Research Results

HMH Go Math! *Implementation Study 2023–2024 SY*

Study Profile

District:
Three suburban school districts in KS, MI, and OH

Grades:
K–6

Study design:
Tier 4 ESSA Demonstrates a Rational

Evaluation period:
2023–2024 school year

Study Conducted By:
Beam Consulting LLC

Outcome Measure:
- *NWEA MAP Math Growth*
- *HMH Math Growth Measure*

Implementation:
Core Instruction

District Characteristics

A total of three districts—selected from HMH's customer base—participated in the Go Math® early implementation study. Between 3,000 and 4,100 students are enrolled in these three small districts, which are located in non-urban locales in Kansas, Michigan, and Ohio.

Implementation Overview

HMH's Go Math! program is a core curriculum initially launched in the fall of 2010. The program's latest edition, rebuilt with additional supports, was launched on the HMH Ed® platform in the fall of 2023. This study includes 10 schools in three school districts that implemented *Go Math!* during the 2023–2024 school year. The study sought to answer the following research questions:

1. What does Go Math! implementation look like in practice? What are the most frequently implemented components of Go Math!? To what extent is the program being implemented as intended?

2. What are the effects of Go Math! on students' mathematics achievement?

3. How do the effects of Go Math! on students' mathematics achievement vary by demographic subgroup?

Implementation Model

Go Math! is a comprehensive print and digital program that combines whole- and small-group instruction, differentiation, guided and independent practice, and assessment. The Ed platform provides embedded, on-demand professional learning support for teachers as well as access to tools and resources to support instruction. HMH's Waggle® is integrated with Go Math! to provide adaptive, skills-based practice that is personalized to the student.

Participants

Table 1. Go Math! Sample

Site	Grades Implementing	Schools	Study teachers	Total students
Kansas	K-3	3	12	763
Michigan	K-5	5	14	1373
Ohio	2-6	2	7	1450
Total	K-6	10	33	3586

ªNot all teachers in the Kansas district completed fall and spring assessments. The number of students identified is based on predicted Go Math! enrollment.

Assessment data were available from 132 classrooms across the three districts. Researchers matched the beginning-of-the-year and end-of-the-year assessment scores for 2,606 students (72.7% of all students). Grade-level participation and the number of participating schools varied by district (Table 1).

Table 2 presents the demographic characteristics of all 2,606 participating students for whom assessment data are available—the analytic sample for this report.

Table 2. Go Math! Student Demographics for the Analytical Sample

Characteristic	Number	Percent
Grade		
K	219	8%
1	246	9%
2	501	19%
3	467	18%
4	471	18%
5	432	17%
6	270	10%
Race		
Asian	181	7%
Black or African American	360	14%
Hispanic	100	4%
Two or more races	1,628	62%
White	260	10%
Other	75	3%
Missing/undisclosed	2	0%
Gender		
Female	1,237	47%
Male	1,359	52%
Missing/undisclosed	10	0%
Special Education Status		
Special education	411	16%
Missing/undisclosed	2	0%
Free/Reduced-Price Meal Status		
Eligible	837	32%
Missing/undisclosed	7	0%

N = 2,606.

Measures

Districts opted to administer either the NWEA® Measures of Academic Progress (MAP) or HMH's Math Growth Measure (MGM) as their fall-to-spring assessment.

Math Growth Measure

HMH's Math Growth Measure is a research-based interim assessment designed to inform instruction by providing information on math performance and grade-level growth expectations. The assessment uses a research-based scaled score ranging from 1 to 99 and five performance levels (far below level, below level, approaching, on level, above level). The Kansas and Michigan districts administered the Math Growth Measure to Go Math! students in the fall and spring of the 2023–2024 school year.

