



# EVALUATION REPORT

BUREAU OF PROGRAM EVALUATION

Volume 8, Issue 1, August 2014

## *What was the impact of the Achieve 3000 literacy program on student reading performance, 2013–2014?*

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*Achieve 3000 was implemented during the 2013–2014 school year. This program was designed to increase student Lexile levels. Specifically, Achieve 3000 was targeted at students in the tenth grade in selected schools. There were 5,023 tenth-grade students from 17 participating high schools who utilized the web-based program. Of these 5,023 students, data were obtained for 4,340 students. This brief was designed to analyze the results from the STAAR EOC English II and the Lexile growth as calculated by pre-and post-test that Achieve 3000 provided. Results indicate that the program improved student Lexile scores, increased EOC English II scale scores, and improved the likelihood of the student passing the EOC English II exam at the Phase-in 1 standard both with and without controlling for student characteristics and school effects.*

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### Background

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Achieve 3000 is a web-based differentiated K-12 reading program. The program aims to raise reading and writing abilities among students by determining the Lexile level of the student and targeting reading activities to the student's current capabilities.

This was the first year of the implementation of Achieve 3000. During the 2013–2014 school year, an estimated 5,023 tenth-grade students participated in the program at 17 high schools.

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### Data and Methods

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Pre-and post-test results and the number of lessons completed by students participating in Achieve 3000 were obtained from the department of Curriculum, Instruction, and Assessment. These results provided Lexile levels based only on informational text for the participating students, which gave the teachers a snapshot of students' reading ability and can be used as a guideline by teachers for appropriate reading assignments for each student. Results from the STAAR End-of-Course (EOC) assessment in English II were also analyzed.

There were two main points of analysis. The first examined the effect of Achieve 3000 on the STAAR EOC English II results. There were two regression models tested for each of the three dependent variables (EOC English II Scale Score, passing EOC English II at the Phase-in 1 standard, and passing EOC English II at the Phase-in 2 standard). The first regression model did not control for student characteristics or campus effects, while the second regression model controlled for both of these factors. The student characteristics included gender, limited English proficiency (LEP) status, at-risk status, economic status, ethnicity, and whether or not students were enrolled in special education. The causal variable of interest in all of the regression models was the number of activities completed in Achieve 3000.

The second main point of analysis was how effective Achieve 3000 was at increasing student reading performance as measured by Lexile levels. Achieve 3000 calculates student Lexile scores based on pre- and post-program tests based only on informational text and how the student performs during activities. This measure was used to determine the impact of the program on student reading performance. Two regression models were tested using Lexile scores as the

dependent variable for the 2,782 students. The first analyses did not control for school attended or student characteristics, as listed above, while the second did. Again, the causal variable of interest was the number of activities completed in Achieve 3000.

The majority of students at schools that utilized the program were historically low performing. As illustrated by **Figure 1**, students who attended schools that did not receive Achieve 3000 had a 62.7% passing rate at the Phase-in 1 standard on the 2013 EOC English I Reading, while the schools that did receive the program had a 51.3% passing rate. This introduces a selection bias and limits the analysis of direct HISD comparisons that a random assignment would have provided.

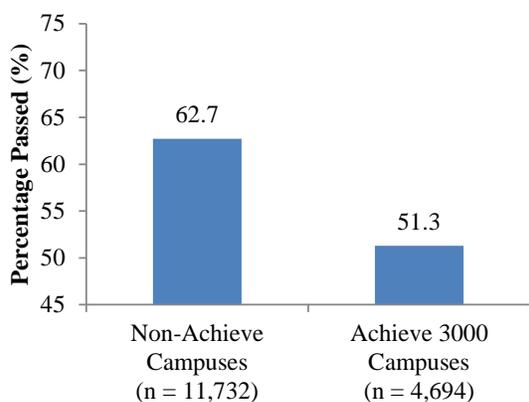
Another limitation relates to schools not systematically implementing the program across the district. Therefore, all results discussing the overall effectiveness of Achieve 3000 are based on the program being implemented at the campus and not on a specific method of implementation.

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#### **What was the implementation process for Achieve 3000?**

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This was Achieve 3000's first year of implementation in HISD. Participation was voluntary and schools requested and received professional development and licenses for the Achieve 3000 program. Seventeen campuses received licenses: Furr, Jones, Kashmere, Lee, Eastwood Academy, Madison, Sterling, Waltrip, Washington, Wheatley, Worthing, Sharpstown, Scarborough, Westside, Sam Houston Math, Science, and Technology, Houston Academy of International Studies, and North Forest High. At




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Figure 1. 2013 English I Reading Passing Rate

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the school level, each campus selected students for program participation based on their own criteria.

