Evaluation of LINC's Caring Communities Sites

21st Century Community Learning Center Programs

Cohort 8, Year 3

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LINC's Caring Communities Sites: 21st Century Community Learning Center Programs
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Introduction

This report summarizes the findings from Georgia State University's evaluation of LINC Caring Community sites funded as 21st Century Community Learning Centers (21C). This report includes findings from eight LINC sites in Hickman Mills, Grandview, and the Kansas City Public Schools which comprise Cohort 8 and were in their third year of 21C funding during the 2016-2017 school year.

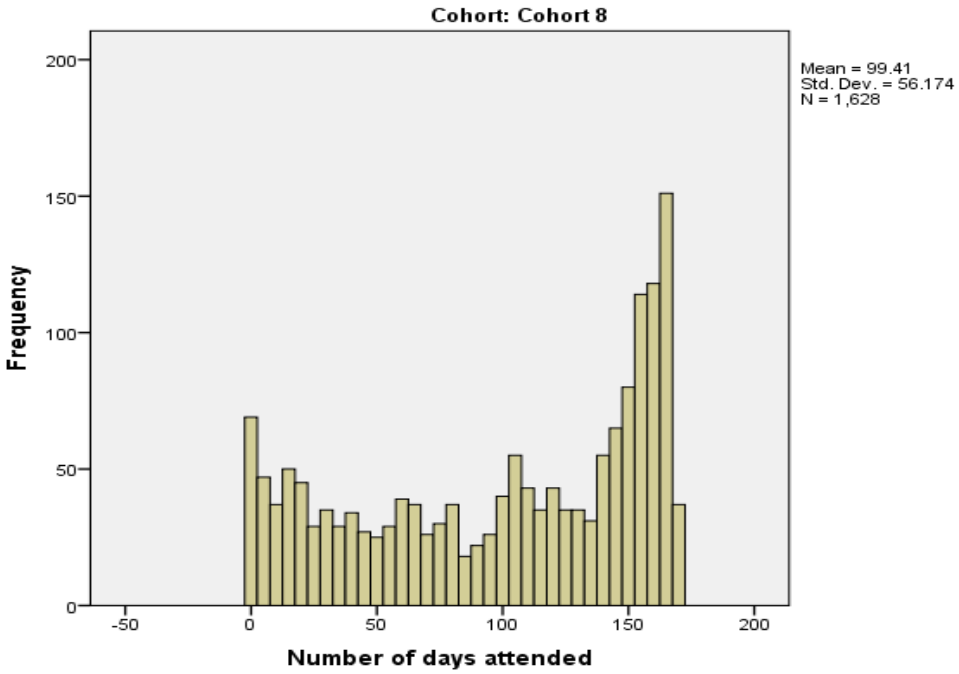
The data sources for the evaluation consist of de-identified data provided by the program. LINC staff rated **student engagement in after-school program activities**. School teachers also rated **improvements in students' school behavior.** Last, **academic grades in math, reading and science** were examined for students. Outcome analyses tested the **effects of students' participation in the LINC 21C program** on change in school behavior and academic achievement over the school year, using program attendance data and engagement ratings. We use the Harvard Family Research Project's three-part model of program participation, in which **participation consists of program enrollment, program attendance, and engagement in program activities**. In order for after-school programs to have beneficial effects on student achievement, students should not just be enrolled but attend regularly and also be engaged in program activities.

Participation in after-school programs, and its effects on student behavior and achievement should also be enhanced by the quality of an after-school program (e.g., Mahoney et al., 2007). The quality of LINC 21CCLC program sites was independently assessed by trained evaluators using the Weikart Center for Youth Program Quality's Program quality Assessment (PQA) tool. The PQA is a well-validated assessment, which scores programs based on safe environment, supportive environment, interaction, and engagement on a scale from 1 to 5. Scores of 5 represents widely available and frequent best practices. Overall PQA ratings ranged from 2.7 to 4.3 across sites, representing above-average quality scores for most sites.

