

Texas Projection Measure (TPM) for TAKS

Technical and Research

FAQs

1. Can the projection be made if the student only has current year data for reading and mathematics?

Yes. The projection equations using two-year data, that is, data from 2011 and 2010, are available for the students who have the necessary data from the two years. The equations are also developed by using predictors from one year. Only projection equations using one-year data will be available for subjects other than reading and mathematics.

2. How are projections made using two-year data?

Projections for each student are made separately for each subject. The projections are made using students' current year scale scores, prior year scale scores, and prior year campus average scale scores to project a scale score for students in the next high-stakes grade. Table 1 shows what information is used to make the projections in each subject.

Table 1. Predictors Used in the Texas Projection Measure with Two-year Data

Projection Subject	Predictors Used
Reading/ELA	<ol style="list-style-type: none">1. Student Reading/ELA Scale Score received in current year2. Student Mathematics Scale Score received in current year3. Student Reading Scale Score received in previous year4. Mean Campus Scale Score in Reading in previous year
Mathematics	<ol style="list-style-type: none">1. Student Mathematics Scale Score received in current year2. Student Reading/ELA Scale Score received in current year3. Student Mathematics Scale Score received in previous year4. Mean Campus Scale Score in Mathematics in previous year

For each projection, an equation is developed using TAKS results for students taking the assessments in prior years. For example, to develop the reading projection equation for grade 10 students in 2011, the 2009 grade 10 reading and mathematics and 2008 grade 9 reading results are examined for all students as well as their schools' average (mean) score in 2009 grade 10 reading. These results are then compared to the 2010 grade 11 reading results for these same students. The comparison establishes the relationship of specific scale score values in 2009 and 2008 to a specific scale score in 2010. Once projection equations are determined, they are applied in the following year.

As an example, the steps used to make 2011 projections from grade 9 to grade 11 mathematics are illustrated below.

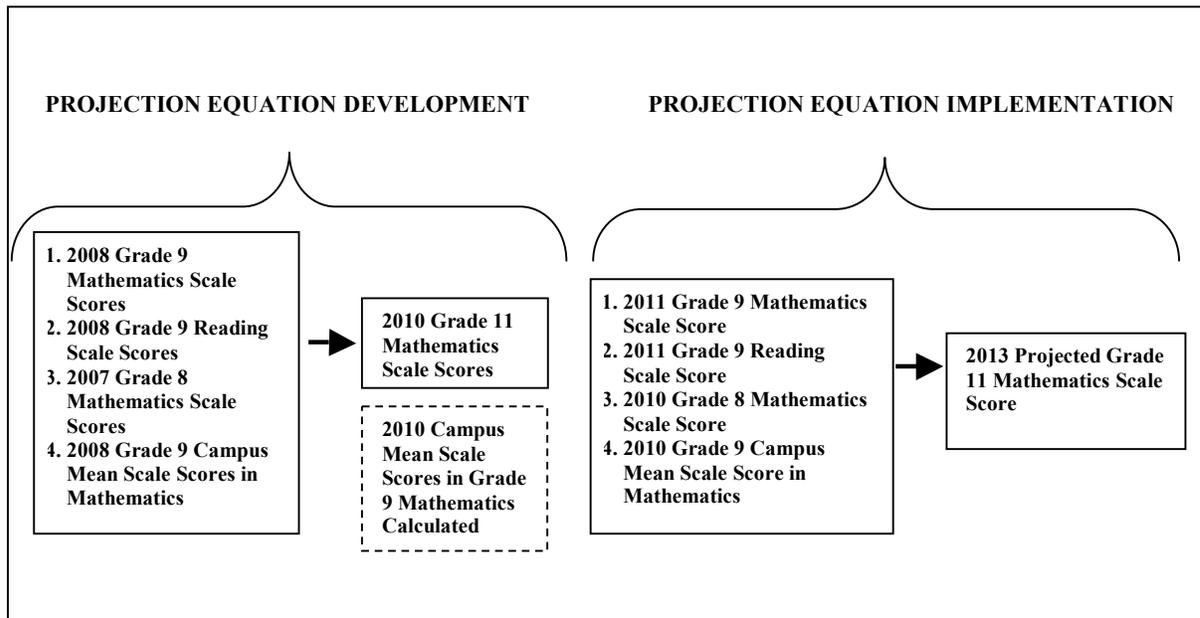


Figure 1. Example Process for Projection Equation Development and Implementation with Two-year Data