NWEA Measures of Academic Progress (MAP)

The NWEA MAP math growth assessment is aligned with current education standards and is a norm-referenced measure of student achievement. Results are reported in Rasch units (RIT), an equal-interval vertical scale that ranges from 100 to 350, and percentile ranking. This computer-adaptive assessment was administered in the fall of 2023 and spring of 2024 to Go Math! students in the Ohio district.

Teacher Survey

Beam Consulting administered an online survey to Go Math! teachers in the fall of 2023 and spring of 2024 to gather information about the teachers' backgrounds and the types of instructional activities they employed in teaching math. The spring survey also asked about their fidelity of implementation to the intended model.

Teacher Logs

Beam Consulting developed a teacher log for Go Math! teachers to record information about each lesson they completed. The teacher log data are used in the implementation analyses to provide descriptive information about teachers' implementation of Go Math!, measure their fidelity to the intended model, and provide lesson-specific feedback to HMH.

Results

Implementation Findings

While implementing Go Math!, teachers reported that, compared to the prior year, they had increased their frequency of use of several instructional practices and learning activities, including explicit vocabulary instruction, math conversations, problem-solving strategies, specific and constructive feedback to students, teacher modeling, solving of nonroutine math problems, application of mathematical concepts to real-world problems, and presentation of problems to the whole class.

Most study teachers reported teaching the program with at least a moderate level of fidelity. The Go Math! instructional steps that teachers were most likely to teach with fidelity were the Explore, Explain, and Examine steps, whereas the step teachers were most likely to skip was the final Evaluate step (see Graph 1). Primary reasons teachers provided for deviating from the curriculum included pacing—feeling that, in some chapters, the program moved through the content too quickly; challenges with differentiation, often resorting to their own methods rather than fully utilizing the program's resources; and technical issues that prevented them from fully accessing and using the online components of the program effectively.

GRAPH 1. Go Math! Instructional Step Skipped, Partially Completed, or Fully Completed
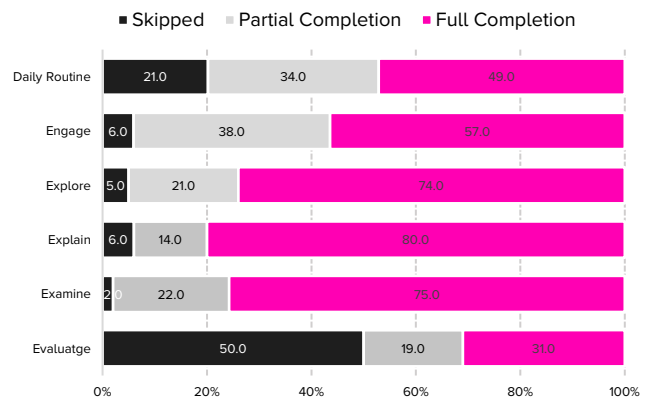
Teacher fidelity to implementation, as measured by teacher logs, found that teachers in kindergarten through Grade 2 were more likely to adhere to the curriculum (76% average fidelity) than teachers in the upper grades (61% average fidelity).

Standardized Test Findings

Paired *t*-tests were used to evaluate the extent to which students' course grades and scores on assessments improved after participating in Go Math! by grade level. Math course grades and assessment descriptive data (i.e., means, standard deviations) and paired *t*-test results are presented in the Appendix in Table 3.

Math Growth Measure

Two districts opted to administer the Math Growth Measure in the fall and spring. A total of 1,236 students from kindergarten through Grade 5 (58% of 2,136 students across both districts—83% of students in one district and 12% of students in the other district) completed both assessments.

Scale score gains and grade-level equivalent gains were significant at all grade levels, with gains ranging from 9.41 (an increase of 0.57 grade-level equivalents) in Grade 5 to 27.30 (an increase of 1.47 grade-level equivalents) in Grade 1 (ps < .05). Overall, greater growth was observed in kindergarten through Grade 2 than in the upper grades (see Graph 2).