Parents were also surveyed about their thoughts of the program and its effects on their children. Survey questions asked parents to rate statements on a scale of 1-5, with responses ranging from "almost never true" (1) to "almost always true" (5). Survey data were available from 425 parents whose children participated in the LINC program. The percentage of parents who responded with a 4 or 5 was combined, indicating that the statement was true at least most of the time. 78% of parents reported that their child had developed better work habits as a result of participating in the program, and a majority of parents reported that their child had developed more confidence in math (78%), reading (78%), and science (79%). Likewise, 81% of parents reported an increase in their child's interest in learning as a result of participating in the program and 90% reported that their child enjoys the activities offered in the after-school program. **These findings indicate that parents believe the LINC program is having a positive effect on their children**

LINC Program Attendance

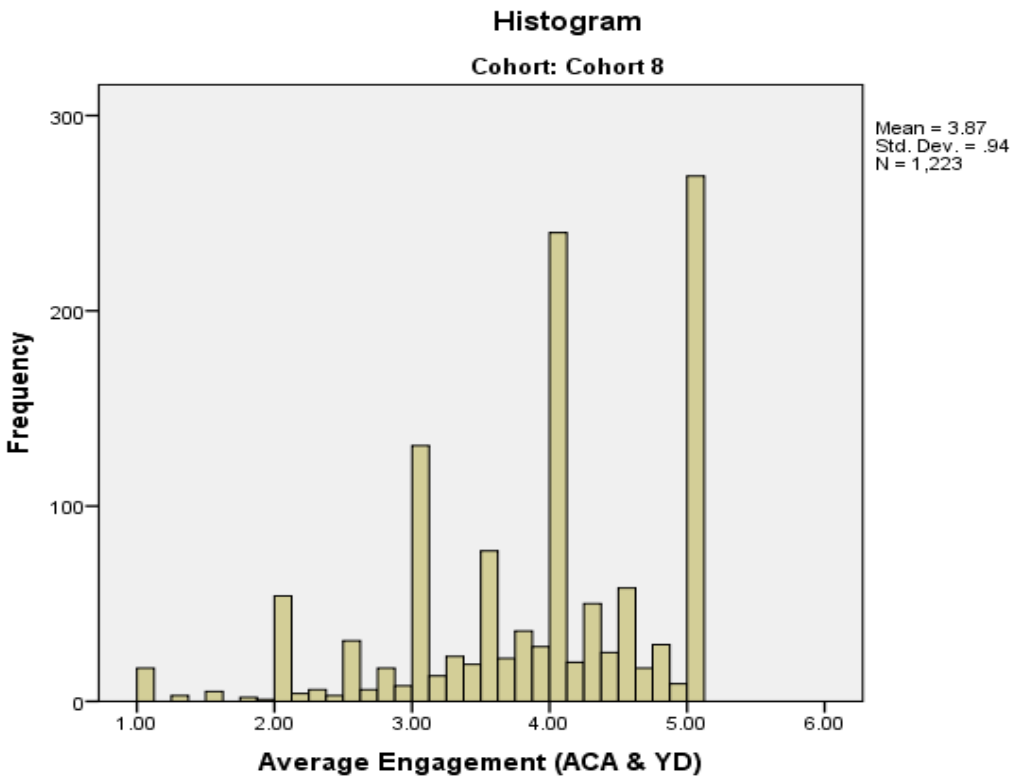
Daily program attendance data were available for 1628 students (compared to 1073 last year) enrolled in the Cohort 8 sites. The average days attended for the 2016-2017 school year was 99 days (*SD* = 56), compared to 119 days (*SD* = 49) last year. There was a wide range from 0 days to 170 days with 2.1% of students enrolling but never attending the program (compared to 1% in the previous school year). As indicated in the figure below, **overall program attendance was moderate to high.**



Student Engagement in Program Activities

During the spring semester LINC staff rated students' engagement during a range of after-school activities. Engagement entails enjoyment of, interest in, and sustained attention and effort focused on an activity. Staff members indicated how often (*never = 1, on occasion = 2, some of the time = 3, most of the time = 4, all of the time = 5*) each student pays attention, seems interested in the subject, on task, and seems to have fun. Student engagement represents each student's average rating during academic and youth development activities. Higher scores indicate a student was more engaged in academic and youth development activities during the LINC after-school program. Engagement data were available for 1223, students compared to 986 students in the evaluation of the previous school year.

As shown in the figure on the following page, the overall level of student engagement in academic and youth development activities, as rated by program staff, was moderate to high. The average engagement score was 3.87 (*SD* = .94) out of 5. This average level of engagement compares to a mean of 3.76 (*SD* = .94) found in last year's evaluation.



