JOHNS HOPKINS SCHOOL of EDUCATION | Institute for Education Policy

The Great Minds & San Tan Heights Partnership: Student Outcomes
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Summary

In 2021, Great Minds and San Tan Heights, a school in Arizona's Florence Unified School District, formed a partnership. The partnership provided high-quality instructional materials, interim assessments, and intensive professional learning support for teachers at San Tan Heights to utilize these new instructional supports. This research examines changes in student test scores after the onset of a partnership. Analyses show that while a small percentage of San Tan Heights students have reached proficiency, as measured by the MAP tests, scores are rising over time. In addition, MAP scores of students who are not proficient grow more than their proficient peers, suggesting that San Tan Heights is closing the achievement gap. Analysis of DIBELS scores shows that students at San Tan Heights generally perform better than their district peers and make more gains the longer they stay in the school.

Introduction

This study investigates one intervention that provided increased support to a school after the COVID-19 pandemic and examines how student outcomes may have changed after that additional support. Specifically, we studied the increased support that resulted from a partnership between the nonprofit Great Minds and San Tan Heights K–8 School ("San Tan"). The partnership increased access to high-quality curriculum, including using Eureka Math^2, Wit & Wisdom, PhD Science, Prologue, and Geodes, as well as interim assessments at San Tan. The partnership also increased the amount of professional learning and ongoing support within the school. We leveraged district administrative data to examine the change in student test scores at San Tan during the partnership for four different outcomes: MAP Reading, MAP Math, MAP Science, and DIBELS scores.

Analyses show that relatively few San Tan students have reached grade-level proficiency, as the MAP test defines. However, the percentage of students who attain proficiency has increased each year of the partnership. In addition, analyses show that students who are not yet proficient learn more than proficient students, suggesting that the school is closing the learning gap between students. Analyses of DIBELS scores suggest that San Tan students generally perform better than do their district peers. Thus, these findings indicate that the San Tan partnership supports student learning.

Analysis

The partnership between Great Minds and San Tan was initiated in the 2021-2022 school year (hereafter referred to by the calendar year of the spring semester). The 2022 school year concurred with operations' returning to normal for most schools after the remote learning, high absentee rates, elevated teacher resignations, and student learning loss that came with the COVID-19 pandemic. This report measures student test performance from 2021 to 2024. While the influence of the partnership is reflected in the data, it is impossible to fully separate the effects of pandemic-era changes in student preparation and school operations from the implementation of the partnership.

Students at San Tan take multiple norm-referenced tests every year that can be evaluated for evidence of progress in knowledge gains. Both exams, DIBELS and MAP, are administered three times a year: fall, winter, and spring. The DIBELS exams occur in kindergarten through 8th grade, while MAP exams are administered in 2nd through 8th grades. This analysis utilizes the composite DIBELS scores, which combine multiple reading skills into one score. In contrast, the MAP provides subject-specific measures of learning in math, science, and reading. The Math and Reading MAP scores are frequently used as part of a school accountability program, and proficiency thresholds for Grades 3 – 8 are published based on the national distribution of student scores. For all of these exams, student performance is compared to the national benchmarks for 2020. DIBELS scores for 2021 through 2024 and MAP scores from 2022 to 2024 are available for analysis.

MAP Scores

MAP scores suggest that students at San Tan are below national averages. Specifically, the default proficiency thresholds for MAP are set so that typically, 40% of students are below the proficiency standard, 30% are proficient, and 30% are advanced; thus, 60% nationally are proficient or better (Tran et al., 2022). In comparison, Table 1A shows the percentage of students at San Tan who are proficient or better for the Fall and Spring MAP exams in reading and math.

Table 1A: Proficiency on MAP Exams

	Percent of all students proficient or advanced				
	Spring 2022	**Fall 2022**	**Spring 2023**	**Fall 2023**	**Spring 2024**
Math	3.5%	2.3%	11.7%	8.9%	21.4%
Number of Students	198	341	402	573	566
Reading	9.1%	11.8%	23.2%	15.4%	25.0%
Number of Students	208	330	383	557	581

Only students in Grades 4-8 have testing data in Spring 2022, and there are no proficiency benchmarks for students in Grade 2. The table includes the number of student test scores each percentage represents to provide a sense of these differences in data availability. In addition, the differences in data availability underscore that these scores do not fully describe all of the students at San Tan.

Table 1A shows that the percentage of San Tan students proficient in Math and Reading is well below 60% each year.

However, Table 1A shows that the percentage of proficient San Tan students increases over time. In addition, the Spring of 2024 scores have the highest percentage of students meeting the proficiency threshold across both subjects. Note that these percentages are based on proficiency benchmarks established in 2020, right before the pandemic era disruptions generated student learning losses. Schools nationwide have seen scores fall, and the losses were larger for student populations that struggled before COVID-19 (Ross, 2024). Thus, these low proficiency rates likely reflect a combination of both phenomena.

The appendix to this report contains Tables A1a to A2b, which show the percentage of students who are proficient by grade and race/ethnicity. The school averages are not remarkably different from the sub-group measures. Students in all grades and demographic groups are not consistently meeting the proficiency thresholds.

To understand how students' spring proficiency relates to their proficiency in the fall of the same school year, Table 1B shows the percentage of students proficient on the spring exams conditional on their fall proficiency status.

Table 1B: Percentage of Students Proficient on Spring Exams

Fall Proficiency Category		
	2023	**2024**
Math		
Proficient	87.5%	94.3%
Not Proficient	9.7%	17.3%
No Fall Math Score	11.8%	13.2%
Reading		
Proficient	89.7%	89.6%
Not Proficient	14.8%	13.4%
No Fall Math Score	18.4%	22.0%

Table 1B shows that students who are proficient in the fall are more likely to be proficient in the spring. For example, of the students who were proficient in math in the fall of 2022, 87.5% were also proficient in math in the spring of 2023. However, the percentage of students who move from non-proficient in the fall to proficient in the spring ranges from 9.7 to 17.3 percent. The final category in each row shows the percentage of students who did not take an exam in the fall but were proficient in the spring. Thus, Table 1B suggests that most students remain proficient once they attain it and that around 15% of non-proficient students move to proficiency each year.

Thus, despite the low proficiency rates, there are some signs that performance has improved at San Tan over the two years of test score data. In addition, comparisons of students' scores from the fall to spring also show signs of growth. Table 2 below shows the average score increase when spring exams are compared to the fall exam in the same subject. For each subject, the average student growth in 2024 was higher than in 2023. This shows a promising sign of improvement at San Tan. However, this must be interpreted cautiously as expected growth varies by grade level, and the number of students in each grade differs from year to year.

