Fullmind Students Progress Faster than Peers in Math

Overview

From 2017–2019, Fullmind partnered with the Lower Kuskokwim School District (LKSD) in Alaska to provide supplemental math instruction for students in Grades 4–8. The partnership was made possible through the Gaining Early Awareness and Readiness for Undergraduate Programs [GEAR UP] grant, designed to encourage postsecondary enrollment for low-income students. In LKSD, 97% of students identify as of the First Nation and 90% qualify for free and reduced lunch. The GEAR UP program in LKSD serves students experiencing educational barriers, such as lack of transportation, sewage lines, or running water. Through this partnership, students were provided internet access and supplemental math instruction through synchronous tutoring sessions with certified educators.

| Group	n	Avg. Hrs.
2017–2018	78	4.5
Grade 4	30	5.8
Grade 5	20	4.4
Grade 6	17	4.8
Grade 7	11	3.0
2018–2019	81	10.9
Grade 5	30	11.4
Grade 6	21	9.6
Grade 7	10	11.8
Grade 8	20	10.8

Fullmind students received targeted math instruction two hours per week. To ensure culturally responsive education, Fullmind educators received professional development focused on cultural norms and traditions of the population served. During the 2017–18 SY, 217 students participated. The intervention expanded the following year to reach 323 students. Students were placed in small groups (*n*=4) based on baseline assessment performance to appropriately individualize instruction.

Of participating students, 78 completed both a pre and post assessment in SY 2017–18, and 81 completed both in SY 2018–19. These subsamples were retained for all analyses. During the 2017–18 academic year, the intervention ran for six weeks and students received an average of 4.5 hours of synchronous instruction. This increased substantially the following academic year, in which the intervention ran for eight months with an average of 10.9 hours of instruction received. To measure growth in math achievement, Fullmind analyzed Scantron® Performance Series Assessment data from beginning and end of program administrations across both academic years.

Impact

Fullmind students demonstrated growth from pre (M=2306) to post (M=2339) test during SY 2017–18, and showed statistically significant gains in their Normal Curve Equivalent [NCE] scores, $p < .05$ (Figure 1). Gains in NCE scores indicate students are progressing at a faster rate than their national peers. These data suggest Fullmind students were able to quickly make gains and progress towards grade level content. These outcomes are encouraging, given the short intervention period and limited instructional hours received, but may also highlight more intensive instruction (i.e., higher dosage) is necessary to demonstrate more substantial gains in math achievement.

Figure 1. Average Normal Curve Equivalent (NCE), 2017–2018
Grades 4–7 (*n* = 78)
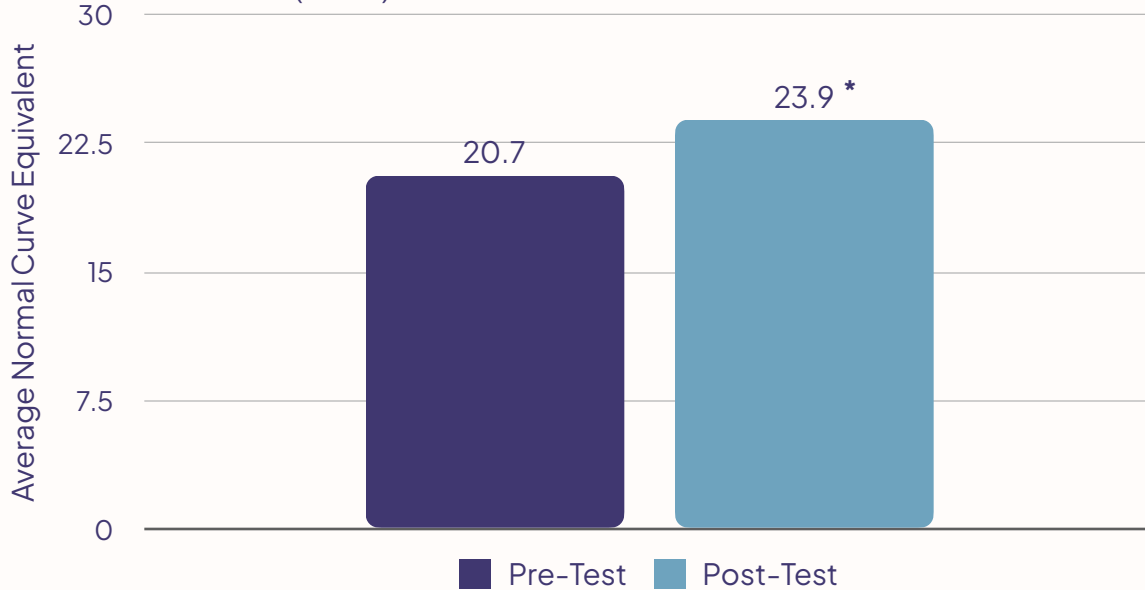
Note: ***p* < .001, ***p* < .01, *p* < .05

The following academic year, Fullmind students demonstrated statistically significant gains from pre to post-test, *p* < .001. Though all groups of students made gains, on average, students who received greater than five hours of instruction demonstrated larger gains (M=137), than students receiving fewer than five hours (M=98) (Figure 2).

