

**Impact Analysis of Amplify MS-ELA Curriculum Implementation
in A Large Urban School District**

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This report presents results from the impact analysis of the implementation of the Amplify Middle School English Language Arts (MS-ELA) Curriculum in a large urban school district. The overarching question that guided the analysis was whether the Amplify MS-ELA curriculum had a positive impact on students' FSA scores compared to other ELA curricular programs. In the sections that follow, information on the study sample will be presented first, followed by the research questions and descriptions of the analytic approach. After this, key findings will be presented.

Study context and sample

The MS-ELA curriculum was implemented in a large urban district among two groups of 6th and 7th grade students respectively during the 2016-2017 school year. Sixth and seventh graders who did not use the Amplify program served as the control groups. Table 1 displays the sample size for each grade level by the treatment vs. control conditions; whereas Tables 2 and 3 presents the descriptive statistics of variables utilized in the analysis for cohorts 6 and 7 respectively.

Table 1

Sample Size By Cohort and Treatment Condition

Cohort	Treatment	Control
Grade 6	1,057	1,056
Grade 7	949	949

Table 2

Descriptive Statistics of the Variables Used in the Analysis for the Grade 6 Cohort

	Descriptive Statistics					
Variable	<i>N</i>	Min	Max	Mean	SD	
FSA Scale Score 1516	2,113	257	385	323.88	20.814	
FSA Scale Score 1617	2,113	259	391	327.41	20.891	
Amplify User	2,113	0	1	0.50	0.500	
Female	2,113	0	1	0.52	0.500	
Black	2,113	0	1	0.24	0.429	
Hispanic	2,113	0	1	0.68	0.465	
ELL	2,113	0	1	0.44	0.497	
Gifted	2,113	0	1	0.19	0.391	

Table 3

Descriptive Statistics of the Variables Used in the Analysis for the Grade 7 Cohort

	Descriptive				
	Statistics				
Variable	<i>N</i>	Min	Max	Mean	SD
FSA Scale					
Score 1516	1,898	259	391	330.29	20.094
FSA Scale					
Score 1617	1,898	267	397	338.17	19.743
Amplify					
User	1,898	0	1	0.50	0.500
Female	1,898	0	1	0.52	0.500
Black	1,898	0	1	0.26	0.439
Hispanic	1,898	0	1	0.67	0.471
ELL	1,898	0	1	0.48	0.500
Gifted	1,898	0	1	0.19	0.391

Research questions

The following two questions guided the analysis:

- Does the Amplify MS-ELA curriculum have an impact on 6th and 7th graders ELA achievement measured by the State assessments?
- Is there any association between students' ELA scores and the levels of treatment implementation among treatment students?

Analytic approach

To address question #1, several analytic approaches were utilized. First, OLS regression was run in order to investigate whether there was a statistically significant treatment effect, controlling for students' prior ESL scores and key background variables. Then exploratory descriptive statistical analysis was conducted so as to examine whether there was any observable difference between the treatment and control groups on key predictors used in the OLS regression model. Finally, propensity score matching analysis was conducted grade 6 cohort utilizing the STATA psmatch procedure (nearest neighborhood matching). In the OLS and matching analysis, the outcome is students' 2016-2017 ELA scale scores. Variables used in the OLS, exploratory descriptive, and matching analysis included students' pretest scores and measures of students' demographic and academic variables listed in Tables 2 and 3.

To address question #2, OLS regression analysis was conducted using SPSS 24 for all treatment students, regardless of cohorts. The dependent variable was students' 2016-2017 ELA scale scores. The predictor variables included students' pretest ELA scores and the three measures of implementation listed in Tables 2 and 3.

Findings

Question #1. Does the Amplify MS-ELA curriculum have an impact on 6th and 7th graders ELA achievement measured by the State assessments?

Tables 4 and 5 presents the OLS regression analysis for Cohorts 6 and 7 respectively. As shown in the tables, the Amplify MS-ELA curriculum had a statistically significant positive impact on both cohorts' 2016-2017 ELA scores, controlling for students' 2016-2016 ELS scores and key background variables. Specifically, the average treatment effect was about 1.7 (see Table 4) and close to 1.2 (see Table 5) points favoring the treatment group for grade 6 and grade 7 cohorts respectively.