The professional development for program implementation varied by campus. The first set of schools (Eastwood, Jones, Kashmere, Waltrip, Houston Academy for International Studies, and Worthing high schools) received one day of professional development services and a maximum platform access for 100 students. The next set of schools (Furr, Scarborough, Sterling, and Wheatley high schools) received two days of professional development services and a maximum platform access for 250 students. The third group (Lee and Sharpstown high schools) received two days of professional development services and platform access for a maximum of 375 students. The next group (Sam Houston and Madison high schools) received platform access for up to 500 students and three days of professional development services. Finally, Westside High School received three days of professional development training and platform access for up to 675 students. Although the original contract had a set number of licenses, Achieve 3000 allowed additional students to receive access at no additional cost to HISD.

HISD spent a total of \$242,315 for use of the program and training from July 1, 2013 to June 30, 2014. Students who received licenses could complete as many activities as desired and had access to the program both inside and outside of school for the academic year. If each license received was used and each student was to reach the goal of 40 total activities, the district will have paid approximately \$1.22 per activity. If each student completed 80 activities, the district would have paid approximately \$0.61 per activity.

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#### **What were the demographic characteristics of HISD students who participated in Achieve 3000?**

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There were 12,697 tenth-grade students in HISD during the 2013–14 schools year. Of these students, 5,023 participated in the Achieve 3000 program. Data were available for 4,340 of the participants. There were 2,184 students who completed at least one activity in the Achieve 3000 program, 700 who completed more than five activities, 230 completed at least 10 activities, 59 completed at least 20 activities, and only eight completed at least the recommended 40 activities.

Table 1. Demographic Data for Achieve 3000 Students Compared to HISD 10<sup>th</sup> Grade Students, 2013–2014

Variables	HISD 10th Graders		Achieve 3000 10th Graders		Completed at least One activity	
	N	%	N	%	N	%
Total Enrollment	12,697	-	4,340	-	2,184	-
<b>Gender</b>						
Male	6,396	50.4	2,304	53.1	1,179	54
Female	6,301	49.6	2,036	46.9	1,005	46
<b>Ethnicity</b>						
African American	3,356	26.4	1,387	32	673	30.8
Asian/Pacific Islander	469	3.7	77	1.8	32	1.5
American Indian	45	0.4	16	0.4	10	0.5
Hispanic	7,338	57.8	2,605	60	1,391	63.7
White	1,377	10.8	228	5.3	68	3.1
Two or More	112	0.9	27	0.6	10	0.5
Econ Dis	9,167	72.2	3,470	80	1,824	83.5
At-Risk	7,814	61.5	3,026	69.7	1,533	70.2
Special Education	1,185	9.3	443	10.2	173	7.9
LEP	1,253	9.9	523	12.1	258	11.8
Gifted/Talented	1,966	15.5	498	11.5	223	10.2

Source: PEIMS 2013 Fall Snapshot

Comparing the population of participating students to all HISD students, the demographic characteristics were similar but not identical (see **Table 1**). More males (53.1%) were represented in the program compared to males in the HISD student population (50.4%). There was also a higher percentage of African American (32% vs. 26.4%) and Hispanic students (60% vs. 57.8%), and a lower percentage of Asian/Pacific Islander (1.8% vs. 3.7%) and White students (5.3% vs. 10.8%) who participated in the program than in HISD. Economically disadvantaged, at-risk, special education, and LEP students had a higher representation in the Achieve 3000 program than in HISD, while the gifted and talented students had a lower representation.

There were also no large demographic differences between those enrolled in the Achieve 3000 program and those who completed at least one activity. White, African American, special education, LEP, and gifted and talented students had a lower rate of activity completion, while Hispanic and economically-disadvantaged students had a noticeably higher participation rate. The specific demographic breakdown is presented in Table 1.

#### **Has usage of Achieve 3000 increased student performance on the STAAR EOC English II?**

To assess the ability of Achieve 3000 to increase student performance on the STAAR EOC English II, the effect on increasing scale scores and the probability of the student passing

at the Phase-in 1 and Phase-in 2 standards was examined. The results of these analyses are presented in **Appendix A, Table 1** (see page 7).