Table 2: MAP School Year Score Growth

	2023	2024
Math		
Average Score Growth	9.25	9.65
Percent Exceeding Typical Growth	48.3%	52.4%
Number of Students	*317*	*475*
Science		
Average Score Growth	2.98	4.17
Percent Exceeding Typical Growth	35.7%	43.4%
Number of Students	*297*	*412*
Reading		
Average Score Growth	3.97	7.23
Percent Exceeding Typical Growth	36.1%	45.9%
Number of Students	*296*	*481*

To more appropriately compare the growth scores, Table 2 also shows the percentage of students whose growth exceeds the "typical growth" of a student on their grade level. This expected growth measure is adjusted for the student's grade level and current scores. Students

who exceed typical growth represent those making more than expected academic progress or closing the academic achievement gap if they are behind. For example, among 5th-grade students, the typical score growth in math is 9 – 12, depending on their current score. If a student's typical or expected growth is 12 and their score goes up 14 points from fall to spring, they would be identified as exceeding typical growth in the chart below.

Thus, Table 2 shows that the percentage of students making typical growth increased from 2023 to 2024 in all three subjects. These increases provide an even stronger indication that San Tan is effectively increasing student learning over time. These same measures for subgroups by grade level and race/ethnicity are shown in Tables A3a through A4c in the appendix to this report. Again, these data show that all grades and demographic groups are not currently proficient but are growing toward proficiency. These results are also promising, as they suggest that San Tan's methods are equally effective for all students.

To better understand if students who are not proficient are catching up over the school year, Table 3A shows the differences in MAP score growth based on those who were and were not proficient in the fall.

Table 3A: MAP School Year Growth Scores

	2023	2024
Math		
Proficient fall	8.50	7.26
Not proficient fall	9.27	9.84
Number of students	*317*	*475*
Reading		
Proficient Fall	1.69	2.04
Not Proficient Fall	4.31	8.22
Number of students	*296*	*481*

Table 3A shows that, for both math and reading, growth scores are higher for students who were not yet proficient in the fall for both academic years. For example, students who were not yet proficient gained an average of 9.84 points in math compared to their proficient peers, who gained 7.26 points across the 2024 school year. In addition, the gains of students who were not yet proficient in reading and math were larger in 2024 than in 2023. These results are encouraging and suggest that students who struggle academically are growing and closing the gap in both math and reading.

Table 3B shows the percentage exceeding typical growth each year. Typical growth is determined for each student based on their grade level and fall test scores, as described in Table 2.

Table 3B: Percent exceeding typical school year growth

	2023	2024
Math		
Proficient fall	50.0%	48.6%
Not proficient fall	48.2%	52.7%
Number of students	317	475
Reading		
Proficient fall	38.5%	41.6%
Not proficient fall	35.8%	46.8%
Number of students	296	481

Table 3B shows that the percentage of students with higher than typical growth is about the same between those students who are already proficient and those who are not in math and reading. The percentage of students exceeding typical growth in reading increased in the second year. Collectively, these tables suggest that San Tan supports all students equally well, and there is evidence that students below grade level are learning more.

A similar analysis of the scores is shown in Table A14 of the appendix to this report. That analysis looks at the quintile distribution of students in the fall and spring of each year. It includes science exam scores and examines students' movement across quintiles in the national distribution.

To provide a more complete understanding of students' learning, we next estimate student academic growth while controlling for time, grade level, student demographics, and starting achievement. Since test scale scores are expected to increase for higher grades, these analyses use a student's percentile distribution for their appropriate grade. This model is estimated separately for each subject. Table 6 below shows the average difference in estimated growth in the second year or 2024 school year. Growth rates vary over time because students learn different amounts in different grades.

Table 6: Fall to Spring Percentile Gains

	MAP Second-Year Improvement
Math	0.98
Science	**3.31** ***
Reading	**3.23** ***

NOTE: *, **, *** represent statistical significance at .10, .05, and .01 levels respectively.

The estimate of 3.23 in reading suggests that for two students with the same percentile ranking on the fall exam, a student attending San Tan in 2024 would have a spring percentile ranking that is 3.23 higher than the student in 2023. This suggests that comparable students learned more at San Tan during the 2024 school year than in the 2023 school year. Thus, these estimates provide evidence that the partnership between San Tan and Great Minds has become more effective over time.

In addition, there were no meaningful differences by gender, race/ethnicity, and grade level. This suggests that the gains are equal across all students at the school. Of the other student-level information used, only a Special Education determination is consistently influential in predicting percentile gains. This is promising, as it suggests that all groups of students learned equally well at San Tan.

DIBELS Scores

For the DIBELS tests, composite scores were analyzed rather than the sub-scale measures. The scores are also presented as percentile rankings rather than raw scores, so the score represents the percentage of students who scored lower. That is, a score of 37 means 37% of students in the same grade level had a lower score, and 63% had a higher score.

If San Tan students score similarly to the nation on average, we expect the mean score to be 50 when measured as a percentile. For the four years of test data, the average percentile is slightly below 50, but scores on spring exams rose consistently from 45.3 to 48.6 over the data collection period. This average includes all students who took the end-of-year exam.

Table 7: DIBELS Percentile Rankings

Year	Average Percentile Score	Number of Students
2021	45.3	488
2022	47.9	633
2023	48.3	454
2024	48.6	456

By analyzing students who took the exam in the fall and spring of the same school year, we can see how frequently percentile scores are increasing over the school year. This represents above-average growth relative to the national score distribution. Table 8 shows the percentage of San Tan students with increasing percentile scores each school year.

Table 8: DIBELS Percentile Growth Fall to Spring

Year	Percent of Students	Number of Students
2021	55.7%	359
2022	55.2%	594
2023	53.5%	428
2024	59.6%	463

