

Recovery Interventions Require Effects Equivalent to Months of Additional School Time

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The COVID-19 pandemic substantially disrupted education in North Carolina. Most students experienced growth equivalent to that generally associated with just a fraction of a typical school year. In some cases, given the severity and diversity of pandemic-induced challenges, students may now need interventions with effects equivalent to the expected effects of more additional school time than that which passed between school closure in March 2020 and the end of the 2020-2021 school year. In other words, students may need acceleration experiences that surpass the expected effects of 12 school months in order to recover from the disruptions that occurred during those 12 school months.

To help practitioners understand the scope of academic need and identify appropriate interventions, the Office of Learning Recovery (OLR) estimated the number of additional school months necessary for recovery by students who experienced tested subjects in the 2020-2021 school year. This will help readers further understand [OLR's March report to the General Assembly](#), due in final form during December 2022. This is not a recommendation to extend the school day and/or year and these estimates should not be considered exact.

Method

Converting test score differences to units of school time has become common during the pandemic. Most recently, Goldhaber et al. (2022) used national data from NWEA's MAP assessment to estimate "weeks of learning." Our conversion is similar and includes two main steps. First, student-level differences between predicted and actual achievement are converted into "effect sizes" by dividing these differences by the standard deviation of achievement during the 2018-2019 school year.

See [here](#) for more information on this process. Then, these effect sizes are converted into school months using widely-cited growth benchmarks developed by researchers from Georgetown, MDRC, and Vanderbilt (Hill et al., 2008). Kogan and Lavertu (2022) also use these benchmarks to estimate the pandemic's effects in Ohio.

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To illustrate, here is the equation for Math 3. Note that these effect sizes are originally negative but that OLR drops the negative sign to interpret them as estimates of “additional time necessary for recovery” rather than “learning loss.” The x on the right-hand side indicates that we need to solve for total months out of a 9-month school year. Step 1 divides Math 3’s average effect size by its corresponding benchmark. This yields the estimated proportion of an additional school year necessary for the average student who experienced Math 3 in the 2020-2021 school year to fully recover to pre-pandemic expectations. To solve for x , this proportion is multiplied by nine, or roughly the number of months in a typical North Carolinian school year.

$$1. \frac{.11}{.14} = \frac{x}{9}$$
$$2. .79 = \frac{x}{9}$$

$$3. 9 * .79 = x$$
$$4. 7.11 = x$$

These conversions are strictly intended to help audiences understand the magnitude of student need and to facilitate meaningful dialogue between all members of the community. OLR acknowledges that these conversions have several flaws. For example, these conversions assume that learning occurs at a constant rate throughout the school year. This may be true in some contexts but not others. For example, in some schools, students may learn more in March than September even though both months have roughly the same number of school days. See Baird and Pane (2019) for a thorough discussion.

Interpreting estimates

Figure 1 provides estimates of additional time necessary for recovery by students who experienced each tested subject in the 2020-2021 school year. Estimates are rounded to the nearest quarter of a month so that readers can interpret fractional parts as weeks of school time.

Given a 9-month school year, estimates of additional school time necessary for recovery at the end of the 2020-2021 school year range from 2 months and 1 week in ELA Grade 3 to 1 year, 6 months, and 1 week in Math 1. On average, students may need interventions that are equivalent to twice as much additional time in Math than ELA. For example, the average student who completed ELA Grade 8 and Math Grade 8 during the 2020-2021 school year might expect recovery after participating in interventions that generate gains equivalent to 2/3rds of an additional school year in ELA and about 1 and a half additional school years in Math.

Additional notes and limitations

OLR cannot provide estimates for Science as we are unaware of any available year-to-year growth benchmarks in Science. OLR also cannot provide estimates for Math Grades 3 & 4 given concerns regarding the reliability of effect sizes in these subjects. We conclude that the average student does not need intervention in English II, given that the average effect size in English II is positive. Further, we provide only state-wide, subject-level conversions. Given that historical growth trends differ by subgroup, subgroup-level conversions using average benchmarks may misstate the amount of additional time necessary for recovery.

