



Effectiveness of XLPrep.com's Standards-Based Math Program

Introduction and Procedure

XLPrep.com offers a math program that is structured by and aligned with the California content standards. The program contains lessons, quizzes, and tests for all content standards in [Algebra I](#), Geometry, Algebra II, and Probability and Statistics. The program provides practice questions for each content standard and shows student scores by individual content standard. The software adapts to the needs of each student by giving more practice questions where the student is challenged and fewer questions on concepts the student has mastered.

To test the effectiveness of our math program, a 9th grade Algebra class of 35 students used our math program in 2009. Algebra I CST scores were used as a measure of the program's effectiveness. The study took place at Animo Venice High School in Venice, California. Students used our program for various lengths of time during the 2008-2009 school years as a homework supplement. XLPrep.com homework assignments were aligned with the curriculum being taught in class. Because XLPrep.com questions can be permuted to provide students with more practice, students had unlimited study time and answered different numbers of questions.

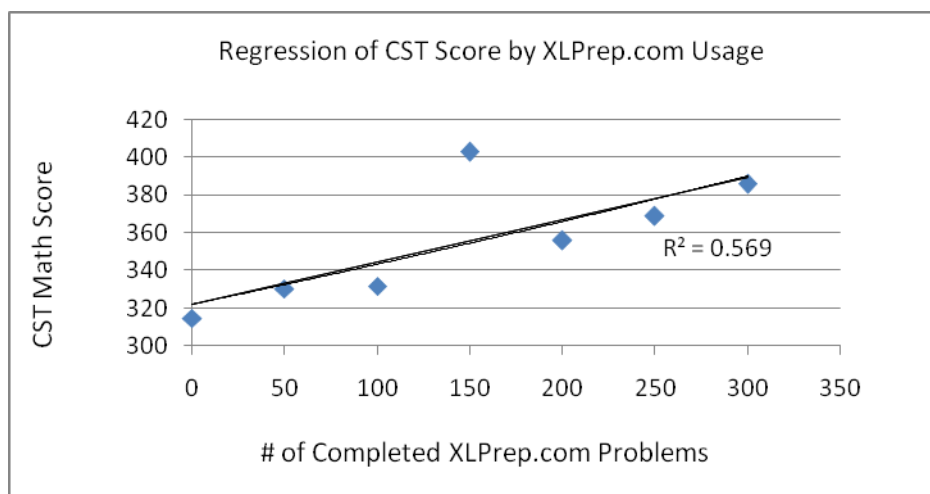
Results

Study results were analyzed in three ways. First, use of the math program was correlated with an increase in Algebra I CST score. Second, significance tests were conducted to determine how many completed questions resulted in a statistically significant increase in CST math score due to studying with our program. Third, CST scores with and without XLPrep.com utilization were compared by comparing the student performance levels attained in 2008 vs. 2009; XLPrep.com was not used in this teacher's math class in 2008.

Figure 1 below shows the correlation for all students in the Algebra I math class. It breaks the students into groups by how many problems they completed and shows the average increase in CST score for each group. As the number of correctly completed problems increases, the average CST score increases. The R-squared for

this relationship is 0.57. Therefore, 57% of the change in score increase can be explained by the number of completed questions. The other 43% could be explained by any number of factors including human variability. If two outliers in the group completing approximately 150 [XLPrep.com questions](#) are removed, the R-squared becomes 0.98. These outliers represent two students who scored over 500 on the Algebra I CST. The average for the class was 353, so these two students highly influence the results. We did not remove these points or students from the data set because there is nothing that sets them apart, other than above normal math ability for the population at Animo Venice.

Figure 1. Algebra I CST Score Increase vs. Number of XLPrep.com Questions Completed



To further ascertain how our program affects student performance, significance tests were conducted to determine at what number of completed questions a statistically significant increase in CST math score occurred due to our program. Statistically significant score increases were evident with a p-value of 0.022 in students who completed 90 problems or more as compared to students who completed 89 problems or less. As shown in table 1, an average increase of 59 CST points is achieved when students complete 90 or more [XLPrep.com questions](#). An increase of 59 points is noteworthy because a jump from the below basic to basic performance level on the CST is 46 points, and a jump from the basic to proficient performance level is 49 points.

