

Evaluation of Reasoning Mind: 2015-16

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At-a-Glance

In 2015-16, 32,889 Dallas Independent School District (ISD) students used the Reasoning Mind (RM) mathematics curriculum. All district second- and third-grade teachers (except at Dealey, Mata, H. Stone) were required to use RM in 2015-16, but RM was optional for fourth- and fifth-grade teachers. RM was supplemental to the district curriculum in grades two to four, which means teacher time was split between using district and RM curricula. RM served as the full curriculum for grade five. The 2015-16 budget was \$1,925,777, which included \$1,777,370 for grades two to four (supplemental RM) and \$148,407 for grade five (core RM). The \$1,777,370 for supplemental RM included \$1,252,370 of Title I, Part A funds and \$525,000 of Title II, Part A funds. The \$148,407 for fifth grade consisted of \$112,907 from District Action Plan funds and \$35,500 from general operating funds.

Methodology

The evaluators developed the *Dallas ISD Reasoning Mind Evaluation Framework* to guide the evaluation. Context and process information were gathered from internal documents, the RM web site, interviews, and classroom observations. The evaluators held formal interviews with RM staff members in November and an interview with the district mathematics director in February. Feeder Pattern Executive Directors and selected staff conducted ten-minute walkthroughs in second- and third-grade RM classrooms in October ($n=761$). Evaluators conducted three 45-minute observations in each fifth-grade classroom (with one exception) between October and January ($n=67$). Student data were extracted from the October 2015 Public Education Information Management System (PEIMS) file and RM files. Frequency and descriptive analyses were used to examine student demographic characteristics, student use of RM, teacher training completion, and observation results. Quantitative and qualitative analyses were conducted for campus staff surveys, which were administered in January 2016.

Outcome analyses were carried out to determine how RM students performed on spring 2016 mathematics assessments. These included *TerraNova*¹ and *State of Texas Assessments of Academic Readiness*² (STAAR). There were three main limitations of the

analyses. First, achievement results could not be attributed solely to RM due to (a) the inability to create a comparison group for grades two and three and (b) the district's use of RM as supplemental to regular instruction in grades two to four (e.g., it is not possible to know how much achievement results should be attributed to RM and how much they should be credited to teacher instruction based on district curriculum). Second, implementation fidelity continued to be a confounding factor as a sizeable proportion of students in all grades did not meet RM expectations for implementation. Third, there was possible selection bias between treatment and comparison groups for grade four.³

Correlation coefficients were computed to note strength of relationships between test scores and RM indicators. Crosstab analyses were carried out to study the link between RM and achievement. Multiple regression analyses were conducted for each grade level to determine which RM indicators best predicted students' achievement scores. For fourth- and fifth-grade, multiple regression was used to determine if there were statistically and practically significant differences between RM and non-RM comparison group students.⁴

What were the demographic characteristics of students involved in Reasoning Mind?

A total of 32,889 students were enrolled in RM during 2015-16, which included 13,078 (97%) of the district's second graders, 12,848 (96%) of the district's third graders, 6,152 (49%) of the district's fourth graders, and 811 (7%) of the district's fifth graders. Second- and third-grade RM enrollment was similar to the last two years; however, the number of fourth graders decreased from 10,448 (130 schools) in 2013-14 to 9,218 (119 schools) in 2014-15 to 6,152 (81 schools) in 2015-16; fifth-grade participation increased from 411 students in 2014-15 to 811 students in 2015-16. Most 2015-16 RM students were economically disadvantaged (92%) and Hispanic (70%). Half were English language learners.

Did staff members participate in Reasoning Mind training as planned?

Sixty-three percent of first-year teachers completed the Qualification Course (QC) by the end of the first six

¹ Data reported as of 6/9/16. Updates received after 6/9/16 are not reflected in this report.

² Data reported as of 7/11/16. Updates received 7/11/16 are not reflected in this report.

³ It is unknown how principal decision to opt in or out of using RM affected the treatment and comparison groups.

⁴ All fourth graders (RM and non-RM students) were used in fourth-grade analyses, whereas propensity score matching (PSM) was used to create a matched comparison group of non-RM fifth-grade students.