Steps for developing and applying projection equations from grade 9 to grade 11 mathematics include the following:

1. Projection Equation Development
 - a. The following data are used to develop the equations:
 - i. 2010 grade 11 mathematics scale scores
 - ii. 2008 grade 9 mathematics scale scores
 - iii. 2008 grade 9 reading scale scores
 - iv. 2007 grade 8 mathematics scale scores
 - v. 2008 grade 9 campus mean scale scores in mathematics
 - b. The grade 11 mathematics scale scores from 2010 are regressed on the other four variables in a multi-level model.
 - c. Coefficients from the analyses are recorded and reported.
 - d. Campus mean scale scores are calculated using 2010 statewide data for grade 9 mathematics.
2. Projection Equation Implementation
 - a. The coefficients from the development of the projection equations are used with the following information to make a student projection in grade 9 mathematics in spring 2011:
 - i. A student's 2011 grade 9 mathematics scale score
 - ii. A student's 2011 grade 9 reading scale score
 - iii. A student's 2010 grade 8 mathematics scale score
 - iv. A student's 2010 grade 9 campus mean scale score in mathematics
 - b. Once the projection is calculated, a student receives the following information:

- i. A projection scale score in grade 11 mathematics;
- ii. An indicator about whether the student’s projected grade 11 mathematics scale score is at least as high as the grade 11 mathematics scale score that indicates Met Standard, and an indicator about whether it is at least as high as the grade 11 mathematics scale score that indicates Commended Performance.

For more information about projections using data from two years, see “[Calculating projections with the Texas projection measure](#)” and “[Projections using data from two years.](#)”

3. Will students receive the projections for writing, social studies, and science using two-year data?

No. The projections using two-year data can only be made for reading/ELA and mathematics. The projection equations for writing, social studies, and science are available only for projections using current year data.

4. How are projections made using one-year data?

The projections using one-year data are made in the same way as the projections using two-year data except that the prior year data are not needed for the projection. Table 2 shows what information is used to make the projections using one-year data in each subject.

Table 2. Predictors Used in the Texas Projection Measure with One-year Data

Projection Subject	Predictors Used
Reading/ELA	<ol style="list-style-type: none"> 1. Student Reading/ELA Scale Score 2. Student Mathematics Scale Score 3. Mean Campus Scale Score in Reading/ELA
Mathematics	<ol style="list-style-type: none"> 1. Student Mathematics Scale Score 2. Student Reading/ELA Scale Score 3. Mean Campus Scale Score in Mathematics
Writing	<ol style="list-style-type: none"> 1. Student Writing Scale Score 2. Student Reading Scale Score 3. Student Mathematics Scale Score 4. Mean Campus Scale Score in Writing
Science	<ol style="list-style-type: none"> 1. Student Science Scale Score 2. Student Reading/ELA Scale Score 3. Student Mathematics Scale Score 4. Mean Campus Scale Score in Science
Social Studies	<ol style="list-style-type: none"> 1. Student Social Studies Scale Score 2. Student Reading/ELA Scale Score 3. Student Mathematics Scale Score 4. Mean Campus Scale Score in Social Studies

For each projection an equation is developed using TAKS results for students taking the assessments in prior years. For example, to develop the reading projection equation for grade 10 students in 2011, the 2009 grade 10 reading and mathematics results are examined for all students scoring as well as their schools’ average (mean) score in 2009 grade 10 reading. These results are then compared to the 2010 grade 11 reading results for these same students. The comparison establishes the

relationship of specific scale score values in 2009 to a specific scale score in 2010. Once projection equations are determined, they are applied in the following year.

As an example, the steps used to make 2011 projections from grade 9 mathematics to grade 11 mathematics are illustrated below.

