MEMORANDUM December 19, 2014

TO: Board Members

FROM: Terry B. Grier, Ed.D.
Superintendent of Schools

CONTACT: Carla Stevens, 713-556-6700

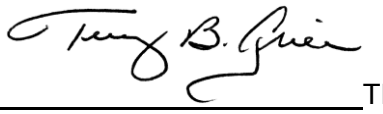
SUBJECT: **THINK THROUGH MATH IN HISD, 2013–2014**

Think Through Math (TTM) is an online, adaptive mathematics program designed to supplement classroom instruction. The program is funded by the Texas Education Agency for students in grades 3–8, and schools have the option to purchase the program for students in other grades. This report compares the STAAR mathematics achievement of HISD students in grades 3–8 who enrolled in the TTM program in 2013–2014 with the results of similar students in the same grades who did not use TTM. Three treatment groups of students were considered: all TTM users in the district, TTM users in 2013–2014 priority and focus schools, and TTM users who took the June 2014 retest of the STAAR mathematics test.

Some of the highlights are as follows:

- Students in every grade level in HISD used TTM in 2013–2014 and 95 percent of the TTM users were in grades 3–8. 29,359 TTM users and 25,718 non-TTM users met the criteria for inclusion in this study, for a total of 55,077 students included in the analyses.
- Propensity score analyses were used to compare the mathematics achievement of TTM users matched with non-TTM users. Results indicated that HISD students who used TTM had significantly higher 2014 STAAR scale scores than did matched students who did not enroll in the program.
- TTM users at priority and focus schools who were matched with non-TTM users at the same schools were also found to have obtained significantly higher 2014 STAAR mathematics scale scores than non-TTM users had.
- For students who took the June 2014 STAAR retest, however, there were no significant differences in scale scores earned by TTM users when compared with the results of matched non-TTM users.
- Regression analyses indicated that for most groups of students, passing a higher number of TTM lessons, particularly passing a higher number of target TTM lessons, predicted a higher 2014 STAAR mathematics scale score. Effect sizes for the significant relationships were small, with the exception of a moderately strong relationship between the number of TTM target lessons passed and 2014 STAAR mathematics scale scores for students who met the phase-in 1, satisfactory standard on the 2013 STAAR mathematics assessment.

Should you have any further questions, please contact Carla Stevens in Research and Accountability at 713-556-6700.



TBG

Attachment

cc: Superintendent's Direct Reports
Chief School Officers
School Support Officers
Monica Kendall
Jennifer Montgomery

HOUSTON INDEPENDENT SCHOOL DISTRICT

RESEARCH

Educational Program Report

THINK THROUGH MATH IN HISD
2013 – 2014

HISD | Research and Accountability
ANALYZING DATA, MEASURING PERFORMANCE.

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THINK THROUGH MATH IN HISD, 2013–2014

Executive Summary

Evaluation Description

Think Through Math (TTM) is an online, adaptive mathematics program designed to supplement classroom instruction in mathematics. In 2013–2014, the program was funded by the Texas Success Initiative through the Texas Education Agency and was free to students in grades three through eight, though additional services could be purchased by campuses to serve students through high school Algebra I. This study was designed to investigate the impact of the Think Through Math program on the State of Texas Assessment of Academic Readiness (STAAR) mathematics achievement of HISD students who used the program in grades three through eight. Three treatment groups of students were considered: all identified TTM users in the district, TTM users in 2013–2014 priority and focus schools, and TTM users who took the June 2014 retest of the STAAR mathematics test.

Highlights

- A total of 51,863 HISD students, from every grade level, used TTM and could be matched with demographic data in 2013–2014. From the group of TTM users, 29,359 took both the spring 2013 and 2014 STAAR mathematics assessments and were included in this analysis. A group of 25,718 HISD students who took the same exams but did not use TTM were included for comparisons of demographics and academic performance, making a total of 55,077 students whose performance was analyzed in this report.

- While 53 percent of students in the analysis used TTM, 66 percent of students in priority schools and 56 percent of students who did not meet the phase-in 1 standard on the spring 2013 STAAR mathematics assessment did, indicating that TTM was used at higher rates with groups of students who needed academic support than it was used with other groups of students.

- A propensity score nearest neighbor matching analysis, in which spring 2014 STAAR mathematics scale scores were compared based on matching students on key variables, indicated that HISD students who used TTM had significantly higher 2014 STAAR mathematics scale scores than did matched students who did not enroll in the program. The same result was obtained when comparing spring 2014 STAAR mathematics scale scores for matched students at priority and focus schools. For students who retook the 2014 STAAR mathematics assessment in June, however, there were no significant differences in the scale scores earned by TTM users when compared with the scale scores earned by matched non-TTM users.

- Regression analyses were conducted to predict spring 2014 STAAR mathematics scale scores. Analyses were completed for all students in HISD and students in priority and focus schools, with students grouped based on spring 2013 STAAR mathematics results. For the majority of groups, the numbers of TTM lessons were significant predictors of 2014 STAAR mathematics scale scores. With some exceptions, the relationships were positive, i.e., a higher number of lessons predicted a higher scale score, however, the effect sizes, the magnitude of the differences, for the significant relationships

were generally small. Only one effect size was moderate, that for the relationship between the number of target TTM lessons passed and spring 2014 STAAR mathematics scale scores for TTM users in HISD who met the 2013 STAAR mathematics phase-in 1, satisfactory standard.

Recommendations

- TTM data would be more accessible and reliable if data were associated with a single unique identifying number, such as the TSDS, rather than based on user names. Further, it would be helpful if TTM supported a system that allowed data to be modified without loss of information, and collected and accessible for more than a single academic year.

- In this study, TTM was generally shown to be an effective academic support for HISD students in increasing their scale scores on the STAAR mathematics assessment. It is recommended that the program continue to be made accessible to schools and teachers to use as a supplement to regular instruction.

- The number of TTM lessons a student passed and the number of target TTM lessons a student passed were more consistently associated with higher STAAR mathematics scale scores than the number of TTM lessons a student completed was. It is therefore recommended that teachers and monitors consider emphasizing students passing lessons over students simply completing them.

Administrative Response

Think Through Math, a supplemental program funded for all grade 3–8 students by the Texas Success Initiative, has been well received by both teachers and students in HISD so we have continued to recommend and support its use in the district.

Recognizing that usage alone will not always have a positive result, we recommend that students not just complete lessons but rather that students pass the lessons they attempt. Students are encouraged to pass at least 30 target, or on grade-level, lessons prior to the administration of the STAAR-Mathematics. Think Through Math captures the idea in their catchphrase, “Think 30,” which can be heard and seen in many 3–8 classrooms in the district.

We continue to recommend that teachers take an active role in the program by monitoring student use, utilizing the motivational features of the program, and using the various reports to review student progress and plan classroom instruction. In addition to grade-level lessons, the program offers lessons that remediate and scaffold the mathematics development of students with diverse needs. Teachers have significant control over the lessons students attempt in Think Through Math and are encouraged to use the program to individualize supplemental instruction as needed.

A follow-up evaluation might consider the effect of Think Through Math on the various sub-populations we serve in our district. Also, anecdotal reports from campuses have been positive for high achieving students, and it is possible that a measure other than STAAR-Math would show a positive effect for high achieving students. The evaluation might also consider students’ feelings and perceptions about mathematics because many teachers report that students enjoy using Think Through Math.

We continue working to build intentional usage of the program so that more HISD students can benefit and grow as mathematicians. To make data more accessible and student records more accurate, we began automated data provisioning for the 2014-2015 school year so that all student and teacher accounts were

set up based on Chancery. In the past, teachers/campuses were responsible for manually setting up accounts, which led to inaccuracies in student data and multiple student accounts. We have also requested that Think Through Math make historical student data reports available online so that teachers, administrators, and district-level personnel can track student growth over time.

Introduction

Think Through Math (TTM) is an adaptive, web-based math enrichment program funded for students in grades three through eight through the Texas Success Initiative provided by the Texas Education Agency. Since the lessons are online, students can access the program both at school and during after-school hours free of charge. The program is also available for campuses to purchase for students in high school who are studying mathematics through Algebra I.

Typically, a student takes a placement test at the beginning of a school year and, based on the results, is placed on a grade-level "pathway" which consists of approximately 30 target lessons. Remediation lessons are inserted on a student's pathway if needed, and students can begin a new pathway when they finish the grade level assigned. Teachers have significant control on the presentation of the curriculum and can reorder, add, and remove lessons from a student's pathway to meet classroom and/or student needs. The curriculum is designed to supplement rather than replace classroom teaching.

A notable element of the program is the student motivators built into the lessons. Students earn points for all the actions they take in the program. Points can be used in a variety of ways, including to contribute to a class reward such as a pizza party or classroom supplies, to make a cash contribution to the student's choice of a variety of charities, or to enhance a student's online TTM avatar. Students can earn points even for answering questions randomly, so teacher monitoring of use of the program is crucial. Teachers have ready access to information about each student's progress and can change a student's pathway or send a personal note to a student instantly.

According to the TTM website, "students who complete at least 30 lessons in their targeted pathway are proven to make measureable gains on standardized tests" (TTM, n.d., "Common Core Ready") and users were encouraged to "Think 30" to increase their test scores. The statement is largely based on research done between 1991 and 1999 with 632 junior high and high school students learning 9th grade algebra using a product similar to Think Through Math for an average of 15–20 contact hours during the academic year (Meyer, et al., 2000). Further documentation is provided through more recent anecdotal information and case studies, which are available in local newspapers and on the Think Through Math website. This report provides academic performance and demographic information for HISD students who used the program in 2013–2014 and compares the results with those of similar HISD students who did not use the program. Performance is analyzed for all students as a group, and then disaggregated by students' spring 2013 STAAR mathematics performance and their accomplishments in the TTM program. In addition, the performance of students in 2013–2014 priority and focus schools is considered, as is the performance of students who did not successfully meet the phase-in 1 satisfactory standard on the spring 2014 STAAR mathematics assessment and retook the exam in June 2014.

Methods

Data Collection and Analysis

- Think Through Math achievement data came from TTM. A first draw was made for student work done by April 21, 2014, to document student achievement before the spring administration of the STAAR Mathematics exam, and the second was drawn for TTM work done by June 23, 2014, to measure any further progress in TTM before the STAAR retest.

- Demographic data were drawn from PEIMS Fall Resubmission files.

- Data on STAAR performance came from data files from the Texas Education Agency. Scored versions of the regular STAAR and STAAR L (the linguistically accommodated test for English language learners) were used for the analyses. Performance of students on the spring 2013 administration of the mathematics subject test was used to analyze performance of the same students on the spring 2014 and, for those who retested, the June 2014 administration of the mathematics subject test.

- One student, a TTM user, who had met the phase-in 1 standard on the spring 2014 STAAR mathematics exam, also took the retest in June 2014. This student's score was not included in the analysis of the achievement of TTM users on the June retest, leaving a total of 2,789 students for the analysis of the performance of June 2014 retesters.

- Propensity score nearest neighbor matching, used to make causal inferences based on observational data (Cohen, 1988), was used to compare the performance of students who took both the spring 2013 and 2014 STAAR mathematics assessments and used TTM in 2013–2014 with the performance of other students in the district who took the same tests. Students in grades three through eight were compared within three groups: all students in HISD; students in priority and focus schools; and students who retook the STAAR mathematics exam in June 2014. Students in each group were matched on spring 2013 STAAR mathematics scale score and 2014 enrollment in a priority or focus school, grade level, gender, economic disadvantage, limited English proficiency (LEP) status, and race/ethnicity. In each case, a probit regression analysis indicated significant differences between the groups initially. For the propensity score matching comparison within HISD, all 55,077 students were included and balance was achieved on each of the matching variables, i.e., after the matches were made, there were no significant differences between the groups on any of the matching variables. For the comparison within priority and focus schools, all 12,792 students were included; balance was not achieved for economic disadvantage or for the ethnic category American Indian. For the comparison of students who retested in June, all 2,789 students were used and balance was achieved on each matching variable.

- In order to establish the performance of students based on the number of TTM lessons they used, regression analyses were run for the relationship between spring 2014 STAAR mathematics scale scores and the number of lessons TTM users completed, the number of lessons they passed, and the number of target lessons they passed. Completed lessons were those that students finished but did not necessarily pass. Completed lessons included target lessons, specifically aligned to the grade level curriculum, and remedial or administrative lessons, inserted to allow students to negotiate the program and to provide lessons on content students had not yet mastered. Passed lessons were those for which students were successful in a summative assessment, and could have been either target or other inserted lessons. Target lessons completed were those specifically designed to address grade level content on which students were successful in the summative assessment. Data for each category were provided by TTM.

- Priority and focus schools were those identified by the Texas Education Agency for the 2013–2014 academic year. Priority elementary and middle schools were in the lowest five percent of Title I schools academically, based on state reading and mathematics assessments, and focus schools were in the

lowest ten percent of Title I schools based on the widest gaps between student performance and established federal targets (González Reynolds, 2013).

- In this report, numbers were rounded to the nearest whole number in the text, and to the nearest tenth in the tables. Numbers were rounded up if the next digit was 5 or higher and were not changed if the next digit was lower, so 11.49 was recorded as 11.5 in a table and 11 in the text, while 11.50 was recorded as 11.5 in the table and 12 in the text.

- For percentages associated with demographics, percentages in the text are reported as percentage of TTM users and non-TTM users who share a given characteristic. In the tables, percentages are reported as a distribution of a given characteristic within the group of TTM users or the group of non-TTM users. Percentages reported in the text can be reproduced by using the corresponding table of demographics selecting a single demographic characteristic, and dividing the number of students in the chosen group, TTM user or non-TTM user, by the sum of the number of TTM users and non-TTM users who share the same characteristic.

Data Limitations

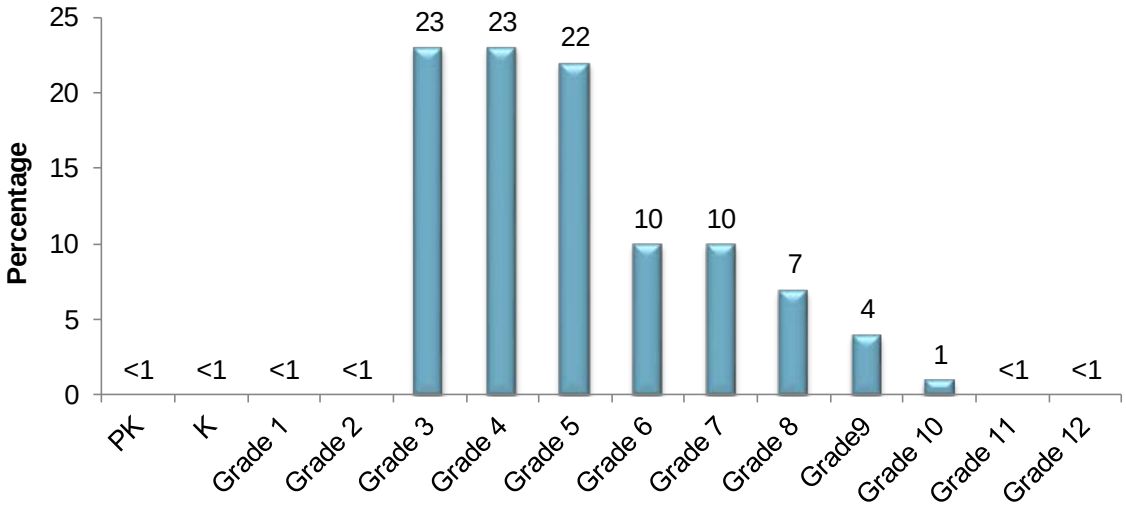
For a complete description of data limitations, see **Appendix A**, page 48.

Results

How many HISD students used TTM in 2013–2014 and how did they compare with their peers in the district?

- A total of 51,863 HISD students were identified as TTM users and were matched with demographic data and in 2013–2014. As detailed in **Table 1**, (page 49), nine percent of TTM users attended a 2013–2014 priority school, 19 percent attended a 2013–2014 focus school, and the remainder attended a non-prioritized school. Also in Table 1 (page 49) and illustrated in **Figure 1** (page 7), TTM users were represented in every grade level, as the registration process for TTM facilitated small numbers of students in lower grades enrolling in the program. The majority of HISD TTM users, 68 percent, attended elementary grades three through five, and 27 percent attended middle school grades six through eight, for a total of 95 percent of TTM users attending grades three through eight.

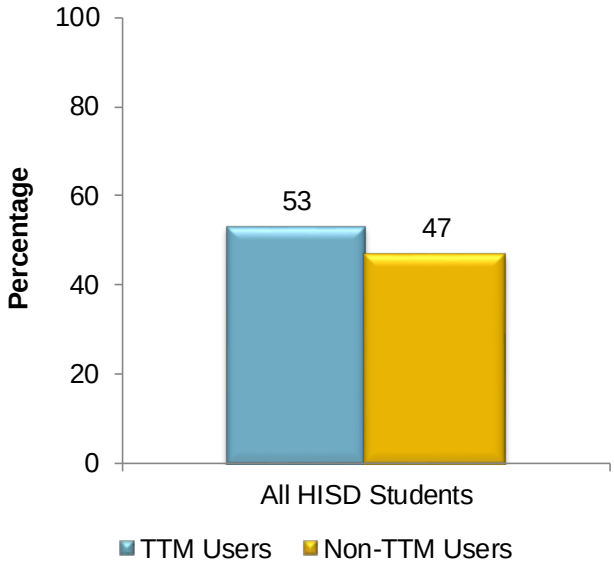
Figure 1. Percentage of HISD students who used TTM by grade level, 2013–2014



Note: Percentages may not equal 100 due to rounding
Sources: PEIMS Fall Resubmission and TTM files

- Of the HISD students who used TTM, 29,359 took both the spring 2013 and 2014 STAAR mathematics assessments. Another 25,718 HISD students took the same exams at the same times but did not use TTM in 2013–2014. Demographic information for these students, including numbers that allow calculation of the results in **Figures 2–6** (pages 8–12) can be found in **Table 2** (page 50). Shown in **Figure 2**, 53 percent of students who took both the spring 2013 and 2014 STAAR mathematics assessments used TTM in 2013–2014, while 47 percent did not.

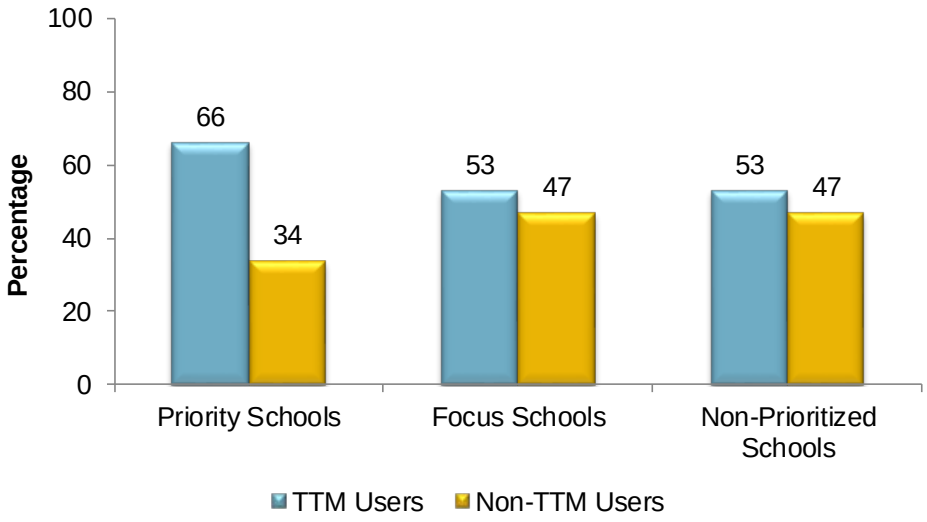
Figure 2. Percentage of TTM users and non-TTM users among students who took both the spring 2013 and 2014 STAAR mathematics assessments, 2013–2014



Sources: PEIMS Fall Resubmission and TTM files

- Seventy-six (76) percent of TTM users who took both STAAR mathematics assessments attended schools that were not prioritized by the state of Texas. Shown in **Figure 3**, of students who attended priority schools and took both STAAR mathematics tests, 66 percent used TTM and 34 percent did not, while at focus schools and at non-prioritized schools, 53 percent used TTM and 47 percent did not. Since 53 percent of all students who took both STAAR mathematics tests used TTM (see Figure 2, page 7), TTM usage was proportionate in focus and non-prioritized schools, but was used more broadly at priority schools.

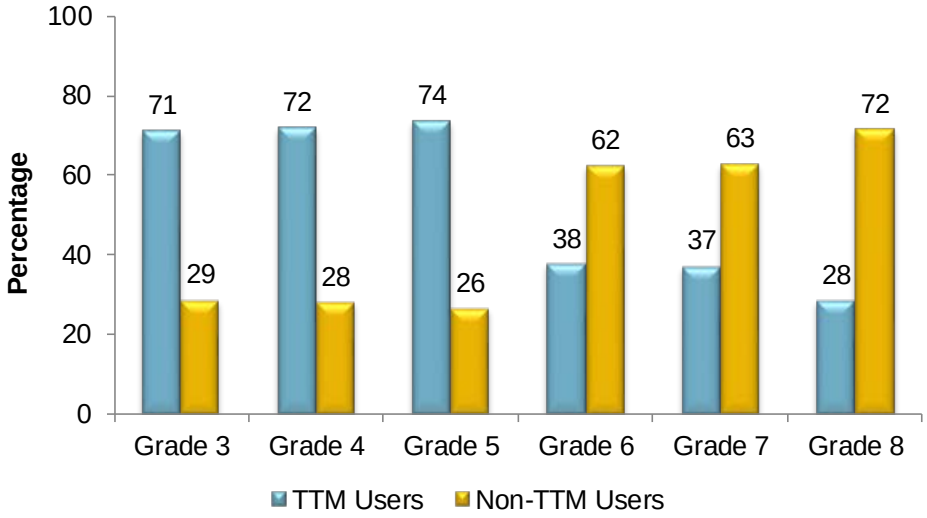
Figure 3. Percentage of TTM users and non-TTM users among students who took both the spring 2013 and 2014 STAAR mathematics assessments, by 2013–2014 school prioritization



Note: Percentages may not equal 100 due to rounding.
Sources: PEIMS Fall Resubmission, TEA priority and focus school identification files, and TTM files

- Illustrated in **Figure 4**, in the elementary grades three through five, the majority of students who took both the spring 2013 and 2014 STAAR mathematics exams were enrolled in TTM, while in the middle school grades six through eight, a majority of students who tested both years were not enrolled in the program.