Factors Predicting Participation

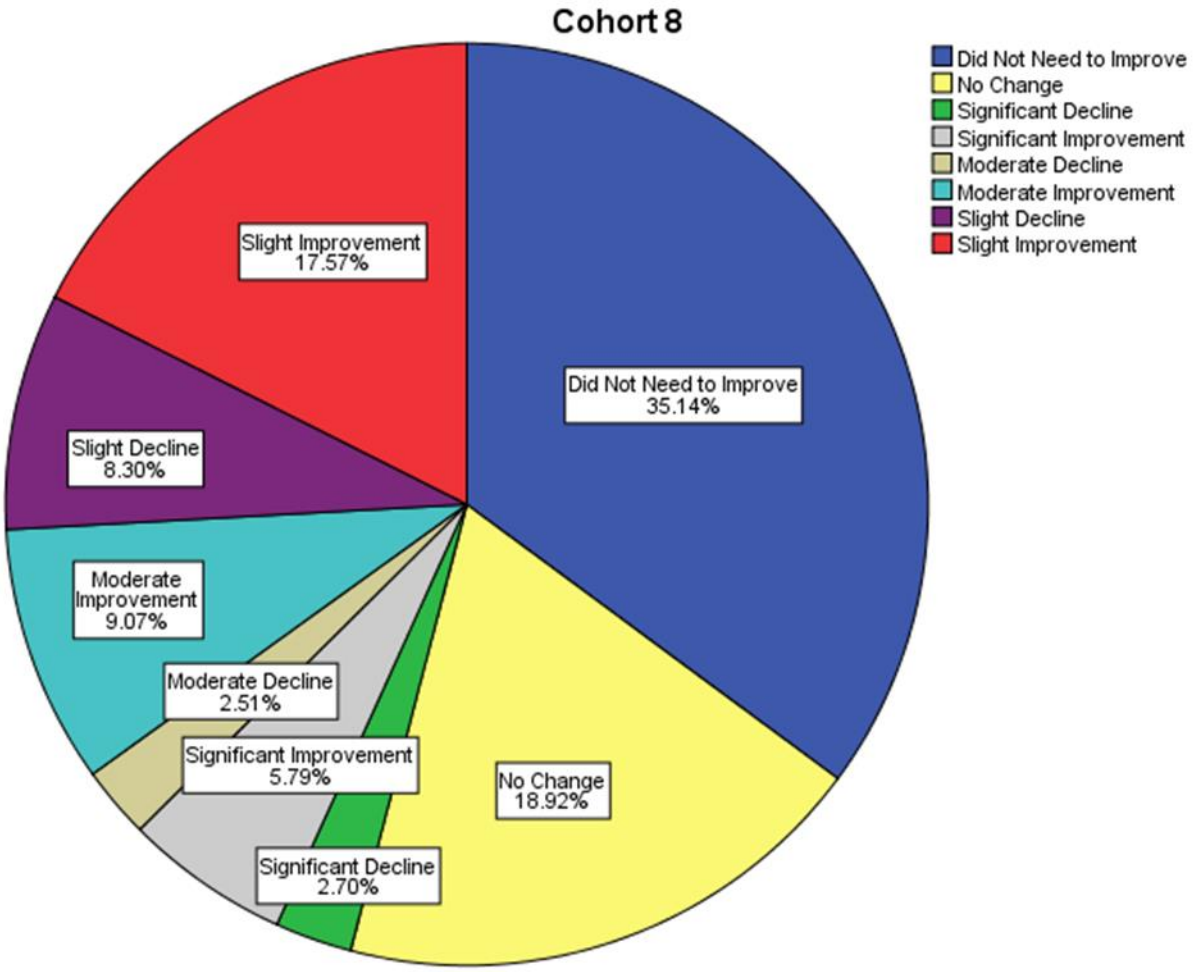
As in last year's evaluation, the two facets of participation – program attendance and engagement in program activities – were not correlated with one another, $r = .03$, $p = .36$. Engagement in program activities was positively associated with reading grades in the fall and spring and science grades in the spring. The magnitude of the associations ranged from $r = .11$ to .16, $p < .05$.