Table 4

Summary of OLS Regression Analysis for Impact of Amplify Use in Predicting FSA Scale Score for the Grade 6 Cohort in 2016-2017 (N=2,113)

	Model 1		
Variable	<i>B</i>	<i>SE B</i>	β
Intercept	81.748	4.798	
FSA Scale Score 1516	0.763	0.015	0.760**
Female	-0.733	0.511	-0.018
Black	-4.261	1.099	-0.087**
Hispanic	-1.800	1.029	-0.040
ELL	-1.035	0.572	-0.025
Gifted	4.340	0.737	0.081**
Amplify User	1.706	0.537	0.041**

* $p < .05$. ** $p < .01$.

Table 5

Summary of OLS Regression Analysis for Impact of Amplify Use in Predicting FSA Scale Score for the Grade 7 Cohort in 2016-2017 (N=1,898)

	Model 2		
Variable	<i>B</i>	<i>SE B</i>	β
Intercept	72.502	4.995	
FSA Scale Score 1516	0.809	0.015	0.823**
Female	-0.601	0.495	-0.015
Black	-2.943	1.062	-0.065**
Hispanic	-1.034	0.998	-0.025
ELL	-0.671	0.534	-0.017
Gifted	0.392	0.724	0.008
Amplify User	1.164	0.492	0.029*

* $p < .05$. ** $p < .01$.

Examinations of the means between treatment and control groups on key control variables used in the OLS regression seem to suggest that some differences exist for grade 6 (see Table 6) cohort but not so much for cohort 7 (see Table 7).

Table 6

*Descriptive Statistics of Key Predictors Between Control and Treatment Groups:
Grade 6 Cohort*

Group	Descriptive Statistics	Variable					
		Female	Black	Hispanic	ELL	Gifted	FSA Scale Score 1516
Control							
1	Mean	0.51	0.22	0.69	0.50	0.14	317.59
	<i>N</i>	1,056	1,056	1,056	1,056	1,056	1,056
	SD	0.500	0.417	0.461	0.500	0.350	22.124
Treatment							
	Mean	0.54	0.26	0.67	0.38	0.23	330.15
	<i>N</i>	1,057	1,057	1,057	1,057	1,057	1,057
	SD	0.499	0.439	0.469	0.486	0.424	17.278
Total							
	Mean	0.52	0.24	0.68	0.44	0.19	323.88
	<i>N</i>	2,113	2,113	2,113	2,113	2,113	2,113
	SD	0.500	0.429	0.465	0.497	0.391	20.814

Table 7

*Descriptive Statistics of Key Predictors Between Control and Treatment Groups:
Grade 7 Cohort*

Group	Descriptive Statistics	Variable					
		Female	Black	Hispanic	ELL	Gifted	FSA Scale Score 1516
Control	Mean	0.52	0.24	0.68	0.49	0.19	328.22
	<i>N</i>	949	949	949	949	949	949
	SD	0.500	0.427	0.466	0.500	0.389	20.311
Treatment	Mean	0.52	0.28	0.65	0.47	0.19	332.35
	<i>N</i>	949	949	949	949	949	949
	SD	0.500	0.450	0.477	0.499	0.393	19.669
Total	Mean	0.52	0.26	0.67	0.48	0.19	330.29
	<i>N</i>	1,898	1,898	1,898	1,898	1,898	1,898
	SD	0.500	0.439	0.471	0.500	0.391	20.094

In light of the results in Tables 6 and 7, propensity score matching was run for the grade 6 cohort. Results suggest a significant average treatment effect for grade 6 cohort (see Table 8). In other words, the significant treatment effect shown in the OLS regression analysis was retained in the matching analysis.

Table 8

Average Treatment Effect from the Matching Analysis^a in the Grade 6 Cohort (N=2,113)

Variable	<i>B</i>	<i>SE B</i>	β	95 % Conf. Interval	
Amplify User (1 vs 0)	1.930	0.687	2.810* *	0.584	3.276

As shown in Table 8, the Amplify MS-ELA curriculum had a statistically significant positive impact on Grade 6 Cohort's ELA scores. The average treatment effect was now close to 2 points favoring the treatment group (see Table 8).