Figure 4. Percentage of TTM users and non-TTM users among students who took both the spring 2013 and 2014 STAAR mathematics assessments, by 2013–2014 grade level

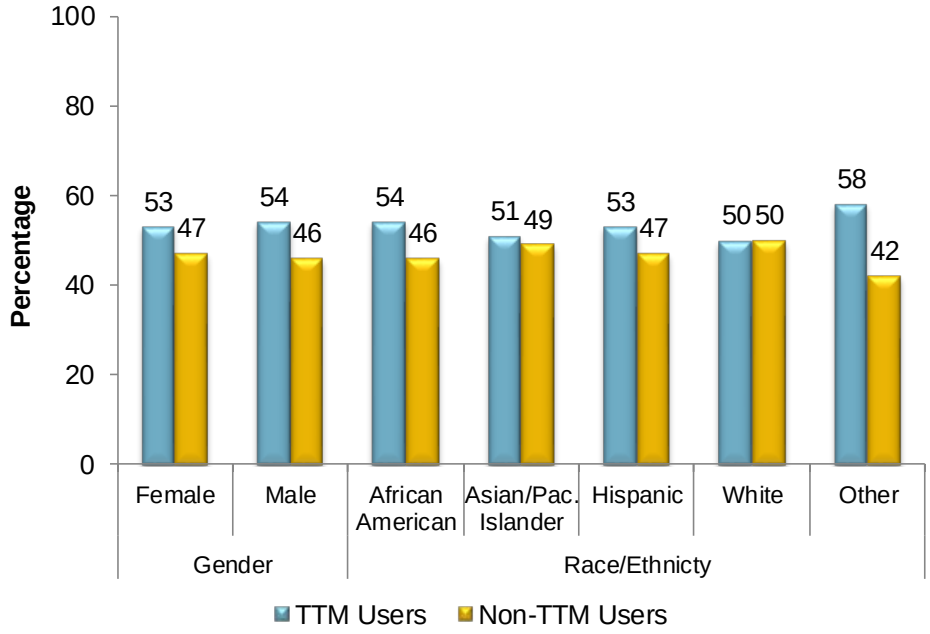


Notes: Students in grade three took the grade three level STAAR mathematics test in both 2013 and 2014, indicating that they had been retained in third grade. Percentages may not equal 100 due to rounding.

Sources: PEIMS Fall Resubmission and TTM files

- Fifty-three (53) percent of the females and 54 percent of the males who took both the spring 2013 and 2014 STAAR mathematics assessments used TTM. Since 53 percent of all the students were TTM users, gender was distributed relatively evenly within the groups of TTM and non-TTM users. Shown in **Figure 5**, compared with TTM usage in all schools (53 percent of students in all the schools used TTM) (see Figure 2, page 7), a smaller percentage of whites and Asian/Pacific Islanders used TTM, and a larger percentage of other students (American Indians and those with two or more race/ethnicity designations) used the program.

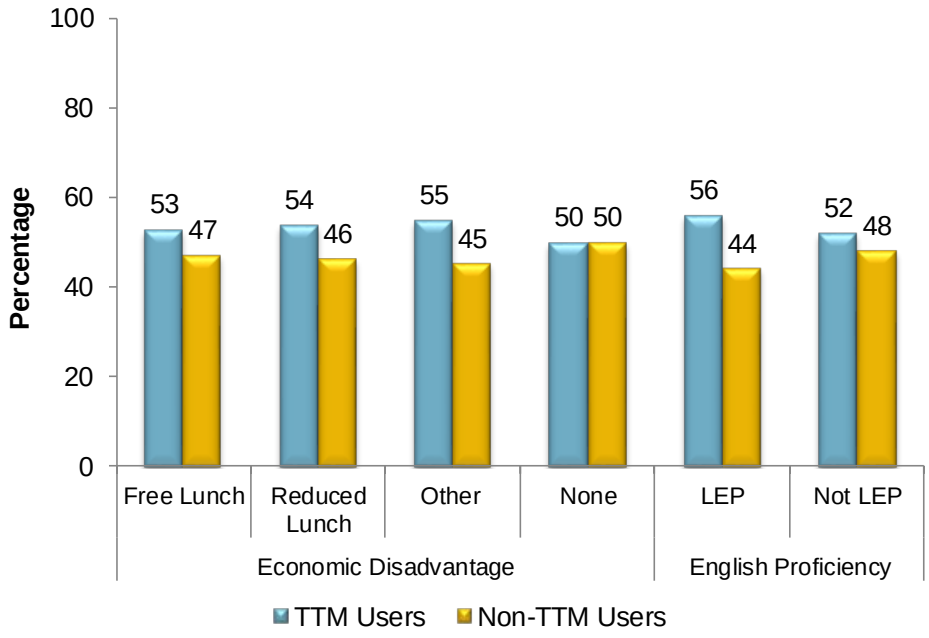
Figure 5. Percentage of TTM users and non-TTM users among students who took both the spring 2013 and 2014 STAAR mathematics assessments, by gender and race/ethnicity



Note: Percentages may not equal 100 due to rounding.
Sources: PEIMS Fall Resubmission and TTM files

- Illustrated in **Figure 6**, half of the students who took both the spring 2013 and 2014 STAAR mathematics exams and who had no economic disadvantage used TTM and half did not, indicating that TTM was more broadly used among students in every category of economic disadvantage than among students who had no economic disadvantage. Grouped by English proficiency, a higher percentage of students who had limited English proficiency (LEP) used TTM than did students who had no limitations in English proficiency.

Figure 6. Percentage of TTM users and non-TTM users among students who took both the spring 2013 and 2014 STAAR mathematics assessments, by economic disadvantage and English proficiency

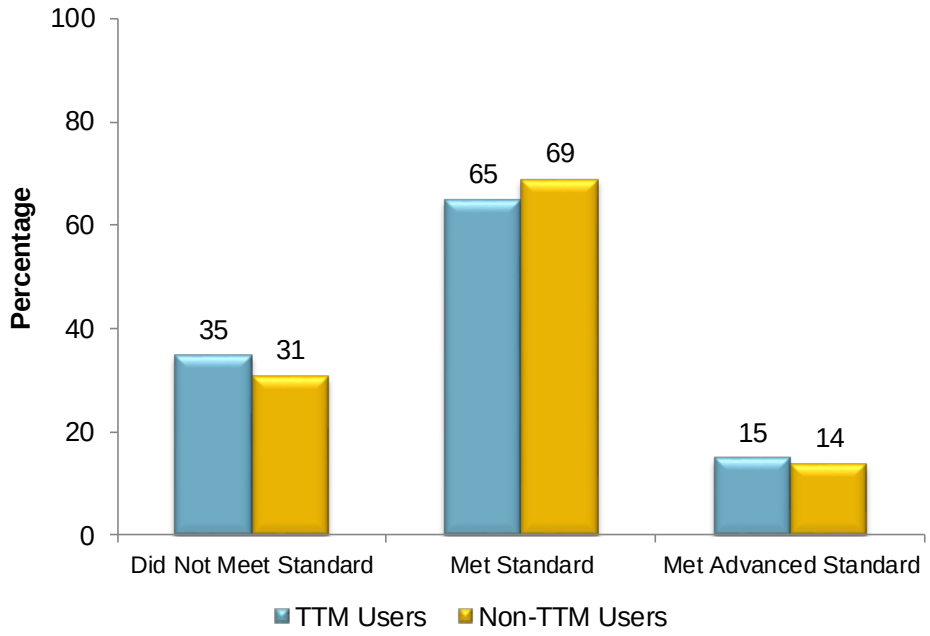


Note: Percentages may not equal 100 due to rounding.
Sources: PEIMS Fall Resubmission and TTM files

- More detail on the demographics of students, both TTM users and non-TTM users, who took both the spring 2013 and 2014 STAAR mathematics assessments can be found in Table 2 (page 50).

- Spring 2013 STAAR mathematics results for the 55,077 students who took both the spring 2013 and 2014 STAAR mathematics exams are shown in **Figure 7** and **Table 3** (page 51). A lower percentage of TTM users than of non-TTM users met the spring 2013 phase-in 1, satisfactory standard but a slightly higher percentage met the advanced standard.

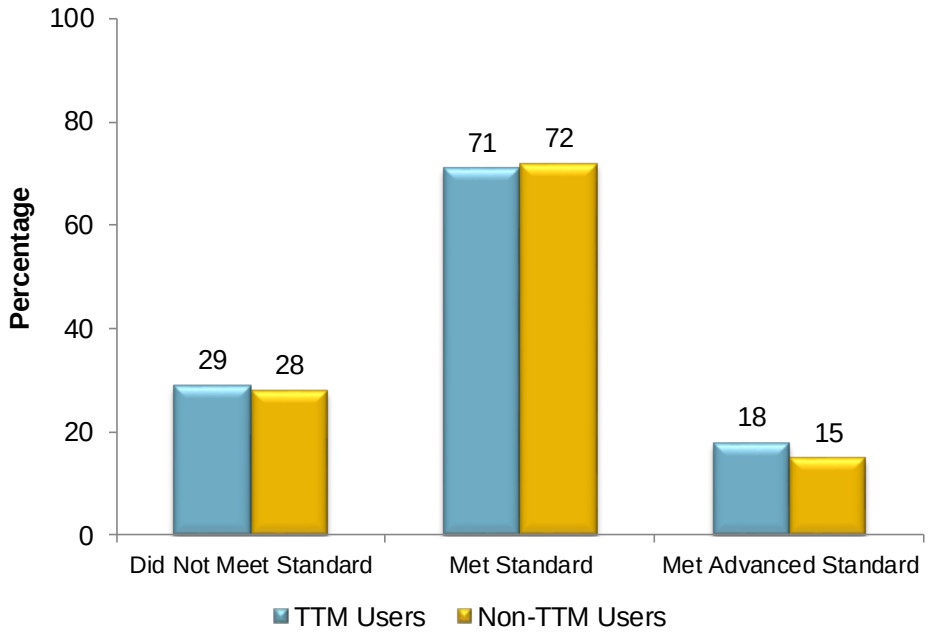
Figure 7. Spring 2013 STAAR mathematics performance of students who took both the spring 2013 and 2014 STAAR mathematics assessments, by TTM useage



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files and TTM files

- Spring 2014 STAAR mathematics results for the same students, those in HISD who took both the 2013 and 2014 spring STAAR mathematics assessments, are shown in **Figure 8** and **Table 4** (page 51). A higher percentage of TTM users and also of non-TTM users met the phase-in 1, satisfactory standard in spring 2014 than in spring 2013. The gap between the percentage of TTM and non-TTM users who met the phase-in 1, satisfactory standard was reduced from four percentage points in 2013 to one percentage point in 2014, with TTM users attaining the lower percentage meeting the satisfactory standard both years. At the same time, the gap between the percentage of TTM and non-TTM users who earned the advanced standard increased from one percentage point to three percentage points, with TTM users attaining the higher percentage achieving the advanced standard both years.

Figure 8. Spring 2014 STAAR mathematics performance of students who took both the spring 2013 and 2014 STAAR mathematics assessments, by TTM useage



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files and TTM files

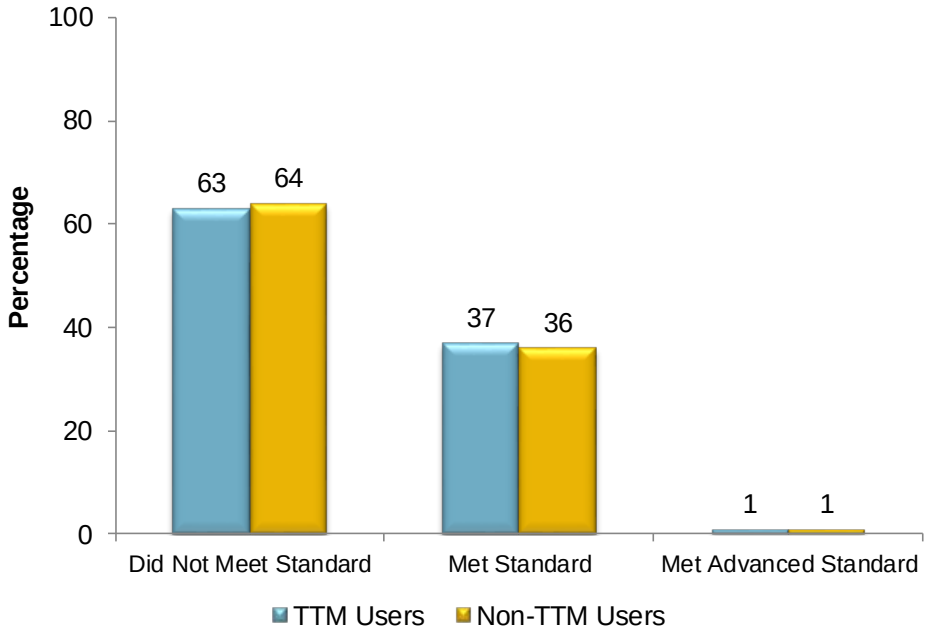
- Analysis using propensity score nearest neighbor matching, in which spring 2014 STAAR mathematics scale scores were compared based on matching students on key variables which included spring 2013 STAAR mathematics scale scores, enrollment in a priority or focus school, grade level, gender, economic disadvantage, LEP status, and race/ethnicity, indicated that students who used TTM had significantly higher spring 2014 STAAR mathematics scale scores than did matched students who did not enroll in the program. All 55,077 students in the sample were included in the analysis. Shown in **Table 5** (page 51), students enrolled in TTM earned an average of 12 scale score points more than matched students not enrolled in the program earned. To put the 12 point difference in scale scores in context, while differences in the scale score cut-off points for achieving the phase-in 1 satisfactory standard on STAAR are different for each grade level from three to eight, a student must gain an average of 38 scale score points each year to meet the standard set for a year's progress. While all students were expected to earn an average of 38 scale points in a year, TTM students earned an

average of 12 more scale points in 2013–2014 than non-TTM users earned. The difference in scale score points earned by TTM users compared with the scale score points earned by non-TTM users was significant at the p<.001 level.

Based on the number of TTM lessons they completed in 2013–2014, how did HISD students who did not meet the spring 2013 STAAR mathematics phase-in 1, satisfactory standard perform on the spring 2014 STAAR mathematics assessment?

- Of the 55,077 HISD students who took both the spring 2013 and 2014 STAAR mathematics assessments, 18,322 (33 percent) did not meet the phase-in 1, satisfactory standard on the spring 2013 STAAR Mathematics assessment. Of those students, 10,227 (56 percent) were enrolled in TTM in the 2013–2014 school year. As shown in **Figure 9** and detailed in **Table 6** (page 52), the majority of students who did not meet the phase-in 1, satisfactory standard in 2013 also failed to meet the satisfactory standard in 2014, however 37 percent of TTM users met the phase-in 1, satisfactory standard on the spring 2014 exam while a slightly lower percentage, 36 percent, of non-TTM users did.

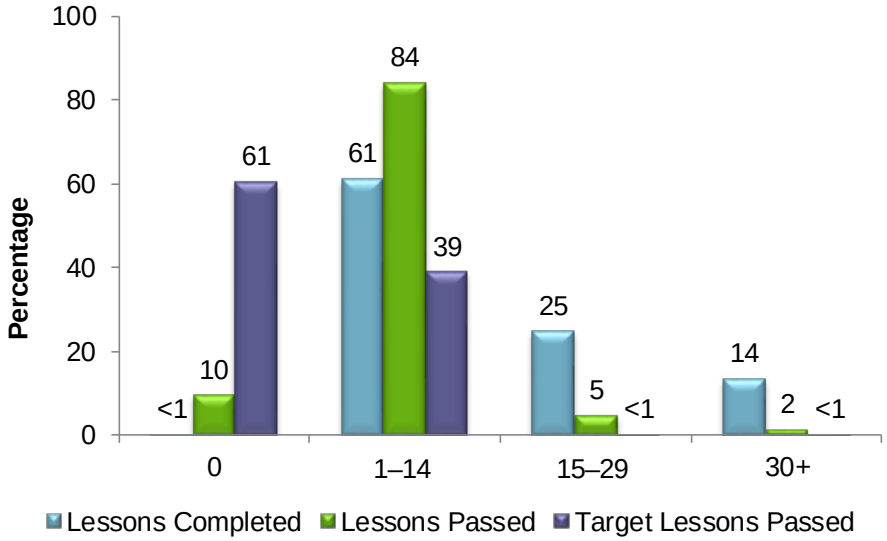
Figure 9. Spring 2014 STAAR mathematics performance of students who took both the spring 2013 and 2014 STAAR mathematics assessments and did not meet the phase-in 1, satisfactory standard on the spring 2013 exam



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files and TTM files

- As shown in **Figure 10**, the majority of TTM users who did not meet the spring 2013 STAAR mathematics standard completed and passed 1–14 TTM lessons in 2013–2014, 61 percent and 84 percent of students, respectively. Fourteen (14) percent of the TTM users completed 30 or more TTM lessons, the recommended goal set by TTM, while two percent of users passed 30 or more of the TTM lessons they completed. Only 0.2 percent of the users passed thirty or more TTM target lessons.

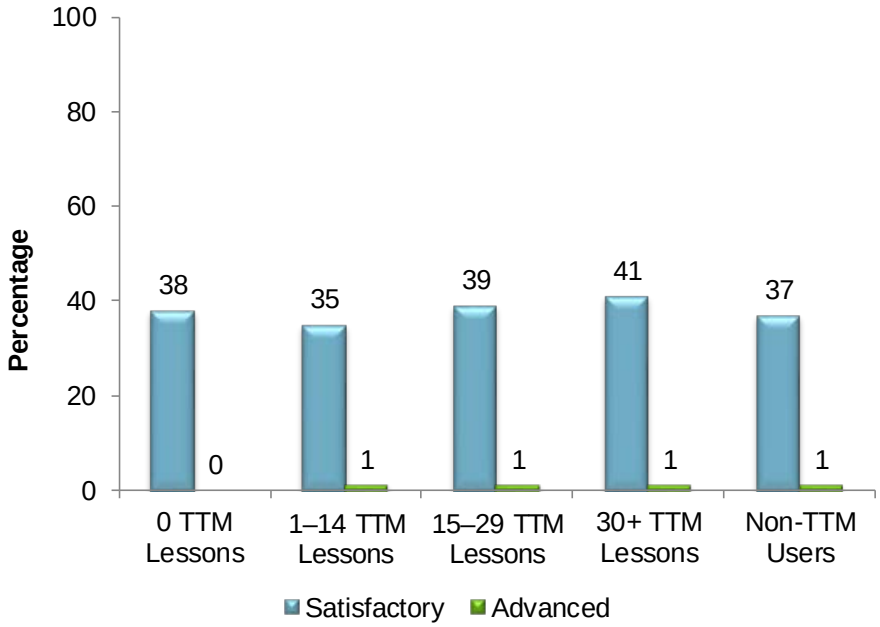
Figure 10. Percentage of TTM users who did not meet the spring 2013 STAAR mathematics phase-in 1, satisfactory standard, by number of TTM lessons completed, number of TTM lessons passed, and number of target TTM lessons passed, 2013–2014



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files and TTM files

- The 2014 STAAR mathematics results for HISD students who failed to meet the phase-in 1, satisfactory standard on the spring 2013 STAAR mathematics assessment are illustrated in **Figure 11** (page 16) and detailed in Table 6 (page 52) for non-TTM users and **Table 7** (page 52) for TTM users. Within this group, a higher percentage of TTM users met the 2014 STAAR mathematics phase-in 1 satisfactory standard than did non-TTM users (the last column in the figure), except for TTM users who completed 1–14 TTM lessons. Forty-one (41) percent of the students who did not meet the 2013 standard and completed thirty or more TTM lessons in 2013–2014 passed the spring 2014 STAAR mathematics exam with the phase-in 1, satisfactory standard, and one percent of them achieved the advanced standard. For comparison, 37 percent of non-TTM users met the phase-in 1 satisfactory standard and one percent achieved the advanced standard.

Figure 11. Percentage of students who achieved satisfactory and advanced ratings on the spring 2014 STAAR mathematics assessment after not meeting the satisfactory standard on the spring 2013 STAAR mathematics test, by number of TTM lessons completed and compared with HISD students who did not enroll in TTM



Sources: 2013 and 2014 STAAR mathematics files and TTM files

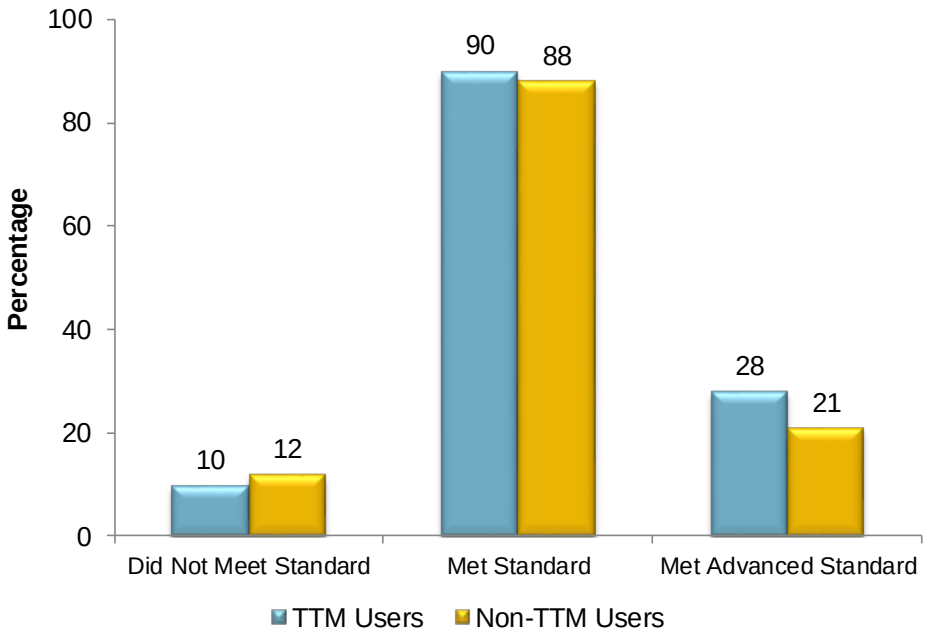
- Three regression analyses were conducted, one with the number of TTM lessons completed as the predictor, the second with the number of TTM lessons passed as the predictor, and the third with the number of TTM target lessons passed as the predictor. The criterion variable for all three analyses was the spring 2014 STAAR mathematics scale score. As shown in **Table 8** (page 53), two of the three independent variables were significant predictors of 2014 STAAR mathematics scale scores, the number of TTM lessons passed and the number of TTM target lessons passed. In both cases, more TTM lessons were associated with higher spring 2014 STAAR mathematics scale scores. The magnitude of the difference (the effect size) between the sets of 2014 STAAR mathematics scale scores was small for both relationships.