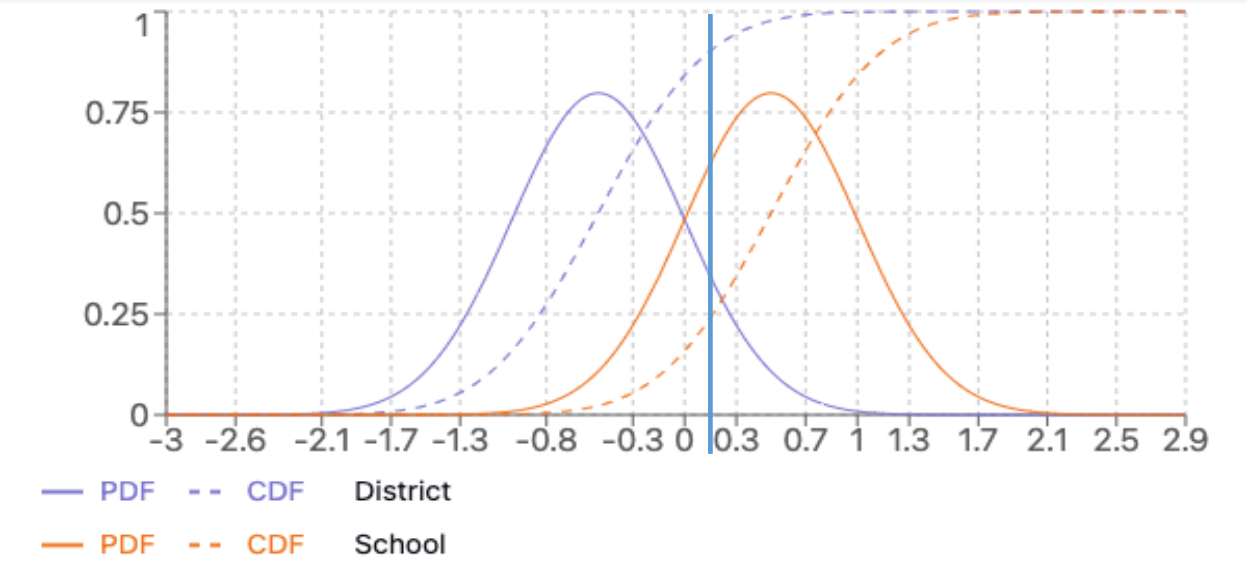
Table 8 shows that when students take the DIBELS test at San Tan at the beginning and end of the same school year, over half of students are consistently achieving above-average growth when taking. Thus, students at San Tan are improving on the DIBELS test relative to the national average.

Tables A10 and A11 in the report's appendix provide statistics by demographic subgroup and grade. These tables suggest some variation by grade level and race.

The DIBELS exam scores provide opportunities for additional insight because the data includes four total school years, and percentile rankings are available to show how a student at San Tan compares to other students in the nation, district, and other students at school. From this data, we can see changes over additional years and observe how San Tan may be changing relative to the larger Florence Unified school district, as all schools were finding ways to help students who fell behind during the pandemic.

The figure below helps show how the percentile rankings relative to different student populations can provide information about school performance.

Figure 1: Relationship between PDF and CDF



The figure above shows the probability density function (PDF) with solid lines and the cumulative density function (CDF) of test scores for a representative district and school where test scores are normally distributed. The PDF shows the distribution of individual test scores, and the CDF is the percentile ranking for the test score. The horizontal axis shows test scores measured in standard deviations from the national mean. The vertical axis measures the percentage of exams or students. For the PDF, this measures the percentage of exams with a given score. On the CDF, this measures the percentage of exams with a lower score.

In this example, the students in the school perform better than students in the district overall. This can be seen by comparing the PDFs of the school (in orange) and the district (in purple), and the fact that the school's average scores are higher than those of the district. Specifically, the average score of students in the school is about 0.6 deviations above the mean, and the district average is about -0.5, or half a standard deviation below the mean. Note that the mean test score is the x-value below the highest point on the PDF.

Thus, since the school's PDF is shifted to the right of the district's, it has a higher average. The school CDF is also shifted to the right but appears lower than the district CDF (in the range where the CDFs are positively sloped). Consider a student who scored 0.15 deviations above the mean on this test, as shown by the vertical blue line. That would be a percentile rank of about .23 or 23rd percentile (orange dashed curve) when compared to students in the school. That same student would have a percentile rank of about .90 or 90th percentile (purple dashed curve) compared to all district students. Thus, comparing the CDFs provides another way to think about how students in the school perform better than their peers in the district. Note, however, that these differences are exaggerated to make it easier to see in an example figure. The expected difference between an individual school and the overall district is generally much smaller.

The table below summarizes the percentile ranking of San Tan students relative to the nation, district, and school for the years that scores are available. One way to think of these visually is that these scores are where the three different CDFs each cross a vertical line that represents the students' exam scores. The italicized numbers indicate that data for at least one grade is missing for the percentile ranking in that year.

Table 9: San Tan Heights Average Percentile Scores

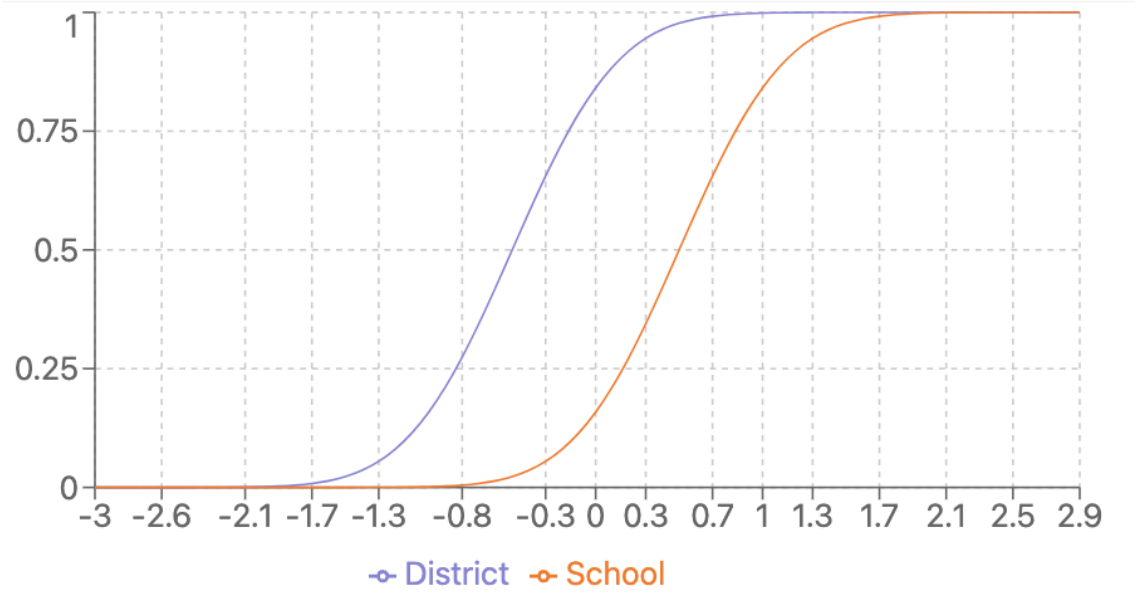
	Nation	District	School
2021	45.3	***52.9***	48.7
2022	47.9	50.5	49.0
2023	48.3	51.7	49.0
2024	48.6	51.5	***48.9***

Table 9 shows that in each year, the percentile ranking for the district is higher than the school. That means that a student does relatively better than their peers in the district than they do

compared to their stronger peers at their school. Thus, Table 9 indicates that the average DIBELS test score at San Tan is higher than that of the district overall.