Analyses tested for factors that may predict students' levels of participation. Separate multiple linear regression models were run in which program attendance and student engagement were regressed on the following predictor variables: Grade level, first quarter academic grades, and whether or not teachers rated students as needing improvement at the start of the school year as part of their overall behavioral assessment. Analyses also statistically controlled for program site. Detailed results tables are included in Appendix A.

None of the predictor variables tested was uniquely associated with students' program attendance or their engagement in program activities. This finding is similar to what was reported in last year's evaluation, where no predictors were uniquely associated with students' attendance, and only one predictor (teacher ratings of needing improvement) was related to students' engagement.

Teacher Ratings of Improvement in School Behavior

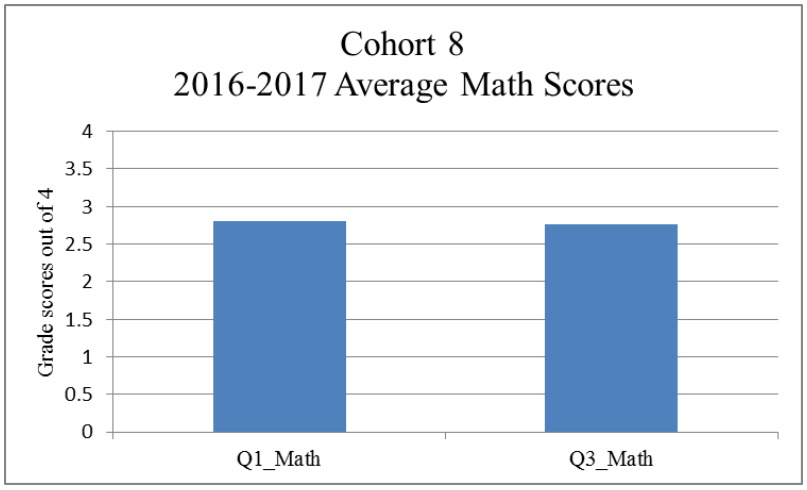
Teacher ratings of changes in student behavior on the DESE Teacher Survey were provided for approximately 518 students who attended the 21CCLC program at least 30 days. For the DESE survey, teachers report on changes over the school year in 10 dimensions of student behavior – academic performance, class attendance, class attentiveness, behaving well in class, gets along with other students, arrives motivated to learn, turns in homework on time, completes homework satisfactorily, participation in class, and volunteering for additional activity – as well as an overall assessment of student behavior. Teachers indicate whether functioning was acceptable at the start of the school year so that the student *did not need to* improve; if level of functioning at the start of the school year was not at an acceptable level, teachers rate change over the school across the following response categories: *significant decline*, *moderate decline*, *slight decline*, *no change*, *slight improvement*, *moderate improvement*, *significant improvement*. The figure below shows the teacher ratings for their overall assessment of student behavior. In terms of overall behavior, 35% of students (equivalent to the percentage in last year's evaluation) were rated as *did not need to improve*, and 33% of students were rated has having either slight, moderate or significant improvement (compared to 37% in last year's evaluation). **In summary, according to teacher ratings, the majority of the LINC students who needed to improve in school did improve.**



Students' Academic Performance in Math, Reading and Science

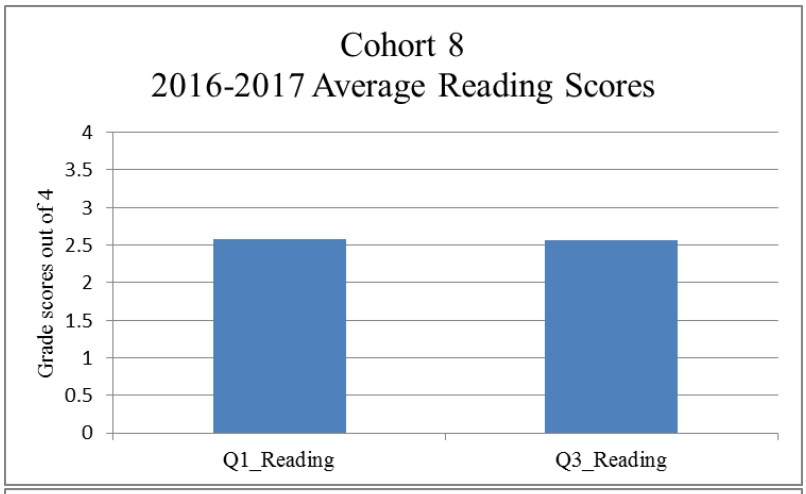
Academic grades in math, reading, and science were taken from the first and third quarter marking periods. Because of apparent variability in the use of +/- grading systems, grades were converted to an interval scale where A+, A, and A- = 4, B+, B, and B- = 3, B- = 2.70, C+, C, and C- = 2, and anything below a C- = 1. Math grades from both marking periods were available for 480 students (compared to 503 students in previous school year). Reading grades from both marking periods were available for 538 students (compared to 528 students in previous school year), while science grades from both marking periods were available for 569 students (compared to 543 students in previous school year). Results from paired samples t-test indicated that there were no significant mean changes in math ($t = 0.64$, $df = 479$, $p = .52$) or reading grades ($t = 0.93$, $df = 537$, $p = .35$) from fall to spring, although **there was a slight and statistically significant increase in science grades** ($t = 2.35$, $df = 568$, $p < .05$). Note that in the previous year, there were no significant mean changes in math, reading, or science grades. The figures below and on the following page show the average math, reading, and science grades and from the two marking periods (fall and spring).

