

Summary of SITTE and DREAMS

In 2005 a collaborative consisting of Local District 2 of Los Angeles Unified School District (LAUSD), California State University Northridge (CSUN), Los Angeles Mission College (LAMC), Project GRAD Los Angeles, and the Economic Alliance of the San Fernando Valley was awarded a planning grant from the Alliance for Regional Collaboration to Heighten Educational Success (ARCHES) and California Engaging Latino Communities for Education (ENLACE) to address the district’s concern with high attrition rates among high school students due, in part, to failure in first year algebra.

In 2006, this collaborative initiated the Student Improvement Through Teacher Empowerment (SITTE) project to improve student performance in algebra by supporting teachers in developing innovative approaches for teaching algebra. A central feature of the program was that the teachers met each day to analyze student work and design the next day’s lesson based on evidence of student learning. Using a “responsive teaching cycle” (RTC), teachers focused on getting through to their students rather than simply getting through a book.

Building on the success of SITTE, the collaborative then implemented an intervention project in 2007 called Developing Resources and Engaging Activities to Motivate Students (DREAMS). In this program, **low performing seventh graders who were below “proficient” on the California Standards Test (CST)** were provided a full-day summer program before entering algebra in the eighth grade. This summer program included a teacher-designed algebra readiness class, a study skills class, and a robotics class. As a result of this intervention, students were successful the following semester in first year algebra (see Figure 1).

The fact that **students who participated in DREAMS were not initially considered algebra ready** makes their achievement even more remarkable. Since course grades have a high correlation with CST scores (Ai & White, 2003), these grades have significant implications.

- In 2007, 86 percent of the students in the intervention subsequently earned a C grade or better in Algebra 1 in the semester following the summer project. When compared with classmates who did not participate in the intervention, DREAMS students scored 11.5% better in standardized district benchmark assessments (Figure 1 & Appendix A).
- In 2008, 90 percent of the students in the intervention passed Algebra 1 as eighth graders in the fall semester following the DREAMS summer program (Figure 1).

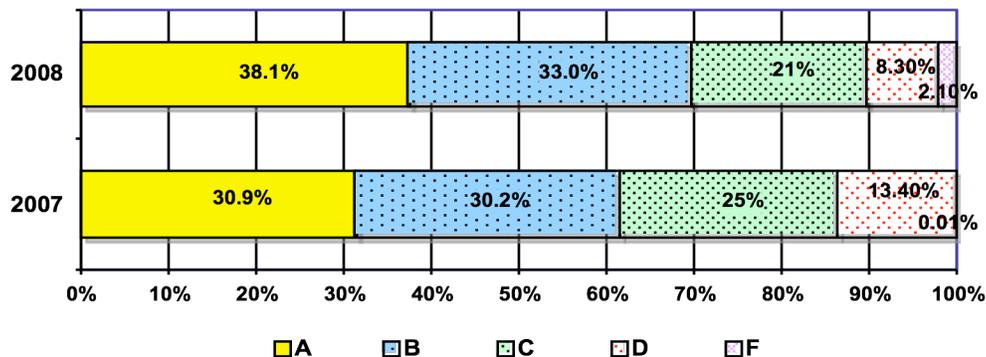


Figure 1. Grades in Algebra 1 following the summer intervention (N ≈ 150 each year).

As eighth graders, the students who participated in DREAMS consisted of a representative sample of students who had scored *below* “proficient” on the 7th grade California Standards Test in mathematics. According to district statistics, almost three fourths of all eighth graders were in this category. The *proficient* students who did not participate in DREAMS consisted of nearly all of the students who had scored at a “proficient” or “advanced” level in seventh grade and were algebra ready as eighth graders. The *non-proficient* students who did not participate in DREAMS represented the same population from which the DREAMS students were selected.

To date, over 450 students have been served over the three summers since 2007. At the same time, 12 teachers have been engaged in this collaborative professional development activity. Given the fact that each teacher teaches at least 150 students each semester, it is likely that over 1,800 students have been impacted each year since the project began.