#### **Scale Score**

The average EOC English II scale score for all HISD students during the 2013–14 school year was 3826. Non-Achieve 3000 average scale scores were 3947 and students who completed at least one activity of the Achieve 3000 program averaged a scale score of 3841. To pass the EOC English II exam at the Phase-in 1 standard, a student needed to have at least a 3750 scale score. They needed at least a scale score of 3900

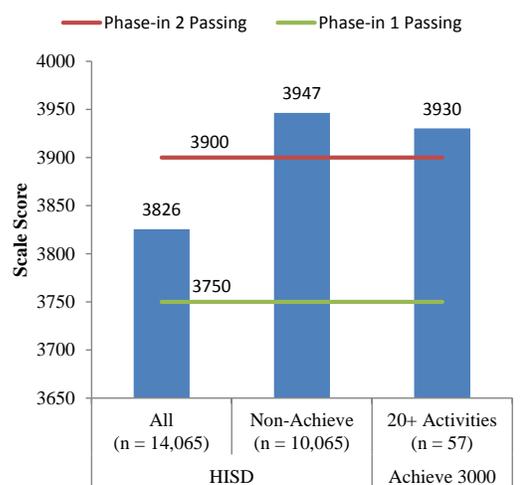


Figure 2. Average 2014 EOC English II Scale Scores for Achieve 3000 Students vs. Non-Achieve 3000 Students

to pass at the Phase-in 2 standard. As illustrated in **Figure 2**, the average scale score for students who completed at least 20 activities (3930) and the average scale score for non-Achieve 3000 students (3947) was higher than the Phase-in 2 standard, while the average scale score for all HISD students (3826) was below the Phase-in 2 standard but above the Phase-in 1 standard. **Appendix B, Figure 1** provides a more detailed graph of this information showing average scale scores for Achieve 3000 students based on the number of activities completed (see page 8).

Graphically, there was a positive correlation between scale scores and the number of activities completed. Statistically, the number of activities had a positive and statistically significant effect on the EOC English II scale score regardless of school or student characteristics.

When there were no characteristics controlled for, the number of activities completed was significant at the  $p < 0.01$  level and shows approximately a seven point increase in the scale score for each activity completed. However, the  $R^2$  was only .0044. Therefore, the model explained less than 1% of the variance in scale scores.

When student characteristics and school attended were controlled for, the number of activities completed was still significant, though only at the  $p < 0.05$  level. The magnitude of the effect was reduced to approximately a three point increase for each activity completed. However, the  $R^2$  increased to .51. Therefore, the model explains over 50% of the variance in EOC scale scores.

### ***Passing EOC English II at the Phase-in 1 Standard***

To determine the effectiveness of completed activities on whether or not students passed the EOC English II exam at the Phase-in 1 standard, two probit models were used. The first did not control for student characteristics and school attended, while the second one did. The results and marginal effects were both positive and statistically significant for the number of activities completed in both models. These results are illustrated in **Appendix B, Figure 2** (see page 8). **Figure 3** provides a snapshot of Appendix B, Figure 2. It illustrates the 2014 EOC English II passing rate at the Phase-in 1 standard for all HISD tenth-grade students, tenth-grade students who attended campuses

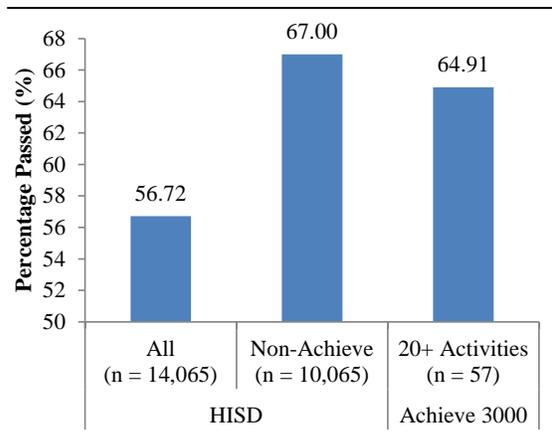


Figure 3. EOC English II Phase-in 1 Passing

without the Achieve 3000 program, and students who completed at least 20 activities of the Achieve 3000 program.

As predicted by the previous 2012–13 EOC Reading 1 results presented earlier, the campuses without the Achieve 3000 program outperformed the campuses with the program. This further illustrates that analysis should only include campuses that obtained access to Achieve 3000 due to selection bias.

Without controlling for students or the school attended, activities completed was significant at the  $p < 0.01$  level and had a marginal effect of .008 which was also significant at the  $p < 0.01$  level. The pseudo- $R^2$  was also very low at .0038, meaning the model explained less than 1% of the variance in passing the EOC English II exam at the Phase-in 1 standard.