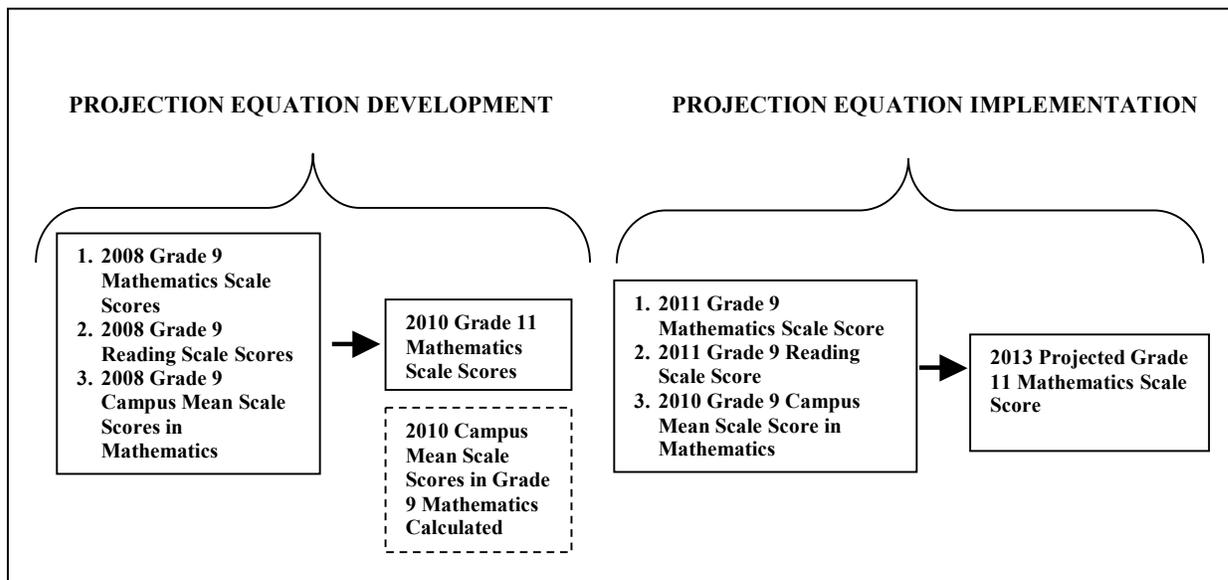


Figure 2. Example Process for Projection Equation Development and Implementation with One-year Data

Steps for developing and applying projection equations from grade 9 to grade 11 mathematics include the following:

1. Projection Equation Development
 - a. The following data are used to develop the equations:
 - i. 2010 grade 11 mathematics scale scores
 - ii. 2008 grade 9 mathematics scale scores
 - iii. 2008 grade 9 reading scale scores
 - iv. 2008 campus mean scale scores in grade 9 mathematics
 - b. The grade 11 mathematics scale scores from 2010 are regressed on the other three variables in a multi-level model.
 - c. Coefficients from the analyses are recorded and reported.
 - d. Campus mean scale scores are calculated using 2010 statewide data for grade 9 mathematics.
2. Projection Equation Implementation
 - a. The coefficients from the development of the projection equations are used with the following information to make a student projection in grade 9 mathematics in spring 2011:
 - i. A student's 2011 grade 9 mathematics scale score
 - ii. A student's 2011 grade 9 reading scale score
 - iii. A student's 2010 grade 9 campus mean scale score in mathematics
 - b. Once the projection is calculated, a student receives the following information:
 - i. A projection scale score in grade 11 mathematics

- ii. An indicator about whether the student’s projected grade 11 mathematics scale score is at least as high as the grade 11 mathematics scale score that indicates Met Standard, and an indicator about whether it is at least as high as the grade 11 mathematics scale score that indicates Commended Performance.

For more information about the model development and projection calculation using one-year data, see “[Calculating projections with the Texas projection measure](#)” and “[Procedures for developing the Texas projection measure equations.](#)”

5. To what are projections compared in order to determine if students are projected to meet the standard, achieve commended performance, or not?

When a projection is made to a future grade, the result is a projected score. To determine whether a student is projected to meet the standard or achieve commended performance in the projected grade, the projected score is compared with the Met Standard cut point and Commended Performance cut point in the projected grade and subject. Table 3 shows the current TAKS Met Standard cut points and the Commended Performance cut points for projection grades and subjects.