GRAPH 2. HMH Math Growth Measure Scale Scores by Grade
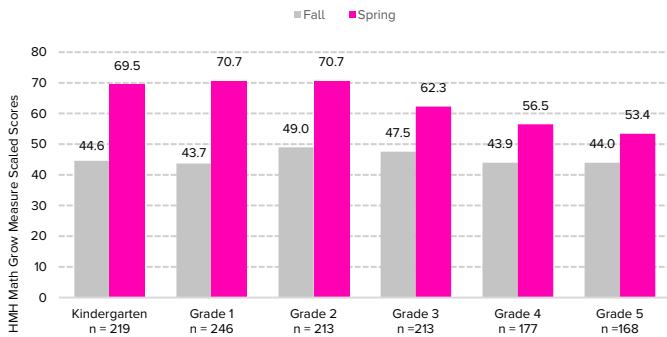
NWEA MAP

Only one of the three districts opted to administer the NWEA MAP growth assessment, and a total of 1,370 students in Grades 2 through 6 (94% of the district sample) completed both assessments. RIT score gains were significant at all grade levels, with gains ranging from 8.64 in Grade 5 to 12.16 in Grade 2 (ps < .05). RIT score gains across all grade levels were statistically significant, and all effect sizes were large (see Graph 3).

GRAPH 3. NWEA MAP Growth RIT Scores by Grade
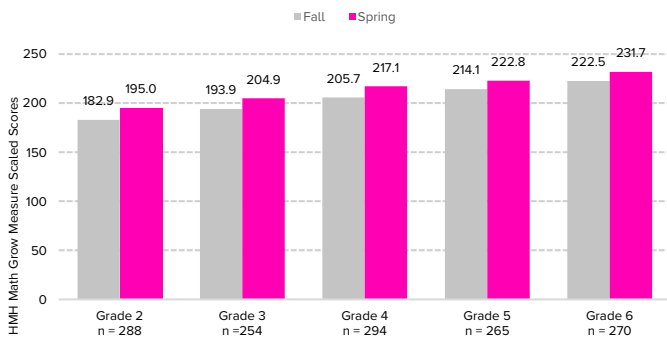
Standardized Test Findings for Students from Demographic Subgroups

For students participating in Go Math!, both NWEA MAP and Math Growth Measure assessment scores generally favored White students, non-special education students, and economically advantaged students. These trends mimic national trends and are not surprising.

Further analyses examining gains within different demographic subgroups found that, while at some grade levels, some small variation in gains occurred within subgroups, all tested subgroups (i.e., gender, race, special education status, and free and reduced-price meal status) achieved significant and substantial gains (ps < .05) (see Appendix Tables 5 and 6).

Conclusion

This early implementation study of the newly launched Go Math! program sought to measure teacher implementation and program effects across multiple sites and recruited districts that were using the program in their schools.

Teachers varied in their fidelity of implementation, maintaining higher fidelity with some instructional steps over others, but most teachers reported that they implemented the program with either moderate or high fidelity. Primary reasons teachers gave for deviating from the curriculum included pacing issues, differentiation challenges, or technical difficulties. Teachers also provided suggestions for the program and areas where they believed they could benefit from additional professional learning.

Overall, study findings showed that students in districts using Go Math! demonstrated significant gains on both district-administered assessments. While the magnitude of gains varied across grade levels, with lower grades exhibiting greater growth potentially due to greater fidelity of implementation, significant gains were observed in all grade levels. Fall and spring assessment scores generally favored White students, non-special education students, and economically advantaged students; not surprisingly, these trends mimic national trends. While some grade levels exhibited slight variation in gains between subgroups, all tested subgroups (gender, race, special education status, and free and reduced-price meal status) achieved significant and substantial gains.