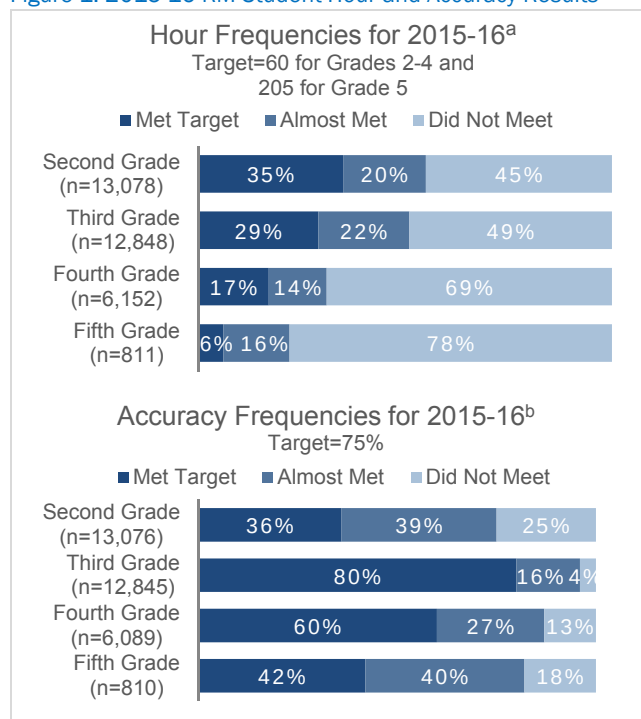
weeks, which means many students could not begin using RM until later in the school year. About a fifth ($n=177$) of the almost 1,000 RM teachers opted to participate in additional RM professional development during the fall semester. Also, approximately 90 district staff members participated in the Dallas RM GenieCon conference in November 2015.

Was the Reasoning Mind program used by students as planned?

Campus-level implementation continued to vary greatly within schools and within grade levels at the same schools. Most of the campuses with fourth (63%) and fifth (85%) grade were classified as low implementation schools. Schools were split mainly between the medium (56%) and low (40%) categories for second grade and divided between all three categories for third grade (44% low, 25% medium, 31% high).

Consistent with past years, a sizeable percentage of students in all grades did not meet the grade-level hour target for 2015-16 (see Figure 1). In contrast, many third- (80%) and fourth-grade (60%) students met the accuracy target. Interestingly, the percentage that “met” the hour target decreased as grade level increased. There were noticeably more fourth- and fifth-grade students (69% and 78%, respectively) in the “did not meet” category than second- and third-grade students (45% and 49%, respectively)

Figure 1: 2015-16 RM Student Hour and Accuracy Results



Note. The number of students with hour and accuracy data differ for each grade because some students did not have accuracy data. ^a Met=Logged 100 percent of expected hours. Almost Met=Logged 80 to 99 percent of expected hours. Did Not Meet=Logged less than 80 percent of expected hours. ^b Met=Attained Guided Study Level A accuracy rate of 75 percent or higher. Almost Met=Accuracy rate between 60 and 74 percent. Did Not Meet=Accuracy rate of less than 60 percent.

What were the results of Reasoning Mind classroom observations?

Results of second- and third-grade RM supplemental classroom walkthroughs showed teachers spent most of the time monitoring students (66%), conducting individual or small group interventions (60%), and reviewing the RM administrator screen (50%). About a third of the classrooms (32%) had one or more technology issues; these included non-working computers (14%), computer accessory issues (14%), and connectivity/internet issues (14%). In most classes observed, all students used their RM notebooks as expected (66%) and all students were on task (80%).

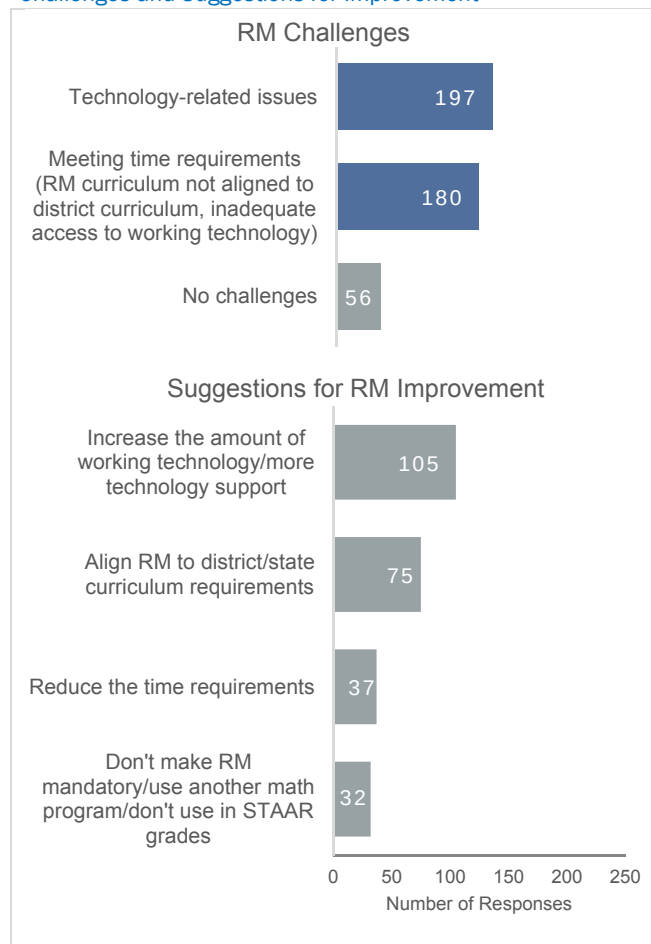
During fifth-grade observations, teachers allocated most of the time to conducting individual or small group interventions (60%), while students mainly used RM (83%) and worked with the teacher individually or as part of a small group (60%). Technology-related issues were noted in 57 percent of observations with the main problems being non-working computers (40%), connectivity/internet issues (13%), and computer accessory issues (5%). In most classes, all students were on task (74%) and all used RM notebooks (66%).