Based on the initial success of these efforts, the school district expressed interest in expanding the program to include more students and the inclusion of language arts in the next phase. To that end, CSU Northridge has received grant funding from the California Postsecondary Education Commission to continue the summer project and to expand the collaboration into the school year. Further, CSU Northridge has provided funding through *Teachers for a New Era* to provide SITTE at the high school level during the 2009–2010 school year (see Appendix B). This work is based on previous pilot studies of the SITTE approach (at two high schools) suggest that significant numbers of students can be supported in gaining success in algebra (see Table 1 and Figure 2).

- SITTE students (9th – 12th graders repeating Algebra 1) passed at a rate at least 50 percent higher than did similar groups of non-participating students.
- Each comparative cohort evidences the same trend suggesting that the effects of SITTE were consistent over time despite the inevitable changes in personnel and the learning histories of students measured at different times and under varying circumstances.

Algebra 1A Classes (Non-SITTE)	Algebra 1A Classes (SITTE)	Number of students enrolled	Number of students passing	Percentage of students passing
Spring 2004		418	106	25.36%
Inter-session 2004		131	51	38.93%
	SITTE Implementation 1 Fall 2004	111	67	60.36%
Inter-session 2005		95	28	29.47%
	SITTE Implementation 2 Winter 2006	84	44	52.38%
Fall 2005		201	73	36.32%
	SITTE Implementation 3 Summer 2006	87	54	62.07%

Table 1. Comparison of pass rates in algebra from the SITTE pilot studies

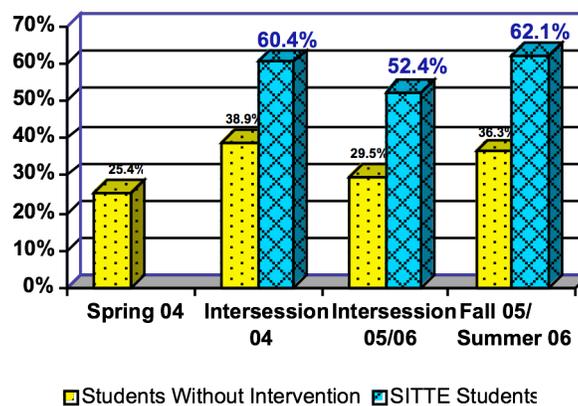


Figure 2. Comparison of pass rates in algebra from previous pilot studies of SITTE.

Based on the data collected so far, the SITTE approach and the DREAMS Project represent powerful interventions for student achievement while enhancing teacher knowledge and skills. This success can be partially attributed to the strategic design of the intervention, which focuses on getting through to the students rather than getting through a curriculum through the use of RTC.

Appendix A: Findings from Cohort 1 Participants

For the first cohort of the DREAMS Project, grades and District benchmark assessments were used to compare the performance of students who participated in the summer program and those who did not. This data was gathered from all algebra classes from the four participating middle schools, and included advanced students from a Math-Science Magnet located on the campus of one middle school. At another middle school, *all* eighth graders were placed into algebra regardless of their initial proficiency level. This provided a control sample, as the algebra classes at this school consisted of students from three representative populations: 1) students who participated in the DREAMS Project, 2) proficient eighth graders who did not participate in DREAMS, and 3) non-proficient eighth graders who did not participate in DREAMS.

At the conclusion of the fall semester (February, 2008), follow-up data was collected based on course grades (Table 2) and scores on standardized district benchmark assessment scores (Tables 3, 4, and 5). The pass rates of students who participated in DREAMS is particularly compelling because statistics from LAUSD indicate that over 30% of the students in eighth grade algebra receive Ds and Fs (Ai & White, 2003) with the failure rate even higher in Local District 2. Furthermore, the fact that students who participated in DREAMS were not initially considered algebra ready makes their achievement even more remarkable. Since course grades have a high correlation with CST scores (Ai & White, 2003), these grades have significant implications.