Figure 2. Average Scaled Score by Instructional Hours Received, 2018–2019
Grades 5–8 (*n* = 81)
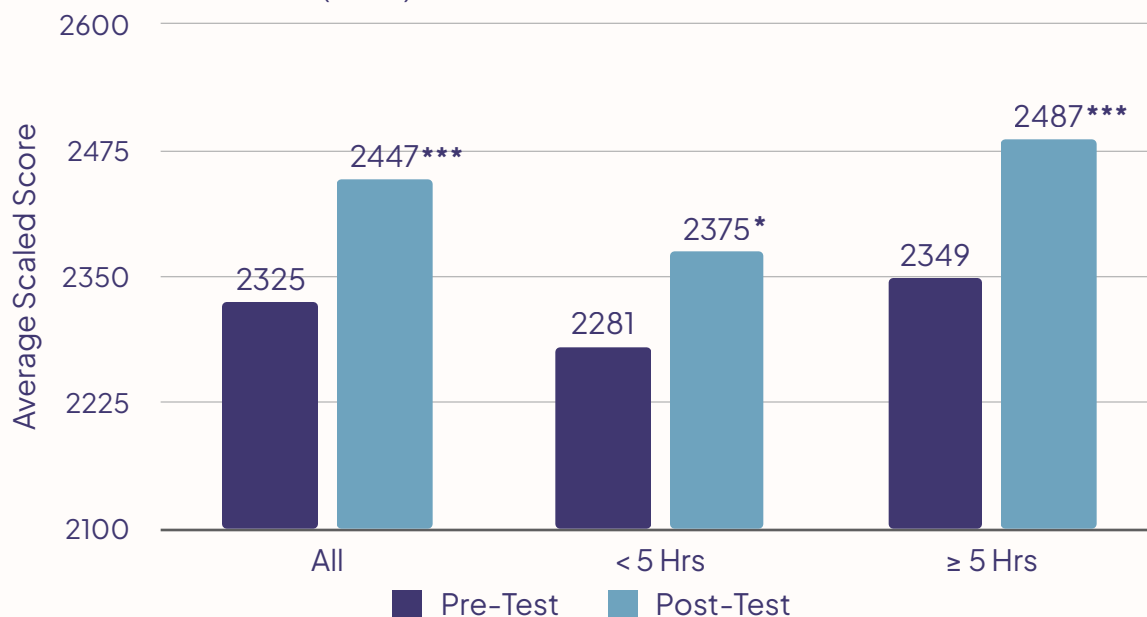
Note: ***p* < .001, ***p* < .01, *p* < .05

Students again demonstrated significant gains in their NCE scores from pre to post, indicating progress towards grade level content, $p < .01$ (Figure 3). Students again demonstrated significant gains in their NCE scores from pre to post, indicating progress towards grade level content, $p < .01$ (Figure 3).

Figure 3. Average Normal Curve Equivalent (NCE), 2018–2019
Grades 5–8 ($n = 81$)
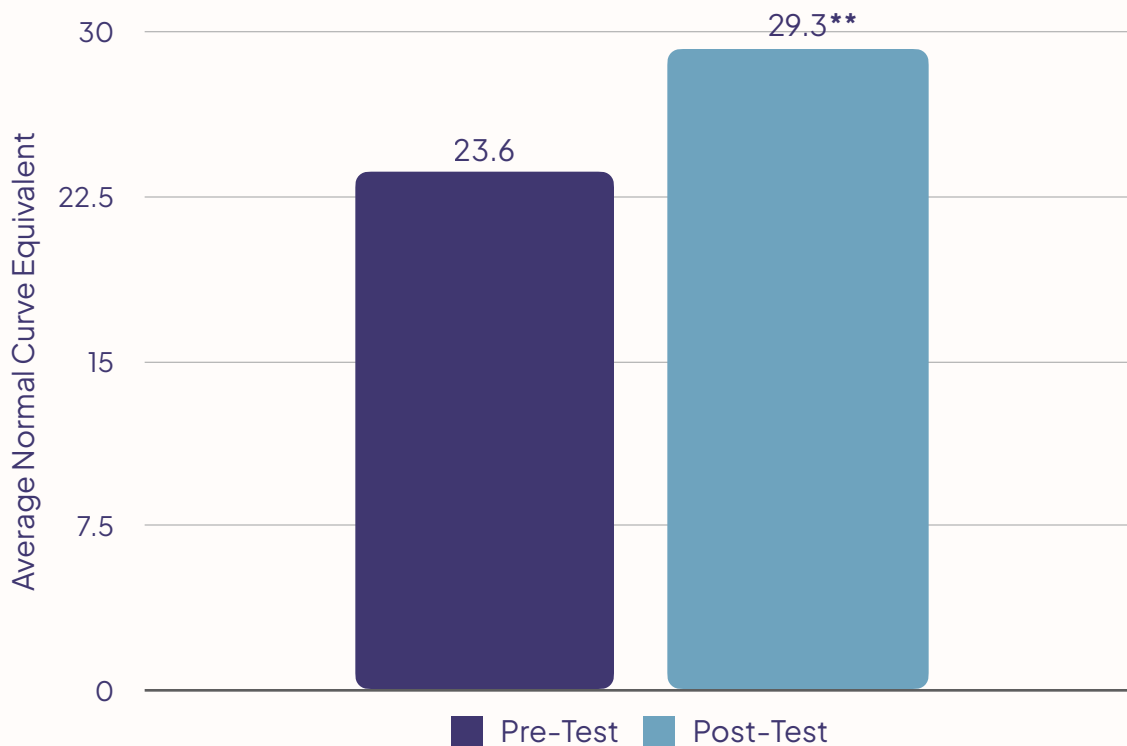
Note: ***$p < .001$, **$p < .01$, *$p < .05$

Further analysis of both cohorts revealed use of Fullmind services significantly predicted gains on test scores. For each additional hour of instruction, students were projected to increase their test scores by 5.5 points, $p < .05$. Results indicate students who receive more instructional hours demonstrate greater gains on a measure of math achievement. For students performing below grade level, this limited, but targeted, instruction may have the ability to quickly scale students toward grade level content. These results highlight the potential ability of virtual instruction to not only remove access barriers but to provide high quality instruction capable of encouraging significant academic gains for students.