Next, we use multiple regression to more formally estimate the relationship between the district and school's score distributions or CDF curves. Figure 2, below, shows the same relationship as Figure 1 but with only the CDF curves remaining for simplicity.

Figure 2: Graphical representation of the difference between district and school percentiles



The vertical distance between the two curves tells us how the two distributions compare, and it is a non-linear function of the test score. For example, the vertical difference is so slight that it appears to be zero for test scores more than two deviations below the mean or more than two deviations above the mean. However, the difference is quite large when the test scores are close to zero. To allow for the difference to be very small at high and low values and large in the middle, we estimate the school percentile as a cubic function of the district percentile without a constant term.

$$SchPer_i = b_1 * DistPer_i + b_2 * DistPer_i^{\,2} + b_3 * DistPer_i^{\,3} + \epsilon_i \qquad (1)$$

Where $SchPer_i$ is the percentile (Y-value) of the orange curve for student i; $DistPer_i$ is the percentile (Y-value) of the purple curve for student I; and ϵ_i is a normally distributed error term.

If the two distributions are identical, we would expect b_1 to be 1—that is, the students' district percentile rank completely predicts their school percentile rank—and b_2 and b_3 would be zero. If the orange school distribution is to the right/lower than the purple district curve, we would expect the estimate of b_1 to be less than one and b_2 and b_3 to be much smaller coefficients. If the orange school distribution is to the right/above the purple, we would expect the estimates of b_1 to be greater than 1.

The estimated coefficients and significance levels for these equations, when estimated for each grade separately, are shown below in Table 10.

Table 10: Estimated Coefficients Between School and District CDFs

	District Percentile	Squared	Cubed
	(1)	(2)	(3)
Kindergarten	**1.000** ***	-0.003	0.00003
Grade 1	**0.730** ***	0.001	0.00002
Grade 2	**1.025** ***	**-0.007** ***	**0.00007** ***
Grade 3	**1.142** ***	**-0.008** ***	**0.00007** ***
Grade 4	**0.935** ***	-0.002	**0.00003** ***
Grade 5	**0.859** ***	0.001	0.00001
Grade 6	**0.722** ***	**0.007** ***	**-0.00005** ***
Grade 7	**0.899** ***	0.001	0.00000
Grade 8	**1.181** ***	**-0.003** ***	**0.00001** *

NOTE: *, **, *** represent statistical significance at .10, .05, and .01 levels respectively.

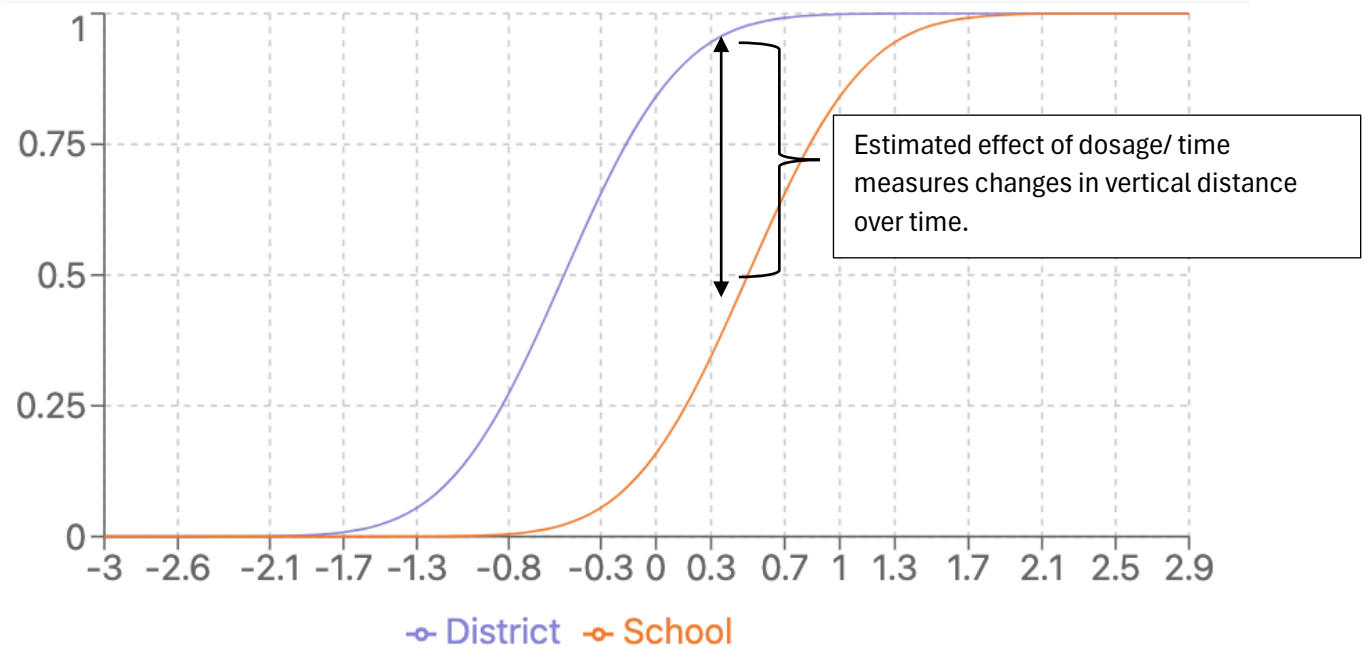
The coefficients in column (1) are the estimates of b_1 in equation (1). Since the estimates are larger than 1 for 2nd, 3rd, and 8th grades, San Tan's CDF is higher/left of the district, and students in those grades do not perform as well as students in the district overall on the DIBELS over this period. The equation (1) model estimates a single relationship between the district and the school over the entire period.

If the partnership is effective, we expect the relationship between the school and the district to change over time. Student exam scores may have accelerated growth for the first few years of the partnership; as students are exposed to it over multiple years, teachers become more accustomed to it, and the partnership becomes more effective in successive years.

Thus, more nuanced models are estimated, allowing for a shifting relationship between the district and San Tan score distributions over time. If the relationship changes over time, the estimated coefficient on the dosage or time variable tells us how it is changing.

If the estimated effect on dosage/time is zero, that would suggest the difference is not changing. If the estimated effect is positive, that means over time, the orange curve is higher, and school scores are lower relative to the district or not growing as rapidly as the district. If the estimated effect is negative, the orange curve will lower, or school scores will grow more quickly than in the district. Figure 3 illustrates these differences visually.