Algebra Grades	Number of Students	Percentage of Students	Percentage of students passing (C or better)	Percentage of students passing (D or better)
A	46	30.87%	85.91%	99.33%
B	45	30.20%		
C	37	24.83%		
D	20	13.42%		
F	1	0.007%		

Table 2. Pass rates in algebra the semester following DREAMS

In February 2008, standardized district benchmark assessment data was also collected at the end of the fall semester. This data was gathered from all algebra classes from the four participating middle schools, and included advanced students from a Math-Science Magnet located on the campus of one middle school. At another middle school, *all* eighth graders were placed into algebra regardless of their initial proficiency level. This provided a control sample, as the algebra classes at this school consisted of students from three representative populations: 1) students who participated in the DREAMS Project, 2) proficient eighth graders who did not participate in DREAMS, and 3) non-proficient eighth graders who did not participate in DREAMS.

Benchmark scores (see Table 3) indicate that, at the first three middle schools, DREAMS students scored 9.63% lower than their peers who entered eighth grade *already proficient* in math, based on their seventh grade scores on the California Standards Test (CST). At the same time, the DREAMS students scored 6.29% higher than non-proficient students who did not participate in DREAMS.

	DREAMS Algebra	Non-DREAMS Algebra	
		Proficient*	Non-proficient**
<i>n</i>	120	437	262
μ	43.30	52.66	37.01
σ	17.08	20.68	13.44

Table 3. Comparisons of benchmark assessment scores following the first semester of algebra

*Community Charter Middle School, Maclay Middle School, Pacoima Middle School

**San Fernando Middle School, where *all* eighth graders took algebra

Comparisons of all three groups at the fourth middle school show similar results (see Table 4), with DREAMS students scoring just 3.73% lower than the proficient students, and 10.39% higher than the non-proficient students who did not participate.

	DREAMS Algebra	Non-DREAMS Algebra	
		Proficient*	Non-proficient**
n	24	114	262
μ	47.40	51.13	37.01
σ	12.88	15.94	13.44

Table 4. Comparisons of benchmark assessment scores following the first semester of algebra at San Fernando Middle School, where all eighth graders took algebra

Figure 3 below provides a better picture of how the DREAMS students compare with their peers. Each graph shows the range, the median, and the quartile values for each group on the Quarter 2 benchmark assessments. While the range of scores for non-proficient students and DREAMS students were similar, their median scores were 37.5 and 41.67, respectively. However, the DREAMS students' inter-quartile range was significantly higher than that of the non-proficient students, with nearly three fourths of the DREAMS students scoring above the median of the non-proficient students. Even though the DREAMS students had also tested below proficient on the CST, they clearly made progress over their peers who did not participate in DREAMS.

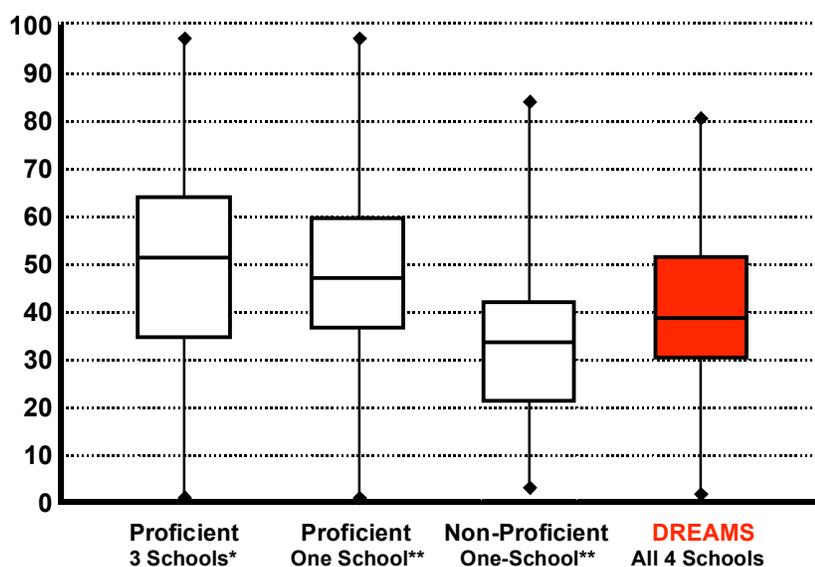


Figure 3. Comparisons of benchmark assessment scores following the first semester of algebra

*Community Charter Middle School, Maclay Middle School, Pacoima Middle School

**San Fernando Middle School, where all eighth graders took algebra

Further analysis of the benchmark assessment data reveals an even more dramatic achievement. When the benchmark scores were disaggregated to sort out multiple-choice items from the constructed-response item, the gap disappeared between the DREAMS students and their peers who were already proficient upon entering eighth grade (see Table 5 and Figure 4). This data is most compelling when considering the fact that average scores on the constructed-response item is typically closer to the performance of the non-proficient students. In fact, the DREAMS students scored **11.53%** better than the non-proficient students who did not participate.