Appendix

TABLE 3. Go Math! Student HMH Growth Measure Statistical Analysis

Grade	n	Fall 2023 Mean	Fall 2023 SD	Spring 2024 Mean	Spring 2024 SD	Change Mean	Change SD	t	d
K	219	44.57	21.08	69.47	18.05	24.90	20.08	18.35***	1.24
1	246	43.66	22.48	70.96	19.46	27.30	18.94	22.61***	1.44
2	213	48.95	22.01	70.73	20.11	21.78	16.82	18.49***	1.30
3	213	47.52	21.20	62.28	19.85	14.76	14.49	14.87***	1.02
4	177	43.94	23.53	56.45	25.47	12.51	19.34	8.61***	0.65
5	168	43.95	23.54	53.36	26.61	9.41	16.71	7.30***	0.56

Notes. Cohen's d = 0.20 indicates a small effect. Cohen's d = 0.50 indicates a medium effect. Cohen's d = 0.80 indicates a large effect. *p < .05   **p < .01   ***p < .001.

TABLE 4. Go Math! Student NWEA MAP Growth Statistical Analysis

Grade	n	Fall 2023 Mean	Fall 2023 SD	Spring 2024 Mean	Spring 2024 SD	Change Mean	Change SD	t	d
2	288	182.87	12.92	195.03	11.62	12.17	7.60	27.18***	1.60
3	254	193.89	11.58	204.89	11.48	11.01	5.77	30.41***	1.91
4	294	205.66	12.06	217.10	13.13	11.44	6.12	32.02***	1.68
5	264	214.13	13.54	222.77	15.51	8.64	6.98	20.12***	1.08
6	270	222.45	15.75	231.74	18.96	9.29	7.31	20.88***	1.11

Notes. Cohen's d = 0.20 indicates a small effect. Cohen's d = 0.50 indicates a medium effect. Cohen's d = 0.80 indicates a large effect. *p < .05   **p < .01   ***p < .001.

Table 5. Go MATH! Student HMH Math Growth Measure Scale Scores as a Function of Demographics

Grade		Fall 2023		Spring 2024					Fall 2023		Spring 2024			
Grade	n	Mean	SD	Mean	SD	t	d	n	Mean	SD	Mean	SD	t	d
Grade				Gender: Male							Gender: Female			
K	115	43.00	22.45	69.83	19.03	13.54***	1.26	103	46.31	19.52	69.17	17.03	12.44***	1.23
1	132	42.65	23.88	70.11	22.09	15.50***	1.35	112	44.98	20.73	72.13	15.99	16.69***	1.58
2	115	51.21	23.06	71.81	21.40	12.80***	1.13	95	46.53	20.57	69.47	18.61	13.03***	1.30
3	109	52.14	20.96	66.32	18.89	10.70***	1.02	103	42.93	20.39	57.94	20.12	10.27***	1.01
4	95	42.65	24.33	55.87	27.10	5.87***	0.60	81	45.83	22.48	57.09	23.73	6.54***	0.73
5	84	47.00	25.71	57.67	28.20	6.28***	0.68	82	41.38	20.84	49.04	24.56	3.92***	0.43
Grade				Race: White							Race: Non-White			
K	161	47.03	21.50	71.63	16.84	15.66***	1.23	58	37.74	18.38	63.47	19.98	9.49***	1.25
1	176	46.28	21.74	72.10	18.87	18.80***	1.42	70	37.07	23.11	68.10	20.72	12.79***	1.53
2	152	52.04	22.64	73.97	18.68	16.59***	1.31	61	41.25	18.34	62.67	21.41	8.68***	1.04
3	149	48.77	21.21	64.10	19.17	13.09***	1.07	64	44.61	21.05	58.03	20.90	7.18***	0.90
4	136	46.77	23.11	58.91	24.55	7.20***	0.62	41	34.56	22.71	48.29	27.05	4.78***	0.75
5	118	46.11	23.95	55.81	26.13	6.42***	0.59	50	38.84	21.95	47.58	27.11	3.51***	0.50
Grade				Special Education							Eligible for FRM			
K	36	39.50	20.47	63.11	20.14	6.23***	1.04	44	45.39	19.22	69.30	17.87	7.97***	1.20
1	40	34.50	21.54	62.45	21.64	10.41***	1.65	100	37.81	21.40	65.09	21.00	13.32***	1.33
2	53	41.60	21.80	62.19	22.97	8.31***	1.14	100	42.01	19.88	65.70	20.09	13.81***	1.38
3	57	39.89	23.53	58.74	20.93	10.96***	1.45	104	41.40	19.22	55.51	19.65	8.84***	0.87
4	52	30.29	19.16	42.23	24.54	4.04***	0.56	73	33.66	19.09	42.04	23.30	3.33***	0.39
5	43	41.33	23.72	50.30	29.32	3.70***	0.56	86	38.21	20.57	48.12	24.34	5.48***	0.59