What were teacher and administrator perceptions of Reasoning Mind?

Per interviews with RM and district staff, the RM project director and district mathematics director viewed the strong relationship between RM and the mathematics department as a success, especially when planning for GenieCon. RM ICs cited the change to a flexible support model as a success. Barriers to implementation included limited communication between RM and School Leadership staff, the roll out of fifth-grade technology, teacher turnover, teacher schedule changes that were not communicated to RM ICs, fewer teachers participating in professional development than in the past, the lack of alignment between fifth-grade curriculum and ACPs, and technology problems.

As in previous years, teachers were more positive than campus administrators on the overall survey items. Teachers and administrators were most positive about RM's benefit on students. Respondents continued to view training and resources as helpful, and administrators continued to report higher levels of communication than teachers. Most teachers (75% to 85%) believed students improved on key indicators (e.g., enjoyment of mathematics, etc.). Several reported technology issues, especially with laptops/computer on wheels (COW) carts (35% to 39%) and wireless connectivity (26% to 30%). The main successes were increased student mathematics skills and engagement. The most cited challenges were technology issues and meeting time requirements (see Figure 2). Primary suggestions included increasing the number of computers and aligning RM and district curricula.

Figure 2: Survey Results for Most Frequently-Cited Challenges and Suggestions for Improvement



What were student mathematics achievement outcomes?

Outcome results were consistent with previous findings (Bush and Kim, August 2015). RM students that met the accuracy target outperformed those who did not. Students that “met” the hour target tended to have slightly higher test scores than students in the “almost met” and “did not meet” categories; however, hour differences were not as pronounced as those for accuracy.

Likewise, students’ mathematics scores were highly correlated with accuracy ($r=0.62$ to 0.74); correlations between objectives completed and assessment scores were in the middle (0.29 to 0.48), and correlations between hours online and test scores were small (0.09 to 0.20). Multiple regression analyses showed that RM accuracy, prior achievement, and RM objectives completed were major predictors of spring 2016 assessment scores (see Table 1).

As seen in Figures 3 and 4, non-RM comparison students in both fourth and fifth grades had slightly higher mathematics STAAR scores than RM students (passing rates and scale scores). Multiple regression

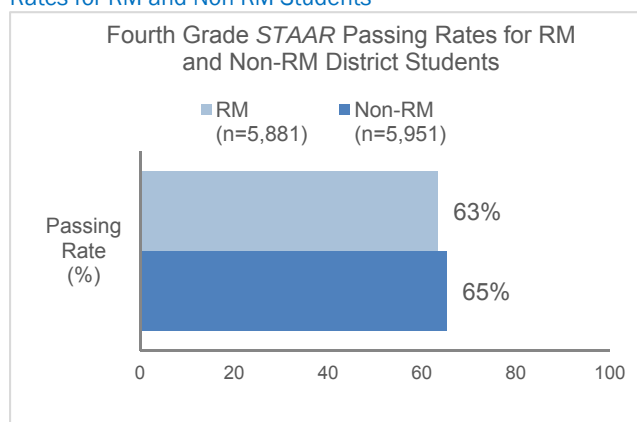
results showed that when prior achievement and economically disadvantaged status were accounted for, differences between the two groups were *not* statistically significant. Even so, the trend was opposite of what would be hoped.

Table 1: Multiple Regression Major RM Predictors of Spring 2016 Mathematics Scores

Grade	Major Predictors	β	p	Variance Explained
2 ($n=11,238$)	Accuracy	.47	<.001	63%
	Prior Achievement	.31	<.001	
	Objectives Completed	.17	<.001	
3 ($n=11,006$)	Accuracy	.40	<.001	62%
	Prior Achievement	.41	<.001	
	Objectives Completed	.12	<.001	
4 ($n=4,233$)	Accuracy	.27	<.001	66%
	Prior Achievement	.58	<.001	
	Objectives Completed	.06	<.001	
5 ($n=723$)	Accuracy	.25	<.001	74%
	Prior Achievement	.61	<.001	
	Objectives Completed	.07	<.001	