Note that the cut points presented in Table 3 are for TAKS assessments. Only grade 9 and 10 students in 2010–2011 will take TAKS assessments when they are in the projection grade (Grade 11 for grade 9 and 10 students) and will be able to compare their projected scores with their actual performance in the projection grade. Students in grades 3–8 in 2010–2011 will take STAAR assessments starting from 2012, and new STAAR cut points, which will be on a different score scale from TAKS, will be applied. Therefore the students who are currently in grades 3–8 will not have TAKS scores to compare with their projected scores when they are in the projection grades.

Table 3. Met Standard and Commended Performance Cut Point for Projection Grades and Subjects

Projection Grade	Grades From Which Projections are Made	Projection Subject (Language Version)	Met Standard Cut Point	Commended Performance Cut Point
11	9 and 10	English Language Arts	2100	2400
11	9 and 10	Mathematics	2100	2400
11	10	Science	2100	2400
11	10	Social Studies	2100	2400

As an example, suppose a student taking TAKS in grade 9 is projected to have a TAKS score of 2160 in grade 11 mathematics. Since the student’s projected score of 2160 is greater than the Met Standard cut point (2100) but smaller than the Commended Performance cut point (2400) in TAKS grade 11 mathematics, that student is projected to meet the standard but not to achieve commended performance in TAKS grade 11 mathematics.

6. Do students have to take the same version (TAKS, TAKS (Accommodated), LAT) of TAKS tests in different subjects to have the TPM scores?

No. Students who take the TAKS tests in any of the three versions can get projection scores.

7. Why are campus means used in the projections?

Campus means are included in the projections for two reasons. First, they provide information about the environment in which students learn. Second, these means were found to be statistically significant in the equation development analyses, meaning that they add precision to the projections. However, the coefficients are small for the campus means relative to the coefficients for the student scale scores, indicating that the impact of the campus means on the projections is smaller than the impact of the student scale scores.

8. How are the campus means used in the TPM calculated?

Campus means are calculated the year before they are applied. For spring 2011, campus means in the subject are calculated from the statewide student scores of the 2010 primary administrations for students taking English versions of TAKS, including TAKS (Accommodated), and linguistically accommodated versions of TAKS. Data from all students taking English TAKS with a valid score (i.e., a score code of 'S' for TAKS and TAKS [Accommodated] students or a score code of 'L' and LAT indicator of '1' for a LAT student) in the subject area are used in calculating the campus mean. Campus means are calculated only for campuses with at least 30 students who have valid TAKS English scores in that grade and subject. If a campus has fewer than 30 students with valid scores, the district mean is used. If there are fewer than 30 students with valid scores in the district, the statewide mean is used. If a student tests in a campus in 2011 with a County-District-Campus (CDC) number that was not in the 2010 statewide dataset, the district mean will be used in the projections. If the district did not have at least 30 students with valid scores, the statewide mean will be used. Campus means for students taking English versions for TAKS are applied for Spanish TPM projections as well.

9. Why are projection equations and campus means from the prior year used?

The projection equations and campus means from the year before are used so that the Texas Projection Measure equations can be reported on the Confidential Student Report (CSR). If current year results and campus means were used in the projection equations, the TPM projections would not be able to be reported on the CSR, and results based on current year information would not be available until later on a separate report. Also, the analysis of comparing the projection accuracy between using prior year data and current year data has been conducted, and the results show that there appears to be very little difference between projections generated from the TPM with current-year regression coefficients and projections generated from the TPM with prior-year coefficients. For more information about the comparison of the projection accuracy between using prior year data and current year data, see "[2009 TPM prior-year coefficient analysis.](#)"

10. Why are some of the coefficients for the campus mean scale scores negative? How should the part of the equation with the campus mean coefficient be interpreted?

For some grades and subjects, the coefficients that are to be multiplied by the mean campus scale score are negative. The reason relates to the statistical model used to make the projections. The part of the equation with the campus mean is best interpreted as a statistical adjustment for the projection. The part of the equation related to the school mean should not be interpreted independently from the rest of the equation. The different parts of the equation work together to create the projection. It would not be appropriate, for example, to interpret a negative coefficient for the campus mean to indicate that higher performing schools cause lower student performance in the future.