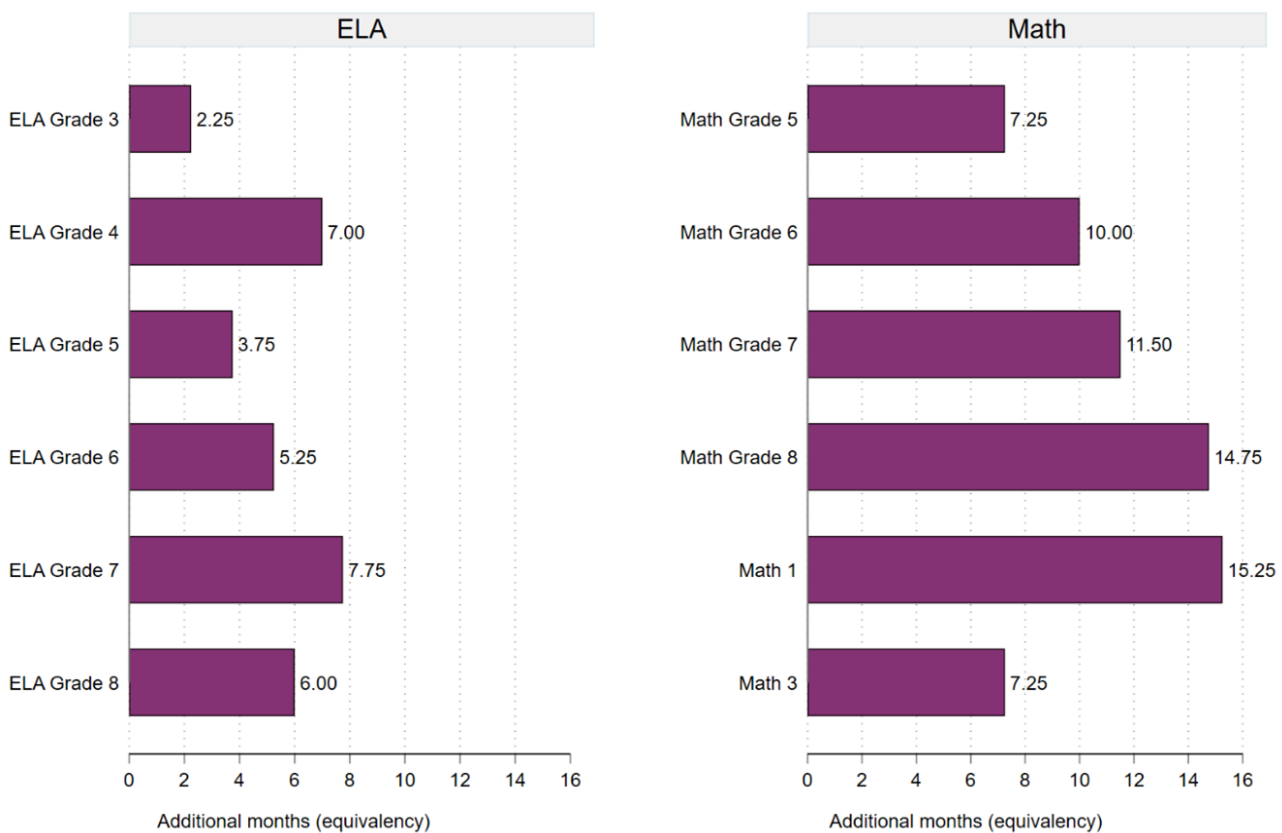
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Conclusion

These estimates are intended to reflect student need at the end of the 2020-2021 school year. Therefore, they do not reflect any recovery efforts that occurred between the end of the 2020-2021 school year and today. Furthermore, most students progressed to the next grade in 2021-2022. If the average 4th grader needed 7 additional months to recover at the end of the 2020-2021 school year, then we might expect that—without intervention—the average 5th grader needs experiences equivalent to 7 additional months to recover by the end of the 2021-2022 school year. As time passes, these needs will move to higher grades unless the state, districts, and schools work together to accelerate learning. OLR encourages districts and schools to explore the [What Works Clearinghouse](#) to find the best interventions for their students.

Figure 1. Estimated additional school months necessary for recovery, by subject (2021)



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References

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