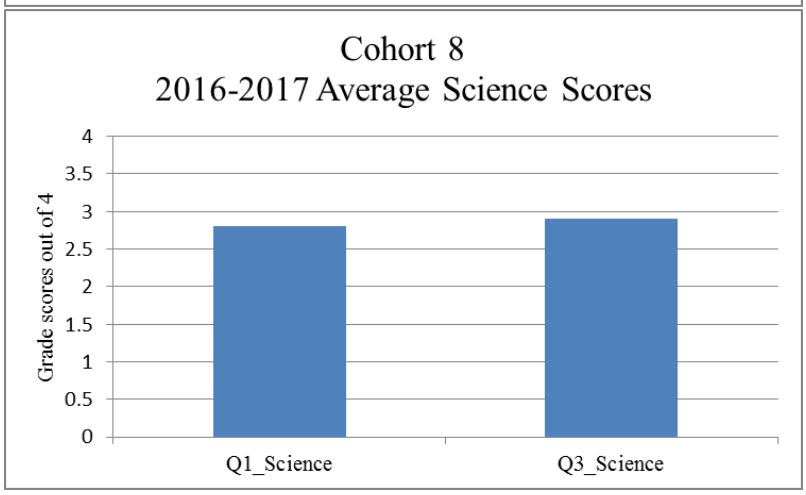
Math Grades



Reading Grades

Science Grades





Effects of Program Participation on Academic Achievement and School Behavior

A primary goal of the evaluation is to assess the impact of participation in LINC's 21C before-and-after school program on students' academic achievement and social competence in school. We used the Harvard Family Project's three-part model of program participation to inform this part of the evaluation. In this model, participation consists of program enrollment, program attendance, and engagement in program activities. In order for after-school programs to benefit student achievement, students should not just be enrolled but attend regularly and also be engaged in program activities. In addition to being linked directly to student outcomes, engagement in after-school programs may also enhance the effects of program attendance on outcomes. Thus, engagement in after-school activities may operate interactively with attendance to promote students' school success.

Academic Grades. To examine the effects of daily program attendance and staff-ratings of students' engagement in program activities on academic achievement, a series of multiple linear regression models was conducted in which math, reading, and science grades from the spring semester were regressed on the additive and interactive effects of engagement and attendance,

controlling for program site, grade-level, and grades from the first marking period. Analyses were conducted on a sample of between 443 and 517 students from all eight sites who had available data from staff engagement ratings, school records, and program records.

Detailed results tables are presented in Appendix B. Though the effect was small, **students rated as more highly engaged in after-school activities actually performed worse in math over the course of the school year**. This is the opposite of what was found in last year's evaluation, where engagement in program activities was positively associated with students' math scores. Results also indicated that older students performed less well in science, a finding that was not reported last year. No other effects of program participation on academic achievement were detected.