- The average numbers of TTM lessons used by students who did not meet the phase-in 1, satisfactory standard in 2013 but who successfully met the satisfactory standard and/or achieved the advanced standard on the spring 2014 STAAR mathematics exam are shown in **Table 9** (page 54). Students who successfully met the 2014 satisfactory standard completed an average of 18 TTM lessons, passed an average of seven, and passed an average of two target TTM lessons. Those who also met the advanced standard had higher average numbers for each category, 24 completed lessons, 12 passed lessons, and five passed target lessons. The standard deviation associated with each of the averages was high, indicating a wide distribution of numbers of lessons was associated with the groups of successful students.

Based on the number of TTM lessons they completed in 2013–2014, how did HISD students who met the 2013 STAAR mathematics phase-in 1, satisfactory standard perform on the spring 2014 STAAR mathematics assessment?

- Of the 55,077 HISD students who took both the spring 2013 and 2014 STAAR mathematics assessments, 36,755 (67 percent) met the phase-in 1, satisfactory standard on the spring 2013 STAAR mathematics test. Of these students, 19,132 (52 percent) used TTM and 17,623 (48 percent) did not. Shown in **Figure 12** and **Table 10** (page 54), almost 90 percent of students who met the phase-in 1, satisfactory standard in spring 2013 did so again in spring 2014. Notably, a higher percentage of TTM users than non-TTM users both met the phase-in 1, satisfactory standard and met the advanced standard on the spring 2014 STAAR mathematics exam.

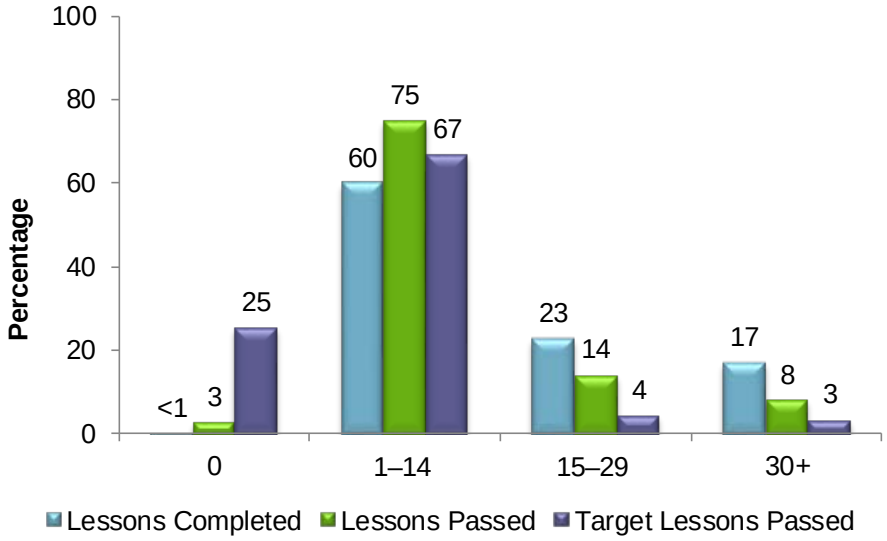
Figure 12. Spring 2014 STAAR mathematics performance of students who took both the spring 2013 and 2014 STAAR mathematics assessments and met the phase-in 1, satisfactory standard on the spring 2013 exam



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files and TTM files

- Pictured in **Figure 13**, the majority of TTM users who met the phase-in 1, satisfactory standard on the spring 2013 STAAR mathematics completed and passed from 1–14 TTM lessons and passed 1–14 target TTM lessons. Seventeen (17) percent completed at least 30 TTM lessons and three percent passed 30 or more target TTM lessons. The percentage of students in all three categories of 30 or more TTM lessons was higher than the percentage in the same categories for students who did not meet the 2013 phase-in 1, satisfactory standard (for comparison, see Figure 10, page 16).

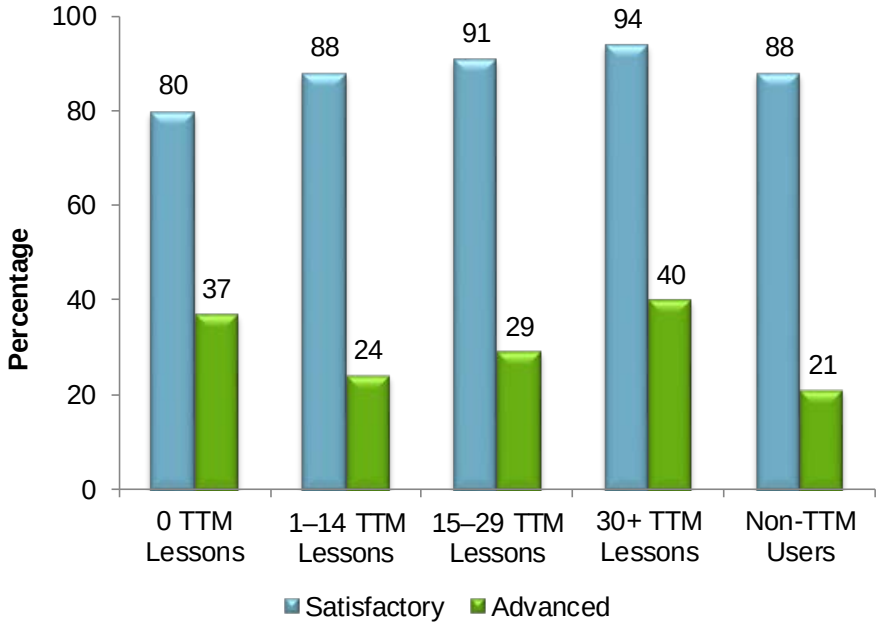
Figure 13. Percentage of TTM users who met the spring 2013 STAAR mathematics phase-in 1, satisfactory standard, by number of TTM lessons completed, number of TTM lessons passed, and number of target TTM lessons passed, 2013–2014



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files and TTM files

- On the spring 2014 STAAR mathematics assessment, TTM users who completed 0–14 TTM lessons had the same or lower percentages of students meeting the phase-in 1, satisfactory standard but higher percentages meeting the advanced standard compared with students who did not use TTM (see **Figure 14** and Table 10, page 54, for non-TTM users and **Table 11**, page 54, for TTM users). Students who completed and passed 15 or more TTM lessons had higher percentages of students meeting both the satisfactory and advanced standards than did non-TTM users. The percentage of students who achieved the satisfactory and/or advanced standard on the spring 2014 STAAR mathematics test was higher for students who met the 2013 phase-in 1, satisfactory standard than it was for students who did not meet the standard, in all categories illustrated (for comparison, see Figure 11, page 16).

Figure 14. Percentage of students who achieved satisfactory and advanced ratings on the spring 2014 STAAR mathematics assessment after meeting the satisfactory standard on the spring 2013 STAAR mathematics test, by number of TTM lessons completed and compared with HISD students who did not enroll in TTM



Sources: 2013 and 2014 STAAR mathematics files and TTM files

- Regression analyses using the number of TTM lessons completed, the number of TTM lessons passed, and the number of target TTM lessons passed to predict spring 2014 STAAR mathematics scale scores are provided in **Table 12** (page 55). All three categories of numbers of lessons were significant predictors of spring 2014 test scores, with higher numbers of TTM lessons associated with higher spring 2014 STAAR mathematics scale scores. The effect sizes for the number of TTM lessons completed and the number of TTM lessons passed was small, but the effect size for the number of target TTM lessons passed was medium, indicating a greater magnitude in the difference in 2014 scale scores.

- The average number of lessons in each category for TTM users who successfully met the 2013 STAAR mathematics phase-in 1 satisfactory standard and also met the 2014 satisfactory standard and/or the

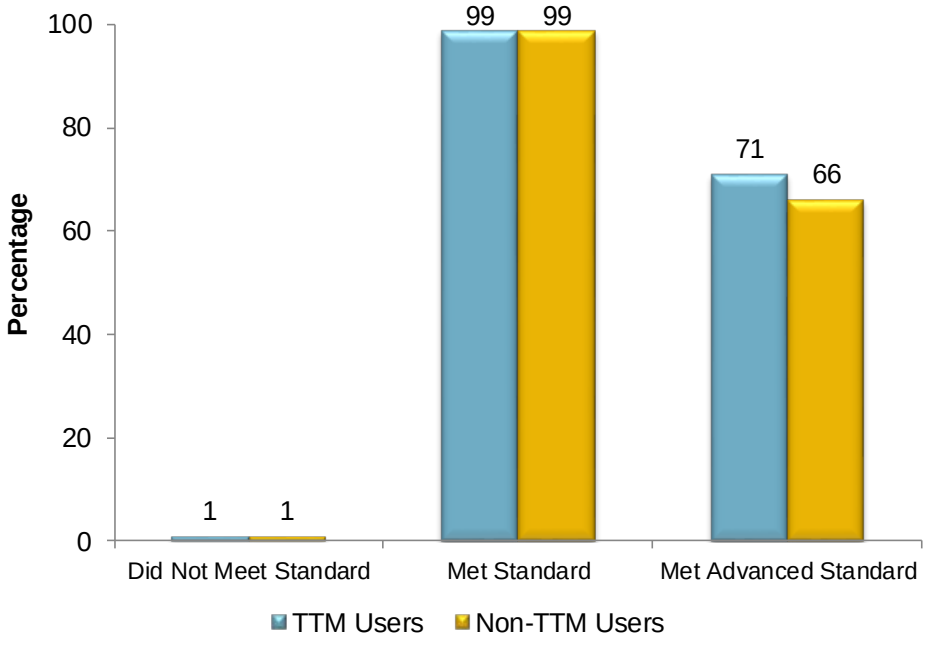
2014 advanced standard is provided in **Table 13** (page 55). Students who met the satisfactory standard completed an average of 19 lessons, passed 12, and passed an average of six target TTM lessons; those who also met the advanced standard averaged more lessons in each category, 23 TTM lessons completed, 18 passed, and 12 target TTM lessons passed.

- The average number of lessons in each category for TTM users who met the 2013 phase-in 1, satisfactory standard (Table 13, page 55) was higher than the complementary average for successful students who did not meet the 2013 phase-in 1 satisfactory standard (Table 9, page 53), with the exception of the average number of TTM lessons completed by students who were successful on the 2013 STAAR mathematics test and who achieved the 2014 advanced standard.

Based on the number of TTM lessons they completed in 2013–2014, how did HISD students who met the spring 2013 STAAR mathematics advanced standard perform on the spring 2014 STAAR mathematics assessment?

- A total of 7,881 students (14 percent of those in the group of students who took both the spring 2013 and 2014 STAAR mathematics exams) achieved the advanced standard on the 2013 STAAR mathematics test. Of these, 4,262 (54 percent) used TTM and the remainder did not. Illustrated in **Figure 15** and detailed in **Table 14** (page 56), 99 percent of both TTM users and non-TTM users achieved the phase-in 1, satisfactory standard on the spring 2014 STAAR mathematics test, and a majority of both groups again achieved the advanced standard, with the percentage of TTM users earning the advanced standard exceeding that of non-TTM users.

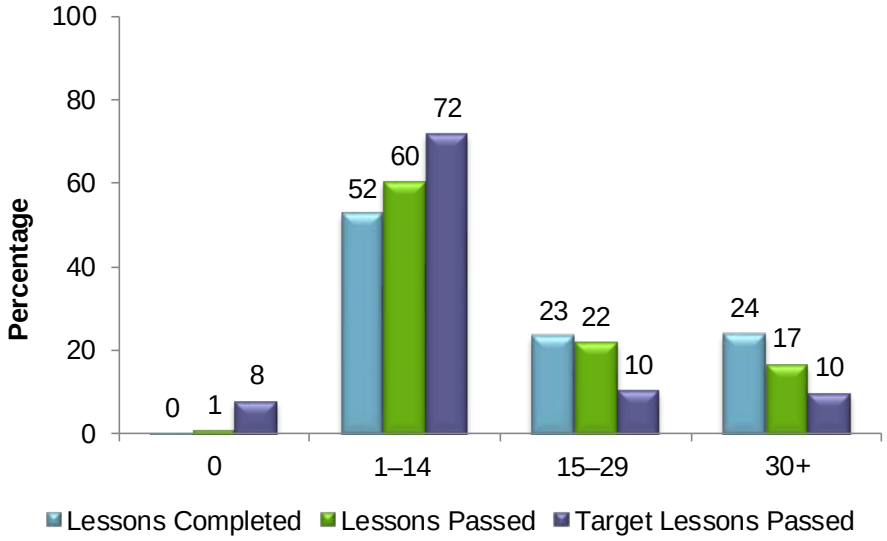
Figure 15. Spring 2014 STAAR mathematics performance of students who took both the spring 2013 and 2014 STAAR mathematics assessments and met the advanced standard on the spring 2013 exam



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files and TTM files

- Shown in **Figure 16**, the majority of TTM users who earned the advanced standard on the spring 2013 STAAR mathematics exam completed and passed 1–14 TTM lessons and also 1–14 target TTM lessons in 2013–2014. This group had larger percentages of students completing and passing 30 or more TTM lessons and also passing 30 or more target TTM lessons than did students who did not meet the advanced standard on the spring 2013 STAAR mathematics test (for comparison, see Figure 10, page 15, and Figure 13, page 18).

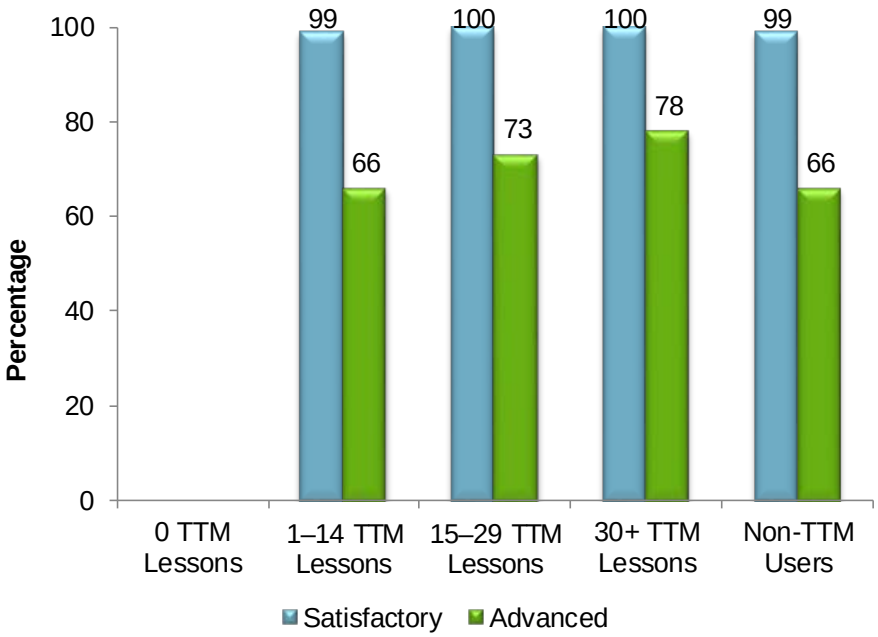
Figure 16. Percentage of TTM users who met the 2013 STAAR mathematics phase-in 1, satisfactory standard, by number of TTM lessons completed, number of TTM lessons passed, and number of target TTM lessons passed, 2013–2014



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files and TTM files

- When students who achieved the advanced standard on the spring 2013 STAAR mathematics assessment were grouped by the number of TTM lessons completed, either 99 or 100 percent in each category achieved the satisfactory standard on the spring 2014 STAAR mathematics exam. Ilustrated in **Figure 17** and detailed in Table 14 (page 56) for non-TTM users and in **Table 15** (page 56) for TTM users, TTM users who completed 1–14 TTM lessons had the same percentage of students achieving the advanced standard on the spring 2014 STAAR mathematics test as non-TTM users had, but TTM users who completed more lessons had higher percentages of students earning the satisfactory and advanced ratings in 2014 than non-TTM users had.

Figure 17. Percentage of students who achieved satisfactory and advanced ratings on the spring 2014 STAAR mathematics assessment after meeting the advanced standard on the spring 2013 STAAR mathematics test, by number of TTM lessons completed and compared with HISD students who did not enroll in TTM



Sources: 2013 and 2014 STAAR mathematics files and TTM files

- The results of regression analyses using numbers of lessons as predictor variables for students who earned the advanced standard on the 2013 STAAR mathematics assessment are reported in **Table 16** (page 57). The number of TTM lessons completed, the number of TTM lessons passed, and the number of target TTM lessons passed were all significant predictors of spring 2014 STAAR mathematics scale scores with higher numbers of lessons associated with higher spring 2014 STAAR mathematics scale scores. All the relationships were significant at the $p<.001$ level, but all the effect sizes were small.

- The average number of TTM lessons completed and passed, and the average number of target TTM lessons passed by students who achieved the advanced standard on the spring 2013 STAAR mathematics exam and were successful on the spring 2014 test are listed in **Table 17** (page 57).

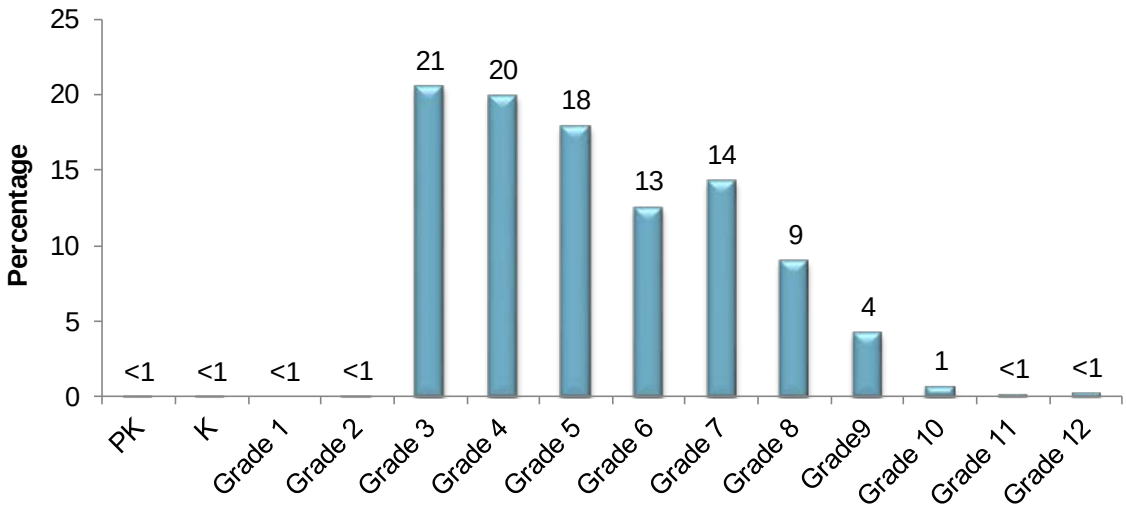
Students who achieved the advanced standard on both tests completed an average of 24 TTM lessons, close to but not surpassing the TTM recommendation of 30. They passed an average of 20 TTM lessons, and an average of 14 target TTM lessons.

- The average number of TTM lessons completed and passed, as well as the average number of target TTM lessons completed by students who earned the advanced standard on the spring 2013 STAAR mathematics test exceeded the averages recorded for students who did not achieve that standard on the spring 2013 exam (for comparison, see Table 9, page 53, Table 13, page 55, and Table 17, page 57).

How many students in HISD priority and focus schools used TTM in 2013–2014 and how did they compare with their peers enrolled in priority and focus schools who did not use TTM?

- Of the 51,863 students who used TTM and could be matched with demographic data in 2013–2014, 14,901 of them, 29 percent of identifiable TTM users in HISD, attended an HISD priority or focus school. TTM users in priority and focus schools were found at every grade level except grade one. As shown in **Figure 18**, the majority of TTM users were enrolled in grades three through eight, the grade levels in which TTM lessons were funded by the state.

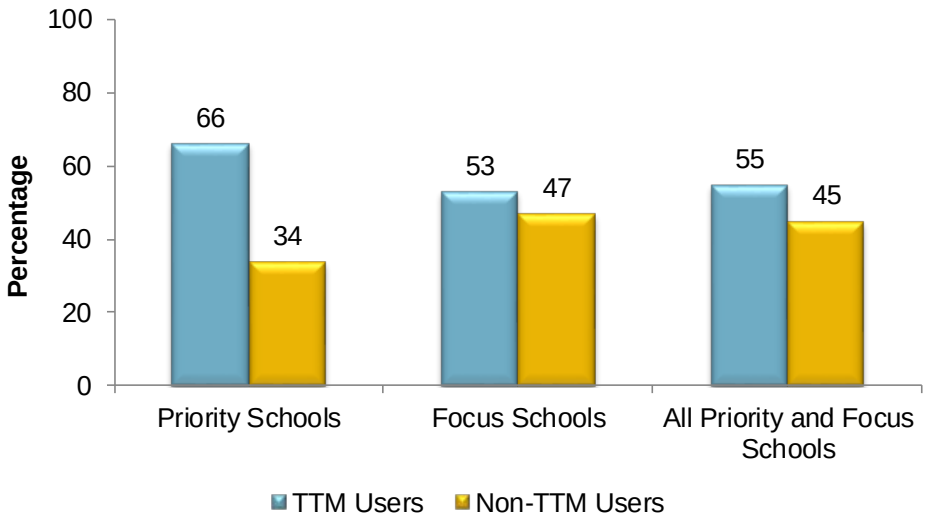
Figure 18. Percentage of students enrolled in HISD priority and focus schools who used TTM, by grade level, 2013–2014



Note: Percentages may not equal 100 due to rounding.
Sources: PEIMS Fall Resubmission, TEA priority and focus school identification files, and TTM files

- In HISD, 55,077 students took both the spring 2013 and 2014 STAAR mathematics assessments and were associated with demographic information. Of these students, 12,792 (23 percent) attended an HISD priority or focus school. Demographic information for these students, including numbers that allow calculation of the results in **Figures 19–22** (pages 24–27) can be found in **Table 19** (page 59). Illustrated in **Figure 19**, 66 percent of students in priority schools used TTM, and 53 percent of students in focus schools used the program. For comparison, 53 percent of all HISD students who took both the spring 2013 and 2014 STAAR mathematics exams used TTM in 2013–2014 (see Figure 2, page 7), indicating that TTM was used by a higher percentage of students in priority schools than in other schools in HISD, including in focus schools. Overall, a higher percentage of students who attended a 2013–2014 priority or focus school, 55 percent, used TTM than did all HISD students in the analysis, 53 percent.