Once the student characteristics and school attended are controlled, the coefficient and marginal effects for activities completed both decrease, but are still significant at the  $p < 0.05$  level. The pseudo- $R^2$  for this model is .26, with the model explaining 26% of the variance.

**Appendix B, Figure 3** (see page 9) illustrates the predicted probability of passing the EOC English II exam at the Phase-in 1 standard. The predicted probability was created by using the probit model which controlled for school attended and demographic variables, assigned each variable its mean value, and allowed the activities variable to vary. The predicted probability shows what the expected passing rate of the EOC English II exam at the Phase-in 1 standard would have been if each tenth-grade student at the schools that received licenses had completed the designated number of activities.

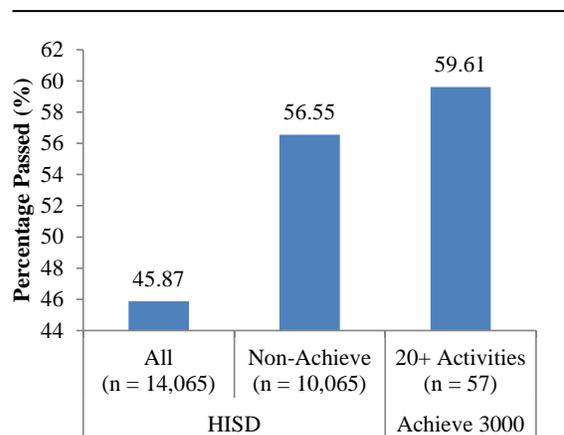


Figure 4. EOC English II Phase-in 2 Passing

### Passing EOC English II at the Phase-in 2 Standard

The same methodology was used to examine passing rates at the Phase-in 1 standard was used to examine the effectiveness of completed activities on whether or not students passed the EOC English II exam at the Phase-in 2 standard. When school attended and student characteristics were omitted, the number of activities completed no longer had a statistically significant effect. The results are presented in Appendix A, Table 1 (see page 7) and illustrated in **Appendix B, Figure 4** (see page 9). **Figure 4** provides a snapshot of Appendix B, Figure 4. It illustrates the 2014 EOC English II passing rate at the Phase-in 2 standard for all HISD tenth-grade students, tenth-grade students who attended campuses without the Achieve 3000 program, and students who completed at least 20 activities of the Achieve 3000 program.

Without controlling for student characteristics or the school attended, the activities completed was significant at the  $p < 0.05$  level and had a marginal effect of .004, which was also significant at the  $p < 0.05$  level. The pseudo- $R^2$  was also very low at .0011, meaning the model explained less than 1% of the variance in passing the EOC English II exam at the Phase-in 2 standard.

Once the student characteristics and school attended were controlled, the coefficient and marginal effects for activities both become statistically insignificant ( $p = .62$ ). Therefore, Achieve 3000 had no statistically significant effect on students passing the EOC English II exam at the Phase-in 2 standard.

### HISD Comparison

Since each campus obtained a limited number of Achieve 3000 licenses, a comparison could be made with those students who did not have access. A two-sample t-test showed a statistically significant difference between the students who had access to the program ( $p = 0.00$ ), where students with access to the program performed better.

Due to the lack of fidelity in determining which students obtain access to the program at the individual campuses, the t-test cannot be stated as an indicator of program success.

### Cost-Benefit Analysis

Achieve 3000 has shown to have a positive effect on EOC English II outcomes, but the cost of the program must be considered when analyzing the benefit to the district. As shown earlier, there was \$242,315 spent on the program for the 2013-14 school year. If 40 activities were completed for each license, then a total of 198,000 would have been completed and the district would have paid \$1.22 per activity

In practice, only 11,107 activities were completed by the students that had data available. It cost a total of \$21.82 per lesson completed, for a gain of approximately three points in the scale score, and an increase of about half a percentage point to the mean conditional probability of a single student passing the EOC English II exam at the Phase-in 1 standard.

### Was there an impact on the reading performance of students who participated in Achieve 3000?

**Appendix B, Figure 5** (see page 10) shows student Lexile level by the number of activities completed. **Figure 5** provides a snapshot of Appendix B, Figure 5, and shows the Lexile level for all students who had access to Achieve 3000 and received a Lexile score, completed at least one activity, and completed at least 20 activities. As seen with student performance on the EOC English II exam, participation in activities increased student reading outcomes.