Teachers' Overall Assessment of Student Behavior. To examine the effects of daily program attendance and staff-ratings of students' engagement in program activities on teachers' ratings of improvement over the school year, an improvement rating variable was constructed based on the 11 teacher ratings (10 domains plus overall behavioral assessment). For each item, students who were not rated as *did not need to improve* were assigned a score of 1 (*significant decline*) to 7 (*significant improvement*), and their scores were averaged across the 11 items. Thus, scores on the composite improvement rating reflect the average improvement across all domains that a given student was deemed as not functioning at an acceptable level at the start of the school year. Students who received ratings of *did not need to improve* in teachers' overall behavioral assessment were excluded from the analyses. Analyses are based on the subsample of 104 students who were assessed by their teachers as needing to improve.

Detailed results tables are presented in Appendix C. The composite improvement rating was regressed on the additive and interactive effects of engagement and attendance, controlling for site, grade-level, and grades from the first marking period. **There were no effects of program attendance or engagement in program activities on teacher ratings of improvement.** This stands in contrast to last year's evaluation, when findings indicated a positive effect of engagement in program activities on teacher ratings for improvement, such that students who were rated by staff as being more engaged were rated by their teachers as improving more in school.

Summary and Conclusions

Overall, students attended the LINC program fairly regularly and were rated as highly engaged in program activities. Parents also reported that the LINC program had positive effects on their children, helping them to develop better work habits and increasing their confidence in school and their interest in learning. According to teacher ratings, the majority of the LINC students who needed to improve in school did improve. Also, LINC student's grades in science increased slightly over the year, although grades in math and reading did not change over the school year.

Tests of whether greater participation in the LINC program – in terms of frequency of attendance and engagement in activities – was associated with school performance and teacher ratings did not find any evidence of positive effects of program participation. In fact, there was a small, negative effect of program engagement on math scores. Other analyses revealed null results:

There were no effects of program attendance on math grades or of engagement on school performance in any of the three subjects. There were also no unique or interactive effects of program attendance and engagement on teacher ratings of improvement in behavior. In summary, results of the participation analyses were less promising this year than the evaluation findings were last year.

Several notable weaknesses limit the conclusions from the evaluation. First, although a larger proportion of students enrolled in the LINC program this year, few had complete data from all sources – program records, school records, staff ratings, and teacher ratings. Thus, it is not clear how generalizable findings are to the larger population of students enrolled in LINC 21C programs. Second, due to the scope of the evaluation and the age range of the students in the program, assessment of students' engagement in after-school activities relied exclusively on staff report. More comprehensive evaluations of engagement would rely on student report and possibly observational ratings. Another limitation is the inability to connect parent surveys with student, staff, and teacher reports to analyze the relationships among parents' perceptions of the program and other variables and outcomes of interest, such as program attendance, engagement, grades, and student behavior. Additionally, given the lack of an experimental design, the direction of effects linking student participation with school outcomes cannot be isolated, limiting causal inferences based on the results.

Although observational ratings of program quality indicated that sites were of overall high quality, there was also some variability in PQA scores across the three sites. The number of sites in Cohort 8 is not sufficiently large to systematically examine the effects of site quality and other site-level characteristics on student participation, achievement, and behavior. The next steps of the evaluation are to pool 21CCLC sites across cohorts to systematically examine effects of site-level characteristics, like program quality, on youth outcomes.

Appendices

A1. Linear Model Predicting Daily Program Attendance

Between-Subjects Factors

		Value Label	N
Site ID	1	Belvidere	10
	3	Conn-West	14
	6	Johnson	27
	7	Santa Fe	25
	8	Smith-Hale	22
	9	ACCPA	39
	10	Hartman	22
	11	Melcher	24

Parameter Estimates

Dependent Variable: Daily Program Attendance

					95% Confidence Interval		
Parameter	B	Std. Error	t	Sig.	Lower Bound	Upper Bound	Partial Eta Squared
Intercept	111.146	19.335	5.748	.000	72.977	149.314	.163
[SiteID=1]	39.381	17.859	2.205	.029	4.128	74.635	.028
[SiteID=3]	37.049	16.103	2.301	.023	5.262	68.835	.030
[SiteID=6]	29.824	13.224	2.255	.025	3.719	55.929	.029
[SiteID=7]	35.936	13.527	2.657	.009	9.234	62.639	.040
[SiteID=8]	33.218	16.643	1.996	.048	.364	66.071	.023
[SiteID=9]	9.791	12.224	.801	.424	-14.339	33.921	.004
[SiteID=10]	-5.980	13.684	-.437	.663	-32.992	21.033	.001
Grade level	-4.137	2.697	-1.534	.127	-9.461	1.187	.014
Math Q1	2.335	3.914	.597	.552	-5.391	10.062	.002
Reading Q1	3.538	4.072	.869	.386	-4.500	11.575	.004
Science Q1	-2.304	3.743	-.616	.539	-9.693	5.085	.002
Needs improvement	-3.545	7.122	-.498	.619	-17.604	10.515	.001