For grade 7 cohort, considering the sample size between the treatment and control groups is identical (see Table 1) and the key controls variables between the two groups are also similar (see Table 7), the suggestion is to use the OLS regression results (i.e., matching analysis does not seem warranted). So, the final result for the grade 7 cohort is as follows:

Table 9

Summary of Final OLS Regression Analysis for Impact of Amplify Use in Predicting FSA Scale Score for the Grade 7 Cohort in 2016-2017 (N=1,898)

	Model 2		
Variable	<i>B</i>	<i>SE B</i>	β
Intercept	72.502	4.995	
FSA Scale Score 1516	0.809	0.015	0.823**
Female	-0.601	0.495	-0.015
Black	-2.943	1.062	-0.065**
Hispanic	-1.034	0.998	-0.025
ELL	-0.671	0.534	-0.017
Gifted	0.392	0.724	0.008
Amplify User	1.164	0.492	0.029*

* $p < .05$. ** $p < .01$.

Question #2. Is there any association between students' ELA scores and the levels of treatment implementation among treatment students?

For the treatment group, OLS multiple linear regression analysis was also conducted among the treatment students in order to examine the relationship between the outcome and the three dosage variables, controlling for the pretest scores. One of the dosage variables, percent rubric scores received, was statistically significant (see Table 10).

Table 10

Summary of Dosage Analysis for Variables Predicting FSA Scale Score in 2016-2017 (N=793)

Variable	Model 3		
	<i>B</i>	<i>SE B</i>	β
Intercept	73.226	6.381	
FSA Scale Score 1516	0.791	0.020	0.812**
% Comments			
Received	-2.501	3.551	-0.014
% Rubric Scores			
Received	18.079	3.999	0.093**
% Lessons Completed	-1.843	3.940	-0.009

* $p < .05$. ** $p < .01$.

The dosage analysis suggests that percent rubric scores treatment students received was associated with their ELA scores, controlling for pretest scores (i.e., the higher percentage rubric scores, the higher ELA scale scores). Recall earlier the impact analysis showed that the Amplify ES-ELA curriculum had a stronger average positive treatment effect on cohort 6 students than on cohort 7 students. To explore the possibility that the relationship between this dosage variable (i.e., percent rubric scores received) and students' outcome (i.e., ELA test scores) varied for the treatment students in the two cohorts, the OLS regression analysis was ran separately for each cohort. Tables 11 and 12 show the results.

Table 11

Summary of Dosage Analysis for Variables Predicting FSA Scale Score for the Grade 6 Cohort in 2016-2017 (N=438)

	Model 4		
Variable	<i>B</i>	<i>SE B</i>	β
Intercept	67.820	9.742	
FSA Scale Score 1516	0.797	0.030	0.788**
% Comments			
Received	-6.861	4.919	-0.042
% Rubric Scores			
Received	25.969	11.272	0.073*
% Lessons Completed	5.307	7.982	0.019

* $p < .05$. ** $p < .01$.

Table 12

Summary of Dosage Analysis for Variables Predicting FSA Scale Score for the Grade 7 Cohort in 2016-2017 (N=354)

	Model 5		
Variable	<i>B</i>	<i>SE B</i>	β
Intercept	78.355	7.924	
FSA Scale Score 1516	0.789	0.025	0.872**
% Comments			
Received	-1.989	5.136	-0.010
% Rubric Scores			
Received	6.247	3.974	0.042
% Lessons Completed	-5.067	4.060	-0.034

* $p < .05$. ** $p < .01$.

As shown in Tables 11 and 12, the percent rubric scores received was positively related to ELA scores (statistically significant) for cohort 6 students, controlling for pretest scores. However, this dosage variable was not statistically significant predictor of students' ELA scores for cohort 7 students. Further analysis, especially of qualitative nature, could be conducted to evaluate the quality of rubric scores so as to probe what might have led to the differential relationship between this dosage variable (i.e., percent rubric scores) and students' ELA scores, controlling for their pretest ELA scores.