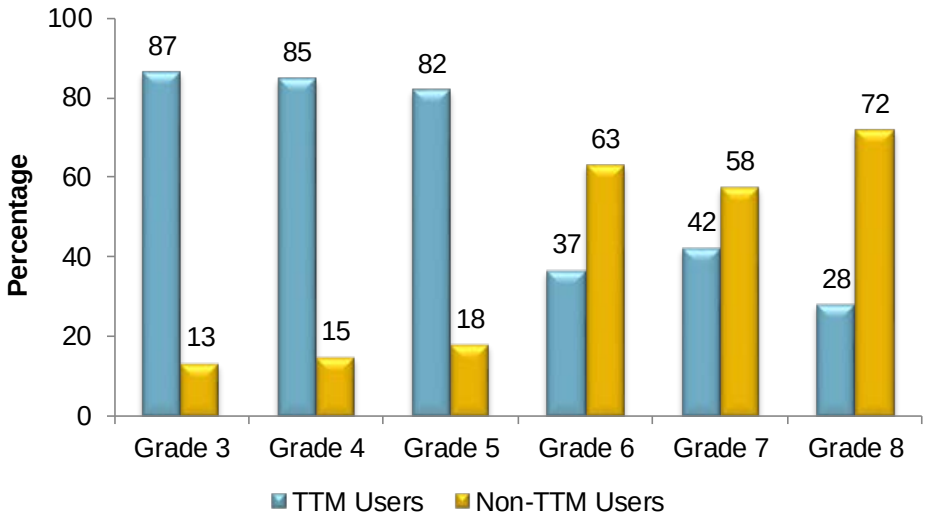
Figure 19. Percentage of TTM users and non-TTM users among students who attended a 2013–2014 priority or focus school and took both the spring 2013 and 2014 STAAR mathematics assessments



Note: Percentages may not equal 100 due to rounding.
Sources: PEIMS Fall Resubmission, TEA priority and focus school identification files, and TTM files

- More than 80 percent of third-, fourth-, and fifth-grade students in priority and focus schools who took both the spring 2013 and 2014 STAAR mathematics assessments used TTM in 2013–2014, while fewer than 50 percent of priority and focus school students in grades six through eight used the program the same year. More detail can be seen in **Figure 20**.

Figure 20. Percentage of TTM users and non-TTM users among students who attended a 2013–2014 priority or focus school and took both the spring 2013 and 2014 STAAR mathematics assessments, by 2013–2014 grade level

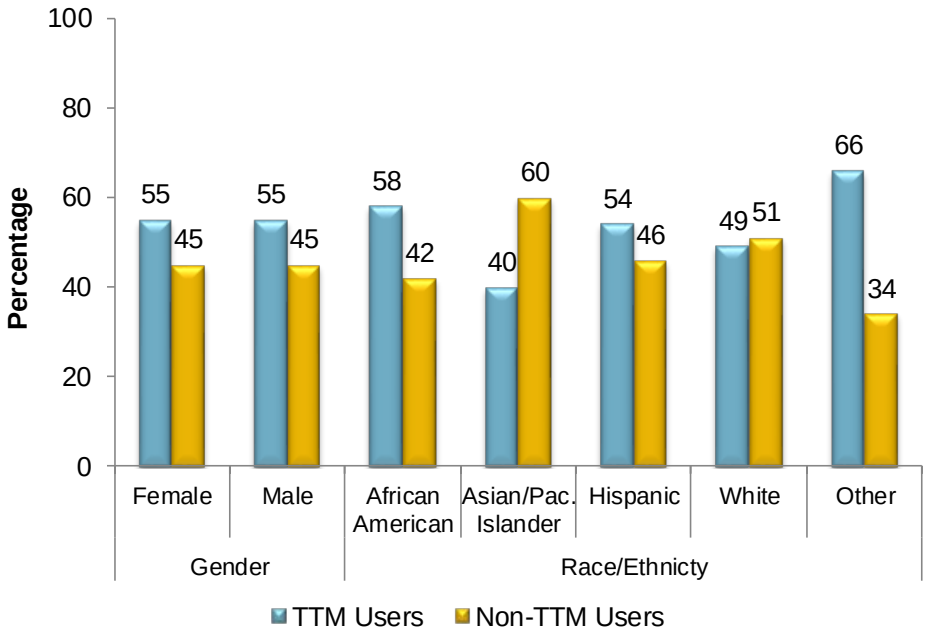


Notes: Students in grade three took the grade three level STAAR mathematics test in both 2013 and 2014, indicating that they had been retained in third grade. Percentages may not equal 100 due to rounding.

Sources: PEIMS Fall Resubmission, TEA priority and focus school identification files, and TTM files

- Illustrated in **Figure 21**, 55 percent of females and 55 percent of males in priority and focus schools who took both the spring 2013 and 2014 STAAR mathematics exams used TTM. Since 55 percent of students in priority and focus schools used TTM, these percentages match those of the whole group, indicating that gender was proportionally represented in each group. By race/ethnicity, a higher percentage of African Americans and of other students (American Indians and those with two or more race/ethnicity designations) in priority and focus schools used TTM while a lower percentage of white and Asian/Pacific Islander students in the same schools used the program.

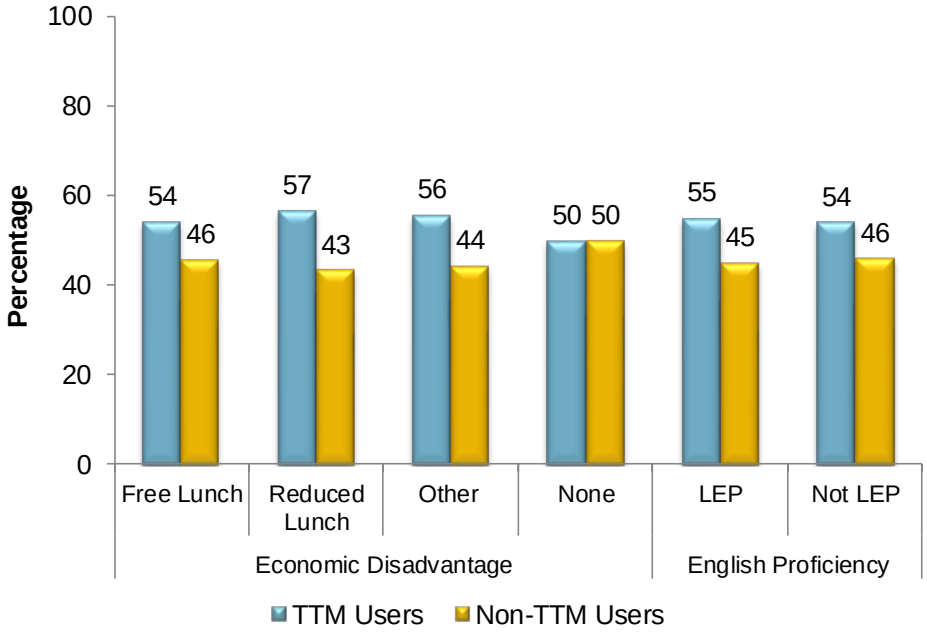
Figure 21. Percentage of TTM users and non-TTM users among students who attended a 2013–2014 priority or focus school and took both the spring 2013 and 2014 STAAR mathematics assessments, by gender and race/ethnicity



Note: Percentages may not equal 100 due to rounding.
Sources: PEIMS Fall Resubmission, TEA priority and focus school identification files, and TTM files

- The percentage of economically disadvantaged students who attended 2013–2014 priority and focus schools, took both the spring 2013 and 2014 STAAR mathematics assessments, and used TTM was generally the same as the percentage of TTM users in priority and focus schools. At the same time, the percentage of non-economically disadvantaged students who used TTM was lower than the 55 percent figure for the sample of students from priority and focus schools (**Figure 22**). By LEP status, the percentage of LEP and non-LEP students using TTM generally matched the percentage of TTM users from priority and focus schools, indicating that LEP status was distributed relatively proportionately between the groups.

Figure 22. Percentage of TTM users and non-TTM users among students who attended a 2013–2014 priority or focus school and took both the spring 2013 and 2014 STAAR mathematics assessments, by economic disadvantage and English proficiency

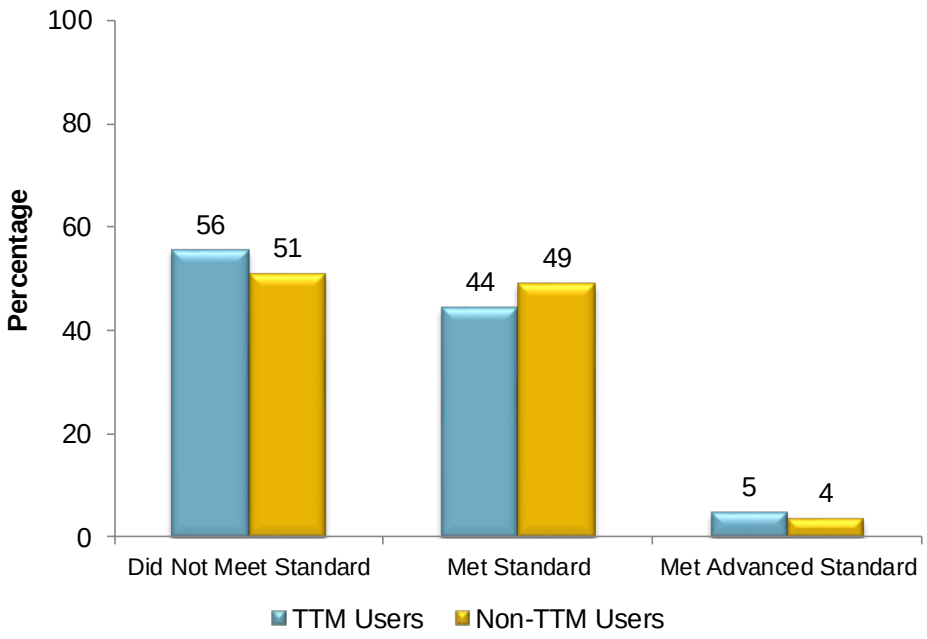


Note: Percentages may not equal 100 due to rounding.
Sources: PEIMS Fall Resubmission, TEA priority and focus school identification files, and TTM files

- See **Table 18** (page 58), for more detail on demographic characteristics of students in priority and focus schools associated with TTM usage and **Table 19** (page 59), for a comparison of demographics for TTM and non-TTM users in the analyses.

- Academic performance on the spring 2013 STAAR mathematics assessment is shown in **Figure 23** and in **Table 20** (page 60), for students who attended a 2013–2014 priority or focus school and took both the spring 2013 and 2014 STAAR mathematics tests. Fifty-six (56) percent of the priority and focus school students who used TTM in 2013–2104 did not meet the phase-in 1, satisfactory standard on the spring 2013 STAAR mathematics exam, while 51 percent of students in the same schools who did not use TTM had the same result. A higher percentage of TTM users, five percent, achieved the advanced standard than did non-TTM users, with four percent of students earning the advanced standard. The percentages of TTM and non-TTM users in priority and focus schools who failed to meet the 2013 STAAR mathematics satisfactory standard were higher than those of all TTM and non-TTM users in HISD (see Figure 7, page 12), and a lower percentage of students in priority and focus schools achieved the advanced standard on the same test.

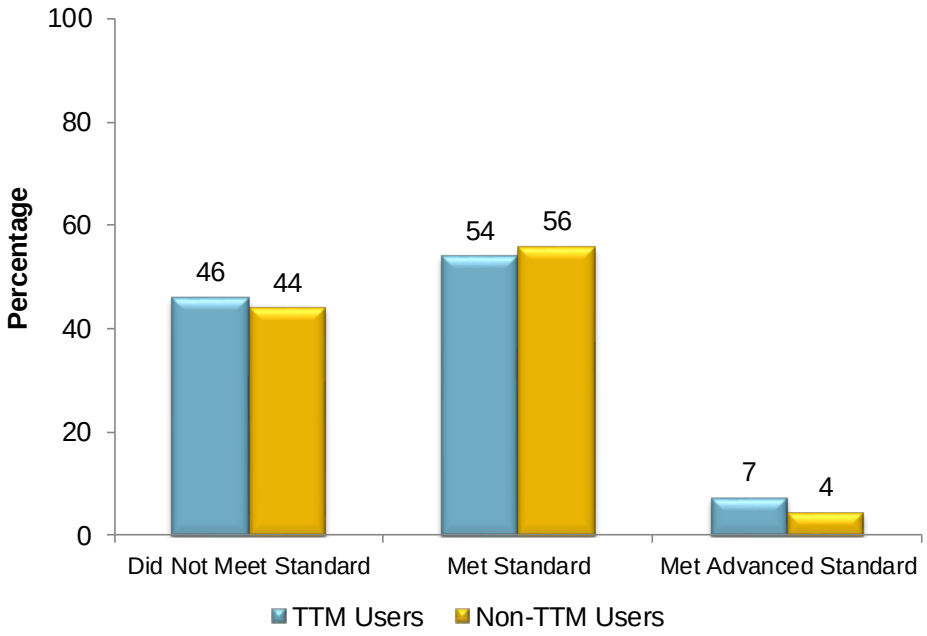
Figure 23. Spring 2013 STAAR mathematics performance of students who attended a 2013–2014 priority or focus school and took both the spring 2013 and 2014 STAAR mathematics assessments, by TTM useage



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files, TEA priority and focus school identification files, and TTM files

- The same priority and focus school students' academic performance on the spring 2014 STAAR mathematics exam is illustrated in **Figure 24** and detailed in **Table 21** (page 60). A majority of both TTM and non-TTM users met the phase-in 1, satisfactory standard, with a slightly higher percentage of non-TTM users than TTM users meeting the satisfactory standard. However, between 2013 and 2014, the gap between the two groups closed by three percentage points. While the percentage of non-TTM users who achieved the advanced standard remained at four percent for both 2013 and 2014, the percentage of TTM users who earned the advanced standard rose from five percent on the 2013 test to seven percent in 2014.

Figure 24. Spring 2014 STAAR mathematics performance of students who attended a 2013–2014 priority or focus school and took both the spring 2013 and 2014 STAAR mathematics assessments, by TTM useage



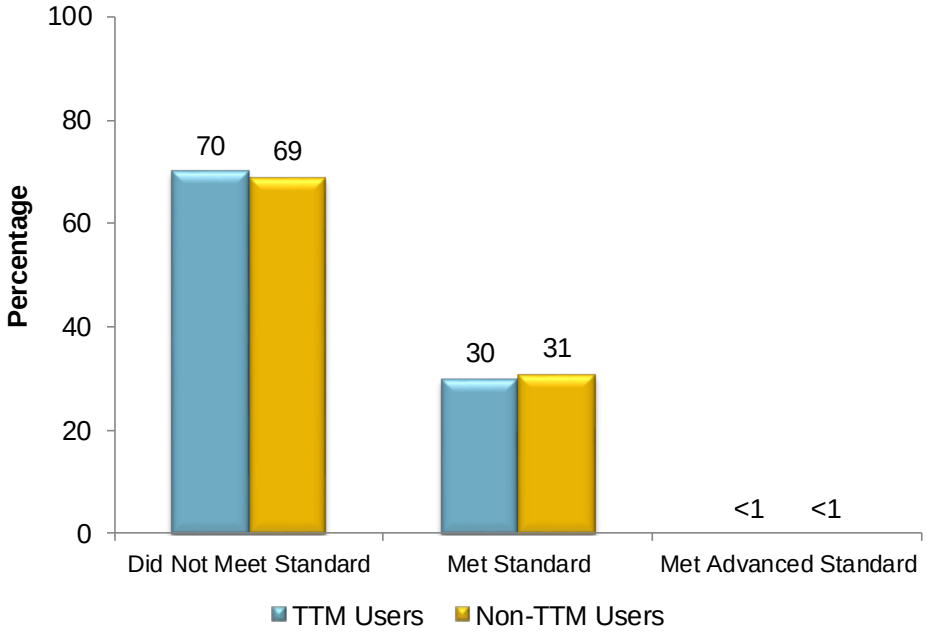
Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files, TEA priority and focus school identification files, and TTM files

- A propensity score nearest neighbor matching analysis was done to compare spring 2014 STAAR mathematics scale scores between TTM users and non-TTM users who attended priority or focus schools and had taken both the spring 2013 and 2014 STAAR mathematics assessments. Students in the two groups were matched on spring 2013 STAAR mathematics scale scores, grade level, gender, economic disadvantage status, LEP status, and race/ethnicity. All 12,792 students in the sample were included in the analysis. The results, seen in **Table 22** (page 61), indicated a significant difference in spring 2014 STAAR mathematics scale scores, $p < .001$, between TTM and non-TTM users, with TTM users earning an average of 16 scale score points more than non-TTM users earned. For a context for interpreting scale score points, please see the explanation in the bullet for propensity score matching on pages 13–14 of this report.

Based on the number of TTM lessons they completed in 2013–2014, how did HISD students who attended a 2013–2014 priority or focus school and who did not meet the spring 2013 STAAR mathematics phase-in 1, satisfactory standard perform on the spring 2014 STAAR mathematics assessment?

- Fifty-three (53) percent of the 6,837 students who attended 2013–2014 priority or focus schools and who took both the spring 2013 and 2014 STAAR mathematics assessments did not meet the phase-in 1, satisfactory standard on the 2013 assessment. Shown in **Figure 25** and detailed in **Table 23** (page 61), the majority of the students also did not meet the standard for the spring 2014 STAAR mathematics test. A slightly higher percentage of non-TTM users than TTM users met the 2014 phase-in 1, satisfactory standard, and, though numbers of students meeting the advanced standard were small, a few more TTM users (12) than non-TTM users (seven) met the advanced standard.

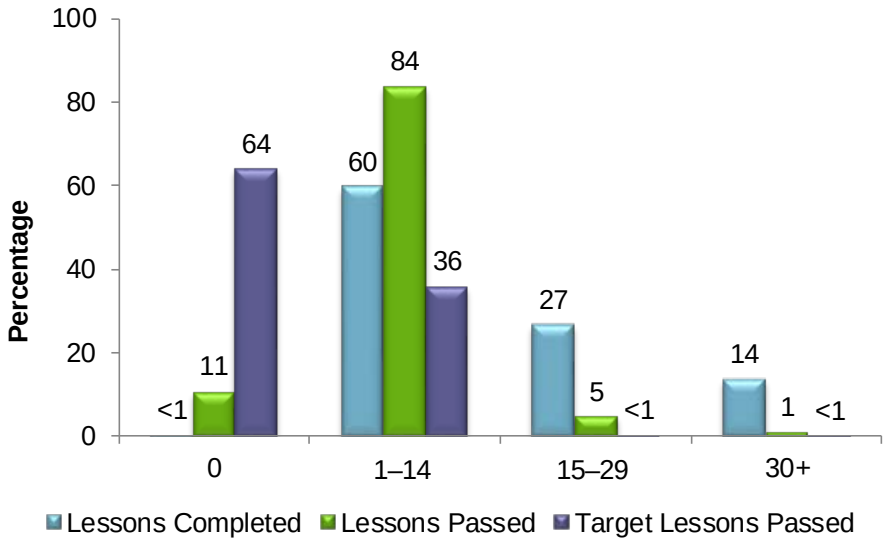
Figure 25. Spring 2014 STAAR mathematics performance of students who attended a priority or focus school, took both the spring 2013 and 2014 STAAR mathematics assessments, and did not meet the phase-in 1, satisfactory standard on the 2013 exam



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files, TEA priority and focus school identification files, and TTM files

- The number of TTM lessons completed, the number of TTM lessons passed, and the number of target TTM lessons passed by TTM users in priority and focus schools who took both the spring 2013 and 2014 STAAR mathematics assessments and did not meet the 2013 satisfactory standard are shown in **Figure 26** and in **Table 24** (page 62). The majority of students completed and passed 1–14 TTM lessons and passed zero target TTM lessons. Fourteen (14) percent completed 30 or more TTM lessons, as recommended by the TTM company, and one percent passed 30 or more lessons.

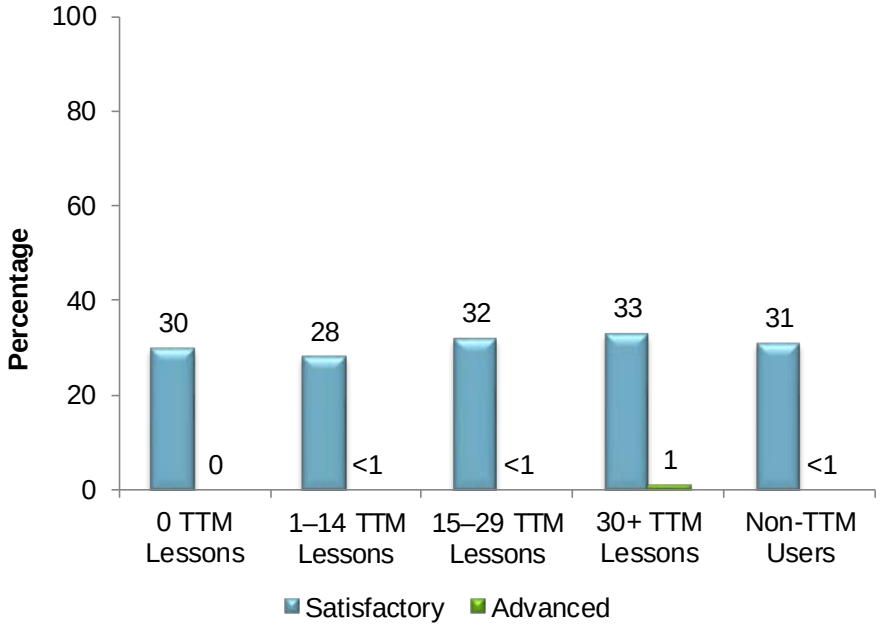
Figure 26. Percentage of TTM users who attended a 2013–2014 priority or focus school and did not meet the 2013 STAAR mathematics phase-in 1, satisfactory standard, by number of TTM lessons completed, number of TTM lessons passed, and number of target TTM lessons passed, 2013–2014



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files, TEA priority and focus school identification files, and TTM files

- Shown in **Figure 27** (page 32) and in Table 24 (page 62), the percentage of students who attended 2013–2014 priority and focus schools and who failed to meet the 2013 STAAR mathematics phase-in 1, satisfactory standard but who were successful on the spring 2014 exam generally rose slightly as the number of completed lessons rose, from 30 percent of students who completed no TTM lessons to 33 percent of students who completed 30 or more TTM lessons. For comparison, 31 percent of non-TTM users who attended a priority or focus school and who did not meet the 2013 satisfactory standard succeeded in meeting the standard on the 2014 assessment (Figure 27, last column, page 32, and Table 23, page 61).