Two regression models measuring the impact of completing activities in Achieve 3000 on student Lexile levels are presented in **Appendix A, Table 2** (see page 7).

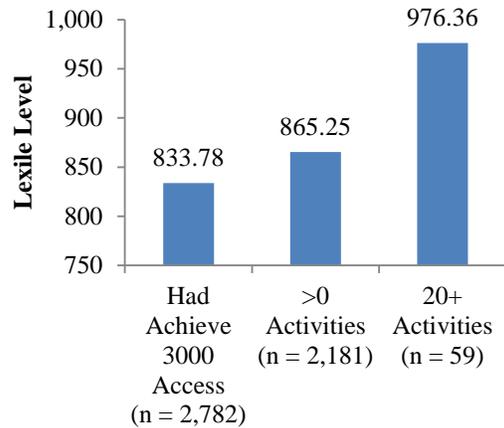


Figure 5. EOC English II Phase-in 2 Passing

Both regression test results showed a statistically significant positive effect of activities completed on the Lexile level at the  $p < 0.01$  level. Without controlling for school effects and student characteristics, the model showed a 10.8 point increase in Lexile level for each activity completed with an  $R^2$  of .02. This model explained 2% of the variance.

Once student characteristics and school attended were controlled, the effect reflects a 4.6 gain in Lexile level for each activity completed, with an  $R^2$  of .25. Therefore, the model then explained 25% of the variance.

Using the same calculations as the previous section, the district paid \$21.82 for each gain of 4.6 to the Lexile level per student.

## Conclusions

The data show that the Achieve 3000 program had a positive effect on reading outcomes for students that participated in this program and completed activities. However, current implementation fidelity is questionable. This limits the program's potential impact on student reading scores. Given that this is the first year of implementation, the program performed well for those students who utilized it for at least five activities. Future analysis is needed with full implementation.

The current cost per activity is relatively high compared to the benefit being derived. Regular classroom use and adherence to the minimum expected activity completion agreed upon before license distribution may greatly improve the cost-benefit of the program. Program implementation with fidelity targeting students who will benefit the most from the program should greatly improve tenth-grade EOC English II passing rates at the Phase-in 1 standard.

For additional information contact the HISD  
Department of Research and Accountability at  
713-556-6700 or e-mail [Research@Houstonisd.org](mailto:Research@Houstonisd.org).

## Appendix A: Tables

Table 1 Effect of Achieve 3000 on EOC English II Results										
Variables	Scale Score		Passing EOC English II Phase-in 1				Passing EOC English II Phase-in-2			
	(1)	(2)	(3)	MFX	(4)	MFX	(5)	MFX	(6)	MFX
Activities Completed	6.68*** (1.56)	2.96** (1.21)	.019*** (.004)	.008*** (.002)	.011** (.005)	.004** (.001)	.01** (.004)	.004** (.002)	.002 (.005)	.001 (.001)
<b>Controlled:</b>										
Student Characteristics	No	Yes	No	No	Yes	Yes	No	No	Yes	Yes
High School	No	Yes	No	No	Yes	Yes	No	No	Yes	Yes
N	4,148	4,148	4,148		4,148		4,148		4,148	
R-Squared	0.004	.51	.0038		.26		.0011		.28	

Note: Standard errors are in parenthesis. Columns (1) and (2) are OLS regressions with EOC English II Scale Score as the dependent variable. Columns (3) and (4) are probit regressions with whether or not the student passed the EOC English II exam as the dependent variable. For a full table of results including student characteristic and high school outcomes, please contact the HISD's Department of Research and Accountability.

\*p<.10 \*\*p<.05 \*\*\*p<.01

Table 2 Effect of Achieve 3000 on Lexile Scores		
Variables	Lexile Score	
	(1)	(2)
Activities Completed	10.82*** (1.35)	4.63*** (1.45)
<b>Controlled:</b>		
Student Characteristics	No	Yes
High School	No	Yes
N	2,782	2,676
R-Squared	.02	.25

Note: Standard errors are in parenthesis. Columns (1) and (2) are OLS regressions with EOC English II Scale Score as the dependent variable. Columns (3) and (4) are probit regressions with whether or not the student passed the EOC English II exam as the dependent variable. For a full table of results including student characteristic and high school outcomes, please contact the HISD's Department of Research and Accountability.

\*p<.10 \*\*p<.05 \*\*\*p<.01

**Appendix B: Figures**