11. If a student moves to a new campus, which campus mean is used in calculating the TPM?

If a student moves to a new campus, the mean for that new campus (calculated from the prior year scores) will be used in all TPM calculations. For example, suppose a student takes the grade 9 March primary reading administration at Campus A. That student will not have a TPM yet, because all TPM calculations require both reading and mathematics scale scores. Then, the student moves to Campus B and takes the primary mathematics administration in April. That student's TPM for reading **and** mathematics will use the mean scale score from Campus B. As with all mean campus scale scores, the mean scale score from Campus B will be from the prior year, or 2010.

12. Is the TPM a growth measure?

The TPM does not evaluate student score changes in past years, so it is more accurately classified as a projection measure, which provides information about how a student will likely perform in the future after receiving grade-level instruction. Note, however, that growth is measured for students who take the TAKS-Alt using a transition table approach known as the TAKS-Alt Growth Measure. For more information about the TAKS-Alt Growth Measure see the [TAKS-Alt Growth page](#).

For TAKS, the information about student growth over past years will be provided with the vertical scale, which will be reported in spring 2011 for TAKS English grades 3–8 in reading and mathematics and for TAKS Spanish grades 3–5 in reading and mathematics. TEA has developed a vertical scale for TAKS that will allow comparisons of student scores over years in a way that will offer a measure of actual growth for each student in these grades, languages, and subjects.

13. How are the TPM and vertical scale alike? How do they differ?

The vertical scale provides information about student growth in past years. With the vertical scale, a student's scale score in one grade can be compared to that student's scale score in another grade, making it possible to determine how much the student has grown in that content area. The TPM provides the best estimate of how a student will perform in the future after receiving content-area instruction, given the student's current and previous (two-year model only) years' scores and the prior year's scores of all students on the campus that the student attends.

For grades in which a vertical scale is reported, the vertical scale score information can be used with the TPM to provide information about how a student performed relative to the performance standards in the current year, how the student progressed over past years, and how a student is projected to perform in future

years after content-area instruction. For grades in which there is not a vertical scale, only current-year and future projection information will be available.

Table 6 illustrates the information that will be available for students testing in a grade and subject with a vertical scale in spring 2011. Figure 2 provides an example of how a student’s current score, past scores on the vertical scale, and projections can be used together.

Table 6. Student Information from Vertical Scale and Texas Projection Measure

Timing	Information	Source
Current Year	Student Performance Level	Comparison of Current-Year Scale Score to Performance Level Cut Points (i.e., Did Not Meet Standard, Met Standard, Commended Performance)
Past	Student Growth from Past to Present	Comparison of Vertical Scale Scores from Past to Present Grades in Reading and Mathematics in Grades 3–8
Future	Student Projected Performance (TPM)	Comparison of Predicted Score to Performance Level Cut Points in Projection Grade