Figure 3: Allowing difference between district and school percentile to change over time



The equation (2) model includes the dosage effect, which is the number of years the student has attended San Tan while the partnership is in effect.

$$SchPer_i = b_1 * DistPer_i + b_2 * DistPer_i{}^2 + b_3 * DistPer_i{}^3 + b_4 * Dosage_i + \epsilon_i \quad (2)$$

The equation (3) model includes a year trend, which captures the number of years the partnership has been in effect at the school. The number of years the partnership has been in effect may measure teachers' comfort and effectiveness in best utilizing the curriculum, even if a student has only been in the school for one year.

$$SchPer_{it} = b_1 * DistPer_{it} + b_2 * DistPer_{it}{}^2 + b_3 * DistPer_{it}{}^3 + b_4 * time + \epsilon_i \quad (3)$$

Where all other variables have the exact definition as equation (1).

Note that a zero or insignificant coefficient on dosage or time would mean there is no discernible pattern or change in the relationship between the curves over time. Table 11 captures the estimated coefficients for b_4 when equations (2) and (3) are estimated for each grade separately.

Table 11: Estimated Effects of Changes Over Time

	Dosage	Time
Kindergarten	**10.530** ***	-0.001
Grade 1	-0.458	0.001
Grade 2	**-1.905** ***	-0.001
Grade 3	**-1.391** **	0.000
Grade 4	**-2.355** ***	**-0.001** ***
Grade 5	**-3.265** ***	0.000
Grade 6	-0.374	-0.001
Grade 7	**-0.723** ***	0.000
Grade 8	**-1.207** ***	**-0.002** ***

*, **, *** represent statistical significance at .10, .05, and .01 levels respectively

The large positive effect on dosage for kindergarten suggests that Kindergarteners at San Tan, after the partnership, scored lower on the DIBELS exams than those the year before. The dataset only includes one cohort of kindergarteners before the program was implemented, so the positive and significant coefficient is not too troubling. In addition, the maximum dosage for kindergartners is one year of exposure to the partnership. The results in Table 10 also suggest that kindergarten students at San Tan score almost identical to the district overall.

The negative and statistically significant coefficients for most other grades suggest that San Tan students have test scores *rising more rapidly* than the district overall. In addition, the difference is larger for students with more exposure to the partnership (i.e., dosage). The insignificant coefficients on Dosage for 1st and 6th grades suggest that the relationship between the district and schools does not significantly change during those years. Recall from Table 10 that 1st and 6th grades had the lowest coefficients on the district effect, so students in those grades at San Tan have consistently outperformed the district on DIBELS exams for all years in the dataset even though the gap between test scores and the rest of the district does not change for those grades.

From Table 10, 2nd, 3rd, and 8th grades had estimated coefficients greater than 1, suggesting San Tan students underperform relative to the district. However, they have strong dosage effects when we allow for changes over time. This is worth tracking, and if the trend persists, we may see students in those grades match the district's performance over time. However, it should be noted that the district's 8th-grade percentile measures are missing in 2021, and the school's percentile measures are missing in 2024. This leaves only two years of data to estimate an effect for 8th grade, so the results for 8th grade should be interpreted with caution.

The very small coefficients on Time suggest that student exposure plays a larger role in student growth over time, as opposed to the number of years of the partnership. However, two of the estimated coefficients are significant and negative, so there may be some improvement as teachers become more experienced with the program, at least in the first few years of the partnership.

Conclusion

Due to data limitations, we cannot assert that test scores at San Tan improved due to the partnership with Great Minds. The data were collected when operations were returning to normal after pandemic precautions, remote learning, elevated teacher resignations, higher absence rates, and COVID-19 learning losses caused schools to make multiple changes during a short time frame. However, San Tan's MAP scores have improved over the past two years, and the school shows positive signs of growth, especially among students who are not yet proficient.

The DIBELS test data allow a little more insight. It is reasonable to assume that the pandemic challenges and operational changes to address those challenges at San Tan were much like those at other schools in the Florence Unified District. If the only meaningful differences between San Tan and other schools in the district during this time are due to the Great Minds partnership, the partnership likely influenced the differences in school and district percentile scores on the DIBELS. The patterns seen in Grades 2 through 5 and Grades 7 and 8 are what we would expect to see if the Great Minds partnership supports teachers in building students' knowledge (as measured by student test scores), and increased exposure to the partnership improves scores over time.

Appendix

Table A1a: Percent Proficient or Advanced in Math

Grade	Fall 2022	Spring 2023	Fall 2023	Spring 2024
2	n/a	n/a	n/a	n/a
3	n/a	n/a	6.3%	32.4%
4	1.4%	2.3%	3.4%	26.3%
5	1.5%	6.0%	2.5%	24.4%
6	3.4%	29.4%	16.7%	18.6%
7	0.0%	10.5%	15.0%	22.9%
8	5.3%	14.1%	14.6%	22.4%
Number of Students	341	402	505	496

Table A1b: Percent Proficient or Advanced in Reading

Grade	Fall 2022	Spring 2023	Fall 2023	Spring 2024
2	n/a	n/a	n/a	n/a
3	n/a	n/a	12.7%	27.0%
4	5.6%	17.2%	16.7%	32.9%
5	14.8%	20.8%	11.5%	18.6%
6	11.1%	27.7%	17.9%	29.4%
7	6.3%	14.6%	20.7%	30.5%
8	21.4%	37.7%	24.1%	31.5%
Number of Students	330	383	488	511

Table A2a: MAP Proficiency in Math by Race/Ethnicity

	Fall 2022	Spring 2023	Fall 2023	Spring 2024
Black				
Proficiency Rate	4.35%	8.82%	8.70%	19.23%
Number of Students	23	34	46	52
Hispanic				
Proficiency Rate	0.68%	11.41%	9.13%	20.17%
Number of Students	147	184	241	233
White				
Proficiency Rate	4.14%	12.90%	8.94%	23.35%
Number of Students	145	155	241	233
Other				
Proficiency Rate	0.00%	10.34%	7.84%	20.37%
Number of Students	26	29	235	227

Table A2b: MAP Proficiency in Reading by Race/Ethnicity

	Fall 2022	Spring 2023	Fall 2023	Spring 2024
Black				
Proficiency Rate	21.74%	29.41%	13.04%	28.00%
Number of Students	23	34	46	50
Hispanic				
Proficiency Rate	8.33%	19.77%	11.97%	20.33%
Number of Students	144	177	234	241
White				
Proficiency Rate	15.22%	29.17%	19.82%	30.80%
Number of Students	138	144	237	227
Other				
Proficiency Rate	4.00%	7.14%	14.00%	16.98%
Number of Students	25	28	50	53