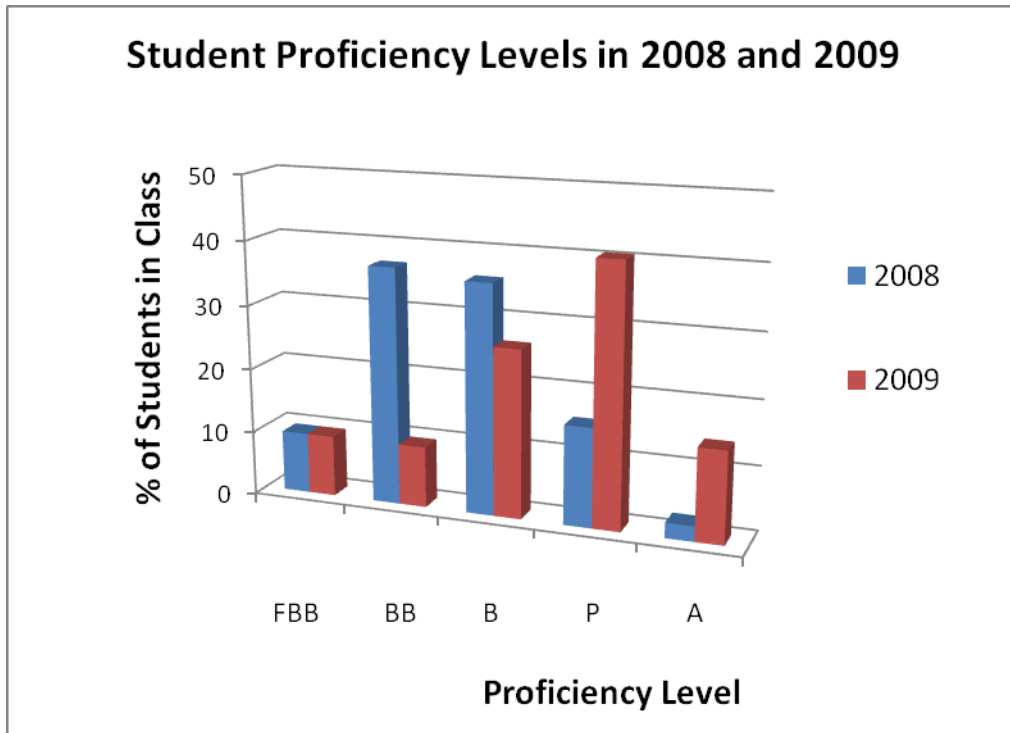
Table 1. Average CST Math Score by Number of Completed XLPrep.com Questions

| Number of Completed XLPrep.com Questions | Average CST Math Score | Standard Deviation | Number of Students in Group |
|--|------------------------|--------------------|-----------------------------|
| At least 1 question* | 353 | 76.4 | 35 |
| 90 or more questions | 385 | 79.5 | 15 |
| 89 or less | 326 | 63.8 | 19 |

**Includes all students.*

Lastly, as shown in Figure 2 below, student performance levels attained in 2008 vs. 2009 in this teacher's class were compared. The blue bars show 2008 when XLPrep.com was not in use, and the red bars show 2009 when it was in use. As can be seen from the figure, while the percentage of students at the far below basic level did not change in 2009, the percentage of students at the below basic and basic levels decreased with substantial gains at the proficient and advanced levels. Because of this, the bulk of students were at the basic level or above in 2009. In 2008, the bulk of students were at the basic level or below. According to the math teacher at Animo Venice, using XLPrep.com was the only significant change in his teaching approach in 2009 and most of the improvement in student performance could be attributed to XLPrep.com.

Figure 2. Student Proficiency Levels on the Algebra I CST with and without XLPrep.com Use



Summary and Conclusion

In summary, this study has provided quantitative and qualitative evidence of the effectiveness of [XLPrep.com's math program](http://XLPrep.com). With respect to quantitative evidence, the regression analysis for students who used the program in 2009 shows a clear relationship between use of our program and an increase in CST math score. In addition, the results of the t-test using 2009 data show a statistically significant relationship between use of our program and an increase in CST math score. With respect to qualitative evidence, improved student performance is shown by the higher number of students scoring Basic or higher in 2009 vs. 2008. Based on these results, our program is effective in improving student math skills and performance on tests.