Figure 27. Percentage of students who attended a 2013–2014 priority or focus schools and achieved satisfactory and advanced ratings on the spring 2014 STAAR mathematics assessment after not meeting the satisfactory standard on the spring 2013 STAAR mathematics test, by number of TTM lessons completed and compared with students in priority and focus schools who did not enroll in TTM



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files, TEA priority and focus school identification files, and TTM files

- Regression analyses of the relationships between numbers of lessons and spring 2014 STAAR mathematics scale scores for students who atteded 2013–2014 priority and focus schools and who did not achieve the phase-in 1, satisfactory standard on the 2013 STAAR mathematics assessment are reported in **Table 25**, (page 63). The number of TTM lessons completed, the number of TTM lessons passed, and the number of target TTM lessons passed were all significant predictors of spring 2014 STAAR mathematics scale scores. For the number of TTM lessons completed, the relationship was negative, meaning higher numbers of lessons were associated with lower spring 2014 STAAR mathematics scale scores. Though the relationship was significant, the magnitude of the relationship was very small. For the number of TTM lessons passed and the number of target TTM lessons passed, a positive relationship was found. A higher number of lessons predicted a higher 2014 STAAR mathematics scale score. The relationships were significant, but the effect sizes were small.

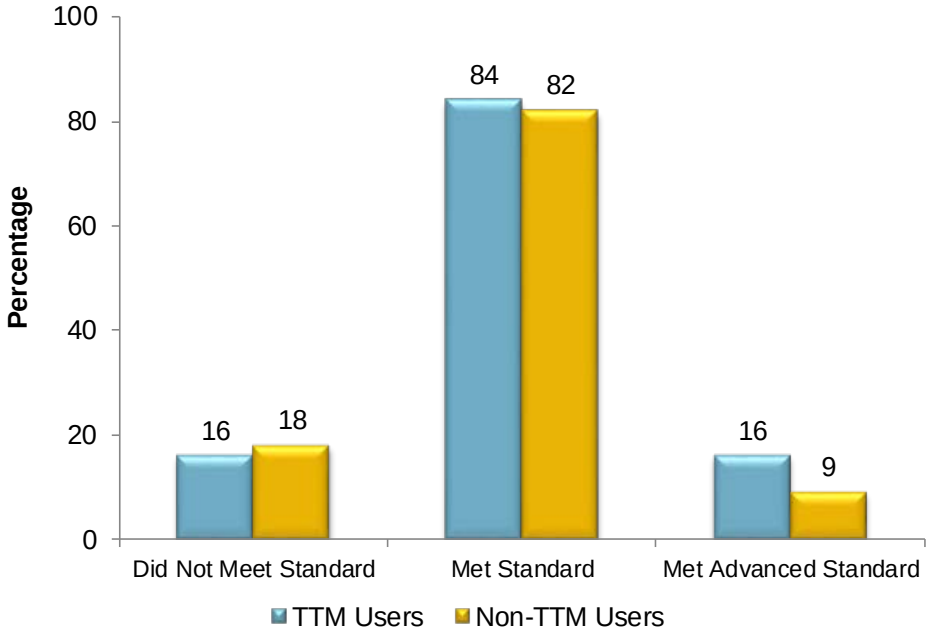
- The average number of TTM lessons completed, number of TTM lessons passed, and number of TTM target lessons passed for students who attended a priority or focus school and who did not meet the satisfactory standard on the spring 2013 STAAR mathematics test but who were successful on the spring 2014 exam are provided in **Table 26** (page 63). The average for all three categories was higher for students who earned the advanced standard than it was for those who met the phase-in 1, satisfactory standard. Students who achieved the advanced standard logged an average of 22 TTM

lessons completed, 11 passed, and four target TTM lessons passed while those who met the satisfactory standard completed an average of 18 TTM lessons, passed an average of seven, and passed an average of two target TTM lessons.

Based on the number of TTM lessons they completed in 2013–2014, how did HISD students who attended 2013–2014 priority and focus schools and who met the spring 2013 STAAR mathematics phase-in 1, satisfactory standard perform on the spring 2014 STAAR mathematics assessment?

- A total of 5,955 students (47 percent of students in 2013–2014 priority and focus schools who took both the spring 2013 and 2014 STAAR mathematics exams) met the phase-in 1, satisfactory standard on the spring 2013 STAAR mathematics assessment. Fifty-two (52) percent of these students used TTM and 48 percent did not. Spring 2014 STAAR mathematics results for these students are shown in **Figure 28** and in **Table 27** (page 64). More than 80 percent of the students, TTM users and non-TTM users, who met the 2013 phase-in 1, satisfactory standard also met the standard on the spring 2014 assessment. A larger percentage of TTM users than non-TTM users achieved both the satisfactory and the advanced standard on the same test.

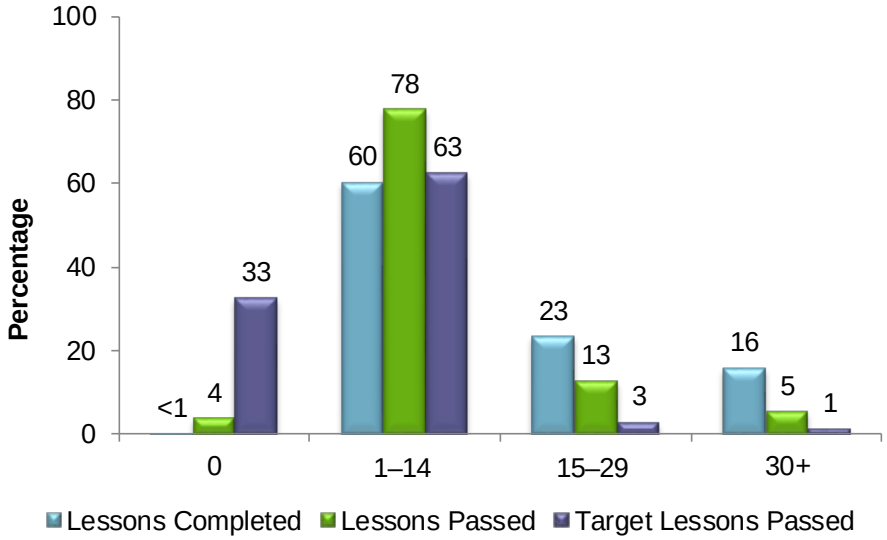
Figure 28. Spring 2014 STAAR mathematics performance of students who attended a priority or focus school, took both the spring 2013 and 2014 STAAR mathematics assessments, and met the phase-in 1, satisfactory standard on the spring 2013 exam



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files, TEA priority and focus school identification files, and TTM files

- Illustrated in **Figure 29** and shown in **Table 28** (page 64), the majority of TTM users who met the phase-in 1, satisfactory standard on the spring 2013 STAAR mathematics assessment completed 1–14 TTM lessons, passed 1–14 TTM lessons, and also passed 1–14 target TTM lessons. Sixteen (16) percent completed 30 or more TTM lessons, as recommended by the TTM company, five percent passed 30 or more TTM lessons, and one percent passed thirty or more target TTM lessons.

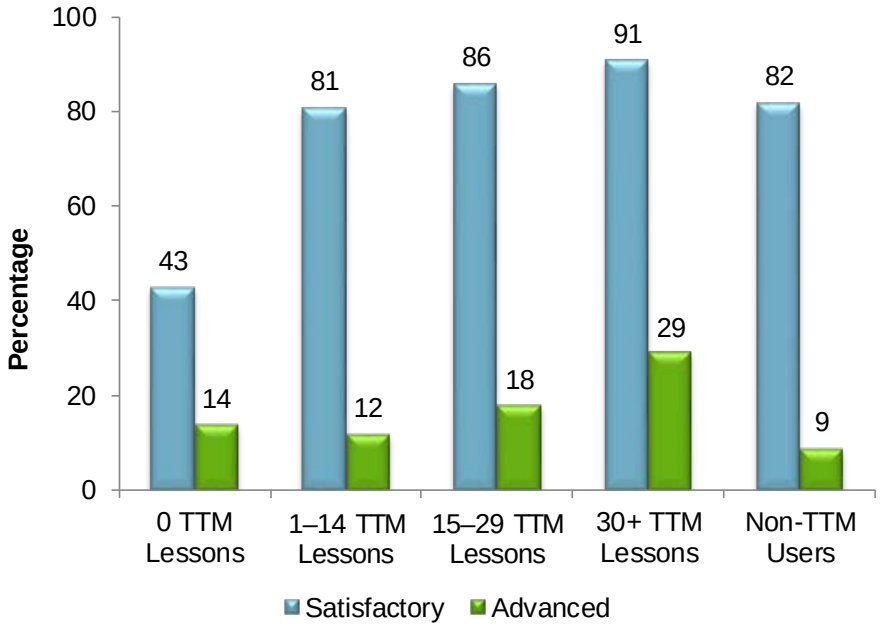
Figure 29. Percentage of TTM users who attended a 2013–2014 priority or focus school and met the 2013 STAAR mathematics phase-in 1, satisfactory standard, by number of TTM lessons completed, number of TTM lessons passed, and number of target TTM lessons passed, 2013–2014



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files, TEA priority and focus school identification files, and TTM files

- Shown in **Figure 30** and in Table 28 (page 64) the percentage of TTM users who successfully met the phase-in 1, satisfactory standard on the spring 2014 STAAR mathematics test after earning the satisfactory standard on the spring 2013 assessment, rose steadily from 43 percent of students who completed zero TTM lessons to 91 percent of students who completed 30 or more lessons. For comparison, shown in Figure 30 and in Table 27 (page 64), 82 percent of non-TTM users met the phase-in 1 satisfactory standard on both the spring 2013 and 2014 STAAR mathematics exams, slightly higher than the percentage recorded for TTM users who completed 1–14 TTM lessons. The percentage of TTM users who earned the 2014 STAAR mathematics advanced standard was larger than the percentage of non-TTM users for each category of number of lessons completed.

Figure 30. Percentage of students who attended a 2013–2014 priority or focus schools and achieved satisfactory and advanced ratings on the spring 2014 STAAR mathematics assessment after meeting the satisfactory standard on the spring 2013 STAAR mathematics test, by number of TTM lessons completed and compared with students in priority and focus schools who did not enroll in TTM



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files, TEA priority and focus school identification files, and TTM files

- Regression analyses examining the usefulness of the number of TTM lessons completed, number of TTM lessons passed, and number of target TTM lessons completed in predicting spring 2014 STAAR mathematics scale scores of students in priority and focus schools who met the phase-in 1, satisfactory standard on the spring 2013 STAAR mathematics assessment are shown in **Table 29** (page 65). All of the relationships were significant, with higher numbers of lessons being associated with higher scale scores. The effect size of the relationship between number of TTM lessons passed and spring 2014 STAAR mathematics scale scores and of the relationship between number of target TTM lessons and

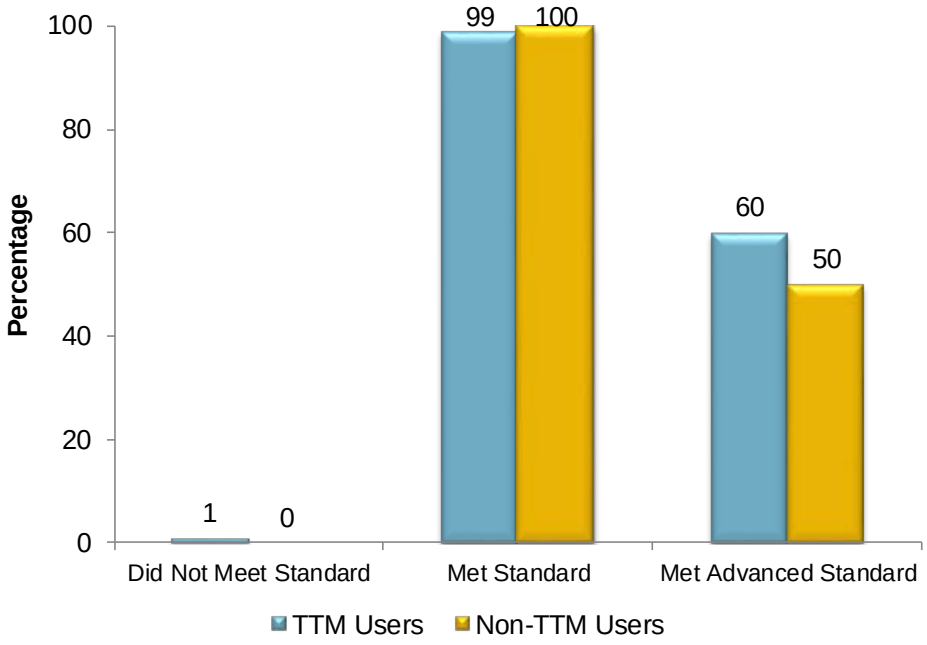
spring STAAR mathematics 2014 STAAR mathematics scale scores were small, and the effect size of the relationship between the number of TTM lessons completed and spring 2014 scale scores was very small.

- As seen in **Table 30** (page 65), students in priority and focus schools who met the satisfactory standard on the spring 2013 STAAR mathematics assessment and those who were also successful on the spring 2014 STAAR mathematics exam had lower average numbers of lessons in every category than did students in the same group who earned the advanced standard on the 2014 exam. The ranges and standard deviations for all these averages were large.

Based on the number of TTM lessons they completed in 2013–2014, how did students who attended priority and focus schools and who met the 2013 STAAR mathematics advanced standard perform on the spring 2014 STAAR mathematics assessment?

- Virtually all, all but two (0.6 percent), of the students at priority and focus schools who took both the spring 2013 and 2014 STAAR mathematics assessments and earned the advanced standard on the spring 2013 assessment, met the phase-in 1, satisfactory standard on the spring 2014 exam, and 56 pecent of them also achieved the advanced standard. As seen in **Figure 31** and detailed in **Table 31** (page 66), a larger percentage of TTM users earned the advanced standard on the spring 2014 STAAR mathematics assessment than did non-TTM users.

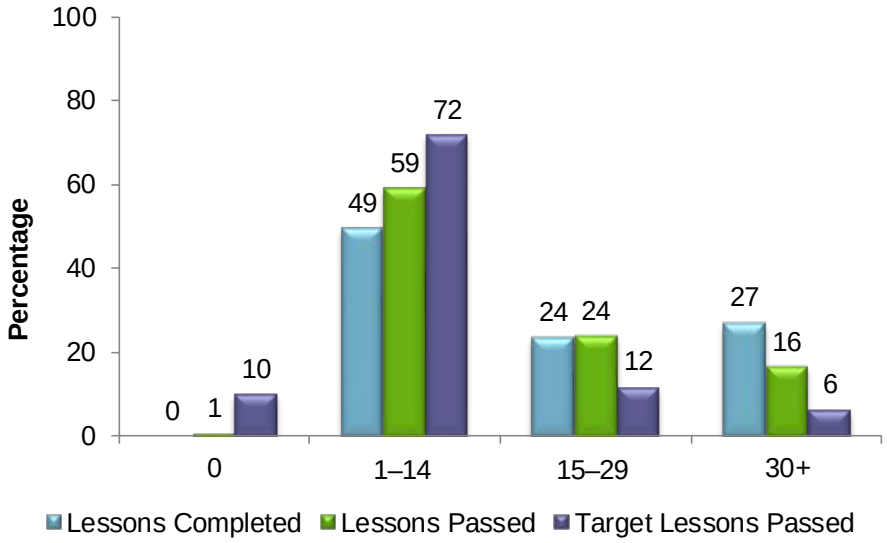
Figure 31. Spring 2014 STAAR mathematics performance of students who attended a priority or focus school, took both the spring 2013 and 2014 STAAR mathematics assessments, and met the advanced standard on the spring 2013 exam



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files, TEA priority and focus school identification files, and TTM files

- The numbers of lessons completed and passed by TTM users who attended 2013–2014 priority and focus schools and who earned the advanced standard on the spring 2013 STAAR mathematics exam are shown in **Figure 32**. All of these students completed at least one TTM lesson and a higher percentage of these students were represented in each of the categories for 30 or more lessons than were TTM users in priority or focus schools who did not achieve the 2013 advanced standard (for comparison, see Figure 26, page 31, and Figure 29, page 34). Twenty-seven (27) percent completed 30 or more TTM lessons, 16 percent passed 30 or more lessons, and six percent passed 30 or more target TTM lessons in 2013–2014.

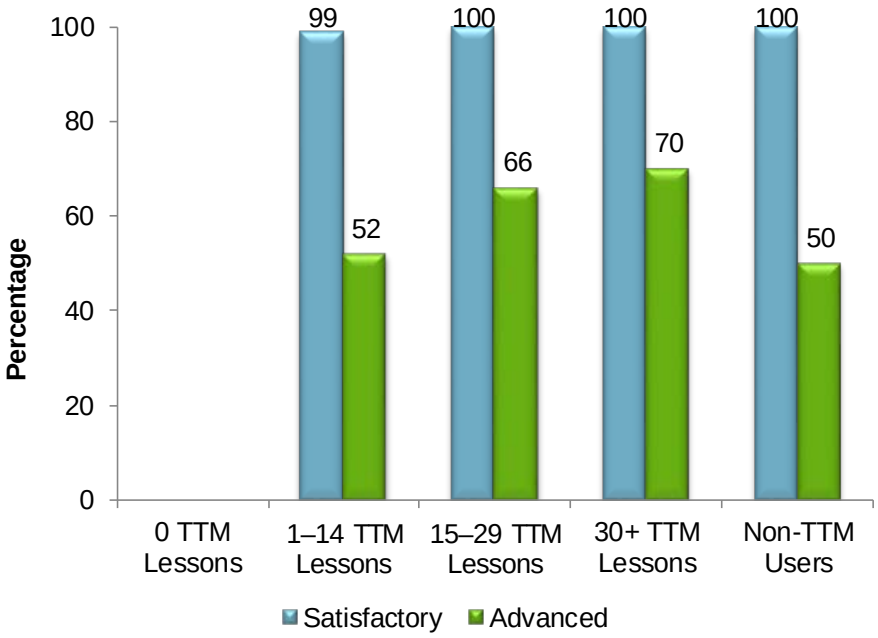
Figure 32. Percentage of TTM users who attended a 2013–2014 priority or focus school and met the 2013 STAAR mathematics advanced standard, by number of TTM lessons completed, number of TTM lessons passed, and number of target TTM lessons passed, 2013–2014



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files, TEA priority and focus school identification files, and TTM files

- The spring 2014 STAAR mathematics results based on the number TTM lessons completed in 2013–2014 for students at priority and focus schools who earned the 2013 STAAR mathematics advanced standard are presented in **Figure 33** and are detailed in **Table 32** (page 66). Virtually all of the students successfully met the phase-in 1, satisfactory standard on the spring 2014 STAAR mathematics assessment. The percentage of students earning the advanced standard increased as the number of completed TTM lessons increased, and the percentage of students who achieved the advanced standard was higher for each category of TTM users than it was for non-TTM users (Figure 33 and Table 31, page 66).

Figure 33. Percentage of students who attended a 2013–2014 priority or focus schools and achieved satisfactory and advanced ratings on the spring 2014 STAAR mathematics assessment after meeting the advanced standard on the spring 2013 STAAR mathematics test, by number of TTM lessons completed and compared with students in priority and focus schools who did not enroll in TTM



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files, TEA priority and focus school identification files, and TTM files

- Regression analyses using the number of TTM lessons completed, the number of TTM lessons passed, and the number of target TTM lessons passed to predict spring 2014 STAAR mathematics scale scores of students in 2013–2014 priority and focus schools who achieved the advanced standard on the 2013 STAAR mathematics assessment are reported in **Table 33** (page 67). None of the relationships were significant, indicating that the numbers of TTM lessons were not predictors of spring 2014 STAAR

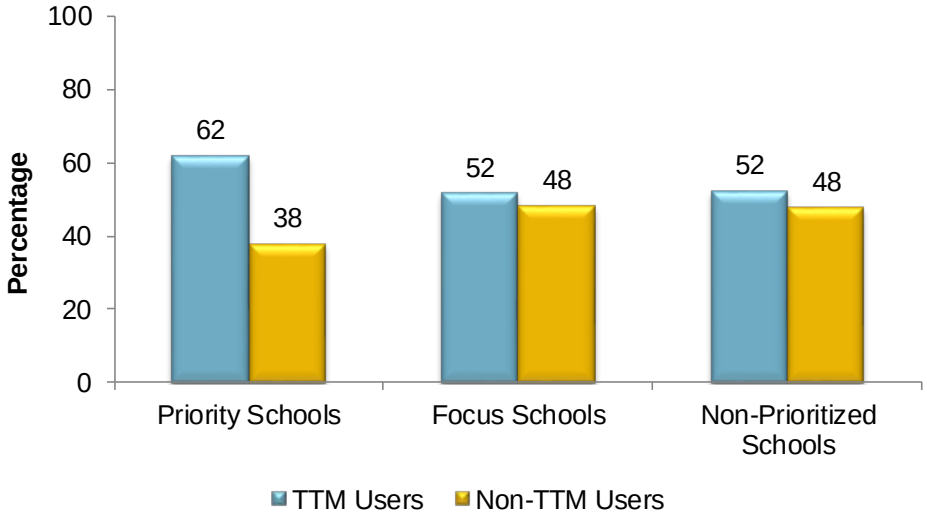
mathematics scale scores for students in priority and focus schools who achieved the advanced standard on the spring 2013 STAAR mathematics assessment.