	DREAMS Algebra	Non-DREAMS Algebra	
		Proficient*	Non-proficient**
<i>n</i>	91	364	262
μ	2.648	2.676	2.187
σ	1.149	1.075	1.20

Table 5. Comparisons of constructed response scores following the first semester of algebra

*Community Charter Middle School, Maclay Middle School, Pacoima Middle School

**San Fernando Middle School, where all eighth graders took algebra

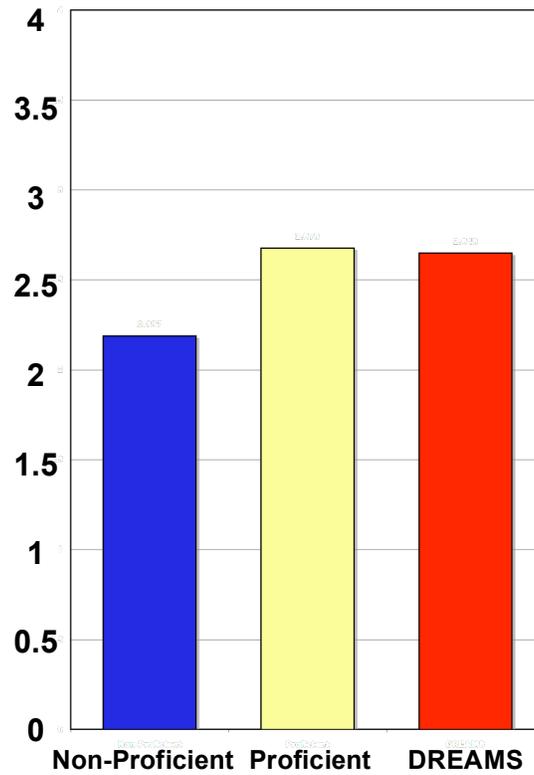


Figure 4. Comparison of performance on the constructed response item.

Appendix B: Findings from SITTE 2009–2010

In the Fall of 2009, the *Teachers for a New Era* Project at CSU Northridge worked with San Fernando High School to provide intervention for Algebra 1 courses. In this intervention, nine sections of Algebra 1A (~350 students, 9th – 12th grade) were taught by *student teachers* under the supervision of six mentor teachers. In Fall 2009, five student teachers were involved and in Spring 2010, four student teachers were involved. The team of teachers met daily for collaborative lesson planning based on daily progress monitoring of student learning. Lessons and activities were designed based on research-based practices and “first good teaching.” A facilitator was provided by CSU Northridge, funded by *Teachers for a New Era*.

Preliminary results are positive, with approximately 75% of the students (over 250) passing the first unit test created by the teachers (mostly with an A). This is in contrast to algebra students from one year earlier, when only 25% of whom passed a similar test. In fact, average scores ranged from 70% to 82% among the nine classes. Further, 48.1% scored “Proficient” or “Advanced” on the Quarter 1 Periodic Assessment, with SITTE students scoring 52% higher on the most difficult portion of the assessment (i.e., “constructed response”) in Quarter 1. The graphs below summarize the data from the district benchmark assessments, disaggregated for multiple choice (MC) and constructed response (CR) items.

Comparisons of Periodic Assessment Results

Unit 1 (Q1) November 2009

N = 482 (School)

N = 277 (SITTE)

Unit 2 (Q2) February 2010

N = 469 (School)

N = 272 (SITTE)

Q2 MC Scores (Number Correct)

School Avg. 5.436759062

SITTE Avg. 6.096544118 (12% ↑ over School)

Q2 CR Scores (Out of 4 Maximum)

School Avg. 1.837953092

SITTE Avg. 2.439338235 (33% ↑ over School)