Table A3a: MAP Math Score Increases by Grade

	Mean score increase	
Grade	**Fall 2022 – Spring 2023**	**Fall 2023 – Spring 2024**
2	n/a	14.3
3	n/a	14.7
4	11.0	11.3
5	9.6	8.9
6	11.7	3.3
7	7.6	6.7
8	6.8	9.4

Table A3b: MAP Science Score Increases by Grade

	Mean score increase	
Grade	**Fall 2022 – Spring 2023**	**Fall 2023 – Spring 2024**
2	n/a	n/a
3	n/a	6.98
4	4.97	6.36
5	4.51	4.02
6	4.23	3.08
7	-0.48	2.61
8	1.21	2.96

Table A3c: MAP Reading Score Increases by Grade

	Mean score increase	
Grade	**Fall 2022 – Spring 2023**	**Fall 2023- Spring 2024**
2	n/a	16.00
3	n/a	8.79
4	7.63	10.20
5	5.43	4.41
6	3.40	6.90
7	1.14	0.70
8	1.42	1.09

Table A4a: MAP Math Score Increases by Race/Ethnicity

Race	Fall 2022 – Spring 2023	Fall 2023- Spring 2024
Black	11.18	9.90
Hispanic	9.29	8.96
White	8.50	10.30
Other	11.60	9.93

Table A4b: MAP Science Score Increases by Race/Ethnicity

Race	Fall 2022 – Spring 2023	Fall 2023- Spring 2024
Black	2.90	3.76
Hispanic	2.59	4.67
White	3.17	3.61
Other	4.08	4.74

Table A4c: MAP Reading Score Increases by Race/Ethnicity

Race	Fall 2022 – Spring 2023	Fall 2023- Spring 2024
Black	0.45	7.16
Hispanic	4.86	7.69
White	4.23	6.91
Other	0.84	6.43

Table A5a: Higher than Average Math MAP Growth by Grade

Grade	Fall 2022 – Spring 2023	Fall 2023- Spring 2024
2	n/a	44.4%
3	n/a	60.3%
4	48.6%	54.3%
5	43.1%	50.0%
6	63.5%	26.2%
7	40.0%	56.5%
8	50.8%	71.4%

Table A5b: Higher than Average Science MAP Growth by Grade

Grade	Fall 2022 – Spring 2023	Fall 2023- Spring 2024
2	n/a	n/a
3	n/a	48.3%
4	31.3%	42.2%
5	44.4%	44.6%
6	39.6%	40.0%
7	26.8%	46.3%
8	36.2%	40.0%

Table A5c: Higher than Average Reading MAP Growth by Grade

Grade	Fall 2022 – Spring 2023	Fall 2023- Spring 2024
2	n/a	53.1%
3	n/a	36.2%
4	28.2%	54.3%
5	41.5%	34.8%
6	43.6%	54.2%
7	28.1%	47.3%
8	41.7%	40.5%

Table A6a: Higher than Average Math MAP Growth by Race/Ethnicity

Race	Fall 2022 – Spring 2023	Fall 2023- Spring 2024
Black	50.0%	51.3%
Hispanic	46.8%	50.2%
White	46.6%	54.6%
Other	68.0%	54.3%

Table A6b: Higher than Average Science MAP Growth by Race/Ethnicity

Race	Fall 2022 – Spring 2023	Fall 2023- Spring 2024
Black	28.6%	41.4%
Hispanic	32.8%	44.6%
White	39.0%	43.9%
Other	40.0%	37.1%

Table A6c: Higher than Average Reading MAP Growth by Race/Ethnicity

Race	Fall 2022 – Spring 2023	Fall 2023- Spring 2024
Black	22.7%	51.4%
Hispanic	39.4%	46.2%
White	40.2%	46.3%
Other	12.0%	38.6%

Table A7a: Summer Learning Loss MAP Math Scores by Grade

Grade	Spring 2022 – Fall 2022	Spring 2023 – Fall 2023
2	n/a	n/a
3	n/a	n/a
4	n/a	0.10
5	5.02	-2.46
6	5.54	-4.30
7	-4.15	-0.24
8	3.34	-0.76

Table A7b: Summer Learning Loss MAP Science Scores by Grade

Grade	Spring 2022 – Fall 2022	Spring 2023 – Fall 2023
2	n/a	n/a
3	n/a	n/a
4	n/a	-3.10
5	5.07	-5.60
6	0.33	2.57
7	3.95	1.71
8	3.90	-0.26

Table A7c: Summer Learning Loss MAP Reading Scores by Grade

Grade	Spring 2022 – Fall 2022	Spring 2023 – Fall 2023
2	n/a	n/a
3	n/a	n/a
4	n/a	-0.52
5	3.45	-0.31
6	1.39	-3.94
7	5.79	5.63
8	4.29	-4.15

Table A8a: Summer Learning Loss MAP Math Scores by Race/Ethnicity

Race	Spring 2022 – Fall 2022	Spring 2023 – Fall 2023
Black	-5.64	-2.04
Hispanic	2.69	-1.51
White	3.75	-1.06
Other	-2.00	-1.82

Table A8b: Summer Learning Loss MAP Science Scores by Race/Ethnicity

Race	Spring 2022 – Fall 2022	Spring 2023 – Fall 2023
Black	3.78	0.05
Hispanic	2.23	-1.11
White	3.97	-0.89
Other	5.36	-1.52

Table A8c: Summer Learning Loss MAP Reading Scores by Race/Ethnicity

Race	Spring 2022 – Fall 2022	Spring 2023 – Fall 2023
Black	7.10	1.04
Hispanic	2.55	-1.08
White	4.44	-0.80
Other	4.55	2.40

Table A9a: Average Math MAP Scores on Spring Exams by Grade

Grade	2022	2023	2024	Proficiency
2	n/a	n/a	182	n/a
3	n/a	n/a	197	202
4	n/a	190	201	213
5	190	203	207	224
6	197	216	210	227
7	209	213	218	232
8	207	219	222	237

Table A9b: Average Science MAP Scores on Spring Exams by Grade

Grade	2022	2023	2024
2	n/a	n/a	n/a
3	n/a	n/a	196
4	n/a	196	196
5	191	200	198
6	196	203	207
7	197	201	205
8	200	208	208

Table A9c: Average Reading MAP Scores on Spring Exams by Grade

Grade	2022	2023	2024	Proficiency
2	n/a	n/a	181	n/a
3	n/a	n/a	190	201
4	n/a	185	196	208
5	186	195	197	214
6	200	207	208	218
7	196	203	212	221
8	207	217	212	224