- Students at priority and focus schools who earned the advanced standard on both the spring 2013 and 2014 STAAR mathematics exams completed an average of 26 TTM lessons, passed an average of 20 lessons, and passed an average of 13 target TTM lessons. As shown in **Table 34** (page 67), averages were even higher for the students who met the lower, satisfactory, standard on the test, with the exception of the average number of target TTM lessons passed, which was slightly lower.

How many HISD students used TTM in 2013–2014 and took the June 2014 retest of the 2014 STAAR mathematics assessment, and how did they compare with their peers in the district?

- Students in grades five and eight who were unsuccessful on the spring 2014 STAAR mathematics assessment were offered the opportunity to retake the test in June 2014. Of the students who had taken both the spring 2013 and 2014 STAAR mathematics exams, 2,789 students in grades five and eight who had been unsuccessful on the spring 2014 assessment retook the test. Demographic information for these students, including numbers that allow calculation of the results in **Figures 34–37** (pages 39–42) can be found in **Table 35** (page 68). Fifty-three (53) percent of these students, 1,478 students, used TTM in 2013–2014 and 1,311, 47 percent, did not. Illustrated in **Figure 34**, 62 percent of retested students in priority schools and 52 percent of retested students in focus schools used TTM. These percentages largely parallel those of the group of all HISD students who took both the spring 2013 and 2014 STAAR mathematics tests (see Figure 3, page 8 for comparison).

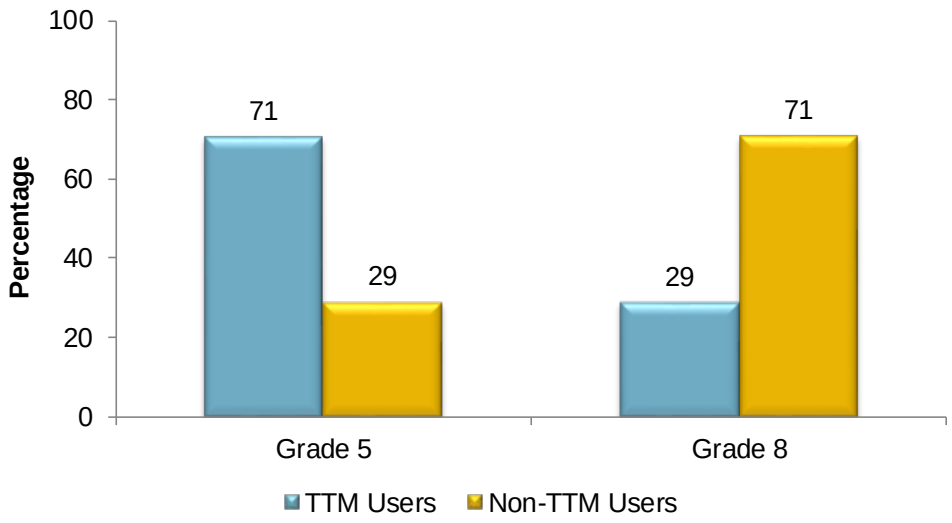
Figure 34. Percentage of TTM users and non-TTM users among students who took both the spring 2013 and 2014 STAAR mathematics assessments and retook the 2014 STAAR mathematics exam in June 2014, by attendance at 2013–2014 priority and focus schools



Note: Percentages may not equal 100 due to rounding.
Sources: PEIMS Fall Resubmission, TEA priority and focus school identification files, and TTM files

- Shown in **Figure 35**, 71 percent of the fifth graders who took both the spring 2013 and 2014 spring STAAR mathematics tests and retested in June 2014 used TTM and 29 percent did not, while in eighth-grade, the percentages were reversed: 29 percent used TTM and 71 percent did not. This finding echoes the results depicted in Figure 4 (page 9) and Figure 20 (page 25), with majorities of students in grades three through five using TTM and majorities of students in grades six through eight not using the program.

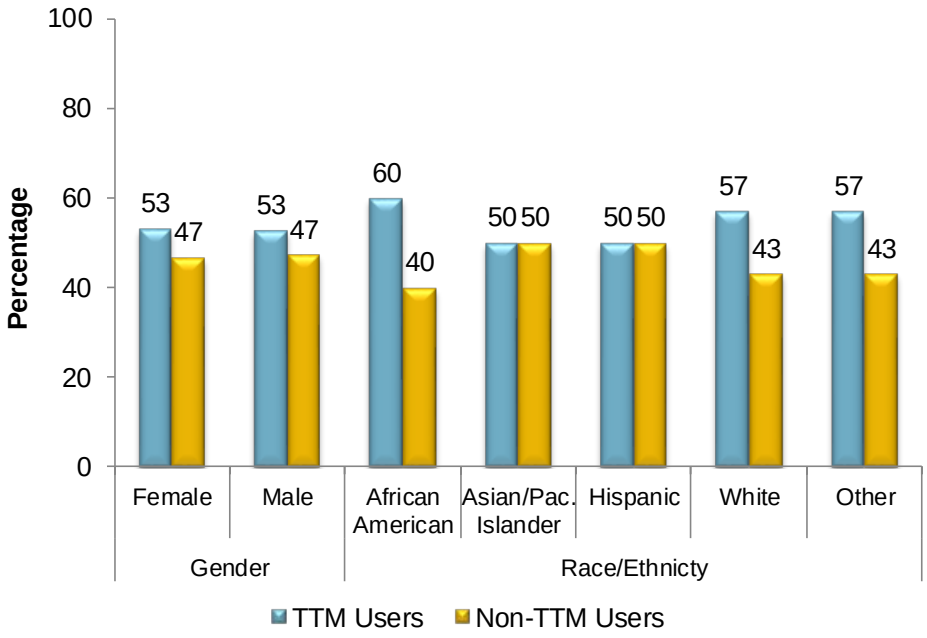
Figure 35. Percentage of TTM users and non-TTM users among students who took both the spring 2013 and 2014 STAAR mathematics assessments and retook the 2014 STAAR mathematics exam in June 2014, by 2013–2014 grade level



Note: Percentages may not equal 100 due to rounding.
Sources: PEIMS Fall Resubmission, TEA priority and focus school identification files, and TTM files

- By gender, 53 percent of both females and males who retook the 2014 STAAR mathematics assessment in June were TTM users, shown in **Figure 36**. In comparison with the whole sample of retesters, a larger percentage of African American, white, and other students, and a smaller percentage of Asian/Pacific Islander and Hispanic students used TTM than did in the larger population.

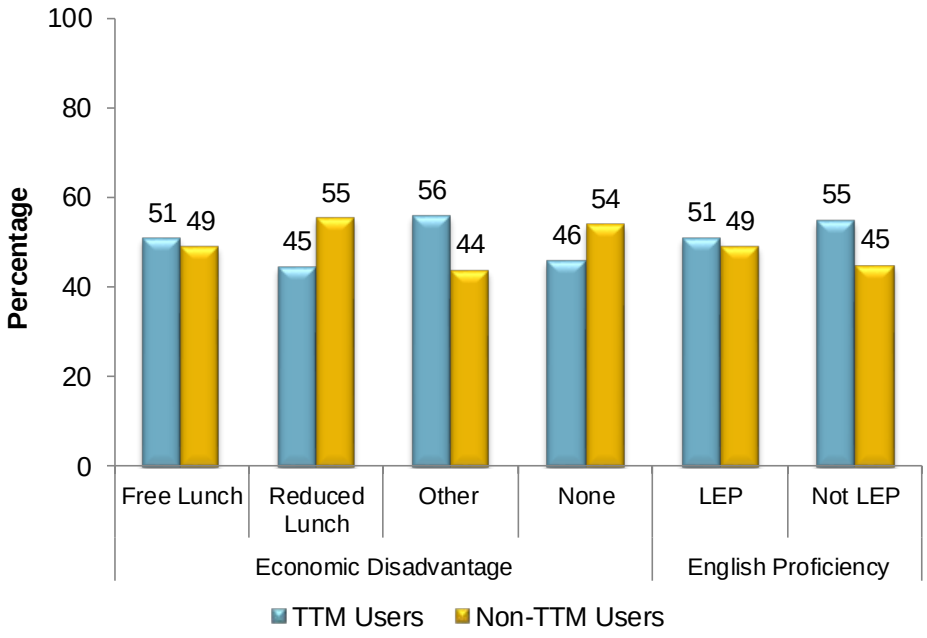
Figure 36. Percentage of TTM users and non-TTM users among students who took both the spring 2013 and 2014 STAAR mathematics assessments and retook the 2014 STAAR mathematics exam in June 2014, by gender and race/ethnicity



Note: Percentages may not equal 100 due to rounding.
Sources: PEIMS Fall Resubmission, TEA priority and focus school identification files, and TTM files

- Illustrated in **Figure 37**, a higher proportion of retested students with economic disadvantage other than free and reduced lunch and a lower proportion of students with reduced lunch and no economic disadvantage used TTM in 2013–2014 compared with students in the whole sample of students who retook the 2014 STAAR mathematics assessment in June 2014. Fifty-one (51) percent of LEP retesters used TTM while among non-LEP students, a higher percentage used TTM than did not.

Figure 37. Percentage of TTM users and non-TTM users among students who took both the spring 2013 and 2014 STAAR mathematics assessments and retook the spring 2014 STAAR mathematics exam in June, by economic disadvantage and LEP status

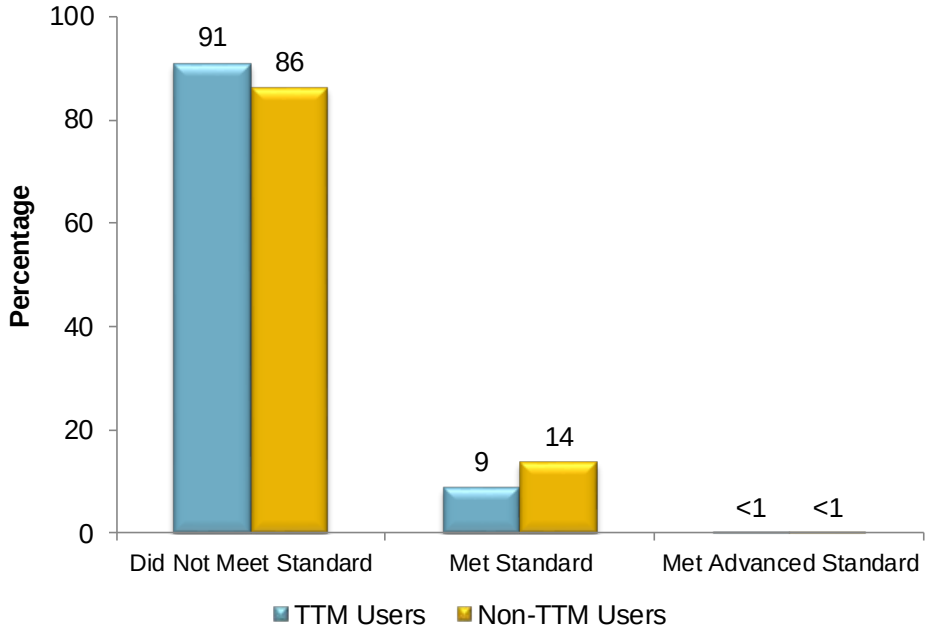


Note: Percentages may not equal 100 due to rounding.
Sources: PEIMS Fall Resubmission, TEA priority and focus school identification files, and TTM files

- More detail on demographics of students who took both the spring 2013 and 2014 STAAR mathematics assessments and retook the 2014 exam in June can be found in Table 35 (page 68).

- Spring 2013 STAAR mathematics results for students who retested in June 2014 are shown in **Figure 38** and in **Table 36** (page 69). Students who were not successful on the spring 2014 STAAR mathematics assessment were largely also unsuccessful the year before, on the spring 2013 exam. Nine percent of TTM users met the phase-in 1, satisfactory standard and 14 percent of non-TTM users met the satisfactory standard on the 2013 test. Only one TTM user and one non-TTM user achieved the advanced standard.

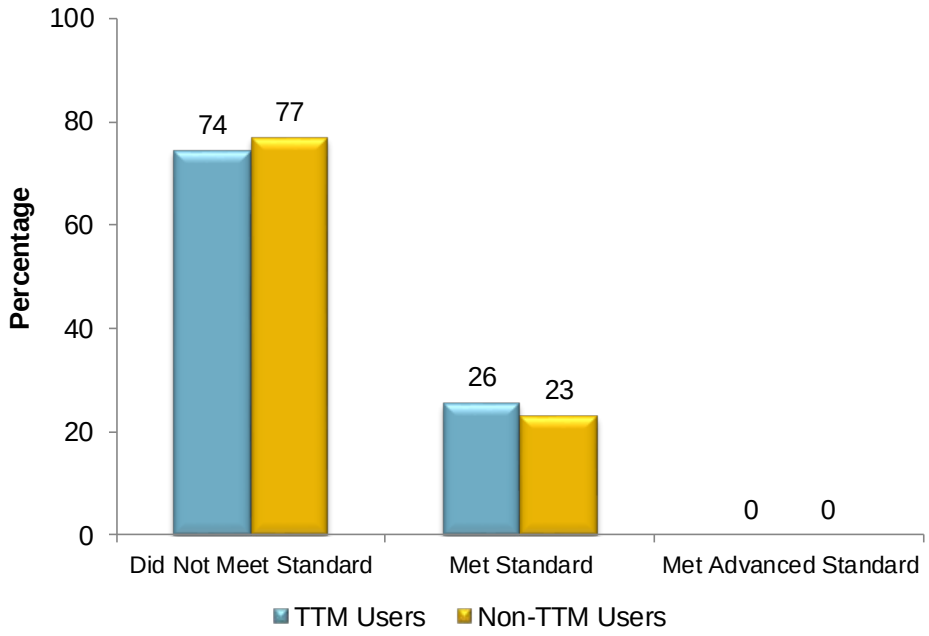
Figure 38. Spring 2013 STAAR mathematics performance of students who took both the spring 2013 and 2014 STAAR mathematics assessments and retook the 2014 STAAR mathematics exam in June 2014, by TTM useage



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files and TTM files

- The June 2014, retest, results for students who took both the spring 2013 and 2014 STAAR mathematics exams and did not meet the phase-in 1 standard on the spring 2014 assessment are shown in **Figure 39** and **Table 37** (page 69). The majority of students were again unsuccessful in attaining the satisfactory standard, however, 26 percent of TTM users and 23 percent of non-TTM users were successful. No retesters in the group earned the advanced standard on the June 2014 retest.

Figure 39. June 2014, retest, STAAR mathematics performance of students who took both the spring 2013 and 2014 STAAR mathematics assessments and retook the 2014 STAAR mathematics exam in June 2014, by TTM useage



Note: Percentages may not equal 100 due to rounding.
Sources: 2013 and 2014 STAAR mathematics files and TTM files

- A propensity score nearest neighbor matching anaysis was conducted to compare the June 2014 retest scale scores of TTM users with the scale scores earned by non-TTM users, all of whom had also taken the spring 2013 and 2014 spring STAAR mathematics assessments. Students were matched on their spring 2013 STAAR mathematics scale scores, attendance at a priority or focus school, grade level, gender, economic disadvantage status, LEP status, and race/ethnicity. All 2,789 students were included in the analysis. The results, shown in **Table 38** (page 70), showed no significant differences in scale scores between TTM users and non-TTM users after students were matched.

Discussion

The Think Through Math program was relatively widely used in HISD in 2013–2014. Unique users who could be identified numbered 51,863 and were in every grade level. In grades three through eight, the grades levels for which TTM was funded by the Texas Education Agency, 53 percent of the students who

took both the spring 2013 and spring 2014 STAAR mathematics assessments used TTM. The program had even higher usage rates in 2013–2014 priority schools; 66 percent of students in priority schools who took both the spring 2013 and 2014 STAAR mathematics assessments used TTM. The program was also well used by HISD students who did not meet the spring 2013 STAAR mathematics phase-in 1, satisfactory standard, as 56 percent of these students were TTM users.

With the exception of students who retested on the STAAR mathematics assessment in June 2014, propensity score matching results indicated that students who used TTM earned higher average scale scores on the spring 2014 STAAR mathematics assessment than did similar students who did not use TTM.

Regression analyses were used to establish relationships between spring 2014 STAAR mathematics scale scores for groups of students based on spring 2013 STAAR mathematics results and three categories of TTM lessons: number of TTM lessons completed, number of TTM lessons passed, and number of target TTM lessons completed. For the majority of groups, the numbers of TTM lessons were significant predictors of 2014 STAAR mathematics scale scores, with higher numbers of lessons associated with higher scale scores. However, the category of TTM lessons matters. The strongest relationship was for the number of target TTM lessons passed by HISD students who met the 2013 STAAR mathematics phase-in 1, satisfactory standard, for which the significant positive relationship had a medium effect size. The higher the number of target TTM lessons an HISD student who met the satisfactory standard on the spring 2013 STAAR mathematics exam passed, the higher the student's scale score on the spring 2014 STAAR mathematics was likely to be. Weak relationships were found for students at priority and focus schools who earned the advanced standard on the spring 2013 STAAR mathematics exam. None of the categories for TTM lessons, those completed, those passed, or target TTM lessons passed, was a significant predictor of spring 2014 STAAR mathematics scale scores. However, a similar weak relationship was found for the number of TTM lessons completed by TTM users who did not meet the satisfactory standard on the 2013 STAAR mathematics assessment. More strikingly, the number of TTM lessons completed by students who did not meet the satisfactory standard on the 2013 STAAR mathematics exam and who attended a priority or focus school did predict spring 2014 STAAR mathematics scale scores, but the relationship was negative. The more TTM lessons these students completed, the lower the 2014 STAAR mathematics scale score was likely to be. For these same students, the number of TTM lessons passed and the number of target TTM lessons passed were both significant predictors of 2014 STAAR mathematics scale scores, and the relationships were positive. The more TTM lessons passed by a student in a priority or focus school who did not meet the 2013 STAAR mathematics satisfactory standard, and the more target TTM lessons the student passed, the higher the 2014 STAAR mathematics scale score was likely to be. The number of TTM lessons passed and the number of target TTM lessons passed were more consistent predictors of higher 2014 STAAR mathematics scale scores than the number of TTM lessons completed was.

The optimal number of TTM lessons (or target TTM lessons) for a student to complete or pass in order to increase achievement on the STAAR mathematics assessment is not clear from this analysis. The TTM company recommends that students "think 30," i.e., complete—and preferably pass—30 TTM lessons to use the program with fidelity. Only 16 percent of TTM users in this analysis completed 30 or more lessons, while six percent passed 30 or more TTM lessons and two percent passed 30 or more target TTM lessons. The average numbers of lessons completed and passed by students who successfully met the 2014 phase-in 1 standard on the spring 2014 STAAR mathematics exam were all below 28, and the standard deviations for the averages were very large, indicating great variation in the numbers of lessons associated with succeeding on the 2014 STAAR mathematics exam. Also notable, the range of courses completed by successful students began with 0 to 4, indicating relatively minimal contact with TTM for some successful

students. In addition, with one exception, effect sizes for relationships between the number of lessons completed or passed and 2014 scale scores were small. These findings all suggest that the number of TTM lessons associated with success on the STAAR mathematics assessment varies greatly.

The results of this study show that TTM lessons were largely helpful in supporting the STAAR mathematics achievement of HISD students who used them. The wide dispersal of the average number of lessons associated with success on the STAAR and the results for some groups of students, specifically students who did not achieve the passing standard on the previous year's STAAR mathematics assessment and students at priority and focus schools who achieved the advanced standard on the same test, indicate that some students did not benefit as much as others did. Though the potential value of the program is clear, it is also clear that select groups of students may need additional attention to achieve higher STAAR mathematics scale scores. TTM can be a useful tool in supporting student achievement on the STAAR mathematics exam, but is likely best used as recommended by the program creators, with significant teacher and monitor oversight and as a supplement in conjunction with other successful methods for diverse learners.

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Appendix A
Data Limitations

For 2013–2014, TTM files were organized based on user name. They contained a single identification number, the Texas Student Data System (TSDS) ten-digit unique student identification number, as required by the state of Texas. TSDS identification numbers were provided by school personnel over the course of the year. Because the TSDS was relatively new and school personnel were accustomed to providing seven-digit local student identification numbers, many personnel filled in the ten-digit numbers in ways that made the data accessible to the school but which did not correlate with TSDS identification numbers. As a result, more than half of the 55,585 TSDS identification numbers for students who used TTM that were provided by the TTM company did not match the TSDS numbers provided by the state. Through matching the original numbers with data available within the district, including local student identification numbers, school numbers, student names and schools, and so on, TSDS numbers were found for 52,010 unique TTM student users. Data for students without TSDS numbers, including homeschooled students, were not included in the analyses of TTM users. Further, of the 52,010 unique TTM student users, 51,863 could be matched to 2014 PEIMS Fall Resubmission data for demographic information and were included in the analyses. As a result, for comparisons of performance, some students who used TTM but were not identifiable were included in the group of students who did not use TTM.

Students could create multiple accounts, and many did, for working from home, after changing schools, for working with different teachers in the same school, and so on. Eight students had four accounts, 48 had three, and 1,259 had two, for a total of 1,315 students with multiple accounts. For analyses, the numbers of TTM lessons that the 51,863 unique students completed were summed and associated with the first school assigned by TTM. The majority of students with multiple accounts had all accounts linked to a single school. For the remainder, the majority were linked with schools that were in the same category of priority/focus school or not. However, the method resulted in some lessons being credited to schools at which they were not completed.

TTM data collection methods included resetting all values when identification numbers were changed. As a result, for the second draw of data, for TTM work done by June 23, 2014, TTM data for 180 of 1,478 students who used TTM and retested in June was missing and the remaining accounts contained similar kinds of errors in identification numbers that were found in the first file. A large percentage of the data from the second draw was not reliably accessible. As a result, number of lessons completed, number of lessons passed, and number of target lessons passed were not reported for students who retested in June 2014. Test results for TTM students were reported and were compared with those of retested students who did not use TTM, but the numbers of lessons associated with TTM students were not available to be included in the analysis.