Notes. FRM = Free or reduced-price meals. Cohen's *d* = 0.20 indicates a small effect. Cohen's *d* = 0.50 indicates a medium effect. Cohen's *d* = 0.80 indicates a large effect. *p < .05   **p < .01   ***p < .001.

TABLE 6. Go MATH! Student NWEA MAP RIT SCORES as a Function of Demographics

		Fall 2023		Spring 2024					Fall 2023		Spring 2024			
Grade	n	Mean	SD	Mean	SD	t	d	n	Mean	SD	Mean	SD	t	d
Grade				Gender: Male							Gender: Female			
2	153	183.21	14.10	196.22	12.71	19.75***	1.60	135	182.48	11.46	193.69	10.13	19.09***	1.64
3	117	195.59	12.41	206.22	12.12	19.01***	1.76	137	192.43	10.66	203.76	10.82	24.01***	2.05
4	152	206.07	12.04	217.75	13.52	22.10***	1.79	142	205.23	12.11	216.39	12.70	23.41***	1.96
5	136	215.54	14.56	225.03	16.15	15.40***	1.32	128	212.63	12.24	220.37	14.49	13.15***	1.16
6	151	223.01	15.88	232.19	19.03	15.20***	1.24	119	221.74	15.62	231.16	18.93	14.29***	1.31
Grade				Race: White							Race: Non-White			
2	152	184.11	12.03	195.99	11.21	20.15***	1.63	136	181.49	13.75	193.97	12.02	18.29***	1.57
3	136	195.60	10.45	206.40	10.77	21.56***	1.85	118	191.92	12.53	203.15	12.05	21.43***	1.97
4	160	207.64	11.58	219.44	12.12	24.11***	1.91	134	203.29	12.24	214.30	13.77	21.09***	1.82
5	134	217.88	12.44	227.72	14.18	16.41***	1.42	130	210.26	13.59	217.67	15.22	12.37***	1.09
6	154	226.36	13.43	235.98	17.10	15.46***	1.25	116	217.26	17.11	226.10	19.89	14.16***	1.32
Grade				Special Education							Eligible for FRM			
2	27	170.52	16.26	187.78	9.06	7.23***	1.39	67	173.73	13.25	187.64	8.98	11.22***	1.37
3	22	178.32	13.56	191.82	12.15	7.26***	1.55	65	186.17	10.95	197.15	9.45	13.53***	1.68
4	30	190.07	12.79	198.20	13.68	6.38***	1.16	69	198.29	12.23	208.49	13.54	13.90***	1.67
5	27	201.04	13.88	208.07	14.74	4.45***	0.86	65	206.97	11.89	213.52	12.14	8.36***	1.04
6	24	200.67	16.60	207.79	17.29	4.98***	1.02	64	210.89	15.11	217.30	17.82	7.14***	0.89

Notes. FRM = Free or reduced-price meals. Cohen's *d* = 0.20 indicates a small effect. Cohen's *d* = 0.50 indicates a medium effect. Cohen's *d* = 0.80 indicates a large effect. *$p < .05$ **$p < .01$ ***$p < .001$.