Table A10: Positive Growth on DIBELS Composite Scores by Grade

Percent of students showing percentile growth fall to spring

Grade	2021	2022	2023	2024
2	45.7%	51.0%	69.7%	71.2%
3	60.4%	40.8%	34.0%	47.5%
4	55.0%	41.9%	61.3%	55.6%
5	52.6%	53.1%	61.2%	47.0%
6	43.9%	67.2%	50.0%	57.1%
7	57.4%	46.3%	48.0%	63.9%
8	74.3%	60.8%	53.4%	53.3%

Table A11: Positive Growth on DIBELS Composite Scores by Race/Ethnicity

Percent of students showing percentile growth fall to spring

Race	2019-2020	2020-2021	2021-2022	2022-2023
Black	68.8%	50.0%	41.9%	67.6%
Hispanic	54.9%	48.0%	55.9%	57.0%
White	53.2%	54.0%	53.0%	51.5%
Other	57.5%	64.9%	52.9%	71.1%

Table A12: Mean DIBELS Composite Score by Grade and Year

Grade	2021	2022	2023	2024	Benchmark 1	Benchmark 2
K	430.1	437.7	400.3*	422.1	452.0	428.0
1	447.1	450.9	471.0	440.5	479.0	441.0
2	449.2	437.4	449.1	460.4	477.0	440.0
3	441.2	446.5	429.1	451.4	467.0	442.0
4	432.1	432.1	437.9	425.9	466.0	401.0
5	442.6	442.8	453.3	439.4	483.0	453.0
6	425.6	433.1	432.0	437.9	470.0	451.0
7	416.9	424.7	424.0	427.5	463.0	436.0
8	444.7	455.1	453.6	456.8	478.0	444.0

Benchmark 1 is the score needed to be negligible risk (<10% chance of not achieving at or above 40th percentile on criterion measure.)

Benchmark 2 is score needed to be at minimal risk (<20% chance of not achieving at or above 40th percentile on criterion measure.)

Table A13: Mean DIBELS Percentile by Race and Year

	2021	2022	2023	2024
Black	43.3	39.5	48.4	45.3
Hispanic	42.0	48.8	48.8	49.2
White	49.7	49.1	48.0	48.0
Other	39.8	46.1	47.6	51.3

Table A14: Fall to Spring Achievement Quintiles

These tables shows the quintile distribution of test scores for students in all MAP subjects. Over time we would like to see migration to the NW corner of the tables. In a given year, movement to the left or west is growth. We certainly want to see more students below the diagonal than above.

Math 2023

Fall Achievement Quintile	Spring Achievement Quintile: High	HiAvg	Avg	LoAvg	Low	Total
High	11	7	1	0	0	19
HiAvg	10	21	18	1	1	51
Avg	0	16	30	18	4	68
LoAvg	0	2	21	36	21	80
Low	1	3	1	17	77	99
Total	22	49	71	72	103	317

Above Diagonal	71
Below Diagonal	71

Math 2024

Fall Achievement Quintile	Spring Achievement Quintile: High	HiAvg	Avg	LoAvg	Low	Total
High	18	2	2	0	0	22
HiAvg	18	35	18	0	0	71
Avg	6	28	35	23	0	92
LoAvg	1	4	28	48	32	113
Low	0	0	4	37	131	172
Total	43	69	87	108	163	470

Above Diagonal	77
Below Diagonal	126

Science 2023

Fall Achievement Quintile	Spring Achievement Quintile: High	HiAvg	Avg	LoAvg	Low	Total
High	28	12	5	0	0	45
HiAvg	6	30	18	9	4	67
Avg	1	8	19	24	15	67
LoAvg	1	2	11	26	19	59
Low	0	0	3	9	47	59
Total	36	52	56	68	85	297

Above Diagonal	106
Below Diagonal	41

Science 2024

Fall Achievement Quintile	Spring Achievement Quintile: High	HiAvg	Avg	LoAvg	Low	Total
High	37	17	6	1	1	62
HiAvg	15	30	22	4	4	75
Avg	2	10	40	23	13	88
LoAvg	0	3	9	39	25	76
Low	0	3	10	26	72	111
Total	54	63	87	93	115	412

Above Diagonal	116
Below Diagonal	78

Reading 2023 **Spring Achievement Quintile**

Fall Achievement Quintile	High	HiAvg	Avg	LoAvg	Low	Total
High	21	18	0	0	0	39
HiAvg	7	17	21	6	2	53
Avg	2	11	18	14	12	57
LoAvg	0	3	12	26	19	60
Low	0	1	3	12	71	87
Total	30	50	54	58	104	296

Above Diagonal	92
Below Diagonal	51

Reading 2024 **Spring Achievement Quintile**

Fall Achievement Quintile	High	HiAvg	Avg	LoAvg	Low	Total
High	26	16	2	1	0	45
HiAvg	12	35	19	10	0	76
Avg	2	21	40	19	7	89
LoAvg	0	14	23	38	33	108
Low	1	2	6	27	127	163
Total	41	88	90	95	167	481

Above Diagonal	107
Below Diagonal	108

Table A15: Enrollment and Returning Students

Year	Students Enrolled	Percent Return
2021	563	63.8%
2022	733	55.5%
2023	552	69.4%
2024	681	.

Table A16: DIBELS Composite Sample Characteristics

	2020- 2021 School Year				2021- 2022 School Year				2022-2023 School Year				2023-2024 School Year			
	Beginning	Middle	End	B & E	Beginning	Middle	End	B & E	Beginning	Middle	End	B & E	Beginning	Middle	End	B & E
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Total	359	454	483	310	582	603	618	497	528	430	454	381	463	483	523	392
Gender																
Male	172	218	241	147	295	307	316	249	200	198	204	175	214	216	229	175
Female	179	226	238	156	291	304	307	253	213	212	226	192	248	270	283	217
Race																
Black	22	28	38	18	44	46	48	36	35	32	35	31	42	36	48	32
Hispanic/Latino	139	177	190	124	228	238	250	208	271	178	191	157	179	185	205	159
Other	46	50	52	34	66	69	71	51	55	55	64	47	47	52	51	40
White	152	199	203	134	244	250	249	202	167	165	164	146	195	210	219	161
Grade Level																
K	32	30	38	29	60	63	63	50	0	1	6	0	50	52	52	42
1	25	28	30	20	39	38	40	31	50	50	53	42	15	16	27	13
2	46	50	53	39	49	56	56	46	33	35	32	29	52	55	55	48
3	48	50	51	40	71	70	71	59	53	55	58	50	40	52	59	37
4	40	46	47	35	62	61	62	54	62	61	66	58	45	49	54	38
5	38	50	59	36	64	67	67	53	49	49	51	41	66	67	71	56

