%	64%	26%	- 0.40 🟡
IEP	IEP	211	4%	10%	66%	23%	- 0.31 🟡
IEP	No IEP	1,236	18%	11%	67%	22%	- 0.27 🟢
Income	Low Income	930	9%	10%	67%	23%	- 0.32 🟡
Income	Not Low Income	517	28%	12%	67%	21%	- 0.21 🟢
LEP	LEP	101	2%	11%	72%	17%	- 0.16 🟢
LEP	Not LEP	1,346	17%	11%	66%	23%	- 0.29 🟢
EXPECTED				16%	68%	16%	0.00

* Dot color is green for all growth scores that are not statistically significant
^ Student count only includes students with at least 2 predictors

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And especially disaggregating by student groups to ensure equitable recovery.

Monitor Effect Sizes by Student (sample)
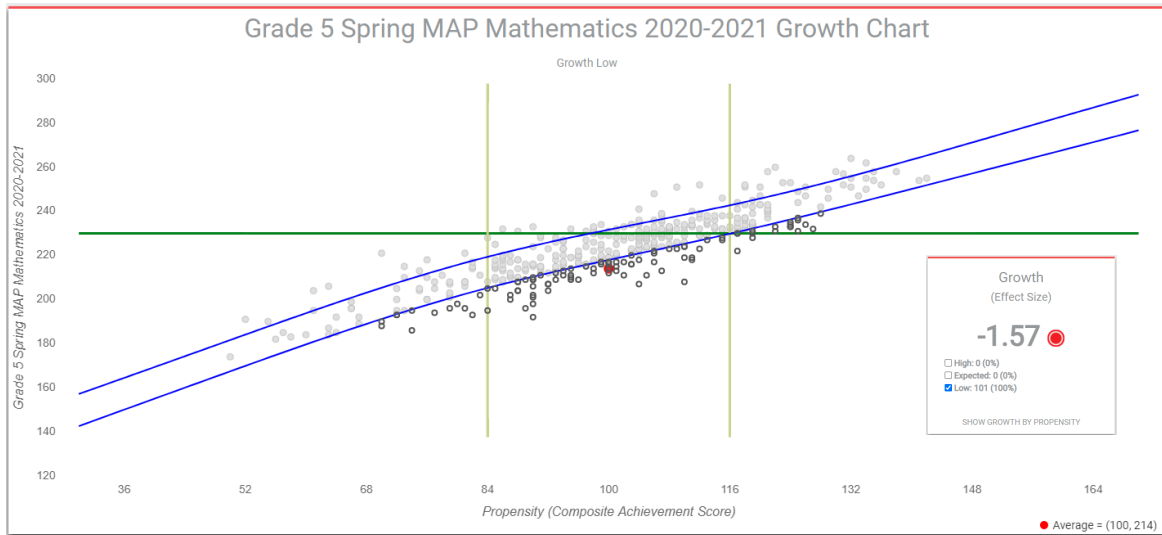
Optionally, school districts can use tools provided by ECRA to interact with study results and disaggregate unfinished learning by any combination of student groups and drill down to individual students.

Evaluate Return on Investment (sample)

Return on Investment Report

Math Intervention

Overview

This return on investment report provides a summary of the Math Intervention. It analyzes the Math Intervention in terms of its cost and its impact on student learning. Impact is quantified using the metric of effect size, which is a well-established approach for quantifying the magnitude of impact that educational programs and initiatives have on student outcomes. The effect size reported captures whether growth rates for students in the Math Intervention are higher or lower than expected given typical growth rates of similar students across the district.

Description

Third grade students were identified that needed additional support in math during the first half of the 2019-20 school year.

Funding Source

Title I

Results

The analysis is for the 2019-2020 school year, and is based on the following assessments: 2019-2020 Winter MAP Mathematics Grade 3. Services were rendered between 08/19/19-01/31/20.

19	$42,000	+ 0.60
Students	Total Expenditure	Effect Size

Overall, the effect size for the Math Intervention is + 0.60, which is higher than expected growth. This is strong evidence that the Math Intervention is providing a value-added benefit to students.

Tools provided by ECRA can also link financial data to local study results to provide a return-on-investment analysis for the use of ESSER funds and other funding sources.

If you would like to have ECRA replicate
this study in your state or local school
district, please contact me via twitter at

@jlgatta

or

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