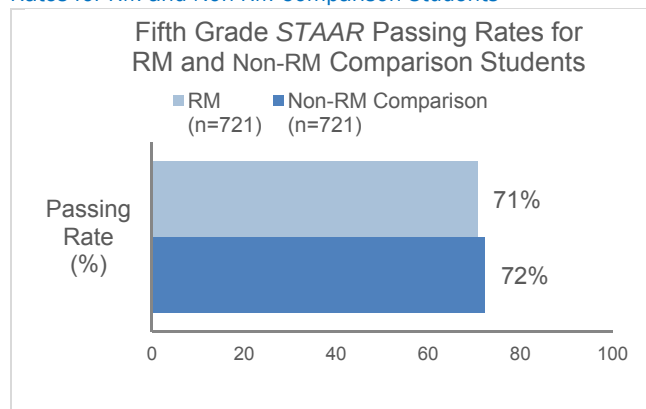
Note. TerraNova (as of 6/9/16) NCE scores were used for second grade. STAAR (as of 7/11/16) scale scores were used for grades three to five.

Figure 3: Fourth-Grade Spring 2016 Mathematics STAAR Passing Rates for RM and Non-RM Students



Note. % passing=Met the 2015-16 Level II Satisfactory Standard. When prior achievement and economically disadvantaged status were accounted for, differences in STAAR scale scores between the two groups were *not* statistically significant. STAAR data as of 7/11/16.

Figure 4: Fifth-Grade Spring 2016 Mathematics STAAR Passing Rates for RM and Non-RM Comparison Students



Note. % passing=Met the 2015-16 Level II Satisfactory Standard. When prior achievement and economically disadvantaged status were accounted for, differences in STAAR scale scores between the two groups were *not* statistically significant. STAAR data as of 7/11/16.

Recommendations

Ensure higher levels of implementation for existing RM grade levels before expanding to additional grade levels. Across grade levels, there were more campuses in the “low” implementing category than in the “medium” and “high” implementing categories. This is especially concerning for fifth grade when RM is the full curriculum. With a 2015-16 RM budget of almost \$2 million, the district should ensure adequate return on its investment before further expansion.

Decide whether to continue using the fifth-grade RM curriculum when it serves as the full curriculum but does not align with the district curriculum and when 11 of 13 campuses met the evaluator criteria for “low” implementation. Per classroom observations and interviews, RM teachers had to veer away from the RM curriculum occasionally to ensure students covered all of the district student expectations. Implementation and outcome measures give further reason for concern as the majority of fifth-grade students (78%) “did not meet” hour expectations (logged less than 80% of expected hours) and because the non-RM comparison group slightly outperformed the RM group on Spring 2016 STAAR; the same was true for Spring 2015 STAAR results. Although Spring 2016 assessment differences between RM and non-RM students were not statistically significant, the trend was opposite of what would be hoped.

If RM continues to be a district priority, make sure teachers receive adequate guidance on how to meld two different curricula (district and RM). The district curriculum is fully aligned with local and state assessment measures, but RM is not. Because local and state assessment measures are part of the district Teacher Excellence Initiative, many campus staff members question why teachers should be pressured to spend so much time on RM when it does not align to district expectations. As recommended previously, make certain teachers have sufficient guidance on how to effectively blend the two different curricula.

Strategically plan for next year’s RM QC training to make sure more teachers complete the QC prior to or at the onset of the 2016-17 school year. A notable percentage of teachers (37%) did not complete QC training by the end of the first six weeks of Fall 2015, which was markedly worse than in the previous two school years. This meant many students could not use RM until after the first six weeks of the school year. As recommended in the past, the district needs to make sure more teachers complete the QC prior to or at the start of the school year.

Ensure RM teacher schedule changes are communicated to RM ICs in a timely manner. Per interviews with RM ICs, teacher schedule changes occurred often but were frequently not communicated

to ICs. The result was limited support for some teachers and campuses. To ensure equitable campus support, it will be important that teacher schedule changes are communicated to RM ICs immediately.

Increase communication between RM and School Leadership, Teaching and Learning, and Information Technology staff members. Ongoing communication is needed to overcome barriers to implementation, strengthen campus support, and ensure the district is receiving a good return on its investment in RM (time and funds allocated).

Make certain all campuses have adequate working technology and are reporting issues to Information Technology as problems occur. Technology issues continued to be a challenge based on survey and classroom observation results. During interviews, RM IC coordinators noted that some teachers were not completing Information Technology tickets in a timely manner, which meant problems were not resolved quickly. It will be important to continue to add and upgrade campus technology while ensuring ample campus support and timely submission of tickets to Information Technology.

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The full 2015-16 RM final evaluation report can be found at <http://www.dallasisd.org/Page/888>. For more information, contact Program Evaluation at 972-925-6457.