A2. Linear Model Predicting Staff-rated Student Engagement in Program Activities

Between-Subjects Factors

		Value Label	N
Site ID	1	Belvidere	10
	3	Conn-West	14
	6	Johnson	26
	7	Santa Fe	24
	8	Smith-Hale	17
	9	ACCPA	38
	10	Hartman	21
	11	Melcher	20

Parameter Estimates

Dependent Variable: Program Engagement

					95% Confidence Interval		
Parameter	B	Std. Error	t	Sig.	Lower Bound	Upper Bound	Partial Eta Squared
Intercept	3.952	.348	11.343	.000	3.263	4.640	.450
[SiteID=1]	-1.546	.315	-4.909	.000	-2.167	-.924	.133
[SiteID=3]	-.717	.285	-2.517	.013	-1.280	-.154	.039
[SiteID=6]	-.792	.237	-3.344	.001	-1.260	-.324	.066
[SiteID=7]	.188	.247	.763	.447	-.299	.676	.004
[SiteID=8]	-1.314	.303	-4.336	.000	-1.912	-.715	.107
[SiteID=9]	-.460	.222	-2.070	.040	-.900	-.021	.027
[SiteID=10]	-.282	.251	-1.123	.263	-.778	.214	.008
Grade level	.057	.048	1.195	.234	-.037	.151	.009
Math Q1	.138	.070	1.967	.051	-.001	.276	.024
Reading Q1	.000	.073	.003	.998	-.143	.144	.000
Science Q1	-.046	.067	-.682	.496	-.178	.086	.003
Needs improvement	-.073	.126	-.579	.564	-.322	.176	.002

B1. Linear Model Predicting Q3 Math

Between-Subjects Factors

		Value Label	N
Site ID	1	Belvidere	26
	3	Conn-West	35
	6	Johnson	63
	7	Santa Fe	89
	8	Smith-Hale	15
	9	ACCPA	80
	10	Hartman	76
	11	Melcher	59

Parameter Estimates

Dependent Variable: Math grade - 3rd Quarter

					95% Confidence Interval		
Parameter	B	Std. Error	t	Sig.	Lower Bound	Upper Bound	Partial Eta Squared
Intercept	1.423	.208	6.849	.000	1.015	1.832	.098
[SiteID=1]	.390	.227	1.718	.087	-.056	.836	.007
[SiteID=3]	.205	.193	1.058	.291	-.175	.584	.003
[SiteID=6]	-.296	.163	-1.819	.070	-.616	.024	.008
[SiteID=7]	.010	.153	.063	.950	-.291	.310	.000
[SiteID=8]	.012	.275	.044	.965	-.528	.552	.000
[SiteID=9]	-.141	.149	-.948	.344	-.435	.152	.002
[SiteID=10]	-.059	.151	-.391	.696	-.356	.238	.000
Grade level	.008	.030	.277	.782	-.051	.068	.000
MathQ1	.495	.042	11.679	.000	.412	.579	.241
Program engagement	**-.121**	**.061**	**-1.977**	**.049**	**-.241**	**-.001**	**.009**
Program attendance	.002	.001	1.868	.062	.000	.004	.008
Attendance X engagement	.002	.001	1.229	.220	-.001	.004	.004

Note: Statistically significant effect of interest is bolded.