Appendix B

Table 1. Demographic Characteristics and TTM Achievement of Students Who Used TTM, 2013–2014

	N	%	Mean # Lessons Completed	Mean # Lessons Passed	Mean # Target Lessons Completed
School Attended					
Priority School	4,880	9.4	17.2	5.7	1.9
Focus School	10,021	19.3	17.3	6.0	2.2
Not a Prioritized School	36,962	71.3	17.8	9.2	4.5
Grade Level					
PreKindergarten	5	<0.1	87.8	5.6	0.6
Kindergarten	6	<0.1	3.8	2.3	0.5
Grade 1	6	<0.1	9.5	3.8	1.0
Grade 2	101	0.2	17.7	8.0	4.2
Grade 3	11,944	23.0	18.3	7.5	3.9
Grade 4	11,781	22.7	20.5	9.5	4.6
Grade 5	11,407	22.0	18.4	9.0	3.7
Grade 6	5,115	9.9	15.7	8.2	4.1
Grade 7	5,098	9.8	15.2	7.5	3.0
Grade 8	3,676	7.1	13.8	7.1	3.4
Grade 9	2,143	4.1	13.5	6.8	2.7
Grade 10	352	0.7	9.5	4.3	1.5
Grade 11	122	0.2	12.9	5.0	1.7
Grade 12	107	0.2	16.1	5.4	1.3
Gender					
Female	25,345	48.9	15.5	7.5	3.4
Male	26,518	51.1	19.7	9.0	4.2
Race/Ethnicity					
African American	13,652	26.3	16.6	6.7	2.6
American Indian	109	0.2	20.8	10.0	4.7
Asian/Pacific Islander	1,609	3.1	32.1	22.1	14.9
Hispanic	32,448	62.6	17.2	7.6	3.2
White	3,610	7.0	19.4	13.0	8.1
Two or more	435	0.8	19.7	12.4	7.6
Economic Disadvantage					
Free Lunch	17,203	33.2	18.1	7.8	3.3
Reduced Lunch	3,726	7.2	18.6	9.4	4.5
Other Economic Disadvantage	22,328	43.1	16.3	6.5	2.5
No Economic Disadvantage	8,606	16.6	20.0	13.1	8.0
Limited English Proficiency (LEP)					
LEP	20,626	39.8	18.9	7.9	3.3
Not LEP	31,237	60.2	16.8	8.5	4.2
Total	**51,863**	**100.0**	**17.7**	**8.2**	**3.8**

Note: Percentages may not total 100 due to rounding

Sources: PEIMS Fall Resubmission and TTM files

Table 2. Demographic Characteristics of HISD Students Who Took the Spring 2013 and 2014 STAAR Mathematics Assessments and Were Used in Analyses, by TTM Usage

	TTM Users		Non-TTM Users		Total
	N	%	N	%	N
School Attended					
Priority School	1,388	4.7	710	2.8	2,098
Focus School	5,631	19.2	5,063	19.7	10,694
Not a Prioritized School	22,340	76.1	19,945	77.6	42,285
Grade Level					
Grade 3	382	1.3	154	0.6	536
Grade 4	9,661	32.9	3,758	14.6	13,419
Grade 5	9,403	32.0	3,373	13.1	12,776
Grade 6	3,883	13.2	6,440	25.0	10,323
Grade 7	3,846	13.1	6,497	25.3	10,343
Grade 8	2,184	7.4	5,496	21.4	7,680
Gender					
Female	14,479	49.3	12,928	50.3	27,407
Male	14,880	50.7	12,790	49.7	27,670
Race/Ethnicity					
African American	6,561	22.3	5,568	21.7	12,129
American Indian	62	0.2	37	0.1	99
Asian/Pacific Islander	925	3.2	887	3.4	1,812
Hispanic	19,475	66.3	16,965	66.0	36,440
White	2,110	7.2	2,086	8.1	4,196
Two or more	226	0.8	175	0.7	401
Economic Disadvantage					
Free Lunch	8,997	30.6	8,025	31.2	17,022
Reduced Lunch	2,220	7.6	1,902	7.4	4,122
Other Economic Disadvantage	13,167	44.8	10,846	42.2	24,013
No Economic Disadvantage	4,975	16.9	4,945	19.2	9,920
Limited English Proficiency (LEP)					
LEP	12,596	42.9	10,028	39.0	22,624
Not LEP	16,763	57.1	15,690	61.0	32,453
Total	**29,359**	**100.0**	**25,718**	**100.0**	**55,077**

Notes: Students in grade three are those who repeated the grade; they were enrolled in grade three for both the spring 2013 and 2014 STAAR mathematics assessments.
Percentages may not total 100 due to rounding.

Source: PEIMS Fall Resubmission and TTM files

Table 3. Spring 2013 STAAR Mathematics Results for HISD Students Who Took Both the Spring 2013 and 2014 STAAR Mathematics Assessments, by Use of TTM

	Total	Did Not Meet the 2013 Phase-In 1 Standard		Met the 2013 Phase-In 1 Standard		Achieved the 2013 Advanced Standard°	
	N	N	%	N	N	N	%
TTM Users	29,359	10,227	34.8	19,132	65.2	4,262	14.5
Non-TTM Users	25,718	8,095	31.5	17,623	68.5	3,619	14.1
Total	**55,077**	**18,322**	**33.3**	**36,755**	**66.7**	**7,881**	**14.3**

Notes: °Students are also included in the number "Met the 2013 Phase-In 1 Standard."
Remaining percentages may not equal 100 due to rounding.

Sources: 2013 STAAR, 2014 STAAR, 10-8-13 SharePoint listing of 2013–2014 priority and focus schools, and TTM files

Table 4. Spring 2014 STAAR Mathematics Results for HISD Students Who Also Took the Spring 2013 STAAR Mathematics Assessment, by Use of TTM

	Total	Did Not Meet the 2014 Phase-In 1 Standard		Met the 2014 Phase-In 1 Standard		Achieved the 2014 Advanced Standard°	
	N	N	%	N	N	N	%
TTM Users	29,359	8,394	28.6	20,965	71.4	5,378	18.3
Non-TTM Users	25,718	7,320	28.5	18,398	71.5	3,824	14.9
Total	**55,077**	**15,714**	**28.5**	**39,363**	**71.5**	**9,202**	**16.7**

Notes: °Students are also included in the number "Met the 2014 Phase-In 1 Standard."
Remaining percentages may not equal 100 due to rounding.

Sources: 2013 STAAR, 2014 STAAR, and TTM files

Table 5. Propensity Score Matching Results for All HISD Students Who Took Both the Spring 2013 and 2014 STAAR Mathematics Assessments, by TTM Usage

	Mean 2014 STAAR Mathematics Scale Score				
	TTM Users (N=29,359)	Non-TTM Users (N=25,718)	Difference	S.E.	*t*
Before Matching	1,589.3	1,612.9	-23.7	1.3	-18.69*
Matched	1,589.3	1,577.6	11.7	3.4	3.43*

Note: * indicates p<.001.

Table 6. Spring 2014 STAAR Mathematics Results for HISD Students Who Did Not Meet the Level 2, Satisfactory, Phase-In 1 Standard on the Spring 2013 STAAR Mathematics Assessment, by Use of TTM

	Total	Did Not Meet the 2014 Phase-In 1 Standard		Met the 2014 Phase-In 1 Standard		Achieved the 2014 Advanced Standard°	
	N	N	%	N	N	N	%
TTM Users	10,227	6,429	62.9	3,798	37.1	73	0.7
Non-TTM Users	8,095	5,138	63.5	2,957	36.5	40	0.5
Total	**18,322**	**11,567**	**63.1**	**6,755**	**36.9**	**113**	**0.6**

Notes: °Students are also included in the number "Met the 2014 Phase-In 1 Standard."
Remaining percentages may not equal 100 due to rounding.

Sources: 2013 STAAR, 2014 STAAR, 10-8-13 SharePoint listing of 2013–2014 priority and focus schools, and TTM files

Table 7. Spring 2014 STAAR Mathematics Results for TTM Users Who Did Not Meet the Level 2, Satisfactory, Phase-In 1 Standard on the Spring 2013 STAAR Mathematics Assessment, by Number of TTM Lessons Completed, Number of TTM Lessons Passed, and Number of TTM Target Lessons Passed

	Total	Did Not Meet the 2014 Phase-In 1 Standard		Met the 2014 Phase-In 1 Standard		Achieved the 2014 Advanced Standard°	
	N	N	%	N	N	N	%
TTM Lessons Completed							
0	29	18	62.1	11	37.9	0	0.0
1–14	6,276	4,049	64.5	2,227	35.5	31	0.5
15–29	2,536	1,549	61.1	987	38.9	24	0.9
30 or more	1,386	813	58.7	573	41.3	18	1.3
TTM Lessons Passed							
0	983	805	81.9	178	18.1	2	0.2
1–14	8,606	5,391	62.6	3,215	37.4	50	0.6
15–29	482	183	38.0	299	62.0	13	2.7
30 or more	156	50	32.1	106	67.9	8	5.1
TTM Target Lessons Passed							
0	6,192	4,504	72.7	1,688	27.3	18	0.3
1–19	3,983	1,913	48.0	2,070	52.0	50	1.3
20–29	33	9	27.3	24	72.7	4	12.1
30 or more	19	3	15.8	16	84.2	1	5.3
Total	**10,227**	**6,429**	**62.9**	**3,798**	**37.1**	**73**	**0.7**

Notes: °Students are also included in the number "Met the 2014 Phase-In 1 Standard."
Percentages may not total 100 due to rounding.

Sources: 2013 STAAR, 2014 STAAR, and TTM files

Table 8. Regression Analyses of Relationships between 2014 STAAR Mathematics Scale Scores and the Number of TTM Lessons Completed, TTM Lessons Passed, and TTM Target Lessons Passed by TTM Users Who Took Both the Spring 2013 and 2014 STAAR Mathematics Assessments and Did Not Meet the Level 2, Satisfactory, Phase-In 1 Standard on the Spring 2013 STAAR Mathematics Assessment

Independent Variable	Dependent Variable	*β*	*t*	p	R^2
Number of TTM Lessons Completed	2014 STAAR Mathematics Scale Score	-.01	*t* (10,225) = -1.01	.31	NA
Number of TTM Lessons Passed	2014 STAAR Mathematics Scale Score	.20	*t* (10,225) = 20.57	< .001	.04
Number of TTM Target Lessons Passed	2014 STAAR Mathematics Scale Score	.16	*t* (10,225) = 16.19	< .001	.03

Note: Effect size conventions for R^2 are: .01 is small, .09 is medium, and .24 is large.

Table 9. Number of TTM Lessons Recorded for TTM Users Who Did Not Meet the Spring 2013 STAAR Level 2, Satisfactory, Phase-In 1 Standard, by Spring 2014 STAAR Mathematics Performance, 2013–2014

	Number of Lessons		
	Range	Mean	Standard Deviation
Met 2014 Phase-In 1 Standard (N=3,798)			
TTM Lessons Completed	0–276	17.5	20.9
TTM Lessons Passed	0–136	7.1	9.1
TTM Target Lessons Passed	0–79	2.0	4.4
Met 2014 Advanced Standard (N=73)			
TTM Lessons Completed	1–127	23.8	23.1
TTM Lessons Passed	0–74	12.0	12.9
TTM Target Lessons Passed	0–46	5.0	7.6

Sources: 2013 STAAR, 2014 STAAR, and TTM files

Table 10. Spring 2014 STAAR Mathematics Results for HISD Students Who Met the Level 2, Satisfactory, Phase-In 1 Standard on the Spring 2013 STAAR Mathematics Assessment, by Use of TTM

	Total	Did Not Meet the 2014 Phase-In 1 Standard		Met the 2014 Phase-In 1 Standard		Achieved the 2014 Advanced Standard°	
	N	N	%	N	N	N	%
TTM Users	19,132	1,965	10.3	17,167	89.7	5,305	27.7
Non-TTM Users	17,623	2,182	12.4	15,441	87.6	3,784	21.5
Total	**36,755**	**4,147**	**11.3**	**32,608**	**88.7**	**9,089**	**24.7**

Notes: °Students are also included in the number "Met the 2014 Phase-In 1 Standard."
Remaining percentages may not equal 100 due to rounding.

Sources: 2013 STAAR, 2014 STAAR, 10-8-13 SharePoint listing of 2013–2014 priority and focus schools, and TTM files

Table 11. Spring 2014 STAAR Mathematics Results for TTM Users Who Met the Level 2, Satisfactory, Phase-In 1 Standard on the Spring 2013 STAAR Mathematics Assessment, by Number of TTM Lessons Completed, Number of TTM Lessons Passed, and Number of TTM Target Lessons Passed

	Total	Did Not Meet the 2014 Phase-In 1 Standard		Met the 2014 Phase-In 1 Standard		Achieved the 2014 Advanced Standard°	
	N	N	%	N	N	N	%
TTM Lessons Completed							
0	41	8	19.5	33	80.5	15	36.6
1–14	11,472	1,347	11.7	10,125	88.3	2,742	23.9
15–29	4,346	404	9.3	3,942	90.7	1,242	28.6
30 or more	3,273	206	6.3	3,067	93.7	1,306	39.9
TTM Lessons Passed							
0	531	180	33.9	351	66.1	41	7.7
1–14	14,347	1,666	11.6	12,681	88.4	3,200	22.3
15–29	2,702	92	3.4	2,610	96.6	1,163	43.0
30 or more	1,552	27	1.7	1,525	98.3	901	58.1
TTM Target Lessons Passed							
0	4,863	1,183	24.3	3,680	75.7	398	8.2
1–19	12,796	772	6.0	12,024	94.0	3,873	30.3
20–29	827	7	0.8	820	99.2	554	67.0
30 or more	646	3	0.5	643	99.5	480	74.3
Total	**19,132**	**1,965**	**10.3**	**17,167**	**89.7**	**5,305**	**27.7**

Notes: °Students are also included in the number "Met the 2014 Phase-In 1 Standard."
Percentages may not total 100 due to rounding.

Sources: 2013 STAAR, 2014 STAAR, and TTM files

Table 12. Regression Analyses of Relationships between Spring 2014 STAAR Mathematics Scale Scores and the Number of TTM Lessons Completed, TTM Lessons Passed, and TTM Target Lessons Passed by TTM Users Who Took Both the Spring 2013 and 2014 STAAR Mathematics Assessments and Met the Level 2, Satisfactory, Phase-In 1 Standard on the Spring 2013 STAAR Mathematics Assessment

Independent Variable	Dependent Variable	β	t	p	R^2
Number of TTM Lessons Completed	2014 STAAR Mathematics Scale Score	.11	t (19,130) = 15.41	< .001	.01
Number of TTM Lessons Passed	2014 STAAR Mathematics Scale Score	.24	t (19,130) = 34.77	< .001	.06
Number of TTM Target Lessons Passed	2014 STAAR Mathematics Scale Score	.34	t (19,130) = 50.51	< .001	.12

Note: Effect size conventions for R^2 are: .01 is small, .09 is medium, and .24 is large.

Table 13. Number of TTM Lessons Recorded for TTM Users Who Met the Spring 2013 STAAR Mathematics Level 2, Satisfactory, Phase-In 1 Standard, by 2014 STAAR Mathematics Performance, 2013–2014

	Number of Lessons		
	Range	Mean	Standard Deviation
Met 2014 Phase-In 1 Standard (N=17,167)			
TTM Lessons Completed	0–1,110	18.8	26.1
TTM Lessons Passed	0–1,050	12.0	19.0
TTM Target Lessons Passed	0–510	6.3	12.3
Met 2014 Advanced Standard (N=5,305)			
TTM Lessons Completed	1–453	23.2	29.4
TTM Lessons Passed	0–310	17.7	22.8
TTM Target Lessons Passed	0–261	11.6	16.5

Sources: 2013 STAAR, 2014 STAAR, and TTM files

Table 14. Spring 2014 STAAR Mathematics Results for HISD Students Who Met the Level 3, Advanced Performance, on the Spring 2013 STAAR Mathematics Assessment, by Use of TTM

	Total	Did Not Meet the 2014 Phase-In 1 Standard		Met the 2014 Phase-In 1 Standard		Achieved the 2014 Advanced Standard°	
	N	N	%	N	N	N	%
TTM Users	4,262	24	0.6	4,238	99.4	3,012	70.7
Non-TTM Users	3,619	19	0.5	3,600	99.5	2,373	65.6
Total	**7,881**	**43**	**0.5**	**7,838**	**99.5**	**5,385**	**68.3**

Notes: °Students are also included in the number "Met the 2014 Phase-In 1 Standard."
Remaining percentages may not equal 100 due to rounding.

Sources: 2013 STAAR, 2014 STAAR, 10-8-13 SharePoint listing of 2013–2014 priority and focus schools, and TTM files

Table 15. Spring 2014 STAAR Mathematics Results for TTM Users Who Met the Level 3, Advanced Performance Standard, on the Spring 2013 STAAR Mathematics Assessment, by Number of TTM Lessons Completed, Number of TTM Lessons Passed, and Number of TTM Target Lessons Passed

	Total	Did Not Meet the 2014 Phase-In 1 Standard		Met the 2014 Phase-In 1 Standard		Achieved the 2014 Advanced Standard°	
	N	N	%	N	N	N	%
TTM Lessons Completed							
0	*	*	*	*	*	*	*
1–14	2,236	16	0.7	2,220	99.3	1,485	66.4
15–29	999	4	0.4	995	99.6	730	73.1
30 or more	1,023	4	0.4	1,019	99.6	793	77.5
TTM Lessons Passed							
0	37	3	8.1	34	91.9	19	51.4
1–14	2,570	17	0.7	2,553	99.3	1,675	65.2
15–29	938	3	0.3	935	99.7	732	78.0
30 or more	717	1	0.1	716	99.9	586	81.7
TTM Target Lessons Passed							
0	338	15	4.4	323	95.6	133	39.3
1–19	3,061	9	0.3	3,052	99.7	2,133	69.7
20–29	444	0	0.0	444	100.0	380	85.6
30 or more	419	0	0.0	419	100.0	366	87.4
Total	**4,262**	**24**	**0.6**	**4,238**	**99.4**	**3,012**	**70.7**

Notes: °Students are also included in the number "Met the 2014 Phase-In 1 Standard."
*Results are not provided for fewer than five students.
°Students are also included in the number "Met the 2014 Phase-In 1 Standard."

Sources: 2013 STAAR, 2014 STAAR, and TTM files

Table 16. Regression Analyses of Relationships between 2014 STAAR Mathematics Scale Scores and the Number of TTM Lessons Completed, TTM Lessons Passed, and TTM Target Lessons Passed by TTM Users Who Took Both the Spring 2013 and 2014 STAAR Mathematics Assessments and Met the Level 3, Advanced Performance Standard on the Spring 2013 STAAR Mathematics Assessment

Independent Variable	Dependent Variable	*β*	*t*	p	R^2
Number of TTM Lessons Completed	2014 STAAR Mathematics Scale Score	.08	*t* (4,260) = 5.01	< .001	.01
Number of TTM Lessons Passed	2014 STAAR Mathematics Scale Score	.14	*t* (4,260) = 8.87	< .001	.02
Number of TTM Target Lessons Passed	2014 STAAR Mathematics Scale Score	.23	*t* (4,260) = 15.57	< .001	.05

Note: Effect size conventions for R^2 are: .01 is small, .09 is medium, and .24 is large.

Table 17. Number of TTM Lessons Recorded for TTM Users Who Met the Spring 2013 STAAR Mathematics Level 3, Advanced Performance Standard, by 2014 STAAR Mathematics Performance, 2013–2014

	Number of Lessons		
	Range	Mean	Standard Deviation
Met 2014 Phase-In 1 Standard (N=4,238)			
TTM Lessons Completed	0–1,100	23.0	34.0
TTM Lessons Passed	0–1,050	18.1	28.6
TTM Target Lessons Passed	0–510	12.2	18.8
Met 2014 Advanced Standard (N=3,012)			
TTM Lessons Completed	1–334	24.2	29.7
TTM Lessons Passed	0–310	19.8	24.8
TTM Target Lessons Passed	0–261	14.1	18.5

Sources: 2013 STAAR, 2014 STAAR, and TTM files

Table 18. Demographic Characteristics and TTM Achievement of Students Who Attended a Priority or Focus School and Used TTM, 2013–2014

	N	%	Mean # Lessons Completed	Mean # Lessons Passed	Mean # Target Lessons Completed
School Attended					
Priority School	4,880	32.7	17.2	5.7	1.9
Focus School	10,021	67.3	17.3	6.0	2.2
Grade Level					
PreKindergarten	*	*	*	*	*
Kindergarten	*	*	*	*	*
Grade 1	*	*	*	*	*
Grade 2	11	0.1	5.5	3.1	1.5
Grade 3	3,063	20.6	18.5	5.4	2.5
Grade 4	2,969	19.9	21.6	7.9	3.2
Grade 5	2,675	18.0	20.1	7.2	2.1
Grade 6	1,878	12.6	12.7	4.0	1.2
Grade 7	2,136	14.3	15.3	5.3	1.3
Grade 8	1,351	9.1	15.6	5.0	1.4
Grade 9	641	4.3	4.9	2.9	1.3
Grade 10	106	0.7	3.5	1.7	0.4
Grade 11	27	0.2	5.3	2.2	0.4
Grade 12	39	0.3	15.0	6.3	1.6
Gender					
Female	7,238	48.6	15.2	5.3	1.8
Male	7,663	51.4	19.3	6.4	2.3
Race/Ethnicity					
African American	6,010	40.3	16.8	5.4	1.8
American Indian	34	0.2	17.4	5.6	1.4
Asian/Pacific Islander	124	0.8	51.1	13.5	5.0
Hispanic	8,388	56.3	16.9	6.0	2.2
White	288	1.9	22.4	7.1	2.9
Two or more	57	0.4	11.8	6.2	3.2
Economic Disadvantage					
Free Lunch	5,248	35.2	19.4	6.5	2.4
Reduced Lunch	847	5.7	17.9	6.6	2.5
Other Economic Disadvantage	7,772	52.2	15.9	5.3	1.8
No Economic Disadvantage	1,034	6.9	16.0	6.5	2.7
Limited English Proficiency (LEP)					
LEP	5,452	36.6	20.9	6.7	2.4
Not LEP	9,449	63.4	15.2	5.4	1.9
Total	**14,901**	**100.0**	**17.3**	**5.9**	**2.1**

Notes: *Results are not provided for fewer than five students.
Percentages may not total 100 due to rounding.