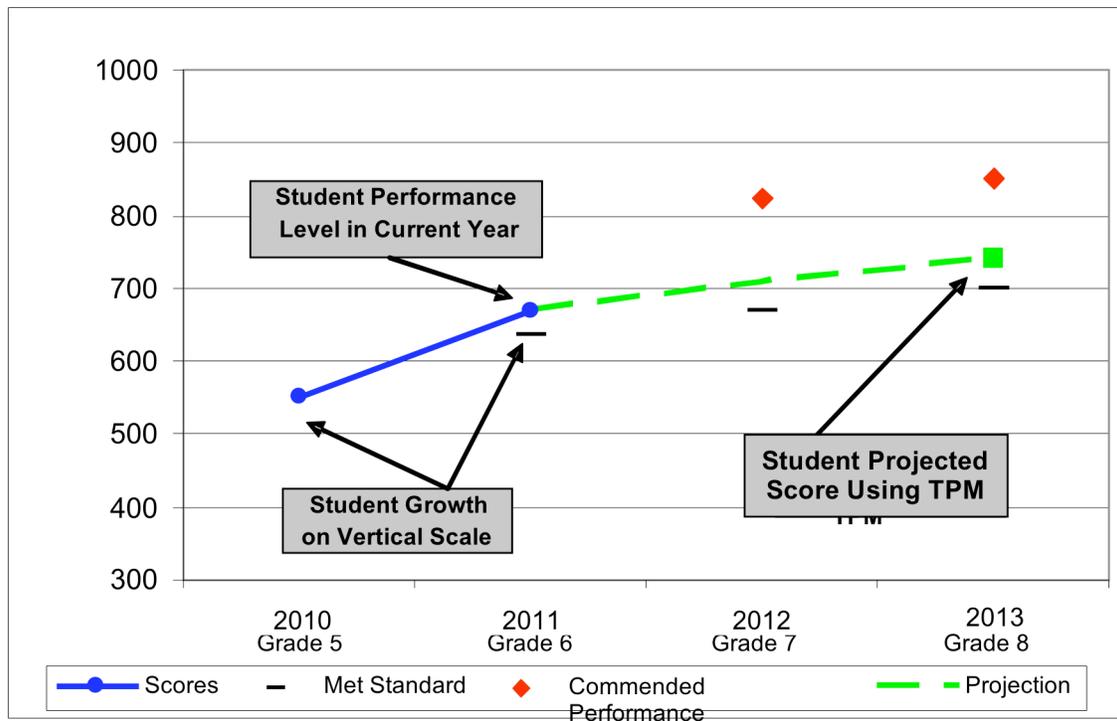


Figure 2. Mathematics Growth and Projection Example for Student in Grade 6

14. How accurate are the projections?

Texas conducts annual evaluations of the projection accuracy of the TPM. This annual evaluation will allow Texas to monitor projection accuracy for all students, for student groups, for different subjects, and for different numbers of projection years.

In 2009 and 2010 the projection accuracy was evaluated for the projections from grade 4 to 5, grade 7 to 8, and grade 10 to 11. English reading results indicated that the percent of students who were accurately classified to a reading performance level (either Met Standard or Not Met Standard) ranged from 74% to 97% in 2009 and 79% to 97% in 2010 for students overall and for all groups. The projection accuracy is relatively lower for limited English proficient (LEP) students and students in special education (SPED). English mathematics results indicated that the percent of students who were accurately classified to a mathematics performance level in English were slightly lower than in reading but still high. The accurate classification rate ranged from 77% to 93% in 2009 and 74% to 95% in 2010. Same as English reading, the projection accuracy for English mathematics is relatively lower for LEP students and SPED students. The results also indicated that the accuracy for English TAKS projections was higher than for Spanish TAKS projections in both of 2009 and 2010.

The projection accuracy was also evaluated in 2009 for the projections using two-year data. The results indicated that the TPM with two years of predictors generally resulted in higher projection accuracy (ranged from 77% to 98%) and more balanced over- and under-projections than the TPM using one-year data.

For the examinees who took reading and mathematics in different languages, the projection accuracy was lower than those who took both reading and mathematics in English, but still comparable with those who took both reading and mathematics in Spanish. For more information on TPM projection accuracy in 2009 by using one-year data, two-year data, and for cross-language examinees, see "[2009 TPM Projection Accuracy](#)" "[Projections using data from two years](#)" and "[Analyzing the Texas Projection Measure for use with Spanish and Cross-language TAKS Examinees](#)." For more information on TPM projection accuracy in 2010 by using one-year data, see "[2010 TPM Projection Accuracy](#)" the Technical and Research section of this website.

15. Why are the projections more accurate for reading than for mathematics?

There are a number of reasons why projection accuracy is higher for reading than for mathematics, such as the greater similarity of content across years in reading versus mathematics. However, the more noteworthy reason for the higher projection accuracy in reading is that more students in mathematics score around the cut point for Met Standard. These are the students for whom projection accuracy is lowest, since one or two questions can make a significant difference in whether students meet or do not meet the passing standard. Although the projection accuracy for mathematics results is slightly lower than for reading, the percent of accurate projections in mathematics typically exceeded 85% for students overall and for all groups except the LEP and SPED.