6	41	68	66	33	67	71	71	57	58	57	62	53	63	70	65	53
7	54	76	80	45	80	75	85	72	50	52	49	42	72	72	73	54
8	35	56	64	30	102	117	118	87	73	69	77	66	60	54	66	51

Table A17: MAP Sample Characteristics – Math

	2021- 2022 School Year				2022-2023 School Year				2023-2024 School Year			
	Fall	Winter	Spring	F & S	Fall	Winter	Spring	F & S	Fall	Winter	Spring	F & S
	N	N	N	N	N	N	N	N	N	N	N	N
Total		192	198		341	370	402	317	573	563	566	475
Gender												
Male	0	93	99	0	166	181	194	153	267	255	263	224
Female	0	99	99	0	175	189	208	164	306	308	303	251
Race												
Black	0	13	13	0	23	28	34	22	46	43	52	39
Hispanic/Latino	0	86	90	0	147	167	184	139	241	231	233	205
Other	0	10	11	0	26	27	29	25	51	53	54	185
White	0	83	84	0	145	148	155	131	235	236	227	46
Grade Level												
2									68	70	70	63
3									63	69	74	58
4					72	82	86	70	88	81	80	70
5		48	50	0	66	74	84	65	81	76	82	68
6		49	51	0	59	63	68	52	84	84	70	61
7		47	50	0	69	74	86	65	100	96	105	85
8		48	47	0	75	77	78	65	89	87	85	70

Table A18: MAP Sample Characteristics -- Science

	2021- 2022 School Year				2022-2023 School Year				2023-2024 School Year			
	Fall	Winter	Spring	F & S	Fall	Winter	Spring	F & S	Fall	Winter	Spring	F & S
	N	N	N	N	N	N	N	N	N	N	N	N
Total	0	208	194	0	337	361	374	297	496	485	500	412
Gender												
Male	0	96	97	0	162	173	183	140	228	222	223	187
Female	0	112	97	0	175	188	191	157	268	263	277	225
Race												
Black	0	14	10	0	23	28	32	21	40	37	43	29
Hispanic/Latino	0	93	90	0	144	166	167	128	200	192	201	177
Other	0	13	12	0	25	23	28	25	46	45	41	35
White	0	88	82	0	145	144	147	123	210	211	215	171
Grade Level												
2												
3									63	69	74	58
4					72	82	81	67	80	75	75	64
5	0	51	46	0	66	73	79	63	80	78	79	65
6	0	55	52	0	62	67	65	53	86	85	86	75
7	0	48	47	0	67	70	76	56	100	93	98	80
8	0	54	49	0	70	69	73	58	87	85	88	70

Table A19: MAP Sample Characteristics – Reading/ELA

	2021- 2022 School Year				2022-2023 School Year				2023-2024 School Year			
	Fall	Winter	Spring	F & S	Fall	Winter	Spring	F & S	Fall	Winter	Spring	F & S
	N	N	N	N	N	N	N	N	N	N	N	N
Total	0	194	208	0	330	353	383	296	557	557	581	481
Gender												
Male	0	89	101	0	159	169	183	137	261	251	263	224
Female	0	105	107	0	171	184	200	159	296	306	318	257
Race												
Black	0	15	12	0	23	28	34	22	46	43	50	37
Hispanic/Latino	0	82	94	0	144	158	177	132	234	227	241	212
Other	0	11	13	0	25	24	28	25	50	51	53	44
White	0	86	89	0	138	143	144	117	227	236	237	188
Grade Level												
2									69	71	70	64
3									63	69	74	58
4					72	80	87	71	84	80	82	70
5	0	49	48	0	61	68	72	53	78	77	86	69
6	0	48	51	0	63	65	65	55	84	86	85	72
7	0	48	53	0	64	72	82	57	92	90	95	74
8	0	49	56	0	70	68	77	60	87	84	89	74

Data Challenges

We have already mentioned challenges disentangling effects of programs in an educational environment where many things are changing all in a relatively short time frame. We also had other data challenges with the analysis.

The data for this project came from different files that had to be merged for our analysis. The school has been migrating data across systems in the last few years, which limited the data that was still accessible for this project to a relatively short time frame. Even within the time frame, some data was not available. We do not have DIBELS school percentiles for 4^{th} – 8^{th} graders in 2024, no district percentiles for 5^{th}, 7^{th}, or 8^{th} grade in 2021.

Another challenge in working with the data had to do with different Student ID numbering systems. There was a 6-digit number used in some systems and an 8-digit number used in others. We had a crosswalk file that allowed us to match the different systems most of the time. The file with DIBELS scores had a single column for a Student ID. For some students it was a 6-digit number, for other students it was an 8-digit number, and for 392 out of 1803 it was missing altogether.

We matched to a file with 6-digit numbers and another with 8-digit numbers to maximize the student data available to be analyzed. Of those that remained, in many cases we were able to match up the students based on grade, gender and birthdate when the ID number was missing.

However, for the 60 students in kindergarten in the fall 2022 semester, only 7 students have an ID number in the DIBELS file and only 8 have a gender listed. Three have a birthdate, but these three also have an ID number. Due to this lack of data, the students that were unable to be matched across the datasets are disproportionately kindergarten students in the 2022-2023 school year. We do not have beginning test scores for any of those students.

The MAP test data for the fall exams in the 2021-2022 school year were not available, giving us only two years of MAP testing data where we can compare fall to spring growth.

	2020 Fall	2021 Spring	2021 Fall	2022 Spring	2022 Fall	2023 Spring	2023 Fall	2024 Spring
DIBELS								
K					Most IDs missing			
1							Most IDs missing	
2								
3								
4								2
5		1						2
6								2
7		1						2
8		1						2
MAP								
K								
1								
2							3	3
3								
4								
5								
6								
7								
8								

Missing Data Codes

1	District percentile on DIBELS
2	School percentile on DIBELS
3	No proficiency benchmark established

References

Ross, E.M. (2024). Despite Progress, Achievement Gaps Persist During Recovery from Pandemic. Harvard Graduate School of Education. https://www.gse.harvard.edu/ideas/news/24/01/despite-progress-achievement-gaps-persist-during-recovery-pandemic

Tran,S., Majumdar, R., Hu, A., Meyer, J.P. (2022). Default Cut Scores for MAP Growth Reading and Mathematics Assessments. NWEA.org. https://www.nwea.org/uploads/2022/07/MAP-Growth-Default-Cut-Scores_NWEA_linking-study.pdf