Sources: PEIMS Fall Resubmission and TTM files

Table 19. Demographic Characteristics of HISD Students Who Attended a Priority or Focus School, Took the Spring 2013 and 2014 STAAR Mathematics Assessments, and Were Used in Analyses, by TTM Usage

	TTM Users		Non-TTM Users		Total
	N	%	N	%	N
School Attended					
Priority School	1,388	19.8	710	12.3	2,098
Focus School	5,631	80.2	5,063	87.7	10,694
Grade Level					
Grade 3	116	1.7	18	0.3	134
Grade 4	2,145	30.6	378	6.5	2,523
Grade 5	1,955	27.9	430	7.4	2,385
Grade 6	721	10.3	1,238	21.4	1,959
Grade 7	1,357	19.3	1,851	32.1	3,208
Grade 8	725	10.3	1,858	32.2	2,583
Gender					
Female	3,439	49.0	2,865	49.6	6,304
Male	3,580	51.0	2,908	50.4	6,488
Race/Ethnicity					
African American	2,501	35.6	1,825	31.6	4,326
American Indian	14	0.2	8	0.1	22
Asian/Pacific Islander	47	0.7	70	1.2	117
Hispanic	4,326	61.6	3,748	64.9	8,074
White	108	1.5	111	1.9	219
Two or more	23	0.3	11	0.2	34
Economic Disadvantage					
Free Lunch	2,188	31.2	1,842	31.9	4,030
Reduced Lunch	415	5.9	317	5.5	732
Other Economic Disadvantage	3,965	56.5	3,155	54.7	7,120
No Economic Disadvantage	451	6.4	459	8.0	910
Limited English Proficiency (LEP)					
LEP	2,856	40.7	2,291	39.7	5,147
Not LEP	4,163	59.3	3,482	60.3	7,645
Total	**7,019**	**100.0**	**5,773**	**100.0**	**12,792**

Notes: Students in grade three are those who repeated the grade; they were enrolled in grade three for both the spring 2013 and 2014 STAAR mathematics assessments.
Percentages may not total 100 due to rounding.

Source: PEIMS Fall Resubmission and TTM files

Table 20. Spring 2013 STAAR Mathematics Results for HISD Students Who Attended a 2013–2014 Priority or Focus School and Took Both the Spring 2013 and 2014 STAAR Mathematics Assessments, by Use of TTM

	Total	Did Not Meet the 2013 Phase-In 1 Standard		Met the 2013 Phase-In 1 Standard		Achieved the 2013 Advanced Standard°	
	N	N	%	N	N	N	%
TTM Users	7,019	3,896	55.5	3,123	44.5	340	4.8
Non-TTM Users	5,773	2,941	50.9	2,832	49.1	215	3.7
Total	**12,792**	**6,837**	**53.4**	**5,955**	**46.6**	**555**	**4.3**

Notes: °Students are also included in the number "Met the 2013 Phase-In 1 Standard."
Remaining percentages may not equal 100 due to rounding.

Sources: 2013 STAAR, 2014 STAAR, 10-8-13 SharePoint listing of 2013–2014 priority and focus schools, and TTM files

Table 21. Spring 2014 STAAR Mathematics Results for HISD Students Who Attended a 2013–2014 Priority or Focus School and Took Both the Spring 2013 and 2014 STAAR Mathematics Assessments, by Use of TTM

	Total	Did Not Meet the 2014 Phase-In 1 Standard		Met the 2014 Phase-In 1 Standard		Achieved the 2014 Advanced Standard°	
	N	N	%	N	N	N	%
TTM Users	7,019	3,234	46.1	3,785	53.9	522	7.4
Non-TTM Users	5,773	2,541	44.0	3,232	56.0	259	4.4
Total	**12,792**	**5,775**	**45.1**	**7,017**	**54.9**	**781**	**6.1**

Notes: °Students are also included in the number "Met the 2014 Phase-In 1 Standard."
Remaining percentages may not equal 100 due to rounding.

Sources: 2013 STAAR, 2014 STAAR, 10-8-13 SharePoint listing of 2013–2014 priority and focus schools, and TTM files

Table 22. Propensity Score Matching Results for HISD Students in Priority and Focus Schools Who Took Both the Spring 2013 and 2014 STAAR Mathematics Assessments, by TTM Usage

	Mean 2014 STAAR Mathematics Scale Score				
	TTM Users (N=7,019)	Non-TTM Users (N=5,773)	Difference	S.E.	*t*
Before Matching	1,529.6	1,567.9	-38.3	2.2	-17.05*
Matched	1,529.6	1,513.4	16.1	5.2	3.12*

Note: * indicates p<.001.

Table 23. Spring 2014 STAAR Mathematics Results for HISD Students Who Attended a 2013–2014 Priority or Focus School and Did Not Meet the Level 2, Satisfactory, Phase-In 1 Standard on the Spring 2013 STAAR Mathematics Assessment, by Use of TTM

	Total	Did Not Meet the 2014 Phase-In 1 Standard		Met the 2014 Phase-In 1 Standard		Achieved the 2014 Advanced Standard°	
	N	N	%	N	N	N	%
TTM Users	3,896	2,733	70.1	1,163	29.9	12	0.3
Non-TTM Users	2,941	2,023	68.8	918	31.2	7	0.2
Total	**6,837**	**4,756**	**69.6**	**2,081**	**30.4**	**19**	**0.3**

Notes: °Students are also included in the number "Met the 2014 Phase-In 1 Standard."
Remaining percentages may not equal 100 due to rounding.

Sources: 2013 STAAR, 2014 STAAR, 10-8-13 SharePoint listing of 2013–2014 priority and focus schools, and TTM files

Table 24. Spring 2014 STAAR Mathematics Results for TTM Users Who Attended a 2013–2014 Priority or Focus School and Did Not Meet the Level 2, Satisfactory, Phase-In 1 Standard on the Spring 2013 STAAR Mathematics Assessment, by Number of TTM Lessons Completed, Number of TTM Lessons Passed, and Number of TTM Target Lessons Passed

	Total	Did Not Meet the 2014 Phase-In 1 Standard		Met the 2014 Phase-In 1 Standard		Achieved the 2014 Advanced Standard°	
	N	N	%	N	N	N	%
TTM Lessons Completed							
0	10	7	70.0	3	30.0	0	0.0
1–14	2,322	1,667	71.8	655	28.2	5	0.2
15–29	1,035	704	68.0	331	32.0	4	0.4
30 or more	529	355	67.1	174	32.9	3	0.6
TTM Lessons Passed							
0	415	359	86.5	56	13.5	0	0.0
1–14	3,263	2,282	69.9	981	30.1	9	0.3
15–29	181	78	43.1	103	56.9	2	1.1
30 or more	37	14	37.8	23	62.2	1	2.7
TTM Target Lessons Passed							
0	2,492	1,960	78.7	532	21.3	2	0.1
1–19	1,394	770	55.2	624	44.8	10	0.7
20–29	7	3	42.9	4	57.1	0	0.0
30 or more	*	*	*	*	*	*	*
Total	**3,896**	**2,733**	**70.1**	**1,163**	**29.9**	**12**	**0.3**

Notes: °Students are also included in the number "Met the 2014 Phase-In 1 Standard."
*Results are not provided for fewer than five students.
Percentages may not total 100 due to rounding.

Sources: 2013 STAAR, 2014 STAAR, and TTM files

Table 25. Regression Analyses of Relationships between 2014 STAAR Mathematics Scale Scores and the Number of TTM Lessons Completed, TTM Lessons Passed, and TTM Target Lessons Passed by TTM Users Who Attended a Priority or Focus School, Took Both the Spring 2013 and 2014 STAAR Mathematics Assessments, and Did Not Meet the Level 2, Satisfactory, Phase-In 1 Standard on the Spring 2013 STAAR Mathematics Assessment

Independent Variable	Dependent Variable	*β*	*t*	p	R^2
Number of TTM Lessons Completed	2014 STAAR Mathematics Scale Score	-.04	*t* (3,894) = -2.69	.01	.002
Number of TTM Lessons Passed	2014 STAAR Mathematics Scale Score	.21	*t* (3,894) = 13.43	< .001	.04
Number of TTM Target Lessons Passed	2014 STAAR Mathematics Scale Score	.16	*t* (3,894) = 10.09	< .001	.03

Note: Effect size conventions for R^2 are: .01 is small, .09 is medium, and .24 is large.

Table 26. Number of TTM Lessons Recorded for TTM Users Who Attended a Priority or Focus School and Did Not Meet the Spring 2013 STAAR Mathematics Level 2, Satisfactory, Phase-In 1 Standard, by Spring 2014 STAAR Mathematics Performance, 2013–2014

	Number of Lessons		
	Range	Mean	Standard Deviation
Met 2014 Phase-In 1 Standard (N=1,163)			
TTM Lessons Completed	0–276	17.8	21.5
TTM Lessons Passed	0–108	7.0	8.1
TTM Target Lessons Passed	0–52	1.8	3.5
Met 2014 Advanced Standard (N=12)			
TTM Lessons Completed	4–61	22.2	15.4
TTM Lessons Passed	2–38	11.4	9.9
TTM Target Lessons Passed	0–17	3.9	5.2

Sources: 2013 STAAR, 2014 STAAR, and TTM files

Table 27. Spring 2014 STAAR Mathematics Results for HISD Students Who Attended a 2013–2014 Priority or Focus School and Met the Level 2, Satisfactory, Phase-In 1 Standard on the Spring 2013 STAAR Mathematics Assessment, by Use of TTM

	Total	Did Not Meet the 2014 Phase-In 1 Standard		Met the 2014 Phase-In 1 Standard		Achieved the 2014 Advanced Standard°	
	N	N	%	N	N	N	%
TTM Users	3,123	501	16.0	2,622	84.0	510	16.3
Non-TTM Users	2,832	518	18.3	2,314	81.7	252	8.9
Total	**5,955**	**1,019**	**17.1**	**4,936**	**82.9**	**762**	**12.8**

Notes: °Students are also included in the number "Met the 2014 Phase-In 1 Standard." Remaining percentages may not equal 100 due to rounding.

Sources: 2013 STAAR, 2014 STAAR, 10-8-13 SharePoint listing of 2013–2014 priority and focus schools, and TTM files

Table 28. Spring 2014 STAAR Mathematics Results for TTM Users Who Attended a 2013–2014 Priority or Focus School and Met the Level 2, Satisfactory, Phase-In 1 Standard on the Spring 2013 STAAR Mathematics Assessment, by Number of TTM Lessons Completed, Number of TTM Lessons Passed, and Number of TTM Target Lessons Passed

	Total	Did Not Meet the 2014 Phase-In 1 Standard		Met the 2014 Phase-In 1 Standard		Achieved the 2014 Advanced Standard°	
	N	N	%	N	N	N	%
TTM Lessons Completed							
0	7	4	57.1	3	42.9	1	14.3
1–14	1,886	355	18.8	1,531	81.2	232	12.3
15–29	731	99	13.5	632	86.5	133	18.2
30 or more	499	43	8.6	456	91.4	144	28.9
TTM Lessons Passed							
0	122	46	37.7	76	62.3	2	1.6
1–14	2,429	431	17.7	1,998	82.3	288	11.9
15–29	402	22	5.5	380	94.5	136	33.8
30 or more	170	2	1.2	168	98.8	84	49.4
TTM Target Lessons Passed							
0	1,024	306	29.9	718	70.1	29	2.8
1–19	1,959	194	9.9	1,765	90.1	395	20.1
20–29	95	1	1.1	94	98.9	59	62.1
30 or more	45	0	0.0	45	100.0	27	60.0
Total	**3,123**	**501**	**16.0**	**2,622**	**84.0**	**510**	**16.3**

Notes: °Students are also included in the number "Met the 2014 Phase-In 1 Standard." Percentages may not total 100 due to rounding.

Sources: 2013 STAAR, 2014 STAAR, and TTM files

Table 29. Regression Analyses of Relationships between 2014 STAAR Mathematics Scale Scores and the Number of TTM Lessons Completed, TTM Lessons Passed, and TTM Target Lessons Passed by TTM Users Who Attended a Priority or Focus School, Took Both the Spring 2013 and 2014 STAAR Mathematics Assessments, and Met the Level 2, Satisfactory, Phase-In 1 Standard on the Spring 2013 STAAR Mathematics Assessment

Independent Variable	Dependent Variable	*β*	*t*	p	R^2
Number of TTM Lessons Completed	2014 STAAR Mathematics Scale Score	.04	*t* (3,121) = 2.40	.02	.002
Number of TTM Lessons Passed	2014 STAAR Mathematics Scale Score	.12	*t* (3,121) = 6.78	< .001	.02
Number of TTM Target Lessons Passed	2014 STAAR Mathematics Scale Score	.19	*t* (3,121) = 10.54	< .001	.03

Note: Effect size conventions for R^2 are: .01 is small, .09 is medium, and .24 is large.

Table 30. Number of TTM Lessons Recorded for TTM Users Who Attended a Priority or Focus School and Met the Spring 2013 STAAR Mathematics Level 2, Satisfactory, Phase-In 1 Standard, by Spring 2014 STAAR Mathematics Performance, 2013–2014

	Number of Lessons		
	Range	Mean	Standard Deviation
Met 2014 Phase-In 1 Standard (N=2,622)			
TTM Lessons Completed	0–1,100	18.4	31.4
TTM Lessons Passed	0–1,050	10.7	25.3
TTM Target Lessons Passed	0–510	4.8	13.4
Met 2014 Advanced Standard (N=510)			
TTM Lessons Completed	1–256	24.8	28.0
TTM Lessons Passed	0–226	17.7	21.0
TTM Target Lessons Passed	0–149	10.3	14.0

Sources: 2013 STAAR, 2014 STAAR, and TTM files

Table 31. Spring 2014 STAAR Mathematics Results for HISD Students Who Attended a 2013–2014 Priority or Focus School and Met the Level 3, Advanced Performance, on the Spring 2013 STAAR Mathematics Assessment, by Use of TTM

	Total	Did Not Meet the 2014 Phase-In 1 Standard		Met the 2014 Phase-In 1 Standard		Achieved the 2014 Advanced Standard°	
	N	N	%	N	N	N	%
TTM Users	340	2	0.6	338	99.4	205	60.3
Non-TTM Users	215	0	0.0	215	100.0	108	50.2
Total	**555**	**2**	**0.4**	**553**	**99.6**	**313**	**56.4**

Notes: °Students are also included in the number "Met the 2014 Phase-In 1 Standard."
*Results are not provided for fewer than five students
Remaining percentages may not equal 100 due to rounding.

Sources: 2013 STAAR, 2014 STAAR, 10-8-13 SharePoint listing of 2013–2014 priority and focus schools, and TTM files

Table 32. Spring 2014 STAAR Mathematics Results for TTM Users Who Attended a 2013–2014 Priority or Focus School and Met the Level 3, Advanced Performance Standard, on the Spring 2013 STAAR Mathematics Assessment, by Number of TTM Lessons Completed, Number of TTM Lessons Passed, and Number of TTM Target Lessons Passed

	Total	Did Not Meet the 2014 Phase-In 1 Standard		Met the 2014 Phase-In 1 Standard		Achieved the 2014 Advanced Standard°	
	N	N	%	N	N	N	%
TTM Lessons Completed							
0	*	*	*	*	*	*	*
1–14	168	2	1.2	166	98.8	88	52.4
15–29	80	0	0.0	80	100.0	53	66.3
30 or more	92	0	0.0	92	100.0	64	69.6
TTM Lessons Passed							
0	*	*	*	*	*	*	*
1–14	201	2	1.0	199	99.0	103	51.2
15–29	81	0	0.0	81	100.0	63	77.8
30 or more	56	0	0.0	56	100.0	38	67.9
TTM Target Lessons Passed							
0	34	2	5.9	32	94.1	7	20.6
1–19	244	0	0.0	244	100.0	150	61.5
20–29	40	0	0.0	40	100.0	32	80.0
30 or more	22	0	0.0	22	100.0	16	72.7
Total	**340**	**2**	**0.6**	**338**	**99.4**	**205**	**60.3**

Notes: °Students are also included in the number "Met the 2014 Phase-In 1 Standard."
*Results are not provided for fewer than five students.
Percentages may not total 100 due to rounding.

Sources: 2013 STAAR, 2014 STAAR, and TTM files

Table 33. Regression Analyses of Relationships between Spring 2014 STAAR Mathematics Scale Scores and the Number of TTM Lessons Completed, TTM Lessons Passed, and TTM Target Lessons Passed by TTM Users Who Attended a Priority or Focus School, Took Both the Spring 2013 and 2014 STAAR Mathematics Assessments, and Met the Level 3, Advanced Performance Standard on the Spring 2013 STAAR Mathematics Assessment

Independent Variable	Dependent Variable	*β*	*t*	p	R^2
Number of TTM Lessons Completed	2014 STAAR Mathematics Scale Score	-.08	*t* (338) = -1.56	.12	NA
Number of TTM Lessons Passed	2014 STAAR Mathematics Scale Score	-.07	*t* (338) = -1.19	.24	NA
Number of TTM Target Lessons Passed	2014 STAAR Mathematics Scale Score	-.02	*t* (338) = -0.37	.71	NA

Note: Effect size conventions for R^2 are: .01 is small, .09 is medium, and .24 is large.

Table 34. Number of TTM Lessons Recorded for TTM Users Who Attended a Priority or Focus School and Met the Spring 2013 STAAR Mathematics Level 3, Advanced Performance Standard, by Spring 2014 STAAR Mathematics Performance, 2013–2014

	Number of Lessons		
	Range	Mean	Standard Deviation
Met 2014 Phase-In 1 Standard (N=338)			
TTM Lessons Completed	0–1,100	27.2	67.1
TTM Lessons Passed	0–1,050	20.8	62.3
TTM Target Lessons Passed	0–510	12.2	31.6
Met 2014 Advanced Standard (N=205)			
TTM Lessons Completed	1–256	25.8	29.6
TTM Lessons Passed	0–226	19.8	24.0
TTM Target Lessons Passed	0–149	12.7	16.7

Sources: 2013 STAAR, 2014 STAAR, and TTM files

Table 35. Demographic Characteristics of HISD Students Who Retested on STAAR Mathematics Assessment, June 2014, by TTM Usage

	TTM Users		Non-TTM Users		Total
	N	%	N	%	N
School Attended					
Priority School	157	10.6	95	7.2	252
Focus School	498	33.7	465	35.5	963
Not a Prioritized School	823	55.7	751	57.3	1,574
Grade Level					
Grade 5	1,134	76.7	467	35.6	1,601
Grade 8	344	23.3	844	64.4	1,188
Gender					
Female	742	50.2	653	49.8	1,395
Male	736	49.8	658	50.2	1,394
Race/Ethnicity					
African American	529	35.8	355	27.1	884
American Indian	3	0.2	3	0.2	6
Asian/Pacific Islander	9	0.6	9	0.7	18
Hispanic	895	60.6	913	69.6	1,808
White	37	2.5	28	2.1	65
Two or more	5	0.3	3	0.2	8
Economic Disadvantage					
Free Lunch	426	28.8	412	31.4	838
Reduced Lunch	62	4.2	77	5.9	139
Other Economic Disadvantage	866	58.6	679	51.8	1,545
No Economic Disadvantage	124	8.4	143	10.9	267
Limited English Proficiency (LEP)					
LEP	619	41.9	594	45.3	1,213
Not LEP	859	58.1	717	54.7	1,576
Total	**1,478**	**53.0**	**1,311**	**47.0**	**2,789**

Note: *Results are not provided for fewer than five students
Percentages may not total 100 due to rounding

Source: PEIMS Fall Resubmission and TTM files

Table 36. Spring 2013 STAAR Mathematics Results for HISD Students Who Retested on the STAAR Mathematics Assessment, June 2014, by Use of TTM

	Total	Did Not Meet the 2013 Phase-In 1 Standard		Met the 2013 Phase-In 1 Standard		Achieved the 2013 Advanced Standard°	
	N	N	%	N	N	N	%
TTM Users	1,478	1,344	90.9	134	9.1	1	0.1
Non-TTM Users	1,311	1,130	86.2	181	13.8	1	0.1
Total	**2,789**	**2,474**	**88.7**	**315**	**11.3**	**2**	**0.1**

Notes: °Students are also included in the number "Met the 2013 Phase-In 1 Standard."
Remaining percentages may not equal 100 due to rounding.

Sources: 2013 STAAR, 2014 STAAR, 10-8-13 SharePoint listing of 2013–2014 priority and focus schools, and TTM files

Table 37. June 2014 STAAR Mathematics Results for HISD Students Who Retested on the STAAR Mathematics Assessment, June 2014, by Use of TTM

	Total	Did Not Meet the 2014 Phase-In 1 Standard		Met the 2014 Phase-In 1 Standard		Achieved the 2014 Advanced Standard°	
	N	N	%	N	N	N	%
TTM Users	1,478	1,099	74.4	379	25.6	0	0.0
Non-TTM Users	1,311	1,007	76.8	304	23.2	0	0.0
Total	**2,789**	**2,106**	**75.5**	**683**	**24.5**	**0**	**0.0**

Notes: °Students are also included in the number "Met the 2014 Phase-In 1 Standard."
Remaining percentages may not equal 100 due to rounding.

Sources: 2013 STAAR, 2014 STAAR, 10-8-13 SharePoint listing of 2013–2014 priority and focus schools, and TTM files

Table 38. Propensity Score Matching Results for HISD Students Who Took Both the Spring 2013 and 2014 STAAR Mathematics Assessments and Retook the STAAR Mathematics Assessment in June 2014, by TTM Usage

	Mean 2014 STAAR Mathematics Scale Score				
	TTM Users (N=1,478)	Non-TTM Users (N=1,311)	Difference	S.E.	*t*
Before Matching	1,421.0	1,478.1	-57.1	2.9	-19.90*
Matched	1,421.0	1,420.1	0.8	5.7	0.15

Note: * indicates p<.001.