B2. Linear Model Predicting Q3 Reading Grades

Between-Subjects Factors

		Value Label	N
Site ID	1	Belvidere	38
	3	Conn-West	42
	6	Johnson	60
	7	Santa Fe	90
	8	Smith-Hale	27
	9	ACCPA	98
	10	Hartman	77
	11	Melcher	67

Parameter Estimates

Dependent Variable: Reading grade - 3rd Quarter

					95% Confidence Interval		
Parameter	B	Std. Error	t	Sig.	Lower Bound	Upper Bound	Partial Eta Squared
Intercept	1.503	.180	8.349	.000	1.149	1.857	.125
[SiteID=1]	.389	.198	1.965	.050	-.000	.778	.008
[SiteID=3]	.043	.176	.244	.807	-.303	.389	.000
[SiteID=6]	-.066	.160	-.409	.682	-.380	.249	.000
[SiteID=7]	.223	.148	1.511	.131	-.067	.514	.005
[SiteID=8]	.631	.228	2.774	.006	.184	1.079	.016
[SiteID=9]	-.267	.142	-1.886	.060	-.545	.011	.007
[SiteID=10]	.047	.149	.318	.750	-.244	.339	.000
Grade level	-.024	.029	-.834	.405	-.081	.033	.001
Reading Q1	.441	.040	11.024	.000	.362	.520	.200
Program engagement	.076	.057	1.324	.186	-.037	.189	.004
Program attendance	.000	.001	.047	.963	-.002	.002	.000
Attendance X engagement	.002	.001	1.687	.092	.000	.004	.006

B3. Linear Model Predicting Q3 Science Grades

Between-Subjects Factors

		Value Label	N
Site ID	1	Belvidere	40
	3	Conn-West	42
	6	Johnson	59
	7	Santa Fe	87
	8	Smith-Hale	33
	9	ACCPA	88
	10	Hartman	76
	11	Melcher	92

Parameter Estimates

Dependent Variable: Science grade - 3rd Quarter

					95% Confidence Interval		
Parameter	B	Std. Error	t	Sig.	Lower Bound	Upper Bound	Partial Eta Squared
Intercept	2.210	.182	12.159	.000	1.853	2.567	.227
[SiteID=1]	.377	.183	2.058	.040	.017	.736	.008
[SiteID=3]	.361	.168	2.149	.032	.031	.690	.009
[SiteID=6]	-.126	.152	-.826	.409	-.425	.173	.001
[SiteID=7]	.109	.138	.790	.430	-.162	.380	.001
[SiteID=8]	-.022	.213	-.104	.917	-.440	.396	.000
[SiteID=9]	-.071	.131	-.541	.589	-.327	.186	.001
[SiteID=10]	.327	.136	2.401	.017	.059	.594	.011
Grade level	-.074	.029	-2.525	.012	-.131	-.016	.012
ScienceQ1	.321	.039	8.132	.000	.243	.398	.116
Program engagement	.098	.055	1.768	.078	-.011	.206	.006
Program attendance	.000	.001	.144	.885	-.002	.002	.000
Attendance X Engagement	.002	.001	1.847	.065	.000	.004	.007

C. Linear Model Predicting Composite Teacher Ratings of School Behavior Improvement

Between-Subjects Factors

		Value Label	N
Site ID	1	Belvidere	6
	3	Conn-West	7
	6	Johnson	14
	7	Santa Fe	20
	8	Smith-Hale	10
	9	ACCPA	22
	10	Hartman	14
	11	Melcher	11

Parameter Estimates

Dependent Variable: Composite Teacher Improvement Rating

					95% Confidence Interval		
Parameter	B	Std. Error	t	Sig.	Lower Bound	Upper Bound	Partial Eta Squared
Intercept	4.216	.758	5.562	.000	2.710	5.722	.258
[SiteID=1]	-1.075	.787	-1.365	.176	-2.639	.489	.021
[SiteID=3]	-.250	.701	-.357	.722	-1.643	1.143	.001
[SiteID=6]	.414	.638	.649	.518	-.854	1.682	.005
[SiteID=7]	.279	.554	.504	.615	-.821	1.380	.003
[SiteID=8]	.603	.725	.832	.408	-.837	2.043	.008
[SiteID=9]	.461	.531	.868	.388	-.594	1.515	.008
[SiteID=10]	.349	.562	.620	.537	-.769	1.466	.004
Grade level	-.085	.108	-.793	.430	-.300	.129	.007
Math Q1	.025	.162	.154	.878	-.296	.346	.000
Reading Q1	.024	.178	.136	.892	-.330	.378	.000
ScienceQ1	.049	.152	.324	.747	-.253	.351	.001
Program engagement	-.029	.227	-.129	.897	-.481	.422	.000
Program attendance	-.002	.004	-.642	.523	-.009	.005	.005
Attendance X engagement	-.001	.004	-.217	.828	-.009	.007	.001